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The diversity of *Bradyrhizobium* and *Mesorhizobium* strains associated with root nodules of selected indigenous SA legumes

By

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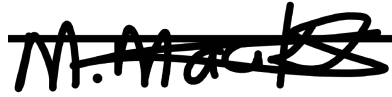
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Declaration

I certify that this dissertation is hereby submitted to the University of Pretoria for the degree of *Magister Scientiae* (Microbiology), has not previously been submitted for any degree at any other University.

A handwritten signature in black ink, appearing to read 'M. Maake', is written over a horizontal line.

Mabodiba Masutane Maake

25 May 2022

This dissertation is dedicated to my parents (Lillian and Phillip Maake), my siblings (Mosibudi, Ngoako, and Tapala), and the rest of my family- for their unconditional love and support throughout my studies. Most importantly, I thank God for giving me the wisdom, courage, and strength throughout this degree, for sending me angels in the form of colleagues, friends, and strangers who were there for me in times of need.

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Ethics

This study aimed to investigate the diversity of *Bradyrhizobium* and *Mesorhizobium* strains in indigenous SA Genisteae. Nodule and soil samples have been collected at Mpumalanga and Kwazulu-Natal.

This project is included under ethics reference number: NAS173/2020 and was registered with the title "Centre of Excellence in Plant Health Biotechnology (CPHB) and Tree Protection Co-operative Programme (TPCP)" at the Department of Biochemistry, Genetics, and Microbiology, Faculty of Natural and Agricultural Science, University of Pretoria.

Preface

Southern Africa has a high diversity of ca.1600 Leguminosae species. The Genisteae is one of the basal legume tribes, which form part of the Core Genistoids, which have their centre of origin in southern Africa. The Genisteae tribe has received many taxonomic revisions over the past years (Cristofolini and Chiapella, 1984). Perhaps the most notable and recent rearrangement of the tribe involves the move of the southern African indigenous genera and species such as *Argyrolobium*, *Melolobium*, *Polhillia*, and *Melolobium* from the Crotalariaeae tribe to the Genisteae (Cubas et al., 2010, Polhill et al., 2005, Van Wyk, 2003). Apart from the taxonomic controversies, little attention has been given to South African indigenous Genisteae regarding their associated rhizobial symbionts. As a result, most of the rhizobial species have not been classified or investigated for their nitrogen fixation potential. Recently, a few studies have looked at the rhizobial diversity of some *Argyrolobium* and *Polhillia* species. These studies provide a better understanding of the rhizobial symbionts of the tribe in the context of South Africa (SA). However, because of the biases in the sampled habitats and host species variability (i.e., rhizobial diversity might differ based on the area or host plants sampled) a lot of questions remained unanswered, and no specific conclusions could be made (i.e., regarding SA Genisteae rhizobial diversity and evolutionary histories, host species specificity, and provincial or habitat distribution).

This study is divided into two aims that are presented as two research chapters in this dissertation. The first aim was to study the diversity of *Bradyrhizobium* associated with indigenous legumes within the Genisteae in SA. This was achieved first by genus level identification of isolates using 16S rRNA sequence comparisons. Thereafter, genealogical concordance analysis was applied to identify isolates or delineate new species by generating species hypotheses for the unique *Bradyrhizobium* strains from this study. The species hypotheses were then supported by incorporating a polyphasic approach, which involved determining genotypic, phylogenetic, and phenotypic characterization for the strains being studied. Nodulation tests were conducted to confirm the nodulation capabilities of the strains. The evolutionary relationships of the symbiotic loci (particularly *nodA* and *nifH*) of these strains were investigated to determine the host and biogeographical patterns (if any). This adds to the knowledge of the diversity and species present in this agriculturally important genus. Although

Bradyrhizobium species are increasingly being described, strains are mostly from China, Brazil, the USA and North Africa with only a few from southern Africa, and none yet from SA (Gronemeyer and Reinhold-Hurek, 2018). This study, therefore, contributes to uncovering and documenting the understudied *Bradyrhizobium* diversity in SA.

The second aim and thus third chapter of the study evaluates the diversity of *Mesorhizobium* associated with indigenous SA legumes, following the same approach as mentioned above. In this part of the study, the diversity of *Mesorhizobium* strains also associated with legumes in the Genisteae tribe sampled in SA was investigated. Strains from this genus have been isolated in previous studies, but mostly from the Cape Core Region (CCR) of SA. This study will, therefore, increase our knowledge of *Mesorhizobium* linked to the Genisteae tribe and be the first study to unravel the phylogeographic patterns that exist in this genus.

These two research chapters could contribute to the discovery and development of highly effective rhizobia inoculants for sustainable and cheaper food production (Gronemeyer and Reinhold-Hurek, 2018). In investigating SA rhizobia, inoculants adapted to SA soils and climatic conditions could be developed.

Chapter 1

Evolutionary history of Genisteae and their rhizobial symbionts

1.1 Introduction

Crop production is often limited by the availability of nutrients as well as other factors linked to soil fertility. Farmers globally rely on the use of fertilizers to improve soil fertility and increase food production (Crews and Peoples, 2004). Chemical fertilizers are however expensive, making them inaccessible to developing countries such as those in sub-Saharan Africa (SSA). They are also associated with environmental pollution such as contamination of groundwater (Crews and Peoples, 2004). These issues raise an urgent universal need for cheaper, sustainable, and environmentally friendly alternatives to chemical fertilisers with which to increase agricultural production (Farssi et al., 2018), in order to feed a growing global population. One such an alternative approach is biological nitrogen fixation (BNF), specifically the symbiosis between rhizobia and legumes. During this symbiosis, rhizobia can fix atmospheric nitrogen for their host plants, thus providing nitrogen sources essential for plant growth while in turn receiving carbon sources from their plant hosts. This symbiotic relationship improves soil fertility at low costs without causing damage to the environment (Chianu et al., 2011).

The symbiotic association between legumes and rhizobia is very specific such that rhizobia species interact with specific legumes and vice-versa (Hirsch et al., 2001, Tilak et al., 2005). The specificity is maintained by genes and molecular crosstalk involved in the legume-rhizobia symbiosis, enabling rhizobia to interact with their specific legume hosts (Tilak et al., 2005, Hirsch et al., 2001). Different legume hosts produce different chemical molecules or signals such as (iso) flavonoids, stachydrines, or aldonic acids into the rhizosphere via the roots (Farssi et al., 2018). These chemical molecules attract rhizobia through chemotaxis towards the plant root and induces synthesis of the rhizobial NodD, which then activates transcription of the bacterial core nodulation (*nod*) genes (*nodA*, acyltransferase; *nodB*, deacetylase; *nodC*, N-acetylglucosaminyl transferase) that encode the Nod factor backbone (Farssi et al., 2018). After host-specific modifications of this backbone, these rhizobial signalling molecules can bind to Nod factor receptors on plant root cells (Andrews and Andrews, 2017).

Rhizobial infection of most legume species occurs through the root hair (a process which involves the formation of infection threads) (Sprent et al., 2013), while there are other hosts in which crack entry (Okubo 2012, Bianco 2014), or infection through the

root epidermis is the preferred route (Ardley et al., 2013, Czernic et al., 2015, González-Sama et al., 2004). The latter has been reported in some members of the Genisteae such as *Lupinus*, *Cytisus*, *Genista*, and *Ulex* (Czernic et al., 2015, González-Sama et al., 2004, Kalita et al., 2006, Sajnaga et al., 2001, Lechtova-Trnka, 1931), where instead of forming infection threads, rhizobia infect between hosts epidermal cells adjacent to the root hair bases (González-Sama et al., 2004). A nodule is formed through the rapid proliferation of the cortical root cells (Madigan, 2007), this is also the structure in which the rhizobia undergo physiological changes to differentiate into bacteroids (Farssi et al., 2018). Depending on the legume host, the nodule can be either determinate or indeterminate (Sprent et al., 2017). Most of the papilionoid tribes such as the Genisteae and Crotalariaeae, form indeterminate nodules- which are differentiated by their persistent nodule meristem (Sprent et al., 2017). The nodules are an oxygen-poor environment, making them ideal for the oxygen-sensitive nitrogenase enzyme to function properly. This is done through the conversion of the free-living rhizobia into nitrogen fixing forms (i.e., the bacteroids) that expresses genes required for the assembly and function of nitrogenase: the *nif* and *fix* genes (Poole et al., 2018).

One of the major centres of legume diversifications are known to have occurred on the African continent (Polhill, 1981). South Africa is known to harbour a high diversity of indigenous legumes occurring in ca. 24 tribes, 118 genera, and with ca. 1662 species (Trytsman, 2013). Some of these tribes include Genisteae, Phaseoleae, and Podalyrieae (Sprent et al., 2017). However, only a few of these indigenous legumes have been studied for their rhizobial symbionts (Beukes et al. 2013). Trytsman et al. (2013) argues that reasons for this lack of interest in studying indigenous legumes could be due to a focus on the large and well-known genera such as *Aspalathus*, *Crotalaria*, *Indigofera*, and *Tephrosia* (Trytsman, 2013, Sprent et al., 2017).

When taking a closer look at one of the tribes that have their centre of origin in southern Africa, such as the tribe Genisteae, a clear knowledge gap regarding their rhizobial diversity and evolutionary histories is evident. Perhaps because of the taxonomic revisions and rearrangements that have occurred in the southern African Genisteae (Cardoso et al., 2013, Polhill et al., 2005), they have received less attention. Research conducted on CCR Genisteae provides a contrasting picture of rhizobial symbionts, where they are mostly nodulated by *Mesorhizobium* and not *Bradyrhizobium* (Dludlu

et al., 2018a, du Preez, 2019, Lemaire et al., 2015b). On the other hand, Beukes et al. (2016) shows that SA Escarpment and lowveld Genisteae legumes are associated with both genera. These studies further emphasise the knowledge gap that exists within this group of legumes in SA and the need to further evaluate their rhizobial diversity and whether host, geography, or both is driving their rhizobial diversity and evolution.

The aim of this literature review is therefore to provide clarity on the evolutionary history and distribution of the Genisteae tribe as well as the associated rhizobia, with a focus on the southern African Genisteae. Because the genera of interest in this study is *Bradyrhizobium* and *Mesorhizobium*, the duo will be discussed broadly and further discussed in the context of Genisteae legumes and more specifically, those indigenous to southern Africa.

1.2 Rhizobial taxonomy

Traditionally, the term ‘rhizobia’ is used for a group of bacteria that can form symbioses with leguminous plants by fixing nitrogen in specialized organs (nodules) on the plant roots or stems (de Lajudie and Young, 2017). This group of bacteria are not monophyletic, as its members are found in two different classes, the Alpha- and Gamma (until recently still the Betaproteobacteria; Parks et al., 2018). Of the two groups (alpha- and beta-rhizobia; Moulin et al., 2001), the alpha-rhizobia are older, and members are found in several well-known rhizobial genera (Moulin et al., 2001). The majority of species described for these genera are known to be able to fix atmospheric nitrogen in association with legumes (Andrews and Andrews, 2017). There are, however, also a few alpha-rhizobial species found in genera such as *Microvirga* and *Methylobacterium* (Sy et al., 2001, Kanso and Patel, 2003), genera which are not normally recognized as rhizobial genera. Some rhizobia belong to the Betaproteobacteria in the family *Burkholderiaceae* (*Paraburkholderia*, *Cupriavidus*, *Trinickia*) (Andrews and Andrews, 2017, Estrada-de Los Santos et al., 2018).

The rhizobia belonging to the Alphaproteobacteria are classified in the *Rhizobiaceae* (*Rhizobium*, *Ensifer* (until recently, syn. *Sinorhizobium*), *Allorhizobium*, *Pararhizobium*, *Neorhizobium*, *Shinella*), *Phyllobacteriaceae* (*Mesorhizobium*, *Aminobacter*, *Phyllobacterium*), *Brucellaceae* (*Ochrobactrum*), *Methylobacteriaceae* (*Methylobacterium*, *Microvirga*), *Bradyrhizobiaceae* now known as *Nitrobacteraceae*

(*Bradyrhizobium*), *Xanthobacteraceae* (*Azorhizobium*) and *Hyphomicrobiaceae* (*Devosia*) families (Andrews and Andrews, 2017, Estrada-de Los Santos et al., 2018, Tindall, 2019). The alpha-rhizobia share similarities such as that they are chemoorganotrophs, obligate aerobes, and their nodulation genes have been widely distributed among the genera (Hördt et al., 2020).

1.2.1 The genus *Bradyrhizobium*

In the early nineteen eighties, *Bradyrhizobium* was one of the first rhizobial genera introduced (Alves et al., 2014, Jordan, 1982). This was after data (such as numerical taxonomy, nucleic acid hybridization, serology, composition of extracellular gum, carbohydrate utilization and metabolism, antibiotic susceptibilities, and protein composition) showed that slow-growing, non-acid producing, root nodule forming bacteria of legume plants should not be placed in the same taxon as the fast-growing, acid-producing bacteria placed in the genus *Rhizobium* (Jordan, 1982).

Some researchers consider it plausible that *Bradyrhizobium* could be the ancestor to most extant rhizobial taxa (Dos Santos et al., 2017, Fonseca et al., 2012, Rathi et al., 2018, Yao et al., 2014). This is based on findings such as that (i) *Bradyrhizobium* appears to have preference for nodulating with the basal legumes i.e. Caesalpinioideae (Dos Santos et al., 2017, Fonseca et al., 2012), (ii) the genus is highly diverse (iii) apart from primitive legumes, they are able to form symbiosis with non-legumes (e.g. *Parasponia* spp.) as well as 'advanced papilionoids (e.g. *Aeschynomene* spp.) (Fonseca et al., 2012), (iv) they are flexible in terms of host adaptation and host infection methods (Fonseca et al., 2012), and (v) they are predominant in legume absent soils (VanInsberghe et al., 2015).

The genus was noted for the high heterogeneity of its members and unresolved taxonomic relationships (Jordan, 1982). Due to this lack of understanding of the taxonomic relationships, members that were putatively different from the type species were for the longest period referred with the name *Bradyrhizobium* sp. with a link to the host they were originally isolated from (Jordan, 1982). These strains were only later designated with appropriate names following sporadic increase in species descriptions using more discriminative markers.

The first validly described species within this genus was *Bradyrhizobium japonicum* in 1980 (Jordan, 1982), followed by *B. elkanii* (Kuykendall et al., 1994), and *B.*

liaoningense (Xu et al., 1995). The description of novel *Bradyrhizobium* species has however, increased exponentially since 1980. As of 6 March 2022, the genus contains over 77 species according to the List of Prokaryotic Names with Standing in Nomenclature (Parte et al., 2020). Only names of 63 out of the 77 species have been validly published. The majority of the described *Bradyrhizobium* species originate from China, followed by Brazil and North Africa, and a few from sub-Saharan Africa (Table 1.3). Recently, the first SA *Bradyrhizobium* species (“*B. acaciae*”, “*B. altum*”, and “*B. oropedii*”) have been described (Table 1.3) from the hosts *Acacia mearnsii*, *Pearsonia obovate*, and *Leobordea lanceolata* respectively (Avontuur et al., 2021). Besides a broad geographical distribution, *Bradyrhizobium* also has a broad host range when compared to other rhizobial genera (Parker, 2015). In total, *Bradyrhizobium* strains have been identified in at least 24 out of the 33 nodulating legume tribes (Parker, 2015).

Phylogenetic analysis based on housekeeping genes reveals seven supergroups/lineages in *Bradyrhizobium*: The *B. japonicum*, *B. elkanii*, Photosynthetic, Kakadu, *B. jicamae*, Soil 1 and Soil 2 supergroups, with the *B. japonicum*, *B. elkanii*, and Photosynthetic supergroups representing the three main/oldest lineages (Avontuur et al., 2021). A study on the genomotaxonomy of *Bradyrhizobium* (Martinez-Romero and Ormeño-Orrillo, 2019) supported the existence of the same groups (named as super clade I-VII) in the paper), and in addition, the existence of a more complex intragenetic structure within *Bradyrhizobium* (Martinez-Romero and Ormeño-Orrillo, 2019).

Many *Bradyrhizobium* strains (both described as well as undescribed) sampled from various continents, climatic zones and hosts, cluster in the *B. japonicum* supergroup (Stepkowski et al., 2018, Vinuesa et al., 2008). Within the *B. japonicum* supergroup, a separate cluster of acidic soil preferring *B. canariense* species can be found (Cardinale et al., 2008, Ruiz-Díez et al., 2009, Vinuesa et al., 2005a). In addition, the *B. japonicum* supergroup includes several undescribed strains (Avontuur et al., 2019). Fewer species, predominantly occur in the subtropical (e.g., Algeria, Morocco, Sicily) and tropical (e.g., Brazil) legumes and cluster in the *B. elkanii* supergroup (Stepkowski et al., 2018, Stepkowski et al., 2012, Menna and Hungria, 2011). Generally, the *B. japonicum* and *B. elkanii* supergroups are the two dominant lineages in southern African isolates (Avontuur et al., 2019). The Photosynthetic supergroup includes symbionts of aquatic, tropical *Aeschynomene* species (Mornico et al., 2012). Strains

in this supergroup can photosynthesize and nodulate with or without producing Nod factors. No species had been formally described from the Kakadu, Soil 1 and Soil 2 supergroups (Avontuur et al., 2019), at the time of writing this paper. It is worth noting that *Bradyrhizobium* is believed to be the most dominant genus in soils globally (including where legumes are absent) (Stepkowski et al., 2018). However, there appears to be a bias when sampling and sequencing this genus with a focus on nodulating strains.

More studies on the diversity and biogeography of *Bradyrhizobium* are still required. The number of species described does not reflect the variety of legume hosts they nodulate or the expected diversity (Jaiswal and Dakora, 2019). To estimate the number of *Bradyrhizobium* species, 5678 *recA* sequences available in the GenBank (accessed in 2020) were used as meta-samples in a pairwise comparison with type strains, revealing a total of 648 species-level OTUs representing potential species (Ormeno-Orrillo and Martinez-Romero, 2019). In addition to this study, Chao and Chiu (2016) also conducted a non-parametric richness estimation on the meta-samples of both *recA* and *glnII*, revealing at least 800 *Bradyrhizobium* species in nature. Although these studies attempted to estimate the number of species within this genus, there is still an underestimation as bradyrhizobia inhabiting different niches such as soil (Ormeno-Orrillo and Martinez-Romero, 2019). There is also a clear geographic bias with very little information regarding bradyrhizobial diversity and identity from African soils (Gronemeyer et al 2018).

Species within *Bradyrhizobium* exhibit diverse lifestyles (Chaintreuil et al., 2000, Durán et al., 2013, Jones et al., 2016, VanInsberghe et al., 2015). They can be symbiotic or endophytic with legume and non-legume hosts (e.g. *Parasponia*) (Chaintreuil et al., 2000, Durán et al., 2013, Menna and Hungria, 2011), while some also possess the remarkable trait of photosynthesis (Giraud et al., 2013). Although the majority of bradyrhizobia are free-living soil microorganisms (VanInsberghe et al., 2015), some have been shown to occur in clinical environments as opportunistic human pathogens (e.g. *Bradyrhizobium enterica*) (Bhatt et al., 2013, Lo et al., 2013). This diverse metabolic lifestyle could be attributed to their large genomes which based on the current complete genome assemblies, range between 6.1 Mbp and 11.7 Mbp (Martinez-Romero and Ormeño-Orrillo, 2019). This, together with the symbiosis islands/mobile elements present, which carries the accessory genome (to which the

nodulation (*nod*) and nitrogen fixation (*nif*) genes belong), have been suggested as some of the drivers of the diverse lifestyles mentioned above (Martinez-Romero and Ormeño-Orrillo, 2019). However, it has been noted in strain GAS478, which has the largest genome for the genus but lacks symbiosis genes, that symbiosis ability and genome size are not necessarily correlated (Martinez-Romero and Ormeño-Orrillo, 2019). Phylogenies of both *nod* and *nif* genes (in comparison to phylogenies of housekeeping genes) have supported both vertical inheritance and horizontal transfer of these genes among bradyrhizobial lineages and rarely between genera (Moulin et al., 2004, Vinuesa et al., 2005a). Thus, to study the biogeographical patterns of nodulation and nitrogen fixation in bradyrhizobial isolates, most studies construct phylogenies of the *nodACD* and *nifCDH* genes (Beukes et al., 2016, Steenkamp et al., 2008, Stepkowski et al., 2005, Vinuesa and Silva, 2004, Vinuesa et al., 2005c). Phylogenetic analysis of these genes provides insight into the *Bradyrhizobium* distribution and geographic origin (Stepkowski et al., 2005, Vinuesa et al., 2005a).

1.2.2 The genus *Mesorhizobium*

Another rhizobial genus, which is receiving increased attention, especially in the SA context, is *Mesorhizobium*. The genus *Mesorhizobium* was first proposed in 1997, when many of its species such as *Mesorhizobium loti*, *M. haukii*, *M. ciceri*, *M. - mediterraneum*, and *M. tianshanense* were moved from the genus *Rhizobium* (Jarvis et al., 1997). The genus name was coined to describe rhizobia that have an intermediate growth rate and phylogenetic position between the slow-growing *Bradyrhizobium* and the fast-growing *Rhizobium* and *Sinorhizobium* (Jarvis et al., 1997). Members of this genus are increasingly discovered in association with hosts from various legume tribes (Dludlu et al., 2018b, Lemaire et al., 2015b).

Taxonomically, this genus falls in the order *Rhizobiales* and family *Phyllobacteriaceae*, respectively (de Lajudie et al., 2019). As of 6 March 2022, the genus contains 65 described species, 58 of which have been validly named (Parte et al., 2020). *Mesorhizobium* strains have been isolated from different regions of the world such as China (Han et al., 2008), the United States of America (Haukka et al., 1998), France (Mohamad et al., 2017), India (Ghosh and Roy, 2006), New Zealand (De Meyer et al., 2019), Ethiopia (Degefu et al., 2013), and South Africa (Dludlu et al., 2018a).

Mesorhizobium strains have been associated with many legumes tribes in SA such as Podalyrieae, Psoraleeae, Galegeae, Crotalariaeae, and Genisteae, indicating an

association with a wide range of hosts (Dludlu et al., 2018a). It is important to note that *Mesorhizobium* studies in SA have primarily concentrated on the Core Cape Subregion (CCR), which was previously known as the Cape Floristic Region (CFR) (Dludlu et al., 2018a, Dludlu et al., 2018b, du Preez, 2019, Gerding et al., 2012, Lemaire et al., 2015b). *Mesorhizobium* strains have mostly been isolated from the Northern, Eastern, and Western Cape, in association with the tribes mentioned above, as well as the genus *Indigofera* (Dludlu et al., 2018b, Dludlu et al., 2018a, du Preez, 2019, Lemaire et al., 2015b, Gerding et al., 2012). Although *Mesorhizobium* is not known as a common symbiont of Genisteae spp., studies have thus far found *Mesorhizobium* isolates associated with SA Genisteae, such as *Polhillia* and *Argyrolobium* (Dludlu et al., 2018b, du Preez, 2019).

Members of *Mesorhizobium*, although mostly associated with legume root nodules (Yuan et al., 2016), have also been isolated from various other sources such as compost (Lin et al., 2019), wastewater sludge (Siddiqi et al., 2019) and deep-sea sediments (Yuan et al., 2016). This alludes to the ability of *Mesorhizobium* species to survive/grow in adverse environmental conditions such as in the presence of heavy metals and under a wide range of pH, salinity, and temperature variables (Brígido et al., 2007, Brígido et al., 2017, Laranjo and Oliveira, 2011). It has also been hypothesized that the ability of *Mesorhizobium* to tolerate a wide range of edaphic factors could explain the more dispersed geographical distribution of the genus (Dludlu et al., 2018b).

In symbiotaxonomy, the phylogeny of symbiotic genes (*nod* and *nif*) of rhizobia have allowed the identification of strains into symbiotic variants (symbiovars) (Vinuesa et al., 2008, Wang et al., 2007) as well as determining distribution and evolution of rhizobia (Banasiewicz et al., 2021, Beukes et al., 2016, Vinuesa et al., 2008, Stepkowski et al., 2012). In many cases, symbiotic gene phylogenies have an evolutionary history different to the housekeeping genes (Beukes et al., 2016, Lemaire et al., 2015b) because they reside in easily interchangeable elements such as plasmids or symbiosis islands and are therefore more prone to horizontal gene transfer (HGT) (Ormeno-Orrillo and Martinez-Romero, 2013).

Concerning the symbiotaxonomy of *Mesorhizobium*, studies predominantly investigate the ability of isolates to group into different symbiovars. This term is parallel to the term

pathovar, which is used to describe pathogenic bacteria (Rogel et al., 2011). Symbiovars are groups of strains that essentially cluster together on symbiotic phylogenies based on the host ranges that they can infect or adapt to (Rogel et al., 2011). Most studies in this genus look at either the *nodC* or *nodA* gene for symbiotic analysis (Lemaire et al., 2015b, León-Barrios et al., 2021, Lin et al., 2019). These genes are essential for the successful establishment of the initial molecular cross talk in an effective symbiosis as they encode for enzymes that determine the host plant flavonoid interacting lipochitooligosaccharides (LCOs) (Downie, 1998), therefore directly involved in host specificity. Within *Mesorhizobium*, the following symbiovars have been defined; sv. caragane, sv. canariense, sv. psolareae, sv. albiziae, sv. robiniae, sv. sophorae, sv. sesbaniae, sv. loti, sv. ciceri, sv. astragali, sv. aridi/hedysari, sv. glycyphyllae, sv. biserrulae, and sv. anthyllids (Lemaire et al., 2015b, León-Barrios et al., 2021), correlated grouping of symbiotic genes with host range, where they recovered strongly supported clades including an intermingled pattern of isolates from the tribe Psoraleeae (e.g. *Otholobium* and *Psoralea*), Crotalariaeae (e.g. *Aspalathus*), Genisteae (e.g. *Argyrolobium*), and Indigofereae (e.g. *Indigofera*) (Lemaire et al., 2015b). In their study, the *Argyrolobium*-nodulating *Mesorhizobium* strains from the CCR formed discrete branches, grouping with *Aspalathus* spp. (Lemaire et al., 2015a), suggesting that they belong to the same symbiovar. In another study, *Lessertia* spp. were shown to form unique clades on the *nodA* phylogeny, also correlating host grouping patterns (Gerding et al., 2012). The authors however acknowledge the sampling bias in African legumes, which may also reveal an intermingling pattern of *Lessertia* spp. with other legumes isolates.

Although no phylogeographic framework exists for the genus, other studies have also reported grouping of mesorhizobial symbiotic genes based on geographical origin (Gao et al., 2004, Han et al., 2008). Gerding et al. (2015) additionally reports on Northern Cape (Succulent Karoo biome) and Western Cape (Fynbos biome) isolates grouping separately, indicating grouping of isolates based on the geographical origin or biome type of isolates host (Gerding et al., 2012). These findings support the hypothesis that symbiotic microorganisms should have a similar biogeography with their associated host (Martiny et al., 2006). In bradyrhizobial studies, a phylogeographic framework has been established where some SA isolates of the Great Escarpment showed distinct groupings of *nodA* genes from those occurring in

other parts of the world (Beukes et al., 2016). Similarly, *Mesorhizobium nodA* genes from CCR legumes were shown to form unique groupings from the others isolated elsewhere in the world (Dludlu et al., 2018a, Dludlu et al., 2018b, Lemaire et al., 2015b), indicating independent evolution of this locus for members of this genus in this region. As a phylogeographic framework for this genus does not currently exist, the unique evolution of the *nodA* for the CCR mesorhizobia remains to be evaluated. It would also be of interest to determine whether mesorhizobia from SA regions, other than the CCR, would form part of this unique *nodA* lineage or whether they would form part of the more global evolutionary history.

1.3 Legume taxonomy

Legumes belong to the family Leguminosae or Fabaceae (LPWG, 2017), which represents the third largest family of flowering plants (angiosperms) after the Asteraceae and Orchidaceae on the basis of species number; ca. 20 000 (Cronk et al., 2006). Apart from being one of the largest families of flowering plants, this family is also the largest group of plants involved in symbiotic nitrogen fixation (LPWG, 2017). Until the recent taxonomic circumscription of the Leguminosae in 2017, legumes were classified into three subfamilies: Caesalpinioideae, Mimosoideae, and Papilionoideae, however the Caesalpinioideae was found to form a paraphyletic group (LPWG, 2017). Under the current system, monophyly of the subfamilies was considered central to taxon delineation which is why six subfamilies (i.e., Caesalpinioideae, Cercidoideae, Detarioideae, Dialioideae, Duparquetioidea, and Papilionoideae) are currently recognized (LPWG, 2017). They are distinguished from one another based upon differences in morphology (i.e. leaves, flowers, fruits, and petals), chemistry (chemical molecules secreted), and number of chromosomes (LPWG, 2017). Of the six subfamilies, only the Caesalpinioideae and Papilionoideae can nodulate, with the latter generally being nodulated while in the former the trait is variable (LPWG, 2017). Legume subfamilies are further subdivided into tribes, which are informal groups of genera with similarities based upon molecular data, as well as morphological and chemical properties (Lewis, 2005).

The ca. 14 000 member species of the Papilionoideae subfamily are found in 28 tribes and ca. 503 genera (Andrews and Andrews, 2017, LPWG, 2017). Due to limited taxon sampling over the years, the resolution among early branching papilionoids has been poor, therefore obstructing phylogenetic classification of the Papilionoideae (Lewis,

2005). Since the publication of the “Legumes of the world” book, molecular phylogenetic studies have resolved the relationships of deep-branching nodes, resulting in reassignments of some genera, tribes, and species (Cardoso et al., 2013, Lewis, 2005, Wojciechowski et al., 2004). Resolving the phylogenetic relationships within deep nodes allows the understanding of the evolutionary history and diversification of papilionoids legumes. Cardoso et al. (2013) provides a more stable phylogenetic classification of the Papilionoideae by providing a better-resolved phylogeny of the early-branching papilionoids using a comprehensive Bayesian phylogenetic analysis of 668 plastid *matK* sequences, resulting in strongly supported clades (Cardoso et al., 2013).

According to the Cardoso et al. (2013) study, early branching legumes fall within two main clades, the ADA clade, and the 50-kb inversion clade (Cardoso et al., 2013). The latter comprises nine constituent clades: *Amphimas*, *Dermatophyllum*, *Exostyleae*, *Vataireoid*, *Andira*, Genistoid *sensu lato* (s.l.), the *Dalbergioid* s.l., *Baphieae*, and papilionoids within the non-protein–aminoacid-accumulating (NPAAA) clade (Cardoso et al., 2013). Of interest to the current study, the Genistoid s.l. clade is characterized by the accumulation of quinolizidine-alkaloids and comprises the tribes Ormosieae, Brongniartieae, Leptolobieae, Camoensieae, and lastly the Core Genistoid group containing Sophoreae, Podalyrieae, Crotalarieae, and Genisteae from Africa and Eurasia (Cardoso et al., 2013, Wojciechowski et al., 2004). Within the Core Genistoids, the Crotalarieae and Genisteae are known to be the only genistoids that accumulate α -pyridone type quinolizidine alkaloids (Van Wyk, 2003, Wink and Mohamed, 2003). In addition, the Crotalarieae and Genisteae are thought to have had their centre of origin in SA and to share a common ancestor before their separation ca. 41 million years ago (Stepkowski et al., 2018).

1.3.1 The tribe Genisteae

Genisteae (subfamily Papilionoideae) is one of the largest tribes of papilionoid legumes within the Genisteae clade, encompassing ca. 618 species across 25 genera (Table 1.1) (Cardoso et al., 2013). Most of the genera in Table 1.1 have their centres of diversity in the Mediterranean, while some such as *Cytisus*, *Lupinus*, *Spartium*, and *Ulex* have been introduced and become naturalised into other geographical ranges. Genisteae is a monophyletic tribe mostly comprising of woody shrubs and herbs that occur predominantly in temperate climates (although some can also be encountered

in the tropic regions) (Stepkowski et al., 2018). They are broadly distributed, with their biogeographical locations covering the western and eastern Mediterranean (Cristofolini and Chiapella, 1984), northern Europe, America (Cubas et al., 2010), and southern Africa (Polhill et al., 2005).

Genisteae is sister to Crotalariaeae with which it shares similarities in terms of morphology and secondary metabolites such as pyrrolizidine alkaloids (Van Wyk, 2003, Wink and Mohamed, 2003). These similarities have led to taxonomic confusion and the misclassification of certain genera of Genisteae and species in the Crotalariaeae tribe. Following taxonomic revision and delimitation of the Crotalariaeae, however *Argyrolobium*, *Dichilus* as well as *Melolobium* Eckl. & Zeyh. and *Polhillia* C.H. Stirt. were transferred to the Genisteae (Van Wyk and Schutte, 1995). Indeed, this complex tribe has undergone many taxonomic revisions but contributions from serological data, chemotaxonomic studies, and phylogenetic analysis from various studies have provided clarity on the systematic relationships within the tribe by providing convincing evidence that the above mentioned genera are part of Genisteae (Cubas et al., 2010, Stirton, 1986, Trytsman et al., 2016, Polhill et al., 2005).

Despite the shared similarities between the Genisteae and Crotalariaeae, members of the Genisteae have been noted for distinctive features such as the presence of a rare isoflavone, 5-O-methylgenistein, the primary accumulation of an α -pyridone type of quinolizidine alkaloid, and the presence of bilabiate calyces with a bifid upper lip and a trifid lower lip (Boatwright et al., 2008, Van Wyk, 2005).

1.3.1.1 Evolutionary history and diversification

After its separation from the Crotalariaeae ca. 41 million years ago, the Genisteae formed two basal lineages in southern Africa (Stepkowski et al., 2018). From one of these lineages developed the extant genera *Polhillia*, *Dichilus*, *Melolobium* and *Argyrolobium* (which forms part of the Adenocarpinae Rouy subtribe) with ranges including SA, tropical Africa and extending into the Mediterranean (Stepkowski et al., 2018; Lewis, 2005). The other basal lineage dispersed northwards, forming the Mediterranean lineage (Stepkowski et al., 2018), which includes the genera *Adenocarpus* and *Lupinus* (which forms part of the Lupininae Rouy- which in addition comprises the genera *Anarthrophyllum*, *Sellocharis*), subtribes Genistinae (consisting of the genera *Gonocytisus*, *Retama*, *Spartium*, *Genista*, *Echinospartum*,

Stauracanthus, *Ulex*), and Cytisinae (Horan.) Benth. (Comprising the genera *Cytisophyllum*, *Argyrocytistus*, *Petteria*, *Cytisus*, *Lembotropis*, *Calicotome*, *Laburnum*, *Podocytisus*, and *Hesperolaburnum*) (Stępkowski et al., 2018). These legumes occur primarily in the Mediterranean, Europe, America, and tropical Africa (Lewis, 2005). Although the Genisteae has its centre of origin in southern Africa (Lewis 2005), the majority of species occur in the Mediterranean as this is where major diversification occurred, with *Lupinus* being the most species-rich (ca. 275 species) and the most widely distributed genus within the tribe (Cardoso et al., 2013).

Among the southern African species of the Genisteae (Table 1.2), genera such as *Argyrolobium* have a wider provincial distribution and habitat, and endemism to SA varies within and between genera. Most species within *Argyrolobium* are the group of least concern according to the Red List of threatened species, with only a few that are either rare, endangered, vulnerable, or near threatened (mostly due to habitat destruction in order to repurpose land for agricultural use). Similar trends of threats are observed in *Melolobium*, *Dichilus*, and *Polhillia*. In this above-mentioned table, it is clear to see that *Argyrolobium* is the most species rich genus with a wider geographical range followed by *Melolobium*. While *Dichilus* spp. are the least in terms of number but also have a wider provincial distribution than *Polhillia*. With the exception of *Polhillia*, most of the species within southern African Genisteae are not endemic to SA but occur in other southern African countries such as Namibia, Zimbabwe, Lesotho, and Botswana.

The genus *Polhillia* contains 12 formally described species, 11 of these species occur in the Western Cape of SA, with only one species, *P. involucrata* (Thunb.) B.-E.van Wyk & A.L.Schutte, found in the Northern Cape (du Preez, 2019). *Polhillia* is also one of the least species-rich genera within this lineage, preceded only by *Dichilus*, which contains five species (du Preez, 2019). This genus is endemic to Africa, specifically the eastern parts of Namibia, Botswana, eastern and central parts of SA to Zimbabwe (Lewis, 2005). *Melolobium* includes 15 species, its distribution ranges in southern Africa. *Argyrolobium* is the most species-rich genus in the southern African lineage of the Genisteae with at least 100 species and it is more broadly distributed throughout SA in comparison to the other genera in the southern African lineage. About 48 *Argyrolobium* species occur in southern Africa (Table 2), with only a few endemic to SA. The remainder of the *Argyrolobium* spp. are distributed throughout the tropical African highlands to Ethiopia, Madagascar, the Mediterranean (specifically North

Africa and Southern Europe), Arabia, West Asia, and India (Lewis, 2005). Interestingly, molecular analysis based on *matK*, *rbcL*, and ITS sequences supports a paraphyletic *Argyrolobium*, where the *Argyrolobium* pro maj. parte are sister to the *Melolobium*, *Dichilus*, and *Polhillia* group and the Lupinae subtribe (POWO, 2019), and the *Argyrolobium* pro min. parte is sister to the Lupinae subtribe and the *Genista* and *Cytisus* complex.

1.3.1.2 Genisteae associated rhizobia

The tribe Genisteae also interacts with diverse rhizobia, reflecting the complexity of the tribe's evolutionary history (Stepkowski et al., 2018). Knowledge of the rhizobial symbionts of many Genisteae legumes are still lacking, especially for those legumes indigenous to southern Africa. The rhizobial symbionts of only a few SA Genisteae have been identified, and these were mostly sampled in the CCR and Great Escarpment (Beukes et al., 2016, du Preez, 2019, Lemaire et al., 2015b). The rhizobial diversity in this complex tribe is therefore highly understudied.

Species in the Genisteae associate with both 'classical' rhizobia (i.e., members of genera whose names end with the term 'rhizobium') as well as nonclassical rhizobia belonging to the class Alpha-proteobacteria (Sprent et al., 2017). Seven out of the sixteen authenticated rhizobial genera can nodulate with the Genisteae (Stepkowski et al., 2018). This includes species and strains from the fast-growing cosmopolitan genera *Mesorhizobium*, *Rhizobium*, *Sinorhizobium*, as well as from the slow-growing genus, *Bradyrhizobium* (Stepkowski et al., 2018). These genera are regarded as 'cosmopolitan' due to their nodulation ability across a broad range of Fabaceae spp. (Andrews and Andrews, 2017). Apart from the 'classical' rhizobia, other genera to which nodule-forming symbionts of the Genisteae belong are *Microvirga*, *Ochrobactrum*, *Phyllobacterium*, and *Neorhizobium* (Stepkowski et al., 2018).

3.1.3 Bradyrhizobia associated with the Genisteae

Based on studies focused on the rhizobia of Genisteae, *Bradyrhizobium* are known to predominantly nodulate Genisteae legumes. This predominance was indicated in previous studies such as a recent study indicating that 33 out of 44 *Bradyrhizobium* strains isolated were from Genisteae (Stepkowski et al., 2018). In the Canary Islands, Morocco, Spain, and America, highly diverse *Bradyrhizobium* strains were found nodulating genistoid legumes such as *Adenocarpus*, *Chamaecytisus*, *Lupinus*, *Spartocytisus* and *Teline* (Vinuesa et al., 2005a, Ahnia et al., 2014). In another study,

B. canariense was found dominating lupin in addition to serradella isolates of Western Australian origin (Stepkowski et al., 2005). Boudouche et al. (2020) also sequenced 107 partial 23S rRNAs of which 96% of the isolates were *Bradyrhizobium*. In Africa, *Bradyrhizobium* strains have been isolated from *Cytisus villosus* and *Retama sphaerocarpa* in Northeast Algeria (Ahnia et al., 2014, Ahnia et al., 2018).

Although the predominance of *Bradyrhizobium* as the symbionts of Genisteeae has been evident from various studies (Ahnia et al., 2014, Banasiewicz et al., 2021, Botha et al., 2002, Boudehouche et al., 2020, Cardinale et al., 2008, Chahboune et al., 2011), these studies also indicated that most of these strains associate with genera from the Mediterranean lineage such as *Lupinus* (mostly), *Genista*, and *Cytisus* species (Stepkowski et al., 2018). For example, 30 out of 33 rhizobial isolations from lupin species were identified as *Bradyrhizobium* strains (Beukes et al., 2016). This supports the idea of the coevolution of *Bradyrhizobium* with the Mediterranean-Genisteeae lineage (Stepkowski et al., 2007).

Bradyrhizobial isolates have recently been isolated from *Argyrolobium* species in SA (Lowveld regions) (Beukes et al., 2016). This was the first time that this legume genus was found associated with *Bradyrhizobium*, as opposed to *Ensifer/Sinorhizobium* and *Mesorhizobium* as found in previous studies (Lemaire et al., 2015a, Merabet et al., 2010). The diversity of rhizobia nodulating *Melolobium* is still (du Preez, 2019), while those nodulating other genera such as *Dichilus* are not well (Beukes et al., 2016).

There is still a vast diversity of rhizobia in African soils that has not yet been explored (Gronemeyer and Reinhold-Hurek, 2018). Most of the described species are from other countries such as South America, Asia, and China, with only a few from Sub-Saharan Africa (SSA) (Gronemeyer and Reinhold-Hurek, 2018). This is despite Africa being the centre of origin for many legume species and the sizable species richness in Sub-Saharan Africa (Lemaire et al., 2015b, Trytsman et al., 2019). There has been a very large knowledge gap regarding the SA symbionts of Genisteeae, which several studies have attempted to fill in the recent years (Beukes et al., 2016, Dlodlu et al., 2018b, du Preez, 2019, Lemaire et al., 2015b, Mpai et al., 2021). Within SA, we see that different rhizobial symbionts may dominate among Genisteeae depending on the habitat. Therefore, the CCR, which has a similar habitat to the Mediterranean region

climate, appears to correlate with the notion of *Bradyrhizobium* being the dominant symbiont (du Preez, 2019).

The prevalence of *Bradyrhizobium* in association with Genisteae could be attributed to various factors such as the wide geographical distribution of members of this bacterial genus, their ability to adapt to different climatic conditions and soils (Stepkowski et al., 2018) as well as their ability to form a functional nitrogen-fixing symbiosis with a wide range of *Fabaceae* spp., they have encountered (Parker, 2015, Sprent et al., 2017). This has led to the hypothesis that *Bradyrhizobium* could be the ancestral nodulating symbiont of all legumes (Parker, 2015, Sprent et al., 2017).

In the species trees, *Bradyrhizobium* strains from Genisteae cluster in two out of the seven recognized supergroups (Avontuur et al., 2019), the *B. japonicum* and *B. elkanii* supergroups (Beukes et al., 2016). The majority of the Mediterranean Genisteae spp. form part of the *B. japonicum* supergroup, while those encountered in temperate climatic regions are predominantly part of the *B. elkanii* supergroup (Stepkowski et al., 2018). For example, of the three bradyrhizobial symbionts of indigenous SA *Argyrolobium* spp. isolate Arg105 (lineage SA-10) grouped in the *B. japonicum* supergroup, while both isolate Arg68 (lineage SA-6) and isolate Arg 62 (lineage SA-10) are found in the *B. elkanii* supergroup (Beukes et al., 2016).

Strains are also scattered in several distinct groups from phylogenetically distant hosts in symbiotic phylogenies (Stepkowski et al., 2018). There are currently 18 clades as recently revised (Beukes et al., 2016). In this revised *nodA* gene based phylogeographic framework, Clade I include Australian, SA, and Brazilian isolates, Clade II comprises European and SA isolates from Genisteae and *Serradella* hosts and has been linked with the evolution of *Bradyrhizobium* as well as diversification of Genisteae in the Mediterranean (Stepkowski et al., 2007). On the other hand, Clade III is regarded as the cosmopolitan and heterogenous group being that it comprises isolates from the broadest geographical ranges as well as hosts (Stepkowski et al., 2018). Clade IV includes Genisteae isolates from Algeria, Croatia, Italy, and Spain (Cardinale et al., 2008, Duran et al., 2014, Durán et al., 2013, Parker, 2015). Clade V includes isolates from Brazil, Australia, and Panama (Stepkowski et al., 2012), Clade VI comprises photosynthetic isolates from *Aeschynomene* spp. (Stepkowski et al., 2012), while Clade VII is considered a highly differentiated clade comprising North

and South American strains as well as south-east Asian strains (da Silva et al., 2014, Islam et al., 2008, Ramirez-Bahena et al., 2016). Clade VIII includes isolates from tropical & subtropical Americas. Clade XVI strains from the United States originate from the hosts *L. lepidus*, *L. perennis*, and *A. strigosus* (Koppell and Parker, 2012). Clade XVIII comprises isolates from *Argyrobium* spp. and *Cytisus* sp. from Australia and Portugal, respectively (Crisóstomo et al., 2013). Clade X includes Australian isolates (Beukes et al., 2016).

Clade XI includes Spain endemic *Lupinus mariae-josephae* isolates (Durán et al., 2013), Clade XII includes *Vigna radiata* isolates from Nepal (Risal et al., 2012). Clade XIII includes the SA isolate WSM2783, Clade XV includes SA isolates from *Leobordea* spp. and *Argyrobium* sp. (Beukes et al., 2016), and Clade XVI includes *B. jicamae* strain from Honduras (Ramirez-Bahena et al., 2009). Overall, Genisteae associated bradyrhizobia in this phylogeographic framework are represented in Clades I-III (Stepkowski et al., 2018). The SA *Argyrobium-Bradyrhizobium* strains cluster with the cosmopolitan clade (clade III), and two SA clades (clades XV and XIV) (Beukes et al., 2016).

3.1.4 Fast-growing rhizobial genera associated with the Genisteae

From current literature, it appears as if *Bradyrhizobium* is the dominant symbiont of Genisteae legumes (Andrews and Andrews, 2017), and that these plants less frequently interact with the fast-growing genera represented by *Mesorhizobium*, *Rhizobium* and *Ensifer*. This observation could however be due to the bias of Genisteae genera, which are studied. The symbionts of those genera in the southern African lineage have historically received less attention. *Mesorhizobium* strains have been recovered from the Mediterranean lineage of Genisteae in association with genera such as *Lupinus*, *Retama*, *Genista*, and *Teline*, as well as the southern African lineage Genisteae genera, *Argyrobium*, *Dichilus*, and *Polhillia* (Beukes et al., 2016, du Preez, 2019, Cardinale et al., 2008). Within the Mediterranean Genisteae, *Mesorhizobium* species such as *M. loti* and *M. ciceri* have been isolated from lupins occurring in North America, such as *Lupinus densiflorus*, and *L. succulentus* respectively (Andrews and Andrews, 2017). Detailed knowledge regarding the *Mesorhizobium* diversity nodulating Genisteae species from the southern African lineage is still lacking (Stepkowski et al., 2018). For example, Beukes et al. (2016) identified *Mesorhizobium* among *Dichilus* isolates but did not perform any phylogenetic

analysis on the isolates. *Mesorhizobium* isolates have been shown to dominate associations in the CCR of SA with many tribes, including the Genisteae, as they have been isolated from root nodules of *Argyrolobium* spp. such as *A. lunare* and *A. velutinum*, and all *Polhillia* species except *P. brevicalyx* and *P. xairuensis* (Dludlu et al., 2018a, du Preez, 2019). Prior to the du Preez study, the identity of rhizobial symbionts associated with *Polhillia* was unknown. *Mesorhizobium* strains have also been isolated in association with *Dichilus reflexus* by Beukes et al. (2016), but the extent to which these rhizobia associate with species of these genera is still unclear. The available data appears to suggest that the southern African Genisteae may be predominantly nodulated by *Mesorhizobium*, as opposed to the Mediterranean lineage of Genisteae, which is predominantly nodulated by *Bradyrhizobium* (Stepkowski et al., 2018). The above statement needs confirmation through a larger sampling of SA Genisteae to gain a clearer picture of the rhizobial diversity associated with these legumes.

Members of *Rhizobium* have been reported in association with Genisteae, predominantly from the Mediterranean lineage, such as *Calicotome infesta* in Sicily (Cardinale et al., 2008), *Cytisus scoparius* in Australia (Lafay and Burdon, 2006), *Adenocarpus decorticans* in Morocco (Abdelmoumen et al., 1999), *Argyrolobium uniflorum* in Senegal and Tunisia (Mahdhi et al., 2008, Mousavi et al., 2014, Zakhia et al., 2004), as well as *Lupinus* spp. in Poland (Pudęłko, 2010). Most of the lupin *Rhizobium* isolates have not been characterized using core and symbiotic gene phylogenies to confirm their phylogenetic placement or symbiotic properties (Gevers et al., 2005, Stepkowski et al., 2018). Therefore, confirmation is still required for the classification of these isolates belonging to the genus *Rhizobium*, as this genus is known to be paraphyletic and is constantly undergoing taxonomic revision (Kuzmanović et al., 2021) and their effective symbiotic interaction with their original hosts still needs to be proved. In SA, three geographically and phylogenetically distinct *Rhizobium* isolates have been identified from the CCR endemic genus *Polhillia*, in association with the species *P. brevicalyx*, *P. involucrata*, and *P. xairuensis* (du Preez, 2019). However, since this was the only study conducted on these host species and the phylogenies of the symbiotic loci were not studied, no comments can be made on the strains' (as there are multiple *Rhizobium* groups) symbiotic effectivity, phylogeographic placement, or symbiovar association.

Mousavi and his colleges in 2015 proposed a novel genus, (Mousavi et al., 2014), to contain several *Rhizobium* species (e.g., *R. galegae*, *R. vignae*, *R. huautlense*, and *R. alkalisoli*) which form a separate clade from other *Rhizobium* and *Agrobacterium* species based on MLSA of six protein-coding genes (Mousavi et al., 2014). Several *Neorhizobium* strains have been reported in association with *Genista saharae*, a host from Algeria which grouped closely to *N. alkalisoli*, *N. galegae*, and *N. huautlense*) (Chaïch et al., 2017) as well as with *A. uniflorum* from Tunisia (Zakhia et al., 2004).

The genus *Ensifer* was first established in 1982 (Casida Jr, 1982) and the former genus *Sinorhizobium* in 1988 (Chen et al., 1988). Initially, *Ensifer* and *Sinorhizobium* type strains were classified as separate genera (Parks et al., 2018). Later *Sinorhizobium* spp. were transferred to *Ensifer* after being recognized as belonging to one taxon, with the name *Ensifer* taking priority as it was the genus name first established and therefore had priority above *Sinorhizobium*, which was then regarded as a heterotypic synonym of *Ensifer* (Prokaryotes, 2008). Recent extensive genomic and phenotypic data however dispute the unification of the two genera and support the initial separation of the two genera into rather a symbiotic clade (*Sinorhizobium*) and a non- symbiotic clade (*Ensifer*) (de Lajudie et al., 2021, Fagorzi et al., 2020, Kuzmanović et al., 2021). Although the Genisteeae tribe is not predominantly nodulated by *Sinorhizobium* strains, certain Genisteeae spp., particularly *Argyrolobium uniflorum* and *Genista saharae* in Tunisia have been reported to predominantly associate with *Sinorhizobium* (Mahdhi et al., 2008, Mnasri et al., 2009, Zakhia et al., 2004). Two factors have been suggested to explain the predominance of this specific fast-growing rhizobia genus with this specific Genisteeae species: either (i) species-level host specificity that favours the genus *Sinorhizobium* , or (ii) the edaphic factors in which the legume grows, such as salinity and aridity (Mnasri et al., 2007), results in growth of predominantly *Sinorhizobium*.

Other fast-growing rhizobial genera associating with Genisteeae are considered non-classical rhizobia, such as *Microvirga*, *Ochrobactrum*, and *Phyllobacterium* (Stepkowski et al., 2018). These non-classical rhizobia are rare symbionts of legumes, mostly associating with a few legumes with known symbiotic partners (Sprent et al., 2017). These rare legume symbionts seem to have acquired their *nod* genes from the classical rhizobia via horizontal gene transfer (Andrews and Andrews, 2017). *Microvirga* (currently contains 27 species) was first described in 2003 by Kanso and

Patel (Kanso and Patel, 2003), and contains isolates sampled from soil (Zhang et al., 2009), the atmosphere (Weon et al., 2010), and aquatic environments (Kanso and Patel, 2003). Since 2012, however, *Microvirga* strains have been isolated and characterized from root nodules of *Lupinus texensis* (e.g., *Microvirga lupini*) from Texas, United States of America (Ardley et al., 2012). These strains were shown to nodulate *L. texensis* but were ineffective in nitrogen fixation. Conversely, Ardley et al. (2012) suggested the dual and separate events of horizontal transfer of *Microvirga nodA* genes from distant but closely related lineages (*Rhizobium*, *Mesorhizobium*, and *Sinorhizobium*) through analysis of their *nodA* sequences. Following this first description from legume root nodules which was based on close relatedness of the strains 16S rRNA gene sequences to *Microvirga flocculans* (Weon et al., 2010), *Microvirga* strains have also been isolated in other *Lupinus* spp. in Tunisia, such as *L. micranthus*, and *L. luteus* (Msaddak et al., 2017a, Msaddak et al., 2017b, Msaddak et al., 2019) in which effective symbiosis with the original hosts was observed. The nodulation tests from these studies suggested the symbiosis between *Microvirga* and legumes to be highly specific as only a few of the described species have a nodulation ability with narrow host ranges. Besides lupins, *Microvirga* strains have not yet been isolated from any other Genisteae spp. Therefore, the association of this microsymbiont with the broader Genisteae tribe remains unclear.

Ochrobactrum was first described from a human clinical sample by Holmes and colleagues (Holmes et al., 1988). Species within this genus were previously assumed to only occur in soil and animal faeces as opportunistic pathogens and saprophytes, respectively (Lebuhn et al., 2006). In 2005 the first rhizobial symbiont associated with this genus (*Ochrobactrum lupini*) was described from *Lupinus honoratus* in Argentina (Trujillo et al., 2005). This was followed three years later by isolations in *Cytisus scoparius* in Spain (Zurdo-Pineiro et al., 2007). Besides *Lupinus* and *Cytisus*, no other Genisteae genera have been found to associate with this rhizobial genus thus far.

Phyllobacterium (Knösel, 1962), family *Phyllobacteriaceae*, originally contained species isolated from leaf nodules (Mergaert et al., 2002) but has since also been isolated from volcanic rock (Jurado et al., 2005), and also root-soil zones of different plants (Mantelin et al., 2006). *Phyllobacteria* are also known to form root nodules in association with genistoid legumes such as *Argyrolobium* (Mantelin et al., 2006), *L. micranthus* (Msaddak et al., 2017a), *Genista saharae* (Mahdhi et al., 2008), *G. tinctoria*

(Baimiev et al., 2012), *Chamaecytisus ruthenicus* (Kalita et al., 2020), as well as *Adenocarpus hispanicus*, *Retama sphaerocarpa*, and *Spartium junceum* (Ruiz-Díez et al., 2009). *Phyllobacterium trifolii* whose original host is *Trifolium repens* (white clover), was also found to form ineffective nodules in *Lupinus albus* (Valverde et al., 2005). It has been suggested in a study that identified non-nodulating *Phyllobacterium* strains, that members of this genus can be present in nodules as endophytes while lacking the ability to nodulate as well as the *nod* and *nif* genes (Beghalem et al., 2017). Thus, indicating a possible ecological role that they may play.

Overall, the available literature shows that Mediterranean lineage Genisteae associate with both classical (e.g., *Mesorhizobium*, *Rhizobium*, and *Bradyrhizobium*) and non-classical rhizobia (*Microvirga*, *Ochrobactrum*, *Phyllobacterium*, and *Neorhizobium*), but most predominantly with *Bradyrhizobium*. The few rhizobial studies conducted on SA Genisteae revealed that they might be associated with *Rhizobium*, *Bradyrhizobium*, and more predominantly, *Mesorhizobium*. In the SA Genisteae context, it is not yet clear whether rhizobial specificity holds at the species level or whether the symbioses are related to the potential symbionts in the different regions or biomes of SA. Although recent studies have attempted to fill very large knowledge gaps regarding the symbionts of SA Genisteae, there is still a vast diversity of rhizobia in South African Genisteae that has not yet been explored. In addition, the evolutionary histories of their symbiotic loci are not well understood.

1.4 Tables

Table 1.1. Genisteae genera, the number of species and the centre of diversity or native range¹

Genisteae genera	Number of species	Native range/ centre of diversity
<i>Adenocarpus</i>	15	"Mediterranean Region (S Europe, Middle East, N Africa [many in Morocco], Macaronesia) and montane tropical Africa"
<i>Anarthrophyllum</i>	15	Chile to Argentina
<i>Argyrocytisus</i>	1	Morocco
<i>Argyrolobium</i>	80-100	W. Europe to W. & Central Medit.
<i>Calicotome</i>	5	Albania, Algeria, Balears, Corse, Cyprus, East Aegean Is., France, Greece, Italy, Kriti, Lebanon-Syria, Libya, Morocco, Palestine, Portugal, Sardegna, Sicilia, Spain, Tunisia, Turkey, Turkey-in-Europe, Yugoslavia
<i>Cytisophyllum</i>	1	Mediterranean area of S Europe from Spain to Italy
<i>Cytisus</i>	65	Canary Islands, Europe to Medit.*
<i>Dichilus</i>	5	S. Tropical & S. Africa
<i>Echinospartum</i>	5	Not enough info
<i>Erinacea</i>	1	Algeria, France, Morocco, Spain, Tunisia (W. Medit.)
<i>Genista</i>	142	Macaronesia, Europe, Medit. to Caucasus*
<i>Gonocytisus</i>	3	Greece, Lebanon-Syria, Palestine, Turkey, Turkey-in-Europe (E. Medit.)
<i>Hesperolaburnum</i>	1	Morocco
<i>Laburnum</i>	2	Central & SE. Europe
<i>Lembotropis</i>	2	Not enough info (used as synonym of <i>Cytisus</i> Desf.)
<i>Lupinus</i>	612	America, Medit. to Tanzania*
<i>Melolobium</i>	15	S. Africa
<i>Petteria</i>	1	SE. Europe (Albania, Greece, Yugoslavia)
<i>Podocytisus</i>	1	SE. Europe to Turkey*
<i>Polhillia</i>	12	Cape Province of South Africa
<i>Retama</i>	5	Canary Islands, Medit. to Sahara, Arabian Peninsula
<i>Sellocharis</i>	1	S. Brazil
<i>Spartium</i>	1	Azores, S. Europe to E. Medit.*
<i>Stauracanthus</i>	3	W. Medit.
<i>Ulex</i>	20	W. Europe to W. & Central Medit.*

Legumes introduced to other areas outside their native range.

¹ References:

Table 1.2. SA indigenous Genisteae legume species¹ Red List of threatened species and South African National Biodiversity Institute

Species	Status ²	Endemism	Provincial distribution ⁴	Range	Habitats	Description	Threats	Population trend
<i>Argyrolobium</i> (over 48)								
<i>A. aciculare</i> Dummer	Rare	SA endemic	WC	Kogelberg	Fynbos	Exposed, rocky sandstone ridges	No data	Stable
<i>A. amplexicaule</i> (E.Mey.) Dummer ³	LC	SA endemic	EC, FS, KZN	Eastern Free State to Eastern Cape	Fynbos, Savanna/Grassland	Perennial, Not climbing, Herb	No data	Stable
<i>A. angustissimum</i> (E.Mey.) T.J.Edwards	Endangered	SA endemic	WC	Paarl Mountain	Boland Granite Fynbos	Granite Fynbos	No severe threats; requires fire for flowering and regeneration	Stable
<i>A. argenteum</i> Eckl. & Zeyh.	LC	SA endemic	EC, NC, WC, FS	No data	Fynbos	No data	No data	Stable
<i>A. ascendens</i> Walp.	LC	Not endemic to SA	KZN and MP	No data	Savanna/Grassland	No data	No data	Stable
<i>A. baptisioides</i> (E.Mey.) Walp.	LC	SA endemic	EC, KZN	E. Cape Prov. to S. KwaZulu-Natal	Fynbos, Savanna/Grassland	Perennial, Not climbing, Herb	No data	Stable
<i>A. barbatum</i> Walp.	Vulnerable	SA endemic	EC	Paterson and Addo to Port Elizabeth.	Kowie Thicket, Albany Coastal Belt, Sundays Thicket	Bushveld, limestone outcrops.	Habitat loss	Stable
<i>A. campicola</i> Harms	Near threatened	SA endemic	FS, GP, KZN	Pretoria to Dundee	Grassland	Highveld grassland	No data	Decreasing
<i>A. candicans</i> Eckl. & Zeyh.	LC	Not endemic to SA	EC, KZN	No data	Fynbos, Savanna/Grassland	No data	No data	Stable
<i>A. collinum</i> Eckl. & Zeyh.	LC	SA endemic	EC, WC	Joubertina to Grahamstown.	Fynbos	Grassy fynbos	No severe threats	Stable
<i>A. crassifolium</i> Eckl. & Zeyh.	Endangered	SA endemic	EC	Humansdorp to Uitenhage	Kouga Grassy, Sandstone Fynbos,	Grassland, below 300 m	Invasive Alien Species	Decreasing

Species	Status ²	Endemism	Provincial distribution ⁴	Range	Habitats	Description	Threats	Population trend
<i>A. crinitum</i> (E.Mey.) Walp.	Critically endangered	SA endemic	WC	Barrydale	Algoa Sandstone Fynbos, Albany Alluvial Vegetation, Humansdorp Shale Renosterveld Montagu Shale Renosterveld	Renosterveld on shale.	(direct effects), Changes in native species dynamics, Habitat loss, Habitat degradation Cultivation, overgrazing, road construction, lack of fire	Decreasing
<i>A. filiforme</i> (Thunb.) Eckl. & Zeyh.	LC	SA endemic	WC	Cederberg to Cape Peninsula, through to the Agulhas Plain and Riversdale	Fynbos	Lowland and mountain fynbos	Urban expansion, cultivation, invasive alien species	Stable
<i>A. frutescens</i> Burt Davy	LC	Not endemic to SA	MP	Eswatini to Mpumalanga	Grassland/Savanna	Perennial, Not climbing, Herb/Shrub	Insufficiently known	No data
<i>A. harmsianum</i> Schltr. ex Harms	Endangered	SA endemic	WC	Agulhas to Mossel Bay	Canca Limestone Fynbos, De Hoop Limestone Fynbos, Agulhas Limestone Fynbos	Coastal limestone	Alien species, urban development	Decreasing
<i>A. harveyanum</i> Oliv.	LC	Not endemic to SA	EC, FS, KZN, LP, MP, WC	Zimbabwe to S. Africa	Fromontane grassland, Kalahari-Highveld regional transition zone; grassland., Zambezian grassland	Perennial, Not climbing, Herb/Shrub	Not Threatened	Stable
<i>A. humile</i> E.Phillips	LC	SA endemic	EC, KZN	Cape Provinces, Free State, KwaZulu-Natal	Fynbos and Grassland/Savanna	No data	Not Threatened	Stable

Species	Status ²	Endemism	Provincial distribution ⁴	Range	Habitats	Description	Threats	Population trend
<i>A. incanum</i> Eckl. & Zeyh.	LC	SA endemic	EC	No data	Fynbos	No data	Not Threatened	No data
<i>A. longifolium</i> (Meisn.) Walp.	Vulnerable	SA endemic	KZN	Pietermaritzburg to Tugela and Port Shepstone.	Sandstone Sourveld, Ngongoni Veld, Eastern Valley Bushveld	Ngongoni and sandstone grassland.	Conversion of sandstone to grassland, unmanaged alien invasive plants, urban expansion	Decreasing
<i>A. lotoides</i> Harv.	LC	Not endemic to SA	EC, FS, GP, KZN, MP	No data	Fynbos and Grassland/Savanna	No data	No data	No data
<i>A. lunare</i> (L.) Druce subsp. <i>lunare</i>	LC	SA endemic	WC	No data	Fynbos	No data	No data	Stable
<i>A. lunare</i> (L.) Druce subsp. <i>sericeum</i>	LC	SA endemic	WC, MP	No data	Fynbos and Grassland/Savanna	No data	No data	Stable
<i>A. marginatum</i> Bolus	LC	SA endemic	EC, FS, KZN	No data	Fynbos and Grassland/Savanna	No data	No data	No data
<i>A. megarrhizum</i> Bolus	Near threatened	SA endemic	GP, LP, MP	Pretoria to Bronkhorstspuit	Savanna	Mixed bushveld	Overgrazing of communal land, spreading rural settlements	Decreasing
<i>A. molle</i> Eckl. & Zeyh.	LC	SA endemic	EC, FS, KZN, GP, MP, WC	No data	Fynbos and Grassland/Savanna	No data	No data	Stable
<i>A. muddii</i> Dummer	Endangered	SA endemic	LP, MP	Haenertsburg and Graskop.	Wood bush Granite Grassland, Northern Escarpment Dolomite Grassland, Northern Escarpment Quartzite Sourveld	Mist belt Grassland.	Habitat modified to pine plantations, alien invasive plants, less fires due to	Decreasing

Species	Status ²	Endemism	Provincial distribution ⁴	Range	Habitats	Description	Threats	Population trend
<i>A. nigrescens</i> Dummer	LC	Not endemic to SA SA endemic	EC, FS, KZN	No data	Fynbos and Grassland/Savanna	No data	grassland fragmentation No data	No data
<i>A. pachyphyllum</i> Schltr.	Endangered		WC	Caledon to Greyton, Elim and Potberg	Greyton Shale Fynbos, Elim Ferricrete Fynbos, Eastern Rûens Shale Renosterveld, Albertinia Sand Fynbos, South Sonderend Sandstone Fynbos, Overberg Sandstone Fynbos	Fynbos-renosterveld ecotones below 400 m.	Changes in native species dynamics, Invasive Alien Species (direct effects), Habitat loss	Decreasing
<i>A. parviflorum</i> T.J.Edwards	Rare	SA endemic	EC	Baviaanskloof Mountains	Fynbos	Arid fynbos, 300-1 500 m	No recorded threats	Stable
<i>A. pauciflorum</i> Eckl. & Zeyh.	LC	SA endemic	EC, FS, MP	No data	Fynbos and Grassland/Savanna	No data	No data	No data
<i>A. petiolare</i> (E.Mey.) Steud.	Insufficient information	SA endemic	NC, WC	Namaqualand, Kamiesberg	Fynbos	Unknown, possibly mountain renosterveld.	Unknown	Unknown
<i>A. polyphyllum</i> Eckl. & Zeyh.	LC	SA endemic	EC	No data	Fynbos	No data	No data	Stable
<i>A. pseudotuberosum</i> T.J.Edwards	LC	SA endemic	KZN, MP	No data	Grassland/Savanna	No data	No data	No data
<i>A. pumilum</i> Eckl. & Zeyh.	LC	SA endemic	EC	Eastern Cape, from Humansdorp to Grahamstown, and inland as far as Cradock	Albany Thicket, Fynbos, Nama Karoo	Rocky outcrops and areas of baked earth.	No data	Stable
<i>A. rarum</i> Dummer	Rare	SA endemic	WC	Montagu to Oudtshoorn	Fynbos	Arid montane fynbos.	No data	Stable

Species	Status ²	Endemism	Provincial distribution ⁴	Range	Habitats	Description	Threats	Population trend
<i>A. robustum</i> T.J.Edwards	LC	Not endemic to SA	FS, GP, KZN, LP, MP	No data	Fynbos and Grassland, Savanna	No data	No data	No data
<i>A. rotundifolium</i> T.J.Edwards	LC	Not endemic to SA	EC, KZN	No data	Fynbos and Grassland/Savanna	No data	No data	No data
<i>A. rupestre</i> (E.Mey.) Walp. <i>subsp. rupestre</i>	LC	Not endemic to SA	EC, FS, KZN, LP, MP	Highlands of eastern Africa south to the Cape Province of South Africa	Afromontane(upland) bushland and thicket., Afromontane (upland) shrubland ('moorland'), Afromontane grassland	No data	Not threatened	Stable
<i>A. sericosemium</i> Harms	LC	SA endemic	KZN	KwaZulu-Natal Midlands and Drakensberg	Grassland	Montane grassland	No data	Stable
<i>A. speciosum</i> Eckl. & Zeyh.	LC	SA endemic	EC	No data	Fynbos	No data	No data	No data
<i>A. splendens</i> (E.Mey.) Walp.	Endangered	SA endemic	WC	Babilonstoring Mountain	Shale Band Vegetation	Shale bands on lower north-facing slopes	Invasive alien Hakea species	Stable
<i>A. stipulaceum</i> Eckl. & Zeyh.	LC	Not endemic to SA (Eswatini & Lesotho)	Eastern Cape, Free State, KwaZulu-Natal, Mpumalanga	No data	No data	No data	No data	No data
<i>A. tomentosum</i> (Andrews) Druce	LC	Not endemic to SA (Eswatini)	EC, EC, KZN, MP, WC	No data	No data	No data	No data	No data
<i>A. transvaalense</i> Schinz	LC	SA endemic	LP, MP	No data	No data	No data	No data	No data
<i>A. trifoliatum</i> (Thunb.) Druce	Endangered	SA endemic	EC	Humansdorp to Uitenhage	Kouga Grassy Sandstone Fynbos	Coastal grassy fynbos below 300 m	Timber plantations, alien invasive	Decreasing

Species	Status ²	Endemism	Provincial distribution ⁴	Range	Habitats	Description	Threats	Population trend
<i>A. tuberosum</i> Eckl. & Zeyh.	LC	Not endemic to SA	EC, FS, GP, KZN, LP, MP, NW, WC	No data	No data	No data	plants, development of infrastructure and crop cultivation No data	No data
<i>A. velutinum</i> Eckl. & Zeyh.	Vulnerable	SA endemic	NC, WC	Namaqualand to the Cape Flats	Saldanha Flats Strandveld, Cape Flats Sand Fynbos, Atlantis Sand Fynbos, Hopefield Sand Fynbos, Leipoldtville Sand Fynbos, Namaqualand Coastal Duneveld, Cape Flats	Sandveld and sandveld-strandveld ecotones, alkaline coastal sands	Urban expansion on the Cape Flats, Cultivation, open-cast mining of coastal dunes	Decreasing
<i>A. wilmsii</i> Harms	LC	Not endemic to SA	LP, MP	No data	No data	No data	No data	No data
<i>Polhillia</i> (8) <i>P. brevicalyx</i>	Critically endangered	SA endemic	WC	Swellendam.	Cape Lowland Alluvial Vegetation, Eastern Rûens Shale Renosterveld, Central Rûens Shale Renosterveld, Rûens Silcrete Renosterveld	Renosterveld shales.	Invasive Alien Species (direct effects), Habitat degradation, Pollution (affecting habitat and/or species), Habitat loss	Decreasing

Species	Status ²	Endemism	Provincial distribution ⁴	Range	Habitats	Description	Threats	Population trend
<i>P. connata</i>	Critically endangered	SA endemic	WC	Riversdale to lower Breede River Valley	Eastern Rûens Shale Renosterveld	Renosterveld, 300 m.	Wheat cultivation	Decreasing
<i>P. involucrata</i> (Thunb.) B.-E.van Wyk & A.L.Schutte	Endangered	SA endemic	NC	Roggeveld Escarpment.	Roggeveld Shale Renosterveld	Mountain renosterveld on well-drained, sandy loams	Overgrazing (highly palatable), crop cultivation in past. Remaining are confined to road reserves	Decreasing
<i>P. canescens</i> C.H.Stirt.	Vulnerable	SA endemic	WC	Bredasdorp	Central Rûens Shale Renosterveld, Eastern Rûens Shale Renosterveld	Renosterveld slopes	Habitat loss, Habitat degradation	Stable
<i>P. pallens</i> C.H.Stirt.	Vulnerable	SA endemic	WC	Bredasdorp to Potberg	Eastern Rûens Shale Renosterveld, Central Rûens Shale Renosterveld, Rûens Silcrete Renosterveld, Potberg Ferricrete Fynbos, Swellendam Silcrete Fynbos	Renosterveld in deep clay soils on southwest-facing slopes, 30 m	Habitat loss, Habitat degradation, Invasive Alien Species	Unknown
<i>P. ignota</i> Boatwr.	Critically endangered (previously presumed extinct)	SA endemic	WC	Northern Swartland between Vredenburg, Eendekuil and Porterville	Swartland Shale Renosterveld	Shale renosterveld	Agricultural expansion, habitat degradation due to overgrazing	Decreasing
<i>P. curtisiae</i> C.H.Stirt. & Muasya	Critically endangered	SA endemic	WC	Overberg north-east of Bredasdorp.	Eastern Rûens Shale Renosterveld	Dry north-facing slopes in quartz patches with deep,	Expanding crop cultivation	Unknown

Species	Status ²	Endemism	Provincial distribution ⁴	Range	Habitats	Description	Threats	Population trend
<i>P. obsoleta</i> (Harv.) B.-E.van Wyk	Endangered	SA endemic	WC	Northeast of the Overberg in the Worcester areas	Breede Alluvium Fynbos	powdery kaolinitic soils in Eastern Rûens Shale Renosterveld Renosterveld, 300-430 m	Urban expansion and other land developments	Decreasing
<i>Dichilus</i> (5) <i>D. gracilis</i> Eckl. & Zeyh.	LC	SA endemic	EC, FS, GP, MP, NC, WC	Cape Provinces, Free State, Northern Provinces	No data	Perennial, Not climbing, Herb/Shrub	Not Threatened	Stable
<i>D. lebeckioides</i> DC.	LC	Not endemic to SA (SW Africa and Botswana)	FS, GP, LP, MP, NW	Botswana, Cape Provinces, Free State, Namibia, Northern Provinces, Swaziland, Zimbabwe	No data	Perennial, Not climbing, Herb/Shrub	Not Threatened	Stable
<i>D. pilosus</i> Conrath ex Schinz	LC	SA endemic	GP, MP	Northern province	Kalahari-Highveld regional transition zone; grassland	Perennial, Not climbing, Herb/Shrub	Not Threatened	Stable
<i>D. reflexus</i> (N.E.Br.) A.L.Schutte	LC	Not endemic to SA (eastern Zimbabwe)	EC, KZN, MP	Cape Provinces, KwaZulu-Natal, Mozambique, Northern Provinces, Swaziland, Zimbabwe	No data	Perennial, Not climbing, Herb/Shrub	Not Threatened	Stable
<i>D. strictus</i> E.Mey.	LC	Not endemic to SA	EC, FS, GP, KZN, MP	Cape Provinces, Free State, KwaZulu-Natal, Lesotho,	No data	Perennial, Not climbing, Herb/Shrub	Not Threatened	Stable

Species	Status ²	Endemism	Provincial distribution ⁴	Range	Habitats	Description	Threats	Population trend
<i>Melolobium</i> (15)				Northern Provinces				
<i>M. adenoides</i> Eckl. & Zeyh.	LC	Not endemic to SA	EC, NC, WC	Cape Provinces, Namibia	No data	Perennial, Not climbing, Herb/Shrub	Not Threatened	No data
<i>M. aethiopicum</i> (L.) Druce	LC	SA endemic	NC, WC		No data	Perennial, Not climbing, Herb/Shrub	Not Threatened	Stable
<i>M. alpinum</i> Eckl. & Zeyh.	LC	Not endemic to SA	FS, KZN	Cape Provinces, Free State, KwaZulu-Natal, Lesotho	No data	Perennial, Not climbing, Herb/Shrub	Not Threatened	Stable
<i>M. calycinum</i> Benth.	LC	Not endemic to SA (Lesotho, Namibia, and Botswana)	KZN, FS, EC, MP, NC, WC	Botswana, Cape Provinces, Free State, KwaZulu-Natal, Namibia, Northern Provinces	Fynbos, Grassland	Perennial, Not climbing, Herb/Shrub	Not Threatened	Stable
<i>M. candicans</i> (E.Mey.) Eckl. & Zeyh.	LC	Not endemic to SA	EC, FS, WC, NW	No data	No data	No data	No data	Stable
<i>M. canescens</i> Benth.	LC	Not endemic to SA (Namibia)	EC, FS, NC, NW, WC	No data	No data	No data	No data	Stable
<i>M. exudans</i> Harv.	LC	SA endemic	WC	No data	No data	No data	No data	Stable
<i>M. humile</i> Eckl. & Zeyh.	LC	SA endemic	NC, WC	No data	No data	No data	No data	Stable
<i>M. lampolobum</i> (E.Mey.) Moteetee & B.-E.van Wyk	LC	SA endemic	WC	No data	No data	No data	No data	Stable
<i>M. macrocalyx</i> Dummer var. <i>longifolium</i>	LC	Not endemic to	NC	Botswana, Namibia, SA	Mixed bushland and woodland on Kalahari sands	No data	No data	Stable

Species	Status ²	Endemism	Provincial distribution ⁴	Range	Habitats	Description	Threats	Population trend
<i>M. macrocalyx</i> Dumme var. <i>macrocalyx</i>	LC	SA (Namibia) Not endemic to SA (Namibia)	NC	Botswana, Namibia, SA	Mixed bushland and woodland on Kalahari sands	No data	No data	Stable
<i>M. obcordatum</i> Harv.	LC	Not endemic to SA	EC, FS, GP, KZN	No data	No data	No data	No data	Stable
<i>M. stipulatum</i> (Thunb.) Harv.	Vulnerable	SA endemic	WC	Touwsrivier.	Matjiesfontein Shale Renosterveld	Stony clays above 900 m Grassland	Habitat loss	Stable
<i>M. subspicatum</i> Conrath	Vulnerable	SA endemic	GP, NW	Krugersdorp to Pretoria.	Carletonville Dolomite Grassland, Soweto Highveld Grassland, Egoli Granite Grassland		Habitat loss, Habitat degradation, Changes in native species dynamics	Stable
<i>M. wilmsii</i> Harms	LC	SA endemic	FS, GP, KZN, MP	No data	No data	No data	No data	Stable

¹ References: [\(du Preez, 2019, POWO, 2019, SANBI, 2010-12\)](#)

² LC; Least conserved

³ Species in green are those included in this study

⁴ Province abbreviations: LP (Limpopo), MP (Mpumalanga), KZN (Kwazulu-Natal), FS (Free state), NW (Northwest), GP (Gauteng), EC (Eastern Cape), WC (Western Cape), NC (Northern Cape)

Table 1.3. Geographical distribution of currently described *Bradyrhizobium* species

Country	Described species (references)
China	<i>B. yuamingense</i> (Yao, 2002), <i>B. lablabi</i> (Chang et al., 2011), <i>B. huanghuaihaiense</i> (Zhang et al., 2012), <i>B. daqingense</i> (Wang et al., 2013a), <i>B. arachidis</i> (Wang et al., 2013b), <i>B. ferriligni</i> and <i>B. erythrophlei</i> (Yao et al., 2015), <i>B. guangzhouense</i> , <i>B. nanningense</i> and <i>B. zhanjiangense</i> (Li et al., 2019), <i>B. ganzhouense</i> (Lu et al., 2014), <i>B. guangdongense</i> and <i>B. guangxiense</i> (Li et al., 2015)
Brazil	<i>B. manausense</i> (Silva et al., 2014), <i>B. ingae</i> (da Silva et al., 2014), <i>B. embrapense</i> and <i>B. tropiciagri</i> (Delamuta et al., 2015), <i>B. viridifuturi</i> (Helene et al., 2015), <i>B. styloSAthis</i> (Delamuta et al., 2016), <i>B. macuxiense</i> (Michel et al., 2017), <i>B. mercantei</i> (Helene et al., 2017), <i>B. forestalis</i> (Martins da Costa et al., 2018), and <i>B. sacchari</i> (de Matos et al., 2017)
North-Africa	<i>B. cytisi</i> (Chahboune et al., 2011), <i>B. retamae</i> (Guerrouj et al., 2013), <i>B. rifense</i> (Chahboune et al., 2012), and <i>B. shewense</i> (Aserse et al., 2017)
Sub-Saharan Africa	<i>B. subterraneum</i> (Gronemeyer et al., 2015), <i>B. kavangense</i> (Gronemeyer and Reinhold-Hurek, 2015), <i>B. vignae</i> (Gronemeyer et al., 2016), <i>B. namibiense</i> (Gronemeyer et al., 2017), <i>B. ripae</i> (Bunger et al., 2018), <i>B. ivorensense</i> (Fossou et al., 2020), <i>B. acaciae</i> , <i>B. altum</i> , and <i>B. oropedii</i> (Avontuur et al., 2021)

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Chapter 2

**The diversity of *Bradyrhizobium*
strains associated with indigenous
South African Genisteae**

Abstract

South Africa is the centre of origin for the legume tribe Genisteae and the centre of diversity for many of its genera. In other parts of the world the Genisteae are predominantly nodulated by *Bradyrhizobium* species, however not much is known about the diversity of rhizobia that associate with members indigenous to South Africa. The aim of this study was therefore to investigate this rhizobial diversity across the native range of nine indigenous Genisteae species. A set of 77 rhizobial isolates were obtained from root nodules of these species and were identified to genus level based on 16S rRNA sequence analyses. Sequence comparisons showed that most strains belong to *Mesorhizobium* (i.e., 40 strains), while 18 of the remaining strains represent *Bradyrhizobium* isolated from nodules of *A. rupestre*, *A. sericeum*, *A. harveyanum* and *A. robustum*, while a strain of *Rhizobium* was obtained from a *Melolobium* sp. The final sixteen strains, which associate with *Argyrolobium* spp. (*A. robustum*, *A. tomentosum*, *A. rupestre*, and *A. sericeum*) and *Melolobium* spp. formed part of genera not considered to contain rhizobia. To identify the *Bradyrhizobium* strains to species level, we followed a genealogical concordance approach based on five core genes (*glnII*, *recA*, *dnaK*, *rpoB* and *gyrB*). The resulting phylogenies revealed the consistent grouping of several strains into two putative novel *Bradyrhizobium* lineages while the remaining three groups were conspecific to *B. arachidis*, “*B. brasilense*”, and *B. ivorense*, respectively. Six representative strains were characterized by establishing their temperature, pH, and salt tolerance, as well as their ability to assimilate different carbon and nitrogen sources. Values of the calculated Average Nucleotide Identity comparisons were below the species circumscription threshold at 93.35% with *B. japonicum* USDA 6^T and 78.78% with *B. paxllaeri* LMTR 21^T for Arg816 and Arg237L, respectively. These were the two proposed type strains for the two putative lineages. Only Arg816 and representative strains were able to nodulate both cowpea and siratro, while Arg237L, 31Arga, and 31Argb strains failed to nodulate both hosts. The strains 31Arga and 31Argb, 62Arga19 and 68Arga19 formed part of the South African Clade XV, while the remainder of the strains belong to the cosmopolitan Clade III based on the *nodA* gene. Taken together, our findings thus show that Genisteae indigenous to South Africa are more likely to be nodulated by *Mesorhizobium* than *Bradyrhizobium*, although it would appear that there are novel lineages of *Bradyrhizobium* capable of interacting with these legumes.

Keywords

Bradyrhizobium, *Mesorhizobium*, genealogical concordance, phylogeography, *Argyrolobium*, *Dichilus*, *Melolobium*

2.1 Introduction

'Rhizobia' is a collective term for soil bacteria capable of forming symbiotic relationships with leguminous plants with the end goal of fixing nitrogen into a biologically available form (Bromfield et al., 2017). *Bradyrhizobium* is a genus of slow-growing rhizobia, of which the original members were previously part of the genus *Rhizobium* (Jordan, 1982). Members of this genus have garnered a lot of interest with their diverse metabolic lifestyles, such as their ability to live as symbionts or endophytes ((Chaintreuil et al., 2000) with leguminous and non-leguminous plants (Menna et al., 2009), to thrive freely in forest soils (VanInsberghe et al., 2015), and in some rare cases even clinical environments (Bhatt et al., 2013), to photosynthesize (Giraud et al., 2013), denitrify (Van Berkum et al., 2006), and lastly, to defy the known central dogma of nodulation by nodulating independent of the involvement of the 'essential' Nod Factor (Giraud et al., 2007).

Furthermore, this genus stands out from other nodulating rhizobia in that it is widely distributed and nodulates a wide range of hosts, including the rarely nodulated basal legumes of the Caesalpinioideae subfamily (de Oliveira Urquiaga et al., 2019). The largest Leguminosae subfamily, Papilionoideae, is also predominantly nodulated by bradyrhizobia (Stepkowski et al., 2018), which also appears to be true for one of the largest tribes within this subfamily, the (Andrews and Andrews, 2017, LPWG, 2017). The taxonomy of this tribe is highly complex and has undergone numerous revisions involving the removal and addition of genera and species (Ainouche et al., 2003, Polhill et al., 2005, Stirton, 1986). Currently, it includes 618 species across 25 genera, many of which have their centre of diversity in the Mediterranean (such as *Lupinus* and *Genista*) (Stepkowski et al., 2018), while some have their centre of diversity within their centre of origin, Sub-Saharan Africa (SSA), such as *Argyrolobium*, *Melolobium*, *Dichilus*, and *Polhillia* (du Preez, 2019, Stepkowski et al., 2018).

The genera *Melolobium* and *Dichilus* are widespread across southern Africa, found in countries such as South Africa, Botswana, Lesotho, and Namibia, while *Dichilus* also occurs in Zimbabwe, Mozambique, and the Kingdom of Eswatini (formerly the Kingdom of Swaziland) (POWO, 2019). The genus *Argyrolobium* is spread widely across Africa and the Mediterranean, while *Polhillia* is an endemic, which can be only found in the south and southwestern areas of the Cape region of South Africa (POWO, 2019). Although the available literature shows that *Bradyrhizobium* strains

predominate among Genisteae spp., it should be emphasized that most of these studies have been focused on genera belonging to the Mediterranean lineage and did not include strains associated with hosts of the southern African lineage. These Genisteae-associated bradyrhizobia have been shown to belong mainly to the *B. japonicum* and *B. elkanii* supergroups (Stepkowski et al., 2018). A study by Beukes et al. (2016), albeit on a very small Genisteae sample set from the Mpumalanga province of South Africa, also recovered bradyrhizobial strains, that were placed in both above-mentioned supergroups.

Even though Africa and specifically SSA represents the centre of origin and diversity for many legumes including the Genisteae (Trytsman et al., 2016), only a few indigenous legumes have been explored with regards to their rhizobial diversity. A contributing factor to this is that in SSA, most studies have focused on cultivated rather than indigenous legumes (De Meyer et al., 2011), with these studies predominantly identifying rhizobia from the genus *Bradyrhizobium* (Gronemeyer et al., 2017, Gronemeyer et al., 2015, Gronemeyer et al., 2016, Gronemeyer and Reinhold-Hurek, 2015, Gronemeyer and Reinhold-Hurek, 2018). This “cradle of legume origins” therefore represents a vast source of untapped rhizobial potential. From SSA, ten *Bradyrhizobium* species have been described, including *B. kavangense* (Namibia) (Gronemeyer and Reinhold-Hurek, 2015), “*B. namibiense*” (Namibia) (Gronemeyer et al., 2017), *B. ripae* (Namibia) (Bunger et al., 2018), *B. subterraneum* (Namibia) (Gronemeyer et al., 2015), *B. vignae* (Namibia) (Gronemeyer et al., 2016), *B. ivorense* (Côte d’Ivoire) (Fossou et al., 2020), and *B. shewense* (Ethiopia) (Aserse et al., 2017). These SSA bradyrhizobial species have been associated with the host's *Vigna unguiculata*, *Lablab purpureus*, *Indigofera rautanenii*, *Arachis hypogaea*, *Vigna unguiculata*, *Cajanus cajan* and *Erythrina brucei*, respectively. The most recently described, are three species, “*B. acacia*”, “*B. altum*” and “*B. oropedii*”, from South Africa, which were isolated from the legumes *Acacia dealbata* and *A. mearnsii*, *Pearsonia obovata*, as well as *Leobordea lanceolata* (Avontuur et al., 2021). None of the described SSA bradyrhizobial species are associated with Genisteae.

Previous studies have established a phylogeographic framework for the genus *Bradyrhizobium* through phylogenetic analysis of the symbiotic gene, *nodA*, which encodes an acyltransferase. This phylogeographic framework currently contains sixteen distinct clades (Beukes et al., 2016, Stepkowski et al., 2018, Avontuur et al.,

2021, Stepkowski et al., 2012), with South African strains grouping within the cosmopolitan Clade III as well as three clades unique to South Africa, Clades XIII, XIV and XV (Beukes et al., 2016). These findings illustrate that indigenous South African bradyrhizobia have a unique evolutionary origin and history for the nodulation trait (Beukes et al., 2016). Stepkowski and colleagues have reported that Genisteae bradyrhizobia have independently evolved the ability to nodulate several times, as shown by their occurrence in several distinct clades, including Clades I, II, III (III.3C, III.3G, III.3B, III.2, and III.4), IV, VII, XVI, and XVIII (Stepkowski et al., 2018).

In this study, the diversity of rhizobial genera nodulating *Argyrobium tomentosum*, *A. robustum*, *A. amplexicaule*, *A. rupestre*, *A. harveyanum*, *A. sericeum*, and *A. tuberosum*, as well as *Melolobium* spp. and *Dichilus reflexus* isolated from South Africa were identified through 16S rRNA sequence comparison. Those strains identified as belonging to *Bradyrhizobium* were then further characterized to the species level based on the genealogical concordance approach of Venter and colleagues (2017), together with phylogenetic, genotypic, and phenotypic analyses for species delineation. Additionally, evolutionary histories of the symbiotic loci (*nodA* and *nifH*) were evaluated to determine the biogeography of these strains by employing phylogenetic analyses.

2.2 Materials and methods

2.2.1 Sample origins and bacterial isolation

This chapter focuses on rhizobia isolated directly from legumes in the Genisteae tribe, specifically the genera *Argyrobium*, *Melolobium*, and *Dichilus* (Table 2.1). Information on the hosts, collection dates, geographical location, GPS coordinates as well as habitat/biome from which the root nodules were collected, are provided. Thirty-six of the rhizobial isolates were from root nodules of *Argyrobium* spp. collected in 2019 from the provinces Mpumalanga (MP) and KwaZulu-Natal (KZN) (Table 2.1, number 1-36). Additionally, 41 isolates previously sampled and preserved at -70 °C in 20% glycerol were studied (Table 2.1, number 37-77). In total, seventy-seven isolates were studied. Preserved rhizobial strains were resuscitated on Yeast Mannitol agar (YMA) at 28 °C.

Root nodule isolations were performed on the 2019 samples 3 to 5 days after collection. Nodules were stored in screwcap vials with silica from sampling to isolation

(Howieson et al., 2016). Each nodule was surface sterilized by immersion in a crucible containing 3.5% sodium hypochlorite for three minutes using a sterilized tweezer, followed by immersion in 70% ethanol for 30 seconds (in a separate crucible) and finally rinsing the nodules five times with sterile water in a third crucible. Thereafter, the nodules were crushed onto YMA plates using sterile tweezers and streaked to obtain single colonies. These plates were incubated at 28 °C until growth was observed. Rhizobia exhibiting excessive production of polysaccharides (i.e., slimy growth) was grown on Tryptone Yeast agar (TYA) for a better visual inspection of contamination. This medium was prepared by adding 2 ml calcium chloride dihydrate solution ($\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$; 440 g/L) to a mixture of 5 g/L Tryptone (Oxoid, Hampshire, UK), 3 g/L Yeast Extract (Biolab) and 15 g/L agar, after sterilisation. All pure cultures were preserved in duplicate at -70 °C in 20% glycerol.

2.2.2 DNA extraction, PCR, and sequence analysis of 16S rRNA, housekeeping and symbiotic genes

High-quality DNA was extracted from fresh pure cultures using the Quick-gDNA™ MiniPrep kit (Zymo Research) according to the manufacturer's instructions. Extracted DNA was stored at -20 °C for downstream applications. The DNA was used as a template in PCR amplification of the 16S rRNA, five protein-coding genes (*dnaK*, *glnII*, *gyrB*, *recA*, and *rpoB*), as well as the *nodA* and *nifH* symbiotic genes. These housekeeping genes respectively encode for products with essential functions such as the Hsp70 chaperone, glutamine synthetase isoform II, DNA gyrase subunit B, recombinase A, and RNA polymerase beta subunit, while *nodA* and *nifH* encode products with functions essential to the symbiosis such as an acyltransferase and dinitrogenase reductase. Amplification of gene regions was performed using previously described primers (Table 2.2), together with the Super-Therm *Taq* DNA polymerase kit (Thermo scientific, South Africa). Optimization was performed if required i.e., changes in annealing temperature and template concentration to obtain amplification. For the *nodA* amplification, FastStart *Taq* was used as recommended (Stepkowski et al., 2007, Stepkowski et al., 2005). The PCR cycle conditions used for each gene amplification protocol are listed in Table 2.3 and the PCR machines used were Veriti 96 Well Thermal Cycler (AB Applied Biosystems), BIO-RAD T100 Thermal cycler, and GeneAmp PCR System 9700 (AB Applied Biosystems).

Purification of all PCR products was performed by adding 2 U/μl of Exonuclease 1 (Thermo Scientific) and 2 U/μl of FastAP (Thermo Scientific), followed by incubation on the T100™ Thermal Cycler (BioRad) first at 37 °C for 15 minutes to activate the enzymes and another incubation at 85 °C for 15 minutes. In those instances where a second amplification product remained after cleaning, the Zymoclean Gel DNA Recovery Kit (Zymo Research) was used to purify the band of the expected size. The purified products were then sequenced using the BigDye Terminator v3.1 Cycle Sequencing kit (Thermo Fisher Scientific, USA). *Bradyrhizobium* screening was performed by sequencing the 16S rRNA in only one direction using primer 27F to be able to identify the isolates to the genus level. The Sanger sequencing cycling conditions are listed in Table 2.3 The housekeeping and symbiotic genes were sequenced in both directions in a T100™ Thermal Cycler (BioRad), using the thermal cycling conditions listed in Table 2.3. For *nodA* sequencing, only the primers TSnodB2N and TSnodB7 were used. The AB13100 Automated Capillary DNA sequencer (Thermo Fisher Scientific, Carlsbad, USA) at the DNA Sanger Sequencing Facility, hosted in the Faculty of Natural and Agricultural Sciences of the University of Pretoria, was used to determine DNA sequence chromatograms from the purified sequencing products.

2.2.3 Datasets and phylogenetic analysis

All obtained sequences were subjected to a *blastn* search (Kalyaanamoorthy et al., 2017) against all publicly available sequences in GenBank (National Centre for Biotechnology Information (NCBI); <http://www.ncbi.nlm.nih.gov/>) (Benson et al., 2004) to identify their genus designation. All chromatograms for the housekeeping and symbiotic gene sequences (forward and reverse) were manually edited in ChromasLite v2.01 (Technelysium, Australia) whereafter consensus sequences were generated in BioEdit v7.05 (Hall, 1999). Based upon the results of the 16S rRNA sequences, the sample set consisted of different genera. As this Chapter focuses on *Bradyrhizobium*, only strains belonging to this genus were included for further analyses.

2.2.3.1 Housekeeping genes

The dataset of each gene (*dnaK*, *glnII*, *gyrB*, *recA*, and *rpoB*) included sequences generated during this study, together with all *Bradyrhizobium* type strains (that have sequences for these genes) as per the List of Prokaryotic Names with Standing in Nomenclature (LPSN; Parte et al., 2020; <https://www.bacterio.net/>) as well as many undescribed Genisteae-associated bradyrhizobia from literature (Supplementary Table S2.1). Species of which the name has not yet been validated are indicated by inverted commas (“...”). Genes were extracted from complete genomes or whole genomic shotgun sequences using CLC Workbench v. 8.1 (CLC Bio; Aarhus, Denmark) and NCBI. For a full list of comparative sequences included in each dataset (as well as their accession numbers), refer to Supplementary Table S2.2. For outgroup purposes, *Rhodopseudomonas palustris* (strains CGA009, HaA2, and BisB5), which belongs to a separate genus in the family Bradyrhizobiaceae, and close relative of *Bradyrhizobium* was used (Le Roux et al., 2016). The number of taxa between the datasets differed due to the unavailability of gene sequences (especially for the undescribed bradyrhizobia associated Genisteae) or genome sequences for some type strains). Multiple nucleotide alignments were constructed using the online version of MAFFT (Multiple Alignment using Fast Fourier Transformation; <http://mafft.cbrc.jp/alignment/server/>), whereafter the alignments were manually verified based upon the inferred amino acid alignment using BioEdit (Hall, 1999). Geneious 7.1.5 was used to search and remove sequences from the alignment that appear in duplicate.

Maximum likelihood phylogenies were generated using the IQ-TREE webserver (<http://iqtree.cibiv.univie.ac.at/>; (Trifinopoulos et al., 2016)). Ultrafast bootstrap (UFBoot) approximation values were determined from 1,000 pseudoreplicates (Hoang et al., 2018). The best-fit substitution model was obtained using ModelFinder, which tests the dataset against 88 DNA models (Kalyaanamoorthy et al., 2017). For the multilocus sequence analysis (MLSA) dataset, FASconCAT-G v1.02 (Kück and Longo, 2014) was used to concatenate and partition all the aligned individual datasets. The concatenated dataset together with the partition files was then used to run a maximum likelihood analysis with standard bootstrap support calculated based on 1,000 pseudoreplicates in RAxML v. 8.2.1 (Stamatakis, 2014). The model setting used was ‘GTRGAMMA’ which utilizes the General Time Reversible (GTR) model and

optimizes the gamma rate parameter for each partition. The MLSA was conducted twice; one dataset only included type strains while the other was a larger dataset consisting of both type strains and Genisteeae-associated *Bradyrhizobium* strains.

Following the genealogical concordance approach, the groupings of the strains being investigated were assessed across the five individual gene phylogenies, to determine whether they formed consistent and exclusive lineages. These lineages were then viewed as tentative species hypotheses, the existence of which is to be confirmed by different lines of evidence. From these lineages, representatives were then chosen for further study in the downstream genotypic and phenotypic characterization.

2.2.3.2 Symbiotic genes

The *Bradyrhizobium nodA* included a dataset obtained from previous studies (Nurk et al., 2013), with the addition of strains described following the Avontuur et al. (2021) publication (Supplementary Table S2.3). The *nifH* dataset comprised all *Bradyrhizobium nifH* sequences deposited in GenBank at the time of writing. The metadata (including accession numbers, strain, host, source, country, and reference information) for the *nifH* sequences is listed in Supplementary Table S2.4. The *nodA* alignment comprised 283 taxa that are 642 bp long, while the *nifH* contained 584 taxa of 726 bp in length. The taxa included in these two datasets were not identical as not all strains had sequences for both genes. The *nifH* dataset is also larger as free-living nitrogen-fixers (i.e., strains not capable of nodulation) were also included to accurately reflect the evolutionary history of this gene.

Methylobacterium nodulans ORS2060 was used for outgroup purposes in *nodA*, while *Rhodopseudomonas palustris* (strains CGA009, BisB5, and HaA2) was used for *nifH*. Nucleotide alignments and editing was performed as described for the housekeeping gene datasets. The software, DnaSP v5.5 (Librado and Rozas, 2009) was used to generate haplotype files from the nucleotide alignments. In these output files, taxa with identical sequences are merged into a single haplotype, thereby lightening the computational 'load' for downstream phylogenetic analyses. During the generation of the haplotype files, gaps were treated as fifth characters and invariable sites were retained. The haplotype-nucleotide dataset was then permanently translated into an amino acid dataset in Bioedit. ProtTest 3.4 (Abascal et al., 2005) was then used to determine the best fit model of amino acid substitution. Maximum likelihood

phylogenetic trees were then constructed using RAxML 8.2.1 (Stamatakis, 2014) and non-parametric bootstrap support was calculated on 1,000 pseudoreplicates.

2.2.4 Genomic DNA extraction and characterization

The strains Arg816 (Lineage I) and Arg237L (Lineage II) were chosen as type strains from their putative species clusters. The hexadecyltrimethylammonium bromide (CTAB) method was followed to extract high-quality genomic DNA for whole-genome sequencing (Cleenwerck, 2002). Following quality checks, gDNA samples were submitted to the Agricultural Research Council (ARC) of South Africa where sample library preparation was performed using the NEBNext Ultra II FS DNA Library Prep Kit and sequencing on an Illumina HiSeq X instrument using 2x150bp read length.

For genomic characterization, Average Nucleotide Identity (ANI) and the GC content of the genomes of strains Arg816 and Arg237L were determined. Prior to the ANI analysis, however quality checks and trimming of raw sequence data were performed with FastQC (<http://www.bioinformatics.babraham.ac.uk/projects/fastqc/>) and trim galore (http://www.bioinformatics.babraham.ac.uk/projects/trim_galore/), followed by *de novo* assembly using SPADes 3.12 (Nurk et al., 2013). ANI values were calculated by using the BLAST+ (ANiB) algorithm in the online version of JSpecies, JSpeciesWS, (Richter et al., 2016), by comparing genomes of the selected strains from this study with that of their closest phylogenetic relatives chosen based upon the species tree (Table 2.8 and Figures 2.2 and 2.3).

Strain Arg816 was compared with *B. japonicum* USDA6^T, *B. lupini* DSM 30140^T, *B. betae* PL7HG1^T, *B. cytisi* CTAW11^T, *B. cosmicum* 58S1^T, *B. canariense* BTA-1^T, *B. rifense* CTAW71^T, *B. hipponense* aSej3^T and “*B. guangzhouense*” CCBAU 51670^T. Strain Arg237L was compared to *B. paxllaeri* LMTR21^T, *B. archetypum* WSM1744^T, *B. lablabi* CCBAU 23086^T, *B. australiense* WSM1791^T, *B. jicamae* PAC68^T, *B. murdochi* WSM1741^T, *B. algeriense* RST89^T, *B. icense* LMTR13^T, *B. retame* Ro19^T and “*B. valentinum*” LmjM3^T. Isolates with an ANI value of ≥ 95 -96% to that of a previously described species were considered strains of this known species, and those with ≤ 95 -96% ANI values as representatives of a putative novel species (Chun et al., 2018). Following this, the GC content was also estimated in JSpeciesWS (Richter et al., 2016), for comparison with the values of the closest relatives.

2.2.5 Phenotypic characterization

Phenotypic tests were performed on YMA grown colonies incubated at 28 °C for 7-14 days. For colonies that produced a lot of exopolysaccharides (i.e., had a very slimy growth form), TYA media was instead used for culturing. Cell morphology and size were determined using Zeiss Stereo phase-contrast microscope with associated Auxiovision software at the Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria. Oxidase activity was evaluated based upon a colour change observed when bringing a colony in contact with 1% *N, N, N', N'*- tetramethyl *p*-phenylenediamine solution. Catalase activity was determined by the formation of bubbles when the colonies is exposed to 10% w/v H₂O₂ (Zilli et al., 2014).

Bromothymol blue (BTB) (0.125% w/v) was used as a pH indicator in YMA media to test the ability of each strain to produce either an acidic or alkaline environment during growth. Growth was observed after 3-5 days of incubation at 28 °C. Colonies that depicted a yellow colour change were recorded as acidic (normally seen for fast-growing rhizobia) and malachite green as basic/alkaline (normally indicates slow-growing rhizobia).

To determine the range of environmental conditions within which the strains can grow, growth was evaluated for the following variables: temperature, salt, and pH. Strains were incubated on YMA at different temperatures (4 °C, 10 °C, 15 °C, 20 °C, 25 °C, 28 °C, 30 °C, 35 °C, 37 °C and 40 °C) for 7-10 days, while different NaCl concentrations (0.3, 0.5, 1.0, 1.5, 2.0, and 2.5% w/v) were tested on YMA medium incubated at 28 °C for 7-10 days. To determine the pH range of each strain, Yeast mannitol Broth (YMB) was prepared to varying pH levels (4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0) with hydrochloric acid (HCl) or sodium hydroxide (NaOH). The resulting flasks were incubated in a shaking incubator at 28 °C for 7-10 days (Gerhardt, 1994).

Antibiotic susceptibility tests were performed on YMA plates by using the Sensi-disc dispenser with bio discs containing ampicillin (10 µg), chloramphenicol (30 µg and 50 µg), gentamicin (10 µg), kanamycin (30 µg), neomycin (10 µg), penicillin (10 µg), streptomycin (10 µg and 25 µg), tetracycline (30 µg) (Mast diagnostics, UK), and erythromycin (30 µg) (Oxoid, UK). A loopful of pure bacterial culture for each strain was suspended in 1 ml sterile water of which 100 µl was then spread onto the disc-containing plates, which were incubated at 28 °C for 7-10 days. Isolates were

interpreted as susceptible/sensitive to an antibiotic if a zone of inhibition was visible and resistant/tolerant if growth was observed around the disc.

The BIOLOG GEN III ID MicroPlate (Biolog, USA) system was used to generate a phenotypic fingerprint of the rhizobial isolates by analysing 94 phenotypic tests (utilization of 71 carbon sources and sensitivity to 23 chemicals). Additional biochemical tests were performed by inoculating API 20E strips (bioMérieux, France) with single colony suspensions of each strain according to the manufacturer's instructions, to evaluate the utilization of additional carbon sources and nitrate reduction. For both the BIOLOG and API 20E tests, only representative strains based on the single gene phylogenies were evaluated. Because *Bradyrhizobium* are slow growers, we modified the protocols by incubating for longer periods (i.e., 7 days), than indicated in the manufacturers' protocols.

2.2.6 Authentication of rhizobial abilities

The nodulation and nitrogen-fixation capabilities of six representative strains, chosen based upon their identification as putative novel species on single gene phylogenies were authenticated using the presumed promiscuous legumes *Vigna unguiculata* (cowpea) and *Macroptilium atropurpureum* (siratro). The siratro and cowpea seeds were germinated by soaking in 95% ethanol for 30 seconds, followed by soaking in 3.5% (w/v) sodium hypochlorite for 6 minutes, whereafter the seeds were rinsed with sterile distilled water. Finally, the seeds were soaked in water for 3 hours before incubating the seeds on 1.5% w/v water agar at 28 °C in the dark for 7 days.

Nodulation tests were performed in 15 cm planting pots containing sterilized sand and nitrogen-free Hoagland plant growth solution (Howieson and Dilworth, 2016). Pure cultures of each *Bradyrhizobium* strain tested were used as inoculum that was prepared by adding two inoculation loopful of pure culture into 4 mL sterile water. This mixture was then homogenized; whereafter 1 mL of the solution was added to each of the two germinated seeds of a single legume species planted per pot, with each inoculum consisting of only one *Bradyrhizobium* strain. These planting experiments were done in duplicate as each 15 cm pot contained two germinated cowpea or siratro seeds. A negative control of sterile water instead of inoculum was included for each experiment. The inoculated seedlings were grown in a glasshouse at 27-28 °C for 14h day and 15 °C at 10 h night temperatures for four weeks. The effectiveness of the

individual strains was evaluated by visually comparing plants grown under nitrogen-free conditions (i.e., the negative controls only inoculated with sterile water) to those provided with a putative rhizobial inoculant. Strong growth and dark green leaves meant that the plant was effectively nodulated (i.e., receiving fixed atmospheric nitrogen), whereas yellow leaves meant that the plant was either not nodulated or not receiving nitrogen due to ineffective nodules. For those plants on which nodules did form, the nodule interior was also investigated for the production of leghaemoglobin (essential for nitrogen fixation in legumes) and which turns the nodule interior pink (Moller et al., 1992).

Following successful nodulation on cowpea and/or siratro, the presumptive rhizobium was isolated from surface-sterilized nodules and grown for genomic DNA extraction (following the protocol previously mentioned). The *rpoB* protein-coding gene was amplified and sequenced for those isolates resulting from the authentication tests to confirm the identity of the inoculants by sequence comparison with the original isolate.

2.3 Results

2.3.1 Determination of rhizobial genus identity

To identify the nodule isolates to the genus level, a *blastn* search of the GenBank database was conducted using the forward sequence of the 16S rRNA locus. Search results revealed that from the total of 77 indigenous isolates, 18 isolates associated with root nodules of *Argyrolobium rupestre*, *A. sericeum*, *A. harveyanum* and *A. robustum* belonged to *Bradyrhizobium*, one *Rhizobium* strain was isolated from a *Melolobium* sp., while forty *Mesorhizobium* strains were identified from the root nodules of *A. tomentosum*, *A. robustum*, *A. amplexicaule*, *A. rupestre*, *A. harveyanum* and *A. tuberosum*, as well as *Melolobium* spp. and *Dichilus reflexus*. The remaining sixteen isolates associated with *A. robustum*, *A. tomentosum*, *A. rupestre*, *A. sericeum* and *Melolobium* species formed part of genera not considered to contain rhizobia. These diversity results are summarized in Table 2.5.

2.3.2 Single housekeeping gene phylogenies

For the purposes of identifying the *Bradyrhizobium* strains to the species level, we performed phylogenetic analyses on the sequences of five core genes, *dnaK*, *glnII*, *gyrB*, *recA*, and *rpoB*. The aligned dataset for *dnaK*, comprised 278 sequences of 794 bp, that of *glnII* comprised 323 sequences of 590 bp, while the *gyrB* alignment

compromised 258 sequences of 671 bp. For the remaining two loci, the *recA* alignment contained 421 sequences of 541 bp, while the *rpoB* alignment was compromised of only 89 sequences of 607 bp. The best-fit model as identified by ModelFinder (Kalyaanamoorthy et al., 2017) in IQ-TREE was TIM2+F+I+G4 for the *dnaK* dataset, while the four remaining datasets all utilized the GTR+F+I+G4 model.

Phylogenetic analysis of all five housekeeping genes revealed that three groups of strains were conspecific to previously described species, *B. arachidis* (strains 105Arga19, 105Argb19, 105Argb17), “*B. brasilense*” (strains 62Arga22, 62Argb22, 62Argb07) and *B. ivorensis* (strains 68Arga19, 68Argb19, 68Argb17) (Figures 2.5 to 2.9). These species also included strains Arg105, Arg62 and Arg68, which have formed part of previous South African studies (Avontuur et al., 2021, Beukes et al., 2016).

Single phylogenies of *dnaK*, *glnII*, *gyrB*, *recA* and *rpoB* revealed consistent clustering of several strains into two putative novel *Bradyrhizobium* species (Figures 2.5- 2.9), as the two lineages were unique and did not include type strains of any previously described species. Lineage I contained six strains, Arg816, Arg826, Arg836, Arg846, Arg856, and Arg866 from one host plant, *A. harveyanum* Oliv., sampled in the Karkloof Nature Reserve (KwaZulu-Natal Province), that grouped with high SH-aLRT (98-99%) and UFBoot support (99-100%) across four of the phylogenies (Figures. 2.5– 2.8). In the *rpoB* phylogeny, however, this group did not have SH-aLRT $\geq$ 80% and UFBoot support of $\geq$ 95%. This lineage consistently formed part of the *B. japonicum* supergroup (Figures. 2.5- 2.9).

Lineage II consisted of only three strains, Arg237L (*A. robustum* T.J.Edwards), 31Arga and 31Argb (*A. rupestre* (E.Mey.) Walp. subsp. *rupestre*) sampled in the Mpumalanga Province (Figures 2.5-2.9), recovered with 100% SH-aLRT and UFBoot support across all five phylogenies. Interestingly, the placement of Lineage II strains moved between phylogenies, e.g., in the *dnaK* and *gyrB* phylogenies (Figures 2.4 and 2.6) it is placed between the *B. elkanii* and *B. jicamae* supergroups, while in the *glnII* phylogeny it is placed between the *B. elkanii* and *B. japonicum* supergroups, In both the *rpoB* and *recA* phylogenies it was situated within the *B. elkanii* supergroup. In fact, in the *rpoB* phylogeny, it is placed between the strains belonging to *B. ivorensis* (Figure. 2.9). Lineage I, on the other hand, consistently appeared as a separate group

within the *B. japonicum* supergroup but was closely related to undescribed Genisteae-associated strains such as *Bradyrhizobium* sp. C1Cs70 in the *glnII* phylogeny (Figure 2.6), *Bradyrhizobium* spp. CH2318 and CH2443 in the *dnaK* phylogeny with 85.3/100% SH-aLRT branch test and UFBoot support, respectively (Figure 2.5).

2.3.3 MLSA of *dnaK*, *glnII*, *gyrB*, *recA*, and *rpoB*

The MLSA phylogeny (Figure 2.10) based on a concatenated dataset of *dnaK*, *glnII*, *gyrB*, *recA*, and *rpoB* also recovered the three groupings (Arg62, Arg68, Arg105) which were conspecific to *B. arachidis*, *B. ivorense*, and “*B. brasilense*”, respectively, as well as the two proposed novel lineages. Lineage I was placed within the *B. japonicum* supergroup and formed a highly supported group together with *B. japonicum* USDA 6^T and *B. lupini* DSM 30140^T with 100% bootstrap support (Figure 2.10). Lineage II was also recovered and shared a common ancestor with the *B. elkanii* and *B. jicamae* supergroups (93% bootstrap support), although it was placed basal to the *B. jicamae* supergroup (61% bootstrap support; Figure. 2.10). Supplementary Figure S2.1 shows a maximum likelihood MLSA phylogeny including all type strains as well Genisteae associated *Bradyrhizobium* strains. On this phylogeny (Supplementary Figure S2.1), Lineage I grouped with the same strains in Figure 2.10 together with *B. japonicum* FN1. Lineage II was also basal to the *B. jicamae* supergroup with no statistical support.

2.3.4 Symbiotic phylogenies

In this study, we obtained sequences for two symbiotic genes (*nodA* and *nifH*) and used a maximum likelihood approach to uncover the evolutionary histories of these genes in the studied *Bradyrhizobium* strains. Of the strains conspecific to *B. arachidis*, *B. ivorense*, and “*B. brasilense*”, only one strain per species group was selected due to difficulty in amplifying all strains. The *nodA* gene of Arg816 and Arg237L strains was difficult to amplify and therefore was extracted from the genome using the Geneious 7.1.5 programme. The *nodA* phylogeny showed that the *Bradyrhizobium* strains from this study form part of two recognized phylogeographic clades; the *nodA* sequences of strains 31Argb, 31Arga, 68Arga19 and 62Arga19 all form part of Clade XV which is proposed to have a South African origin (Supplementary Figure S2.2). The remainder of the *nodA* sequences (strains Arg856, Arg826, Arg836, Arg846, Arg866, Arg816, Arg237L and 105Arga19) form part of the Cosmopolitan Clade III (Supplementary Figure S2.2).

On the *nifH* phylogeny, the group of strains from this study form part of three separate groups (Supplementary Figure S2.3): strains 31Argb and 31Arga grouped with 96% bootstrap support, with strains 62Arga22 and 68Arga19 forming part of a second lineage and finally the remaining strains formed part of another large lineage. Within this large lineage, strains Arg826, Arg866 and Arg836 forms a group with 62% bootstrap support while the other strains (Arg846, Arg237L, 105Arga19, Arg856 and Arg816) also forms part of this lineage although there is no support for their placement (Supplementary Figure S2.3). Nested within this latter group are several undescribed *Bradyrhizobium* strains as well as *B. arachidis* strains isolated from hosts such as *Vigna unguiculata*, *Cajanus cajan*, *Chamaecrista pumila*, and *Arachis hypogaea* sampled in Mozambique, Cote d'Ivoire, India, and China. Overall, the *nifH* phylogeny had very poor resolution and low statistical support.

2.3.5 Genome-based characterization

The genome sequence of strain Arg816 had an average coverage of 82.48x, consisted of 290 contigs, with an N50 value of 344,770, has an estimated genome size of 9,708,847 bp and GC content of 63.2% (Table 2.9). The genome of strain Arg237L on the other hand had an average coverage of only 37.91x, consisting of 282 contigs, with an N50 value of 195,966, a total length of 18,984,951 bp, and a GC content of 63.2% (Table 2.8).

For pairwise genome comparisons, genome assemblies of Arg816 and Arg237L strains were compared to their closest relatives based upon the MLSA phylogeny (Figures 2.2-2.3). The comparisons showed that the genome of strain Arg816 shared the highest ANI values with *B. japonicum* USDA 6^T and *B. lupini* DSM 30140^T with both comparisons having a value of 93.35% (Figure 2.2). The species with the highest ANI value in comparison with Arg237L was *B. paxllaeri* LMTR21^T with a value of 78.67% (Figure 2.3).

2.3.6 Morphological, physiological, and biochemical characterization

From the 18 identified strains, the following six representatives were selected for further characterization through analysis of physiological and biochemical traits: Arg816, Arg846, Arg866 (Lineage I, *B. japonicum* supergroup), Arg237L, 31Arga, and 31Argb (Lineage II, putatively novel lineage). Table 2.5 shows detailed results of the morphological and physiological tests performed, while Tables 2.6 and 2.7

summarizes the results of biochemical tests performed with the API 20NE and BIOLOG GENIII Microplate systems.

Isolates grew in temperature ranges of 25-30 °C (with optimum growth at 28 °C), they also showed growth across a pH range of 5-10 and can routinely grow on media containing up to 0.5% (w/v) NaCl. Isolate 31Arga showed intermediate growth at 1% (w/v) NaCl. All isolates were resistant to ampicillin (10 µg), penicillin (10 µg), and tetracycline (30 µg; except for isolate 31Arga which was weakly susceptible). Generally, most of the strains were susceptible to the remaining antibiotics. Discrepancies were observed in Arg846 and 31Argb, which showed resistance to erythromycin (30 µg) and neomycin (10 µg) respectively.

With regards to nitrogen sources, all the isolates could reduce nitrates to nitrite and nitrogen except strains 31Arga and 31Argb (Lineage II). All the strains could also not produce indole, ferment glucose, or hydrolyse gelatin but tested positive for Urease, esculin ferric citrate, β -galactosidase, D-glucose, L-arabinose, and adipic acid activity. Lastly, oxidase and catalase tests were positive for all isolates.

In terms of the phenotypic tests conducted, a lot of intraspecies and interspecies variation was observed in terms of utilized carbon and nitrogen sources (Tables 2.6 and 2.7). For example, only the strains Arg816 and 31Argb could hydrolyse L-arginine, all tested strains from Lineages I (except Arg866) and II could assimilate malic acid, and lastly, only Arg816 (from Lineage I) could assimilate Phenylacetic acid. Overall, the isolates Arg846, Arg866, and 31Argb were able to utilize most of the carbon and nitrogen sources and no coherence was observed among the species clusters.

2.3.7 Authentication of rhizobial abilities

To verify whether these isolates could indeed nodulate and fix nitrogen, six of the eighteen *Bradyrhizobium* isolates were tested on presumed promiscuous hosts cowpea and siratro, under glasshouse conditions. Following six weeks of growth the plants were harvested and inspected for nodule development, nodules with pink interiors were observed on cowpea and siratro hosts inoculated with Arg816, Arg846, and Arg866 (Figure 2.4, A) but no nodules were observed for plants of both hosts inoculated with Arg237L, 31Arga, or 31Argb (Figure 2.4, B). Observed nodules were round and had pink interiors (indicative of the formation of leghaemoglobin), with the nodulated plants also appearing tall and green (Figure 2.4, A), as opposed to those

with no nodules which were smaller and lighter in colour (Figure 2.4, B). Rhizobial isolations were again completed for those hosts with nodules and the *rpoB* gene was amplified and sequenced and compared to those of the 'original' strains to confirm the identity of these strains. The *rpoB* sequences of this nodulation trail strains matched 100% to those of the 'original' strains when aligning in BioEdit.

2.4 Discussion and conclusion

Bradyrhizobium has been identified in African soils and from Genisteae spp., however, most of these previous *Bradyrhizobium* studies have been focused on agriculturally important legumes such as cowpea and soybean, and less frequently on indigenous legumes (Gronemeyer and Reinhold-Hurek, 2018, Steenkamp et al., 2008). From literature it appears as if Genisteae species are predominantly nodulated by *Bradyrhizobium* (Stepkowski et al., 2018, Stepkowski et al., 2007, Stepkowski et al., 2005, Stępkowski et al., 2011). Although these legumes have a central origin in South Africa, only those that have diversified towards the Mediterranean have been studied in depth (Ahnia et al., 2014, Boudehouche et al., 2020, De Meyer et al., 2011, Gonzalez-Andres and Ortiz, 1999, Kalita et al., 2020, Kalita et al., 2006, Vinuesa et al., 2008). This then gives a skewed perception that *Bradyrhizobium* would also be the dominant rhizobial symbiont of the southern African Genisteae lineage.

Currently, there is not much known about the genetic diversity, symbiotic specificity or phylogeographic patterns of the rhizobia that nodulate genistoid legumes in South Africa. A recent study on *Polhillia* (du Preez, 2019), a genus known to be endangered and endemic to the Core Cape Subregion (CCR) of SA, found the rhizobia nodulating these species to predominantly belong to *Mesorhizobium*, followed by strains of *Rhizobium*. Other CCR (previously referred to as the Cape Floristic Region (Trytsman et al., 2019, Dlodlu et al., 2018b)) studies investigated the rhizobia associated with a few *Argyrolobium* spp. such as *A. lunare* and *A. velutinum*, which also identified *Mesorhizobium* as the nodulating genus (Dlodlu et al., 2018b, Lemaire et al., 2015a). Taking into consideration the limited Cape studies together with studies conducted in northern Africa (Mnasri et al., 2009, Zakhia et al., 2004) which also identified *Ensifer* symbionts, researchers have hypothesised that *Argyrolobium* spp. from Africa are nodulated by *Mesorhizobium* and *Ensifer*.

In 2016, our research group published results contradicting this hypothesis by identifying both *Mesorhizobium* (in *D. reflexus*) and *Bradyrhizobium* (in *A. rupestre*, *A. robustum*) from the Mpumalanga region of South Africa (Beukes et al., 2016). These results provided insight on rhizobia nodulating these native tribe, providing the idea of rhizobia dominance or association based on geography. The Genisteae tribe is widespread across 26 bioregions in South Africa, especially in the case of *Argyrolobium*, which exhibits the widest distribution (Trytsman, 2013). It has been suggested that biogeography may be playing a role in the observed geographic distributions of rhizobia (Dludlu et al., 2018b). This being supported by the observed dominance of *Burkholderia* (now *Paraburkholderia*; Beukes et al. 2021) and *Mesorhizobium* strains in the CCR and *Bradyrhizobium* in the Grassland and Savanna biomes (Beukes et al., 2013, Dludlu et al., 2018b, Lemaire et al., 2015b). There was not enough evidence in this current study to support the suggestion of a possible host-driven rhizobial genus affinity. Although all *Bradyrhizobium* strains were only identified in *Argyrolobium* spp., there was an overlap in host species associated with bradyrhizobial and mesorhizobial strains. The presence of non-rhizobia in nodules was not surprising, as members of *Pseudomonas*, *Enterobacter*, and *Bacillus* have been reported in legumes previously, where they co-exist with rhizobia (Beghalem et al., 2017). In our study, bacteria such as *Enterobacter*, *Bacillus*, and *Luteibacter* were identified.

For a very long time, *Bradyrhizobium* strains were grouped into three main groups, the *B. japonicum*, *B. elkanii* and Photosynthetic supergroups. In a recent study conducted by Avontuur et al. (2019), four additional supergroups were inferred based on a maximum likelihood phylogeny of a 400-gene, 180-taxon dataset. Interestingly, Lineage II did not group with any of the seven known supergroups from this 400-gene phylogeny (Avontuur et al., 2019). Instead, the lineage moved between the *B. japonicum*, *B. elkanii*, *B. jicamae*, and Photosynthetic supergroups (comparable to the historical positioning of the Photosynthetic supergroup as previously described), but mostly formed a sister group to the *B. jicamae* supergroup. Results from the Avontuur et al. (2019) study further suggested a subset of the *B. jicamae* supergroup to occupy functionally distinct environments and lacks the ability to nodulate or photosynthesize. Therefore, one could hypothesise that this putatively novel lineage closely related to the *B. jicamae* supergroup may include some strains that also lack these abilities.

Genisteeae-associated bradyrhizobia are known to be affiliated with the *B. japonicum* and *B. elkanii* supergroups (Stepkowski et al., 2018). Therefore, it was not unexpected that phylogenies of the five housekeeping genes revealed the dominance of both the *B. japonicum* and *B. elkanii* supergroup affiliated strains. In our study, three lineages were observed in the *B. japonicum* and one in the *B. elkanii* supergroup. Subgroups (Figures 2.5 to 2.9) were also observed within the supergroups, mostly consisting of bradyrhizobial strains associated with Genisteeae spp. Several of these undescribed strains were possibly representatives of novel species distinct from described species within all the different supergroups. We also observed consistent grouping of the type strains “*B. valentinum*” LmjM3^T, *B. quebecense* 66S1MB^T, *B. hipponense* aSej3^T, and *B. algeriense* RST91^T with undescribed Genisteeae associated bradyrhizobia strains, either as members of the same species, close relatives, or forming well supported distinct but related clades (Figures 2.5- 2.9). From these, we could make inferences that the species “*B. valentinum*” LmjM3^T, *B. quebecense* 66S1MB^T, *B. hipponense* aSej3^T, and *B. algeriense* RST91^T could possibly be associated with Genisteeae in terms of nodulation ability, given that they grouped with undescribed Genisteeae strains over multiple housekeeping gene phylogenies. However, nodulation tests will need to be conducted to confirm the host distribution or cross-nodulation of these mentioned strains.

Overall, the maximum likelihood phylogenies of *dnaK*, *glnII*, *gyrB*, *recA*, and *rpoB* revealed two exclusive groupings consistently being observed across all five phylogenies, supporting the hypothesis of two putative novel species. To further support the hypothesis of novel species, six representative strains were selected for further characterization (three from lineages I and II) using a polyphasic approach. This polyphasic approach incorporated the minimal standards of describing new rhizobial species such as genetic, genomic, phenotypic and nodulation features or variations from representative strains (de Lajudie et al., 2019). The strains representing *B. arachidis*, *B. ivorense*, and “*B. brasilense*” (Arg105, Arg68, and Arg682 respectively) were previously identified and described and were therefore not be further evaluated using these standards (Avontuur et al., 2021, Beukes et al., 2016).

Multilocus sequence analysis offers an alternative method for delineating species within the *Bradyrhizobium* genus, by employing a set of five or more housekeeping genes (Duran et al., 2014, Rivas et al., 2009, Tang et al., 2012). These housekeeping

genes are concatenated under the assumption that individual gene phylogenies provide a partial view of genomic information while the concatenated phylogeny of more genes provides a clearer understanding of the evolution of the strains (Menna et al., 2009). In this study, the MLSA phylogeny corroborated the single gene trees in terms of the presence of two distinct novel species, resolved the incongruencies within the single gene trees (Figure 2.9), and was similar to *dnak*, *glnII*, and *gyrB* (Figures 2.5, 2.6 and 2.8). Although the use of the MLSA approach has been proven valuable in providing a more representative view of the genome, as opposed to the partial view provided by the single gene trees and improving phylogenetic signals (Stepkowski et al., 2012), phylogenetic trees based on concatenated gene sequences are not informative on the relative position of the species boundary boundary (Venter et al., 2017).

Conflicting phylogenetic relationships were observed between the housekeeping and symbiotic genes, suggesting that they have different evolutionary histories and evidence for horizontal gene transfer. Sixteen clades (I-XVI) on the *nodA* maximum likelihood phylogeny previously identified in literature were observed within which our strains (Arg81-6, Arg237L, and 105Arg) were placed in the cosmopolitan Clade III, which is not only known to represent one of the oldest *Bradyrhizobium nodA* lineages (Steenkamp et al., 2008), but to comprise of strains isolated from the largest diversity of both indigenous and cultivated legumes (Beukes et al., 2016, Stepkowski et al., 2007, Stepkowski et al., 2012), including SSA legumes (Degefu et al., 2017, Steenkamp et al., 2008). Strains 31Arga and 31Argb, Arg62 and Arg68 were placed in the South African Clade XV. This was unsurprising as previous studies have shown that the Great Escarpment of SA where these strains were isolated, “represents a unique centre of diversity for *Bradyrhizobium*” (Avontuur et al., 2021).

The *nifH* maximum likelihood phylogeny on the other hand had a very poor resolution, which could in future be improved by using nucleotide sequences instead of amino acids. Clade III strains from the *nodA* phylogeny corresponded with the *nifH* phylogeny, showing that these genes have co-evolved together in these strains (Supplementary Figures S2.2 and 2.3). On the other hand, strains that grouped in Clade XV on the *nodA* phylogeny were placed in two phylogenetically distant lineages (Lineage I= 31Arga and 31Argb; Lineage II= Arg62 and b) on the *nifH* phylogeny, indicating that although these strains share similar *nodA* genes, their *nifH* genes have

different evolutionary histories. The disagreement of *nodA* with *nifH* phylogeny was reported in a study by Chen et al. (2003) who reported an entanglement of β -rhizobial sequences with α -rhizobial sequences on the *nodA* phylogeny, but a contrasting grouping of the same β -rhizobial sequences with free-living nitrogen-fixing β -proteobacteria on the *nifH* phylogeny (Chen et al., 2003). In another study that looked at the diversity and evolutionary histories of *Bradyrhizobium nod* gene (*nodA*, *nodZ*, *noel*, and *noeL*) sequences, lateral and vertical gene transfer was shown where photosynthetic strains on the *nodZ* and *noel* phylogenies were notably different from the *nodA* phylogeny (Moulin et al., 2004). This complex evolutionary history between symbiotic loci highlights the complexities in the legume-rhizobium symbioses (Chen et al., 2003).

Our strains were similar to other bradyrhizobia in that they produced slow growth on YMA within 5-7 days, although some (31Arga and 31Argb) were extremely slow growing and needed a longer incubation period of 7-14 days. This long incubation period was similar to *B. namibiense* 5-10^T and “*B. valentinum*” LmjM3^T, which have recorded growth rates of 8 and 10 days, respectively (Duran et al., 2014, Gronemeyer et al., 2017). All tested strains were non-acid produces as seen by their inability to change the BTB in the medium to yellow. Physiological properties such as temperature, pH, and salinity are known to influence the success of an inoculant. Six of our isolates were tested for their tolerance to these stressed conditions and showed tolerance to temperatures between 25 °C and 30 °C, pH ranges between 4 and 10, and 0.5% (w/v) or less salinity. Intraspecific variation was observed within our species clusters, where Arg846 within Lineage I was not able to grow at pH 4, and 31Arga and 31Argb within Lineage II showed no growth at a pH of 6 or below. Phenotypic characteristics of our representative strains were also compared to their closest relatives based on the MLSA phylogeny (Tables 2.5 to 2.7). The phenotypic features that differentiated our strains (from Lineage I) from their phylogenetically closely related *Bradyrhizobium* type strains were growth duration, pH, and salinity, where *B. japonicum* USDA6^T was faster growing than Lineage I strains (Arg816, Arg846, and Arg866) and could grow at varied pH levels and NaCl concentrations. Within Lineage II, Arg237L varied phenotypically from 31Arga, 31Argb and the closest relatives (*B. paxlaelleri* LMTR21^T, “*B. valentinum*” LmjM3^T, and *B. namibiense* 5-10^T) in that the strain was faster growing, had a larger colony size. On the other hand, 31Arga and

31Argb strains shared similar colony morphology, growth rate, NaCl, and pH ranges, and shared more phenotypic traits with the closest relatives of the lineage. Comparison of phenotypic characteristics was difficult in terms of the API and Biolog tests conducted due to corresponding data lacking in most studies, especially Lineage II one close representative (Tables 2.6 and 2. (Duran et al., 2014, Gronemeyer et al., 2017)).(Duran et al., 2014, Gronemeyer et al., 2017)). These tests together with the antibiotic resistance tests have been critiqued for their reliability, reproducibility, and usefulness in describing a new species (Ormeno-Orrillo and Martínez-Romero, 2013). This is attributed to the subjectivity in data interpretation among scientists, the high intraspecific phenotypic variation (Ormeno-Orrillo and Martínez-Romero, 2013), and the fact that the genes encoding for the tested capabilities are encoded on the accessory genome and may therefore be lost or gained (López-Guerrero et al., 2012). Irrespective of this, phenotypic tests such as temperature, pH, and salinity are still very important as they provide additional information regarding the strain's ecology.

Genomic characterization has been gaining popularity in species description due to their higher discrimination between species (Avontuur et al., 2019, Peix et al., 2015a). Therefore, in addition to the phenotypic tests conducted, representative strains from each putative species cluster were selected for genome comparisons. Closely related strains were also included for genome comparisons in Table 2.9. However, it is important to note that the genome for *B. namibiense* was not available for comparison and *B. lupini* DSM 30140^T is regarded as a synonym for *B. japonicum*(Peix et al., 2015b). Although it still appears under LPSN as the type strain for *B. lupini*, USDA 3050^T should, instead, be regarded as the type strain for *B. lupini*. From Lineage I, Arg816 was chosen as a type strain and therefore compared with the closest relatives (*B. japonicum* USDA 6^T, *B. lupini* DSM 30140^T, *B. betae* PL7HG1^T, *B. cytisi* CTAW11^T, *B. cosmicum* 58S1^T, *canariense* BTA 1^T, *B. rifense* CTAW71^T, *hipponense* aSej3^T, and “*B. guangzhouense*” CCBAU 51670^T). From Lineage II, Arg237L was chosen as the type strain for this novel putatively novel group and sequenced compared with the available genomes of the closest relatives (*B. paxllaeri* LMTR 21^T, *B. archetypum* WSM 1744^T, *B. lablabi* CCBAU 23086^T, *B. australiense* WSM 1791^T, *B. jicamae* PAC68^T, *B. murdochi* WSM 174^T, *B. algeriense* RST89^T, *B. icense* LMTR 13^T, *B. retamae* Ro19^T, and “*B. valentinum*” LmjM3^T).

The GC content of our studied strains was similar to the described *Bradyrhizobium* strains at 63.2% (Table 2.9). Strain Arg816 had a higher genome coverage of 82.48, a larger number of contigs, and N50 of 344770. The genome size was within the expected size range for *Bradyrhizobium* genomes and the N50 was high, indicating good genome assembly. On the other hand, strain Arg237L had a very large genome, which is double the size of the average *Bradyrhizobium* genome. Additionally, this strain had a lower genome coverage compared to Arg816 but still higher compared to type strains in Table 2.9, and a lower N50. Due to the observed large genome size and the identified highly similar double 16S rRNA genes, we suggest that this strain could have been contaminated with a very closely related strain and would therefore need to be repeated in future studies. Our ANI results yielded values of less than 93.35% when comparing Arg816 (Figure 2.2) and less than 78.87% when comparing Arg237L (Figure 2.3), all of which were below the species cut-off value (Chun et al., 2018), therefore supporting the hypothesis of two novel species.

The nodulation abilities on cowpea and siratro could only be confirmed for Lineage I strains (Figure 2.4). Both hosts were selected due to their wide and successful use in nodulation tests owing to their known promiscuity, especially with regard to bradyrhizobia (Avontuur et al., 2021, Fossou et al., 2020, Steenkamp et al., 2008). The inability of Lineage II strains to nodulate the broad host legumes does not imply that they cannot nodulate, especially because we were able to amplify the *nodA* genes for these strains, indicating their potential to nodulate. As the test legumes could nodulate with strains from Lineage I, we can assume that growth conditions were conducive towards symbiosis initiation and are therefore not the cause for the lack of nodulation by Lineage II strains. It is therefore likely that these strains are host specific and will therefore need to be tested on their original hosts or at least native Genisteae plants to confirm their ability to nodulate.

In conclusion, this study shows that some Genisteae indigenous to South Africa are more likely to be nodulated by *Bradyrhizobium* and denotes that the vast majority of rhizobia occurring in South African Genisteae remains to be discovered. Two novel *Bradyrhizobium* species have been identified. These *Bradyrhizobium* strains grew at high pHs and exhibited less tolerance to extreme temperatures and salinity. Only representatives of Lineage I were successfully authenticated for nodulation while Lineage II strains failed to nodulate to broad host plants, cowpea and siratro. Our study

further showed that *Bradyrhizobium* symbionts from Genisteeae formed part of the cosmopolitan (III) and South African (XV) *nodA* clades. Based on our phylogenetic, genomic, and phenotypic data, our study proposes the description of two novel *Bradyrhizobium* species from Lineages I and II, proposing Arg816 and Arg237L as the type strains for: *Bradyrhizobium* Arg816 sp. nov. and *Bradyrhizobium* Arg237L sp. nov., including strains isolated from *Argyrolobium harveyanum* (KZN) and *A. robustum* (MP) respectively.

Description of *Bradyrhizobium harveyanum* sp. nov

Arg816 sp. nov. was isolated from *Argyrolobium harveyanum* Oliv. At the Karkloof Nature Reserve in the KwaZulu-Natal province of South Africa. The site of root nodule collection was a grassland biome at an altitude of 1171 m, in a stony-loam, well-drained soil. *Argyrolobium harveyanum* Oliv. perennial herb/shrub, endemic to Zimbabwe and southern Africa (Cape Provinces, Free State, KwaZulu-Natal, Lesotho, Northern Provinces, and Swaziland) was the host.

Cells are gram-negative motile rods ranging from 0.577 to 0.603 μm (in length) to 0.166 to 0.177 μm (in width). Colonies were medium in size, ranging between 1 mm and 2 mm on YMA medium stored at 28 °C after 7 days, were circular, opaque, pulvinate, smooth, opaque, and slimy. Colonies also produced an alkaline reaction in YMA with bromothymol blue as an indicator. The type strain grows at a pH range of 5 to 10, temperature range of 25 to 30 °C, with optimum growth at 25 and 28 °C and tolerates up to 0.5% (wv) NaCl. It is resistant to ampicillin (10 μg), chloramphenicol (50 μg), penicillin (10 μg), and tetracycline (30 μg), and sensitive to kanamycin (30 μg), streptomycin (10 μg), erythromycin (30 μg), gentamicin (10 μg), and neomycin (10 μg). It assimilates L-arginine, Urease, esculin ferric citrate, β -galactosidase, L-arabinose, D-maltose, potassium gluconate, Capric acid, adipic acid, Malic acid, Trisodium citrate, and Phenylacetic acid, but does not assimilate indole, D-glucose, gelatin, D-mannose, D-mannitol, and N-acetyl-glucosamine. It can reduce nitrates to nitrite. In terms of the biology tests, Arg816 was reported negative for Dextrin, D-Maltose, D-Trehalose, D-Cellobiose, Gentiobiose, Sucrose, D-Turanose, Stachyose, D-Raffinose, α -D-Lactose, D-Melibiose, β -Methyl-D-Glucoside, D-Salicin, N-Acetyl-D-Glucosamine, N-Acetyl- β -D-Mannosamine, N-Acetyl-D-Galactosamine, N-Acetyl Neuraminic Acid, D-Fructose, D-Galactose, 3-Methyl Glucose, L-Rhamnose, Inosine,

1% Sodium Lactate, D-Sorbitol, D-Mannitol, D-Arabitol, myo-Inositol, Glycerol, D-Glucose6-PO₄, D-Aspartic Acid, D-Serine, Gelatin, Glycyl-L-Proline, L-Alanine, L-Arginine, L-Aspartic Acid, L-Glutamic Acid, L-Pyroglutamic Acid, L-Serine, Niaproof 4, Pectin, D-Gluconic Acid, Quinic Acid, Methyl Pyruvate, D-Lactic Acid Methyl Ester, Citric Acid, Bromo-Succinic Acid, Tween 40, γ -Amino-Butyric Acid, α -Hydroxy-Butyric Acid, α -Keto-Butyric Acid, Propionic Acid, and Sodium Bromate, weakly positive for α -D-Glucose, D-Mannose, D-Fucose, L-Fucose, Fusidic Acid, D-Serine, D-Fructose6-PO₄, Troleandomycin, L-Histidine, Lincomycin, Guanidine HCl, D-Galacturonic Acid, L-Galactonic Acid Lactone, D-Glucuronic Acid, Glucuronamide, Mucic Acid, D-Saccharic Acid, Vancomycin, L-Lactic Acid, α -Keto-Glutaric Acid, L-Malic Acid, Nalidixic Acid, Lithium Chloride, Potassium Tellurite, β -Hydroxy-D, L-Butyric Acid, Acetic Acid, Aztreonam, and Sodium Butyrate, and Positive for Rifamycin SV, Minocycline, Tetrazolium Violet, Tetrazolium Blue, p-Hydroxy-Phenylacetic Acid, D-Malic Acid, Acetoacetic Acid, and Formic Acid. The GC content for Arg816 was 63.2 mol%.

Description of *Bradyrhizobium robustum* sp. nov.

Arg237L sp. nov. was isolated from *Argyrolobium robustum* T.J. Edwards, at a Mondli site in the Mpumalanga province of South Africa. The site of root nodule collection was a grassland-savanna biome at an altitude of 1212 m on the side of a gravel road. This legume host is native to southern Africa, in Botswana, Swaziland, and South Africa (Free State, KwaZulu-Natal, and Northern Provinces).

Cells are gram-negative motile rods ranging from 0.577 to 0.603 μ m (in length) to 0.166 to 0.177 μ m (in width). Colonies were medium in size, ranging between 1mm and 2mm at 7 days, are circular, opaque, pulvinate, smooth, opaque, and slimy. Colonies also produced an alkaline reaction in YMA with bromothymol blue as an indicator. The type strain grows at a pH range of 5 to 10, temperature range of 25 to 30 °C, with optimum growth at 25 and 28 °C and tolerates up to 0.5% (wv) NaCl. It is resistant to ampicillin (10 μ g), penicillin (10 μ g), and tetracycline (30 μ g), and sensitive to chloramphenicol (50 μ g), kanamycin (30 μ g), streptomycin (10 μ g), erythromycin (30 μ g), gentamicin (10 μ g), and neomycin (10 μ g). It assimilates Urease, esculin ferric citrate, β -galactosidase, L-arabinose, D-mannose, D-mannitol, D-maltose, adipic acid, Malic acid, Trisodium citrate, and N-acetyl-glucosamine, but does not assimilate indole, D-glucose, L-arginine, gelatin, potassium gluconate, Capric acid, and

Phenylacetic acid. This strain can reduce nitrates to nitrite and nitrogen. In terms of the biology tests, Arg237L was reported negative for Dextrin, D-Maltose, D-Trehalose, D-Cellobiose, Gentiobiose, Sucrose, D-Turanose, Stachyose, D-Raffinose, α -D-Lactose, D-Melibiose, β -Methyl-D-Glucoside, D-Salicin, N-Acetyl-D-Glucosamine, N-Acetyl- β -D-Mannosamine, N-Acetyl-D-Galactosamine, N-Acetyl Neuraminic Acid, D-Fructose, 3-Methyl Glucose, Inosine, D-Sorbitol, myo-Inositol, Glycerol, D-Glucose6-PO₄, D-Fructose6-PO₄, L-Histidine, D-Aspartic Acid, D-Serine, Gelatin, Glycyl-L-Proline, L-Alanine, L-Arginine, L-Aspartic Acid, L-Glutamic Acid, L-Serine, Pectin, D-Gluconic Acid, Quinic Acid, Lithium Chloride, Guanidine HCl, D-Lactic Acid Methyl Ester, Citric Acid, D-Galacturonic Acid, Tween 40, γ -Amino-Butyric Acid, α -Hydroxy-Butyric Acid, α -Keto-Butyric Acid, Propionic Acid, and Sodium Bromate, weakly positive for D-Galactose, α -D-Glucose, D-Mannose, L-Fucose, L-Rhamnose, D-Mannitol, D-Arabitol, Fusidic Acid, Minocycline, Troleandomycin, L-Pyroglutamic Acid, Niaproof 4, Bromo-Succinic Acid, L-Galactonic Acid Lactone, D-Glucuronic Acid, Glucuronamide, Mucic Acid, Tetrazolium Blue, p-Hydroxy-Phenylacetic Acid, Vancomycin, , α -Keto-Glutaric Acid, Acetoacetic Acid, L-Malic Acid, Methyl Pyruvate, D-Malic Acid, Potassium Tellurite, Acetic Acid, and Sodium Butyrate, and Positive for D-Fucose, 1% Sodium Lactate, Rifamycin SV, Tetrazolium Violet, Lincomycin, D-Saccharic Acid, L-Lactic Acid, Nalidixic Acid, β -Hydroxy-D, L-Butyric Acid, Aztreonam, and Formic Acid. The GC content for Arg237L was 63.2 mol%.

2.5 Tables

Table 2.1. Genisteae root nodule isolations collected previously between the years 1997 and 2019 from the hosts *Argyrolobium*, *Dichilus*, and *Melolobium* spp., and several *Argyrolobium* spp. root nodules were collected at the Mpumalanga, Kwazulu-Natal, and Western Cape province in SA. Information regarding the isolates host species of isolation, geography information, and habitat is summarized

#	Collection date	Isolate	Nodule	Abrev. ¹	Legume host	Location	GPS location	Altitude
1	30/10/19	<i>Argyrolobium</i> sp1	A	ArgA1	<i>A. tomentosum</i> (Andrews) Druce	KwaZulu-Natal Province; on the banks of the Umgeni River, close to the Cumberland Horseshoe Cottage, under trees.	S29° 30' 11.6" E030° 30' 15.5"	504-564m
2	30/10/19	<i>Argyrolobium</i> sp1	B	ArgB1	<i>A. tomentosum</i>	KwaZulu-Natal Province; on the banks of the Umgeni River, close to the Cumberland Horseshoe Cottage, under trees.	S29° 30' 11.6" E030° 30' 15.5"	504-564m
3	30/10/19	<i>Argyrolobium</i> sp1	C	ArgC1	<i>A. tomentosum</i>	KwaZulu-Natal Province; on the banks of the Umgeni River, close to the Cumberland Horseshoe Cottage, under trees.	S29° 30' 11.6" E030° 30' 15.5"	504-564m
4	30/10/19	<i>Argyrolobium</i> sp1	D	ArgD1	<i>A. tomentosum</i>	KwaZulu-Natal Province; on the banks of the Umgeni River, close to the Cumberland Horseshoe Cottage, under trees.	S29° 30' 11.6" E030° 30' 15.5"	504-564m

#	Collection date	Isolate	Nodule	Abrev. ¹	Legume host	Location	GPS location	Altitude
5	30/10/19	<i>Argyrolobium</i> sp1	E	ArgE1	<i>A. tomentosum</i>	KwaZulu-Natal Province; on the banks of the Umgeni River, close to the Cumberland Horseshoe Cottage, under trees.	S29° 30' 11.6" E030° 30' 15.5"	504-564m
6	30/10/19	<i>Argyrolobium</i> sp1	F	ArgF1	<i>A. tomentosum</i>	KwaZulu-Natal Province; on the banks of the Umgeni River, close to the Cumberland Horseshoe Cottage, under trees.	S29° 30' 11.6" E030° 30' 15.5"	504-564m
7	30/10/19	<i>Argyrolobium</i> sp1	G	ArgG1	<i>A. tomentosum</i>	KwaZulu-Natal Province; on the banks of the Umgeni River, close to the Cumberland Horseshoe Cottage, under trees.	S29° 30' 11.6" E030° 30' 15.5"	504-564m
8	30/10/19	<i>Argyrolobium</i> sp1	H	ArgH1	<i>A. tomentosum</i>	KwaZulu-Natal Province; on the banks of the Umgeni River, close to the Cumberland Horseshoe Cottage, under trees.	S29° 30' 11.6" E030° 30' 15.5"	504-564m

#	Collection date	Isolate	Nodule	Abrev. ¹	Legume host	Location	GPS location	Altitude
9	30/10/19	<i>Argyrolobium</i> sp1	I	ArgI1	<i>A. tomentosum</i>	KwaZulu-Natal Province; on the banks of the Umgeni River, close to the Cumberland Horseshoe Cottage, under trees.	S29° 30' 11.6" E030° 30' 15.5"	504-564m
10	30/10/19	<i>Argyrolobium</i> sp1	J	ArgJ1	<i>A. tomentosum</i>	KwaZulu-Natal Province; on the banks of the Umgeni River, close to the Cumberland Horseshoe Cottage, under trees.	S29° 30' 11.6" E030° 30' 15.5"	504-564m
11	30/10/19	<i>Argyrolobium</i> sp2	A	ArgA2	<i>A. tomentosum</i>	KwaZulu-Natal Province; on the banks of the Umgeni River, close to the Cumberland Horseshoe Cottage, under trees.	S29° 30' 11.6" E030° 30' 15.5"	504-564m
12	30/10/19	<i>Argyrolobium</i> sp2	C	ArgC	<i>A. tomentosum</i>	KwaZulu-Natal Province; on the banks of the Umgeni River, close to the Cumberland Horseshoe Cottage, under trees.	S29° 30' 11.6" E030° 30' 15.5"	504-564m

#	Collection date	Isolate	Nodule	Abrev. ¹	Legume host	Location	GPS location	Altitude
13	30/10/19	<i>Argyrolobium</i> sp.	B	ArgB	<i>A. robustum</i> T.J.Edwards	Mpumalanga Province; Mondli site, Emahlathini gravel road between Piet Retief and Eswatini	S: 26° 53' 42.3" E: 030° 52' 23.7"	1212m
14	30/10/19	<i>Argyrolobium</i> sp2	1	Arg212	<i>A. robustum</i>	Mpumalanga Province; Mondli site, Emahlathini gravel road between Piet Retief and Eswatini	S: 26° 53' 42.3" E: 030° 52' 23.7"	1212m
15	30/10/19	<i>Argyrolobium</i> sp2	2	Arg213	<i>A. robustum</i>	Mpumalanga Province; Mondli site, Emahlathini gravel road between Piet Retief and Eswatini	S: 26° 53' 42.3" E: 030° 52' 23.7"	1212m
16	30/10/19	<i>Argyrolobium</i> sp2	3	Arg237L	<i>A. robustum</i>	Mpumalanga Province; Mondli site, Emahlathini gravel road between Piet Retief and Eswatini	S: 26° 53' 42.3" E: 030° 52' 23.7"	1212m
17	30/10/19	<i>Argyrolobium</i> sp2	7	Arg277	<i>A. robustum</i>	Mpumalanga Province; Mondli site, Emahlathini gravel road between Piet Retief and Eswatini	S: 26° 53' 42.3" E: 030° 52' 23.7"	1212m

#	Collection date	Isolate	Nodule	Abrev. ¹	Legume host	Location	GPS location	Altitude
18	30/10/19	<i>Argyrolobium</i> sp1	2	Arg123	<i>A. amplexicaule</i> (E.Mey.) Dümmer	KwaZulu-Natal Province; Karkloof Nature Reserve	S: 29° 13' 42.6" E: 030° 13' 23.4"	1223m
19	30/10/19	<i>Argyrolobium</i> sp1	3	Arg133	<i>A. amplexicaule</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S: 29° 13' 42.6" E: 030° 13' 23.4"	1223m
20	30/10/19	<i>Argyrolobium</i> sp3	1	Arg314	<i>A. cf. rupestre</i> Walp.	KwaZulu-Natal Province; Karkloof Nature Reserve	S29° 18' 42.6" E030° 13' 23.6"	1223m
21	30/10/19	<i>Argyrolobium</i> sp3	2	Arg324	<i>A. rupestre</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S29° 18' 42.6" E030° 13' 23.6"	1223m
22	30/10/19	<i>Argyrolobium</i> sp3	3	Arg334	<i>A. rupestre</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S29° 18' 42.6" E030° 13' 23.6"	1223m
23	30/10/19	<i>Argyrolobium</i> sp3	4	Arg344	<i>A. rupestre</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S29° 18' 42.6" E030° 13' 23.6"	1223m
24	30/10/19	<i>Argyrolobium</i> sp6	2	Arg627	<i>A. harveyanum</i> Oliv.	KwaZulu-Natal Province; Karkloof Nature Reserve	S29° 18' 43.1" E030° 13' 24.1"	1223m
25	30/10/19	<i>Argyrolobium</i> sp6	3	Arg637	<i>A. harveyanum</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S29° 18' 43.1" E030° 13' 24.1"	1223m
26	30/10/19	<i>Argyrolobium</i> sp6	4	Arg647	<i>A. harveyanum</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S29° 18' 43.1" E030° 13' 24.1"	1223m
27	30/10/19	<i>Argyrolobium</i> sp6	5	Arg657	<i>A. harveyanum</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S29° 18' 43.1" E030° 13' 24.1"	1223m
28	30/10/19	<i>Argyrolobium</i> sp6	7	Arg677	<i>A. harveyanum</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S29° 18' 43.1" E030° 13' 24.1"	1223m
29	30/10/19	<i>Argyrolobium</i> sp8	1	Arg816	<i>A. harveyanum</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S29°18'57.0" E030°13'41.5"	1171m

#	Collection date	Isolate	Nodule	Abrev. ¹	Legume host	Location	GPS location	Altitude
30	30/10/19	<i>Argyrolobium</i> sp8	2	Arg826	<i>A. harveyanum</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S29°18'57.0" E030°13'41.5"	1171m
31	30/10/19	<i>Argyrolobium</i> sp8	3	Arg836	<i>A. harveyanum</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S29°18'57.0" E030°13'41.5"	1171m
32	30/10/19	<i>Argyrolobium</i> sp8	4	Arg846	<i>A. harveyanum</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S29°18'57.0" E030°13'41.5"	1171m
33	30/10/19	<i>Argyrolobium</i> sp8	5	Arg856	<i>A. harveyanum</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S29°18'57.0" E030°13'41.5"	1171m
34	30/10/19	<i>Argyrolobium</i> sp8	6	Arg866	<i>A. harveyanum</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S29°18'57.0" E030°13'41.5"	1171m
35	30/10/19	<i>Argyrolobium</i> sp9	1	Arg913	<i>A. amplexicaule</i> (E.Mey.) Dümmer	KwaZulu-Natal Province; Karkloof Nature Reserve	S29°18'57.0" E030°13'42.0"	1171m
36	30/10/19	<i>Argyrolobium</i> sp9	2	Arg923	<i>A. amplexicaule</i>	KwaZulu-Natal Province; Karkloof Nature Reserve	S29°18'57.0" E030°13'42.0"	1171m
37	24/08/10	<i>Argyrolobium</i> sp. 14	a	14Arga	<i>A. tuberosum</i> Eckl. & Zeyh.	Mpumalanga Province	nd	nd
38	24/08/10	<i>Argyrolobium</i> sp. 14	b	14Argb	<i>A. tuberosum</i> Eckl. & Zeyh.	Mpumalanga Province	nd	nd
39	24/08/10	<i>Argyrolobium</i> sp. 31	a	31Arga	<i>A. rupestre</i> (E.Mey.) Walp. subsp. <i>rupestre</i>	Mpumalanga Province	nd	nd
40	24/08/10	<i>Argyrolobium</i> sp. 31	b	31Argb	<i>A. rupestre</i> subsp. <i>rupestre</i>	Mpumalanga Province	nd	nd
41	19/08/10	<i>Argyrolobium</i> sp. 43	a	43Arga	<i>A. rupestre</i> subsp. <i>rupestre</i>	Mpumalanga Province	S: 25° 47' 752" E: 31° 5' 273"	nd
42	19/08/10	<i>Argyrolobium</i> sp. 44	a	44Arga	<i>A. rupestre</i> subsp. <i>rupestre</i>	Mpumalanga Province	S: 25° 47' 752" E: 31° 5' 273"	nd
43	19/08/10	<i>Argyrolobium</i> sp. 44	b	44Argb	<i>A. rupestre</i> subsp. <i>rupestre</i>	Mpumalanga Province	S: 25° 47' 752" E: 31° 5' 273"	nd

#	Collection date	Isolate	Nodule	Abrev. ¹	Legume host	Location	GPS location	Altitude
44	22/06/2010	<i>Argyrolobium</i> sp. 62	b	62Arg07b	<i>A. sericeum</i>	Mpumalanga Province	S: 25° 59' 50" E: 30° 29' 59"	835-1104m
45	22/06/2010	<i>Argyrolobium</i> sp. 62	b	62Arg22b	<i>A. sericeum</i>	Mpumalanga Province	S: 25° 59' 50" E: 30° 29' 59"	835-1104m
46	07/05/11	<i>Argyrolobium</i> sp. 62	b	62Arg22b	<i>A. sericeum</i>	Mpumalanga Province	S: 25° 59' 50" E: 30° 29' 59"	835-1104m
47	19/08/10	<i>Argyrolobium</i> sp. 64	a	64BArga	<i>A. lunare</i> (L.) Druce subsp. <i>sericeum</i>	Mpumalanga Province	S: 25° 59' 50" E: 30° 29' 59"	835-1104m
48	19/08/10	<i>Argyrolobium</i> sp. 64	b	64BArgb	<i>A. lunare</i> subsp. <i>sericeum</i>	Mpumalanga Province	S: 25° 59' 50" E: 30° 29' 59"	835-1104m
49	19/08/10	<i>Argyrolobium</i> sp. 64	a	64CArga	<i>A. lunare</i> subsp. <i>sericeum</i>	Mpumalanga Province	S: 25° 59' 50" E: 30° 29' 59"	835-1104m
50	19/08/10	<i>Argyrolobium</i> sp. 64	nd	64CArgb	<i>A. lunare</i> subsp. <i>sericeum</i>	Mpumalanga Province	S: 25° 59' 50" E: 30° 29' 59"	835-1104m
51	19/08/10	<i>Argyrolobium</i> sp. 68		68Arg19a	<i>A. sericeum</i>	Mpumalanga Province	S: 25° 59' 50" E: 30° 29' 59"	835-1104m
52	19/08/10	<i>Argyrolobium</i> sp. 68		68Arg19b	<i>A. sericeum</i>	Mpumalanga Province	S: 25° 59' 50" E: 30° 29' 59"	835-1104m
53	17/05/11	<i>Argyrolobium</i> sp. 68		68Arg17b	<i>A. sericeum</i>	Mpumalanga Province	S: 25° 59' 50" E: 30° 29' 59"	835-1104m
54	nd	<i>Argyrolobium</i> sp. 98		98Argb	<i>A. tuberosum</i> Eckl. & Zeyh.	Mpumalanga Province	S 25° 22' 189" E: 30° 8' 659"	nd
55	19/08/10	<i>Argyrolobium</i> sp. 105		105Arg19a	<i>A. rupestre</i> subsp. <i>rupestre</i>	Mpumalanga Province	S: 25° 47' 753" E: 31° 5' 274"	835-1104m
56	19/08/10	<i>Argyrolobium</i> sp. 105		105Arg19b	<i>A. rupestre</i> subsp. <i>rupestre</i>	Mpumalanga Province	S: 25° 47' 753" E: 31° 5' 274"	835-1104m

#	Collection date	Isolate	Nodule	Abrev. ¹	Legume host	Location	GPS location	Altitude
57	07/05/11	<i>Argyrolobium</i> sp. 105		105Arg17b	<i>A. rupestre</i> subsp. <i>rupestre</i>	Mpumalanga Province	S: 25° 47' 753" E: 31° 5' 274"	835-1104m
58	19/08/10	<i>Dichilus</i> sp. 49		49Dich A	<i>D. reflexus</i> (N.E.Br.) A.L.Schutte	Mpumalanga Province	S: 25° 24' 788" E: 30° 6' 816"	nd
59	19/08/10	<i>Dichilus</i> sp. 59		59Dich a	<i>D. reflexus</i>	Mpumalanga Province	S: 25° 24' 788" E: 30° 6' 816"	nd
60	19/08/10	<i>Dichilus</i> sp. 59		59Dich b	<i>D. reflexus</i>	Mpumalanga Province	S: 25° 24' 788" E: 30° 6' 816"	nd
61	19/08/10	<i>Dichilus</i> sp. 59		60Dich	<i>D. reflexus</i>	Mpumalanga Province	S: 25° 24' 788" E: 30° 6' 816"	nd
62	nd	<i>Melolobium</i> sp. 128		128a	<i>M. obcordatum</i>	Mpumalanga Province	nd	nd
63	28/05/02	<i>Melolobium</i> sp. a		a	<i>Melolobium</i> sp.	Mpumalanga Province (Middelburg EC Hanover Rd)	S: 25° 023' 398" E 31° 506' 793"	1241m
64	28/05/02	<i>Melolobium</i> sp. b		b	<i>Melolobium</i> sp.	Mpumalanga Province (Middelburg EC Hanover Rd)	S: 25° 023' 398" E 31° 506' 793"	1241m
65	27/05/02	<i>Melolobium</i> sp. c		c	<i>Melolobium</i> sp.	Mpumalanga Province (Middelburg EC Hanover Rd)	S: 25° 023' 398" E 31° 506' 793"	1241m
66	12/06/02	<i>Melolobium</i> sp. d		d	<i>Melolobium</i> sp.	Mpumalanga Province (Middelburg EC Hanover Rd)	S: 25° 023' 398" E 31° 506' 793"	1241m
67	12/06/02	<i>Melolobium</i> sp. f		f	<i>Melolobium</i> sp.	Mpumalanga Province (Middelburg EC Hanover Rd)	S: 25° 023' 398" E 31° 506' 793"	1241m
68	27/05/03	<i>Melolobium</i> sp. i		i	<i>Melolobium</i> sp.	Mpumalanga Province	S: 25° 023' 398" E 31° 506' 793"	1241m

#	Collection date	Isolate	Nodule	Abrev. ¹	Legume host	Location	GPS location	Altitude
						(Middelburg EC Hanover Rd)		
69	27/05/03	<i>Melolobium</i> sp. j		j	<i>Melolobium</i> sp.	Mpumalanga Province (Middelburg EC Hanover Rd)	S: 25° 023' 398'' E 31° 506' 793''	1241m
70	27/05/02	<i>Melolobium</i> sp. BH	b	BHb	<i>Melolobium</i> sp.	Mpumalanga Province (Pieter Lund Bleak House farm Beaufort West)	S:32°1416 E: 22° 5519	900-1000m
71	27/05/02	<i>Melolobium</i> sp. BH	bdi	BHbdi	<i>Melolobium</i> sp.	Mpumalanga Province (Pieter Lund Bleak House farm Beaufort West)	S:32°1416 E: 22° 5519	900-1000m
72	27/05/02	<i>Melolobium</i> sp. BH	bdi	BHbdii	<i>Melolobium</i> sp.	Mpumalanga Province (Pieter Lund Bleak House farm Beaufort West)	S:32°1416 E: 22° 5519	900-1000m
73	14/03/03	<i>Melolobium</i> sp. BH	sci	BHsci	<i>M. canescens</i>	Mpumalanga Province (Pieter Lund Bleak House farm Beaufort West)	S:32°1416 E: 22° 5519	900-1000m
74	14/03/03	<i>Melolobium</i> sp. BH	scii	BHscii	<i>M. canescens</i>	Mpumalanga Province (Pieter Lund Bleak House farm Beaufort West)	S:32°1416 E: 22° 5519	900-1000m
75	20/03/03	<i>Melolobium</i> sp. PL10	PL10	PL10	<i>Melolobium</i> sp.	Mpumalanga Province	nd	nd
76	28/02/1997	<i>Melolobium</i> sp. Ram	bsc	Ram4bsc	<i>Melolobium</i> sp.	Mpumalanga Province	nd	nd

#	Collection date	Isolate	Nodule	Abrev. ¹	Legume host	Location	GPS location	Altitude
77	23/02/05	<i>Melolobium</i> sp. Ram	asc	Ram4asc	<i>Melolobium</i> sp.	Mpumalanga Province	nd	nd

¹ Abbreviation of isolate names

*nd= no data available

Table 2.2. Details of primers used for PCR and sequencing

Gene	Primer name ¹	Primer sequences 5'-3' ²	Annealing temperature	Reference
16S rRNA	27F 1492R	agagtttgatcctggctcag ggttacctgttacgactt	58°C	(Beukes et al., 2016, Vinuesa et al., 2008)
<i>dnaK</i>	TSdnaK4 TSdnaK2	ggcaaggagccgcayaagg gtacatggcctcgccgagcttca	56°C	(Stepkowski et al., 2005)
<i>glnII</i>	TSglnII _f TSglnII _r	aagctcgagtacatctggctcgacgg sgagccggtccagtcggtgtcg	56-58°C	(Vinuesa et al., 1998)
<i>gyrB</i>	AMgyrB _f AMgyrB _r	gcatgtatatcggcgacac gtgaagcacagyacgttctc	56°C	(Beukes et al., 2013)
<i>recA</i>	TSrecA _{f5} TSrecA _{r3}	cactgcmtygcgtatygctgaagg gatcttcatscggatctggttgatg	56-58°C	(DeLong, 1992)
<i>rpoB</i>	rpoB-456F rpoB1364R	atcgtytcgcagatgcaccg tcgatgtcgtcgatytgcc	56°C	(Stepkowski et al., 2003, Stepkowski et al., 2007)
<i>nodA</i>	TSnodD1-1c TSnodB2N	cagatcnagdcbbtgaargcat ctgtgrthgcrayctyrtgycc	53°C	
<i>nifH</i>	TSnodB7 nifH 40F nifH 817R	gtctcgrggrrtcacygacca ggnatcggcaagtcsacsac tcramcagcatgtcctcsagctc	56°C	(Stepkowski et al., 2005, Stepkowski et al., 2012)

¹ All primers were used for both PCR and sequencing, except for *nodA*, were only TSnodB2N and TSnodB7 were used for sequencing

² n=a, g, c, or t; r=a or g; y=c or t; s=g or c; w=a or t; m=a or c, b=not a (c or g or t); d=not c (a, or c, or t)

Table 2.3. PCR and sequencing thermal cycling conditions

Gene	PCR ¹	Sequencing ²	Reference (conditions)
16S rRNA	Initial denaturation at 94°C for 2 minutes, (94°C for 1 min, 56-58°C for 1 min, 72°C for 1 min) x30 cycles, 72 for 7 min; hold at 4°C	96°C for 5 seconds, (96°C for 10 seconds, 55°C for 10 seconds, 60°C for 4.15 min) x25 cycles, 4°C hold	(Beukes et al., 2016, Vinuesa et al., 2008)
<i>dnaK</i>	Initial denaturation at 95°C for 2 minutes, (95°C for 45 seconds, 58°C for 30 seconds, 72°C for 1.5 min) x35 cycles, 72 for 7 min; hold at 4°C		(Stepkowski et al., 2005)
<i>glnII</i>	Initial denaturation at 95°C for 2 minutes, (95°C for 45 seconds, 56-58°C for 30 seconds, 72°C for 1.5 min) x35 cycles, 72 for 7 min; hold at 4°C		(Vinuesa et al., 2005)
<i>gyrB</i>	Initial denaturation at 95°C for 2 minutes, (95°C for 45 seconds, 55°C for 30 seconds, 72°C for 1.5 min) x35 cycles, 72 for 7 min; hold at 4°C		(Jordan, 1982)
<i>recA</i>	Initial denaturation at 95°C for 4 minutes, (95°C for 30 seconds, 53°C for 30 seconds, 72°C for 1.5 min) x35 cycles, 72 for 7 min; hold at 4°C		(Peix et al., 2015)
<i>rpoB</i>	Initial denaturation at 95°C for 2 minutes, (95°C for 30 seconds, 56°C for 30 seconds, 72°C for 1.5 min) x35 cycles, 72 for 7 min; hold at 4°C		(Durán et al., 2014, Duran et al., 2014)
<i>nodA</i>	Initial denaturation at 95°C for 2 minutes, (94°C for 45 seconds, 53°C for 30 seconds, 72°C for 2.5 min) x35 cycles, 72 for 7 min; hold at 4°C	96°C for 1 min, (96°C for 10 seconds, 52°C for 10 seconds, 60°C for 4 min) x35 cycles, 4°C hold	
<i>nifH</i>	Initial denaturation at 95°C for 3.30s, (94°C for 1min, 56°C for 40s, 72°C for 1 min) x35 cycles, 72°C for 5 min final extension, 4°C hold	96°C for 5 seconds, (96°C for 10 seconds, 55°C for 10 seconds, 60°C for 4.15 min) x25 cycles, 4°C hold	(Gronemeyer et al., 2017)

¹ *dnaK*, *glnII*, *gyrB*, *recA*, and *rpoB* shared the same PCR cycling conditions with differences in denaturation times in *recA* and annealing temperature as well as denaturation time and elongation time in *rpoB*.

² sequencing conditions of all targeted gene regions were the same, except for *nodA*

Table 2.4. Diversity of rhizobia associated with SA indigenous Genisteae

Isolate	Isolation source	Genus
ArgA1	<i>A. tomentosum</i> (Andrews) Druce	<i>Mesorhizobium</i>
ArgB1	<i>A. tomentosum</i>	<i>Mesorhizobium</i>
ArgC1	<i>Argyrolobium</i> <i>tomentosum</i> (Andrews) Druce	<i>Mesorhizobium</i>
ArgD1	<i>Argyrolobium</i> <i>tomentosum</i> (Andrews) Druce	<i>Mesorhizobium</i>
ArgE1	<i>A. tomentosum</i>	<i>Mesorhizobium</i>
ArgF1	<i>A. tomentosum</i>	<i>Mesorhizobium</i>
ArgG1	<i>A. tomentosum</i>	<i>Mesorhizobium</i>
ArgH1	<i>A. tomentosum</i>	<i>Mesorhizobium</i>
ArgI1	<i>A. tomentosum</i>	<i>Mesorhizobium</i>
ArgJ1	<i>A. tomentosum</i>	Not rhizobia ¹
ArgA2	<i>A. tomentosum</i>	<i>Mesorhizobium</i>
ArgC2	<i>A. tomentosum</i>	Not rhizobia ¹
ArgB	<i>A. robustum</i> T.J.Edwards	Not rhizobia ¹
Arg212	<i>A. robustum</i>	Not rhizobia ¹
Arg213	<i>A. robustum</i>	Not rhizobia ¹
Arg217	<i>A. robustum</i>	Not rhizobia ¹
Arg227	<i>A. robustum</i>	Not rhizobia ¹
Arg237L	<i>A. robustum</i>	Large colony= <i>Bradyrhizobium</i> ²
Arg277	<i>A. robustum</i>	Not rhizobia ¹
Arg123	<i>A. amplexicaule</i> (E.Mey.) Dümmer	<i>Mesorhizobium</i>
Arg133	<i>A. amplexicaule</i>	<i>Mesorhizobium</i>
Arg314	<i>A. cf. rupestre</i> Walp.	<i>Mesorhizobium</i>
Arg324	<i>A. rupestre</i>	<i>Mesorhizobium</i>
Arg334	<i>A. rupestre</i>	<i>Mesorhizobium</i>
Arg344	<i>A. rupestre</i>	<i>Mesorhizobium</i>
Arg627	<i>Argyrolobium</i> <i>harveyanum</i> Oliv	<i>Mesorhizobium</i>
Arg637	<i>A. harveyanum</i> Oliv	<i>Mesorhizobium</i>
Arg647	<i>A. harveyanum</i>	<i>Mesorhizobium</i>
Arg657	<i>A. harveyanum</i>	<i>Mesorhizobium</i>
Arg677	<i>A. harveyanum</i>	<i>Mesorhizobium</i>
Arg816	<i>A. harveyanum</i>	<i>Bradyrhizobium</i>
Arg826	<i>A. harveyanum</i>	<i>Bradyrhizobium</i>
Arg836	<i>A. harveyanum</i>	<i>Bradyrhizobium</i>
Arg846	<i>A. harveyanum</i>	<i>Bradyrhizobium</i>
Arg856	<i>A. harveyanum</i>	<i>Bradyrhizobium</i>
Arg866	<i>A. harveyanum</i>	<i>Bradyrhizobium</i>
Arg123	<i>A. harveyanum</i>	<i>Mesorhizobium</i>
Arg123	<i>A. harveyanum</i>	<i>Mesorhizobium</i>
Arg913	<i>A. amplexicaule</i> (E.Mey.) Dümmer	<i>Mesorhizobium</i>
Arg923	<i>A. amplexicaule</i>	<i>Mesorhizobium</i>
14Arga	<i>A. tuberosum</i> Eckl. & Zeyh.	<i>Mesorhizobium</i>
14Argb	<i>A. tuberosum</i>	<i>Mesorhizobium</i>
31Arga	<i>A. rupestre</i> subsp. <i>rupestre</i>	<i>Bradyrhizobium</i>
31Argb	<i>A. rupestre</i> subsp. <i>rupestre</i>	<i>Bradyrhizobium</i>
43Arga	<i>A. rupestre</i> subsp. <i>rupestre</i>	<i>Mesorhizobium</i>

Isolate	Isolation source	Genus
44Arga	<i>A. rupestre</i> subsp. <i>rupestre</i>	Not rhizobia ¹
44Argb	<i>A. rupestre</i> subsp. <i>rupestre</i>	Not rhizobia ¹
62Arg07b	<i>A. sericeum</i>	<i>Bradyrhizobium</i>
62Arg22a	<i>A. sericeum</i>	<i>Bradyrhizobium</i>
62Arg22b	<i>A. sericeum</i>	<i>Bradyrhizobium</i>
64BArga	<i>A. lunare</i> (L.) Druce subsp. <i>sericeum</i>	Not rhizobia ¹
64BArgb	<i>A. lunare</i> (L.) Druce subsp. <i>sericeum</i>	Not rhizobia ¹
64CArga	<i>A. lunare</i> (L.) Druce subsp. <i>sericeum</i>	Not rhizobia ¹
64CArgb	<i>A. lunare</i> (L.) Druce subsp. <i>sericeum</i>	Not rhizobia ¹
68Arg19a	<i>A. sericeum</i>	<i>Bradyrhizobium</i>
68Arg19b	<i>A. sericeum</i>	<i>Bradyrhizobium</i>
68Arg17b	<i>A. sericeum</i>	<i>Bradyrhizobium</i>
98Argb	<i>A. tuberosum</i> Eckl. & Zeyh.	<i>Mesorhizobium</i>
105Arg19a	<i>A. rupestre</i> (E.Mey.) Walp. subsp. <i>rupestre</i>	<i>Bradyrhizobium</i>
105Arg19b	<i>A. rupestre</i> subsp. <i>rupestre</i>	<i>Bradyrhizobium</i>
105Arg17b	<i>A. rupestre</i> subsp. <i>rupestre</i>	<i>Bradyrhizobium</i>
49DichA	<i>D. reflexus</i> (N.E.Br.) A.L.Schutte	Not rhizobia ¹
59Dicha	<i>D. reflexus</i>	<i>Mesorhizobium</i>
59Dichb	<i>Dichilus reflexus</i> (	<i>Mesorhizobium</i>
128a	<i>M. obcordatum</i>	<i>Mesorhizobium</i>
c	<i>M. canescens</i>	<i>Rhizobium</i>
d	<i>M. canescens</i>	<i>Rhizobium</i> / <i>Mesorhizobium</i>
f	<i>M. canescens</i>	<i>Rhizobium</i> / <i>Mesorhizobium</i>
j	<i>M. canescens</i>	Not rhizobia ¹
BHb	<i>M. canescens</i>	<i>Mesorhizobium</i>
BHbdi	<i>M. canescens</i>	<i>Mesorhizobium</i>
BHbdii	<i>M. canescens</i>	<i>Mesorhizobium</i>
BHsci	<i>M. canescens</i>	<i>Mesorhizobium</i>
BHscii	<i>M. canescens</i>	<i>Mesorhizobium</i>
PL10	<i>Melolobium</i> sp.	<i>Mesorhizobium</i>
Ram4bsc	<i>Melolobium</i> sp.	<i>Mesorhizobium</i>
Ram4asc	<i>Melolobium</i> sp.	<i>Mesorhizobium</i>

*

¹ Strains belong to genera not recognized to contain rhizobia or rhizobial members such as *Enterobacter*, *Bacillus*, and *Luteibacter*.

² *Bradyrhizobium* strains are highlighted in green.

Table 2.5. Phenotypic differences among strains obtained in this study (1-6)² and representative strains (7-11)³

Phenotypic feature	1	2	3	4	5	6	7	8	9	10	11
Gram stain	-	-	-	-	-	-	-	-	-	-	-
Growth rate after	Faster (7 days)	Faster (7 days)	Faster (7 days)	Faster (7 days)	Slow (7-14 days)	Slow (7-14 days)	Fast (3-5 days)		Faster (7 days)	Slow (10 days)	Slow (8 days)
Cell shape	Rod	Rod	Rod	Rod	Rod	Rod	Rod	Rod	Rod	Rod	Rod
Colony morphology	Circular, pulvinate, smooth, cream-opaque, mucoid	Circular, pulvinate, smooth, cream-opaque, mucoid	Circular, pulvinate, smooth, cream-opaque, mucoid	Circular, convex, smooth, opaque-white, slimy, moist	Circular, convex, smooth, opaque-white, slimy, moist	Circular, convex, smooth, opaque-white, slimy, moist	Circular, opaque, rarely translucent, white, convex, slimy, granular texture	White, moist, slightly raised, and smooth	White, moist, slightly raised, and smooth	Pearl white, non-mucoid	Circular, convex, translucent, beige-whitish, and very small
Colony size¹	Medium	Medium	Medium	Medium	Punctiform	Punctiform	Punctiform	nd	Medium	Small	Punctiform
Motility	Motile (flagellar)	Motile (flagellar)	Motile (flagellar)	Motile (flagellar)	Motile (flagellar)	Motile (flagellar)	Motile (polar/subpolar flagellar)		nd	nd	Motile (polar flagellar)
Alkaline reaction	+	+	+	+	+	+	+	+	+	+	+
Catalase test	+	+	+	+	+	+	+	nd	nd	+	nd
Oxidase test	+	+	+	+	+	+	nd	nd	nd	nd	nd
Temperature growth:											
4 °C	-	-	-	-	-	-	-	-	nd	-	-
10 °C	-	-	-	-	-	-	-	nd	nd	-	-
15 °C	-	-	-	-	-	-	-	nd	nd	+	-
20 °C	-	-	-	-	-	-	-	nd	nd	+	-
25 °C	+ ^S	+ ^S	+ ^S	+ ^S	+ ^S	+ ^S	+ ^S	nd	nd	+	-
28 °C	+ ^S	+ ^S	+ ^S	+ ^S	+ ^S	+ ^S	+ ^S	nd	nd	+ ^S	+ ^S
30 °C	+ ^I	+ ^I	+ ^I	+ ^I	+ ^I	+ ^I	+ ^S	+ ^S	nd	+	+ ^S
35 °C	-	-	-	-	-	-	-	nd	+	-	+
37 °C	-	-	-	-	-	-	-	-	-	-	+ ^W
40 °C	-	-	-	-	-	-	-	-	-	-	-
pH tolerance:											
4	+	-	+	+	-	-	+		nd	+	-
5	+	+	+	+	-	-	+		+	+	+
6	+	+	+	+	-	-	+		+	+	+ ^S

Phenotypic feature	1	2	3	4	5	6	7	8	9	10	11
7	+	+	+	+	+	+	+		+	+ ^S	+
8	+	+	+	+	+	+	+		+	+	+
9	+	+	+	+	+	+	+		+	+	+
10	+	+	+	+	+	+	-		+	+	+
NaCl tolerance (% wv):											
0.3	+ ^S	+ ^S	+ ^S	+ ^S	+ ^S	+ ^S	+	+	+	+	+
0.5	+ ^S	+ ^S	+ ^S	+ ^S	+ ^S	+ ^S	+	+	+	+	+
1.0	-	-	-	-	+ ^I	-	+	-	+	-	-
1.5	-	-	-	-	-	-	+	-	-	-	-
2.0	-	-	-	-	-	-	+	-	-	-	-
2.5	-	-	-	-	-	-	-	-	-	-	-
Resistance to antibiotics (µg):											
Ampicillin (25)	+	+	+	+	+	+	nd		nd	+	+
Chloramphenicol (50)	+	+	+	- ^S	+	+	nd		nd	nd	- ^W
Kanamycin (30)	- ^W	- ^S	- ^S	- ^S	- ^S	- ^S	nd		-	- ^W	- ^W
Penicillin (10)	+	+	+	+	+	+	nd		nd	nd	nd
Streptomycin (10)	- ^W	- ^S	- ^W	-	- ^S	- ^S	nd		-	-	- ^W
Tetracycline (30)	+	+	+	+	- ^W	+	nd		-	nd	nd
Erythromycin (30)	- ^S	+	- ^S	- ^S	+	+	nd		+	- ^W	nd
Gentamicin (10)	- ^W	-	- ^W	- ^S	- ^S	- ^S	nd		+	- ^W	nd
Neomycin (10)	- ^W	- ^S	- ^W	- ^W	+	- ^I	nd		nd	nd	nd
Nodulation and nitrogen fixation tests											
Nod	+	+	+	-	-	-			+	+	+
Fix	+	+	+	-	-	-			+	+	+

¹ Colony measured in mm. colony sizes ≥ 4mm interpreted as large, 2<x>3 as medium, 1<x> 2 as small, and <1 as punctiform.

² Strains obtained in this study (1. Arg816; 2. Arg846; 3. Arg866; 4. Arg237L; 5. 31Arga; 6. 31Argb)

³ Representative strains (7. *B. japonicum* USDA6^T (Jordan, 1982); 8. *B. lupini* DSM 30140^T (Peix et al., 2015); 9. *B. paxlaelleri* LMTR21^T (Durán et al., 2014); 10. “*B. valentinum*” LmjM3^T (Duran et al., 2014); and 11. *B. namibiense* 5-10^T (Gronemeyer et al., 2017) (Richter et al., 2016)).

*Results are recorded as +^I (intermediately positive), +^W (weakly positive), +^S (strongly positive), + (positive/resistant), - (negative/ no growth/ sensitive), -^S (strong inhibition/sensitivity), -^W (weakly sensitive), and nd (no data available)

Table 2.6. API 20NE results of *Bradyrhizobium* strains obtained in this study (1-6)¹ and representative strains (7-11)².

Substrate	1	2	3	4	5	6	7	8	9	10	11
Reduction of nitrates to nitrites (NO ₂)	+	+	+	+	-	-	-	+		nd	nd
Reduction of nitrates to nitrogen (N ₂)	+	+	+	+	-	-	-	+		nd	nd
Indole production (L-tryptophane) (TRP)	-	-	-	-	-	-	nd	-		nd	nd
Glucose fermentation (D- glucose) (GLU)	-	-	-	-	-	-	nd	-		+	+
L-arginine DiHydrolase (ADH)	+	-	-	-	-	+	-	-		nd	-
Urease (URE)	+	+	+	+	+	+	w	+	+	nd	nd
Esculin ferric citrate (hydrolysis β-glucosidase) (ESC)	+	+	+	+	+	+	w	-		nd	-
gelatin (bovin origin) (GEL)	-	-	-	-	-	-	nd	-		nd	nd
4-nitrophenyl-βD-galactoyranoside (β-galactosidase) (PNPG)	+	+	+	+	+	+	-	-		nd	-
Assimilation of D-glucose (GLU)	+	+	+	+	+	+	nd	-		w	
Assimilation of L-arabinose (ARA)	+	+	+	+	+	+	+	+	+	+	+
Assimilation of D-mannose (MNE)	-	-	+	+	-		+	-	+	w	-
Assimilation of D-mannitol (MAN)	-	+	+	+	+	+	+	-	+	nd	-
Assimilation of N-acetyl-glucosamine (NAG)	-	-	+	+	+	+	-	-		+	nd
Assimilation of D-maltose (MAL)	+	-	+	+	-	-	-	-		-	nd
Assimilation of potassium gluconate GNT)	+	-	+	-	+	+	-	-		nd	nd
Assimilation of Capric acid (CAP)	+	+	+	-	-	-	-	-		nd	nd
Assimilation of Adipic acid (ADI)	+	+	+	+	+	+	+	-		nd	nd
Assimilation of Malic acid (MLT)	+	+	-	+	-	+	-	-		+	nd
Assimilation of Trisodium citrate (CIT)	+	+	-	+	-	-	w	-		nd	nd
Assimilation of Phenylacetic acid (PAC)	+	-	-	-	-	-	-	-		nd	nd

¹ Strains obtained in this study (1. Arg816; 2. Arg846; 3. Arg866; 4. Arg237L; 5. 31Arga; 6. 31Argb)

² Representative strains (7. *B. japonicum* USDA6^T (Richter et al., 2016); 8. *B. lupini* DSM 30140^T (Cristofolini and Chiapella, 1984); 9. *B. paxlaelleri* LMTR21^T (Cubas et al., 2010); 10. "*B. valentinum*" LmjM3^T (Polhill et al., 2005); and 11. *B. namibiense* 5-10^T (Cubas et al., 2010)).

* Results are recorded as + (positive), - (Negative), w (weakly positive), and nd (no data available).

Table 2.7. Biolog GENIII MicroPlate™ test results of *Bradyrhizobium* strains obtained in this study and closely related strains

Carbon source	This study ¹					Closely related strains ²					
	1	2	3	4	5	6	7	8	9	10	11
Dextrin	-	+ ^W	+ ^W	-	-	+	-	-	nd ³	nd	
D-Maltose	-	+ ^W	+ ^W	-	-	+	-	-	nd	nd	-
D-Trehalose	-	+ ^W	+ ^W	-	-	+	-	-	-	+	-
D-Cellobiose	-	+ ^W	+ ^W	-	-	+	-	-	nd	nd	-
Gentiobiose	-	+ ^W	+ ^W	-	-	+	-	-	nd	nd	
Sucrose	-	+ ^W	-	-	-	+	-	-	-	nd	-
D-Turanose	-	+ ^W	+ ^W	-	-	+	-	-	nd	nd	-
Stachyose	-	+ ^W	+ ^W	-	-	+	-		nd	nd	
pH 6	+ ^W	+	+	+	+ ^W	+	+		nd	nd	nd
pH 5	-	+ ^W	-	-	-	-	+		nd	nd	nd
D-Raffinose	-	+ ^W	-	-	-	+	-	-	nd	nd	-
α-D-Lactose	-	+ ^W	-	-	-	+	-	-	nd	nd	-
D-Melibiose	-	+ ^W	+ ^W	-	-	+	nd		nd	nd	
β-Methyl-D-Glucoside	-	-	-	-	-	+	nd	-	nd	nd	-
D-Salicin	-	-	-	-	-	+	nd		nd	nd	
N-Acetyl-D-Glucosamine	-	+ ^W	+ ^W	-	-	+	nd	-	nd	nd	-
N-Acetyl-β-D-Mannosamine	-	-	-	-	-	+	nd		nd	nd	
N-Acetyl-D-Galactosamine	-	-	-	-	-	+	nd		nd	-	
N-Acetyl Neuraminic Acid	-	-	-	-	-	+	nd		nd	nd	
1% NaCl	+ ^W	+	+	+	+ ^W	+ ^W	+		+	nd	
4% NaCl	-	+ ^W	+ ^W	-	-	nd	nd		nd	nd	
8% NaCl	-	+ ^W	+ ^W	-	-	nd	nd		nd	nd	
α-D-Glucose	+ ^W	+	+ ^W	-	-	+	-		nd	nd	+ ^W
D-Mannose	+ ^W	+	+ ^W	-	-	+	nd		-	+ ^W	-
D-Fructose	-	+	+ ^W	-	-	+	+ ^W		nd	-	
D-Galactose	-	+	+ ^W	+ ^W	-	+	-		nd	nd	+ ^W
3-Methyl Glucose	-	+ ^W	+ ^W	-	-	+	nd		nd	nd	nd
D-Fucose	+ ^W	+	+	+	+	+	nd		+	nd	nd
L-Fucose	+ ^W	+	+	+ ^W	+ ^W	+	+ ^W	+	+	nd	nd
L-Rhamnose	-	+	+ ^W	+ ^W	-	+	-	+	+	nd	-
Inosine	-	-	+ ^W	-	-	+	nd		nd	nd	-
1% Sodium Lactate	-	+	+	+	+ ^W	+	nd		nd	nd	
Fusidic Acid	+ ^W	+	+	+ ^W	+ ^W	+ ^W	+		nd	nd	
D-Serine	+ ^W	+	+	-	+ ^W	-	nd	+	nd	nd	
D-Sorbitol	-	+	+ ^W	-	-	+	nd	+	nd	-	-
D-Mannitol	-	+	+	+ ^W	-	+	nd		+	+	-
D-Arabitol	-	+	+	+ ^W	-	+	nd	+	nd	+	-
myo-Inositol	-	-	-	-	-	+	nd		nd	+	-
Glycerol	-	+	+	-	-	+	nd		+	nd	nd
D-Glucose6-PO4	-	+ ^W	+ ^W	-	-	+	nd		nd	nd	-
D-Fructose6-PO4	+ ^W	+ ^W	+ ^W	-	+ ^W	+	+ ^W		+	nd	nd
D-Aspartic Acid	-	+ ^W	+ ^W	-	-	+	-		+	nd	-
D-Serine	-	+ ^W	+ ^W	-	-	+	+		nd	nd	nd

Carbon source	This study ¹						Closely related strains ²			
Troleandomycin	+ ^W	+	+	+ ^W	+ ^W	+ ^W	nd	nd	nd	nd
Rifamycin SV	+	+	+	+	+ ^W	+	nd	nd	nd	nd
Minocycline	+	+	+	+ ^W	+ ^W	+	nd	nd	nd	nd
Gelatin	-	-	-	-	-	+	nd	nd	nd	nd
Glycyl-L-Proline	-	-	-	-	-	+	nd	-	nd	-
L-Alanine	-	+ ^W	+ ^W	-	-	+	nd	-	nd	+
L-Arginine	-	-	-	-	-	+	nd	nd	nd	nd
L-Aspartic Acid	-	+	+ ^W	-	-	+	-	+	nd	+
L-Glutamic Acid	-	+	+ ^W	-	-	+	nd	+	nd	+
L-Histidine	+ ^W	-	+ ^W	-	-	+	-	nd	nd	-
L-Pyroglutamic Acid	-	+	+	+ ^W	-	+	nd	+	+	-
L-Serine	-	-	+ ^W	-	-	+	nd	nd	nd	-
Lincomycin	+ ^W	+	+	+	+ ^W	+ ^W	nd	-	nd	nd
Guanidine HCl	+ ^W	+ ^W	+ ^W	-	-	-	nd	nd	nd	nd
Niaproof 4	-	+ ^W	+ ^W	+ ^W	-	-	nd	nd	nd	nd
Pectin	-	-	-	-	-	+	nd	nd	nd	nd
D-Galacturonic Acid	+ ^W	+	+ ^W	+ ^W	+ ^W	+	+	+	nd	nd
L-Galactonic Acid Lactone	+ ^W	+	+ ^W	+ ^W	+ ^W	+	nd	nd	nd	nd
D-Gluconic Acid	-	+	+	-	-	+	nd	+	+	+
D-Glucuronic Acid	+ ^W	+	+ ^W	-	-	+	nd	-	+	nd
Glucuronamide	+ ^W	+	+	+	+ ^W	+	nd	+	+	nd
Mucic Acid	+ ^W	+	+	+ ^W	-	+	nd	nd	nd	nd
Quinic Acid	-	+	+	-	-	+	nd	+	+	nd
D-Saccharic Acid	+ ^W	+	+	+	-	+	nd	+	nd	nd
Vancomycin	+ ^W	+	+	+ ^W	+ ^W	+ ^W	nd	nd	nd	nd
Tetrazolium Violet	+	+	+ ^W	+ ^W	+	-	nd	nd	nd	nd
Tetrazolium Blue	+	+	+ ^W	+ ^W	+ ^W	-	nd	nd	nd	nd
p-Hydroxy-Phenylacetic Acid	+	+ ^W	+ ^W	+ ^W	-	+	nd	nd	nd	nd
Methyl Pyruvate	-	+	+ ^W	+ ^W	+ ^W	+	nd	+	nd	+
D-Lactic Acid Methyl Ester	-	+ ^W	+ ^W	-	-	+	nd	+	nd	+
L-Lactic Acid	+ ^W	+	+	+	+ ^W	+	nd	nd	+	+
Citric Acid	-	+	+	-	-	+	+	+	nd	nd
α-Keto-Glutaric Acid	+ ^W	+	+ ^W	+ ^W	+ ^W	+	nd	+	nd	+ ^W
D-Malic Acid	+	+	+	+ ^W	-	+	nd	nd	nd	+
L-Malic Acid	+ ^W	+	+	+ ^W	-	+	nd	nd	nd	+
Bromo-Succinic Acid	-	+	+	+ ^W	-	+	+	-	nd	nd
Nalidixic Acid	+ ^W	+	+	+	+ ^W	+	nd	nd	nd	+
Lithium Chloride	+ ^W	+	+ ^W	-	-	+	nd	nd	nd	+
Potassium Tellurite	+ ^W	+	+	+ ^W	-	+	nd	nd	nd	+
Tween 40	-	+	+ ^W	-	-	+	nd	nd	nd	+
γ-Amino-Butyric Acid	-	-	-	-	-	+	nd	nd	nd	+

Carbon source	This study ¹						Closely related strains ²			
α-Hydroxy-Butyric Acid	-	+	+ ^W	-	+ ^W	+	nd	nd	nd	+
β-Hydroxy-D, L-Butyric Acid	+ ^W	+	+	+	+ ^W	+	nd	+	nd	nd
α-Keto-Butyric Acid	-	+	+	-	-	+	nd	-	nd	nd
Acetoacetic Acid	+	+	+	+ ^W	-	+	nd	+	nd	
Propionic Acid	-	+	+	-	-	+	nd	+	nd	nd
Acetic Acid	+ ^W	+	+	+ ^W	-	+	nd	-	nd	nd
Formic Acid	+	+	+	+	-	+	nd	nd	nd	+
Aztreonam	+ ^W	+	+	+	+ ^W	+	nd	nd	nd	
Sodium Butyrate	+ ^W	+	+	+ ^W	-	+	nd	nd	nd	
Sodium Bromate	-	+	+ ^W	-	-	+	nd	nd	nd	

¹ Strains obtained in this study (1. Arg816; 2. Arg846; 3. Arg866; 4. Arg237L; 5. 31Arga; 6. 31Argb)

² Closely related strains (7. *B. japonicum* USDA6^T; 8. *B. lupini* DSM 30140^T; 9. *B. paxlaelleri* LMTR21^T; 10. "*B. valentinum*" LmjM3^T; and 11. *B. namibiense* 5-10^T)

*Results are recorded as + (positive), - (Negative) and +^W (weakly positive),

³ nd (no data available)

Table 2.8. Summary of genome sequence characteristics of Arg816, Arg237L and their closest relatives.

Genome features	Study strain	Closest relative type strains		Study strain	Closest relative type strains		
	Arg816	<i>B. lupini</i> DSM 30140 ^{T a}	<i>B. japonicum</i> USDA 6 ^T	Arg237L	<i>B. paxllaeri</i> LMTR 21 ^T	" <i>B. valentinum</i> " LmjM3 ^T	<i>B. murdochi</i> WSM 1741 ^T
Reference genome	nd ¹	JACJNR000000000.1	NC_017249.1	nd	ASM169351v2	NZ_LLXX000000000.1	NZ_AXAU000000000.1
Genome coverage	82.48x	157.0x	30x	37. 913x	30x	100x	Unknown
Genome size (Mbp)	9,708,847	9,132,369	9,207,384	18,984,951	8,377,719	8,845,260	7,952,271
GC content	63.2%	65.9%	63.7%	63.2%	62.5%	61.9%	62.1%
Number of contigs	290	68	1	282	Complete Genome	430	70
Total number of genes	nd	nd	8740	nd	7,866	8489	7498
Total number of proteins	nd	8819	8391	nd	7578	7906	7178
tRNAs	nd	nd	56	nd	81	54	50
rRNA	3	nd	6	nd	3	3	3
N50 (bp)	344,770	nd	9,207,384	195,966	8,377,719	41,989	244,068
Chromosomes	1	nd	1	1	1	nd	nd
Plasmids	- ²	nd	1	-	nd	nd	nd

¹ nd: no data provided

² -: absent

2.6 Figures

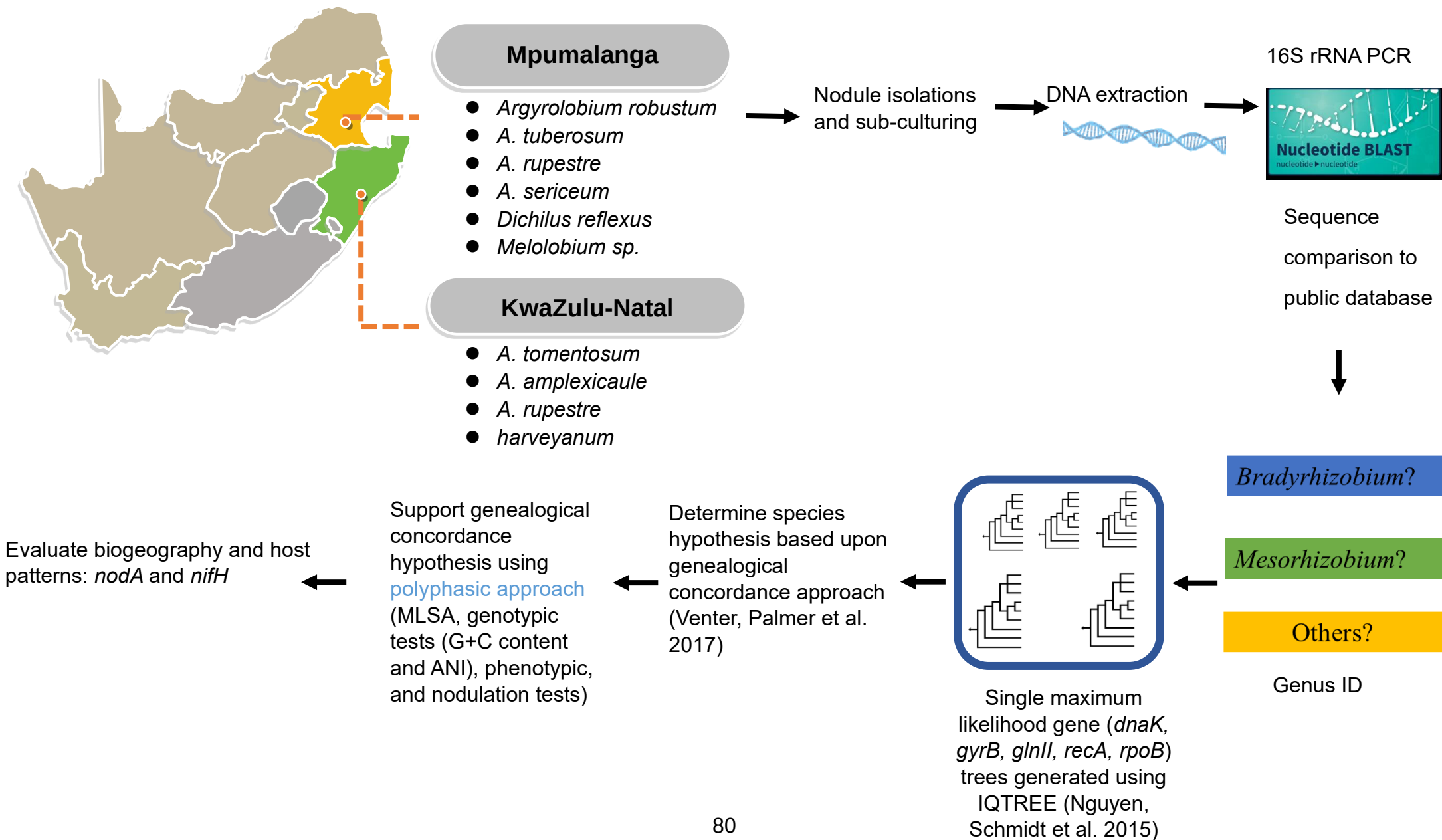


Figure 2.1. Schematic diagram illustrating the experimental flow of this study, which investigated 77 putative rhizobial isolates sampled from two provinces in South Africa, obtained from the root nodules of nine Genisteae species across their native range.

ANlb query genomes	Arg816	<i>B. japonicum</i> USDA 6 ^T	<i>B. lupini</i> DSM 30140 ^T	<i>B. betae</i> PL7HG1 ^T	<i>B. cytisi</i> CTAW11 ^T	<i>B. cosmicum</i> 58S1 ^T	<i>B. canariense</i> BTA-1 ^T	<i>B. rifense</i> CTAW71 ^T	<i>B. hipponense</i> aSej3 ^T	<i>B. guangzhouense</i> CCBAU 51670 ^T
Arg816	100	93.09	93.1	86.82	85.42	86.58	86	85.78	85.04	84.55
<i>B. japonicum</i> USDA 6 ^T	93.35	100	99.99	87.1	85.72	86.97	86.17	85.97	85.2	84.69
<i>B. lupini</i> DSM 30140 ^T	93.35	99.99	100	87.2	85.66	87.02	86.2	85.99	85.28	84.73
<i>B. betae</i> PL7HG1 ^T	87.86	88.05	88.05	100	86.26	93.04	86.72	86.34	85.55	85.08
<i>B. cytisi</i> CTAW11 ^T	85.84	85.72	85.76	85.58	100	85.5	85.5	90.31	85.71	86.12
<i>B. cosmicum</i> 58S1 ^T	87.63	87.78	87.78	92.89	86.03	100	86.57	86.06	85.54	84.94
<i>B. canariense</i> BTA-1 ^T	86.47	86.39	86.42	86.01	85.52	86.03	100	85.32	85.7	84.03
<i>B. rifense</i> CTAW71 ^T	85.4	85.42	85.42	85.02	89.49	84.8	84.62	100	84.68	85.86
<i>B. hipponense</i> aSej3 ^T	85.28	85.39	85.41	85.04	85.63	85.2	85.75	85.26	100	83.57
<i>B. guangzhouense</i> CCBAU 51670 ^T	85.16	85.26	85.27	84.78	86.48	84.81	84.27	86.82	83.78	100

Figure 2.2. A heatmap illustrating ANI values (%) based on genome comparisons between Arg816 proposed type strain and the closest relatives based on the MLSA phylogeny. ANI values were calculated using the ANlb option in JSpeciesWS (Gronemeyer and Reinhold-Hurek, 2018, Crews and Peoples, 2004). The genome accession numbers for the closest relatives were NC_017249, JACJNR01000000, NZ_CP044543, VSSR01000000, NZ_CP041656, NZ_VSST01000001, VSSS01000001, VSTH01000001, and NZ_CP030053 for the type strains *B. japonicum* USDA 6^T, *B. lupini* DSM 30140^T, *B. betae* PL7HG1^T, *B. cytisi* CTAW11^T, *B. cosmicum* 58S1^T, *canariense* BTA 1^T, *B. rifense* CTAW71^T, *hipponense* aSej3^T, and *B. guangzhouense* CCBAU 51670^T, respectively.

ANib query genomes	Arg237L	<i>B. paxllaeri</i> LMTR 21 ^T	<i>B. archetypum</i> WSM 1744 ^T	<i>B. lablabi</i> CCBAU 23086 ^T	<i>B. australiense</i> WSM 1791 ^T	<i>B. jicamiae</i> PAC68 ^T	<i>B. murdochi</i> WSM 1741 ^T	<i>B. algeriense</i> RST89 ^T	<i>B. icense</i> LMTR 13 ^T	<i>B. retamae</i> Ro19 ^T	<i>B. valentinum</i> LmjM3 ^T
Arg237L	100	78	77.74	78.22	77.75	78	77.78	77.89	77.77	77.66	77.76
<i>B. paxllaeri</i> LMTR 21 ^T	78.67	100	85.99	91.78	86.16	91.8	86.18	86.18	86.55	85.97	86.03
<i>B. archetypum</i> WSM 1744 ^T	78.58	86.49	100	86.71	87.48	85.99	87.36	86.29	86.97	86.87	86.53
<i>B. lablabi</i> CCBAU 23086 ^T	78.55	91.53	85.85	100	86.07	90.45	86.04	86.04	86.24	85.98	85.96
<i>B. australiense</i> WSM 1791 ^T	78.43	86.48	87.22	86.68	100	85.9	88.94	86.58	88.96	88.88	86.47
<i>B. jicamiae</i> PAC68 ^T	78.4	91.42	85.19	90.33	85.35	100	85.32	85.57	85.76	85.5	85.53
<i>B. murdochi</i> WSM 1741 ^T	78.39	86.52	87.09	86.53	88.85	85.66	100	86.47	90.03	92.19	86.96
<i>B. algeriense</i> RST89 ^T	78.34	85.95	85.59	86.15	86.15	85.63	86.02	100	86.48	87	88.81
<i>B. icense</i> LMTR 13 ^T	78.22	86.38	86.42	86.28	88.52	85.92	89.63	86.44	100	89.86	86.86
<i>B. retamae</i> Ro19 ^T	78.21	86.01	86.27	86.16	88.4	85.63	91.73	87.22	89.93	100	87.66
<i>B. valentinum</i> LmjM3 ^T	78.15	85.81	85.67	85.96	85.97	85.49	86.37	88.64	86.69	87.37	100

Figure 2.3. A heatmap illustrating ANib values (%) based on genome comparisons between the Arg237L proposed type strain and its closest relatives based on the MLSA phylogeny. ANI values were calculated using the ANib option in JSpeciesWS (Van Wyk, 2003). Accession numbers for the closest relatives were CP042968.1, JAAVLW010000001.1, LLYB01000000.1, JAAVLX010000001.1, LLYB01000000.1, AXAU01000001.1, PYCN01000099.1, CP016428.1, LLYA01000001.1, and LLXX01000001.1 for the type strains *B. paxllaeri* LMTR 21^T, *B. archetypum* WSM 1744^T, *B. lablabi* CCBAU 23086^T, *B. australiense* WSM 1791^T, *B. jicamiae* PAC68^T, *B. murdochi* WSM 1741^T, *B. algeriense* RST89^T, *B. icense* LMTR 13^T, *B. retamae* Ro19^T, and “*B. valentinum*” LmjM3^T, respectively.

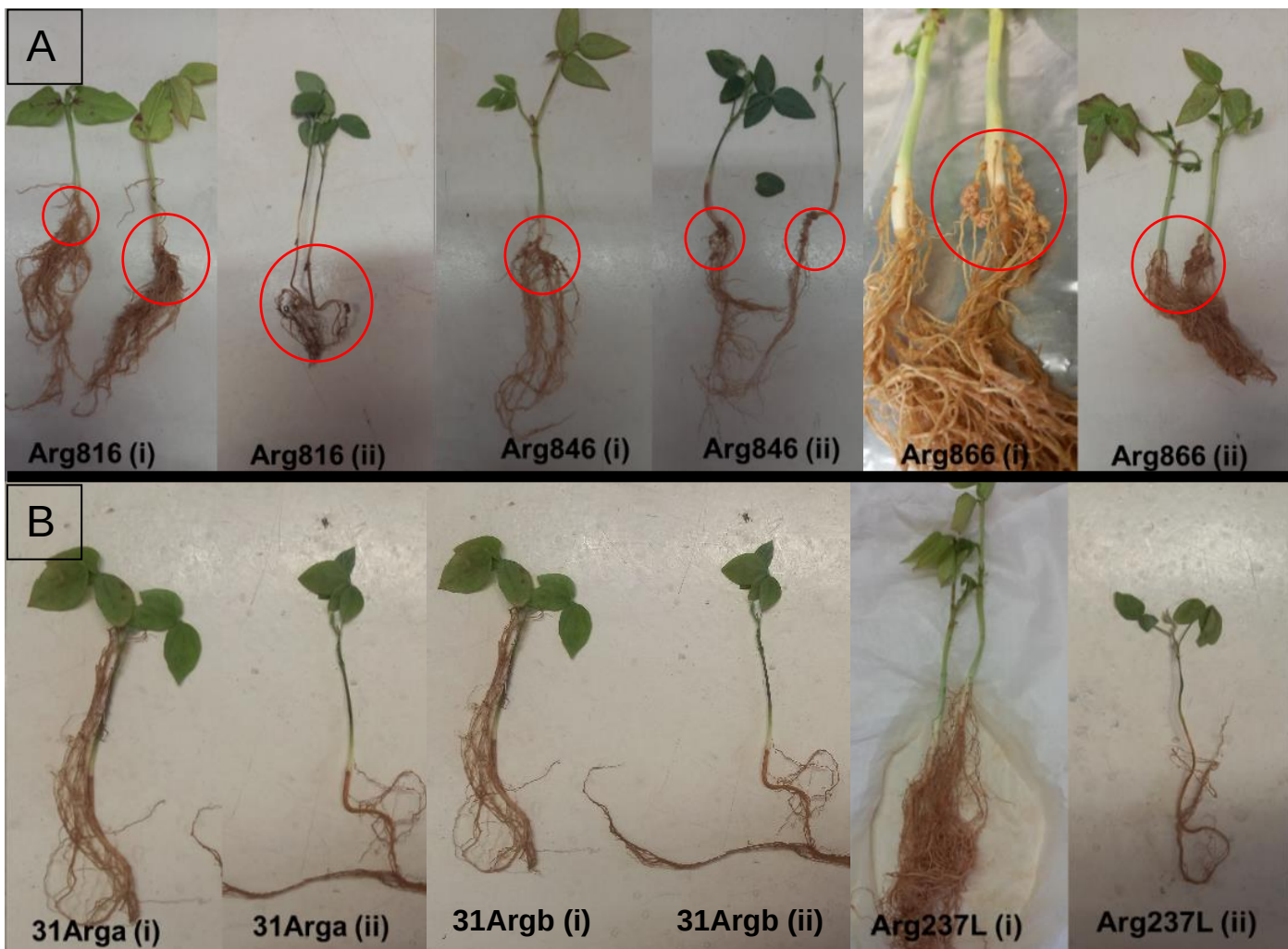


Figure 2.4. Glasshouse nodulation experiments conducted with the hosts (i) Cowpea and (ii) Siratro. Two seeds were planted per pot and tests were done in duplicate. Lineage I strains (A) and Lineage II isolates (B). Nodules were only observed for strains Arg816, Arg846, and Arg866 (circled in red), with hosts inoculated with isolate Arg866 showing a higher number of nodules followed by Arg846. Nodule morphology was spherical with pink interiors.

dnaK

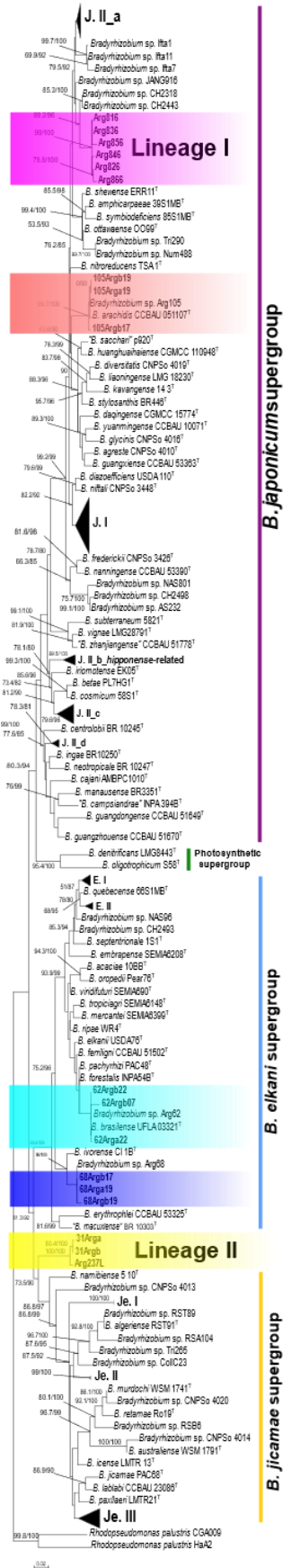


Figure 2.5. A maximum likelihood phylogeny of the *dnaK* dataset for *Bradyrhizobium*. Branches are assigned with SH-aLRT and UFBoot support (in that order), respectively. *Rhodopseudomonas palustris* (strains: HaA2, CGA009, BisB5) was used for outgroup purposes. *Rhodopseudomonas palustris* (strains: HaA2, CGA009, BisB5) was used for outgroup purposes. The scale bar represents 2% substitutions per site. Established *Bradyrhizobium* supergroups are indicated while strains from this study are in bold and highlighted in the colours pink (Lineage I), red, blue, and yellow (Lineage II). Names indicated with the inverted commas are species which do not yet have validated names. For all the species the type strain number is listed after the name. Sequence accession numbers obtained from the GenBank (National Centre for Biotechnology Information (NCBI); <http://www.ncbi.nlm.nih.gov/>; Benson et al., 2004) are shown in Supplementary Table S2.2. For easier display, nine clades were collapsed and included the following bradyrhizobia associated Genisteeae strains and *Bradyrhizobium* type strains (in bold): **(1) J. II (*B. japonicum* subgroup II)_a:** *Bradyrhizobium japonicum* Bga1-, Tri400, zs14, la2, csr64, csds18, cspf19, zs7, csnc4, zar1, Fer5, *B. japonicum* UBMA197, LppB2, JUKR51, WM9, JAN16, CH2510, FN1, FN13, ***B. japonicum* USDA6^T**, ***B. lupini* DSM 30140^T**, *Bradyrhizobium* spp. Jan10, la1a, JANG926, H31, csck18, RLA08, cir2, cyt17, csr63, H32, CH2506, C4, CH2310, and Lcamp1. **(2) J. I (*B. japonicum* subgroup I):** *Bradyrhizobium* spp. csjp11, ll1, ll4, ll1, Tri420, Tri442, Tri432, lsds6, lua6, lua6, lua12, lua12, CH2437, WSM1417, Tri137, Tri304, Tri327, and Tri301, ***B. canariense* BTA 1^T**, *Bradyrhizobium* spp. BLUH1, csma2, MCLA07, Fer113, Tri157, Num487, Fer24, Tri448, Tri418, Num382, Tri138, Num410, *Bradyrhizobium canariense* Bcp5, Tri208, leu3, lss7, leu19, leu5, leu18, leu16, leu1, leu14, lss3, lss8, BLUT1, UBMA052, UBMA060, UBMA050, UBMA061, UBMA051, UBMA183, UBMAN05, UBMA192, UBMA122, UBMA182, UBMA181, UBMA195, UBMA171, and UBMA510. **(3) J. II (*B. japonicum* subgroup II)_c *B. hipponense*-related:** Tri451, Num381, Num380, Num362, Num392, Num393, Num377, Num383, Num384, ***B. hipponense* aSej3^T**. **(4) J. II_c:** *Bradyrhizobium* spp. U29, cs4c2a, R46306, cswp47, Lcamp8, C11, Lcamp6, H33, cs1t11, csc2, cstc20, R46277, csem17, *Bradyrhizobium cytisi* CTAW38, and CTAW11. **(5) J. II_d:** *Bradyrhizobium* spp. gtl2, gtl9, gtl8, gtl7, gtl6a, Lpsp34, Lpsp1, and 1S20. **(6) E. I (*B. elkanii* subgroup I):** *Bradyrhizobium* spp. H11, AlisF2, CollC20, ABruD10, CollC19, ValeG5, csc5, cspf11, csds5, and csmx9, ***B. quebecense* 66S1MB^T**, ***B. altum* Pear77^T**. **(7) E. II (*B. elkanii* subgroup I):** *Bradyrhizobium* spp. csma27, cs1t5, csri27, ABruD12, TaBeB8, RiojA8, and CastH25. **(8) Je. I (*B. jicamae* subgroup I):** *Bradyrhizobium* spp. Fer10p, Fer96p, and Fer98, Fer96g, ***B. valentinum* LmjM3^T**. **(9) Je. II *B. jicamae* subgroup II):** *Bradyrhizobium* spp. Fer37, sjz1, Fer125, and Fer402. **(8) Je. III (*B. jicamae* subgroup III):** *Bradyrhizobium* spp. Fer59, Fer109, Fer403, Fer71, lavp2, sjz3, sjz6, gdr5, Num399, Fer38, Fer83, Num404, gdr4, llw1, lamp9a, lamp5, lamp8, lamp2, and lamp10.

glnII

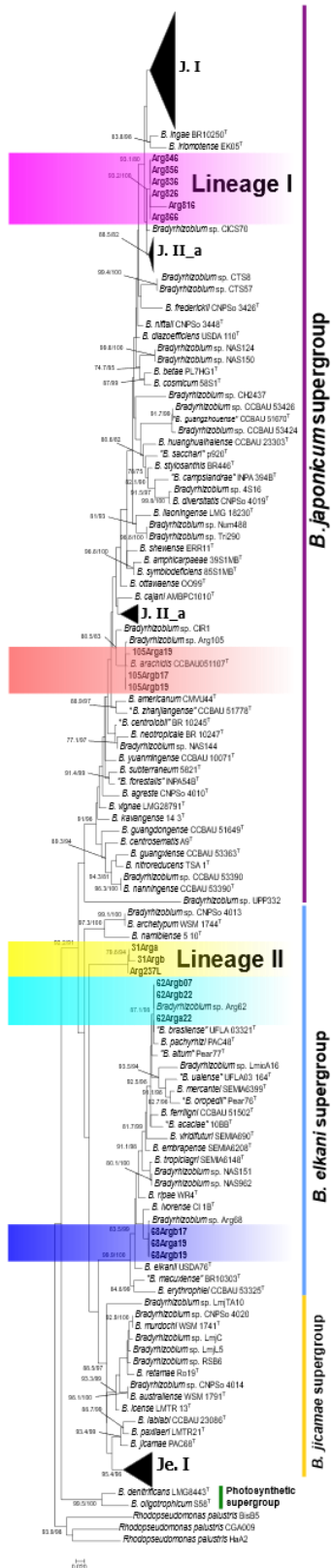


Figure 2.6. A maximum likelihood phylogeny of the *glnII* dataset for *Bradyrhizobium*. Branches are assigned with SH-aLRT and UFBoot support (in that order), respectively. *Rhodopseudomonas palustris* (strains: HaA2, CGA009, and BisB5) was used for outgroup purposes. The scale bar represents 5% substitutions per site. *Rhodopseudomonas palustris* (strains: HaA2, CGA009, BisB5) was used for outgroup purposes. The scale bar represents 2% substitutions per site. Established *Bradyrhizobium* supergroups are indicated while strains from this study are in bold and highlighted in the colours pink (Lineage I), red, blue, and yellow (Lineage II). Names indicated with the inverted commas are species which do not yet have validated names. For all the species the type strain number is listed after the name. Sequence accession numbers obtained from the GenBank (National Centre for Biotechnology Information (NCBI); <http://www.ncbi.nlm.nih.gov/>; Benson et al., 2004) are shown in Supplementary Table S2.2. For easier display, four clades were collapsed and included the following bradyrhizobia associated Genisteeae strains and *Bradyrhizobium* type strains (in bold): **(1) J. I (*B. japonicum* subgroup I):** *Bradyrhizobium* spp. LmicT8, Tri448, Num487, Fer24, CTO44, CTO29, CTO55, LmicT10, LmicT13, LmicT5, Tri157, LmicT28, LmicAM6, LmicAM6, Tri418, LmicT26, LmicT16, Tri138, LmicAM3, Num410, LmicF65, BCMAM8, *Bradyrhizobium canariense* BCP22, BES1, BCMAM11, LmicF61, BES2, BCP5, BCMAM9, BCMAM3, MCLA07, *Bradyrhizobium* spp. Tri208, 3S16, WSM1417, LmicZ10, LmicISLU122, LmicAL27, BLUH1, Tri327, ***B. canariense* BTA1^T**, *Bradyrhizobium* spp. ISLU21, LmicAL42, LmicAL32, CTO11, LmicT14, Tri137, Tri301, LmicZ4, Tri304, LmicISLU13, and ISLU101, *Bradyrhizobium canariense* UPP213, ISLU12, BRE4, ***B. lupini* USDA3051^T**, *Bradyrhizobium canariense* BCC2, UBMA195, UBMA192, UBMA183, UBMAN05, UBMA181, UPP243, UPP201, UPP243, UPP242, UPP241, BCMAM1, UBMA052, SEMIA928, BCMAM6, UBMA182, BCMAM5, UBMA171, UBMA510, UBMA051, BCMAM2, *Bradyrhizobium* spp. LmicF63, LmicAL38, BLUT1, Tri442, Tri420, Tri432, LmicT27 BCC1, CH2509, ICMP 14533, and WSM2154, ***B. ganzhouense* RITF806^T**, FTA6, ***B. rifense* CTAW71^T**, ***B. cytisi* CTAW11^T**, *Bradyrhizobium cytisi* CTAW38 and CTAW22, *Bradyrhizobium* spp. LmicAL52, UPP233, LmicM10, 1S20, LmicAL54, LmicM20, LmicIA1, LmicIA7, LmicT3, Num381, Num380, Tri451, ISLU9, LmicAM4, ***B. hipponense* aSej3^T**, *Bradyrhizobium* spp. LmicT2, Num362, Num377, Num383, Num393, Num384, LmicIA4, and Num392. **(2) J. II (*B. japonicum* subgroup II) _a:** *Bradyrhizobium* spp. CICS70, CTO13, CTO33, CTO24, LmicZ3, CH2443, CH2510, C8, *Bradyrhizobium japonicum* BCP14, UPP323, UPP343, UPP345, UPP348, UPP344, UPP333, BLupMR1, UPP113, UPP331, UPP342, UPP312, UPP346, UPP133, and FN1, ***B. japonicum* USDA6^T**, *Bradyrhizobium japonicum* FN13, CTO41, CTS21, CTS24, CTS12, Jan10, BGA1, *Bradyrhizobium* spp. Tri400, Fer5, ICMP 14291, CTO21, and CTO1. **(3) J. II _b:** *Bradyrhizobium* spp. BCP6, BRE1, BCMK6, BCMK1, AS2, AS21, AS65, AS61, AS15, AS232, AS55, AS68, AS60, NAS74, NAS81, AS38, AS48, CH2498, AS44, AS53, and NAS80. **(4) Je. I (*B. jicamiae* subgroup I):** *Bradyrhizobium* spp. LmjA2, LmjB2B, LmjD2b, LmjL7, LmjTA6, LmjD32, Tri265, Fer96g, Fer96p, Fer10p, Fer98, LmjX7, LmjX10, LmjM10, LmjG2, LmjG3, LmjH2p, Num399, Num399, Fer83, Num404, LmjL9, RST89, Fer125, Fer402, Fer37, Fer71, Fer109, Fer59, and Fer403, *Bradyrhizobium valentinum* LmjM2, LmjM1, and LmjM6, *Bradyrhizobium algeriense* RST91, ***B. valentinum* LmjM3^T**.

gyrB

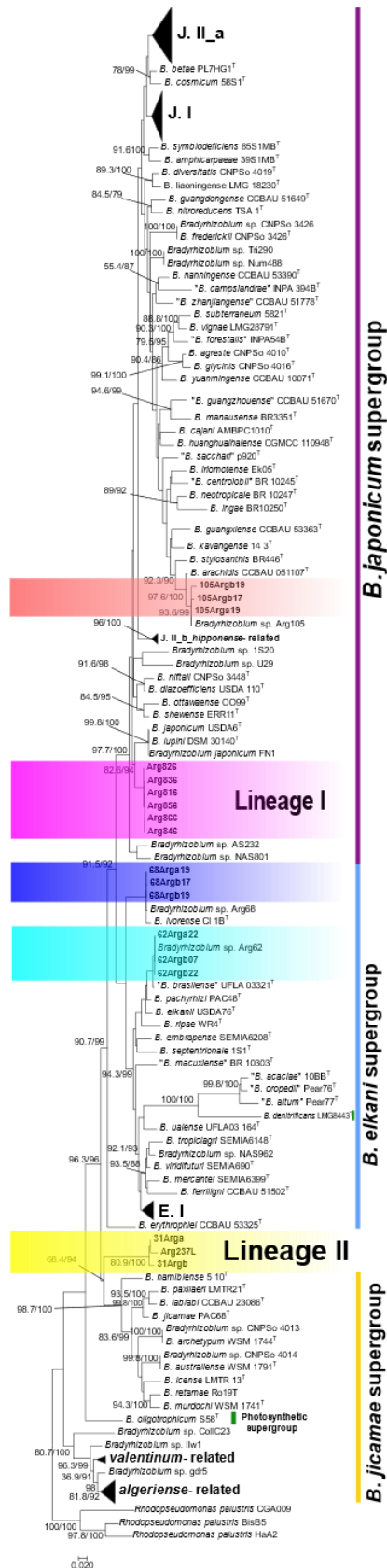


Figure 2.7. A maximum likelihood phylogeny of the *gyrB* dataset for *Bradyrhizobium*. Branches are assigned with SH-aLRT and UFBoot support (in that order), respectively. Only UFBoot support of $\geq 95\%$ are indicated. *Rhodopseudomonas palustris* (strains: HaA2, CGA009, BisB5) was used for outgroup purposes. The scale bar represents 2% substitutions per site. Established *Bradyrhizobium* supergroups are indicated while strains from this study are in bold and highlighted in the colors pink (Lineage I), red, blue, and yellow (Lineage II). Names indicated with the inverted commas are species which do not yet have validated names. For all the species the type strain number is listed after the name. Sequence accession numbers obtained from the GenBank (National Centre for Biotechnology Information (NCBI); <http://www.ncbi.nlm.nih.gov/>; Benson et al., 2004) are shown in Supplementary Table S2.2. For easier display, eight clades were collapsed and included the following bradyrhizobia associated Genistee strains and *Bradyrhizobium* type strains (in bold): **(1) J. II (*B. japonicum* subgroup II) _a:** *B. japonicum* bga1, la2b, *B. japonicum* UBMA197, *Bradyrhizobium* spp. zar1, csds18, Tri400, zs7, zs14, cspf19, csr64, csnc4, Fer5, Lppb2, RLA09, RLA10, Jan10, cir2, RLA08, RLA11, csck18, H32, cyt17, laa, csr63, H31, gtl2, gtl7, gtl8, gtl9, gtl6a, lfta7, lfta11, lfta1, cswp47, cs4c2a, R46306, cs1t11, cstc20, C11, H33, csc2, R46277, csem17, H16, lua12, lua6, lsds6, Tri432, Tri442, ***B. cytisi* CTAW11^T**, ***B. rifense* CTAW71^T**, ***B. betae* PL7HG1^T**, ***B. cosmicum* 58S1^T**; **(2) J. I (*B. japonicum* subgroup I):** *Bradyrhizobium* spp. WSM1417, Il1, Il4, csjp11, Tri137P, MCLA22, csma2b, MCLA07, Tri327, Tri301, Tri304, Tri138, Num410, Tri208, Tri418, Fer113, Tri157, Num382, Tri448, Fer24, Num487, *B. canariense* bcp5, *B. canariense* UBMA171, *B. canariense* UBMA182, *B. canariense* UBMA192, *B. canariense* UBMA195, *B. canariense* UBMA122, *B. canariense* UBMA510, *B. canariense* BCC2, *B. canariense* UBMAN05, *B. canariense* UBMA052, *B. canariense* UBMA050, *B. canariense* UBMA061, *B. canariense* UBMA060, *B. canariense* UBMA051, MCLA12, lss3, lss8, leu1, MCLA23, leu14, leu16, lss7, leu19, leu5, leu3, leu18; **(3) J. II_b_hipponense-related:** *Bradyrhizobium* spp. Num362, Num393, Num392, Num380, Num381, ***B. hipponense* aSej3^T**, *Bradyrhizobium* spp. Tri451, Num383, Num377, Num384; **(4) E. I (*B. elkanii* subgroup I):** CastH25, RiojA8, AbruD12, TabeB8; **(5) E. II (*B. elkanii* subgroup II):** csma27, cs1t5, csri27, csc2, csds5, csmx9, cspf11, ***B. quebecense* 66S1MB^T**, *Bradyrhizobium* spp. ValeG5, CollC20, AbruD10, CollC19, H11, AlisF2; **(7) *Valentinum*- related:** ***B. valentinum* LmjM3^T**, *B. valentinum* LmjM6, *Bradyrhizobium* spp. Fer96p, Fer10p, Fer98, Fer96g, Tri265; and **(8) *algeriense*- related:** *Bradyrhizobium* spp. lamp2, lamp10b, lamp9a, lamp8, lamp5, Fer38, Num399, Num404, Fer83, gdr4, lavp2b, Fer125, Fer402, sjz1b, Fer37, sjz3b, sjz6b, Fer71, Fer403, Fer59, Fer109, ***B. algeriense* RST91^T**.

recA

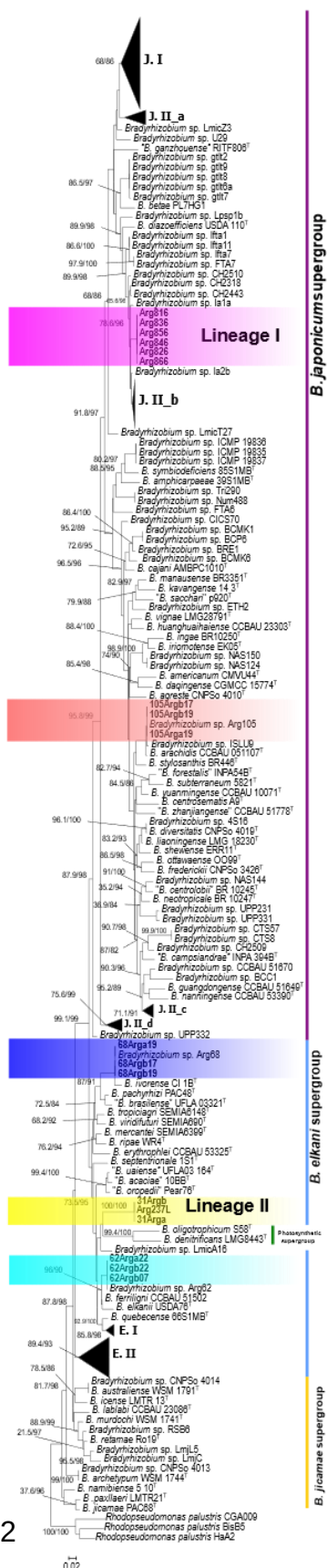


Figure 2.8. A maximum likelihood phylogeny of the *recA* dataset for *Bradyrhizobium*. Branches are assigned with SH-aLRT and UFBoot support (in that order), respectively. *Rhodopseudomonas palustris* (strains: HaA2, CGA009, and BisB5) was used for outgroup purposes. *Rhodopseudomonas palustris* (strains: HaA2, CGA009, BisB5) was used for outgroup purposes. The scale bar represents 2% substitutions per site. Established *Bradyrhizobium* supergroups are indicated while strains from this study are in bold and highlighted in the colors pink (Lineage I), red, blue, and yellow (Lineage II). Names indicated with the inverted commas are species which do not yet have validated names. For all the species the type strain number is listed after the name. Sequence accession numbers obtained from the GenBank (National Centre for Biotechnology Information (NCBI); <http://www.ncbi.nlm.nih.gov/>; Benson et al., 2004) are shown in Supplementary Table S2.2. For easier display, eight clades were collapsed and included the following bradyrhizobia associated Genistee strains and *Bradyrhizobium* type strains (in bold): **(1) J. I (*B. japonicum* subgroup I):** *B. canariense* UBMA171, *B. canariense* UBMA061, *B. canariense* UBMA181, *B. canariense* UBMA510, *B. canariense* UBMAN05, *B. canariense* UBMA050, *B. canariense* UBMA195, *B. canariense* UBMA122, *B. canariense* UBMA182, *B. canariense* UBMA052, *B. canariense* UBMA060, *B. canariense* UBMA192, *B. canariense* UBMA051, *B. canariense* UBMA183, WSM2154, A13, W72, *B. canariense* SEMIA928, MCLA12, LmicISLU13, Iss3, Iss8, *B. lupini* USDA3051, *B. canariense* BCMAM5, LmicM12, *B. canariense* BCC2, *B. canariense* BCMAM2, *B. canariense* BCMAM6, ISLU12, ISLU13, *B. canariense* UPP213, *B. canariense* R4572, *B. canariense* UPP201, *B. canariense* UPP212, VK7, *B. canariense* UPP243, *B. canariense* UPP241, *B. canariense* UPP242, *B. canariense* BCMAM1, LupCI, Iss7, LmicAL38, LmicF63, ISLU101, MCLA23, leu14, leu1, leu5, leu18, leu19, leu3, leu16, LmicISLU122, Tri327, Tri301, Tri304, LmicT14, LmicZ4, LmicF61, BLUH1, LmicAL42, LmicZ10, LmicF65, *B. canariense* BCMAM9, *B. canariense* BCP22, Tri138, Num382, LmicT10, WSM1417, WU140, *B. canariense* BCMAM8, Tri432, Tri420, Tri442, WSM2152, *B. canariense* BES1, MCLA22, LmicAL32, Tri137, CTO11, *B. canariense* BCMAM11, *B. canariense* BES2, *B. canariense* BTA 1, *B. canariense* BCP5, MCLA07, LmicAL27, LmicAL48, Fer24, Num487, Tri448, CTO29, LmicT16, CTO55, CTO44, LmicAM3, LmicT13, LmicT5, Tri208, LmicT8, LmicT26, LmicT18, Fer113, Tri157, LmicT28, LmicAM6, Tri418, Num410, CH2437, Il1, Il4, lua6, lua12, lsd6; **(2) J. II (*B. japonicum* subgroup II) _a:** CTO13, CTO13, CTO13, CTO13, CTO33, *B. japonicum* BCP14, Lcamp1, *B. japonicum* FN, ***B. japonicum* USDA6^T**, ***B. lupini* DSM 30140^T**, CH2310, CH2310, RLA11, RLA10, Jan10, CTS21, CTO41, zs14, *B. japonicum* UPP113, *B. japonicum* UPP351, *B. japonicum* UPP347, *B. japonicum* UPP348, *B. japonicum* UPP361, *B. japonicum* UPP344, *B. japonicum* UPP323, *B. japonicum* UPP345, *B. japonicum* UPP133, *B. japonicum* UPP342, *B. japonicum* UPP343, *B. japonicum* BLupMR1, CTS12, CTS24, ICMP 19832, ICMP 19831, *B. japonicum* UPP312, cyt17, ICMP 14291, *B. japonicum* UPP333, *B. japonicum* UPP162, *B. japonicum* UPP253, zs7, H32, Lppb2, Fer5, Tri400, *B. japonicum* UBMA197, zar1, *B. japonicum* BGA1, *B. japonicum* R4554532, CTS7, CTO21, ICMP 19828, CTO1, ICMP 19842, ICMP 19839,

ICMP 19829, ICMP 19840; **(3) J. II_b**: UPP233, LmicM20, LmicAL52. LmicM10, 1S20, LmicAL54, ***B. rifense* CTAW71^T**, *B. cytisi* CTAW22, H16, *B. cytisi* CTAW38, ***B. cytisi* CTAW11^T**, R46277, C11, Lcamp8, H33, R46306, ICMP 14533; **(4) J. II_c**: AS65, AS21, AS61, AS2, AS232, AS15, CH2498, NAS81, AS48, AS38, NAS74, AS58, AS60, AS55, AS53, NAS801, AS44; **(5) J. II_d**: 4S16, ***B. liaoningense* LMG 18230^T**, ***B. diversitatis* CNPSo 4019^T**, ***B. shewense* ERR11^T**, ***B. ottawaense* OO99^T**, ***B. frederickii* CNPSo 3426^T**, ***“B. forestalis”* INPA54B^T**, ***B. subterraneum* 5821^T**, ***B. yuanmingense* CCBAU 10071^T**, ***B. americanum* CMVU44^T**, ***B. daqingense* CGMCC 15774^T**, ***B. huanghuaihaiense* CCBAU 23303^T**, ***B. agreste* CN PSo 4010^T**, BCMK1, BCP6, BCP6, BCMK6, CICS70, ***B. cajani* AMBPC1010^T**, ETH2, ***B. vignae* LMG28791^T**, ***B. manausense* BR3351^T**, ***B. kavangense* 14 3^T**, ***B. sacchari* p920^T**, FTA6, ***B. ganzhouense* RITF806^T**, Tri290, Num488, ***B. amphicarpaceae* 39S1MB^T**, ***B. symbiodeficiens* 85S1MB^T**, ICMP 19837, ICMP 19836, ICMP 19835; **(6) J. II_e_hipponense-related**: Num362, Num393, Num392, ***B. hipponense* aSej3^T**, LmicAM4, Tri451, Num381, Num380, LmicIA1, LmicT2, LmicIA7, LmicIA4, LmicT3, Num377, Num383, Num384; **(7) E. I**: CH2493, AbruD12, TabeB8, RiojA8, CastH25, NAS962, NAS151, ***B. embrapense* SEMIA6208^T**, ValeG5, AlisF2, AbruD10, CollC20, H11, CollC19; and **(8) E. II**: Fer10p, Fer98, Fer96p, Fer96g, *B. valentinum* LmjM2, LmjM1, *B. valentinum* LmjM6, ***“B. valentinum”* LmjM3^T**, LmjA2, LmjTA6, Tri265, RSA104, LmjTA10, LmjB2b, LmjL7, LmjD2b, LmjD32, LmjG2, LmjG3, LmjH2p, LmjM10, LmjX7, LmjX10, Fer38, Fer83, Num399, LmjL9, gdr5, Num404, RST89, ***B. algeriense* RST91^T**, lamp2, lamp10b, lamp9a, lamp8, lamp5, llw1, CollC23, gdr4, Fer37, sjz1b, Fer125, Fer402.

rpoB

95

0.01

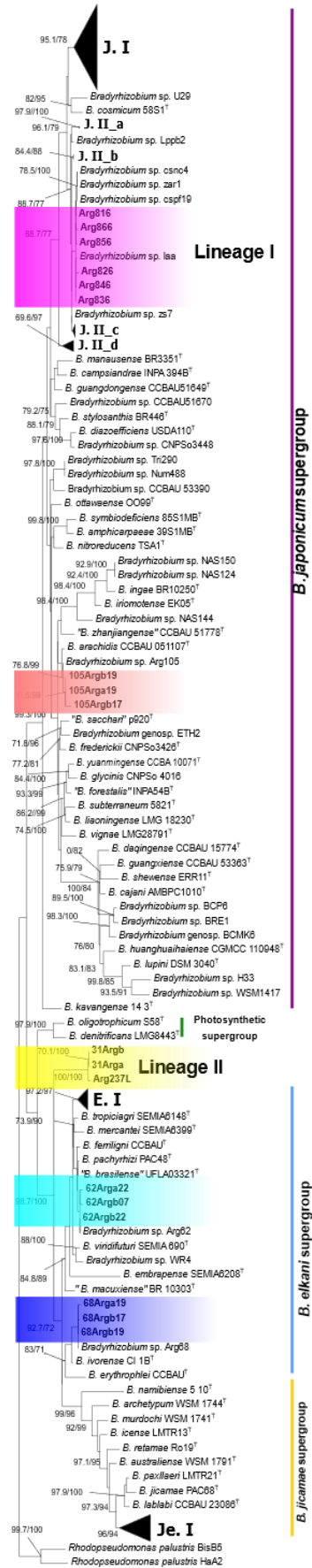


Figure 2.9. A maximum likelihood phylogeny of the *rpoB* dataset for *Bradyrhizobium*. Branches are assigned with SH-aLRT and UFBoot support (in that order), respectively. *Rhodopseudomonas palustris* (strains: HaA2, CGA009, BisB5) was used for outgroup purposes. The scale bar represents 2% substitutions per site. Established *Bradyrhizobium* supergroups are indicated while strains from this study are in bold and highlighted in the colors pink (Lineage I), red, blue, and yellow (Lineage II). Names indicated with the inverted commas are species which do not yet have validated names. For all the species the type strain number is listed after the name. Sequence accession numbers obtained from the GenBank (National Centre for Biotechnology Information (NCBI); <http://www.ncbi.nlm.nih.gov/>; Benson et al., 2004) are shown in Supplementary Table S2.2. For easier display, eleven clades were collapsed and included the following bradyrhizobia associated Genisteeae strains and *Bradyrhizobium* type strains (in bold): **(1) J. I (*B. japonicum* subgroup I):** *Bradyrhizobium canariense* UBMA171, UBMA195, UBMA181, UBMA182, UBMA192, UBMA183, UBMA122, UBMA051, UBMA061, UBMA060, UBMA052, UBMA050, BRE4, BCMAM5, BCMAM2, UBMA510, UBMAN05, BCMAM1 BCC2, BCMAM6, BES2, BES1, BCMAM11, BCP22, and BCMAM9, *Bradyrhizobium* sp. leu1, lss7, leu5, leu3, leu19, leu18, leu14, leu16, MCLA23, MCLA12, lss3, lss8, Fer24, Num487, Num382, Num410, Tri448, Tri138, Fer113, Tri157, Tri418, Tri208, Tri137, Tri327, MCLA07, MCLA22, csma2b, Tri301, Tri304, ll1, csjp11, ll4, lua12, lua6, Tri432, Tri420, Tri442, lssds6, gtl12, gtl19, gtl18, gtl16a, gtl17, Lpspb, 1S20, Lpsp34, ***B. hipponense* aSej3^T**, Num362, Num393, Num392, Num380, Num381, Tri451, Num383, Num377, Num384, AS53, AS44, NAS80c20, NAS74, AS68, NAS81, AS55, AS60, AS58, AS48, AS38, AS232c8, AS15, AS65, AS61, AS21, and AS2; **(2) J. II (*B. japonicum* subgroup II) _a :** *Bradyrhizobium* sp. lfta1, lfta11, and lfta7; **(3) J. II_b:** *Bradyrhizobium* sp. RLA09, RLA10, BLupMR1, csck18, H31, and zs14 ; **(4) J. II_c:** *Bradyrhizobium japonicum* UBMA197, BGA1, FN1, and BCP14, *Bradyrhizobium* sp. la2b, cyt17, Tri400, Fer5, csds18, RLA08, RLA11, cir2, csr6, csr6, and H32, ***B. japonicum* USDA6^T**; **(5) J. II_d:** ***B. rifense* CTAW71^T**, *Bradyrhizobium* sp. H16, csem17, R46277, cstc1, cstc20, cs1t11, cscc2, C11, R46306, cswp47, and cs4c2a, *Bradyrhizobium* genosp. BCC1; **(6) E. I:** *Bradyrhizobium* sp. csma27, cs1t5, csri27, NAS96242, NAS151, CastH25, RiojA8, AbruD12, TabeB8, csfp11, csmx9, cscc5, csds5, ValeG5, AlisF2, CollC20, AbruD10, H11, and CollC19, ***“B. oropedii”* Pear76^T**, ***B. septentrionale* 1S1^T**, ***“B. uaiense”* UFLA03 164^T**, ***“B. acacia”* 10BB^T**, ***“B. altum”* Pear77^T**, and ***B. quebecense* 66S1MB^T**; **(7) Je. I (*B. jicamae* subgroup I):** *Bradyrhizobium* sp. lamp2, lamp8, lamp10b, lamp9a, lamp5, llw1, CollC23, gdr4, gdr5, Num399, Num404, Fer38, Fer83, Tri265, Fer10p, Fer96p, Fer98, Fer96g, lavp2b, sjz3b, sjz6b, Fer37, sjz1b, Fer125, Fer402, Fer71, Fer109, Fer59, and Fer403, ***“B. valentinum”* LmjM3^T**.

MLSA

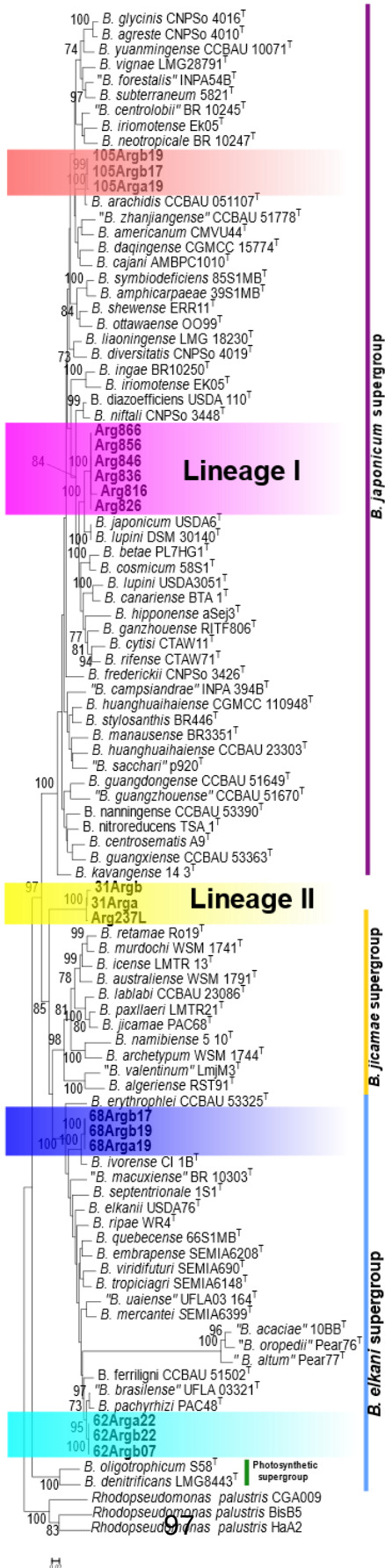


Figure 2.10. A maximum likelihood MLSA phylogeny based on the core genes *glnII* (590 bp), *dnaK* (794 bp), *gyrB* (671 bp), *recA* (541 bp), and *rpoB* (607 bp). The dataset only included sequences of *Bradyrhizobium* type strains together with sequences obtained from this study. Phylogenies were constructed using 1000 bootstrap iterations in RaxML under the GTR+GAMMA model. Only bootstrap support values of $\geq 70\%$ are indicated. *Rhodopseudomonas palustris* (strains: HaA2, CGA009, BisB5) was used for outgroup purposes. The recognized *Bradyrhizobium* supergroups (as per Avontuur et al., 2019) are indicated the *B. japonicum* supergroup with purple, the *B. elkanii* supergroup with blue, the photosynthetic supergroup with green, and finally the *B. jicamae* supergroup with yellow. Lineages I and II represent putatively novel species. Names indicated with the inverted commas are species which do not yet have validated names. For all the species the type strain number is listed after the name. The scale bar represents the number of nucleotide substitutions per site. Established *Bradyrhizobium* supergroups are indicated while strains from this study are in bold and highlighted in the colours pink (Lineage I), red, blue, and yellow (Lineage II). Sequence accession numbers obtained from the GenBank (National Centre for Biotechnology Information (NCBI); <http://www.ncbi.nlm.nih.gov/>; Benson et al., 2004) are shown in Supplementary Table S2.2.

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Chapter 3

**The diversity of *Mesorhizobium*
strains associated with indigenous
South African Genisteae**

Abstract

The genus *Mesorhizobium* is among one of the most well-known rhizobial genera with most of its members known to nodulate and fix atmospheric nitrogen on the roots of legume plants. The discovery of this group of bacteria in association with hosts from various legume tribes is increasing and includes the Genisteae. This tribe comprises at least 620 species across 27 genera, of which less than 5% have been investigated for their rhizobial diversity. Only a handful of previous investigations have found *Mesorhizobium* to be symbionts of this tribe. *Mesorhizobium* has been found in association with some species indigenous to South Africa for example, members of the genera *Argyrolobium*, *Dichilus*, and *Polhillia*, even though *Mesorhizobium* is not known to be a common symbiont of Genisteae species. This study therefore, aimed to evaluate the rhizobial diversity and evolutionary histories of *Mesorhizobium* strains associated with indigenous southern African Genisteae species and to describe any putative novel *Mesorhizobium* species. For this purpose, 40 isolates were used that were previously delineated to genus level using 16S rRNA sequence similarity. The single-gene phylogenetic analysis of several protein-coding genes (*atpD*, *dnaK*, *gyrB*, *recA*, and *rpoB*) separated the strains into at least four consistent groups. The results showed that most of the strains analysed represent at least four species and are diverse in terms of their phenotypic and physiological traits. Both host and geographical patterns were apparent on the *nodA* and *nifH* symbiotic phylogenies. The strains from this study formed unique groups close to other South African strains.

Keywords

Genisteae, *Mesorhizobium*, species descriptions, phylogeography, South Africa

3.1 Introduction

Mesorhizobium is a large genus, currently comprising 69 described species (Parte et al., 2020). Members of this genus are well known for their agricultural and economic importance because of their association with agriculturally important legumes such as chickpea (*Cicer arietinum*) (León-Barrios et al., 2021), and common bean (*Phaseolus vulgaris*) (Helene et al., 2019). Mesorhizobia are also known for their ability to grow at different edaphic factors and the ability to nodulate many legumes of various tribes (including the Genisteeae) resulting in the wide geographic distribution of the genus, (Dludlu et al., 2018b). The origins of this particular tribe are in southern Africa; however, it has formed two basal lineages (the southern African and Mediterranean lineages) (Stepkowski et al., 2018), that differ in their region of diversification and the degree of attention their rhizobial symbionts has received. Based on the limited literature available, the Mediterranean lineage is favoured by *Bradyrhizobium* (Stepkowski et al., 2018) while the southern African lineage is associated with both *Bradyrhizobium* and *Mesorhizobium* (Beukes et al., 2016, Dludlu et al., 2018a, Dludlu et al., 2018b, Lemaire et al., 2015b), depending on the habitat/climate (Dludlu et al., 2018b, Lemaire et al., 2015a).

The association of *Mesorhizobium* with the Genisteeae has been reported for certain species of the genera *Lupinus*, *Retama*, *Genista*, *Teline*, *Argyrolobium*, *Dichilus*, and *Polhillia* (Beukes et al., 2016, du Preez, 2019, Cardinale et al., 2008). Studies investigating the identity and diversity of the rhizobia associated with the southern African lineage, including *Argyrolobium*, *Dichilus*, *Melolobium*, and *Polhillia*, remain limited, however, as these studies only focused on a few legume species. For example, the study by Dludlu et al., (2018a) only investigated two *Argyrolobium* species (*A. lunare* and *A. velutinum*) while Beukes et al., (2016) only included three *Argyrolobium* species (*A. tuberosum*, *A. rupestre*, *A. sericeum*) and one *Dichilus* species (*D. reflexus*) (Beukes et al., 2016). In a study, involving North African *A. uniflorum* isolates, nine rhizobial isolates were investigated (Merabet et al., 2010). This study is the largest on a southern African Genisteeae host followed by the du Preez et al. (2019) study, which found five *Polhillia* species associated with *Mesorhizobium*. These studies provide a picture that the southern African lineage might predominantly associate with *Mesorhizobium*,

Sinorhizobium, and sometimes *Bradyrhizobium* symbionts depending on the region (Beukes et al., 2016, Dlodlu et al., 2018b, du Preez, 2019).

The above studies have also revealed that South Africa harbours unique rhizobial *nodA* genes (a common nodulation gene essential to the formation of the rhizobial signalling molecule – the Nod Factor) with different evolutionary histories from sequences representing the rest of the world (Beukes et al., 2016, Dlodlu et al., 2018a, Dlodlu et al., 2018b, Lemaire et al., 2015b). In the South African context, for example, the Core Cape Subregion (CCR) appears to be predominated by unique *Mesorhizobium* and *Paraburkholderia* (previously *Burkholderia*) strains, while in the Grassland and Savanna biomes *Bradyrhizobium* appears to be dominant (Beukes et al., 2016, Dlodlu et al., 2018a, Dlodlu et al., 2018b). One could expect rhizobia from Genisteae hosts in these regions to experience some form of limitation and therefore be characterized by different biogeographic profiles. Contrary to this idea, Genisteae in the Grassland and Savanna biomes have been associated with both *Mesorhizobium* and *Bradyrhizobium* (Beukes et al., 2016), although the Genisteae-associated sample size in the study only consisted of seven strains.

To provide insight into the evolutionary history and relationships of *Mesorhizobium* strains associated with SA indigenous Genisteae, our study aimed to delineate and characterize *Mesorhizobium* strains associated with indigenous SA Genisteae and to identify any potential novel species. These strains were collected from nodules in the Low- and Highveld regions of the Mpumalanga and Kwa-Zulu Natal provinces of South Africa. To achieve this aim, we had the following objectives: (i) to develop a species hypothesis using the genealogical concordance approach, based upon five single-gene housekeeping phylogenies (*atpD*, *dnaK*, *gyrB*, *recA* and *rpoB*), (ii) to support the species hypothesis further with additional lines of evidence such as phenotypic and biochemical traits, (iii) to evaluate biogeographical and host patterns, (iv) to confirm their nodulation ability.

3.2 Materials and methods

3.2.1 *Mesorhizobium* strains investigated

A total of forty *Mesorhizobium* strains were identified based on 16S rRNA gene sequence screening in Chapter 2 of this dissertation. The strains were isolated from *Argyrolobium* (*A. tomentosum*, *A. robustum*, *A. amplexicaule*, *A. rupestre*, *A. harveyanum* and *A. tuberosum*), *Dichilus reflexus*, and *Melolobium* species. The isolates were preserved at -70 °C in 20% glycerol stock cultures. Information regarding host, habitat, and geographical sampling location is summarised in Tables 3.1 and 3.2. To revive these isolates from the stocks and to routinely grow them, we used Yeast Mannitol agar (YMA) (Howieson and Dilworth, 2016, Dilworth, 2016) with incubation at 28 °C for 5-7 days.

3.2.2 DNA extraction, PCR amplification and sequencing

The same methodology as described in Chapter 2, section 2.2.2, was used to extract high-quality DNA from fresh, pure cultures, using the Quick- gDNA™ MiniPrep kit (Zymo Research), and the extracted DNA was stored at -20 °C. Five protein-coding genes (*atpD*, *gyrB*, *recA*, *rpoB*, and *dnaK*) and two symbiotic genes (*nodA* and *nifH*) were amplified using the primers listed in Table 3.3 and PCR cycling parameters in Table 3.4. All PCR products were purified using 2 U/μl of Exonuclease 1 (Thermo Scientific) and 2 U/μl of FastAP (Thermo Scientific), followed by incubation at 37 °C for 15 minutes to activate the enzymes, and another incubation at 85 °C for 15 minutes using the T100™ Thermal Cycler (Bio-rad). The success of the PCR product clean-up was also confirmed by agarose gel electrophoresis. Purified PCR products were sequenced (in both the forward and reverse directions) using the BigDye Terminator v3.1 Cycle Sequencing kit (Thermo Fisher Scientific, USA) as well as the AB13100 Automated Capillary DNA sequencer (Thermo Fisher Scientific, Carlsbad, USA) of the DNA Sanger Sequencing Facility housed at the University of Pretoria.

3.2.3 Genealogical concordance and MLSA

Consensus sequences of the protein-coding genes *dnaK*, *atpD*, *gyrB*, *recA*, *rpoB*, and *dnaK* were generated and incorporated into multiple sequence alignment datasets together with the sequences available for all the type strains of *Mesorhizobium* species included in the List of Prokaryotic Species Names (LPSN; www.bacterio.net) at the time

of writing (3 March 2022). These sequences were downloaded from the National Centre for Biotechnology Information (NCBI; www.ncbi.nlm.nih.gov) and included in each of the individual datasets. Those species that do not yet have validated names (according to LPSN) were indicated with inverted commas. *Bradyrhizobium diazoefficiens* strain USDA10^T was used for outgroup purposes. These sequence datasets were then aligned with the online version of MAFFT (Multiple Alignment using Fast Fourier Transformation; <https://mafft.cbrc.jp/alignment/server/>) (Kato et al., 2019, Kuraku et al., 2013). The open reading frames of the alignments were checked in BioEdit (Hall, 1999). The accession numbers and information of all the strains examined in this study are listed in Supplementary Table S3.1.

Maximum likelihood phylogenetic trees were generated using the IQ-TREE web server (<http://iqtree.cibiv.univie.ac.at/>) (Minh et al., 2020). Ultrafast bootstrap (UFBoot) was used to determine group support values based upon 1,000 pseudoreplicates (Hoang et al., 2018). In conjunction, SH-aLRT fast branch test was also performed as a second metric with which to determine support (Guindon et al., 2010), lineages were believed to be true if the SH-aLRT and UFBoot support values were $\geq 80\%$ and $\geq 95\%$, respectively. The best-fit substitution model was obtained using ModelFinder in IQ- TREE, which tests the dataset against 88 nucleotide models (Kalyaanamoorthy et al., 2017). FASconCAT-G v1.02 (Kück and Longo, 2014) was used to concatenate the five gene dataset and to produce a partition file, which was used to reconstruct a maximum likelihood multilocus sequence analysis (MLSA) phylogeny with traditional bootstrap support determined based upon 1000 pseudoreplicates in RAxML 8.2.1 under the GTR model (Stamatakis, 2014) with optimisation of other model parameters for each gene being addressed independently.

3.2.4 Phylogenetic analysis of symbiotic loci

Consensus sequences for both *nodA* and *nifH* were generated and then expanded to include all *Mesorhizobium nodA* and *nifH* sequences in GenBank (www.ncbi.nlm.nih.gov/genbank). The metadata for the *nodA* and *nifH* sequences is listed in Supplementary Tables S3.2 and S3.3. Sequences were aligned manually in BioEdit. As described in Chapter 2, haplotypes were generated in DnaSP v5.5 (Librado and

Rozas, 2009) where sites with gaps were considered and invariable sites retained. The haplotypes were then translated into amino acids in BioEdit. The best-fit amino acid model was determined in ProtTest v3.4 (Abascal et al., 2005). Maximum likelihood phylogenies were constructed in RAxML 8.2.1 (Stamatakis, 2014). For outgroup purposes, *B. diazoefficiens* USDA110^T was used.

3.2.5 Phenotypic characterization

To support the species hypotheses, 19 strains were selected for phenotypic characterization. These strains were chosen as representatives as they are part of clusters that represent putatively novel species based on the housekeeping gene phylogenies. In some of the large clusters, more than one strain was included to span variable geographic and host ranges. As previously described in Chapter 2 section 2.2.5 of this dissertation, a variety of tests including colony morphology, temperature, NaCl, pH tolerance, motility, catalase, and oxidase tests, Biolog GEN III ID and API 20NE were performed to assess the phenotypic characteristics of the selected nineteen *Mesorhizobium* strains.

In addition to the above phenotypic traits, the selected strains were also tested for their ability to resist heavy metals such as MnCl₂·4H₂O (manganese) (300 µg/ml) (BDH chemicals, England), ZnCl₂ (zinc) (200 µg/ml) (Merk, Germany), NiSO₄·6H₂O (nickel) (20 µg/ml) (Merk, SA), (CH₃COO)₂·Pb·3H₂O (lead) (20 µg/ml) (SAARchem, SA), and CoSO₄·7H₂O (cobalt) (20 µg/ml) (Merck, Germany). The heavy metal solutions were prepared with autoclaved-distilled water in 1.5 ml Eppendorf tubes followed by sterilization in a boiling water bath for 20 minutes as described by Tomova et al., (2015). Thereafter, 100 µl of a bacterial and sterile water suspension was spread onto YMA plates. The disc-diffusion method was used by aseptically placing the 6 mm discs onto the YMA-dried bacterial culture plates and adding 15 µl of a specific heavy metal solution to each disc. Zones of inhibition were interpreted as sensitive/resistant to a particular heavy metal, depending on the observed growth. All the phenotypic tests were performed on YMA and grown cells were incubated at 28 °C for 5-7 days.

As previously described in chapter 2 section 2.2.6 of this dissertation, nodulation and nitrogen fixation authentication experiments were conducted in duplicates in 15 cm

planting pots containing sterilized sand and nitrogen-free Hoagland plant growth solution using the presumed promiscuous legumes *Vigna unguiculata* (cowpea) and *Macroptilium atropurpureum* (siratro). The inoculum included a single strain of pure culture *Mesorhizobium* and each 15 cm pot included two germinated single legume seeds. The effectiveness of the individual *Mesorhizobium* strains was evaluated through visual comparison of plants grown under nitrogen-free conditions (i.e., the negative controls only inoculated with sterile water) to those provided with a putative *Mesorhizobium* inoculant).

3.3 Results

A total of forty *Mesorhizobium* strains were identified using 16S rRNA gene sequencing (in section 2.3.2, Chapter 2, of this dissertation). These forty *Mesorhizobium* isolates were subjected to amplification of partial *atpD*, *dnaK*, *gyrB*, *recA*, and *rpoB* gene regions to identify novel lineages by employing genealogical concordance. Of the forty strains, nineteen representatives from each distinct group were selected for further evaluation of phenotypic, physiological, and nodulation traits. These strains included 98Argb, 14Arga, 43Arga, 14Argb (from group G.1), ArgA1, ArgA2, 128a, PL10 (from G.2), f, d, BHbdi, BHbdii, BHSci, Ram4asc (for group G.3), and lastly strains Arg314, Arg677, Arg123, Arg923, 59Dicha (for group G.4). Strains were selected to not only include the groups representing putative species but also to include geographic and host variability per 'species' group. The numbering of the groups follows their order on the MLSA phylogeny.

3.3.1 Genealogical concordance and MLSA

The 16S rRNA sequences of two strains (d and f) isolated from *Melolobium* species, showed high sequence similarity to both *Rhizobium* (95.48% and 90.65 %) and *Mesorhizobium* (95.40% and 90.72%) strains based on *blastn* in NCBI. Amplification and sequence comparison of protein-coding genes with those in the NCBI database confirmed that both these strains represented *Mesorhizobium*.

The genealogical concordance approach was used to determine a species hypothesis utilizing five protein-coding genes. The aligned dataset for *atpD* comprised of 95 taxa with sequences 530 bp in length, the *dnaK* dataset had 93 taxa with 352 bp length sequences, *gyrB* had 86 taxa and the sequences were 670 bp in length. *recA* consisted of 103 taxa of which the sequences were 494 bp, and lastly, the *rpoB* aligned dataset had

101 taxa of which the sequences were 1550 bp long. The best-fit model as identified by ModelFinder in IQTREE according to the Bayesian Information Criterion was TIM2+F+I+G4 for *atpD* and *recA*, TIM+F+I+G4 for *gyrB* and *rpoB*, and TIM3+F+I+G4 for *dnaK* (Kalyaanamoorthy et al., 2017). The number of taxa varied between the gene trees as not all the type strains had a genome available or a sequence for the corresponding gene. Amplification was unsuccessful for some genes (i.e., *atpD*, *recA*) in some of our strains (i.e., BHbdii, BHscii, BHscii, and Ram4bsc), additionally contributing to varied taxa numbers between single-gene trees.

Two of the five housekeeping gene phylogenies (*recA* and *rpoB*) supported the delineation of four monophyletic groups (Figures 3.4 and 3.5), G.1 (14Arga, 43Arga, 98Argb and 14Argb), G.2 (ArgA1-I1, PL10, and 128a), G.3 (BHb, BHbdi, BHbdii, BHSci, BHScii, f, d, Ram4asc, and Ram4asc), and G.4 (Arg314, Arg324, Arg334, Arg344, Arg123, Arg133, Arg 913, Arg923, Arg627, Arg 637, Arg 647, - Arg657, Arg677, 59Dicha, and 59Dichb). These same four groups were recovered on the MLSA phylogeny (Figure 3.6). Groups G.1 included only *Argyrobium* isolates and G.2 only *Melolobium* isolates, G.3 included both *Argyrobium* and *Melolobium* isolates, and G.4 included both in addition to *Dichillus* isolates. Of these four main groups, strains within the two larger groups (G.3 and G.4) were consistently placed in their respective groups in all phylogenies and separate from previously described species (Figures 3.1- 3.5), although group G.3 did include two strains from group G.1. (14Arga and 98Argb) in the *gyrB* phylogeny (Figure 3.3). In the MLSA phylogeny however two species were placed within-group G.4, *M. shonense* AC39a^T and *M. robiniae* CCNWYC115^T, (Figure 3.6). Strains in G.3 were closely related to *M. neociceri* CCANP35^T, *M. caraganae* CCBAU 01502, and *M. caraganae* CCBAU 11299^T on the five protein-coding genes (Figures 3.1- 3.5). On all the single-gene phylogenies, *M. hasassense* AC99b^T, was either the most closely related species to the group G.4 strains or one of the most closely related together with *M. acaciae* RITF741^T and *M. atlanticum* CNPSo 3140^T as is the case in *atpD* and *recA* phylogenies (Figures 3.1 and 3.4).

In contrast, groups G.1 and G.2 showed the most discrepancies with regards to their closest relatives across the different gene trees and strains 98Argb, 14Arga, 43Arga,

14Argb, and f constantly moving between groups across the different gene trees. Strains from G.1 clustered together and were closely related to *M. carmichaelinearum* ICMP 18942^T, “*B. intechi*” BD68^T, and *M. jarvisii* LMG 28313^T in the *atpD*, *recA*, and *rpoB* phylogenies, respectively (Figures 3.1, 3.4, and 4.5). However, in the *dnaK* phylogeny, strain 98Argb (G.1-II) grouped close to *M. japonicum* MAFF 303099^T while the rest of its group members (G.1-I) nested within the G.3 cluster with no statistical support (Figure 3.2). Strains 43Arga and 14Argb (G.1-I) were closely related to *M. australicum* WSM2073^T with SH-aLRT and UFBoot support of 86% and 90%, respectively, in the *gyrB* phylogeny, while 14Arga and 98Argb-(G.1-II) formed a group within G.3 and grouped closely with strain 128a (Figure 3.3). For the most part, strains in G.2 are closely related to *M. wenxiniae* WYCCWR 10195^T in the *dnaK*, *gyrB*, and *recA* phylogenies (Figures 3.2, 3.3 and 3.4), in the *atpD* phylogeny, however only strain f groups with this species and separately from the rest of group G.3 which groups with *M. tarimense* CCABU83306^T (Figure 3.1).

The MLSA phylogeny generated using the combined data set of the five protein-coding genes (Figure 3.6) recovered similar congruent groupings as seen in *atpD*, *recA*, and *rpoB* phylogenies, further supporting four possible new species. However, some discrepancies were observed in G.4 where strains 59Dicha and Arg314 were closely related to *M. shonense* AC39a^T and *M. robiniae* CCNWYC 115^T with no statistical support, in contrast to the *atpD*, *dnaK*, *gyrB*, *recA*, and *rpoB* phylogenies (Figures 3.1-3.5). We hypothesize the four main large groups to represent four new species, but other lines of evidence are needed to support this hypothesis.

3.3.2 Phenotypic characterization

All the representative strains of the four groups G.1 (98Argb, 14Arga, 43Arga, 14Argb), G.2 (f, d, BHbdi, BHbdii, BHSci, Ram4asc), G.3 (ArgA1, ArgA2, 128a, PL10), and G.4 (Arg314, Arg677, Arg123, Arg923, 59Dicha) produced an alkaline reaction; indicated by the yellow colour change of the medium. All isolates were catalase and oxidase positive except Arg314, Arg677, and Ram4asc, which tested negative for oxidase (Table 3.5). All strains were negative for gram stain, rod-shaped, and had circular colony morphology (except for strain d, which had a punctiform colony shape). The colony morphology of G.1

strains was convex, smooth, medium-large sizes (Table 3.5), opaque-white, with a shiny, viscous texture, G.2 strains were the same but slimier with sizes ranging from small (d, BHbdii, and Ram4asc) to punctiform (d, f, BHbdi, and BHsci), and a creamy shiny colour for all G.2 strains but a very white colour for Ram4asc. On the other hand, G.3 and G.4 strains shared similar morphologies as the previously mentioned groups, but G.3 strains had a milky white appearance, very slimy texture, and sizes were small to medium (Table 3.5), while G.4 were medium-sized, and colour and surface texture varied between transparent (Arg314) and opaque-white (Arg677, Arg123, and Arg923), creamy-shiny (59Dicha), slimy (Arg123, Arg923, and 59Dicha), slimy-thick (Arg314), slimy-viscous (Arg677).

Most of the *Mesorhizobium* strains were able to grow at a temperature range of 20 °C to 28 °C and had a salt tolerance of 0.05 w/v % to 1.0 w/v % NaCl. *Mesorhizobium* strain Ram4asc (group G.1) exhibited a high salt tolerance of <1.5 w/v %. The tested isolates were highly sensitive to the range of antibiotics and heavy metals (Table 3.5), with the exception of 43Arga, Arg123, 14Arga and Ram4asc which were resistant to all the antibiotics (ampicillin (10 µg), chloramphenicol (30 µg), erythromycin (30 µg), gentamicin (10 µg), kanamycin (30 µg), neomycin (10 µg), penicillin (10 µg), streptomycin (30 µg), and tetracycline (30 µg)). The growth of isolates were inhibited in the presence of selected heavy metals (MnCl₂·4H₂O (300 µg/ml) (BDH chemicals, England), ZnCl₂ (200 µg/ml) (Merk, Germany), NiSO₄·6H₂O (20 µg/ml) (Merk, SA), (CH₃COO)₂Pb·3H₂O (20 µg/ml) (SAARchem, SA), and CoSO₄·7H₂O (20 µg/ml) (Merck, Germany) except for isolate Ram4asc (group G.2), for which growth was present but weak in the presence of heavy metals. Most isolates were able to grow weakly in the presence of MnCl₂·4H₂O (300 µg/ml).

Tables 3.6 and 3.7 summarize the results of the biochemical characteristics obtained from the API 20NE and Biolog GENIII MicroPlate™ tests. With regards to nitrogen sources, about 47% of the tested strains (9 out of the 19 tested) could reduce nitrates to nitrite, and 89% could reduce nitrates to nitrites. None of the isolates could produce indole, or ferment glucose, while all the isolates could assimilate urease, esculin ferric citrate, while only 42% of the isolates could assimilate L-arginine and Adipic acid, 15% Gelatin, 89%

4-nitrophenyl- β D-galactoyranoside, 73% D-glucose, N-acetyl-glucosamine, Malic acid, and D-mannose, 84% L-arabinose, 68% D-maltose, 36% Potassium gluconate, 1% Trisodium citrate and Phenylacetic acid.

Strains within G.1 could assimilate most of the carbon and nitrogen, with the exception of 14Arga, which tested negative for D-Turanose while the other strains (14Argb, 43Arga, 98Argb) tested positive (Table 3.6). Their closest relative, “*M. intechi*” BD68^T, could not grow at a wider range of carbon and nitrogen sources. Differences were also observed in G.3 strains where only strain 128a could weakly assimilate D-serine, only ArgA2 tested positive for p-Hydroxy-Phenylacetic Acid, and PL10 negative for citric acid and D-serine. Their closest relative (*M. caraganae* CCBAU 11299^T) shared some similarities with G.3, with the exception that this type strain was negative for Dextrin, D-Raffinose, and D-Salicin (Table 3.6). Strains within G.2 showed differences among each other as well as their closest relative, *M. wenxiniae* WYCCWR10195^T, but strains f, d and BHsci generally tested negative for most carbon and nitrogen sources in comparison to other strains within the group. On the other hand, G.4 strains tested positive for most of the carbon and nitrogen sources, with the exception of L-Serine and p-Hydroxy-Phenylacetic Acid, which varied among strains Arg314, Arg677, and Arg123. Not enough data from their closest relative (*M. hawassense* AC99b^T) was available for comparison. Lastly, nodulation experiments were conducted in a glasshouse to authenticate the nodulation ability of our strains. None of our isolates were able to nodulate cowpea (*Vigna unguiculata*) or siratro (*Macroptilium atropurpureum*) (Table 3.5).

3.3.3 Phylogenetic analysis of symbiotic loci

At least 2939 *nodA* nucleotide sequences were available on GenBank (downloaded 14 June 2020) and included in the subsequent analyses. However, a total of 526 unique *nodA* amino acid haplotypes remained after filtering and removing sequences that aligned less than 50% to the strains from this study. The best-fit protein model according to ProtTest v3.4 (Abascal et al., 2005) was the Jones-Taylor-Thornton (JTT)+I+G for this dataset.

In the maximum likelihood phylogeny, South African *nodA* sequences from our study and previous studies (Gerding et al., 2012, Lemaire et al., 2015a, Lemaire et al., 2015b)

formed a large separate well supported clade with a 96% bootstrap support (Supplementary Figure S3.1). This large South African clade (96% Bootstrap support) was further subdivided into five clades, most of which were well supported. Clade I (94% Bootstrap support) included CCR region isolates from several *Aspalathus* spp., a few *Podalyria*, *Lessertia*, as well as *Argyrobium* spp. Clade II (75% Bootstrap support) includes only *Lessertia* spp. sampled in the CCR, while Clade III (56% Bootstrap support) includes strains sampled from several CCR *Lessertia* spp. together with *Aspalathus uniflora* and *Aspalathus linearis*, as well as *Argyrobium lunare* and *Argyrobium velutinum*. Clade IV (100% Bootstrap support) shares a common ancestor with Clade III and only includes the indigenous SA Genisteae-associated strains from the current study (Supplementary Figure S3.1). Within Clade IV, clustering was observed according to host as strains isolated from *Melolobium* sp., (e.g., Ram4asc, Ram4bsc, BHbdi, BHBdii, and f), *Dichilus reflexus*, (e.g., 59Dicha) and *Argyrobium* spp. (*A. amplexicaule*, *A. rupestre*) formed separate clusters. The *Argyrobium* spp. cluster did however include a strain associated with one *Melolobium* sp. (*Melolobium canescens*), indicating possible horizontal gene transfer of the symbiotic loci within and across Genisteae genera within the regions sampled. Furthermore, Clade IV included only Genisteae isolates and the symbiovar (sv.) genisteae was therefore proposed. Lastly, Clade V included CCR isolates from *Indigofera venusta* and several *Lessertia* spp. Zooming out of the South African clade within which our isolates are placed, clear phylogeographic patterns are apparent for certain groups in the *nodA* phylogeny, with strains from New Zealand, China, and France forming exclusive groups. Several clades appeared more cosmopolitan in that they included strains from several countries; for instance, African strains (e.g., originating in Tunisia, South Africa, Kenya, and Senegal) are found interspersed among isolates from Mexico, Brazil, and China (Supplementary Figure S3.1). In terms of host grouping, certain known symbiovar groupings were recovered such as sv. canariense, sv. loteae, sv. robinieae and sv. acacieae. Our strains did not group according to their species groups but according to host.

A total of 2493 out of 3453 *nifH* sequences available from GenBank (downloaded on 01 January 2022) were used in analyses. Like the *nodA* dataset strains were removed if the gene sequence was aligned for <50% or could not align. The 2493 sequences were

condensed in DnaSP v5 5 (Librado and Rozas, 2009) to create 694 haplotypes and the final dataset was 380 bp in length. The best-fit protein model was JTT+G and *nifH* ML phylogeny (Supplementary Figure S3.2) resulted in poor resolution with topologies not well supported. *Mesorhizobium loti* MAFF 210245 was used as an outgroup together with *B. diazoefficiens* USDA 110^T, as it has been re-identified as a member of *Bradyrhizobium* following phylogenetic analysis (Islam, Unpublished). Despite the overall poor resolution of the phylogeny, it could clearly be observed that our isolates formed part of a unique SA lineage, which consisted of strains from various hosts such as *Aspalathus*, *Otholobium*, *Lessertia*, *Arachdis*, and *Argyrolobium* spp. sampled in the CCR region (Supplementary Figure S3.2).

3.4 Discussion and conclusion

In *Mesorhizobium* studies, at least two housekeeping genes are commonly used for species delineation (Vidal et al., 2009, Rejili et al., 2020, Marcos-García et al., 2017, Pérez-Yépez et al., 2014). However, for reliable taxonomic classification, a minimum of five genes have been proposed by Stackebrandt et al., (2002), which is why in this study I amplified sequences for the following genes: *dnaK*, *atpD*, *gyrB*, *recA*, and *rpoB*. Based on the phylogenetic analysis of these protein-coding genes, I could delineate the forty strains into four putatively novel *Mesorhizobium* (referred to as groups G.1 to G.4). Although the groups had different sister taxa depending on the gene tree (sometimes due to the unavailability of gene sequences or genome sequences for some type strains), unique groupings were mostly maintained supporting the existence of new species (e.g., G.3 and G.4). Such differences in terms of close relatives were similar to observations made during the description of novel *Mesorhizobium* species such as *M. composti* CC-YTH430^T (Lin et al., 2019) and *M. shonense* (Degefu et al., 2013). In these studies, the type strains also exhibited contrasting close relatives in the *atpD* and *recA* phylogenies, which could be explained by missing type strain sequences in the different gene datasets. According to Degefu et al. (2013), these differences could be attributed to recombination events or different evolutionary histories between genes (Degefu et al., 2013).

Discrepancies were observed in some of the phylogenies where the groups were not consistently recovered. For instance, in the *dnaK* phylogeny, strains 43Arga, 14Argb and

14Arga grouped together however within-group G.2 (see Figure 3.2), while the fourth strain from group G.1, 98Argb, grouped with the type strain of *M. japonicum*. In the *gyrB* phylogeny (see Figure 3.3) strains 14Arga and 98Argb were nested within G.3 on the *gyrB* phylogeny. Lastly, strain f (of group G.2) was also grouped separately from the rest of the G.3 strains on the *atpD* phylogeny (see Figure 3.1). These observed incongruences within the above-mentioned groups between the different phylogenies could be due to reticulation (i.e., recombination is still occurring at the population level and therefore members of a specific species might not all yet follow the same evolutionary trajectory for each gene) (Venter et al., 2017).

The MLSA yielded a better-resolved phylogeny, revealing supported monophyletic groupings ($\geq 95\%$ traditional bootstrap support), indicated as groups G.1- G.4) for the isolates under study. These groups were for the most part unique (i.e., did not include type strains of any other species), except for group G.4 which included the type strains of the species *M. shonense* AC39a^T and *M. robiniae* CCNWYC115^T. The sister taxa to the proposed groups based on this analysis was “*B. intechi*” BD68^T, *M. jarvisii* LMG28313^T, *M. huakuii* IFO15243^T, and *M. japonicum* MAFF303099^T for group G.1, two strains of *M. caraganae*, CCBAU 11299^T and CCBAU 01502, were the closest taxa to group G.2, while *M. wenxiniae* WYCCWR 10195^T was the most closely related taxon to group G.2. *Mesorhizobium hawassense* AC99b^T was found to be a sister taxon to group G.4. I, therefore, propose four putatively novel species based on the species hypotheses generated using a genealogical concordance approach, and chose the following representatives for further tests with which to substantiate the delineation: G.1 (14Arga, 43Arga, 98Argb), G.2 (f, BHsci, BHbdii, Ram4asc), G.3 (ArgA1, 128a, PL10), and G.4 (Arg314, Arg677), from *Argyrolobium* and *Melolobium* root nodules. We chose more than one strain per ‘species’ cluster in order to address possible ‘intra-species’ variability for the traits tested. Other strains such as f and 98Argb, were selected as they moved from their assigned groups on some phylogenies, and further confirmation is needed to confirm whether they form part of the putative species cluster.

The nineteen selected isolates were tested for resistance/sensitivity to antibiotics and heavy metals, growth at various temperatures, NaCl concentrations, and pH levels. These

biotic and abiotic factors are known to affect not only rhizobial survival and growth but also their symbioses with legumes, therefore affecting legume productivity (Zahran, 1999). The strains could not grow at temperatures below 4 °C or above 35 °C, indicating that they might not perform well under cold or heat stress. The salt tolerance of the strains was lower compared to most mesorhizobia, which, according to literature, can tolerate 1-2% NaCl (Chen et al., 2005, Chen et al., 2010, Laranjo and Oliveira, 2011, Siddiqi et al., 2018) and in some cases up to 4% NaCl (Siddiqi et al., 2019). Evaluation of pH tolerance revealed that most of our isolates could grow at a pH range of 4 to 10, except for isolate f, which failed to grow at all pH levels (pH experiments with this strain will need to be repeated). Generally, most strains appear to tolerate both acidic and alkaline conditions. Although it is not clear what drives the rhizobial dominance, especially in the South African context of Genisteae plants, the distribution of *Mesorhizobium* has been suggested to be linked to their ability to withstand the various alkalinity and acidity levels of the soil (Brígido et al., 2007, Dlodlu et al., 2018b).

Evaluation of antibiotic tolerance or resistance revealed that most of our strains were strongly inhibited by the presence of different antibiotics. Previous studies have correlated antibiotic sensitivity with rhizobial growth rate (Maatallah et al., 2002), suggesting that faster-growing rhizobia such as *Mesorhizobium* could be more sensitive to antibiotics than slower-growing rhizobia such as *Bradyrhizobium*. Other studies on the other hand correlated antibiotic sensitivity to bacterial species and not growth rate because there was no consistency in antibiotic resistance behaviour within fast, intermediate, and slow-growing rhizobia in their study (Berrada et al., 2012). Although it is common but not general practice in *Mesorhizobium* species descriptions to evaluate tolerance to heavy metals, this study also included heavy metal testing as part of the phenotype characterization. This interest has spiked since the description of a high metal resistant strain – *M. metallidurans* LMG24485^T (Vidal et al., 2009). In the current study, the tested strains, with the exception of isolate Ram4asc (from G.2) were often strongly inhibited by heavy metals, except for manganese (II) chloride tetrahydrate (MnCl₂·4H₂O). From these results, one can hypothesize that only isolate Ram4asc (from G.2) can be used as a possible inoculant strain in areas rich with the heavy metals mentioned above and that

the rest of our studied strains may be suitable for soils that have high levels of $\text{MnCl}_2 \cdot 4\text{H}_2\text{O}$.

Phenotypic characters are known to overlap between species or vary within a species (de Lajudie et al., 2019). Several studies have reported the lack of correlation between phenotypic and genotypic characters. Hypothetically, since phenotypic traits are carried on the accessory genome/plasmids, they can be acquired or lost, and therefore not all isolates of the same species will possess the same phenotypic traits. Although phenotypic characterization of species is not very useful in discriminating between species, the International Code of Nomenclature of Prokaryotes (ICNP) emphasizes its importance in clarifying whether a particular phenotypic trait is applicable to all strains or not (de Lajudie et al., 2019). They also provide more meaningful information about our strains, which may also help in selecting inoculant strains tolerant to different environmental conditions (Laranjo and Oliveira, 2011). Indeed, phenotypic, and physiological variability was observed between strains of the same species as well as their closest phylogenetic relatives (e.g., see G.3 and G.1 strains in Table 3.7).

Although less commonly used in *Mesorhizobium*, studies in *Bradyrhizobium* have shown phylogenetic analysis of the symbiotic *nodA* gene can be used to investigate biogeographic patterns in addition to host patterns (Beukes et al., 2016, Stepkowski et al., 2007, Stepkowski et al., 2005, Stepkowski et al., 2012, Stępkowski et al., 2011). Therefore, in this study, we developed a phylogeographic framework for *Mesorhizobium*, by evaluating clustering based on the geographic origins of our strains. The *nodA* gene could however only be amplified from ten strains associated with Genisteae spp. (*D. reflexus*, *Melolobium* spp., *A. amplexicaule*, *A. rupestre*) root nodules due to difficulty in amplification using the published *nodA* primers (*nodA*-2F/*nodA*-2R, *nodA*1/*nodA*2), suggesting that the used primers may not be suitable as the *nodA* gene of SA Genisteae may be too diverged. These outcomes were similar to that of Lemaire et al. (2015), where *nodA* gene amplification failed for the tribe Psoraleeae, due to a diverged *nodB* gene for their rhizobial symbionts, resulting in primers not being suitable (Lemaire et al., 2015b). The *nodA* genes clustered in a robust phylogeny within a large South African clade, separate from the rest of the CCR strains, indicating that *nodA* genes from this study have

diverged from their common ancestor with the mesorhizobia of the CCR and have had a long and separately evolving history.

In *Mesorhizobium* symbiotaxonomy, studies predominantly investigate the ability of isolates to group into different symbiovars. This term is parallel to the term pathovar, which is used to describe pathogenic bacteria (Rogel et al., 2011). Symbiovars are groups of strains (sometimes from different species) that essentially cluster together on symbiotic phylogenies based on the host ranges that they can infect or adapt to (Rogel et al., 2011). Most studies on *Mesorhizobium* investigate either the *nodC* (Chen et al., 2010, Estrella et al., 2020) or *nodA* (Dludlu et al., 2018b, Gerding et al., 2012) gene for symbiotic analysis. These genes are essential for the successful establishment of the initial molecular cross-talk in an effective symbiosis as they encode for enzymes that determine the host plant flavonoid interacting lipochitooligosaccharides (LCOs) or Nod Factor (Downie, 1998), and are therefore directly involved in host specificity. In addition to developing a phylogeographic framework for the genus, this study also evaluated the placement of the Genisteae symbionts being studied here, into the existing symbiovars. Our strains grouped together in the proposed sv. Genisteae, separate from other hosts.

The observed discordance between the *nodA* phylogeny and the core gene phylogenies in all our strains was similarly reported in previous studies, revealing lateral and horizontal gene transfer events among isolates (Gerding et al., 2012, Haukka et al., 1998, Lemaire et al., 2015b). Our results were similar to previous studies based on the symbiotic locus (*nodA*) phylogenies i.e., some *SA Lessertia* spp. formed a separate cluster as previously observed in the Gerding et al. (2012) *nodA* phylogeny. We also observed an intermingled pattern of isolates from *Argyrolobium*, *Aspalathus*, *Otholobium*, and *Psoralea* on the *nodA* phylogeny (Lemaire et al., 2015b).

In this study, we were able to successfully confirm the presence of the *nifH* gene in all forty strains through successful amplification using the NifH-F1 and nifH-439R primers (Boulygina et al., 2002, De Meyer et al., 2011). Although we were able to amplify all isolates with these primers, their maximum likelihood phylogenies resulted in poor resolution. This could have been due to fewer differences in the amino acid sequences of this gene and could in future be resolved through the utilization of nucleotide sequences

instead. We could however clearly see that our SA indigenous Genisteae isolates were nested in a SA clade, which included various CCR isolates (contrary to the *nodA* phylogeny where they formed a unique clade with a large SA clade but separate from the CCR strains). In addition, isolates were placed with existing symbiovars. This clustering of the *nifH* phylogeny indicates that the *nifH* gene of our isolates and the CCR could possibly share the same evolutionary histories. Overall, none of the symbiotic loci was concordant with the core gene trees.

Due to the presumed promiscuity of cowpea (*Vigna unguiculata*) and siratro (*Macroptilium atropurpureum*), nodulation tests were performed on these hosts (Lemaire et al., 2015a, Beukes et al., 2016). Previous literature has reported siratro as a promiscuous host successful in nodulating with *Mesorhizobium* strains, and specifically those associated with *Argyrolobium* spp. in the CCR (Lemaire et al., 2015b). However, none of our strains could form root nodules on either of these hosts, however, we were able to amplify the *nodA* gene from ten of the strains under study and the *nifH* gene from all the strains. Some of these strains, therefore, have the potential for nodulation and nitrogen-fixation (i.e., a functional symbiosis) and therefore it is possible that the conditions under which the nodulation tests were conducted were not conducive towards symbiosis initiation (Beukes et al., 2013). There is also the possibility that these strains are host specific and are not able to effectively communicate with these hosts. Thus, future nodulation tests should focus on the legume host from which the strains were originally isolated, or legume hosts known to interact 'easily' with *Mesorhizobium* symbionts.

The phenotypic and phylogenetic data presented in this study suggest the presence of four putatively novel species (groups G.1 to G.4). For future studies, isolates ArgA1, Arg314, Arg677, 98Argb, 14Arga, 43Arga, f, BHsci, BHscii, BHbdi, BHbdii, 128a, PL10, and Ram4asc will be subjected to whole-genome sequencing to allow for genome-based comparisons such as Average Nucleotide Identity (ANI) (Ciufo et al., 2018). Genome-based comparisons will also be vital in proving whether *Mesorhizobium* strains such as f and 98Argb are in fact new species. Obtaining this genome sequencing information will also be useful in designing primers specific for *Mesorhizobium* strains isolated from South Africa, and hopefully, better primers for *nodA* amplification.

3.5 Tables

Table 3.1. *Mesorhizobium* strains isolated from *Argyrolobium* spp. root nodules collected in October 2019 Kwazulu-Natal province in SA

Collection date	Isolate	nodule	Abrev. ¹	Legume host	location	GPS location	Altitude
30/10/2019	<i>Argyrolobium</i> sp1	A	ArgA1	<i>Argyrolobium tomentosum</i> (Andrews) Druce	Banks of the Umgenie River, close to the Cumberland Horseshoe Cottage, under trees, KZN	S: 29°30' 11.6" E° 030°30'15.5"	504-564m
30/10/2019	<i>Argyrolobium</i> sp1	B	ArgB1	<i>A. tomentosum</i>	Banks of the Umgenie River, close to the Cumberland Horseshoe Cottage, under trees, KZN	S: 29°30' 11.6" E° 030°30'15.5"	504-564m
30/10/2019	<i>Argyrolobium</i> sp1	C	ArgC1	<i>A. tomentosum</i>	Banks of the Umgenie River, close to the Cumberland Horseshoe Cottage, under trees, KZN	S: 29°30' 11.6" E° 030°30'15.5"	504-564m
30/10/2019	<i>Argyrolobium</i> sp1	D	ArgD1	<i>A. tomentosum</i>	Banks of the Umgenie River, close to the Cumberland Horseshoe Cottage, under trees, KZN	S: 29°30' 11.6" E° 030°30'15.5"	504-564m
30/10/2019	<i>Argyrolobium</i> sp1	E	ArgE1	<i>A. tomentosum</i>	Banks of the Umgenie River, close to the Cumberland Horseshoe Cottage, under trees, KZN	S: 29°30' 11.6" E° 030°30'15.5"	504-564m
30/10/2019	<i>Argyrolobium</i> sp1	F	ArgF1	<i>A. tomentosum</i>	Banks of the Umgenie River, close to the Cumberland Horseshoe Cottage, under trees, KZN	S: 29°30' 11.6" E° 030°30'15.5"	504-564m
30/10/2019	<i>Argyrolobium</i> sp1	G	ArgG1	<i>A. tomentosum</i>	Banks of the Umgenie River, close to the Cumberland Horseshoe Cottage, under trees, KZN	S: 29°30' 11.6" E° 030°30'15.5"	504-564m
30/10/2019	<i>Argyrolobium</i> sp1	H	ArgH1	<i>A. tomentosum</i>	Bank of the Umgenie River, close to the Cumberland Horseshoe Cottage, under trees, KZN	S: 29°30' 11.6" E° 030°30'15.5"	504-564m
30/10/2019	<i>Argyrolobium</i> sp1	I	ArgI1	<i>A. tomentosum</i>	Banks of the Umgenie River, close to the Cumberland	S: 29°30' 11.6" E° 030°30'15.5"	504-564m

Collection date	Isolate	nodule	Abrev. ¹	Legume host	location	GPS location	Altitude
30/10/2019	<i>Argyrolobium</i> sp1	J	ArgJ1	<i>A. tomentosum</i>	Horseshoe Cottage, under trees., KZN Banks of the Umgenie River, close to the Cumberland Horseshoe Cottage, under trees, KZN	S: 29°30' 11.6" E° 030°30'15.5"	504-564m
30/10/2019	<i>Argyrolobium</i> sp2	A	ArgA2	<i>A. tomentosum</i>	Banks of the Umgenie River, close to the Cumberland Horseshoe Cottage, under trees, KZN	S: 29°30' 11.6" E° 030°30'15.5"	504-564m
30/10/2019	<i>Argyrolobium</i> sp1	2	Arg123	<i>A. amplexicaule</i> (E.Mey.) Dümmer	Karkloof Nature reserve, KZN	S: 29°13'42.6" E: 030°13'23.4"	1223m
30/10/2019	<i>Argyrolobium</i> sp1	3	Arg133	<i>A. tomentosum</i>	Karkloof Nature reserve, KZN	S: 29°13'42.6" E: 030°13'23.4"	1223m
30/10/2019	<i>Argyrolobium</i> sp3	1	Arg314	<i>A. cf. rupestre</i> Walp.	Kaarkloof Nature reserve, KZN	S: 29°18'42.6" E:030°13'23.6"	1223m
30/10/2019	<i>Argyrolobium</i> sp3	2	Arg324	<i>A. rupestre</i>	Karkloof Nature reserve, KZN	S: 29°18'42.6" E:030°13'23.6"	nd ¹
30/10/2019	<i>Argyrolobium</i> sp3	3	Arg334	<i>A. rupestre</i>	Karkloof Nature reserve, KZN	S: 29°18'42.6" E:030°13'23.6"	nd
30/10/2019	<i>Argyrolobium</i> sp3	4	Arg344	<i>A. rupestre</i>	Karkloof Nature reserve, KZN	S: 29°18'42.6" E:030°13'23.6"	nd
30/10/2019	<i>Argyrolobium</i> sp6	2	Arg627	<i>A. harveyanum</i> Oliv.	Karkloof Nature reserve, KZN	S: 29°18'43.1" E: 030°13'24.1"	1223m
30/10/2019	<i>Argyrolobium</i> sp6	3	Arg637	<i>A. harveyanum</i>	Karkloof Nature reserve, KZN	S: 29°18'43.1" E: 030°13'24.1"	1223m
30/10/2019	<i>Argyrolobium</i> sp6	4	Arg647	<i>A. harveyanum</i>	Karkloof Nature reserve, KZN	S: 29°18'43.1" E: 030°13'24.1"	1223m
30/10/2019	<i>Argyrolobium</i> sp6	5	Arg657	<i>A. harveyanum</i>	Karkloof Nature reserve, KZN	S: 29°18'43.1" E: 030°13'24.1"	1223m
30/10/2019	<i>Argyrolobium</i> sp6	7	Arg677	<i>A. harveyanum</i>	Karkloof Nature reserve, KZN	S: 29°18'43.1" E: 030°13'24.1"	1223m
30/10/2019	<i>Argyrolobium</i> sp9	1	Arg913	<i>A. amplexicaule</i>	Karkloof Nature reserve, KZN	S: 29°18'57.0" E: 030°13'42.0"	1171m
30/10/2019	<i>Argyrolobium</i> sp9	2	Arg923	<i>A. amplexicaule</i>	Karkloof Nature reserve, KZN	S: 29°18'57.0" E: 030°13'42.0"	1171m

¹ Abbreviation of isolate names

*nd= no data available

Table 3.2. *Mesorhizobium* strains isolated from Genisteae root nodules in Mpumalanga and Western Cape (Beaufort West)

Isolate ¹	Date	Legume host	GPS coordinates	Altitude
14Arga	24/08/2010	<i>A. tuberosum</i> Eckl. & Zeyh.	nd ¹	nd
14Argb	24/08/2010	<i>A. tuberosum</i>	nd	nd
43AArg a	19/08/10	<i>A. rupestre</i> (E.Mey.) Walp. subsp. <i>rupestre</i>	S: 25° 47' 752" E: 31° 5' 273"	nd
98Argb		<i>A. tuberosum</i> Eckl. & Zeyh.	S 25° 22' 189" E: 30° 8' 659"	nd
59Dicha	19/08/10	<i>D. reflexus</i> (N.E.Br.) A.L.Schutte	S: 25° 24' 788" E: 30° 6' 816"	nd
59Dichb	19/08/10	<i>D. reflexus</i>	S: 25° 24' 788" E: 30° 6' 816"	nd
128a	nd	<i>Melolobium canescens</i>	nd	nd
d	12/06/02	<i>M. canescens</i>	S: 25° 023' 398" E: 31° 506' 793"	1241m
f	12/06/02	<i>M. canescens</i>	S: 25° 023' 398" E: 31° 506' 793"	1241m
BHb	27/05/02	<i>M. canescens</i>	S:32°1416 E: 22° 5519	900-1000m
BHbdi	27/05/02	<i>M. canescens</i>	S:32°1416 E: 22° 5519	900-1000m
BHbdii	27/05/02	<i>M. canescens</i>	S:32°1416 E: 22° 5519	900-1000m
BHsci	14/03/03	<i>M. canescens</i>	S:32°1416 E: 22° 5519	900-1000m
BHscii	20/03/03	<i>M. canescens</i>	S:32°1416 E: 22° 5519	900-1000m
PL10	28/02/97	<i>M. canescens</i>	nd	nd
Ram4bsc	23/02/05	<i>Melolobium</i> sp.	nd	nd
Ram4asc	23/02/05	<i>Melolobium</i> sp.	nd	nd

¹ no data available

Table 3.3. Primers used for both PCR and sequencing of the *Mesorhizobium* isolates

Target gene	Target group	Primer name ¹	Primer sequences 5'-3' ²	PCR product	Reference (primers/ conditions)
atpD	<i>Mesorhizobium</i> , <i>Rhizobium</i>	atpD-237f atpD-771r	sctgggscgyatcmtgaacgt gccgacacttccgaaccngcctg	650 bp	Gaunt et al., 2001 Gaunt et al., 2001
dnaK	<i>Mesorhizobium</i> , <i>Rhizobium</i> , <i>Bradyrhizobium</i> , <i>Sinorhizobium</i> , other non-symbiotic bacteria like <i>E. coli</i> , <i>Brucella</i>	TSdnaK3	aaggagcagcagatccgcatcca		Stępkowski et al. 2003
		TSdnaK2	gtacatggcctcgccgagcttca		Stępkowski et al. 2003
gyrB	<i>Mesorhizobium</i> , <i>Rhizobium</i>	gyrBfor	tgctgctcaccttcttctccg	650 bp	Alexandre et al., 2008
		gyrBrev	ccyttgtagcgctgccatggt		Alexandre et al., 2008
recA	<i>Mesorhizobium</i> , <i>Rhizobium</i>	recA-63F	atcgagcggctgctcggaagg	620 bp	Gaunt et al., 2001
		recA-504R	ttgcgcagcgctggtcat		Gaunt et al., 2001
rpoB	<i>Mesorhizobium</i> , <i>Rhizobium</i>	ropB82F	aacctcatcgagggtcagaaggc	1498 bp	Capela et al., 2001
		ropB1580R	tggatcatgaactgcgagagctg		Capela et al., 2001
nifH	<i>Burkholderia</i> , <i>Mesorhizobium</i> , <i>Rhizobium</i>	NifH-F1	ta ^y ggnaa ^{rgg} nggna ^t yggnaa ^{rtc}	310 bp	(Boulygina et al., 2002, De Meyer et al., 2011)
		nifH-439R	ggcatngcraanccdcrc		De Meyer et al., 2011
nodA	<i>Burkholderia</i> , <i>Mesorhizobium</i> , <i>Rhizobium</i>	nodA-1F	tgcrgtggaantrnnctgggaaa	590 bp	Haukka et al., 1998
		nodA-2R	ggncgcgtcraa ^{wt} gcargta		Haukka et al., 1998

¹ All primers were used for both PCR and sequencing

² n=a, g, c, or t; r=a or g; y=c or t; s=g or c; w=a or t; m=a or c

Table 3.4. PCR and sequencing thermal cycling conditions

Target gene	PCR conditions ¹	Reference
<i>atpD</i>	Initial denaturation at 95 °C for 2 minutes, 35 cycles of (95 °C for 45 seconds, 58 °C for 30 seconds, 72 °C for 1.5 min), extension at 72 °C for 7 min; infinite hold at 4 °C	Gaunt et al., 2001
<i>dnaK</i>	Initial denaturation at 95 °C for 2 minutes, 35 cycles of (95 °C for 45 seconds, 55 °C for 30 seconds, 72 °C for 1.5 min), extension for 7 min at 72 °C for 7; hold at 4 °C	Stępkowski et al. 2003
<i>gyrB</i>	Initial denaturation at 95 °C for 2 minutes, 35 cycles of (95 °C for 45 seconds, 56 to 58 °C for 30 seconds, 72 °C for 1.5 min), extension at 72 °C for 7 min; final infinite hold at 4 °C	Alexandre et al., 2008
<i>recA</i>	Initial denaturation at 95 °C for 4 minutes, 35 cycles of (95 °C for 30 seconds, 53 °C for 30 seconds, 72 °C for 1.5 min), 72 °C for 7 min; hold at 4 °C	Gaunt et al., 2001
<i>rpoB</i>	Initial denaturation at 95 °C for 2 minutes, 35 cycles of (95 °C for 30 seconds, 56 °C for 30 seconds, 72 °C for 1.5 min), 72 °C for 7 min; hold at 4 °C	Capela et al., 2001
<i>nodA</i>	Initial denaturation at 95 °C for 2 minutes, 35 cycles of (94 °C for 45 seconds, 53 °C for 30 seconds, 72 °C for 2.5 min), 72 °C for 7 min; hold at 4 °C	Haukka et al., 1998
<i>nifH</i>	Initial denaturation at 95 °C for 3.30s, 35 cycles of (94 °C for 1min, 56 °C for 40s, 72 °C for 1 min), 72 °C for 5 min final extension, 4 °C hold	Boulygina et al., 2002 and De Meyer et al., 2011

¹ For *dnaK*, *glnII*, *gyrB*, *recA*, and *rpoB* the same PCR cycling conditions were used with the only differences being in denaturation times in *recA* and annealing temperature as well as denaturation time and elongation time in *rpoB*. The sequencing conditions for all were as follows: 96 °C for 5 seconds, 25 cycles of (96 °C for 10 seconds, 55 °C for 10 seconds, 60 °C for 4.15 min), and 4 °C hold.

Table 3.5. Phenotypic traits among strains obtained in this study (1-19)¹ and closely related strains (20-23)²

Phenotypic feature	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Gram stain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cell shape	R ₃	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Colony size (mm) ⁴	≥ 4	1-2	2-3	1-2	<1	2-3	≥ 4	2-3	2-3	2-3	2-3	≥ 4	2-3	2-3	1-2	<1	1-2	<1	1-2	2-4	2-3	1-2	nd
Motility	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alkaline reaction	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	nd	+	nd	nd
Catalase test	+ _s	+ _s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+	+	+	nd
Oxidase test	+ _s	+ _s	+ ^s	+ ^s	+ ^s	-	-	+	+ ^w	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	-	-	+	-	nd
Temperature																							
4 °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	nd	-	-	+
10 °C	-	-	+ ^w	+ ^l	+ ^l	+ ^l	-	-	-	-	-	-	-	-	-	-	-	-	+ ^s	+	-	-	+
15 °C	+ _s	+ _s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^l	+ ^l	+ ^s	+ ^l	-	-	-	-	+ ^s	+	nd	-	+	
20 °C	+ _s	+ _s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	-	+ ^l	-	-	-	+ ^s	+	+	-	+
25 °C	+ _s	+ _s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	-	+ ^l	-	-	-	+ ^s	+	+	-	+
28 °C	+ _s	+ _s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+	+	+ ^s	+
30 °C	+ ^l	-	+ ^s	+ ^s	+ ^l	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	-	-	-	-	-	+ ^s	+	+	+	+
35 °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
37 °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
40 °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
pH																							
4	+	-	+	+	+	-	+	+	+	+	+	+	+	-	+	+	+	+	+	-	-	nd	nd
5	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	-	nd	+

Phenotypic feature		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	6	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	nd	nd	+
	7	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
	8	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	nd	+
	9	-	+	+	+	-	+	+	+	+	+	+	+	+	-	+	-	-	+	-	+	+	nd	+
	10	-	-	+	+	-	-	+	-	+	+	+	+	+	-	-	-	-	+ ^w	-	+	+	nd	+
Salt (NaCl) concentration % (wv)																								
	0.05	+	+	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+	+	nd	+
		s	s																					
	0.3	+	+	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+	+	nd	+
		s	s																					
	0.5	+	+	+ ^s	+ ^s	-	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	+ ^s	-	-	-	-	-	+ ^s	+	+	nd	+
		s	s																					
	1.0	-	-	+ ^w	+ ^s	+ ^w	+ ^s			+ ^w	+ ^s	-	-	-	-	-	-	-	-	+ ^s	-	+	nd	-
	1.5	-	-	-	+ ^w	+ ^w	+ ^w	+ ^w	+ ^w	+ ^w	+ ^w	-	-	-	-	+ ^l	+ ^w	+ ^w	-	+ ^s	-	-	nd	-
	2.0	-	-	-	-	-	+ ^l	+ ^w	-	-	-	-	-	-	-	+ ^l	-	-	-	+ ^l	-	-	nd	-
	2.5	-	-	-	-	-	+ ^l	-	-	-	-	-	-	-	-	-	-	-	-	+ ^l	-	-	nd	-
Antibiotic resistance (µg):																								
Ampicillin (25)		-	-	- ^s	- ^s	- ^s	-	-	+		- ^s	- ^s	- ^s		- ^s	- ^s	- ^s	- ^s	- ^s	+	+	nd	-	nd
		s	s																					
Chloramphenicol (50)		- ^w	-	-	- ^w	- ^s	-	- ^s	- ^s		- ^s	+	+		- ^s	- ^s	- ^s	- ^s	- ^s	+	-	nd	-	nd
Kanamycin (30)		-	- ^s	-	-	- ^s	-	-	-		- ^s	-	-		- ^s	- ^s	- ^s	- ^s	- ^s	+	+	nd	+	-
Penicillin (1 0)		- ^s	- ^s	- ^s	- ^s	- ^s	-	+ ^l	-		- ^s	- ^s	- ^s		- ^s	- ^s	- ^s	- ^s	- ^s	+	nd	nd	nd	nd
Streptomycin (10)		-	-	- ^s	-	- ^s	- ^s	- ^s	- ^s		- ^s	+	- ^s		- ^s	- ^s	- ^s	- ^s	- ^s	+	nd	nd	+	-
			w																					
Tetracyclin (30)		- ^s	-	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s		- ^s	+	- ^s		- ^s	- ^s	- ^s	- ^s	- ^s	+	nd	nd	-	nd
Erythromycin (30)		-	-	-	-	-	-	-	-		- ^s	+ ^l	-		-	- ^w	-	-	-	+	nd	nd	+	-

Phenotypic feature	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Gentamicin (10)	-	-	-	-	-	-	-	-		-	-	-		- ^s	-	-	-	-	+	+	nd	-	nd
Neomycin (10)	-	-	-	-	-	-	-	-		-	-	-		- ^s	-	-	-	-	+	+	nd	-	-
Heavy metal tolerance																							
NiSO ₄ ·6H ₂ O (20 µg/ml)	- s	- s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	-w	nd	nd	nd	nd
CoSO ₄ ·7H ₂ O (20 µg/ml)	- s	- s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	-w	nd	nd	nd	nd
(CH ₃ ·COO) ₂ ·Pb·3H ₂ O (20 µg/ml)	- s	- s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	-w	nd	nd	nd	nd
MnCl ₂ ·4H ₂ O (300 µg/ml)	- w	- w	-w	-w	-w	+	+	+	-w	-w	-w	-w	- ^s	- ^s	- ^s	-w	-w	-w	-w	nd	nd	nd	nd
ZnCl ₂ (200 µg/ml)	- s	- s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	-w	nd	nd	nd	nd
CdCl ₂ (20 µg/ml)	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	- ^s	-l	nd	nd	nd	nd
Nodulation tests																							
nod	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
nif	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

¹ Strains from this study: 1. ArgA1; 2. ArgA2; 3. 98Argb; 4. 128a; 5. PL10; 6. Arg314; 7. Arg677; 8. Arg123; 9. Arg923; 10. 59Dicha; 11. 14Arga; 12. 43Arga; 13. 14Arg b; 14. f; 15. d; 16. BHbdi, 17. BHbdii, 18. BHsci, 19. Ram4asc.

² Reference strains: 20. “*M. intechi*” BD68^T; 21. *M. wenxiniae* WYCCWR95^T; 22. *M. caraganae* CCBAU 11299^T; 23. *M. hawassense* AC99b^T.

³ R= rod-shaped

⁴ Colonies measured in mm. colony sizes ≥ 4 mm were interpreted as large, $2 < x < 3$ as medium, $1 < x < 2$ as small, and < 1 as punctiform.

Table 3.6. Results of *Mesorhizobium* strains obtained in this study (1-19) and closely related strains (20-23)

Substrate	Representative strains (this study) ¹																			Close relatives ²			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Reduction of nitrates to nitrite (NO ₂)	+	+	-	+	+	-	-	-	-	+	-	+	-	-	-	+	-	+	+	-	-	nd	+
Reduction of nitrates to nitrogen (N ₂)	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	-	-	nd	+
Indole production (L-tryptophane) (TRP)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	nd	nd	-
Glucose fermentation (D-glucose) (GLU)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	nd	nd	-
L-arginine DiHydrolase (ADH)	-	-	-	+	-	+	+	+	+	+	-	+	-	-	-	-	-	-	+	-	nd	nd	-
Urease (URE)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	nd	-
Esculin ferric citrate (hydrolysis β-glucosidase) (ESC)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	nd	nd	-
gelatin (bovin origin) (GEL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+	-	nd	nd	-
4-nitrophenyl-βD-galactoyranoside (β-galactosidase) (PNPG)	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	nd	nd	-

Substrate	Representative strains (this study) ¹																						Close relatives ²	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Assimilation of D-glucose (GLU)	+	+	+	+	-	+	+	+	+	+	+	+	+	-	-	+	-	-	+	+	nd	nd	-	
Assimilation of L-arabinose (ARA)	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-	+	+	+	nd	nd	+	
Assimilation of D-mannose (MNE)	+	+	+	+	-	+	+	+	+	+	+	+	+	-	-	+	-	-	+	+	nd	nd	-	
Assimilation of D-mannitol (MAN)	-	-	+	-	-	+	+	+	+	+	+	+	+	-	-	+	-	+	+	+	nd	nd	-	
Assimilation of N-acetyl-glucosamine (NAG)	+	+	+	-	-	+	+	+	+	+	+	+	+	-	+	+	-	-	+	+	nd	nd	+	
Assimilation of D-maltose (MAL)	+	+	+	-	+	+	+	+	+	+	+	+	+	-	-	-	-	-	+	+	nd	nd	+	
Assimilation of potassium gluconate GNT)	+	+	-	+	+	-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	nd	nd	-	
Assimilation of Capric acid (CAP)	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	nd	nd	-	
Assimilation of Adipic acid (ADI)	+	+	-	-	-	-	+	-	-	-	+	+	+	-	-	+	-	+	-	-	nd	nd	-	
Assimilation of Malic acid (MLT)	+	+	+	-	-	+	+	+	+	+	+	-	+	-	+	+	-	+	+	nd	-	nd	-	
Assimilation of Trisodium citrate (CIT)	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	
Assimilation of Phenylacetic acid (PAC)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	nd	nd	-	

¹ Representative strains from this study: 1. ArgA1; 2. ArgA2; 3. 98Argb; 4. 128a; 5. PL10; 6. Agg314; 7. Arg677; 8. Arg123; 9. Arg923; 10. 59Dicha; 11. 14Arga; 12. 43Arga; 13. 14Arg b; 14. f; 15. d; 16. BHbdi, 17. BHbdii, 18. BHsci, 19. Ram4asc.

² Close relatives: 20. "*M. intechi*" BD68^T; 21. *M. wenxiniae* WYCCWR95^T; 22. *M. caraganae* CCBAU 11299^T; 23. *M. hawassense* AC99b^T.

*Results are recorded as + (positive), - (Negative).

Table 3.7. Biolog GENIII MicroPlate™ test results of *Mesorhizobium* strains obtained in this study (1-19) and closely related stains (20-23)

Carbon source	This study ¹																			Close relatives ²			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Dextrin	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+ ^W	+	+ ^W	+ ^W	+	+ ^W	-	?
D-Maltose	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+ ^W	+	+	+ ^W	+	+	+ ^W	+	nd
D-Trehalose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	nd
D-Cellobiose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	nd	nd
Gentiobiose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	nd	nd	nd
Sucrose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	nd
D-Turanose	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+ ^W	+	nd	nd	nd
Stachyose	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+ ^W	+	-	+ ^W	+ ^W	nd	nd	nd
pH 6	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+ ^W	+	+	+	+	nd	nd	nd	nd
pH 5	-	-	-	-	-	+ ^W	-	-	-	-	-	-	-	-	-	-	-	-	+	nd	nd	nd	nd
D-Raffinose	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+ ^W	+	+	+ ^W	+ ^W	+ ^W	-	nd
α-D-Lactose	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	-	+	+	-	+ ^W	+	+ ^W	nd	nd
D-Melibiose	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+ ^W	+	-	+ ^W	+	nd	+	nd
β-Methyl-D-Glucoside	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	+	+	+	+ ^W	nd	nd	nd
D-Salicin	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	-	+	+	+	+ ^W	+	nd	-	nd
N-Acetyl-D-Glucosamine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	nd	nd	nd
N-Acetyl-β-D-Mannosamine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	nd	nd	nd
N-Acetyl-D-Galactosamine	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+ ^W	+	-	-	+ ^W	nd	nd	nd
N-Acetyl Neuraminic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	+	+	+	-	+ ^W	nd	nd	nd
1% NaCl	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+ ^W	+	-	+	+	-	+ ^W	+	nd
4% NaCl	-	-	-	-	+ ^W	+	+	+	+	+ ^W	-	-	-	-	-	-	-	-	+	nd	nd	nd	nd
8% NaCl	+	-	-	-	-	+ ^W	+ ^W	+ ^W	-	+ ^W	-	-	-	-	-	+	+	-	+	nd	nd	nd	nd
α-D-Glucose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	nd	nd
D-Mannose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	nd	+	nd
D-Fructose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	nd

Carbon source	This study ¹																			Close relatives ²			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
D-Galactose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	nd
3-Methyl Glucose	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	-	+ ^W	+	-	-	+ ^W	nd	nd	nd
D-Fucose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+ ^W	nd	nd	nd
L-Fucose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+ ^W	nd	nd	nd
L-Rhamnose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	nd	nd
Inosine	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	-	-	+ ^W	nd	nd	nd
1% Sodium Lactate	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+ ^W	+	+	+	+	-	nd	nd	nd
Fusidic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	-	+	-	nd	nd	nd
D-Serine	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+ ^W	-	-	-	nd	nd	nd
D-Sorbitol	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	nd	nd	nd	nd
D-Mannitol	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	nd	nd	nd	nd
D-Arabitol	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	nd	nd	nd	nd
myo-Inositol	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	+	nd	nd
Glycerol	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	nd	nd	nd
D-Glucose6-PO4	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	-	+ ^W	+	-	+ ^W	+ ^W	nd	nd	nd
D-Fructose6-PO4	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	-	+ ^W	+	-	+ ^W	+	+	+	nd
D-Aspartic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+ ^W	+	-	-	-	nd	+	nd
D-Serine	+ ^W	+	+	-	-	+	+	+	+	+	+	+	+	-	-	-	+	-	+ ^W	+	+ ^W	nd	nd
Troleandomycin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+ ^W	+	-	nd	nd	nd
Rifamycin SV	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	-	+	+	+	+	-	nd	nd	nd
Minocycline	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+ ^W	+	-	nd	nd	nd
Gelatin	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+ ^W	+	+ ^W	+ ^W	-	nd	nd	nd
Glycyl-L-Proline	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	+	+	+ ^W	+	nd	nd	nd
L-Alanine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	nd	nd
L-Arginine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+ ^W	+	-	+	-	nd	-	nd
L-Aspartic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	nd	nd
L-Glutamic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	nd	+	nd
L-Histidine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	+	+	-	-	nd	nd	nd
L-Pyroglutamic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	-	-	+	nd	nd	nd
L-Serine	+	+	+	+ ^W	+	-	-	+	+	+	+	+	+	-	+ ^W	+	+	+ ^W	+ ^W	-	nd	nd	+ ^W

Carbon source	This study ¹																		Close relatives ²				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Lincomycin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	nd	nd	nd
Guanidine HCl	+ ^W	+ ^W	+ ^W	-	+ ^W	+	+	+	+	+	+ ^W	+ ^W	+ ^W	-	-	+	+	+ ^W	+	-	nd	nd	nd
Niaproof 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	nd	nd	nd
Pectin	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+ ^W	+	+	+	+ ^W	+	nd	nd	nd
D-Galacturonic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	-	+ ^W	+ ^W	-	+ ^W	+ ^W	nd	nd	nd
L-Galactonic Acid Lactone	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+ ^W	+ ^W	-	+ ^W	+ ^W	nd	nd	nd
D-Gluconic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+ ^W	+ ^W	-	+	+ ^W	nd	nd	nd
D-Glucuronic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	-	+	+	nd	nd	nd
Glucuronamide	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+ ^W	+	+ ^W	+	+ ^W	nd	nd	nd
Mucic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	-	-	+ ^W	nd	nd	nd
Quinic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	-	+ ^W	+ ^W	nd	nd	nd
D-Saccharic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+ ^W	+	+ ^W	+ ^W	+ ^W	nd	nd	nd
Vancomycin	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	-	nd	nd	nd
Tetrazolium Violet	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+ ^W	+	+	+	+ ^W	-	nd	nd	nd
Tetrazolium Blue	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+ ^W	+	+	+ ^W	+ ^W	-	nd	nd	nd
p-Hydroxy-Phenylacetic Acid	-	+	-	-	-	+	-	-	+	+ ^W	-	-	-	-	-	-	-	-	+ ^W	-	nd	nd	nd
Methyl Pyruvate	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	+	+	+	+ ^W	+	nd	nd	nd
D-Lactic Acid Methyl Ester	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	+	+	+ ^W	+	nd	nd	nd
L-Lactic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	nd	nd	nd
Citric Acid	+ ^W	+	+	+ ^W	-	+	+ ^W	+	+	+	+	+	+	-	-	-	-	-	+	+ ^W	nd	nd	nd
α-Keto-Glutaric Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	-	+ ^W	+	-	+	+	nd	nd	nd
D-Malic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	-	nd	nd
L-Malic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	nd	nd
Bromo-Succinic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+	nd	nd	nd
Nalidixic Acid	+	+	+	+	+	+	+	+	+	+	+	+	+	+ ^W	+ ^W	+	+	+	+	-	nd	nd	nd

¹ Strains from this study: 1. ArgA1; 2. ArgA2; 3. 98Argb; 4. 128a; 5. PL10; 6. Arg314; 7. Arg677; 8. Arg123; 9. Arg923; 10. 59Dicha; 11. 14Arga; 12. 43Arga; 13. 14Arg b; 14. f; 15. d; 16. BHbdi, 17. BHbdii, 18. BHsci, 19. Ram4asc.

² Reference strains: 20. “*M. intechi*” BD68^T; 21. *M. wenxiniae* WYCCWR95^T; 22. *M. caraganae* CCBAU 11299^T; 23. *M. hawassense* AC99b^T.

*Results are recorded as + (positive), - (Negative), -^s (strong inhibition/sensitivity), -^w (weakly sensitive), and where no data was available, nd was used

3.6 Figures

atpD

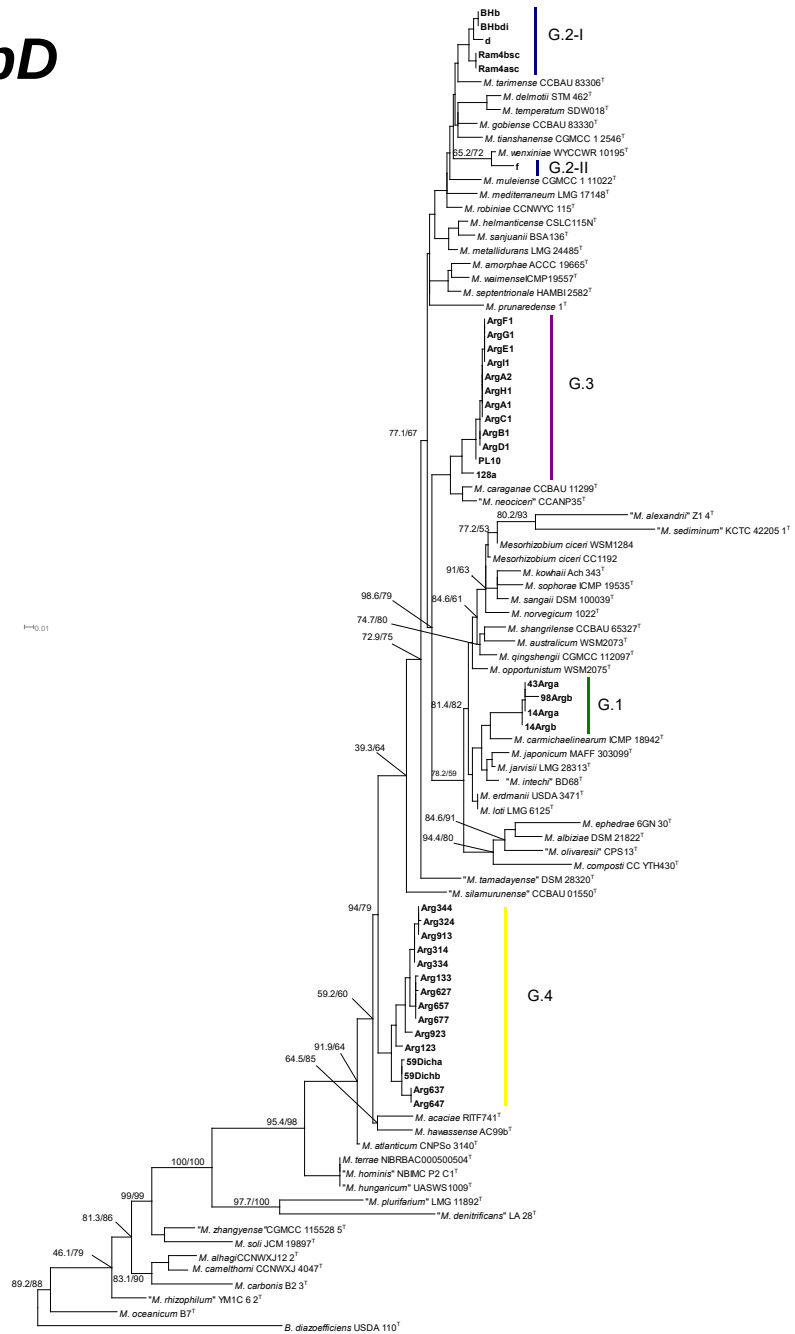


Figure 3.1 A maximum likelihood phylogeny of the *atpD* dataset for *Mesorhizobium*. Branches were assigned with SH-aLRT and UFBoot support (in that order), respectively. *Bradyrhizobium diazoefficiens* USDA 110^T was used as the outgroup. The scale bar represents 2% substitutions per site. Strains obtained from this study appear in bold. The group 1 (G.1) strains are indicated by a green line, G.2 blue, G.3 by purple, and G.4 by yellow. Names indicated with the inverted commas are species, which do not yet have validated names. For all the species, the type strain number is listed after the name.

dnaK

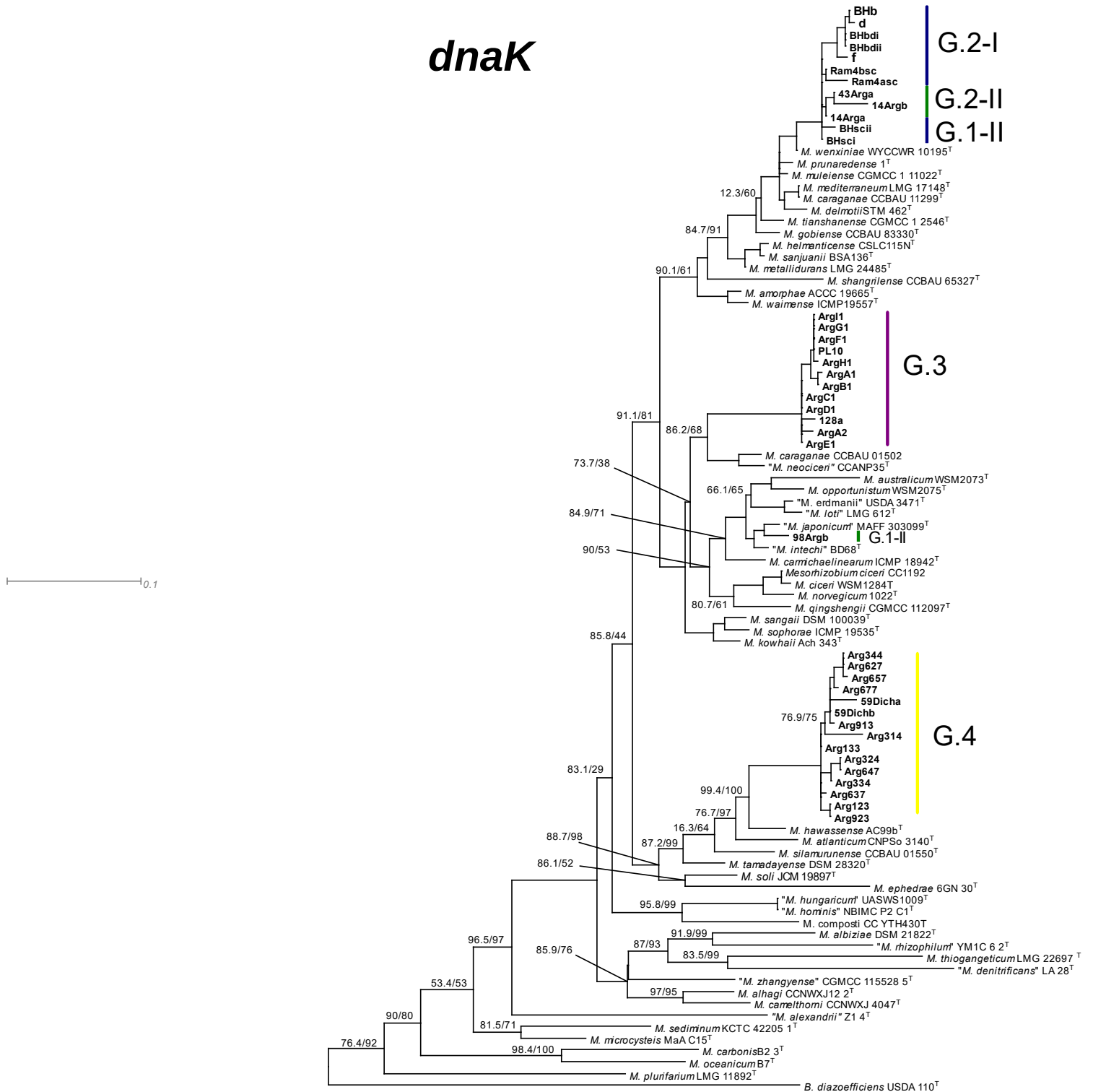


Figure 3.2. A maximum-likelihood phylogeny of the *dnaK* dataset for *Mesorhizobium*. Branches are assigned with SH-aLRT and UFBoot support (in that order), respectively. *Bradyrhizobium diazoefficiens* USDA 110^T was used as outgroup. The scale bar represents 1% substitutions per site. The group 1 (G.1) strains are indicated by a green line, G.2 blue, G.3 by purple, and G.4 by yellow. Names indicated with the inverted commas are species, which do not yet have validated names. For all the species, the type strain number is listed after the name.

GyrB

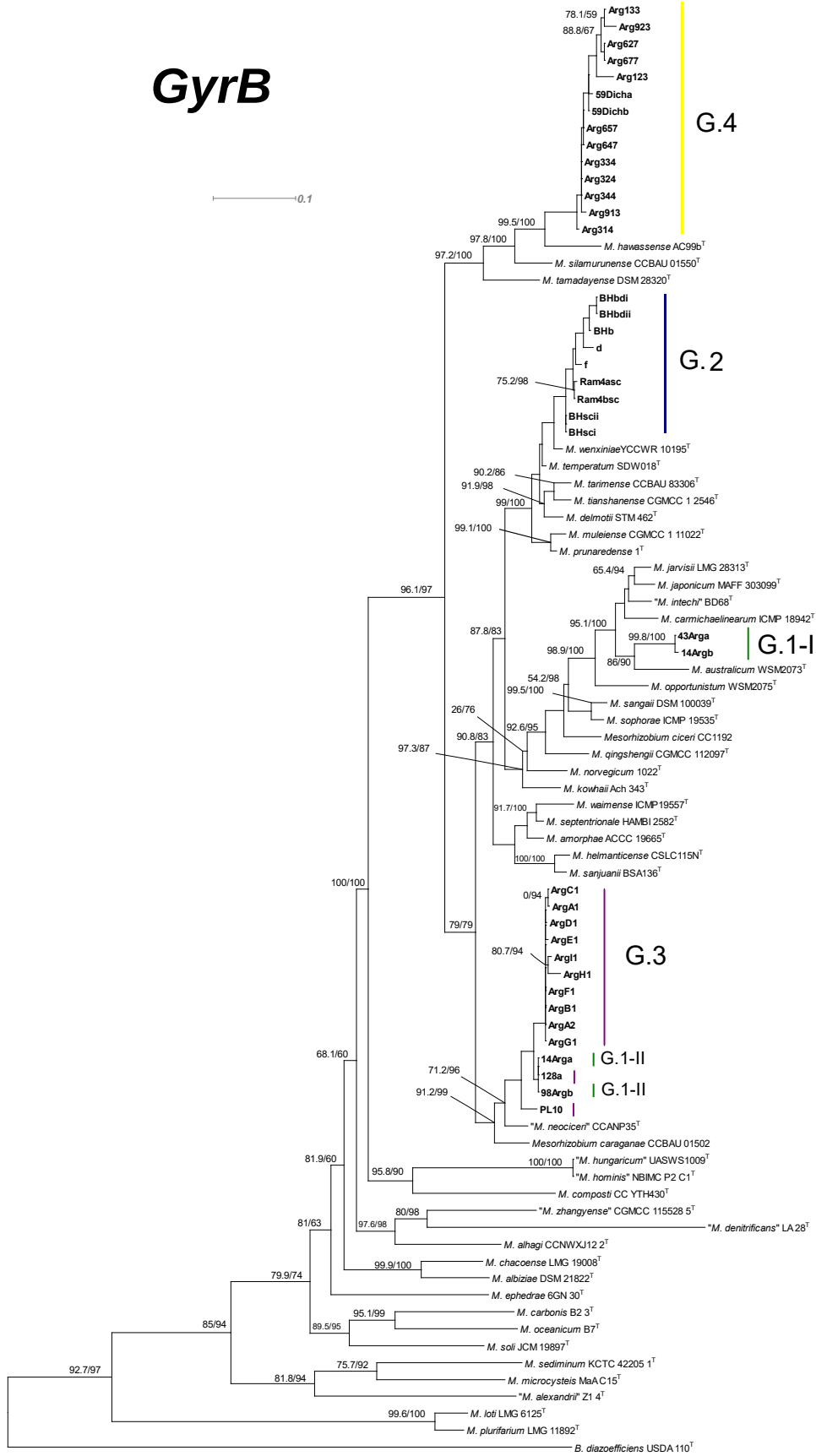


Figure 3.3. A maximum-likelihood phylogeny of the *GyrB* dataset for *Mesorhizobium*. Branches are assigned with SH-aLRT and UFBoot support (in that order), respectively. *Bradyrhizobium diazoefficiens* USDA 110^T was used as outgroup. The scale bar represents 1% substitutions per site. Strains obtained from this study appear in bold. The group 1 (G.1) strains are indicated by a green line, G.2 blue, G.3 by purple, and G.4 by yellow. Names indicated with the inverted commas are species, which do not yet have validated names. For all the species, the type strain number is listed after the name.

recA

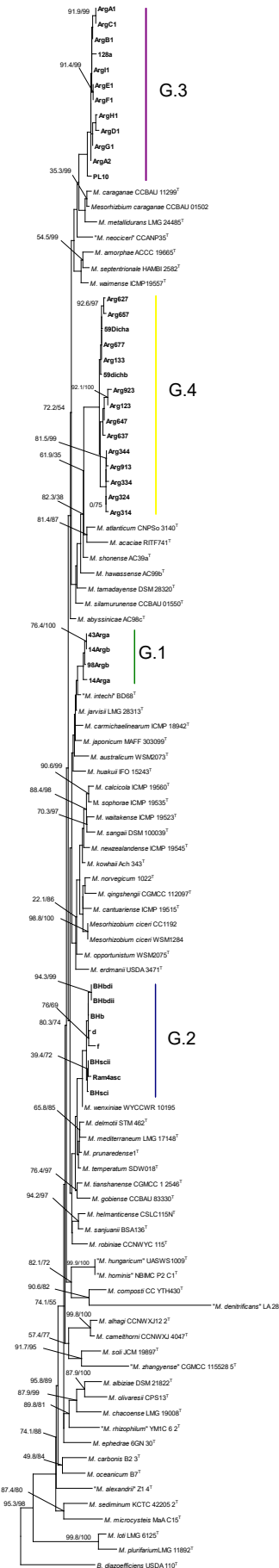
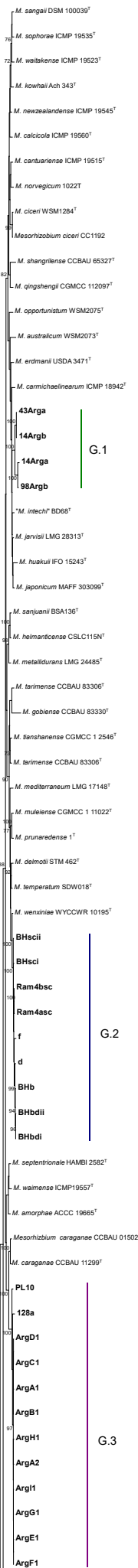


Figure 3.4. A maximum-likelihood phylogeny of the *recA* dataset for *Mesorhizobium*. Branches are assigned with SH-aLRT and UFBoot support (in that order), respectively. *Bradyrhizobium diazoefficiens* USDA 110^T was used as outgroup. The scale bar represents 1% substitutions per site. Strains obtained from this study appear in bold. The group 1 (G.1) strains are indicated by a green line, G.2 blue, G.3 by purple, and G.4 by yellow. Names indicated with the inverted commas are species, which do not yet have validated names. For all the species, the type strain number is listed after the name.

Figure 3.5. A maximum-likelihood phylogeny of the *rpoB* dataset for *Mesorhizobium*. Branches are assigned with SH-aLRT and UFBoot support (in that order), respectively. *Bradyrhizobium diazoefficiens* USDA 110^T was used as outgroup. The scale bar represents 1% substitutions per site. Strains obtained from this study appear in bold. The group 1 (G.1) strains are indicated by a green line, G.2 blue, G.3 by purple, and G.4 by yellow. Names indicated with the inverted commas are species, which do not yet have validated names. For all the species, the type strain number is listed after the name.

MLSA





Continued...

MLSA

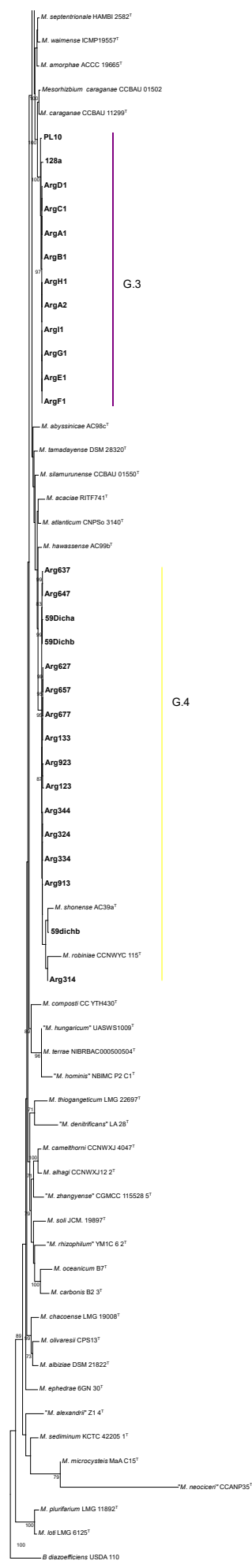


Figure 3.6. A maximum-likelihood MLSA phylogeny of *Mesorhizobium* based on the concatenated 'swiss-cheese' dataset of the core genes *atpD*, *dnaK*, *gyrB*, *recA*, and *rpoB*. Only bootstrap support values of $\geq 70\%$ are indicated. *Bradyrhizobium diazoefficiens* USDA 110^T was used as outgroup. The scale bar represents 5% substitutions per site. Strains obtained from this study appear in bold. The group 1 (G.1) strains are indicated by a green line, G.2 blue, G.3 by purple, and G.4 by yellow. Names indicated with the inverted commas are species, which do not yet have validated names. For all the species, the type strain number is listed after the name.

3.7 Future prospects

Little attention has been given to South African indigenous Genisteae with regards to their associated rhizobial symbionts. Although this study, together with previous studies conducted at the CCR provide some information on the rhizobial diversity associated with this tribe of legumes, there is still a large variety of Genisteae legumes that have not been explored for their rhizobial potential, especially in genera such as *Argyrolobium*, *Melolobium*, and *Dichilus* endemic to South Africa. This study together with previous studies had a sampling bias with regards to Genisteae hosts sampled and regions covered. In this current study, there was not enough evidence to suggest a host-driven rhizobial genus affinity.

Future studies therefore need to further evaluate whether host, geography, or both is driving the rhizobial diversity associated with SA Genisteae. This needs to be done by sampling a representative number of all Genisteae legumes across all provinces/biomes and doing soil sample analysis in each sampled area to (i) gain further understanding on the ecology of indigenous rhizobia, (ii) to evaluate whether there is a difference in species diversity in different biomes, (iii) whether certain species are more likely to be associated with certain genera of Genisteae, and (iv) to further unravel the unknown diversity associated with Genisteae hosts, which will certainly increase the number of newly described rhizobial species from SA.

In chapter 2 of our study, we observed that the *nodA* and *nifH* genes of our strains had different evolutionary histories. Future studies could therefore further investigate the diversity and evolutionary histories between symbiotic loci in Genisteae associated rhizobia, by investigating a wider array of *nod* and *nif* genes to unravel their possibly complex evolutionary histories. Metagenomic studies on the rhizospheres of Genisteae legumes should also be done in addition to the culture dependent approaches to understand the microbial environment and diversity.

3.8 References

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Summary

South Africa is the centre of origin for the legume tribe Genisteeae and the centre of diversity for many of the species in this taxon. In other parts of the world legumes from this tribe are predominantly nodulated by *Bradyrhizobium* species, however not much is known about the rhizobial diversity associated with Genisteeae indigenous to South Africa. The literature review dealt with the status of rhizobial taxonomy, with a specific focus on the genera, *Bradyrhizobium* and *Mesorhizobium*, which is central to this study. Although both these genera associate with a broad range of legume tribes, species descriptions from South Africa are still lacking. I also reviewed the literature on legume taxonomy, with a focus on the evolutionary history and distribution of the Genisteeae tribe (especially the southern African Genisteeae), as well as the diversity and geographical distribution of rhizobia associated with specific genera within the Genisteeae. I highlighted the knowledge gaps on rhizobial symbionts of the southern African lineage Genisteeae.

In this study, 77 isolates from indigenous South African Genisteeae were grouped based on 16S rRNA sequencing. Most of the isolates belonged to *Mesorhizobium* (40 strains), followed by *Bradyrhizobium* (18 strains), non-rhizobial (18 strains), and lastly *Rhizobium* (one strain). The *Bradyrhizobium* strains were delineated to the species level by employing genealogical concordance using five protein-coding genes (*glnII*, *recA*, *dnaK*, *rpoB* and *gyrB*). Two putatively novel species were identified. One of the species (Clade I) belonged to the *B. japonicum* supergroup and the other species (Clade II) could possibly represent a novel lineage (supergroup). In addition, three groups conspecific to previously described species - *B. arachidis*, "*B. brasilense*", and *B. ivorense* were also identified. The novelty of the proposed species was supported by Average Nucleotide Identity (ANI) values of 93.35% and 78.78% respectively. Our *Bradyrhizobium* strains grouped in *nodA* Clades III and IV as well as two lineages on the *nifH* phylogeny. Furthermore, clade I strains could nodulate the promiscuous legumes cowpea and siratro, while clade II strains could not nodulate either, indicating that these strains may be very host specific.

The third chapter focused on evaluating the diversity and evolutionary histories of the forty *Mesorhizobium* strains. These were subjected to phylogenetic analysis of protein-coding genes (*atpD*, *dnaK*, *gyrB*, *recA*, and *rpoB*) which separated the strain into four groups (G.1-G.4), within which only G.2 and G.4 were consistent. A unique grouping

of South African strains was observed in the *nodA* and *nifH* phylogenies, suggesting that our strains have a South African origin. None of the strains was able to nodulate cowpea and siratro. This study shows that Genisteae indigenous to South Africa are more likely to be nodulated by *Mesorhizobium* than *Bradyrhizobium*, that there are potential novel species among the isolates, and nodulation of these indigenous legumes may be very host specific.

The diversity of *Bradyrhizobium* and *Mesorhizobium* strains associated with root nodules of selected indigenous SA legumes

Supplementary material. Mabodiba Maake¹, Juanita Avontuur¹, Chrizelle Beukes¹, Emma Steenkamp¹, Stephanus Venter¹

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Supplementary Tables

Supplementary Table 2.1. Hosts, sources, geographic origin *Bradyrhizobium* strains from the of Genisteae tribe and genes used during their analysis and reference information

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
" <i>B. acaciae</i> " 10BB ^T	Root nodule	<i>Acacia dealbata</i>	South Africa	Avontuur et al. 2021
" <i>B. altum</i> " Pear77 ^T	Root nodule	<i>Pearsonia obovata</i>	South Africa	Avontuur et al. 2021
<i>B. agreste</i> CNPSo 4010 ^T	Root nodule	<i>Glycine clandestina</i>	Western Australia	Klepa et al., 2021
<i>B. algeriense</i> RST89 ^T	Root nodule	<i>Retama sphaerocarpa</i>	Northern Algeria	Ahnia et al., 2019
<i>B. americanum</i> CMVU44 ^T	Nodules	<i>Centrosema macrocarpum</i>	Venezuela	Ramírez-Bahena et al., 2017
<i>B. amphicarpaceae</i> 39S1MB ^T	Root nodule	soybean cv. AC Glengarry	East Canada	Bromfield et al., 2019
<i>B. arachidis</i> LMG26795 ^T	Effective nodules	<i>Arachis hypogaea</i>	China	Wang et al., 2015
<i>B. betae</i> PL7HG1 ^T	Root deformations	<i>Beta vulgaris</i>	Northern Spain	Rivas et al., 2004
" <i>B. brasilense</i> " UFLA03321 ^T	Root nodule	<i>Vigna unguiculata</i>	Brazil	Martins da Costa et al., 2017
<i>B. cajani</i> AMBPC1010 ^T	Root nodule	<i>Cajanus cajan</i>	Dominican Republic	Araújo et al., 2017
<i>B. canariense</i> BTA-1 ^T	Root nodule	<i>Chamaecytisus proliferus</i>	Canary Islands, Spain	Vinuesa et al., 2005
" <i>B. centrolobii</i> " BR10245 ^T	Root nodule	<i>Centrolobium paraense</i>	Brazil	Michel et al., 2017
<i>B. centrosemae</i> A9 ^T	Root nodule	<i>Centrosema molle</i>	Venezuela	Ramírez-Bahena et al., 2017
<i>B. centrosemae</i> A9 ^T	Root nodule	<i>Centrosema molle</i>	Venezuela	Ramírez-Bahena et al., 2017
<i>B. cytisi</i> CTAW11 ^T	Root nodule	<i>Cytisus villosus</i>	Morocco	Chahboune et al., 2011
<i>B. daqingense</i> CCBAU 15774 ^T	Composite soil	<i>Glycine max</i>	China	Wang et al., 2013
" <i>B. denitrificans</i> " LMG 8443 ^T	Stem nodules	<i>Aeschynomene indica</i>	Germany	van Berkum and Eardly. 2002 (Hirsch and Müller 1986) van Berkum et al., 2011
<i>B. diazoefficiens</i> USDA 110 ^T	Root nodule	<i>Glycine max</i>	America	Delamuta et al., 2013
<i>B. diversitatis</i> CNPSo 4019 ^T	Root nodule	<i>Glycine max</i>	Western Australia	Klepa et al., 2021
<i>B. elkanii</i> USDA76 ^T	Root nodule	<i>Glycine max</i>	Japan	Kuykendall et al., 1993
<i>B. embiapense</i> SEMIA 6208 ^T	Root nodule	<i>Desmodium heterocarpon</i>	Colombia	Delamuta et al., 2015
<i>B. erythrophlei</i> CCBAU 53325 ^T	Root nodule	<i>Erythrophleum fordii</i>	China	Yao et al., 2015
<i>B. ferriligni</i> CCBAU 51502 ^T	Root nodule	<i>Erythrophleum fordii</i>	China	Yao et al., 2015
" <i>B. forestalis</i> " INPA54B ^T	Root nodule	Forest legume species (<i>Inga</i> sp.)	Brazil	Martins da Costa et al., 2018

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
<i>B. frederickii</i> CNPS03426 ^T	Root nodule	<i>Chamaecrista fasciculata</i>	USA	Urquiaga et al., 2019
<i>B. ganzhouense</i> CCBAU51670 ^T	Root nodule	<i>Acacia melanoxylon</i>	China	Lu et al., 2014
<i>B. guangdongense</i> CCBAU 51649 ^T	Root nodule	<i>Arachis hypogaea</i>	China	Li et al., 2015
<i>B. guangxiense</i> CCBAU 53363 ^T	Root nodule	<i>Arachis hypogaea</i>	China	Li et al., 2015
" <i>B. guangzhouense</i> " CCBAU 51670 ^T	Root nodule	<i>Arachis hypogaea</i>	China	Li et al., 2019
<i>B. glycinis</i> CNPS04016 ^T	Root nodule	<i>Glycine tabacina</i>	Australia	Klepa et al., 2021
<i>B. huanghuaihaiense</i> CCBAU 23303 ^T	Root nodule	<i>Glycine max</i>	China	Zhang et al., 2012
<i>B. icense</i> LMTR13 ^T	Root nodule	<i>Phaseolus lunatus</i>	Peru	Durán et al., 2014
<i>B. ingae</i> BR10250 ^T	Effective nodules	<i>Inga laurina</i>	Brazil	Da Silva et al., 2014
<i>B. iriomotense</i> EK05 ^T	Tumour-like root outgrowth	<i>Entada koshunensis</i>	Japan	Islam et al., 2010
<i>B. ivorensis</i> CI-1B ^T	Farming soil	<i>Cajanus cajan</i>	Côte d'Ivoire	Fossou et al., 2020
<i>B. japonicum</i> USDA6 ^T	Root nodules	<i>Glycine max</i>	USA	(Kirchner 1896) Jordan 1982
<i>B. jicamae</i> PAC68 ^T	Effective nodules	<i>Pachyrhizus erosus</i>	Native America	Ramírez-Bahena et al., 2009
<i>B. kavangense</i> 14 3 ^T	Root nodules	<i>Vigna unguiculata</i>	Kavango region, Namibia	Grönemeyer et al., 2015
<i>B. lablabi</i> CCBAU 23086 ^T	Root nodules	<i>Lablab purpureus</i>	China	Chang et al., 2011
<i>B. liaoningense</i> 2281 ^T	Soil	<i>Glycine max</i>	China	Xu et al., 1995
<i>B. lupini</i> USDA 3051 ^T	Root nodules	<i>Lupinus angustifolius</i>	New Zealand	(Schroeter 1886) Peix et al., 2015
" <i>B. macuxiense</i> " BR10303 ^T	Root nodules	<i>Centrolobium paraense</i>	Brazil	Michel et al., 2017
<i>B. manausense</i> BR3351 ^T	Effective nodules	<i>Vigna unguiculata</i>	Brazil amazon rainforests	Silva et al., 2014
<i>B. mercantei</i> SEMIA 6399 ^T	Nodules	<i>Lonchocarpus costatus</i>	Brazil	Helene et al., 2017
<i>B. namibiense</i> 5-10 ^T	Root nodules	<i>Lablab purpureus</i>	Namibia	Grönemeyer et al., 2017
<i>B. nanningense</i> CCBAU 53390 ^T	Root nodules	<i>Arachis hypogaea</i>	China	Li et al., 2019
<i>B. neotropica</i> BR10247 ^T	Root nodules	<i>Centrolobium paraense</i>	Brazil	Zilli et al., 2014
<i>B. niftali</i> CNPS03448 ^T	Root nodules	<i>Chamaecrista fasciculata</i>	USA	Klepa et al., 2019
" <i>B. nitroreducens</i> " TSA1 ^T	Rice paddy soil	Rice paddy soil	Japan	Jang et al., 2018
<i>B. oligotrophicum</i> S58 ^T	Rice paddy soil	Rice paddy soil	Japan	(Ohta and Hattori 1985) Ramírez-Bahena et al., 2013
" <i>B. oropedii</i> " pear76 ^T	Root nodules	<i>Pearsonia obovata</i>	South Africa	Avontuur et al. 2021
<i>B. ottawaense</i> OO99 ^T	Root nodules	<i>Glycine max</i>	Canada	Yu et al., 2014

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<i>B. pachyrhizi</i> PAC48 ^T	lima bean	<i>Pachyrhizus erosus</i>	Costa Rica	Ramírez-Bahena et al., 2009
<i>B. paxllaeri</i> LMTR21 ^T	Root nodules	<i>Phaseolus lunatus</i>	Peru	Durán et al., 2014
<i>B. retamae</i> Ro19 ^T	Root nodules	<i>Retama monosperma</i>	Morocco	Guerrouj et al., 2014
<i>B. rifense</i> CTAW71 ^T	Root nodules	<i>Cytisus villosus</i>	Morocco	Chahboune et al., 2014
<i>B. ripae</i> WR4 ^T	Root nodules	<i>Cytisus triflorus</i>	Namibia	Bünger et al., 2018
" <i>B. sacchari</i> " BR10280 ^T	Roots	Sugarcane	Brazil	de Matos et al., 2017
<i>B. shewense</i> ERR11 ^T	Nodules	<i>Erythrina brucei</i>	Ethiopia	Aserse et al., 2017
<i>B. stylosanthis</i> BR446 ^T	Root nodules	<i>Stylosanthes guianensis</i>	Brazil	Delamuta et al., 2016
<i>B. subterraneum</i> 58 21 ^T	Root nodules	<i>Vigna subterranea</i>	Namibia	Grönemeyer et al., 2015
<i>B. symbiodeficiens</i> 85S1MB ^T	Root nodules	<i>Glycine max</i> inoculated with soil from <i>Amphicarpa bracteata</i>	Canada	Bromfield et al., 2020
<i>B. tropiciagri</i> SEMIA6148 ^T	Root nodules	<i>Neonotonia wightii</i>	Brazil	Delamuta et al., 2015
" <i>B. valentinum</i> " LmjM3 ^T	Soil	<i>Lupinus mariae josephae</i>	Spain	Duran et al., 2014
<i>B. vignae</i> 7-2 ^T	Root nodules	<i>Vigna unguiculata</i>	Namibia	Grönemeyer et al., 2016
<i>B. viridifuturi</i> SEMIA690 ^T	Root nodules	<i>Centrosema pubescens</i>	Brazil	Helene et al., 2015
<i>B. yuanmingense</i> CCBAU10071 ^T	Root nodules	<i>Lespedeza cuneata</i>	China	Yao et al., 2002
" <i>B. zhanjiangense</i> " CCBAU51778 ^T	Root nodules	<i>Arachis hypogaea</i>	China	Li et al., 2019
<i>B. archetypum</i> WSM 1744 ^T	Root nodules	<i>Muelleranthus trifoliolatus</i>	Australia	Helene et al., 2020
<i>B. australiense</i> WSM 1791 ^T	Root nodules	<i>Indigofera sp</i>	Australia	Helene et al., 2020
<i>B. murdochi</i> WSM 1741 ^T	Root nodules	<i>Rhynchosia minima</i>	Australia	Helene et al., 2020
<i>B. campsiandrae</i> UFLA 01 1174 ^T	Root nodules	<i>Campsiandra laurilifolia</i>	Amazon rainforest, Brazil	Michelet al., 2020
<i>B. cosmicum</i> 58S1 ^T	Root nodules	<i>Glycine max</i> trapping exp	Canada	Wasai-Hara et al., 2020
<i>B. hipponense</i> aSej3 ^T	Root nodules	<i>Lupinus angustifolius</i>	Tunisia	Rejili et al., 2020
<i>B. uaiense</i> UFLA03 164 ^T	Soil	<i>Glycine max</i>	Brazil	Michelet al., 2020
Arg105	Root nodules	<i>Argyrolobium rupestre</i>	South Africa (Barberton)	Beukes et al., 2016
Arg62	Root nodules	<i>Argyrolobium sericeum</i>	South Africa (Badplaas area)	Beukes et al., 2016
Arg68	Root nodules	<i>Argyrolobium sericeum</i>	South Africa (Badplaas area)	Beukes et al., 2016
BCO1	Root nodules	<i>Adenocarpus foliolosus</i>	Spain	Vinuesa et al., 2005
JAN10	Root nodules	<i>Genista tinctoria</i>	Poland	Kalita and Malek 2004

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JAN16	Root nodules	<i>Genista tinctoria</i>	Poland	Kalita and Malek 2004
JANG916	Root nodules	<i>Genista tinctoria</i>	UK	Kalita and Malek 2004
JANG926	Root nodules	<i>Genista tinctoria</i>	UK	Kalita and Malek 2004
JUKR51	Root nodules	<i>Genista tinctoria</i>	Ukraine	Kalita and Malek 2004
JUKR81	Root nodules	<i>Genista tinctoria</i>	Ukraine	Kalita and Malek 2004
BKBGT6	Root nodules	<i>Genista tinctoria</i>	South Urals	Kalita and Malek 2004
gdr4	Root nodules	<i>Genista sylvestris</i>	Croatia	Parker, M.A et al. unpublished
gdr5	Root nodules	<i>Genista sylvestris</i>	Croatia	Parker, M.A et al. unpublished
gtlt2	Root nodules	<i>Genista tinctoria</i>	Slovenia	Parker, M.A et al. unpublished
gtlt6a	Root nodules	<i>Genista tinctoria</i>	Slovenia	Parker, M.A et al. unpublished
gtlt7	Root nodules	<i>Genista tinctoria</i>	Slovenia	Parker, M.A et al. unpublished
gtlt8	Root nodules	<i>Genista tinctoria</i>	Slovenia	Parker, M.A et al. unpublished
gtlt9	Root nodules	<i>Genista tinctoria</i>	Slovenia	Parker, M.A et al. unpublished
bga1	Root nodules	<i>Genista stenopetala</i>	Canary Islands	Horn et al., 2014
genista10	Root nodules	<i>Genista tinctoria</i>	Poland	Moulin et al., 2004
GaPA1	Root nodules	<i>Genista aspalathoides</i>	Italy	Cardinale et al., 2008
GasA	Root nodules	<i>Genista aspalathoides</i>	Italy	Cardinale et al., 2008
Fer5	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Fer10p	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Fer24	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Fer37	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Fer38	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Fer59	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Fer71	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Fer83	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Fer96g	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Fer96p	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Fer98	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Fer109	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
Fer113	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Fer125	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Fer402	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Fer403	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri137	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri138	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri157	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri208	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri265	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri290	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri301	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri304	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri327	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri400	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri418	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri420	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri432	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri442	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri448	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Tri451	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Num362	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Num377	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Num380	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Num381	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Num382	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Num383	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Num384	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Num392	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Num393	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
Num399	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Num404	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Num410	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Num487	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
Num488	Root nodules	<i>Genista ferox</i>	Northern Algeria	Boudehouche et al., 2020
CTO11	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Baimiev et al., 2012
CTO29	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
CTO55	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
CTO41	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
CTO44*	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
CTS21	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
CTS12	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
CTO13	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
CTO33	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
CTS24	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
CTO1	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
CTO21	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
CTO24	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
CTS7	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
CTS57	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
CTS8	Root nodules	<i>Cytisus villosus</i>	Northeastern Algeria	Ahnia et al., 2014
C1	Root nodules	<i>Chamaecytisus ruthenicus</i>	South Urals	Gonzalez-Andres et al., 1999
R45721	Root nodules	<i>Cytisus scoparius</i> 8	Belgium	Baimiev et al., 2012
R46306	Root nodules	<i>Cytisus scoparius</i> 19	Belgium	De Meyer et al., 2011
R45545	Root nodules	<i>Cytisus scoparius</i> 1	Belgium	De Meyer et al., 2011
R46173	Root nodules	<i>Cytisus scoparius</i> 1	Belgium	De Meyer et al., 2011
R46277	Root nodules	<i>Cytisus scoparius</i>	Belgium	De Meyer et al., 2011
R46306	Root nodules	<i>Cytisus scoparius</i>	Belgium	De Meyer et al., 2011
H13	Root nodules	<i>Cytisus scoparius</i>	Spain	Rodríguez-Echeverría. 2010

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
H15	Root nodules	<i>Cytisus scoparius</i>	Spain	Rodríguez-Echeverría. 2010
C18		<i>Cytisus grandifloras</i>	Portugal	Rodríguez-Echeverría. 2010
csem17, csr64, csds18, csnc4, cspf19, csr63, csma2b, csem17, csc2, cs11, cstc1, cstc20, cswp47, cs4c2a, csc5, cspf11, csds5, csmx9, csma27, cs15, csri27	Root nodules	<i>Cytisus scoparius</i>	USA	De Meyer et al., 2011
csjp11	Root nodules	<i>Cytisus scoparius</i>	USA	Horn et al., 2014
CTAW22	Root nodules	<i>Cytisus triflorus</i>	Morocco	Chahboune et al., 2011
CTAW38	Root nodules	<i>Cytisus triflorus</i>	Morocco	Chahboune et al., 2011
bcc2	Root nodules	<i>Cytisus proliferus</i>	Canary Islands	Horn et al., 2014
bcp5	Root nodules	<i>Cytisus proliferus</i>	Canary Islands	Horn et al., 2014
cir1	Root nodules	<i>Cytisus scoparius</i>	Ireland	Horn et al., 2014
cir2	Root nodules	<i>Cytisus scoparius</i>	Ireland	Horn et al., 2014
csck18	Root nodules	<i>Cytisus scoparius</i>	USA	Horn et al., 2014
cstc1	Root nodules	<i>Cytisus scoparius</i>	USA	Horn et al., 2014
cyt17	Root nodules	<i>Cytisus scoparius</i>	Poland	Horn et al., 2014
c11	Root nodules	<i>Cytisus grandifloras</i>	Portugal	Horn et al., 2014
h11	Root nodules	<i>Cytisus scoparius</i>	Spain	Horn et al., 2014
h16	Root nodules	<i>Cytisus scoparius</i>	Spain	Horn et al., 2014
h31	Root nodules	<i>Cytisus scoparius</i>	Spain	Horn et al., 2014
h32	Root nodules	<i>Cytisus scoparius</i>	Spain	Horn et al., 2014
h33	Root nodules	<i>Cytisus scoparius</i>	Spain	Horn et al., 2014
zar1	Root nodules	<i>Cytisus scoparius</i>	Poland	Horn et al., 2014
zs7	Root nodules	<i>Cytisus scoparius</i>	Scotland	Horn et al., 2014
zs14	Root nodules	<i>Cytisus scoparius</i>	Scotland	Horn et al., 2014
Os9	Root nodules	<i>Cytisus scoparius</i>	Japan	Stępkowski et al., 2007
cyt11	Root nodules	<i>Cytisus</i> sp.	Poland	Stępkowski et al., 2007
ICMP14291	Root nodules	<i>Cytisus scoparius</i>	New Zealand	Weir et al., 2004
ICMP19832	Root nodules	<i>Cytisus scoparius</i>	New Zealand	Weir et al., 2004

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
ICMP19831	Root nodules	<i>Cytisus scoparius</i>	New Zealand	Weir et al., 2004
ICMP19829	Root nodules	<i>Cytisus scoparius</i>	New Zealand	Weir et al., 2004
ICMP19828	Root nodules	<i>Cytisus scoparius</i>	New Zealand	Weir et al., 2004
ICMP12624	Root nodules	<i>Cytisus scoparius</i>	New Zealand	Weir et al., 2004
BCC1	Root nodules	<i>Chamaecytisus proliferus</i>	Canary Islands	Adriana Jarabo-Lorenzo et al. 2003
BCC2	Root nodules	<i>Chamaecytisus proliferus</i>	Canary Islands	Adriana Jarabo-Lorenzo et al. 2003
BCMAM1	Root nodules	<i>Chamaecytisus proliferus</i>	Morocco	Vinuesa et al., 2005
BCMAM3	Root nodules	<i>Chamaecytisus proliferus</i>	Morocco	Vinuesa et al., 2005
BCMAM2	Root nodules	<i>Chamaecytisus proliferus</i>	Morocco	Vinuesa et al., 2005
BCMAM5	Root nodules	<i>Chamaecytisus proliferus</i>	Morocco	Vinuesa et al., 2005
BCMAM6	Root nodules	<i>Chamaecytisus proliferus</i>	Morocco	Vinuesa et al., 2005
BCMAM8	Root nodules	<i>Chamaecytisus proliferus</i>	Morocco	Vinuesa et al., 2005
BCMAM9	Root nodules	<i>Chamaecytisus proliferus</i>	Morocco	Vinuesa et al., 2005
BCMAM11	Root nodules	<i>Chamaecytisus proliferus</i>	Morocco	Vinuesa et al., 2005
BCMK1	Root nodules	<i>Chamaecytisus proliferus</i>	Morocco	Vinuesa et al., 2005
BCMK6	Root nodules	<i>Chamaecytisus proliferus</i>	Morocco	Vinuesa et al., 2005
BCP5	Root nodules	<i>Chamaecytisus proliferus</i>	Canary Islands	Vinuesa et al., 2005
BCP14	Root nodules	<i>Chamaecytisus proliferus</i>	Canary Islands	Vinuesa et al., 2005
BCP22	Root nodules	<i>Chamaecytisus proliferus</i>	Canary Islands	Vinuesa et al., 2005
BES1	Root nodules	<i>Chamaecytisus proliferus</i>	Canary Islands	Vinuesa et al., 2005
BES2	Root nodules	<i>Chamaecytisus proliferus</i>	Canary Islands	Vinuesa et al., 2005
BC-P6	Root nodules	<i>Chamaecytisus proliferus</i>	Canary Islands	Vinuesa et al., 2005
R45574	Root nodule	<i>Lupinus polyphyllus</i>	Belgium	De Meyer et al., 2011
ISLU21	Soil	<i>Lupinus luteus</i>	Spain	Sanchez-Canizares et al., 2011
SEMIA928	Root nodules	<i>Lupinus</i> sp	Brazil	Menna et al., 2009
BlupMR1	Root nodules	<i>Lupinus montanus</i>	Mexico	Vinuesa et al., 2005
CICS70	Root nodules	<i>Lupinus montanus</i>	Mexico	Vinuesa, et al., 2005
FN13	Root nodules	<i>Lupinus montanus</i>	Mexico	Vinuesa et al., 2005
ISLU9	Root nodules	<i>Lupinus cosentinii</i>	Spain	Sanchez-Canizares et al., 2011

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
ISLU12	Root nodules	<i>Lupinus cosentinii</i>	Spain	Sanchez-Canizares et al., 2011
ISLU13	Root nodules	<i>Lupinus micranthus</i>	Spain	Sanchez-Canizares et al., 2011
ISLU101	Root nodules	<i>Lupinus angustifolius</i>	Spain	Sanchez-Canizares et al., 2011
LmjD2b	Root nodules	<i>Lupinus mariae-josephi</i>	Spain	Sanchez-Canizares et al., 2011
UPP113	Root nodules	<i>Lupinus albus</i>	Poland	Stępkowski et al., 2011
UPP133	Root nodules	<i>Lupinus albus</i>	Poland	Stępkowski et al., 2011
UPP162	Root nodules	<i>Lupinus albus</i>	Poland	Stępkowski et al., 2011
UPP201	Root nodules	<i>Lupinus angustifolius</i>	Poland	Stępkowski et al., 2011
UPP212	Root nodules	<i>Lupinus angustifolius</i>	Poland	Stępkowski et al., 2011
UPP213	Root nodules	<i>Lupinus angustifolius</i>	Poland	Stępkowski et al., 2011
UPP231	Root nodules	<i>Lupinus angustifolius</i>	Poland	Stępkowski et al., 2011
UPP233	Root nodules	<i>Lupinus angustifolius</i>	Poland	Stępkowski et al., 2011
UPP241	Root nodules	<i>Lupinus angustifolius</i>	Poland	Stępkowski et al., 2011
UPP242	Root nodules	<i>Lupinus angustifolius</i>	Poland	Stępkowski et al., 2011
UPP243	Root nodules	<i>Lupinus angustifolius</i>	Poland	Stępkowski et al., 2011
UPP253	Root nodules	<i>Lupinus angustifolius</i>	Poland	Stępkowski et al., 2011
UPP312	Root nodules	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2011
UPP323	Root nodules	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2011
UPP331	Root nodules	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2011
UPP332	Root nodules	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2011
UPP333	Root nodules	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2011
UPP342	Root nodules	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2011
UPP343	Root nodules	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2011
UPP344	Root nodules	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2011
UPP345	Root nodules	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2011
UPP346	Root nodules	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2011
UPP347	Root nodules	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2011
UPP348	Root nodules	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2011
UPP351	Root nodules	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2011

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
UPP361	Root nodules	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2011
CH2437	Root nodule	<i>Lupinus tominensis</i>	Bolivia	Stępkowski et al., 2012
CH2509	Root nodule	<i>Lupinus albus</i>	Brazil	Stępkowski et al., 2012
WSM468	Root nodule	<i>Lupinus cosentinii</i>	Australia	Stępkowski et al., 2005
WSM469	Root nodule	<i>Lupinus cosentinii</i>	Australia	Stępkowski et al., 2005
WSM2152	Root nodule	<i>Lupinus angustifolius</i>	Australia	Stępkowski et al., 2005
WSM2153	Root nodule	<i>Lupinus angustifolius</i>	Australia	Stępkowski et al., 2005
WSM2154	Root nodule	<i>Lupinus angustifolius</i>	Australia	Stępkowski et al., 2005
WSM1420	Root nodule	<i>Lupinus cosentinii</i>	Australia	Stępkowski et al., 2005
WSM2458	Root nodule	<i>Lupinus angustifolius</i>	Australia	Stępkowski et al., 2005
Lpsp34	Root nodule	<i>Lupinus perennis</i>	USA	Parker. 2012
lppb2	Root nodule	<i>Lupinus perennis</i>	USA	Koppell and Parker. 2012
Lpsp1b	Root nodule	<i>Lupinus perennis</i>	USA	Koppell and Parker. 2012
ll1	Root nodule	<i>Lupinus lepidus</i>	USA	Koppell and Parker. 2012
ll4	Root nodule	<i>Lupinus lepidus</i>	USA	Koppell and Parker. 2012
llw1	Root nodule	<i>Lupinus lepidus</i>	USA	Koppell and Parker. 2012
leu3	Root nodule	<i>Lupinus leucophyllus</i>	USA	Koppell and Parker. 2012
leu14	Root nodule	<i>Lupinus leucophyllus</i>	USA	Koppell and Parker. 2012
leu16	Root nodule	<i>Lupinus leucophyllus</i>	USA	Koppell and Parker. 2012
leu1	Root nodule	<i>Lupinus leucophyllus</i>	USA	Koppell and Parker. 2012
leu19	Root nodule	<i>Lupinus leucophyllus</i>	USA	Koppell and Parker. 2012
leu5	Root nodule	<i>Lupinus leucophyllus</i>	USA	Koppell and Parker. 2012
leu18	Root nodule	<i>Lupinus leucophyllus</i>	USA	Koppell and Parker. 2012
lua12	Root nodule	<i>Lupinus sericeus</i>	USA	Koppell and Parker. 2012
lua6	Root nodule	<i>Lupinus sericeus</i>	USA	Koppell and Parker. 2012
lss3	Root nodule	<i>Lupinus sericeus</i>	USA	Koppell and Parker. 2012
lss7	Root nodule	<i>Lupinus sericeus</i>	USA	Koppell and Parker. 2012
lss8	Root nodule	<i>Lupinus sericeus</i>	USA	Koppell and Parker. 2012
lsds6	Root nodule	<i>Lupinus sericeus</i>	USA	Koppell and Parker. 2012

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
la1a	Root nodule	<i>Lupinus arboreus</i>	USA	Koppell and Parker. 2012
la2b	Root nodule	<i>Lupinus arboreus</i>	USA	Koppell and Parker. 2012
lfta1	Root nodule	<i>Lupinus nootkatensis</i>	Alaska	Koppell and Parker. 2012
lfta11	Root nodule	<i>Lupinus nootkatensis</i>	Alaska	Koppell and Parker. 2012
lfta7	Root nodule	<i>Lupinus nootkatensis</i>	Alaska	Koppell and Parker. 2012
CH2493	Root nodule	<i>Lupinus paraguariensis</i>	Brazil	Stępkowski et al., 2007
CH2496	Root nodule	<i>Lupinus</i> sp.	Brazil	Unknown
PL41	Root nodule	<i>Lupinus</i> sp.	Peru	Stępkowski et al., 2007
CH2310	Root nodule	<i>Lupinus bandelierae</i>	Bolivia	Stępkowski et al., 2007
CH2318	Root nodule	<i>Lupinus bandelierae</i>	Bolivia	Stępkowski et al., 2007
CH2352	Root nodule	<i>Lupinus</i> sp.	Peru	Stępkowski et al., 2007
CH2355	Root nodule	<i>Lupinus misticola</i>	Peru	Stępkowski et al., 2007
CH2391	Root nodule	<i>Lupinus</i> sp.	Peru	Stępkowski et al., 2007
CH2438	Root nodule	<i>Lupinus beviscapus</i>	Bolivia	Stępkowski et al., 2007
CH2443	Root nodule	<i>Lupinus pycnostachys</i>	Bolivia	Stępkowski et al., 2007
CH2490	Root nodule	<i>Lupinus paranensis</i>	Brazil	Stępkowski et al., 2007
CH2498	Root nodule	<i>Lupinus rubrilorus</i>	Brazil	Stępkowski et al., 2007
CH2506	Root nodule	<i>Lupinus uleanus</i>	Brazil	Stępkowski et al., 2007
CH2510	Root nodule	<i>Lupinus bracteolaris</i>	Brazil	Stępkowski et al., 2007
C4	Root nodule	<i>Lupinus mutabilis</i>	Ecuador	Stępkowski et al., 2007
C8	Root nodule	<i>Lupinus mutabilis</i>	Ecuador	Stępkowski et al., 2007
USDA 3505	Root nodule	<i>Lupinus montanus</i>	Mexico	Stępkowski et al., 2007
FTA6	Root nodule	<i>Lupinus nootkatensis</i>	Alaska	Stępkowski et al., 2007
FTA7	Root nodule	<i>Lupinus nootkatensis</i>	Alaska	Stępkowski et al., 2007
ARC403	Root nodule	<i>Lupinus albus</i>	Egypt	Stępkowski et al., 2003
4S16	Root nodule	<i>Lupinus angustifolius</i>	South Africa	Stępkowski et al., 2005
BLUH1	Root nodule	<i>Lupinus angustifolius</i>	Canary Islands	Stępkowski et al., 2007
BLUT1	Root nodule	<i>Lupinus albus</i>	Canary Islands	Stępkowski et al., 2007
D1	No info	<i>Lupinus polyphyllus</i>	Netherlands	Mouling et al., 2004

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
LL13	No info	<i>Lupinus luteus</i>	France	Moulin et al., 2004
ICEA	Root nodule	<i>Lupinus nootkatensis</i>	Iceland	Stępkowski et al., 2007
ICEB	Root nodule	<i>Lupinus nootkatensis</i>	Iceland	Stępkowski et al., 2007
ICED	Root nodule	<i>Lupinus nootkatensis</i>	Iceland	Stępkowski et al., 2007
WU140	Root nodule	<i>Lupinus cosentinii</i>	Australia	Stępkowski et al., 2005
WM9	Root nodule	<i>Lupinus luteus</i>	Poland	Stępkowski et al., 2003
VK7	Soil	<i>Lupinus</i> sp.	South Africa	Botha et al., 2002
Zaluz80	Root nodule	<i>Lupinus polyphyllus</i>	Poland	Stępkowski et al., 2007
1S20	Soil	<i>Lupinus angustifolius</i>	South Africa	Stępkowski et al., 2005
2S9	Soil	<i>Lupinus angustifolius</i>	South Africa	Stępkowski et al., 2005
3S16	Soil	<i>Lupinus angustifolius</i>	South Africa	Stępkowski et al., 2005
5S10	Soil	<i>Lupinus angustifolius</i>	South Africa	Stępkowski et al., 2005
WSM1417	Root nodule	<i>Lupinus</i> sp.	Chile	Reeve et al., 2013
W72	Root nodule	<i>Lupinus cosentinii</i>	Australia	Stępkowski et al., 2005
A13	Soil	<i>Lupinus angustifolius</i>	Australia	Stępkowski et al., 2005
WU8	Root nodule	<i>Lupinus cosentinii</i>	Australia	Stępkowski et al., 2005
MCLA07	Root nodule	<i>Lupinus albus</i>	Spain	Stępkowski et al., 2007
Lcamp1	Root nodule	<i>Lupinus campestris</i>	Mexico	Stępkowski et al., 2007
Lcamp6	Root nodule	<i>Lupinus campestris</i>	Mexico	Stępkowski et al., 2007
Lcamp8	Root nodule	<i>Lupinus campestris</i>	Mexico	Stępkowski et al., 2007
CBP70	No info	<i>Lupinus campestris</i>	Mexico	Moulin, L. et al. 2004
MCLA23	Root nodules	<i>Lupinus albus</i>	Spain	Rivas et al., 2009
MCLA12	Root nodules	<i>Lupinus albus</i>	Spain	Rivas et al., 2009
MCLA22	Root nodules	<i>Lupinus albus</i>	Spain	Rivas et al., 2009
RLA08	Root nodules	<i>Lupinus albus</i>	Spain	Rivas et al., 2009
RLA09	Root nodules	<i>Lupinus albus</i>	Spain	Rivas et al., 2009
RLA10	Root nodules	<i>Lupinus albus</i>	Spain	Rivas et al., 2009
RLA11	Root nodules	<i>Lupinus albus</i>	Spain	Rivas et al., 2009
LmjA2	Soil	<i>Lupinus mariae-josephae</i>	Spain	Sánchez-Cañizares et al., 2011

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
LmjB2b	Soil	<i>Lupinus mariae-josephae</i>	Spain	Sánchez-Cañizares et al., 2011
LmjC	Soil	<i>Lupinus mariae-josephae</i>	Spain	Sánchez-Cañizares et al., 2011
LmjD32	Soil	<i>Lupinus mariae-josephae</i>	Spain	Sánchez-Cañizares et al., 2011
LmjH2p	Soil	<i>Lupinus mariae-josephae</i>	Spain	Sánchez-Cañizares et al., 2011
LmjG2	Soil	<i>Lupinus mariae-josephae</i>	Spain	Durán et al., 2013
LmjG3	Soil	<i>Lupinus mariae-josephae</i>	Spain	Durán et al., 2013
LmjL5	Soil	<i>Lupinus mariae-josephae</i>	Spain	Durán et al., 2013
LmjL7	Soil	<i>Lupinus mariae-josephae</i>	Spain	Durán et al., 2013
LmjL9	Soil	<i>Lupinus mariae-josephae</i>	Spain	Durán et al., 2013
LmjM1	Soil	<i>Lupinus mariae-josephae</i>	Spain	Durán et al., 2013
LmjM2	Soil	<i>Lupinus mariae-josephae</i>	Spain	Durán et al., 2013
LmjM6	Soil	<i>Lupinus mariae-josephae</i>	Spain	Durán et al., 2013
LmjM10	Soil	<i>Lupinus mariae-josephae</i>	Spain	Durán et al., 2013
LmjTA6	Soil	<i>Lupinus mariae-josephae</i>	Spain	Durán et al., 2013
LmjTA10	Soil	<i>Lupinus mariae-josephae</i>	Spain	Durán et al., 2013
LmjX7	Soil	<i>Lupinus mariae-josephae</i>	Spain	Durán et al., 2013
LmjX10	Soil	<i>Lupinus mariae-josephae</i>	Spain	Durán et al., 2013
AS232	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
AS65	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
NAS150	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
NAS151	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
NAS144	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
NAS124	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
NAS81	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
NAS801	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
NAS74	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
AS68	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
ICMP20566	Root nodules	<i>Lupinus polyphyllus</i>	New Zealand	Unpubl.
ICMP20563	Root nodules	<i>Lupinus polyphyllus</i>	New Zealand	Unpubl.
ICMP20562	Root nodules	<i>Lupinus polyphyllus</i>	New Zealand	Unpubl.
ICMP20561	Root nodules	<i>Lupinus polyphyllus</i>	New Zealand	Unpubl.

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
NAS962	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al. Unpublished
FN1	Root nodules	Field	Canada	Kohlmeier et al., 2015
UBMA171	Root nodules	<i>Lupinus micranthus</i>	Algeria	Chekireb et al., 2017
UBMA183	Root nodules	<i>Lupinus micranthus</i>	Algeria	Chekireb et al., 2017
UBMA195	Root nodules	<i>Lupinus angustifolius</i>	Algeria	Chekireb et al., 2017
UBMA052	Root nodules	<i>Lupinus micranthus</i>	Algeria	Chekireb et al., 2017
UBMA051	Root nodules	<i>Lupinus angustifolius</i>	Algeria	Chekireb et al., 2017
UBMA197	Root nodules	<i>Lupinus angustifolius</i>	Algeria	Chekireb et al., 2017
UBMA182	Root nodules	<i>Lupinus micranthus</i>	Algeria	Chekireb et al., 2017
UBMA122	Root nodules	<i>Lupinus micranthus</i>	Algeria	Chekireb et al., 2017
UBMA510	Root nodules	<i>Lupinus micranthus</i>	Algeria	Chekireb et al., 2017
UBMAN05	Root nodules	<i>Lupinus micranthus</i>	Algeria	Chekireb et al., 2017
UBMA181	Root nodules	<i>Lupinus micranthus</i>	Algeria	Chekireb et al., 2017
UBMA192	Root nodules	<i>Lupinus angustifolius</i>	Algeria	Chekireb et al., 2017
UBMA060	Root nodules	<i>Lupinus angustifolius</i>	Algeria	Chekireb et al., 2017
UBMA050	Root nodules	<i>Lupinus angustifolius</i>	Algeria	Chekireb et al., 2017
ICMP19837	Root nodules	<i>Lupinus arboreus</i>	New Zealand	Liu, W.Y.Y. Unpublished
ICMP19836	Root nodules	<i>Lupinus arboreus</i>	New Zealand	Liu, W.Y.Y. Unpublished
ICMP19835	Root nodules	<i>Lupinus arboreus</i>	New Zealand	Liu, W.Y.Y. Unpublished
LupCI	Root nodules	<i>Lupinus polyphyllus</i>	New Zealand	Unpubl.
AS61	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
AS60	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
AS58	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
AS55	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
AS53	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
AS48	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
AS44	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
AS38	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
AS21	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
AS15	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
AS2	Root nodules	<i>Lupinus albus</i>	Brazil	Granada et al., 2015
UBMA061	Root nodules	<i>Lupinus angustifolius</i>	Algeria	Chekireb et al., 2017
UBMA122	Root nodules	<i>Lupinus micranthus</i>	Algeria	Chekireb et al., 2017
LmicT14	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicZ4	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicZ10	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicAL32	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicISLU122	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicAL27	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicAL42	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicF61	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicF65	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicISLU13	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicM12	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicAL38	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicF63	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicAM6	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicT28	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicAL48	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicAM3	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicT16	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicT13	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicT5	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicT10	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicT8	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicT18	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicT26	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
LmicT27	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicAL52	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicM10	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicAL54	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicM20	Soil; root nodules	<i>Lupinus micranthus</i>	Spain	Bourebaba et al., 2016
LmicAM4	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicT2	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicIA4	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicT3	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicIA1	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicIA7	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicZ3	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
LmicA16	Soil; root nodules	<i>Lupinus micranthus</i>	Algeria	Bourebaba et al., 2016
lavp2b	No info	<i>Laburnum anagyroides</i>	Croatia	Parker, M.A, Unpublished
lamp2	No info	<i>Laburnum anagyroides</i>	Croatia	Parker, M.A, Unpublished
lamp5	No info	<i>Laburnum anagyroides</i>	Croatia	Parker, M.A, Unpublished
lamp8	No info	<i>Laburnum anagyroides</i>	Croatia	Parker, M.A, Unpublished
lamp9a	No info	<i>Laburnum anagyroides</i>	Croatia	Parker, M.A, Unpublished
lamp10b	No info	<i>Laburnum anagyroides</i>	Croatia	Parker, M.A, Unpublished
ValeG5	No info	<i>Retama sphaerocarpa</i>	Spain	Parker, M.A, Unpublished
AbruD12	No info	<i>Retama sphaerocarpa</i>	Spain	Parker, M.A, Unpublished
CastH25	No info	<i>Retama sphaerocarpa</i>	Spain	Parker, M.A, Unpublished
TabeB8	No info	<i>Retama sphaerocarpa</i>	Spain	Parker, M.A, Unpublished
AlisF2	No info	<i>Retama sphaerocarpa</i>	Spain	Parker, M.A, Unpublished
ColIC23	No info	<i>Retama sphaerocarpa</i>	Spain	Parker, M.A, Unpublished
ColIC19	No info	<i>Retama sphaerocarpa</i>	Spain	Parker, M.A, Unpublished
ColIC20	No info	<i>Retama sphaerocarpa</i>	Spain	Parker, M.A, Unpublished
RiojA8	No info	<i>Retama sphaerocarpa</i>	Spain	Parker, M.A, Unpublished
AbruD10	No info	<i>Retama sphaerocarpa</i>	Spain	Parker, M.A, Unpublished

Species name/ Identity (strain)	Source	Legume host	Geographical origin	Reference
RSB6	Root nodules	<i>Retama sphaerocarpa</i>	Algeria	Boulila et al., 2009
RSA104	Root nodules	<i>Retama sphaerocarpa</i>	Algeria	Boulila et al., 2009
sjz1b	No info	<i>Spartium junceum</i>	Croatia	Parker, M.A, Unpublished
sjz3b	No info	<i>Spartium junceum</i>	Croatia	Parker, M.A, Unpublished
sjz6b	No info	<i>Spartium junceum</i>	Croatia	Parker, M.A, Unpublished
SjCL30	Root nodules	<i>Spartium junceum</i>	Italy	Cardinale et al., 2008
Sj1	Root nodules	<i>Spartium junceum</i>	Italy	Cardinale et al., 2008
Sj15c	Root nodules	<i>Spartium junceum</i>	Italy	Cardinale et al., 2008
SjCb5	Root nodules	<i>Spartium junceum</i>	Italy	Cardinale et al., 2008
BGA1	Root nodules	<i>Genista stenopetala</i>	Canary Islands	Horn et al. Unpublished
BRE1	Root nodules	<i>Teline canariensis</i>	Canary Islands	Vinuesa et al., 2005
BRE4	Root nodules	<i>Teline canariensis</i>	Canary Islands	Vinuesa et al., 2005
U12	Root nodules	<i>Ulex europaeus</i>	Portugal	Rodríguez-Echeverría. 2010
U13	Root nodules	<i>Ulex europaeus</i>	Portugal	Rodríguez-Echeverría. 2010
U115	Root nodules	<i>Ulex europaeus</i>	Portugal	Rodríguez-Echeverría. 2010
U118	Root nodules	<i>Ulex europaeus</i>	Portugal	Rodríguez-Echeverría. 2010
UU22sfb	Root nodules	<i>Ulex europaeus</i>	Portugal	Rodríguez-Echeverría. 2010
u29	Root nodules	<i>Ulex europaeus</i>	Portugal	Horn et al., 2014
ICMP14533	Root nodules	<i>Cytisus scoparius</i>	New Zealand	Weir et al., 2004
ICMP19842	Root nodules	<i>Cytisus scoparius</i>	New Zealand	Weir,B.S. Unpublished
ICMP19840	Root nodules	<i>Cytisus scoparius</i>	New Zealand	Weir,B.S. Unpublished
ICMP19839	Root nodules	<i>Cytisus scoparius</i>	New Zealand	Weir,B.S. Unpublished
ICMP12674	Root nodules	<i>Cytisus scoparius</i>	New Zealand	Weir,B.S. Unpublished
ICMP14306	Root nodules	<i>Cytisus scoparius</i>	New Zealand	Weir,B.S. Unpublished

Supplementary Table S2. 2. Accession numbers for *Bradyrhizobium* symbiotic and housekeeping genes, with a focus on those isolated from the Genisteeae tribe of legumes.

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
" <i>B. acaciae</i> " 10BB ^T	Avontuur et al., 2022	H8A92_RS07340	LR877284.	H8A92_RS19085	H8A92_RS37780	H8A92_RS14880
<i>B. agreste</i> CNPSo 4010 ^T	Klepa et al., 2021	HZZ13_RS27085	MK860831	HZZ13_RS27925	HZZ13_RS29890	HZZ13_RS31295
<i>B. algeriense</i> RST89 ^T	Ahnia et al., 2019	C7G61_RS28525	KX344467	C7G61_RS03475	C7G61_RS26870	C7G61_RS21430
" <i>B. altum</i> " Pear77 ^T	Avontuur et al., 2011	H8B02_RS11065	LN650146	H8B02_RS21520	H8B02_RS26710	H8B02_RS07555
<i>B. americanum</i> CMVU44 ^T	Ramírez-Bahena et al., 2017	NI	KX012942.1	NI	KC247141.1	NI
<i>B. amphicarphae</i> 39S1MB ^T	Bromfield et al., 2019	CIT40_RS32050	KP768605.1	KP768721.1	KF615002.1	KP768663.1
<i>B. arachidis</i> LMG26795 ^T	Wang et al., 2015	JX437668.1	HM107251.1	JX437675.1	HM107233.1	JX437682.1
<i>B. archetypum</i> WSM 1744 ^T	Helene et al., 2020	HCN50_RS25990	HCN50_RS18105	HCN50_RS26695	HCN50_RS07505	HCN50_RS22995
<i>B. australiense</i> WSM 1791 ^T	Helene et al., 2020	HCN58_RS07835	HCN58_RS13565	HCN58_RS08565	HCN58_RS05310	HCN58_RS03815
<i>B. betae</i> PL7HG1 ^T	Rivas et al., 2004	F8237_RS15235	F8237_RS00790	F8237_RS14470	F8237_RS27520	F8237_RS29305

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
" <i>B. brasilense</i> " UFLA03-321 ^T	Martins da Costa et al., 2017	KF452791.1	BSN85_RS29540	BSN85_RS29540	KT793142.1	KF452879.1
<i>B. cajani</i> AMBPC1010 ^T	Araújo et al., 2017	GPL20_RS22405	KY349442.1	GPL20_RS36140	GPL20_RS28025	GPL20_RS08760
<i>B. canariense</i> BTA 1 ^T	Vinuesa et al., 2005	AY923047.1	AY386765.1	NI	AY591553.1	NI
" <i>B. centrolobii</i> " BR10245 ^T	Michel et al., 2017	AYJ54_RS39900	AYJ54_RS46310	AYJ54_RS20705	AYJ54_RS26005	AYJ54_RS21025
<i>B. centrosematis</i> A9 ^T	Ramírez-Bahena et al., 2017	NI	KX012940	NI	KC247145.1	NI
" <i>B. campsiandrae</i> " INPA 394B ^T	Michelet al., 2020	KT793131(INPA01-394B)	G8O24_01725 (INPA01-394B)	JAANIH000000000	JAANIH000000000	G8O24_RS26880
<i>B. cosmicum</i> 58S1 ^T	Wasai-Hara et al., 2020	FNV92_RS13210	FNV92_RS28190	FNV92_RS13980	FNV92_RS01375	FNV92_RS34205
<i>B. cytisi</i> CTAW11 ^T	Chahboune et al., 2011	FXB38_RS20045	GU001594.1	FXB38_RS11105	GU001575.1	FXB38_RS07865
<i>B. daqingense</i> CCBAU 15774 ^T	Wang et al., 2013	IQ17_RS10330	HQ231301.1	IQ17_RS11090	HQ231270.1	IQ17_RS06580
<i>B. denitrificans</i> LMG 8443 ^T	(Hirsch and Müller 1986) van Berkum et al., 2011	FJ347273	HM047121.1	KF962685.1	EU665419	FM253282

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>B. diazoefficiens</i> USDA110 ^T	Delamuta et al., 2013	BJA_RS03430	BJA_RS20715	JN685725.1	BJA_RS29135	BJA_RS27315
<i>B. diversitatis</i> CNPSO4019 ^T	Klepa et al., 2021	H1B27_RS03295	MK860829.1	H1B27_RS06140	H1B27_RS20655	H1B27_RS28080
<i>B. elkanii</i> USDA76 ^T	Kuykendall et al., 1993	BRAEL_RS0107435	BRAEL_RS0125560	BRAEL_RS0106555	BRAEL_RS0133605	BRAEL_RS0131375
<i>B. embrapense</i> SEMIA6208 ^T	Delamuta et al., 2015	AKN83_RS31365	GQ160500.1	HQ634891.1	HQ634899.1	HQ634910.1
<i>B. erythrophlei</i> CCBAU53325 ^T	Yao et al., 2015	MG811656.1	KF114693.1	KF114717.1	KF114669.1	MG811654.1
<i>B. ferriligni</i> CCBAU51502 ^T	Yao et al., 2015	MG811657.1	KJ818099.1	KJ818102.1	KJ818112.1	MG811655.1
" <i>B. forestalis</i> " INPA54B ^T	Martins da Costa et al., 2018	KF452796.1	CVM73_19290	KF452831.1	KF452867.1	CVM73_RS26490
<i>B. frederickii</i> CNPSO3426 ^T	Urquiaga et al., 2019	E4K64_RS23660	MK682688.1	E4K64_RS11075	E4K64_RS08155	E4K64_RS25955
<i>B. ganzhouense</i> RITF806 ^T	Lu et al., 2014	XH91_00880	XH91_19950	XH91_00035	JX277144.1	NI
<i>B. guangdongense</i> CCBAU51649 ^T	Li et al., 2015	KC508964.1	KC509023.1	KC509072.1	KC509269.1	KC509318
<i>B. glycinis</i> CNPSO4016 ^T	Klepa et al., 2021	HZZ16_RS32100	HZZ16_04335	HZZ16_RS22695	HZZ16_RS07725	HZZ16_RS07725I
<i>B. guangxiense</i> CCBAU 53363 ^T	Li et al., 2015	X268_RS32430	X268_RS13245	X268_RS31710	KC509279.1	X268_RS19050

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
" <i>B. guangzhouense</i> " CCBAU51670 ^T	Li et al., 2019	KC508950.1	KC509008.1	KC509057.1	KC509254.1	KC509303.1
<i>B. huanghuaihaiense</i> CCBAU23303 ^T	Zhang et al., 2012	IQ16_RS02100	HQ231639.1	IQ16_RS01325	HQ231595.1	IQ16_RS08645
<i>B. hipponense</i> aSej3 ^T	Rejili et al., 2020	FXV83_RS32165	FXV83_RS1 8885	FXV83_RS01525	FXV83_37685	FXV83_RS038 05
<i>B. icense</i> LMTR13 ^T	Da Silva et al., 2014	LMTR13_RS0022 5	LMTR13_RS 22080	LMTR13_RS0097 5	LMTR13_RS15285	LMTR13_RS16 695
<i>B. ingae</i> BR10250 ^T	Islam et al., 2010	KF927055.1	KF927067.1	KF927079.1	KF927061.1	KF927073.1
<i>B. iriomotense</i> EK05 ^T	Fossou et al., 2020	LM994146	AB300995	AB300997	LM994319	LM994170
<i>B. ivorensis</i> CI 1B ^T	(Kirchner 1896) Jordan, 1982	CI41S_RS00310	MH756160.1	CI41S_RS00025	CI41S_RS14185	CI41S_RS3089 0
<i>B. japonicum</i> USDA6 ^T	Ramírez-Bahena et al., 2009	NC_017249.1	NC_017249. 1	NC_017249.1	NC_017249.1	NC_017249.1
<i>B. jicamiae</i> PAC68 ^T	Grönemeyer et al., 2015	CQ12_35815	CQ12_29585	CQ12_RS23435	CQ12_RS29675	CQ12_RS0494 5
<i>B. kavanense</i> 14 3 ^T	Chang et al., 2011	KR259949.1	KM378446.1	KX661397.1	KM378399.1	KM378311.1
<i>B. lablabi</i> CCBAU23086 ^T	Xu et al., 1995	CQ14_12600	GU433498.1	CQ14_RS37205	GU433522.1	CQ14_RS1151 0

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>B. liaoningense</i> LMG18230 ^T	(Schroeter 1886) Peix et al., 2015	AY923041.1	AY386775.1	FM253223.1	AY591564	FM253266
<i>B. lupini</i> DSM 30140 ^T	Michel et al., 2017	HNR58_RS13905	HNR58_RS07925	HNR58_RS12995	HNR58_RS03245	HNR58_RS01315
" <i>B. macuxiense</i> " BR10303 ^T	Silva et al., 2014	AS156_RS37050	AS156_RS18670	AS156_RS14420	AS156_RS03655	AS156_RS02100
<i>B. manausense</i> BR3351 ^T	Silva et al., 2014	AOQ71_24325	AOQ71_33505	AOQ71_RS29095	AOQ71_RS14405	AOQ71_RS10495
<i>B. mercantei</i> SEMIA6399 ^T	Helene et al., 2017	KX690617.1	KX690621.1	KX690623.1	KX690615.1	BI327_RS02865
<i>B. murdochi</i> WSM 1741 ^T	Helene et al., 2020	YUO_RS0116605	YUO_RS0105590	YUO_RS0113885	YUO_RS0126680	YUO_RS0121115
<i>B. namibiense</i> 5-10 ^T	Grönemeyer et al., 2017	KP402058.1	KM378440	KX661393.1	KM378377.1	KM378306.1
<i>B. nanningense</i> CCBAU 53390 ^T	Li et al., 2019	KC508969.1	XH84_RS19170	KC509077.1	KC509274.1	KC509323.1
<i>B. neotropica</i> BR10247 ^T	Zilli et al., 2014	KJ661693.1	KJ661700.1	KJ661707.1	KJ661714.1	AXW67_RS38365
<i>B. niftali</i> CNPSo3448 ^T	Klepa et al., 2019	E4K65_39350	MK675791.1	MK675794.1	MK675797.1	MK675800.1
" <i>B. nitroreducens</i> " TSA1 ^T	Jang et al., 2018	TSA1_RS04115	TSA1_RS07165	TSA1_RS24425	TSA1_RS12505	TSA1_RS14820

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>B. oligotrophicum</i> S58 ^T	(Ohta and Hattori 1985) Ramírez-Bahena et al., 2013	S58_RS00895	S58_RS20060	S58_RS00030	S58_RS13235	S58_RS22255
" <i>B. oropedii</i> " Pear76 ^T	Avontuur et al., 2022	H8A95_RS17410	LN650145	H8A95_RS11100	H8A95_RS01355	H8A95_RS02030
<i>B. ottawaense</i> OO99 ^T	Yu et al., 2014	CIT37_RS10990	CIT37_RS33160	CIT37_RS10130	CIT37_RS25525	CIT37_RS27280
<i>B. pachyrhizi</i> PAC48 ^T	Ramírez-Bahena et al., 2009	AKL29_RS06305	AKL29_RS29740	AKL29_RS05515	AKL29_RS37585	AKL29_RS15930
<i>B. paxllaeri</i> LMTR21 ^T	Durán et al., 2014	LMTR21_RS00255	LMTR21_RS19005	LMTR21_RS01060	LMTR21_RS15080	LMTR21_RS14020
<i>B. quebecense</i> 66S1MB ^T	Bromfield and Cloutier, 2021	NI	HU230_RS20870	HU230_RS40705	HU230_RS12095	HU230_RS14385
<i>B. retamae</i> Ro19 ^T	Guerrouj et al., 2014	CQ13_RS21555	CQ13_RS30520	CQ13_RS20805	CQ13_RS12275	CQ13_RS14575
<i>B. rifense</i> CTAW71 ^T	Chahboune et al., 2014	LM994143	FXB40_RS47000	FXB40_RS39105	FXB40_RS11030	FXB40_RS01730
<i>B. ripae</i> WR4 ^T	Bünger et al., 2018	MF593102	MF593086	MF593094	MF593090	MF593098
" <i>B. sacchari</i> " BR10280 ^T	de Matos et al., 2017	A5906_RS03635	A5906_RS24545	A5906_RS02930	A5906_RS39300	A5906_RS21220

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>B. septentrionale</i> 1S1 ^T	Bromfield and Coutier, 2021	HAP48_RS46285	HAP48_RS1 9970	HAP48_RS00365	HAP48_RS30020	HAP48_RS275 60
<i>B. shewense</i> ERR11 ^T	Aserse et al., 2017	GA0061098_RS2 4735	GA0061098_ RS14755	GA0061098_RS2 3980	GA0061098_RS32 225	GA0061098_R S16085
<i>B. stylosanthis</i> BR446 ^T	Delamuta et al., 2016	A7X65_RS13410	A7X65_RS0 8890	A7X65_RS14660	A7X65_RS00395	A7X65_RS0235 0
<i>B. subterraneum</i> 58 2-1 ^T	Grönemeyer et al., 2015	KP308157	KM378484	KX661396	KM378397	KM378349
<i>B. symbiodeficiens</i> 85S1MB ^T	Bromfield et al., 2020	CIT39_RS31085	CIT39_RS12 725	CIT39_RS30355	CIT39_RS20100	CIT39_RS1839 5
<i>B. tropiciagri</i> SEMIA6148 ^T	Delamuta et al., 2015	AKN84_RS29665	AKN84_RS3 5105	AKN84_RS35005	AKN84_RS27210	AKN84_RS089 90
<i>B. uaiense</i> UFLA03 164 ^T	Michel et al., 2020	FNJ47_RS07015	FNJ47_RS4 8850	FNJ47_RS21710	FNJ47_RS25125	FNJ47_RS0338 0
" <i>B. valentinum</i> " LmjM3 ^T	Durán et al., 2014	CP49_RS04400	CP49_RS17 105	CP49_RS07850	CP49_RS01840	CP49_RS0471 0
<i>B. vignae</i> LMG28791 ^T	Grönemeyer et al., 2016	EAV90_RS32175	EAV90_RS0 6360	EAV90_RS01005	EAV90_RS28660	EAV90_RS315 25
<i>B. viridifuturi</i> SEMIA690 ^T	Helene et al., 2015	ALC15_RS15760	ALC15_RS1 3365	ALC15_RS19850	ALC15_RS22445	ALC15_RS014 30
<i>B. yuanmingense</i> CCBAU10071 ^T	Yao et al., 2002	GA0061099_RS0 6210	GA0061099_ RS16275	GA0061099_RS0 7225	GA0061099_RS32 755	GA0061099_R S28300

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
" <i>B. zhanjiangense</i> " CCBAU51778 ^T	Li et al., 2019	XH85_RS01730	XH85_RS26 780	XH85_RS00990	XH85_RS18005	XH85_RS1977 5
<i>Bradyrhizobium</i> sp. Arg105 (SA-4)	Beukes et al., 2016	LN650111.1	LN650132.1	LN650195.1	LN650153.1	LN650174.1
<i>Bradyrhizobium</i> sp. Arg62 (SA- 10)	Beukes et al., 2016	LN650109.1	LN650130.1	LN650193.1	LN650151.1	LN650172.1
<i>Bradyrhizobium</i> sp. Arg68 (SA- 6)	Beukes et al., 2016	LN650110.1	LN650131.1	LN650194.1	LN650152.1	LN650173.1
<i>Bradyrhizobium</i> sp. JAN10	Kalita and Malek, 2004	AJ431143.1	KJ778988.1	KJ779004.1	KJ779020.1	NI
<i>Bradyrhizobium</i> sp. JAN16	Kalita and Malek, 2004	EU882019.1	NI	NI	NI	NI
<i>Bradyrhizobium</i> sp. J.ANG91.6	Kalita and Malek, 2004	EU882017.1	NI	NI	NI	NI
<i>Bradyrhizobium</i> sp. J.ANG92.6	Kalita and Malek, 2004	EU882020.1	NI	NI	NI	NI
<i>Bradyrhizobium</i> sp. J.UKR5.1	Kalita and Malek, 2004	EU882018.1	NI	NI	NI	NI
<i>Bradyrhizobium</i> sp. gdr4	Parker, 2015	KM247986	NI	KM248087	KM247835	KM247934
<i>Bradyrhizobium</i> sp. gdr5	Parker, 2015	KM247987	NI	KM248088	KM247836	KM247935
<i>Bradyrhizobium</i> sp. gtl2	Parker, 2015	KM248005	NI	KM248106	KM247862	KM247953
<i>Bradyrhizobium</i> sp. gtl6a	Parker, 2015	KM248006	NI	KM248107	KM247863	KM247954

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. gtl7	Parker, 2015	KM248007	NI	KM248108	KM247864	KM247955
<i>Bradyrhizobium</i> sp. gtl8	Parker, 2015	KM248008	NI	KM248109	KM247865	KM247956
<i>Bradyrhizobium</i> sp. gtl9	Parker, 2015	KM248009	NI	KM248110	KM247866	KM247957
<i>Bradyrhizobium</i> sp. bga1	Horn et al., 2014	KF744638	NI	KF744702	NI	NI
<i>Bradyrhizobium</i> sp. Fer5	Boudehouche et al., 2020	MN897517	MN897471	MN897241	MN897103	MN897333
<i>Bradyrhizobium</i> sp. Fer10p	Boudehouche et al., 2020	MN897518	MN897472	MN897242	MN897104	MN897334
<i>Bradyrhizobium</i> sp. Fer24	Boudehouche et al., 2020	MN897519	MN897473	MN897243	MN897105	MN897335
<i>Bradyrhizobium</i> sp. Fer37	Boudehouche et al., 2020	MN897520	MN897474	MN897244	MN897106	MN897336
<i>Bradyrhizobium</i> sp. Fer38	Boudehouche et al., 2020	MN897521	NI	MN897245	MN897107	MN897337
<i>Bradyrhizobium</i> sp. Fer59	Boudehouche et al., 2020	MN897522	MN897476	MN897246	NI	MN897338
<i>Bradyrhizobium</i> sp. Fer71	Boudehouche et al., 2020	MN897523	MN897477	MN897247	NI	MN897339
<i>Bradyrhizobium</i> sp. Fer83	Boudehouche et al., 2020	MN897524	MN897478	MN897248	MN897110	MN897340
<i>Bradyrhizobium</i> sp. Fer96g	Boudehouche et al., 2020	MN897525	MN897479	MN897249	MN897111	MN897341

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. Fer96p	Boudehouche et al., 2020	MN897526	MN897480	MN897250	MN897112	MN897342
<i>Bradyrhizobium</i> sp. Fer98	Boudehouche et al., 2020	MN897527	MN897481	MN897251	MN897113	MN897343
<i>Bradyrhizobium</i> sp. Fer109	Boudehouche et al., 2020	MN897528	MN897482	MN897252	NI	MN897344
<i>Bradyrhizobium</i> sp. Fer113	Boudehouche et al., 2020	MN897529	MN897483	MN897253	MN897115	MN897345
<i>Bradyrhizobium</i> sp. Fer125	Boudehouche et al., 2020	MN897530	MN897484	MN897254	MN897116	MN897346
<i>Bradyrhizobium</i> sp. Fer402	Boudehouche et al., 2020	MN897531	MN897485	MN897255	MN897117	MN897347
<i>Bradyrhizobium</i> sp. Fer403	Boudehouche et al., 2020	MN897532	MN897486	MN897256	NI	MN897348
<i>Bradyrhizobium</i> sp. Tri137	Boudehouche et al., 2020	MN897533	MN897487	MN897257	MN897119	MN897349
<i>Bradyrhizobium</i> sp. Tri138	Boudehouche et al., 2020	MN897534	MN897488	MN897258	MN897120	MN897350
<i>Bradyrhizobium</i> sp. Tri157	Boudehouche et al., 2020	MN897535	MN897489	MN897259	MN897121	MN897351
<i>Bradyrhizobium</i> sp. Tri208	Boudehouche et al., 2020	MN897536	MN897490	MN897260	MN897122	MN897352

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. Tri265	Boudehouche et al., 2020	MN897537	MN897491	MN897261	MN897123	MN897353
<i>Bradyrhizobium</i> sp. Tri290	Boudehouche et al., 2020	MN897538	MN897492	MN897262	MN897124	MN897354
<i>Bradyrhizobium</i> sp. Tri301	Boudehouche et al., 2020	MN897539	MN897493	MN897263	MN897125	MN897355
<i>Bradyrhizobium</i> sp. Tri304	Boudehouche et al., 2020	MN897540	MN897494	MN897264	MN897126	MN897356
<i>Bradyrhizobium</i> sp. Tri327	Boudehouche et al., 2020	MN897541	MN897495	MN897265	MN897127	MN897357
<i>Bradyrhizobium</i> sp. Tri400	Boudehouche et al., 2020	MN897542	MN897496	MN897266	MN897128	MN897358
<i>Bradyrhizobium</i> sp. Tri418	Boudehouche et al., 2020	MN897543	MN897497	MN897267	MN897129	MN897359
<i>Bradyrhizobium</i> sp. Tri420	Boudehouche et al., 2020	MN897544	MN897498	MN897268	MN897130	MN897360
<i>Bradyrhizobium</i> sp. Tri432	Boudehouche et al., 2020	MN897545	MN897499	MN897269	MN897131	MN897361
<i>Bradyrhizobium</i> sp. Tri442	Boudehouche et al., 2020	MN897546	MN897500	MN897270	MN897132	MN897362
<i>Bradyrhizobium</i> sp. Tri448	Boudehouche et al., 2020	MN897547	MN897501	MN897271	MN897133	MN897363

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. Tri451	Boudehouche et al., 2020	MN897548	MN897502	MN897272	MN897134	MN897364
<i>Bradyrhizobium</i> sp. Num362	Boudehouche et al., 2020	MN897549	MN897503	MN897273	MN897135	MN897365
<i>Bradyrhizobium</i> sp. Num377	Boudehouche et al., 2020	MN897550	MN897504	MN897274	MN897136	MN897366
<i>Bradyrhizobium</i> sp. Num380	Boudehouche et al., 2020	MN897551	MN897505	MN897275	MN897137	MN897367
<i>Bradyrhizobium</i> sp. Num381	Boudehouche et al., 2020	MN897552	MN897506	MN897276	MN897138	MN897368
<i>Bradyrhizobium</i> sp. Num382	Boudehouche et al., 2020	MN897553	MN897507	MN897277	MN897139	MN897369
<i>Bradyrhizobium</i> sp. Num383	Boudehouche et al., 2020	MN897554	MN897508	MN897278	MN897140	MN897370
<i>Bradyrhizobium</i> sp. Num384	Boudehouche et al., 2020	MN897555	MN897509	MN897279	MN897141	MN897371
<i>Bradyrhizobium</i> sp. Num392	Boudehouche et al., 2020	MN897556	MN897510	MN897280	MN897142	MN897372
<i>Bradyrhizobium</i> sp. Num393	Boudehouche et al., 2020	MN897557	MN897511	MN897281	MN897143	MN897373
<i>Bradyrhizobium</i> sp. Num399	Boudehouche et al., 2020	MN897558	MN897512	MN897282	MN897144	MN897374

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. Num404	Boudehouche et al., 2020	MN897559	MN897513	MN897283	MN897145	MN897375
<i>Bradyrhizobium</i> sp. Num410	Boudehouche et al., 2020	MN897560	MN897514	MN897284	MN897146	MN897376
<i>Bradyrhizobium</i> sp. Num487	Boudehouche et al., 2020	MN897561	MN897515	MN897285	MN897147	MN897377
<i>Bradyrhizobium</i> sp. Num488	Boudehouche et al., 2020	MN897562	MN897516	MN897286	MN897148	MN897378
<i>Bradyrhizobium</i> sp. CTO11	Ahnia et al., 2014	NI	KF527930.1	NI	KF527914.1	NI
<i>Bradyrhizobium</i> sp. CTO29	Ahnia et al., 2014	NI	KF527934.1	NI	KF527918.1	NI
<i>Bradyrhizobium</i> sp. CTO55	Ahnia et al., 2014	NI	KF527938.1	NI	KF527922.1	NI
<i>Bradyrhizobium</i> sp. CTO41	Ahnia et al., 2014	NI	KF527936.1	NI	KF527920.1	NI
<i>Bradyrhizobium</i> sp. CTO44	Ahnia et al., 2014	NI	KF527937.1	NI	KF527921.1	NI
<i>Bradyrhizobium</i> sp. CTS21	Ahnia et al., 2014	NI	KF527942.1	NI	KF527926.1	NI
<i>Bradyrhizobium</i> sp. CTS12	Ahnia et al., 2014	NI	KF527941.1	NI	KF527925.1	NI
<i>Bradyrhizobium</i> sp. CTO13	Ahnia et al., 2014	NI	KF527931.1	NI	KF527915.1	NI
<i>Bradyrhizobium</i> sp. CTO33	Ahnia et al., 2014	NI	KF527935.1	NI	KF527919.1	NI
<i>Bradyrhizobium</i> sp. CTS24	Ahnia et al., 2014	NI	KF527943.1	NI	KF527927.1	NI
<i>Bradyrhizobium</i> sp. CTO1	Ahnia et al., 2014	NI	KF527929.1	NI	KF527913.1	NI

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. CTO21	Ahnia et al., 2014	NI	KF527932.1	NI	KF527916.1	NI
<i>Bradyrhizobium</i> sp. CTO24	Ahnia et al., 2014	NI	KF527933.1	NI	KF527917.1	NI
<i>Bradyrhizobium</i> sp. CTS7	Ahnia et al., 2014	NI	KF527939.1	NI	KF527923.1	NI
<i>Bradyrhizobium</i> sp. CTS57	Ahnia et al., 2014	NI	KF527944.1	NI	KF527928.1	NI
<i>Bradyrhizobium</i> sp. CTS8	Ahnia et al., 2014	NI	KF527940.1	NI	KF527924.1	NI
<i>Bradyrhizobium</i> sp. ISLU21	Gonzalez-Andres et al., 1999	NI	HQ233180.1	NI	NI	NI
<i>Bradyrhizobium</i> sp. R45721	De Meyer et al., 2011	NI	NI	NI	FR772356.1	NI
<i>Bradyrhizobium</i> sp. R46306	De Meyer et al., 2011	NI	NI	NI	FR772389.1	NI
<i>Bradyrhizobium</i> sp. R45545	De Meyer et al., 2011	NI	NI	NI	FR772366.1	NI
<i>Bradyrhizobium</i> sp. csem17	Horn et al., 2014	KF744610.1	NI	KF744674.1	NI	KF744905.1
<i>Bradyrhizobium</i> sp. csR64	Horn et al., 2014	KF744601.1	NI	KF744665.1	NI	KF744896.1
<i>Bradyrhizobium</i> sp. csds18	Horn et al., 2014	KF744602.1	NI	KF744666	NI	KF744897.1

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. csnc4	Horn et al., 2014	KF744603.1	NI	KF744667.1	NI	KF744898.1
<i>Bradyrhizobium</i> sp. cspf19	Horn et al., 2014	KF744600.1	NI	KF744664.1	NI	KF744895.1
<i>Bradyrhizobium</i> sp. csR63	Horn et al., 2014	KF744605.1	NI	KF744669	NI	KF744900.1
<i>Bradyrhizobium</i> sp. csma2b	Horn et al., 2014	KF744608.1	NI	KF744672.1	NI	KF744903.1
<i>Bradyrhizobium</i> sp. csjp11	Horn et al., 2014	KF744611.1	NI	KF744675.1	NI	KF744906.1
<i>Bradyrhizobium</i> sp. csc2	Horn et al., 2014	KF744614.1	NI	KF744678	NI	KF744909.1
<i>Bradyrhizobium</i> sp. cs11	Horn et al., 2014	KF744609.1	NI	KF744673.1	NI	KF744904.1
<i>Bradyrhizobium</i> sp. cstc1	Horn et al., 2014	KF744613.1	NI	KF744677.1	NI	KF744908.1
<i>Bradyrhizobium</i> sp. cstc20	Horn et al., 2014	KF744612.1	NI	KF744676.1	NI	KF744907.1
<i>Bradyrhizobium</i> sp. cswp47	Horn et al., 2014	KF744606.1	NI	KF744670.1	NI	KF744901.1
<i>Bradyrhizobium</i> sp. csc5	Horn et al., 2014	KF744594	NI	KF744658	NI	KF744889
<i>Bradyrhizobium</i> sp. cspf11	Horn et al., 2014	KF744593	NI	KF744657	NI	KF744888
<i>Bradyrhizobium</i> sp. csds5	Horn et al., 2014	KF744596	NI	KF744660	NI	KF744891

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. csmx9	Horn et al., 2014	KF744595	NI	KF744659	NI	KF744890
<i>Bradyrhizobium</i> sp. csma27	Horn et al., 2014	KF744597	NI	KF744661	NI	KF744892
<i>Bradyrhizobium</i> sp. csIt5	Horn et al., 2014	KF744599	NI	KF744663	NI	KF744894
<i>Bradyrhizobium</i> sp. csri27	Horn et al., 2014	KF744598	NI	KF744662	NI	KF744893
<i>Bradyrhizobium</i> sp. R46277	De Meyer et al., 2011	KF744620	NI	KF744684	KM247893	KF744915
<i>Bradyrhizobium</i> sp. R46306	De Meyer et al., 2011	KF744621	NI	KF744685	KM247894	KF744916
<i>Bradyrhizobium</i> sp. CTAW22	Chahboune et al., 2011	NI	GU001595	NI	GU001576	NI
<i>Bradyrhizobium cytisi</i> CTAW38	Chahboune et al., 2011	JQ945185	GU001600	NI	GU001581	NI
<i>Bradyrhizobium</i> sp. bcc2	Horn et al., 2014	KF744636	NI	KF744700	KM247909	NI
<i>Bradyrhizobium</i> sp. bcp5	Horn et al., 2014	KF744637	NI	KF744701	KM247910	KF744928
<i>Bradyrhizobium</i> sp. cir1	Horn et al., 2014		JQ809853	NI	JQ809797	JQ809966
<i>Bradyrhizobium</i> sp. cir2	Horn et al., 2014	KF744616	NI	KF744680	KM247889	KF744911
<i>Bradyrhizobium</i> sp. cs4c2a	Horn et al., 2014	KF744607	NI	KF744671	NI	KF744902
<i>Bradyrhizobium</i> sp. csck18	Horn et al., 2014	KF744604	NI	KF744668	NI	KF744899
<i>Bradyrhizobium</i> sp. cyt17	Horn et al. 2014	KF744624	NI	KF744688	KM247897	KF744919
<i>Bradyrhizobium</i> sp. c11	Horn et al., 2014	KF744634	NI	KF744698	KM247907	KF744926
<i>Bradyrhizobium</i> sp. h11	Horn et al., 2014	KF744626	NI	KF744690	KM247899	KF744921
<i>Bradyrhizobium</i> sp. h16	Horn et al., 2014	KF744628	NI	KF744692	KM247901	KF744923

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. h31	Horn et al., 2014	KF744629	NI	KF744693	KM247902	KF744924
<i>Bradyrhizobium</i> sp. h32	Horn et al., 2014	KF744627	NI	KF744691	KM247900	KF744922
<i>Bradyrhizobium</i> sp. h33	Horn et al., 2014	KF744630	NI	KF744694	NI	KF744925
<i>Bradyrhizobium</i> sp. zar1	Horn et al., 2014	KF744625	NI	KF744689	KM247898	KF744920
<i>Bradyrhizobium</i> sp. zs7	Horn et al., 2014	KF744618	NI	KF744682	KM247891	KF744913
<i>Bradyrhizobium</i> sp. zs14	Horn et al., 2014	KF744617	NI	KF744681	KM247890	KF744912
<i>Bradyrhizobium</i> sp. ICMP14291	Weir et al., 2004	NI	AY494796	NI	AY494829	NI
<i>Bradyrhizobium</i> sp. ICMP19832	Weir et al., 2004	NI	NI	NI	KM018225	NI
<i>Bradyrhizobium</i> sp. ICMP19831	Weir et al., 2004	NI	NI	NI	KM018224	NI
<i>Bradyrhizobium</i> sp. ICMP19829	Weir et al., 2004	NI	NI	NI	KM018223	NI
<i>Bradyrhizobium</i> sp. ICMP19828	Weir et al., 2004	NI	NI	NI	KM018222	NI
<i>Bradyrhizobium</i> sp. BCC1	Vinuesa et al., 2005	NI	AY386761	NI	AY591540	EF190155
<i>Bradyrhizobium</i> sp. BCC2	Vinuesa et al., 2005	NI	AY386762	NI	AY591541	EF190156
<i>Bradyrhizobium</i> sp. BCMAM1	Vinuesa et al., 2005	NI	AY386767	NI	AY591546	EF190157
<i>Bradyrhizobium</i> sp. BCMAM3	Vinuesa et al., 2005	NI	AY386768	NI	NI	NI
<i>Bradyrhizobium</i> sp. BCMAM2	Vinuesa et al., 2005	NI	AY599103	NI	AY653744	EF190159

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. BCMAM5	Vinuesa et al., 2005	NI	AY386769	NI	AY591547	EF190160
<i>Bradyrhizobium</i> sp. BCMAM6	Vinuesa et al., 2005	NI	AY653771	NI	AY653745	EF190161
<i>Bradyrhizobium</i> sp. BCMAM8	Vinuesa et al., 2005	NI	AY599105	NI	AY653746	NI
<i>Bradyrhizobium</i> sp. BCMAM9	Vinuesa et al., 2005	NI	AY653772	NI	AY653747	EF190162
<i>Bradyrhizobium</i> sp. BCMAM11	Vinuesa et al., 2005	NI	AY386770	NI	AY653748	EF190158
<i>Bradyrhizobium</i> sp. BCMK1	Vinuesa et al., 2005	NI	AY386778	NI	AY653750	NI
<i>Bradyrhizobium</i> sp. BCMK6	Vinuesa et al., 2005	NI	AY386779	NI	AY591554	EF190163
<i>Bradyrhizobium</i> sp. BCP5	Vinuesa et al., 2005	NI	AY386763	NI	AY591542	NI
<i>Bradyrhizobium</i> sp. BCP14	Vinuesa et al., 2005	NI	AY386771	NI	AY591544	EF190164
<i>Bradyrhizobium</i> sp. BCP22	Vinuesa et al., 2005	NI	AY386766	NI	AY591545	EF190165
<i>Bradyrhizobium</i> sp. BES1	Vinuesa et al., 2005	NI	AY386764	NI	AY591548	EF190167

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. BES2	Vinuesa et al., 2005	NI	AY599109	NI	AY591549	EF190168
<i>Bradyrhizobium</i> sp. BCP6	Vinuesa et al., 2005	NI	AY653769	NI	AY591543	EF190166
<i>Bradyrhizobium</i> sp. ISLU21	Ahnia et al., 2014	NI	HQ233180	NI	NI	NI
<i>Bradyrhizobium</i> sp. SEMIA928	Menna et al. 2009	NI	FJ391028	NI	FJ391148	NI
<i>Bradyrhizobium</i> sp. BlupMR1	Vinuesa et al. 2005	NI	AY386774	NI	AY591559	EF190170
<i>Bradyrhizobium</i> sp. CICS70	Vinuesa et al. 2005	NI	AY599113	NI	AY591561	NI
<i>Bradyrhizobium</i> sp. FN13	Vinuesa et al. 2005	AY923045	AY386773	NI	AY591560	EF190117
<i>Bradyrhizobium</i> sp. ISLU9	Sanchez- Canizares et al. 2011	NI	HQ233168	NI	HQ233156	NI
<i>Bradyrhizobium</i> sp. ISLU12	Sanchez- Canizares et al. 2011	NI	HQ233166	NI	HQ233146	NI
<i>Bradyrhizobium</i> sp. ISLU13	Sanchez- Canizares et al., 2011	NI	HQ233167	NI	HQ233147	NI

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. ISLU101	Sanchez-Canizares et al., 2011	NI	HQ233165	NI	HQ233145	NI
<i>Bradyrhizobium</i> sp. LmjD2b	Sanchez-Canizares et al., 2011	NI	HQ233163	NI	HQ233158	NI
<i>Bradyrhizobium</i> sp. UPP113	Stępkowski et al., 2011	NI	FR719749	NI	FR718249	NI
<i>Bradyrhizobium</i> sp. UPP133	Stępkowski et al., 2011	NI	FR719750	NI	FR718250	NI
<i>Bradyrhizobium</i> sp. UPP162	Stępkowski et al., 2011	NI	NI	NI	FR718251	NI
<i>Bradyrhizobium</i> sp. UPP201	Stępkowski et al., 2011	NI	FR719751	NI	FR718252	NI
<i>Bradyrhizobium</i> sp. UPP212	Stępkowski et al., 2011	NI	FR719752	NI	FR718253	NI
<i>Bradyrhizobium</i> sp. UPP213	Stępkowski et al., 2011	NI	FR719753	NI	FR718254	NI
<i>Bradyrhizobium</i> sp. UPP231	Stępkowski et al., 2011	NI	NI	NI	FR718255	NI
<i>Bradyrhizobium</i> sp. UPP233	Stępkowski et al., 2011	NI	FR719754	NI	FR718256	NI

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. UPP241	Stępkowski et al., 2011	NI	FR719755	NI	FR718257	NI
<i>Bradyrhizobium</i> sp. UPP242	Stępkowski et al., 2011	NI	FR719756	NI	FR718258	NI
<i>Bradyrhizobium</i> sp. UPP243	Stępkowski et al., 2011	NI	FR719757	NI	FR718259	NI
<i>Bradyrhizobium</i> sp. UPP253	Stępkowski et al., 2011	NI	NI	NI	FR718260	NI
<i>Bradyrhizobium</i> sp. UPP312	Stępkowski et al., 2011	NI	FR719758	NI	FR718261	NI
<i>Bradyrhizobium</i> sp. UPP323	Stępkowski et al., 2011	NI	FR719759	NI	FR718262	NI
<i>Bradyrhizobium</i> sp. UPP331	Stępkowski et al., 2011	NI	FR719760	NI	FR718263	NI
<i>Bradyrhizobium</i> sp. UPP332	Stępkowski et al., 2011	NI	FR719761	NI	FR718264	NI
<i>Bradyrhizobium</i> sp. UPP333	Stępkowski et al., 2011	NI	FR719762	NI	FR718265	NI
<i>Bradyrhizobium</i> sp. UPP342	Stępkowski et al., 2011	NI	FR719763	NI	FR718266	NI
<i>Bradyrhizobium</i> sp. UPP343	Stępkowski et al., 2011	NI	FR719764	NI	FR718267	NI

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. UPP344	Stępkowski et al., 2011	NI	FR719765	NI	FR718268	NI
<i>Bradyrhizobium</i> sp. UPP345	Stępkowski et al., 2011	NI	FR719766	NI	FR718269	NI
<i>Bradyrhizobium</i> sp. UPP346	Stępkowski et al., 2011	NI	FR719767	NI	NI	NI
<i>Bradyrhizobium</i> sp. UPP347	Stępkowski et al., 2011	NI	NI	NI	FR718270	NI
<i>Bradyrhizobium</i> sp. UPP201	Stępkowski et al., 2011	NI	FR719751	NI	FR718252	NI
<i>Bradyrhizobium</i> sp. UPP212	Stępkowski et al., 2011	NI	FR719752	NI	FR718253	NI
<i>Bradyrhizobium</i> sp. UPP213	Stępkowski et al., 2011	NI	FR719753	NI	FR718254	NI
<i>Bradyrhizobium</i> sp. UPP231	Stępkowski et al., 2011	NI	NI	NI	FR718255	NI
<i>Bradyrhizobium</i> sp. UPP233	Stępkowski et al., 2011	NI	FR719754	NI	FR718256	NI
<i>Bradyrhizobium</i> sp. UPP241	Stępkowski et al., 2011	NI	FR719755	NI	FR718257	NI
<i>Bradyrhizobium</i> sp. UPP242	Stępkowski et al., 2011	NI	FR719756	NI	FR718258	NI

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. UPP243	Stępkowski et al., 2011	NI	FR719757	NI	FR718259	NI
<i>Bradyrhizobium</i> sp. UPP253	Stępkowski et al., 2011	NI	NI	NI	FR718260	NI
<i>Bradyrhizobium</i> sp. UPP312	Stępkowski et al., 2011	NI	FR719758	NI	FR718261	NI
<i>Bradyrhizobium</i> sp. UPP323	Stępkowski et al., 2011	NI	FR719759	NI	FR718262	NI
<i>Bradyrhizobium</i> sp. UPP331	Stępkowski et al., 2011	NI	FR719760	NI	FR718263	NI
<i>Bradyrhizobium</i> sp. UPP332	Stępkowski et al., 2011	NI	FR719761	NI	FR718264	NI
<i>Bradyrhizobium</i> sp. UPP333	Stępkowski et al., 2011	NI	FR719762	NI	FR718265	NI
<i>Bradyrhizobium</i> sp. UPP342	Stępkowski et al., 2011	NI	FR719763	NI	FR718266	NI
<i>Bradyrhizobium</i> sp. UPP343	Stępkowski et al., 2011	NI	FR719764	NI	FR718267	NI
<i>Bradyrhizobium</i> sp. UPP344	Stępkowski et al., 2011	NI	FR719765	NI	FR718268	NI
<i>Bradyrhizobium</i> sp. UPP345	Stępkowski et al., 2011	NI	FR719766	NI	FR718269	NI

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. UPP346	Stępkowski et al., 2011	NI	FR719767	NI	NI	NI
<i>Bradyrhizobium</i> sp. UPP347	Stępkowski et al., 2011	NI	NI	NI	FR718270	NI
<i>Bradyrhizobium</i> sp. UPP348	Stępkowski et al., 2011	NI	FR719768	NI	FR718271	NI
<i>Bradyrhizobium</i> sp. UPP351	Stępkowski et al., 2011	NI	NI	NI	FR718272	NI
<i>Bradyrhizobium</i> sp. UPP361	Stępkowski et al., 2011	NI	NI	NI	FR718273	NI
<i>Bradyrhizobium</i> sp. CH2437	Stępkowski et al., 2012	AM168349	AM168368	NI	AM168327	NI
<i>Bradyrhizobium</i> sp. CH2509	Stępkowski et al., 2012	AM168354	AM168371	NI	AM168332	NI
<i>Bradyrhizobium</i> sp. WSM2152	Stępkowski et al., 2005	NI	NI	NI	AJ891276	NI
<i>Bradyrhizobium</i> sp. WSM2154	Stępkowski et al., 2005	NI	AJ891180	NI	AJ891277	NI
<i>Bradyrhizobium</i> sp. Lpsp34	Parker, 2012	JF820876	NI	NI	NI	JF820951
<i>Bradyrhizobium</i> sp. lppb2	Koppell and Parker, 2012	JF820877	NI	JQ693338	KF532871	JF820952

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. Lpsp1b	Koppell and Parker, 2012	JF820875	NI	NI	KF532872	JF820950
<i>Bradyrhizobium</i> sp. II1	Koppell and Parker, 2012	JQ706447	NI	JQ693352	KF532888	JQ706842
<i>Bradyrhizobium</i> sp. II4	Koppell and Parker, 2012	JQ706448	NI	JQ693353	KF532889	JQ706843
<i>Bradyrhizobium</i> sp. IIw1	Koppell and Parker, 2012	JQ706449	NI	JQ693354	KF532890	JQ706844
<i>Bradyrhizobium</i> sp. leu3	Koppell and Parker, 2012	JQ706450	NI	JQ693355	KF532891	JQ706845
<i>Bradyrhizobium</i> sp. leu14	Koppell and Parker, 2012	JQ706451	NI	JQ693356	KF532892	JQ706846
<i>Bradyrhizobium</i> sp. leu16	Koppell and Parker, 2012	JQ706452	NI	JQ693357	KF532893	JQ706847
<i>Bradyrhizobium</i> sp. leu1	Koppell and Parker, 2012	JQ706453	NI	JQ693358	KF532894	JQ706848
<i>Bradyrhizobium</i> sp. leu19	Koppell and Parker, 2012	JQ706454	NI	JQ693359	KF532895	JQ706849
<i>Bradyrhizobium</i> sp. leu5	Koppell and Parker, 2012	JQ706455	NI	JQ693360	KF532896	JQ706850
<i>Bradyrhizobium</i> sp. leu18	Koppell and Parker, 2012	JQ706456	NI	JQ693361	KF532897	JQ706851

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. lua12	Koppell and Parker, 2012	JQ706457	NI	JQ693362	KF532898	JQ706852
<i>Bradyrhizobium</i> sp. lua6	Koppell and Parker, 2012	JQ706458	NI	JQ693363	KF532899	JQ706853
<i>Bradyrhizobium</i> sp. lss3	Koppell and Parker, 2012	JQ706459	NI	JQ693364	KF532900	JQ706854
<i>Bradyrhizobium</i> sp. lss7	Koppell and Parker, 2012	JQ706460	NI	JQ693365	KF532901	JQ706855
<i>Bradyrhizobium</i> sp. lss8	Koppell and Parker, 2012	JQ706461	NI	JQ693366	KF532902	JQ706856
<i>Bradyrhizobium</i> sp. lsds6	Koppell and Parker, 2012	JQ706462	NI	JQ693367	KF532903	JQ706857
<i>Bradyrhizobium</i> sp. la1a	Koppell and Parker, 2012	JQ706463	NI	JQ693368	KM247925	JQ706858
<i>Bradyrhizobium</i> sp. la2b	Koppell and Parker, 2012	JQ706464	NI	JQ693369	KM247926	JQ706859
<i>Bradyrhizobium</i> sp. lfta1	Koppell and Parker, 2012	JQ706465	NI	JQ693370	KM247927	JQ706860
<i>Bradyrhizobium</i> sp. lfta11	Koppell and Parker, 2012	JQ706466	NI	JQ693371	KM247929	JQ706861
<i>Bradyrhizobium</i> sp. lfta7	Koppell and Parker, 2012	JQ706467	NI	JQ693372	KM247928	JQ706862

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. CH2493	Stępkowski et al., 2007	AM168352	NI	NI	AM168329	NI
<i>Bradyrhizobium</i> sp. CH2310	Stępkowski et al., 2007	AM168347	NI	NI	AM168325	NI
<i>Bradyrhizobium</i> sp. CH2318	Stępkowski et al., 2007	AM168348	NI	NI	AM168326	NI
<i>Bradyrhizobium</i> sp. CH2443	Stępkowski et al., 2007	AM168350	AM168369	NI	AM168328	NI
<i>Bradyrhizobium</i> sp. CH2498	Stępkowski et al., 2007	AM168351	AM168370	NI	AM168330	NI
<i>Bradyrhizobium</i> sp. CH2506	Stępkowski et al., 2007	AM168353	NI	NI	AM168331	NI
<i>Bradyrhizobium</i> sp. CH2510	Stępkowski et al., 2007	AM168355	AM168372	NI	AM168333	NI
<i>Bradyrhizobium</i> sp. C4	Stępkowski et al., 2007	AM168346	NI	NI	AM168323	NI
<i>Bradyrhizobium</i> sp. C8	Stępkowski et al., 2007	NI	AM168367	NI	AM168324	NI
<i>Bradyrhizobium</i> sp. FTA6	Stępkowski et al., 2007	AM168356	AM168373	NI	AM168334	NI
<i>Bradyrhizobium</i> sp. FTA7	Stępkowski et al., 2007	AM168657	NI	NI	AM168335	NI

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. 4S16	Stępkowski et al., 2005	NI	AJ891178	NI	AJ891265	NI
<i>Bradyrhizobium</i> sp. BLUH1	Stępkowski et al., 2007	AM168344	AM168365	NI	AM168321	NI
<i>Bradyrhizobium</i> sp. BLUT1	Stępkowski et al., 2007	AM168345	AM168366	NI	AM168322	NI
<i>Bradyrhizobium</i> sp. WU140	Stępkowski et al., 2005	NI	NI	NI	AJ891281	NI
<i>Bradyrhizobium</i> sp. WM9	Stępkowski et al., 2003	AF222752	NI	NI	NI	NI
<i>Bradyrhizobium</i> sp. VK7	Botha et al., 2002	NI	NI	NI	AJ891284	NI
<i>Bradyrhizobium</i> sp. 1S20	Stępkowski et al., 2005	HE576751	AJ891294	HE576510	AJ891263	LM994165
<i>Bradyrhizobium</i> sp. 3S16	Stępkowski et al., 2005	NI	AJ891295	NI	AJ891264	NI
<i>Bradyrhizobium</i> sp. WSM1417	Reeve et al., 2013	BRA1417_RS0104465	BRA1417_RS0121530	BRA1417_RS0103685	BRA1417_RS0129550	BRA1417_RS0127845
<i>Bradyrhizobium</i> sp. W72	Stępkowski et al., 2005	NI	NI	NI	AJ891285	NI
<i>Bradyrhizobium</i> sp. A13	Stępkowski et al., 2005	NI	NI	NI	AJ891283	NI

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. WU8	Stępkowski et al., 2005	NI	NI	NI	NI	NI
<i>Bradyrhizobium</i> sp. MCLA07	Stępkowski et al., 2007	KF744632	HM749786	KF744696	KM247905	FM253287
<i>Bradyrhizobium</i> sp. Lcamp1	Stępkowski et al., 2007	AM168358	NI	NI	AM168336	NI
<i>Bradyrhizobium</i> sp. Lcamp6	Stępkowski et al., 2007	AM168359	NI	NI	NI	NI
<i>Bradyrhizobium</i> sp. Lcamp8	Stępkowski et al., 2007	AM168360	NI	NI	AM168337	NI
<i>Bradyrhizobium</i> sp. CBP70	Stępkowski et al., 2003	NI	NI	NI	NI	NI
<i>Bradyrhizobium</i> sp. MCLA23	Rivas et al., 2009	NI	NI	FM253247	FM253204	FM253290
<i>Bradyrhizobium</i> sp. MCLA12	Rivas et al., 2009	NI		FM253245	FM253202	FM253288
<i>Bradyrhizobium</i> sp. MCLA22	Rivas et al., 2009	NI	NI	FM253246	FM253203	FM253289
<i>Bradyrhizobium</i> sp. RLA08	Rivas et al., 2009	KF744631	NI	KF744695	KM247904	FM253295
<i>Bradyrhizobium</i> sp. RLA09	Rivas et al., 2009	NI	NI	FM253253	FM253210	FM253296
<i>Bradyrhizobium</i> sp. RLA10	Rivas et al., 2009	NI	NI	FM253254	FM253211	FM253297
<i>Bradyrhizobium</i> sp. RLA11	Rivas et al., 2009	NI	NI	FM253255	FM253212	FM253298
<i>Bradyrhizobium</i> sp. LmjA2	Sánchez- Cañizares et al., 2011	NI	HQ233161	NI	HQ233142	NI

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. LmjB2b	Sánchez-Cañizares et al., 2011	NI	HQ233172	NI	HQ233151	NI
<i>Bradyrhizobium</i> sp. LmjC	Sánchez-Cañizares et al., 2011	NI	HQ233162	NI	HQ233143	NI
<i>Bradyrhizobium</i> sp. LmjD32	Sánchez-Cañizares et al., 2011	NI	HQ233177	NI	HQ233155	NI
<i>Bradyrhizobium</i> sp. LmjH2p	Sánchez-Cañizares et al., 2011	NI	HQ233164	NI	HQ233144	NI
<i>Bradyrhizobium</i> sp. LmjG2	Durán et al., 2013	NI	JX518568	NI	JX518582	NI
<i>Bradyrhizobium</i> sp. LmjG3	Durán et al., 2013	NI	JX518569	NI	JX518583	NI
<i>Bradyrhizobium</i> sp. LmjL5	Durán et al., 2013	NI	JX518570	NI	JX518584	NI
<i>Bradyrhizobium</i> sp. LmjL7	Durán et al., 2013	NI	JX518571	NI	JX518585	NI
<i>Bradyrhizobium</i> sp. LmjL9	Durán et al., 2013	NI	JX518572	NI	JX518586	NI
<i>Bradyrhizobium</i> sp. LmjM1	Durán et al., 2013	NI	JX518573	NI	JX518587	NI
<i>Bradyrhizobium</i> sp. LmjM2	Durán et al., 2013	NI	JX518574	NI	JX518588	NI
<i>Bradyrhizobium</i> sp. LmjM6	Durán et al., 2013	CQ10_36205	CQ10_21815	CQ10_02935	CQ10_20775	CQ10_26270
<i>Bradyrhizobium</i> sp. LmjM10	Durán et al., 2013	NI	JX518577	NI	JX518591	NI
<i>Bradyrhizobium</i> sp. LmjTA6	Durán et al., 2013	NI	JX518578	NI	JX518592	NI

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. LmjTA10	Durán et al., 2013	NI	JX518579	NI	JX518593	NI
<i>Bradyrhizobium</i> sp. LmjX7	Durán et al., 2013	NI	JX518580	NI	JX518594	NI
<i>Bradyrhizobium</i> sp. LmjX10	Durán et al., 2013	NI	JX518581	NI	JX518595	NI
<i>Bradyrhizobium</i> sp. AS23.2	Granada et al., 2015	AC630_22420	AC630_RS3 7430	AC630_28585	AC630_07300	AC630_01560
<i>Bradyrhizobium</i> sp. AS65	Granada et al., 2015	NI	KJ696593	NI	KJ741280	KJ812009
<i>Bradyrhizobium</i> sp. NAS150	Granada et al., 2015	NI	KJ696603	NI	KJ741290	KJ812019
<i>Bradyrhizobium</i> sp. NAS151	Granada et al., 2015	NI	KJ696604	NI	KJ741291	KJ812020
<i>Bradyrhizobium</i> sp. NAS144	Granada et al., 2015	NI	KJ696602	NI	KJ741289	KJ812018
<i>Bradyrhizobium</i> sp. NAS124	Granada et al., 2015	NI	KJ696601	NI	KJ741288	KJ812017
<i>Bradyrhizobium</i> sp. NAS81	Granada et al., 2015	NI	KJ696597	NI	KJ741284	KJ812013
<i>Bradyrhizobium</i> sp. NAS80.1	Granada et al., 2015	AC629_37960	AC629_0011 0	AC629_28540	AC629_15380	AC629_05465
<i>Bradyrhizobium</i> sp. NAS74	Granada et al., 2015	NI	KJ696595	NI	KJ741282	KJ812011

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. AS68	Granada et al., 2015	NI	KJ696594	NI	NI	KJ812010
<i>Bradyrhizobium</i> sp. NAS96.2	Unpubl.	AC628_27455	AC628_RS0 9995	AC628_09080	AC628_RS00760	AC628_RS115 75
<i>B. japonicum</i> FN1	Kohlmeier et al., 2015	CF64_19390	CF64_13740	CF64_RS19480	CF64_39400	CF64_14360
<i>B. canariense</i> UBMA171	Chekireb et al., 2017	BSZ22_17435	BSZ22_3590 0	BSZ22_RS14560	BSZ22_RS12015	BSZ22_RS274 30
<i>B. canariense</i> UBMA183	Chekireb et al., 2017	BSZ25_02035	BSZ25_0877 0	BSZ25_RS31760	BSZ25_RS10760	BSZ25_RS217 20
<i>B. canariense</i> UBMA195	Chekireb et al., 2017	BSZ18_02105	BSZ18_0968 0	BSZ18_RS34750	BSZ18_RS14175	BSZ18_RS264 10
<i>B. canariense</i> UBMA052	Chekireb et al., 2017	BSZ20_17970	BSZ20_3902 0	BSZ20_RS19430	BSZ20_RS13835	BSZ20_RS368 20
<i>B. canariense</i> UBMA051	Chekireb et al., 2017	BST66_11235	BST66_3898 0	BST66_RS17970	BST66_RS12405	BST66_RS247 90
<i>B. japonicum</i> UBMA197	Chekireb et al., 2017	BSZ19_43595	BSZ19_0505 0	BSZ19_RS44520	BSZ19_RS38965	BSZ19_RS471 50
<i>B. canariense</i> UBMA182	Chekireb et al., 2017	BSZ24_02255	BSZ24_3716 5	BSZ24_RS25155	BSZ24_RS16310	BSZ24_RS281 50
<i>B. canariense</i> UBMA122	Chekireb et al., 2017	BSZ21_21695	BSZ21_0111 0	BSZ21_RS13960	BSZ21_RS37180	BSZ21_RS277 10

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>B. canariense</i> UBMA510	Chekireb et al., 2017	BSR47_02790	BSR47_1647 5	BSR47_RS27415	BSR47_RS16175	BSR47_RS129 75
<i>B. canariense</i> UBMAN05	Chekireb et al., 2017	BST63_02745	BST63_2146 0	BST63_RS33505	BST63_RS13840	BST63_RS124 90
<i>B. canariense</i> UBMA181	Chekireb et al., 2017	BSZ23_16855	BSZ23_3476 5	BSZ23_RS2905	BSZ23_RS11730	BSZ23_RS202 30
<i>B. canariense</i> UBMA192	Chekireb et al., 2017	BSZ16_13680	BSZ16_3554 0	BSZ16_RS30965	BSZ16_RS11140	BSZ16_RS191 30
<i>B. canariense</i> UBMA060	Chekireb et al., 2017	BST67_15240	BST67_3836 0	BST67_RS13285	BST67_RS12175	BST67_RS240 65
<i>B. canariense</i> UBMA050	Chekireb et al., 2017	BST65_13460	BST65_3621 5	BST65_RS11535	BST65_RS09160	BST65_RS229 60
<i>Bradyrhizobium</i> sp. ICMP19837	Weir et al., 2004	NI	NI	NI	KM018234	NI
<i>Bradyrhizobium</i> sp. ICMP19836	Weir et al., 2004	NI	NI	NI	KM018233	NI
<i>Bradyrhizobium</i> sp. ICMP19835	Weir et al., 2004	NI	NI	NI	KM018232	NI
<i>Bradyrhizobium</i> sp. LupCI	Unpubl.	NI	NI	NI	KM018270	NI
<i>Bradyrhizobium</i> sp. AS61	Granada et al., 2015	NI	KJ696592	NI	KJ741279	KJ812008
<i>Bradyrhizobium</i> sp. AS60	Granada et al., 2015	NI	KJ696591	NI	KJ741278	KJ812007
<i>Bradyrhizobium</i> sp. AS58	Granada et al., 2015	NI	NI	NI	KJ741277	KJ812006

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. AS55	Granada et al., 2015	NI	KJ696589	NI	KJ741276	KJ812005
<i>Bradyrhizobium</i> sp. AS53	Granada et al., 2015	NI	KJ696588	NI	KJ741275	KJ812004
<i>Bradyrhizobium</i> sp. AS48	Granada et al., 2015	NI	KJ696587	NI	KJ741274	KJ812003
<i>Bradyrhizobium</i> sp. AS44	Granada et al., 2015	NI	KJ696586	NI	KJ741273	KJ812002
<i>Bradyrhizobium</i> sp. AS38	Granada et al., 2015	NI	KJ696585	NI	KJ741272	KJ812001
<i>Bradyrhizobium</i> sp. AS21	Granada et al., 2015	NI	KJ696583	NI	KJ741270	KJ811999
<i>Bradyrhizobium</i> sp. AS15	Granada et al., 2015	NI	KJ696582	NI	KJ741269	KJ811998
<i>Bradyrhizobium</i> sp. AS2	Granada et al., 2015	NI	KJ696581	NI	KJ741268	KJ811997
<i>Bradyrhizobium</i> sp. UBMA061	Chekireb et al., 2017	BSZ15_30240	BSZ15_3898 5	BSZ15_RS13245	BSZ15_RS20215	BSZ15_RS325 75
<i>B. canariense</i> UBMA122	Chekireb et al., 2017	BSZ21_21695	BSZ21_0111 0	BSZ21_RS13960	BSZ21_RS37180	BSZ21_RS277 10
<i>Bradyrhizobium</i> sp. LmicT14	Bourebaba et al., 2016	NI	KU752957	NI	KU752995	NI

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. LmicZ4	Bourebaba et al., 2016	NI	KU752969	NI	KU753001	NI
<i>Bradyrhizobium</i> sp. LmicZ10	Bourebaba et al., 2016	NI	KU752967	NI	KU752980	NI
<i>Bradyrhizobium</i> sp. LmicAL32	Bourebaba et al., 2016	NI	KU752935	NI	KU752982	NI
<i>Bradyrhizobium</i> sp. LmicISLU122	Bourebaba et al., 2016	NI	KU752950	NI	KU753003	NI
<i>Bradyrhizobium</i> sp. LmicAL27	Bourebaba et al., 2016	NI	KU752934	NI	KU752986	NI
<i>Bradyrhizobium</i> sp. LmicAL42	Bourebaba et al., 2016	NI	KU752937	NI	KU752972	NI
<i>Bradyrhizobium</i> sp. LmicF61	Bourebaba et al., 2016	NI	KU752944	NI	KU752985	NI
<i>Bradyrhizobium</i> sp. LmicF65	Bourebaba et al., 2016	NI	KU752946	NI	KU753004	NI
<i>Bradyrhizobium</i> sp. LmicISLU13	Bourebaba et al., 2016	NI	KU752951	NI	KU753006	NI
<i>Bradyrhizobium</i> sp. LmicM12	Bourebaba et al., 2016	NI	KU752953	NI	KU752984	NI
<i>Bradyrhizobium</i> sp. LmicAL38	Bourebaba et al., 2016	NI	KU752936	NI	KU752978	NI

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. LmicF63	Bourebaba et al., 2016	NI	KU752945	NI	KU752977	NI
<i>Bradyrhizobium</i> sp. LmicAM6	Bourebaba et al., 2016	NI	KU752943	NI	KU752971	NI
<i>Bradyrhizobium</i> sp. LmicT28	Bourebaba et al., 2016	NI	KU752963	NI	KU752976	NI
<i>Bradyrhizobium</i> sp. LmicAL48	Bourebaba et al., 2016	NI	KU752938	NI	KU752981	NI
<i>Bradyrhizobium</i> sp. LmicAM3	Bourebaba et al., 2016	NI	KU752941	NI	KU752988	NI
<i>Bradyrhizobium</i> sp. LmicT16	Bourebaba et al., 2016	NI	KU752958	NI	KU752996	NI
<i>Bradyrhizobium</i> sp. LmicT13	Bourebaba et al., 2016	NI	KU752956	NI	KU752994	NI
<i>Bradyrhizobium</i> sp. LmicT5	Bourebaba et al., 2016	NI	KU752965	NI	KU753002	NI
<i>Bradyrhizobium</i> sp. LmicT10	Bourebaba et al., 2016	NI	KU752955	NI	KU752993	NI
<i>Bradyrhizobium</i> sp. LmicT8	Bourebaba et al., 2016	NI	KU752966	NI	KU752999	NI
<i>Bradyrhizobium</i> sp. LmicT18	Bourebaba et al., 2016	NI	KU752959	NI	KU753005	NI

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. LmicT26	Bourebaba et al., 2016	NI	KU752961	NI	KU752974	NI
<i>Bradyrhizobium</i> sp. LmicT27	Bourebaba et al., 2016	NI	KU752962	NI	KU752975	NI
<i>Bradyrhizobium</i> sp. LmicAL52	Bourebaba et al., 2016	NI	KU752939	NI	KU752979	NI
<i>Bradyrhizobium</i> sp. LmicM10	Bourebaba et al., 2016	NI	KU752952	NI	KU752983	NI
<i>Bradyrhizobium</i> sp. LmicAL54	Bourebaba et al., 2016	NI	KU752940	NI	KU752973	NI
<i>Bradyrhizobium</i> sp. LmicM20	Bourebaba et al., 2016	NI	KU752954	NI	KU752970	NI
<i>Bradyrhizobium</i> sp. LmicAM4	Bourebaba et al., 2016	NI	KU752942	NI	KU752989	NI
<i>Bradyrhizobium</i> sp. LmicT2	Bourebaba et al., 2016	NI	KU752960	NI	KU752997	NI
<i>Bradyrhizobium</i> sp. LmicIA4	Bourebaba et al., 2016	NI	KU752948	NI	KU752991	NI
<i>Bradyrhizobium</i> sp. LmicT3	Bourebaba et al., 2016	NI	KU752964	NI	KU752998	NI
<i>Bradyrhizobium</i> sp. LmicIA1	Bourebaba et al., 2016	NI	KU752947	NI	KU752990	NI

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. LmicIA7	Bourebaba et al., 2016	NI	KU752949	NI	KU752992	NI
<i>Bradyrhizobium</i> sp. LmicZ3	Bourebaba et al., 2016	NI	KU752968	NI	KU753000	NI
<i>Bradyrhizobium</i> sp. LmicA16	Bourebaba et al., 2016	NI	KU752933	NI	KU752987	NI
<i>Bradyrhizobium</i> sp. lavp2b	Parker, M.A, Unpublished	KM247988	NI	KM248089	NI	KM247936
<i>Bradyrhizobium</i> sp. lamp2	Parker, M.A, Unpublished	KM247989	NI	KM248090	KM247838	KM247937
<i>Bradyrhizobium</i> sp. lamp5	Parker, M.A, Unpublished	KM247990	NI	KM248091	KM247839	KM247938
<i>Bradyrhizobium</i> sp. lamp8	Parker, M.A, Unpublished	KM247991	NI	KM248092	KM247840	KM247939
<i>Bradyrhizobium</i> sp. lamp9a	Parker, M.A, Unpublished	KM247992	NI	KM248093	KM247841	KM247940
<i>Bradyrhizobium</i> sp. lamp10b	Parker, M.A, Unpublished	KM247993	NI	KM248094	KM247842	KM247941
<i>Bradyrhizobium</i> sp. ValeG5	Parker, M.A, Unpublished	KM248012	NI	KM248113	KF357636	KM247960
<i>Bradyrhizobium</i> sp. AbruD12	Parker, M.A, Unpublished	KM248013	NI	KM248114	KM247874	KM247961

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. CastH25	Parker, M.A, Unpublished	KM248014	NI	KM248115	KM247875	KM247962
<i>Bradyrhizobium</i> sp. TabeB8	Parker, M.A, Unpublished	KM248015	NI	KM248116	KM247876	KM247963
<i>Bradyrhizobium</i> sp. AlisF2	Parker, M.A, Unpublished	KM248020	NI	KM248121	KM247881	KM247968
<i>Bradyrhizobium</i> sp. CollC23	Parker, M.A, Unpublished	KM248021	NI	NI	KM247882	KM247969
<i>Bradyrhizobium</i> sp. CollC19	Parker, M.A, Unpublished	KM248016	NI	KM248117	KM247877	KM247964
<i>Bradyrhizobium</i> sp. CollC20	Parker, M.A, Unpublished	KM248017	NI	KM248118	KM247878	KM247965
<i>Bradyrhizobium</i> sp. RiojA8	Parker, M.A, Unpublished	KM248018	NI	KM248119	KM247879	KM247966
<i>Bradyrhizobium</i> sp. AbruD10	Parker, M.A, Unpublished	KM248019	NI	KM248120	KM247880	KM247967
<i>Bradyrhizobium</i> sp. RSB6	Boulila et al., 2009	FJ264920	FJ264923	NI	FJ264926	NI
<i>Bradyrhizobium</i> sp. RSA104	Boulila et al., 2009	FJ264921	NI	NI	FJ264928	NI
<i>Bradyrhizobium</i> sp. sjz1b	Parker, 2015	KM247994	NI	KM248095	KM247843	KM247942
<i>Bradyrhizobium</i> sp. sjz3b	Parker, 2015	KM247995	NI	KM248096	NI	KM247943
<i>Bradyrhizobium</i> sp. sjz6b	Parker, 2015	KM247996	NI	KM248097	NI	KM247944

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Bradyrhizobium</i> sp. BGA1	Horn et al. Unpublished	NI	AY386772	NI	AY591558	EF190169
<i>Bradyrhizobium</i> sp. BRE1	Vinuesa et al., 2005	NI	AY599112	NI	NI	EF190171
<i>Bradyrhizobium</i> sp. BRE4	Vinuesa et al., 2005	NI	AY599111	NI	NI	EF190172
<i>Bradyrhizobium</i> sp. u29	Rodríguez- Echeverría, 2010	KF744635	NI	KF744699	KM247908	KF744927
<i>Bradyrhizobium</i> sp. ICMP 14533	Weir et al. 2004	NI	AY494800	NI	AY494827	NI
<i>Bradyrhizobium</i> sp. ICMP 19842	Weir et al. 2004	NI	NI	NI	KM018266	NI
<i>Bradyrhizobium</i> sp. ICMP 19840	Weir et al. 2004	NI	NI	NI	KM018265	NI
<i>Bradyrhizobium</i> ICMP 19839	Weir et al. 2004	NI	NI	NI	KM018264	NI
<i>Rhodopseudomonas palustris</i> HaA2	Unpubl.	RPB_RS02175	RPB_RS070 75	RPB_RS00035	RPB_RS18870	RPB_RS11490
<i>Rhodopseudomonas palustris</i> BisB5	Unpubl.	RPD_RS02015	RPD_RS069 95	RPD_RS00020	RPD_RS08710	RPD_RS16040
<i>Rhodopseudomonas palustris</i> BisB18	Unpubl.	RPC_RS01660	RPC_RS077 40	RPC_RS00025	RPC_RS07875	RPC_RS17370

Strain	Reference	<i>dnaK</i>	<i>glnII</i>	<i>gyrB</i>	<i>recA</i>	<i>rpoB</i>
<i>Rhodopseudomonas palustris</i> DX-1	Unpubl.	RPDX1_RS0146 5	RPDX1_RS2 1870	RPDX1_RS0002 5	RPDX1_RS07385	RPDX1_RS105 85
<i>Rhodopseudomonas palustris</i> TIE-1	Unpubl.	RPAL_RS01685	RPAL_RS23 215	RPAL_RS00020	RPAL_RS21655	RPAL_RS1824 0
<i>Rhodopseudomonas palustris</i> CGA009	Unpubl.	TX73_RS01725	TX73_RS21 480	TX73_RS00020	TX73_RS19655	TX73_RS16670

“NI” Not Included, there could either be no accession available or the accession was not included (as it proved too short for comparison).

Supplementary Table S2.3. Hosts, sources, geographic origin of additional *Bradyrhizobium* strains included in the *nodA* phylogeny and their reference information

Strains/ type strains	Source	Legume host	Geographical origin	<i>nodA</i> accession/ locus tag	Reference
<i>B. embrapense</i> SEMIA 6208 ^T	Root nodule	<i>Desmodium heterocarpon</i>	Colombia		Delamuta et al. 2015
<i>B. tropiciagri</i> SEMIA 6148 ^T	Root nodule	<i>Neonotonia wightii</i>	Brazil	HQ259481	Menna et al. 2010
<i>B. viridifuturi</i> SEMIA 690 ^T	Root nodule	<i>Centrosema pubescens</i>	Brazil	ALC15_RS42850	Helene et al. 2015
19AH	Root nodule	<i>Acacia mearnsii</i>	South Africa	LR880917	Avontuur et al. 2021
19AJ	Root nodule	<i>Acacia mearnsii</i>	South Africa	LR880916	Avontuur et al. 2021
16BA no1	Root nodule	<i>Acacia dealbata</i>	South Africa	LR880918	Avontuur et al. 2021
" <i>B. macuxiense</i> " BR 10303 ^T	Root nodule	<i>Centrolobium paraense</i>	Brazil	FBZ93_111134	Whitman et al. 2019
<i>B. guangxiense</i> CCBAU 53363 ^T	Root nodule	<i>Arachis hypogaea</i>	China	KC509186	Li et al. 2015
CCBAU 51649	Root nodule	<i>Arachis hypogaea</i>	China	KC509176	Li et al. 2015
" <i>B. centrolobii</i> " BR 10245 ^T	Root nodule	<i>Centrolobium paraense</i>	Brazil	AYJ54_11265	Michel et al., 2017
" <i>B. forestalis</i> " INPA54B ^T	Root nodule	Forest legume species	Brazil	CVM73_06820	Martins da Costa et al. 2018
<i>B. algeriense</i> RST89 ^T	Root nodule	<i>Retama sphaerocarpa</i>	Algeria	C7G61_RS45870	Ahnia et al. 2019
" <i>B. sacchari</i> " p9-20 ^T	Root nodule	sugarcane cultivar RB867515	Brazil	A5906_RS36550	de Matos et al. 2017
" <i>B. zhanjiangense</i> " CCBAU 517781 ^T	Root nodule	<i>Arachis hypogaea</i>	China	XH85_RS13130	Sui et al, unpublished
" <i>B. guangzhouense</i> " CCBAU 51670 ^T	Root nodule	<i>Arachis hypogaea</i>	China	KC509162	Wang et al. 2013
<i>B. nanningense</i> CCBAU 53390 ^T	Root nodule	<i>Arachis hypogaea</i>	China	KC509181	Li et al. 2015
<i>B. niftali</i> CNPSo 3448 ^T	Root nodule	<i>Chamaecrista fasciculata</i>	USA	E4K65_35080	Klepa et al, unpublished
<i>B. frederickii</i> CNPSo 3426 ^T	Root nodule	<i>Chamaecrista fasciculata</i>	USA	E4K64_34755	Urquiaga et al, unpublished
" <i>B. ivorense</i> " CI 1B ^T	Farming soil	<i>Cajanus cajan</i>	Côte d'Ivoire	CI41S_67310	Fossou et al. 2020
" <i>B. uaiense</i> " UFLA03 164 ^T	Root nodule	<i>Glycine max</i>	Brazil	NEU94272	Michelet al. 2020
<i>B. archetypum</i> WSM 1744 ^T	Root nodule	<i>Muelleranthus trifoliolatus</i>	Australia	HCN50_RS33995	Helene et al. 2020
<i>B. australiense</i> WSM 1791 ^T	Root nodule	<i>Indigofera sp</i>	Australia	HCN58_RS36225	Helene et al. 2020
" <i>B. acaciae</i> " 10BB ^T	Root nodule	<i>Acacia dealbata</i>	South Africa	LR880919	Avontuur et al. 2021
" <i>B. altum</i> " Pear77 ^T	Root nodule	<i>Pearsonia obovata</i>	South Africa	LN650251	Avontuur et al. 2021
" <i>B. oropedii</i> " pear76 ^T	Root nodule	<i>Pearsonia obovata</i>	South Africa	LN65025	Avontuur et al. 2021

* Taxa whose names have not been validly published are written out as "....."

Supplementary Table S2.4. Accession numbers for *Bradyrhizobium nifH* sequences used in this study as well host, country, and source information

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
GU001627	CTAW71	No Country info	<i>Cytisus triflorus</i>	root nodules	Chahboune, R., et al. 2011
GU001618	CTAW11	No Country info	<i>Cytisus triflorus</i>	root nodules	Chahboune, R., et al. 2011
KC247135	CMVU44	Venezuela	<i>Centrosema macrocarpum</i>	root nodule	Ramirez-Bahena, M.H., et al. 2013
KC247139	A9	Venezuela	<i>Centrosema molle</i>	root nodule	Ramirez-Bahena, M.H., et al. 2013
HQ231551	CCBAU 23303	China	<i>Glycine max</i>	No info	Zhang, Y.F., et al. 2011
EU818927	CCBAU 10071	No Country info	No Host info	No info	Appunu, C., et al. 2008
EU818926	BTA-1	No Country info	No Host info	No info	Appunu, C., et al. 2008
EU818925	LMG 18230	No Country info	No Host info	No info	Appunu, C., et al. 2008
EU113240	CCBAU 33011	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113239	CCBAU 51172	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113238	CCBAU 23236	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113236	CCBAU 51377	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113235	CCBAU 23011	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113234	CCBAU 51012	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113233	CCBAU 43135	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113232	CCBAU 35272	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113231	CCBAU 61069	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113230	CCBAU 61073	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113229	CCBAU 45066	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113228	CCBAU 61071	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113227	CCBAU 33012-2	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113226	CCBAU 65066	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113225	CCBAU 35186-1	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
EU113224	CCBAU 51159	No Country info	No Host info	No info	Zhang, Y.F., et al. 2008
KC247138	CMVU30	Venezuela	<i>Centrosema macrocarpum</i>	root nodule	Ramirez-Bahena, M.H., et al. 2013
KC247137	CMVU04	Venezuela	<i>Centrosema macrocarpum</i>	root nodule	Ramirez-Bahena, M.H., et al. 2013
KC247136	CMVU02	Venezuela	<i>Centrosema macrocarpum</i>	root nodule	Ramirez-Bahena, M.H., et al. 2013
GQ336847	STM3059	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336846	STM3074	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336845	STM3060	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336844	STM3068	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336843	STM3043	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336842	STM3062	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336841	STM3040	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336840	STM3047	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336839	STM3091	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336838	STM3049	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336837	STM3090	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336836	STM3088	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336835	STM3078	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336834	STM3082	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336833	STM3080	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
GQ336832	STM3070	Cote d'Ivoire	<i>Vigna unguiculata</i>	root nodules	N'Zoue, A., et al. Unpublished
FJ348678	RST89	No Country info	<i>Retama sphaerocarpa</i>	No info	Boullia, F., et al. 2009
FJ348669	RSA3	No Country info	<i>Retama sphaerocarpa</i>	No info	Boullia, F., et al. 2009
GU001624	CTAW38	No Country info	<i>Cytisus triflorus</i>	root nodules	Chahboune, R., et al. 2011
GU001619	CTAW22	No Country info	<i>Cytisus triflorus</i>	root nodules	Chahboune, R., et al. 2011
HQ231517	CCBAU 25435	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
DQ485701	S 127	Brazil	<i>Glycine max</i>	No info	Barcellos, F.G., et al. 2007
DQ485702	S 127	Brazil	<i>Glycine max</i>	No info	Barcellos, F.G., et al. 2007
FJ347451	ORS400	Senegal	<i>Aeschynomene indica</i>	No info	Nzoue, A., et al. 2009
FJ347450	ORS393	Senegal	<i>Aeschynomene indica</i>	No info	Nzoue, A., et al. 2009
FJ347449	ORS391	Senegal	<i>Aeschynomene indica</i>	No info	Nzoue, A., et al. 2009
FJ347448	ORS377	Senegal	<i>Aeschynomene elaphroxylon</i>	No info	Nzoue, A., et al. 2009
FJ347447	ORS375	Senegal	<i>Aeschynomene indica</i>	No info	Nzoue, A., et al. 2009
FJ347446	ORS372	Senegal	<i>Aeschynomene indica</i>	No info	Nzoue, A., et al. 2009
FJ347445	ORS361	Senegal	<i>Aeschynomene sensitiva</i>	No info	Nzoue, A., et al. 2009
FJ347444	ORS358	Senegal	<i>Aeschynomene nilotica</i>	No info	Nzoue, A., et al. 2009
FJ347443	ORS356	Senegal	<i>Aeschynomene afraspera</i>	No info	Nzoue, A., et al. 2009
FJ347442	ORS354	Senegal	<i>Aeschynomene afraspera</i>	No info	Nzoue, A., et al. 2009
FJ347441	ORS344	Senegal	<i>Aeschynomene indica</i>	No info	Nzoue, A., et al. 2009
FJ347440	ORS336	Senegal	<i>Aeschynomene afraspera</i>	No info	Nzoue, A., et al. 2009
FJ347439	ORS331	Senegal	<i>Aeschynomene tambacoundensis</i>	No info	Nzoue, A., et al. 2009
FJ347438	ORS330	Senegal	<i>Aeschynomene sensitiva</i>	No info	Nzoue, A., et al. 2009
FJ347437	ORS328	Senegal	<i>Aeschynomene indica</i>	No info	Nzoue, A., et al. 2009
FJ347436	ORS327	Senegal	<i>Aeschynomene indica</i>	No info	Nzoue, A., et al. 2009
FJ347435	ORS324	Senegal	<i>Aeschynomene afraspera</i>	No info	Nzoue, A., et al. 2009

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
FJ347434	ORS318	Senegal	<i>Aeschynomene indica</i>	No info	Nzoue,A., et al. 2009
FJ347433	ORS310	Senegal	<i>Aeschynomene indica</i>	No info	Nzoue,A., et al. 2009
FJ347432	ORS309	Senegal	<i>Aeschynomene uniflora</i>	No info	Nzoue,A., et al. 2009
FJ347431	ORS309	Senegal	<i>Aeschynomene uniflora</i>	No info	Nzoue,A., et al. 2009
FJ347430	ORS307	Senegal	<i>Aeschynomene indica</i>	No info	Nzoue,A., et al. 2009
FJ347429	ORS305	Senegal	<i>Aeschynomene schimperi</i>	No info	Nzoue,A., et al. 2009
FJ347428	ORS304	Senegal	<i>Aeschynomene elaphroxylon</i>	No info	Nzoue,A., et al. 2009
FJ347427	ORS303	Senegal	<i>Aeschynomene afraspera</i>	No info	Nzoue,A., et al. 2009
FJ347426	ORS301	Senegal	<i>Aeschynomene americana</i>	No info	Nzoue,A., et al. 2009
FJ347425	ORS300	Senegal	<i>Aeschynomene indica</i>	No info	Nzoue,A., et al. 2009
FJ347424	ORS298	Senegal	<i>Aeschynomene sensitiva</i>	No info	Nzoue,A., et al. 2009
FJ347423	ORS297	Senegal	<i>Aeschynomene sensitiva</i>	No info	Nzoue,A., et al. 2009
FJ347422	ORS294	Senegal	<i>Aeschynomene sensitiva</i>	No info	Nzoue,A., et al. 2009
FJ347421	ORS287	Senegal	<i>Aeschynomene afraspera</i>	No info	Nzoue,A., et al. 2009
FJ347420	ORS 285	Senegal	<i>Aeschynomene afraspera</i>	No info	Nzoue,A., et al. 2009
FJ347419	ORS279	Senegal	<i>Aeschynomene sensitiva</i>	No info	Nzoue,A., et al. 2009
FJ347418	ORS277	Senegal	<i>Aeschynomene sensitiva</i>	No info	Nzoue,A., et al. 2009
MH208463	TUTCS1.I	South Africa	<i>Vigna unguiculata</i>	root nodules	Jaiswal,S.K., et al. Unpublished
MH208462	TUTCK2.I	South Africa	<i>Vigna unguiculata</i>	root nodules	Jaiswal,S.K., et al. Unpublished
MH208461	TUTCS4B	South Africa	<i>Vigna unguiculata</i>	root nodules	Jaiswal,S.K., et al. Unpublished
MH208460	TUTCT5B	South Africa	<i>Vigna unguiculata</i>	root nodules	Jaiswal,S.K., et al. Unpublished
MH208459	TUTCG5C	South Africa	<i>Vigna unguiculata</i>	root nodules	Jaiswal,S.K., et al. Unpublished
MH208458	TUTCG1.I	South Africa	<i>Vigna unguiculata</i>	root nodules	Jaiswal,S.K., et al. Unpublished
MH208457	TUTCSA2A	South Africa	<i>Vigna unguiculata</i>	root nodules	Jaiswal,S.K., et al. Unpublished
GQ907227	DASA 68056	Thailand	<i>Derris elliptica</i>	root nodules	Pongsilp,N. and Leelahawong,C., 2010
FJ514071	SR30	India	<i>Vigna radiata</i>	root nodule	Appunu,C., et al. 2009
FJ514070	SR135	India	<i>Vigna unguiculata</i>	root nodule	Appunu,C., et al. 2009
FJ514069	SR125	India	<i>Vigna unguiculata</i>	root nodule	Appunu,C., et al. 2009
FJ514068	SR50	India	<i>Vigna unguiculata</i>	root nodule	Appunu,C., et al. 2009
FJ514067	SR49	India	<i>Vigna unguiculata</i>	root nodule	Appunu,C., et al. 2009
FJ514066	SR119	India	<i>Vigna unguiculata</i>	root nodule	Appunu,C., et al. 2009
FJ514065	SR35	India	<i>Vigna radiata</i>	root nodule	Appunu,C., et al. 2009
FJ514064	SR121	India	<i>Vigna unguiculata</i>	root nodule	Appunu,C., et al. 2009
FJ514063	SR42	India	<i>Vigna radiata</i>	root nodule	Appunu,C., et al. 2009
FJ514062	SR53	India	<i>Vigna unguiculata</i>	root nodule	Appunu,C., et al. 2009
FJ348677	RST88bis	No Country info	<i>Retama sphaerocarpa</i>	No info	Boullia,F., et al. 2009
FJ348676	RSS137	No Country info	<i>Retama sphaerocarpa</i>	No info	Boullia,F., et al. 2009
FJ348675	RRM8	No Country info	<i>Retama sphaerocarpa</i>	No info	Boullia,F., et al. 2009
FJ348674	RRM3	No Country info	<i>Retama sphaerocarpa</i>	No info	Boullia,F., et al. 2009
FJ348673	RRD24	No Country info	<i>Retama sphaerocarpa</i>	No info	Boullia,F., et al. 2009
FJ348672	RSB6	No Country info	<i>Retama sphaerocarpa</i>	No info	Boullia,F., et al. 2009
FJ348671	RSB2	No Country info	<i>Retama sphaerocarpa</i>	No info	Boullia,F., et al. 2009
FJ348670	RSA104	No Country info	<i>Retama sphaerocarpa</i>	No info	Boullia,F., et al. 2009
FJ348668	RS13	No Country info	<i>Retama sphaerocarpa</i>	No info	Boullia,F., et al. 2009
FJ348667	RRSSET16	No Country info	<i>Retama raetam</i>	No info	Boullia,F., et al. 2009
KF113074	M12	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113073	M3	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113072	AG48	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113071	AG14	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113070	P15-7	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113069	P11-1	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113068	P10-6	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113067	P10-5	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113066	P9-22	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113065	P9-21	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113063	P8-11	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113062	P8-5	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113061	P7-40	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113060	P7-35	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113059	P7-17	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113058	P5-27	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113057	P5-26	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113056	P5-32	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113055	P5-5	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113054	P4-29	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113053	P4-7	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KF113052	P4-5	Brazil	sugarcane	roots	Rouws,L.F., et al. 2014
KJ656157	No Strain info	Mexico	No Host info	rhizosphere from Zea mays	Rosenblueth,M., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KJ656156	No Strain info	Mexico	No Host info	rhizosphere from Zea mays	Rosenblueth,M., et al. Unpublished
KJ656149	No Strain info	Mexico	No Host info	rhizosphere from Zea mays	Rosenblueth,M., et al. Unpublished
KJ656148	No Strain info	Mexico	No Host info	rhizosphere from Zea mays	Rosenblueth,M., et al. Unpublished
KJ656136	No Strain info	Mexico	No Host info	rhizosphere from Zea mays	Rosenblueth,M., et al. Unpublished
KJ656135	No Strain info	Mexico	No Host info	rhizosphere from Zea mays	Rosenblueth,M., et al. Unpublished
KJ656134	No Strain info	Mexico	No Host info	rhizosphere from Zea mays	Rosenblueth,M., et al. Unpublished
KJ656133	No Strain info	Mexico	No Host info	rhizosphere from Zea mays	Rosenblueth,M., et al. Unpublished
KJ656132	No Strain info	Mexico	No Host info	rhizosphere from Zea mays	Rosenblueth,M., et al. Unpublished
KJ656131	No Strain info	Mexico	No Host info	rhizosphere from Zea mays	Rosenblueth,M., et al. Unpublished
KR092344	P2	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
KR092342	J3	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
KR092339	G2	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
KR092338	F4	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
KR092331	B3	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
GU001635	CTFI54	No Country info	<i>Cytisus triflorus</i>	root nodule	Chahboune,R., et al. 2011
GU001634	CTFI52	No Country info	<i>Cytisus triflorus</i>	root nodule	Chahboune,R., et al. 2011
GU001633	CTFI47	No Country info	<i>Cytisus triflorus</i>	root nodule	Chahboune,R., et al. 2011
GU001632	CTFI410	No Country info	<i>Cytisus triflorus</i>	root nodule	Chahboune,R., et al. 2011
GU001631	CTFI32	No Country info	<i>Cytisus triflorus</i>	root nodule	Chahboune,R., et al. 2011
GU001630	CTFI28	No Country info	<i>Cytisus triflorus</i>	root nodule	Chahboune,R., et al. 2011
GU001629	CTFI26	No Country info	<i>Cytisus triflorus</i>	root nodule	Chahboune,R., et al. 2011
GU001628	CTFI12	No Country info	<i>Cytisus triflorus</i>	root nodule	Chahboune,R., et al. 2011
GU001626	CTAW56	No Country info	<i>Cytisus triflorus</i>	root nodule	Chahboune,R., et al. 2011
GU001625	CTAW43	No Country info	<i>Cytisus triflorus</i>	root nodule	Chahboune,R., et al. 2011
GU001623	CTAW36	No Country info	<i>Cytisus triflorus</i>	root nodule	Chahboune,R., et al. 2011
GU001622	CTAW33	No Country info	<i>Cytisus triflorus</i>	root nodule	Chahboune,R., et al. 2011
GU001621	CTAW31	No Country info	<i>Cytisus triflorus</i>	root nodule	Chahboune,R., et al. 2011
GU001620	CTAW25	No Country info	<i>Cytisus triflorus</i>	root nodule	Chahboune,R., et al. 2011
MT198688	Rs27Z8	Morocco	<i>Retama sphaerocarpa</i>	No info	Alami,S., et al. Unpublished
MT198687	Rs19Z8	Morocco	<i>Retama sphaerocarpa</i>	No info	Alami,S., et al. Unpublished
MT198686	Rs9Z8	Morocco	<i>Retama sphaerocarpa</i>	No info	Alami,S., et al. Unpublished
MT198685	Rs4Z8	Morocco	<i>Retama sphaerocarpa</i>	No info	Alami,S., et al. Unpublished
MK559283	83012	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559282	83002	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559281	82084	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559280	82079	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559279	82054	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559278	82044	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559277	81035	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559276	81033	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559275	81013	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559274	81003	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559273	81001	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559272	80029	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559271	80025	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559270	80022	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559269	80016	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559268	80013	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559267	80005	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559266	80004	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK559265	80001	China	<i>Aeschynomene indica</i>	nodules	Zhang,Z. and Li,Y., 2019
MK314848	HCOKY	No Country info	<i>Chamaecrista fasciculata</i>	nodules	Zawada,Z. and Prasad,G., 2018
MK314847	HUMN	No Country info	<i>Chamaecrista fasciculata</i>	nodules	Zawada,Z. and Prasad,G., 2018
MK314846	RMN	No Country info	<i>Chamaecrista fasciculata</i>	nodules	Zawada,Z. and Prasad,G., 2018
MK314845	MSOY	No Country info	<i>Chamaecrista fasciculata</i>	nodules	Zawada,Z. and Prasad,G., 2018
MK314844	SDSOY	No Country info	<i>Chamaecrista fasciculata</i>	nodules	Zawada,Z. and Prasad,G., 2018
MK314843	ASDSOY	No Country info	<i>Chamaecrista fasciculata</i>	nodules	Zawada,Z. and Prasad,G., 2018
MK314842	NoduleZZ1	No Country info	<i>Chamaecrista fasciculata</i>	nodules	Zawada,Z. and Prasad,G., 2018
MK314841	USDA800	No Country info	<i>Chamaecrista fasciculata</i>	nodules	Zawada,Z. and Prasad,G., 2018
MK314840	USDA798	No Country info	<i>Chamaecrista fasciculata</i>	nodules	Zawada,Z. and Prasad,G., 2018
MK314839	USDA797	No Country info	<i>Chamaecrista fasciculata</i>	nodules	Zawada,Z. and Prasad,G., 2018
MK314838	USDA794	No Country info	<i>Chamaecrista fasciculata</i>	nodules	Zawada,Z. and Prasad,G., 2018
MK314837	Nodule4	No Country info	<i>Chamaecrista fasciculata</i>	nodules	Zawada,Z. and Prasad,G., 2018
MK314836	Nodule1	No Country info	<i>Chamaecrista fasciculata</i>	nodules	Zawada,Z. and Prasad,G., 2018
MH339859	TUTVUSA50	South Africa	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal,S.K., et al. Unpublished
MH339858	TUTVUGH25	Ghana	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal,S.K., et al. Unpublished
MH339857	TUTVUSA41	South Africa	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal,S.K., et al. Unpublished
MH339856	TUTVUGH2	Ghana	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal,S.K., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
MH339855	TUTVUGH4	Ghana	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal, S.K., et al. Unpublished
MH339854	TUTVUSA36	South Africa	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal, S.K., et al. Unpublished
MH339853	TUTVUSA45	South Africa	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal, S.K., et al. Unpublished
MH339852	TUTVUSA31	South Africa	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal, S.K., et al. Unpublished
MH339851	TUTVUSA48	South Africa	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal, S.K., et al. Unpublished
MH339850	TUTVUGH17	Ghana	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal, S.K., et al. Unpublished
MH339849	TUTVUGH18	Ghana	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal, S.K., et al. Unpublished
MH339848	TUTVUSA43	South Africa	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal, S.K., et al. Unpublished
MH339847	TUTVUSA33	South Africa	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal, S.K., et al. Unpublished
MH339846	TUTVUGH24	Ghana	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal, S.K., et al. Unpublished
MH339845	TUTVUSA44	South Africa	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal, S.K., et al. Unpublished
MH339844	TUTVUGH22	Ghana	<i>Vigna unguiculata</i>	cowpea root nodules	Jaiswal, S.K., et al. Unpublished
MF140389	TUTMJM5	Mozambique	<i>Glycine max</i>	root nodules	Jaiswal, S.K., et al. Unpublished
MF140388	TUTRAH8A	Mozambique	<i>Glycine max</i>	root nodules	Jaiswal, S.K., et al. Unpublished
MF140387	TUTNFM1A	Mozambique	<i>Glycine max</i>	root nodules	Jaiswal, S.K., et al. Unpublished
MG839640	CI138	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839639	CI137	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839638	CI136	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839636	CI133	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839635	CI132	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839634	CI131	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839633	CI130	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839632	CI128	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839631	CI127	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839630	CI125	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839629	CI124	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839628	CI123	Christmas Island	cowpea	root nodule	De Meyer, S.E., et al. Unpublished
MG839627	CI121	Christmas Island	cowpea	root nodule	De Meyer, S.E., et al. Unpublished
MG839626	CI120	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839625	CI118	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839624	CI117	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839622	CI113	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839621	CI111	Christmas Island	<i>Lablab</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839620	CI108	Christmas Island	peanut	root nodule	De Meyer, S.E., et al. Unpublished
MG839619	CI105	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839618	CI104	Christmas Island	<i>Macroptilium atropurpureum</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839617	CI100	Christmas Island	<i>Lablab</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839610	CI077	Christmas Island	<i>mungbean</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839602	CI037	Christmas Island	<i>Indigofera hirsuta</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839601	CI036	Christmas Island	<i>Indigofera hirsuta</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839596	CI022	Christmas Island	<i>mungbean</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839595	CI019	Christmas Island	<i>mungbean</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839594	CI015	Christmas Island	<i>mungbean</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839593	CI013	Christmas Island	<i>Lablab</i>	root nodule	De Meyer, S.E., et al. Unpublished
MG839592	CI007	Christmas Island	cowpea	root nodule	De Meyer, S.E., et al. Unpublished
MG839591	CI004	Christmas Island	cowpea	root nodule	De Meyer, S.E., et al. Unpublished
KY941348	TUTVU54	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941347	TUTVU44	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941346	TUTVU99	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941345	TUTVU92	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941344	TUTVU87	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941343	TUTVU86	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941342	TUTVU81	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941341	TUTVU77	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941340	TUTVU70	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941339	TUTVU66	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941338	TUTVU63	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941337	TUTVU59	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941336	TUTVU55	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941335	TUTVU42	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941334	TUTVU39	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941333	TUTVU36	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941332	TUTVU30	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941331	TUTVU22	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941330	TUTVU21	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941329	TUTVU14	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941328	TUTVU13	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941327	TUTVU11	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KY941326	TUTVU7	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941325	TUTVU5	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941324	TUTVU3	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
KY941323	TUTVU1	Mozambique	<i>Vigna unguiculata</i>	root nodules	Chidebe, I.N., et al. 2017
HQ231552	CCBAU 45534	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
HQ231549	CCBAU 45474	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
HQ231546	CCBAU 03335	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
HQ231537	CCBAU 45515	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
HQ231535	CCBAU 25551	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
HQ231534	CCBAU 25532	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
HQ231533	CCBAU 25530	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
HQ231532	CCBAU 25575	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
HQ231526	CCBAU 25538	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
HQ231525	CCBAU 25562	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
HQ231522	CCBAU 45512	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
HQ231519	CCBAU 051160	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
HQ231518	CCBAU 25437	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
HQ231514	CCBAU 051156	China	<i>Glycine max</i>	No info	Zhang, Y.M., et al. 2011
KX013238	F86-1-3	No Country info	<i>Faidherbia albida</i>	No info	Teixeira, H. and Rodriguez-Echeverria, S., 2016
KX013237	F86-1-2	No Country info	<i>Faidherbia albida</i>	No info	Teixeira, H. and Rodriguez-Echeverria, S., 2016
KX013236	F85-2-3	No Country info	<i>Faidherbia albida</i>	No info	Teixeira, H. and Rodriguez-Echeverria, S., 2016
KX013235	F83-1-3	No Country info	<i>Faidherbia albida</i>	No info	Teixeira, H. and Rodriguez-Echeverria, S., 2016
KX013234	F82-1-1	No Country info	<i>Faidherbia albida</i>	No info	Teixeira, H. and Rodriguez-Echeverria, S., 2016
KX013233	Alb5-2-6	No Country info	<i>Albizia versicolor</i>	No info	Teixeira, H. and Rodriguez-Echeverria, S., 2016
KX013232	Alb4-1-5	No Country info	<i>Albizia versicolor</i>	No info	Teixeira, H. and Rodriguez-Echeverria, S., 2016
KX013231	Alb4-1-4	No Country info	<i>Albizia versicolor</i>	No info	Teixeira, H. and Rodriguez-Echeverria, S., 2016
KX013230	Alb4-1-3	No Country info	<i>Albizia versicolor</i>	No info	Teixeira, H. and Rodriguez-Echeverria, S., 2016
KX013229	Alb3-2-1	No Country info	<i>Albizia versicolor</i>	No info	Teixeira, H. and Rodriguez-Echeverria, S., 2016
KX013228	Alb2-B-3	No Country info	<i>Albizia versicolor</i>	No info	Teixeira, H. and Rodriguez-Echeverria, S., 2016
KX013227	Alb1-C-1	No Country info	<i>Albizia versicolor</i>	No info	Teixeira, H. and Rodriguez-Echeverria, S., 2016
KX013226	Alb1-B-2	No Country info	<i>Albizia versicolor</i>	No info	Teixeira, H. and Rodriguez-Echeverria, S., 2016
HM063962	GM	China	<i>Erythrophleum fordii</i>	nodules	Lu, J., et al. Unpublished
KU360359	YIC61000	China	<i>arachis hypogaea</i>	root nodule	Wu, H., et al. Unpublished
KU360358	YIC60953	China	<i>arachis hypogaea</i>	root nodule	Wu, H., et al. Unpublished
KU360357	YIC61059	China	<i>arachis hypogaea</i>	root nodule	Wu, H., et al. Unpublished
KU360356	YIC60838	China	<i>arachis hypogaea</i>	root nodule	Wu, H., et al. Unpublished
KU360355	YIC60933	China	<i>arachis hypogaea</i>	root nodule	Wu, H., et al. Unpublished
KU360354	YIC60767	China	<i>arachis hypogaea</i>	root nodule	Wu, H., et al. Unpublished
KU360353	YIC60756	China	<i>arachis hypogaea</i>	root nodule	Wu, H., et al. Unpublished
KR186400	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186399	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186398	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186397	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186396	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186395	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186394	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186393	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186392	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186391	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186390	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186389	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186388	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186387	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186386	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186385	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186384	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186383	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186382	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186381	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186380	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186379	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186378	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186377	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186376	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186375	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186374	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186373	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished
KR186372	No Strain info	USA	<i>Chamaecrista fasciculata</i>	root nodules	Dorman, H.E. and Wallace, L.E., Unpublished

[illegible]

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KT027852	TUTMP18.6	South Africa	No Host info	No info	Jaiswal, S.K., et al. 2015
KT027851	TUTMP16.11	South Africa	No Host info	No info	Jaiswal, S.K., et al. 2015
KT207556	TUTVSB LG	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207555	TUTVSCR G	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207554	TUTVSBEG	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207553	TUTVSRDM	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207552	TUTVSBEM	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207551	TUTVSB LK	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207550	TUTVSCRK	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207549	TUTVSRDK	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207548	TUTVSRMK	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207547	TUTVSB EK	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207546	TUTVSBMK	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207545	TUTVSRMT	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207544	TUTVSRDS	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207543	TUTVSCRM-I	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207542	TUTVSRDK-I	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207541	TUTVSRMSA	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207540	TUTVSBESA	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207539	TUTVSBMSA	Ghana	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KR559275	No Strain info	Mozambique	No Host info	agricultural field soil	Jaiswal, S.K., et al. Unpublished
KR559273	No Strain info	Mozambique	No Host info	agricultural field soil	Jaiswal, S.K., et al. Unpublished
KR559272	No Strain info	Mozambique	No Host info	agricultural field soil	Jaiswal, S.K., et al. Unpublished
KJ546637	NCSU 2690	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546634	NCSU 2632	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546633	NCSU 2631	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546631	NCSU 2583	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546630	NCSU 2579	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546629	NCSU 2576	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546628	NCSU 2536	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546627	NCSU 2513	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546624	NCSU 2476	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546623	NCSU 2473	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546620	NCSU 2446	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546619	NCSU 2438	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546618	NCSU 2406	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546617	NCSU 2401	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546616	NCSU 2384	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546615	NCSU 2369	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546613	NCSU 2358	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546612	NCSU 2335	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546611	NCSU 2333	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546610	NCSU 2322	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546609	NCSU 2320	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546608	NCSU 2265	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546607	NCSU 2248	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546606	NCSU 2223	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546605	NCSU 2211	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546603	NCSU 2207	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546602	NCSU 2204	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546600	NCSU 2199	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546599	NCSU 2192	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546598	NCSU 2185	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546597	NCSU 2135	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546596	NCSU 2114	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546595	NCSU 2112	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546592	NCSU 2061	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546591	NCSU 2039	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546590	NCSU 2028	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546588	NCSU 1943	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KJ546587	NCSU 1933	Malawi	<i>Glycine max</i>	nodule	Parr, M.C., et al. Unpublished
KC841329	MF253	No Country info	No Host info	legume nodules	Lammel, D.R., et al. 2013
KC841328	Ad261	No Country info	No Host info	legume nodules	Lammel, D.R., et al. 2013
KF802663	MM5405	No Country info	<i>Tephrosia capensis</i>	No info	Lammel, D.R., et al. 2013
KF802635	MM5621	No Country info	<i>Indigofera gracilis</i>	No info	Lammel, D.R., et al. 2013
KF802634	MM5392	No Country info	<i>Indigofera frutescens</i>	No info	Lammel, D.R., et al. 2013
KF147163	CCBAU 23377	China	<i>Kummerowia stipulacea</i>	No info	Liu, T. and Chen, W., Unpublished
KX396568	No Strain info	Cote d'Ivoire	<i>Cajanus cajan</i>	farming soil	Fossou, R.K., et al. 2016

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KX396567	No Strain info	Cote d'Ivoire	<i>Cajanus cajan</i>	farming soil	Fossou,R.K., et al. 2016
KX396566	No Strain info	Cote d'Ivoire	<i>Cajanus cajan</i>	farming soil	Fossou,R.K., et al. 2016
KX396565	No Strain info	Cote d'Ivoire	<i>Cajanus cajan</i>	farming soil	Fossou,R.K., et al. 2016
KX396564	No Strain info	Cote d'Ivoire	<i>Cajanus cajan</i>	farming soil	Fossou,R.K., et al. 2016
KX396563	No Strain info	Cote d'Ivoire	<i>Cajanus cajan</i>	farming soil	Fossou,R.K., et al. 2016
KX396562	No Strain info	Cote d'Ivoire	<i>Cajanus cajan</i>	farming soil	Fossou,R.K., et al. 2016
KX396561	No Strain info	Cote d'Ivoire	<i>Cajanus cajan</i>	farming soil	Fossou,R.K., et al. 2016
KX396560	No Strain info	Cote d'Ivoire	<i>Cajanus cajan</i>	farming soil	Fossou,R.K., et al. 2016
KX396559	No Strain info	Cote d'Ivoire	<i>Cajanus cajan</i>	farming soil	Fossou,R.K., et al. 2016
KX396558	No Strain info	Cote d'Ivoire	<i>Cajanus cajan</i>	farming soil	Fossou,R.K., et al. 2016
KX396557	No Strain info	Cote d'Ivoire	<i>Cajanus cajan</i>	farming soil	Fossou,R.K., et al. 2016
KX396556	No Strain info	Cote d'Ivoire	<i>Cajanus cajan</i>	farming soil	Fossou,R.K., et al. 2016
KX396555	No Strain info	Cote d'Ivoire	<i>Cajanus cajan</i>	farming soil	Fossou,R.K., et al. 2016
AH010242	110spc4	No Country info	No Host info	No info	Gottfert,M., et al. 2001
EU113237	CCBAU 65118	No Country info	No Host info	No info	Zhang,Y.F., et al. 2008
EU113223	CCBAU 31015	No Country info	No Host info	No info	Zhang,Y.F., et al. 2008
DQ485715	CPAC 402	Brazil	Glycine max	No info	Barcellos,F.G., et al. 2007
DQ485714	CPAC 402	Brazil	Glycine max	No info	Barcellos,F.G., et al. 2007
GQ907226	DASA 68012	Thailand	<i>Derris elliptica</i>	root nodules	Pongsilp,N. and Leelahawongse,C., et al. 2010
KX230447	TUTPVA41	South Africa	<i>Phaseolus vulgaris</i>	root nodule	Jaiswal,S.K., et al. Unpublished
GQ289584	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289583	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289582	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289581	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289580	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289579	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289578	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289577	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289576	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289575	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289574	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289573	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289572	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289571	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289570	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289569	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289567	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289566	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289565	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289564	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289563	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289562	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289561	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
GQ289560	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
KX683406	CCBAU 51787	China	<i>Arachis hypogaea</i>	No info	Li,Y., Unpublished
KR262788	1676	China	<i>Phaseolus vulgaris</i> L.	root nodule	Zhao,L., Unpublished
KF896161	LMTR 13	Peru	<i>Phaseolus lunatus</i>	root nodule	Duran,D., et al. 2014
EU822944	PAC68	Honduras	<i>Pachyrhizus erosus</i>	effective nodules	Ramirez-Bahena,M.H.,et al. 2009
EU822943	PAC48	Costa Rica	<i>Pachyrhizus erosus</i>	effective nodules	Ramirez-Bahena,M.H., et al 2009
KF615667	1S1	Canada	Glycine max	root nodule from G. max plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615665	66S1MB	Canada	Glycine max	root nodule from G. max plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
HM107283	CCBAU 051107	No Country info	<i>Arachis hypogaea</i>	No info	Wang,R., et al. 2013
GU433546	CCBAU 23086	No Country info	<i>Lablab purpureus</i>	No info	Chang,Y.L., et al. 2011
KF615664	39S1MB	Canada	Glycine max	root nodule from G. max plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KC509140	CCBAU 53363	China	<i>Arachis hypogaea</i>	No info	Li,Y.H.,et al. 2015
KC509130	CCBAU 51649	China	<i>Arachis hypogaea</i>	No info	Li,Y.H.,et al. 2015
KP234518	SEMIA 6208	Brazil	<i>Desmodium heterocarpon</i>	No info	Delamuta,J.R., et al. 2015
JN186287	OO99	Canada	<i>Glycine max</i>	root nodule	Yu,X., et al. 2014
KJ661728	BR 10247	Brazil	<i>Centrollobium paraense</i>	nodules	Zilli,J.E.,et al. 2014
HQ231323	CCBAU 15774	China	<i>Glycine max</i>	soil	Wang,J.Y., et al. 2013
KF670138	Ro19	Morocco	<i>Retama monosperma</i>	nodules	Ramirez-Bahena, Unpublished
AB573866	NBRC 14783	No Country info	No Host info	No info	Muramatsu,Y., et al. Unpublished
KF615705	28S5	Canada	Glycine max	root nodule from Glycine max plant inoculated with root zone soil from <i>Apios americana</i>	Bromfield,E.S.P., et al. 2017
KF615701	12S5	Canada	Glycine max	root nodule from G. max plant inoculated with root zone soil from <i>Apios americana</i>	Bromfield,E.S.P., et al. 2017
KF615692	75S4	Canada	Glycine max	root nodule from G. max plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615680	162S2	Canada	Glycine max	root nodule from G. max plant inoculated with root zone soil from <i>Desmodium canadense</i>	Bromfield,E.S.P., et al. 2017
KM378289	58 2-1	Namibia	<i>Arachis hypogaea</i>	root nodule	Groenemeyer,J.L., et al. 2014
KM378251	7-2	Namibia	<i>Vigna unguiculata</i>	root nodule	Groenemeyer,J.L., et al. 2014

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KU724157	BR 446	Brazil	<i>Stylosanthes guianensis</i>	No info	Delamuta,J.R., et al. 2016
KR149137	SEMIA 690	Brazil	<i>Centrosema pubescens</i>	No info	Helene,L.C., et al. 2015
HQ259540	SEMIA 6148	No Country info	<i>Neonotonia wightii</i>	No info	Menna,P. and Hungria,M., 2011
AY599090	CCBAU 10071	China	<i>Lespedeza cuneata</i>	No info	Vinuesa,P., et al. 2005
AY599087	LMG 18230	China	<i>Glycine max</i>	No info	Vinuesa,P., et al. 2005
AY599085	DSM 30131	No Country info	<i>Glycine max</i>	No info	Vinuesa,P., et al. 2005
KT793160	INPA54B	Brazil	<i>Inga</i>	root nodule	da Costa,E.M. and Moreira,F.M., Unpublished
KF927085	BR 10250	Brazil	<i>Inga laurina</i>	nodules	da Silva,K., et al. 2014
KF786003	BR 3351	Brazil	<i>Vigna unguiculata</i>	nodules	Silva,F.V., et al. 2014
JX292065	RITF806	No Country info	No Host info	No info	Lu,J.K., et al. 2014
KJ636762	LmjC	No Country info	<i>Lupinus mariae-josephae</i>	root nodule	Duran,D., et al. 2014
KF472738	CCBAU 23303	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
MW338611	WYCCWR12986	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338610	WYCCWR12824	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338609	WYCCWR12944	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338608	WYCCWR12854	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338607	WYCCWR12856	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338606	WYCCWR12881	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338605	WYCCWR12894	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338604	WYCCWR12896	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338603	WYCCWR12909	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338602	WYCCWR12750	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338601	WYCCWR12762	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338600	WYCCWR13231	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338599	WYCCWR13235	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338598	WYCCWR13215	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338597	WYCCWR13216	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338596	WYCCWR13221	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338595	WYCCWR13137	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338594	WYCCWR13155	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW338593	WYCCWR13181	China	<i>Arachis hypogaea</i>	No info	Zhang,X.X., et al. 2014
MW168341	WYCCWR12658	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168340	WYCCWR12663	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168339	WYCCWR12669	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168338	WYCCWR12671	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168337	WYCCWR12677	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168336	WYCCWR12678	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168335	WYCCWR13015	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168334	WYCCWR13022	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168333	WYCCWR13023	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168332	WYCCWR13024	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168331	WYCCWR13038	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168330	WYCCWR13051	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168329	WYCCWR13098	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168328	WYCCWR12774	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168327	WYCCWR12802	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168326	WYCCWR12803	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168325	WYCCWR12807	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168324	WYCCWR12718	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168323	WYCCWR12623	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MW168322	WYCCWR12726	China	<i>Arachis hypogaea</i>	No info	Zhang,J., et al. Unpublished
MK385927	RMB4	Morocco	<i>Retama monosperma</i>	Boukker lead abandonned mine	Lamin,H., et al. Unpublished
KM378254	14-3	Namibia	<i>Vigna unguiculata</i>	root nodule	Groenemeyer,J.L., et al. 2014
KX527982	BR 10303	Brazil	<i>Centrolobium paraense</i>	nodules	Michel,D.C., et al. 2017
KX527978	BR 10245	Brazil	<i>Centrolobium paraense</i>	nodules	Michel,D.C., et al. 2017
KC509145	CCBAU 53429	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509138	CCBAU 53344	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509135	CCBAU 53390	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509132	CCBAU 51658	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509131	CCBAU 51650	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509124	CCBAU 51778	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509122	CCBAU 51773	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509115	CCBAU 51670	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
HM047127	LMG 24556	No Country info	No Host info	No info	Chang,Y.L., et al. Unpublished
HM047126	LMG 6138	No Country info	No Host info	No info	Chang,Y.L., et al. Unpublished
HM047125	LMG 8443	No Country info	No Host info	No info	Chang,Y.L., et al. Unpublished
HM047124	LMG 24246	No Country info	No Host info	No info	Chang,Y.L., et al. Unpublished
KT825886	INPA 394B	Brazil	<i>Campsiandra laurifolia</i>	root nodule	Moreira,F.M.S.O.U.Z.A., 2015

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
JN186273	OO100	Canada	<i>Glycine max</i>	root nodule	Tang,J., et al. 2012
JN186286	OO94	Canada	<i>Glycine max</i>	root nodule	Yu,X., et al. 2014
JN186285	OM9	Canada	<i>Glycine max</i>	root nodule	Yu,X., et al. 2014
JN186284	OO86	Canada	<i>Glycine max</i>	root nodule	Yu,X., et al. 2014
JN186283	OO84	Canada	<i>Glycine max</i>	root nodule	Yu,X., et al. 2014
JN186282	OO81	Canada	<i>Glycine max</i>	root nodule	Yu,X., et al. 2014
JN186281	OO77	Canada	<i>Glycine max</i>	root nodule	Yu,X., et al. 2014
JN186280	OO74	Canada	<i>Glycine max</i>	root nodule	Yu,X., et al. 2014
JN186279	OO66	Canada	<i>Glycine max</i>	root nodule	Yu,X., et al. 2014
JN186278	OO60	Canada	<i>Glycine max</i>	root nodule	Yu,X., et al. 2014
JN186277	OM6	Canada	<i>Glycine max</i>	root nodule	Yu,X., et al. 2014
JN186276	OO57	Canada	<i>Glycine max</i>	root nodule	Yu,X., et al. 2014
JN186275	OM27	Canada	<i>Glycine max</i>	root nodule	Yu,X., et al. 2014
JN186274	OO101	Canada	<i>Glycine max</i>	root nodule	Yu,X., et al. 2014
DQ085619	LMTR 21	Peru	<i>Phaseolus lunatus</i>	No info	Ormeno-Orrillo,E., et al. 2006
HQ664977	CCBAU 15772	China	<i>Glycine max</i>	No info	Wang,J.Y., et al. 2013
HQ664976	CCBAU 15768	China	<i>Glycine max</i>	No info	Wang,J.Y., et al. 2013
HQ664974	CCBAU 15779	China	<i>Glycine max</i>	No info	Wang,J.Y., et al. 2013
KJ649522	STM8087	Malaysia	<i>Acacia mangium</i>	root nodule	Perrineau,M.M., et al. 2014
KJ649520	STM8076	Malaysia	<i>Acacia mangium</i>	root nodule	Perrineau,M.M., et al. 2014
KJ649519	STM8099	Malaysia	<i>Acacia mangium</i>	root nodule	Perrineau,M.M., et al. 2014
AB542336	TSA1	Japan	No Host info	rice paddy soil	Ishii,S., et al. 2011
AB300998	EK05 (= NBRC 102520)	Japan	No Host info	isolated from a tumor like root outgrowth of the legume <i>Entada kosunensis</i>	Islam,M.S., et al. 2008
AB094963	IFO 14791T	No Country info	No Host info	No info	Cantera,J.L., et al. 2003
KF615706	38S5	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Apios americana</i>	Bromfield,E.S.P., et al. 2017
KF615704	27S5	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Apios americana</i>	Bromfield,E.S.P., et al. 2017
KF615703	26S5	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Apios americana</i>	Bromfield,E.S.P., et al. 2017
KF615702	13S5	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Apios americana</i>	Bromfield,E.S.P., et al. 2017
KF615700	5S5	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Apios americana</i>	Bromfield,E.S.P., et al. 2017
KF615699	3S5	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Apios americana</i>	Bromfield,E.S.P., et al. 2017
KF615697	JC1S4	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615696	126S4	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615695	125S4	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615691	70S4	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615681	164S2	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Desmodium canadense</i>	Bromfield,E.S.P., et al. 2017
KF615679	157S2	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Desmodium canadense</i>	Bromfield,E.S.P., et al. 2017
KF615677	116S2	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Desmodium canadense</i>	Bromfield,E.S.P., et al. 2017
KF615662	11S1MB	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
MW511749	YIC2845	No Country info	No Host info	No info	Liu,G., et al. Unpublished
MW511746	YIC2281	No Country info	No Host info	No info	Liu,G., et al. Unpublished
MW511717	YIC1913	No Country info	No Host info	No info	Liu,G., et al. Unpublished
KT825888	UFLA03-164	Brazil	<i>Vigna unguiculata</i>	root nodule from cowpea inoculated with soil under bauxite mining	Cabral Michel,D., et al. 2020
JX013888	1S3	Canada	<i>Glycine max</i> cv. AC Orford	root nodule of <i>G. max</i> inoculated with rootzone soil from <i>Desmodium glutinosum</i>	Bromfield,E.S.P., et al. 2017
MK675803	CNPSo 3448	USA	<i>Chamaecrista fasciculata</i>	No info	Klepa,M.Serenato., et al. Unpublished
MK675802	CNPSo 3442	USA	<i>Chamaecrista fasciculata</i>	No info	Klepa,M.Serenato., et al. Unpublished
MK675801	CNPSo 3394	USA	<i>Chamaecrista fasciculata</i>	No info	Klepa,M.Serenato., et al. Unpublished
MK682736	CNPSo 3447	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.C.O., et al. Unpublished
MK682735	CNPSo 3446	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.C.O., et al. Unpublished
MK682734	CNPSo 3443	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.C.O., et al. Unpublished
MK682733	CNPSo 3431	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.C.O., et al. Unpublished
MK682732	CNPSo 3426	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.C.O., et al. Unpublished
MK682731	CNPSo 3424	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.C.O., et al. Unpublished
MK682730	CNPSo 3423	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.C.O., et al. Unpublished
MK682729	CNPSo 3417	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.C.O., et al. Unpublished
MK682728	CNPSo 3413	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.C.O., et al. Unpublished
MK682727	CNPSo 3411	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.C.O., et al. Unpublished
MK682726	CNPSo 3421	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.C.O., et al. Unpublished
KM378301	B14 6-1	Namibia	<i>Vigna subterranea</i>	root nodule	Groenemeyer,J.L., et al. 2014
KM378300	3B 4-1	Namibia	<i>Vigna subterranea</i>	root nodule	Groenemeyer,J.L., et al. 2014
KM378297	15C 4-1	Namibia	<i>Vigna unguiculata</i>	root nodule	Groenemeyer,J.L., et al. 2014
KM378292	B14 4-2	Namibia	<i>Vigna subterranea</i>	root nodule	Groenemeyer,J.L., et al. 2014
KM378291	1B 2-1	Namibia	<i>Vigna subterranea</i>	root nodule	Groenemeyer,J.L., et al. 2014
KM378290	60 2-1	Namibia	<i>Vigna subterranea</i>	root nodule	Groenemeyer,J.L., et al. 2014
KM378288	57 2-1	Namibia	<i>Arachis hypogaea</i>	root nodule	Groenemeyer,J.L., et al. 2014
KM378287	55 1-1	Namibia	<i>Vigna subterranea</i>	root nodule	Groenemeyer,J.L., et al. 2014
KM378286	54 2-1	Namibia	<i>Vigna subterranea</i>	root nodule	Groenemeyer,J.L., et al. 2014
KM378285	54 1-1	Namibia	<i>Vigna subterranea</i>	root nodule	Groenemeyer,J.L., et al. 2014
KM378268	36 3-2	Namibia	<i>Vigna subterranea</i>	root nodule	Groenemeyer,J.L., et al. 2014

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KM378265	35 1-3	Namibia	<i>Vigna unguiculata</i>	root nodule	Groenemeyer, J.L., et al. 2014
KM378262	30 3-2	Namibia	<i>Lablab purpureus</i>	root nodule	Groenemeyer, J.L., et al. 2014
KM378260	28 2-1	Namibia	<i>Arachis hypogaea</i>	root nodule	Groenemeyer, J.L., et al. 2014
KM378259	27 1-1	Namibia	<i>Arachis hypogaea</i>	root nodule	Groenemeyer, J.L., et al. 2014
KM378256	21 1-1	Namibia	<i>Vigna unguiculata</i>	root nodule	Groenemeyer, J.L., et al. 2014
KM378255	16-10	Namibia	<i>Arachis hypogaea</i>	root nodule	Groenemeyer, J.L., et al. 2014
KM378253	10-2	Namibia	<i>Vigna unguiculata</i>	root nodule	Groenemeyer, J.L., et al. 2014
KM378252	9-5	Namibia	<i>Vigna subterranea</i>	root nodule	Groenemeyer, J.L., et al. 2014
KM378249	5-10	Namibia	<i>Lablab purpureus</i>	root nodule	Groenemeyer, J.L., et al. 2014
KX690625	SEMIA 6399	Brazil	<i>Lonchocarpus costatus</i>	No info	Helene, L.C., et al. 2017
KU724159	BR 511	Brazil	<i>Stylosanthes capitata</i>	No info	Delamuta, J.R., et al. 2016
KU724158	BR 510	Brazil	<i>Stylosanthes capitata</i>	No info	Delamuta, J.R., et al. 2016
KR149139	SEMIA 6428	Brazil	<i>Acacia saligna</i>	No info	Helene, L.C., et al. 2015
KR149138	SEMIA 6387	Brazil	<i>Acacia auriculiformis</i>	No info	Helene, L.C., et al. 2015
HQ259557	SEMIA 6059	No Country info	<i>Psophocarpus tetragonolobus</i>	No info	Menna, P. and Hungria, M., 2011
HQ259555	SEMIA 5080	No Country info	<i>Glycine max</i>	No info	Menna, P. and Hungria, M., 2011
HQ259534	SEMIA 5079	No Country info	<i>Glycine max</i>	No info	Menna, P. and Hungria, M., 2011
KJ135031	CzR2	Taiwan	<i>Crotalaria zanzibarica</i>	root nodules	Huang, C.T., et al. 2016
AY386787	Spr3-7	China	<i>Arachis hypogaea</i>	No info	Vinuesa, P., et al. 2005
AY386786	BLup-MR1	Germany	<i>Lupinus polyphylus</i>	No info	Vinuesa, P., et al. 2005
AY386785	FN13	Mexico	<i>Lupinus montanus</i>	No info	Vinuesa, P., et al. 2005
AY386781	BC-C1	Spain	<i>Chamaecytisus proliferus</i>	No info	Vinuesa, P., et al. 2005
AF484640	LMG 6134	No Country info	No Host info	No info	Jaftha, J.B. and Steyn, P.L., Unpublished
AF484637	LMG18230	No Country info	No Host info	No info	Jaftha, J.B. and Steyn, P.L., Unpublished
KT793161	INPA86A	Brazil	<i>Swartzia</i> sp.	root nodule	da Costa, E.M. and Moreira, F.M., Unpublished
JX292066	RITF807	No Country info	No Host info	No info	Lu, J.K., et al. 2014
JX292060	RITF211	No Country info	No Host info	No info	Lu, J.K., et al. 2014
KF806461	LmjM3	No Country info	No Host info	No info	Duran, D., et al. 2014
KF806460	Ro19	No Country info	No Host info	No info	Duran, D., et al. 2014
KF472728	CCBAU 15772	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF962704	Ro19	No Country info	<i>Retama monosperma</i>	No info	Bromfield, E.S.P., et al. Unpublished
KF962703	CCBAU 23086	No Country info	<i>Lablab purpureus</i>	No info	Bromfield, E.S.P., et al. Unpublished
KF962702	CCBAU 23303	No Country info	<i>Glycine max</i>	No info	Bromfield, E.S.P., et al. Unpublished
KF962701	CCBAU 15774	No Country info	<i>Glycine max</i>	No info	Bromfield, E.S.P., et al. Unpublished
KF962700	CCBAU 051107	No Country info	<i>Arachis hypogaea</i>	No info	Bromfield, E.S.P., et al. Unpublished
JX867238	SEMIA 5060	Japan	<i>Glycine max</i>	No info	Delamuta, J.R.M., et al. Unpublished
JQ011358	CCBAU 45332	China	<i>Arachis hypogaea</i>	root nodules	Wang, R., et al. 2013
GU433563	CCBAU 61434	No Country info	<i>Lablab purpureus</i>	No info	Chang, Y.L., et al. 2011
GU433553	CCBAU 23160	No Country info	<i>Arachis hypogaea</i>	No info	Chang, Y.L., et al. 2011
EU146009	CCBAU 83689	China	<i>Glycine max</i>	root nodules	Han, L.L., et al. Unpublished
EU146001	CCBAU 83623	China	<i>Glycine max</i>	root nodules	Han, L.L., et al. Unpublished
AJ563961	DSM 30131	No Country info	No Host info	No info	Dedysh, S.N., et al. 2004
KM378269	37 1-1	Namibia	<i>Vigna subterranea</i>	root nodule	Groenemeyer, J.L., et al. 2014
KM378266	35 3-3	Namibia	<i>Vigna unguiculata</i>	root nodule	Groenemeyer, J.L., et al. 2014
KM378264	34 1-1	Namibia	<i>Vigna unguiculata</i>	root nodule	Groenemeyer, J.L., et al. 2014
HM057565	CCBAU 05737	China	<i>Glycine max</i>	No info	Li, Q.Q., et al. 2011
HM057560	CCBAU 05623	China	<i>Glycine max</i>	No info	Li, Q.Q., et al. 2011
KX527990	BR 10359	Brazil	<i>Centrolobium paraense</i>	nodules	Michel, D.C., et al. 2017
KX527989	BR 10348	Brazil	<i>Centrolobium paraense</i>	nodules	Michel, D.C., et al. 2017
KX527988	BR 10358	Brazil	<i>Centrolobium paraense</i>	nodules	Michel, D.C., et al. 2017
KX527987	BR 10356	Brazil	<i>Centrolobium paraense</i>	nodules	Michel, D.C., et al. 2017
KX527986	BR 10363	Brazil	<i>Centrolobium paraense</i>	nodules	Michel, D.C., et al. 2017
KX527985	BR 10355	Brazil	<i>Centrolobium paraense</i>	nodules	Michel, D.C., et al. 2017
KX527984	BR 10365	Brazil	<i>Centrolobium paraense</i>	nodules	Michel, D.C., et al. 2017
KX527983	BR 10362	Brazil	<i>Centrolobium paraense</i>	nodules	Michel, D.C., et al. 2017
KX527981	BR 10346	Brazil	<i>Centrolobium paraense</i>	nodules	Michel, D.C., et al. 2017
KX527980	BR 10351	Brazil	<i>Centrolobium paraense</i>	nodules	Michel, D.C., et al. 2017
KX527979	BR 10290	Brazil	<i>Centrolobium paraense</i>	nodules	Michel, D.C., et al. 2017
KC509144	CCBAU 53426	China	<i>Arachis hypogaea</i>	No info	Li, Y.H., et al. 2015
KC509143	CCBAU 53424	China	<i>Arachis hypogaea</i>	No info	Li, Y.H., et al. 2015
KC509142	CCBAU 53421	China	<i>Arachis hypogaea</i>	No info	Li, Y.H., et al. 2015
KC509141	CCBAU 53415	China	<i>Arachis hypogaea</i>	No info	Li, Y.H., et al. 2015
KC509139	CCBAU 53351	China	<i>Arachis hypogaea</i>	No info	Li, Y.H., et al. 2015
KC509137	CCBAU 53340	China	<i>Arachis hypogaea</i>	No info	Li, Y.H., et al. 2015
KC509136	CCBAU 53338	China	<i>Arachis hypogaea</i>	No info	Li, Y.H., et al. 2015
KC509134	CCBAU 53380	China	<i>Arachis hypogaea</i>	No info	Li, Y.H., et al. 2015
KC509133	CCBAU 53373	China	<i>Arachis hypogaea</i>	No info	Li, Y.H., et al. 2015
KC509129	CCBAU 51736	China	<i>Arachis hypogaea</i>	No info	Li, Y.H., et al. 2015

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KC509128	CCBAU 51733	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509127	CCBAU 51789	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509126	CCBAU 51787	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509125	CCBAU 51781	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509123	CCBAU 51776	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509121	CCBAU 51770	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509120	CCBAU 51768	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509119	CCBAU 51765	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509118	CCBAU 51757	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509117	CCBAU 51753	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509116	CCBAU 51745	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509114	CCBAU 51663	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509113	CCBAU 51660	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509112	CCBAU 51640	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509111	CCBAU 51627	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509110	CCBAU 21349	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509109	CCBAU 21348	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509108	CCBAU 21342	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509107	CCBAU 21338	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509106	CCBAU 21371	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509105	CCBAU 21365	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509104	CCBAU 51688	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509103	CCBAU 21362	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509102	CCBAU 21360	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509101	CCBAU 21359	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509100	CCBAU 21358	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509099	CCBAU 21356	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KC509098	CCBAU 21355	China	<i>Arachis hypogaea</i>	No info	Li,Y.H., et al. 2015
KX019784	CK1	China	<i>Glycine max</i>	No info	Yan,J., et al. 2017
FR850935	R-45547	Belgium	<i>Cytisus scoparius</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850886	R-45821	Belgium	<i>Cytisus scoparius</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850869	R-45657	Belgium	<i>Ornithopus perpusillus</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850866	R-46313	Belgium	<i>Lotus pedunculatus</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850865	R-46311	Belgium	<i>Lotus pedunculatus</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850864	R-46310	Belgium	<i>Laburnum anagyroides</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850862	R-46306	Belgium	<i>Cytisus scoparius</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850860	R-46304	Belgium	<i>Cytisus scoparius</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850854	R-46224	Belgium	<i>Cytisus scoparius</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850848	R46277	Belgium	No Host info	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850839	R-46220	Belgium	<i>Vicia cracca</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850835	R-46210	Belgium	<i>Lotus pedunculatus</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850833	R-46206	Belgium	<i>Cytisus scoparius</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850825	R-46173	Belgium	<i>Cytisus scoparius</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850824	R-46172	Belgium	<i>Cytisus scoparius</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850818	R-46151	Belgium	<i>Lotus pedunculatus</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850797	R-45743	Belgium	<i>Ornithopus perpusillus</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850789	R-45722	Belgium	<i>Cytisus scoparius</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850781	R-45957	Belgium	<i>Lotus pedunculatus</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850777	R-46016	Belgium	<i>Lotus pedunculatus</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850738	R-46017	Belgium	<i>Lotus pedunculatus</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850714	R-45579	Belgium	<i>Lotus pedunculatus</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
FR850707	R-45662	Belgium	<i>Lotus pedunculatus</i>	host root nodule	De Meyer,S.E. and Willems,A., 2011
KT880580	BRUESC638	Brazil	<i>Inga laurina</i>	nodule	Rhem,M.F.K.,et al. Unpublished
KT880579	BRUESC637	Brazil	<i>Inga laurina</i>	nodule	Rhem,M.F.K.,et al. Unpublished
KT880578	BRUESC636	Brazil	<i>Inga laurina</i>	nodule	Rhem,M.F.K.,et al. Unpublished
KT880577	BRUESC635	Brazil	<i>Inga laurina</i>	nodule	Rhem,M.F.K.,et al. Unpublished
KT880576	BRUESC634	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K.,et al. Unpublished
KT880575	BRUESC631	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K.,et al. Unpublished
KT880574	BRUESC629	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K.,et al. Unpublished
KT825887	INPA 384B	Brazil	<i>Campsiandra</i>	root nodule	Moreira,F.M. 2015
KR092343	O	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
KR092341	J1	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
KR092340	H4	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
KR092337	F3	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
KR092336	F2	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
KR092335	F1	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
KR092334	E1	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
KR092333	C1	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KR092332	B4	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
KR092330	B2	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
KR092329	B1	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
KR092328	4	No Country info	No Host info	root nodule	Zhang,Y. and Bai,H., Unpublished
DQ085618	LMTR 14	Peru	<i>Phaseolus lunatus</i>	No info	Ormeno-Orrillo,E., et al. 2006
DQ085617	LMTR 19	Peru	<i>Phaseolus lunatus</i>	No info	Ormeno-Orrillo,E., et al. 2006
HQ664975	CCBAU 15796	China	<i>Glycine max</i>	No info	Wang,J.Y., et al. 2013
HQ231322	CCBAU 15848	China	<i>Glycine max</i>	soil	Wang,J.Y., et al. 2013
HQ231321	CCBAU 15837	China	<i>Glycine max</i>	soil	Wang,J.Y., et al. 2013
HQ231320	CCBAU 15807	China	<i>Glycine max</i>	soil	Wang,J.Y., et al. 2013
HQ231319	CCBAU 15790	China	<i>Glycine max</i>	soil	Wang,J.Y., et al. 2013
HQ231318	CCBAU 15874	China	<i>Glycine max</i>	soil	Wang,J.Y., et al. 2013
HQ231317	CCBAU 15888	China	<i>Glycine max</i>	soil	Wang,J.Y., et al. 2013
HQ231316	CCBAU 15773	China	<i>Glycine max</i>	soil	Wang,J.Y., et al. 2013
HQ231315	CCBAU 15868	China	<i>Glycine max</i>	soil	Wang,J.Y., et al. 2013
HQ231314	CCBAU 15766	China	<i>Glycine max</i>	soil	Wang,J.Y., et al. 2013
HQ231313	CCBAU 15778	China	<i>Glycine max</i>	soil	Wang,J.Y., et al. 2013
KJ649524	Aust13C	Australia	<i>Acacia mangium</i>	root nodule	Perrineau,M.M., et al. 2014
KJ649523	Aust11c	Australia	<i>Acacia mangium</i>	root nodule	Perrineau,M.M., et al. 2014
HF955510	SR257	No Country info	No Host info	root nodule	Appunu,C., Unpublished
HF955509	SR375	No Country info	No Host info	root nodule	Appunu,C., Unpublished
HF955508	SR268	No Country info	No Host info	root nodule	Appunu,C., Unpublished
GU433551	CCBAU 33067	No Country info	<i>Lablab purpureus</i>	No info	Chang,Y.L., et al. 2011
GU433548	CCBAU 23155	No Country info	<i>Arachis hypogaea</i>	No info	Chang,Y.L., et al. 2011
JX943622	Pop352	Mexico	No Host info	root nodule	Lopez-Lopez,A., et al. 2013
JX943621	Pop342	Mexico	No Host info	root nodule	Lopez-Lopez,A., et al. 2013
JX943620	Pop304	Mexico	No Host info	root nodule	Lopez-Lopez,A., et al. 2013
JX943619	Pop367	Mexico	No Host info	root nodule	Lopez-Lopez,A., et al. 2013
JX943618	Pop321	Mexico	No Host info	root nodule	Lopez-Lopez,A., et al. 2013
KF615707	41S5	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Apios americana</i>	Bromfield,E.S.P., et al. 2017
KF615698	1S5	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Apios americana</i>	Bromfield,E.S.P., et al. 2017
KF615694	106S4	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615693	105S4	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615690	172S4	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615689	165S4	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615688	148S4	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615687	146S4	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615686	144S4	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615685	2S4	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615684	1S4	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615682	323S2	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Desmodium canadense</i>	Bromfield,E.S.P., et al. 2017
KF615678	134S2	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Desmodium canadense</i>	Bromfield,E.S.P., et al. 2017
KF615676	36S2	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Desmodium canadense</i>	Bromfield,E.S.P., et al. 2017
KF615675	2S2	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Desmodium canadense</i>	Bromfield,E.S.P., et al. 2017
KF615674	1S2	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Desmodium canadense</i>	Bromfield,E.S.P., et al. 2017
KF615673	61S1	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615672	60S1	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615671	57S1	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615670	43S1	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615669	35S1	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615668	2S1	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615666	98S1MB	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615663	12S1MB	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
KF615661	9S1MB	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield,E.S.P., et al. 2017
MW504789	CM64	Morocco	<i>Chamaecytisus albidus</i>	root nodules	Bouhnik,O., et al. Unpublished
MW504788	CM57.3	Morocco	<i>Chamaecytisus albidus</i>	root nodules	Bouhnik,O., et al. Unpublished
MW511756	YIC3886	No Country info	No Host info	No info	Liu,G., et al. Unpublished
MW511755	YIC3667	No Country info	No Host info	No info	Liu,G., et al. Unpublished
MW511754	YIC3617	No Country info	No Host info	No info	Liu,G., et al. Unpublished
MW511753	YIC3174	No Country info	No Host info	No info	Liu,G., et al. Unpublished
MW511752	YIC2967	No Country info	No Host info	No info	Liu,G., et al. Unpublished
MW511751	YIC2931	No Country info	No Host info	No info	Liu,G., et al. Unpublished
MW511750	YIC2861	No Country info	No Host info	No info	Liu,G., et al. Unpublished
MW511748	YIC2820	No Country info	No Host info	No info	Liu,G., et al. Unpublished
MW511747	YIC2326	No Country info	No Host info	No info	Liu,G., et al. Unpublished
MW511745	YIC1998	No Country info	No Host info	No info	Liu,G., et al. Unpublished
MW511744	YIC1983	No Country info	No Host info	No info	Liu,G., et al. Unpublished
MW511743	YIC1970	No Country info	No Host info	No info	Liu,G., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
MW511742	YIC1966	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511741	YIC1926	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511740	YIC1919	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511739	YIC1881	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511738	YIC1466	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511737	YIC1840	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511736	YIC1839	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511735	YIC1835	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511734	YIC1805	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511733	YIC1803	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511732	YIC1789	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511731	YIC1786	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511730	YIC1782	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511729	YIC1771	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511728	YIC1741	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511727	YIC1719	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511726	YIC1538	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511725	YIC1537	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511724	YIC1488	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511723	YIC1484	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511722	YIC1480	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511721	YIC1477	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511720	YIC1445	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511719	YIC1439	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511718	YIC1438	No Country info	No Host info	No info	Liu, G., et al. Unpublished
MW511716	YIC1859	No Country info	No Host info	No info	Liu, G., et al. Unpublished
AB079618	No Strain info	No Country info	No Host info	No info	Cantera, J.J.L., et al. 2004
MT514633	TUTSWZ85	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514632	TUTSWZ61	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514631	TUTSWZ47	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514630	TUTSWZ90	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514629	TUTSWZ83	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514628	TUTSWZ65	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514627	TUTSWZ30	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514626	TUTSWZ50	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514625	TUTSWZ60	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514624	TUTSWZ51	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514623	TUTSWZ89	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514622	TUTSWZ88	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514621	TUTSWZ48	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514620	TUTSWZ80	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514619	TUTSWZ55	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514618	TUTSWZ78	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514617	TUTSWZ49	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514616	TUTSWZ56	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514615	TUTSWZ82	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514614	TUTSWZ46	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514613	TUTSWZ71	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514612	TUTSWZ67	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514611	TUTSWZ54	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514610	TUTSWZ6	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514609	TUTSWZ59	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT514608	TUTSWZ53	Eswatini	<i>Vigna subterranea</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134370	TUTVuML74	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134369	TUTVuML35	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134368	TUTVuNM9	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134367	TUTVuMU6	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134366	TUTVuMU11	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134365	TUTVuMU8	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134364	TUTVuMU1	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134363	TUTVuML66	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134362	TUTVuML62	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134361	TUTVuML28	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134360	TUTVuML3	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134359	TUTVuML24	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134358	TUTVuML68	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134357	TUTVuML27	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134356	TUTVuML18	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
MT134355	TUTVuML9	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134354	TUTVuML33	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134353	TUTVuML46	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134352	TUTVuML29	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134351	TUTVuML25	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134350	TUTVuML11	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134349	TUTVuML20	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134348	TUTVuML16	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134347	TUTVuML8	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134346	TUTVuML37	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134345	TUTVuML5	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134344	TUTVuMS23	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134343	TUTVuMS8	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134342	TUTVuMS1	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134341	TUTVuMS19	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134340	TUTVuIM4	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134339	TUTVuIM8	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134338	TUTVuIM5	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134337	TUTVuIM14	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134336	TUTVuIM6	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134335	TUTVuIM23	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134334	TUTVuAG7	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134333	TUTVuAG1	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134332	TUTVuAG15	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134331	TUTVuAG11	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134330	TUTVuAG22	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT134329	TUTVuAG12	Mozambique	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. 2020
MT227863	RMB9	Morocco	<i>Retma monosperma</i>	sidi boubker abandoned lead mine	Lamin, H., et al. Unpublished
MT227862	RMB7	Morocco	<i>Retma monosperma</i>	sidi boubker abandoned lead mine	Lamin, H., et al. Unpublished
AB934901	Ishi 7/13	Japan	<i>Vigna riukiensis</i>	root nodule	Mortuza, M.F., et al. Unpublished
AB934900	Ishi 7/12	Japan	<i>Vigna riukiensis</i>	root nodule	Mortuza, M.F., et al. Unpublished
AB934899	Ishi 7/11	Japan	<i>Vigna riukiensis</i>	root nodule	Mortuza, M.F., et al. Unpublished
AB934898	Ishi 7/2	Japan	<i>Vigna riukiensis</i>	root nodule	Mortuza, M.F., et al. Unpublished
AB934897	Iri 5/8	Japan	<i>Vigna riukiensis</i>	root nodule	Mortuza, M.F., et al. Unpublished
AB934896	Iri 5/14	Japan	<i>Vigna riukiensis</i>	root nodule	Mortuza, M.F., et al. Unpublished
AB934895	Iri 5/12	Japan	<i>Vigna riukiensis</i>	root nodule	Mortuza, M.F., et al. Unpublished
AB934894	Iri 5/11	Japan	<i>Vigna riukiensis</i>	root nodule	Mortuza, M.F., et al. Unpublished
AB934893	Iri 5/9	Japan	<i>Vigna riukiensis</i>	root nodule	Mortuza, M.F., et al. Unpublished
AB934892	Iri 5/7	Japan	<i>Vigna riukiensis</i>	root nodule	Mortuza, M.F., et al. Unpublished
AB934891	Iri 5/6	Japan	<i>Vigna riukiensis</i>	root nodule	Mortuza, M.F., et al. Unpublished
AB934890	Iri 5/5	Japan	<i>Vigna riukiensis</i>	root nodule	Mortuza, M.F., et al. Unpublished
AB934889	Iri 5/4	Japan	<i>Vigna riukiensis</i>	root nodule	Mortuza, M.F., et al. Unpublished
MN897424	Num488	Algeria	<i>Genista numidica</i>	root nodule	Boudehouche, W., et al. 2020
MN897423	Num487	Algeria	<i>Genista numidica</i>	root nodule	Boudehouche, W., et al. 2020
MN897422	Num410	Algeria	<i>Genista numidica</i>	root nodule	Boudehouche, W., et al. 2020
MN897421	Num404	Algeria	<i>Genista numidica</i>	root nodule	Boudehouche, W., et al. 2020
MN897420	Num399	Algeria	<i>Genista numidica</i>	root nodule	Boudehouche, W., et al. 2020
MN897419	Num393	Algeria	<i>Genista numidica</i>	root nodule	Boudehouche, W., et al. 2020
MN897418	Num392	Algeria	<i>Genista numidica</i>	root nodule	Boudehouche, W., et al. 2020
MN897417	Num384	Algeria	<i>Genista numidica</i>	root nodule	Boudehouche, W., et al. 2020
MN897416	Num383	Algeria	<i>Genista numidica</i>	root nodule	Boudehouche, W., et al. 2020
MN897415	Num382	Algeria	<i>Genista numidica</i>	root nodule	Boudehouche, W., et al. 2020
MN897414	Num381	Algeria	<i>Genista numidica</i>	root nodule	Boudehouche, W., et al. 2020
MN897413	Num380	Algeria	<i>Genista numidica</i>	root nodule	Boudehouche, W., et al. 2020
MN897412	Num377	Algeria	<i>Genista numidica</i>	root nodule	Boudehouche, W., et al. 2020
MN897411	Num362	Algeria	<i>Genista numidica</i>	root nodule	Boudehouche, W., et al. 2020
MN897410	Tri451	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche, W., et al. 2020
MN897409	Tri448	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche, W., et al. 2020
MN897408	Tri442	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche, W., et al. 2020
MN897407	Tri432	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche, W., et al. 2020
MN897406	Tri420	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche, W., et al. 2020
MN897405	Tri418	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche, W., et al. 2020
MN897404	Tri400	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche, W., et al. 2020
MN897403	Tri327	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche, W., et al. 2020
MN897402	Tri304	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche, W., et al. 2020
MN897401	Tri301	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche, W., et al. 2020
MN897400	Tri290	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche, W., et al. 2020
MN897399	Tri265	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche, W., et al. 2020

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MN897398	Tri208	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche,W., et al. 2020
MN897397	Tri157	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche,W., et al. 2020
MN897396	Tri138	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche,W., et al. 2020
MN897395	Tri137	Algeria	<i>Genista tricuspidata</i>	root nodule	Boudehouche,W., et al. 2020
MN897394	Fer403	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897393	Fer402	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897392	Fer125	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897391	Fer113	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897390	Fer109	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897389	Fer98	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897388	Fer96p	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897387	Fer96g	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897386	Fer83	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897385	Fer71	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897384	Fer59	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897383	Fer38	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897382	Fer37	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897381	Fer24	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897380	Fer10p	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN897379	Fer5	Algeria	<i>Genista ferox</i>	root nodule	Boudehouche,W., et al. 2020
MN905138	sjz1b	Croatia	<i>Spartium junceum</i>	root nodule	Boudehouche,W., et al. 2020
MN905137	lua6	USA	<i>Lupinus sericeus</i>	root nodule	Boudehouche,W., et al. 2020
MN905136	ll1	USA	<i>Lupinus lepidus</i>	root nodule	Boudehouche,W., et al. 2020
MN905135	gtlt2	Slovenia	<i>Genista tinctoria</i>	root nodule	Boudehouche,W., et al. 2020
MN905134	gdr4	Croatia	<i>Genista sylvestris subsp. dalmatica</i>	root nodule	Boudehouche,W., et al. 2020
MN256157	UFLA05-165	No Country info	<i>No Host info</i>	No info	Sa,O.A.A.L., et al. Unpublished
MN256156	UFLA05-151	No Country info	<i>No Host info</i>	No info	Sa,O.A.A.L., et al. Unpublished
MN256155	UFLA05-134	No Country info	<i>No Host info</i>	No info	Sa,O.A.A.L., et al. Unpublished
MN256154	UFLA05-126	No Country info	<i>No Host info</i>	No info	Sa,O.A.A.L., et al. Unpublished
MN256153	UFLA05-125	No Country info	<i>No Host info</i>	No info	Sa,O.A.A.L., et al. Unpublished
MN256152	UFLA05-110	No Country info	<i>No Host info</i>	No info	Sa,O.A.A.L., et al. Unpublished
MN256151	UFLA05-108	No Country info	<i>No Host info</i>	No info	Sa,O.A.A.L., et al. Unpublished
MN256150	UFLA05-95	No Country info	<i>No Host info</i>	No info	Sa,O.A.A.L., et al. Unpublished
MN256149	UFLA05-89	No Country info	<i>No Host info</i>	No info	Sa,O.A.A.L., et al. Unpublished
MN256148	UFLA05-87	No Country info	<i>No Host info</i>	No info	Sa,O.A.A.L., et al. Unpublished
JX013889	9S3	Canada	<i>Glycine max</i>	root nodule of <i>G. max</i> inoculated with root zone soil from <i>Desmodium glutinosum</i>	Bromfield,E.S.P.,et al. 2017
KU558860	PZHK10	China	<i>Pongamia pinnata</i>	root nodule	Yu,X., et al. Unpublished
KU558859	PZHK9	China	<i>Pongamia pinnata</i>	root nodule	Yu,X., et al. Unpublished
KU558858	PZHK8	China	<i>Pongamia pinnata</i>	root nodule	Yu,X., et al. Unpublished
KU558857	PZHK7	China	<i>Pongamia pinnata</i>	root nodule	Yu,X., et al. Unpublished
KU558856	PZHK6	China	<i>Pongamia pinnata</i>	root nodule	Yu,X., et al. Unpublished
KU558854	PZHK2	China	<i>Pongamia pinnata</i>	root nodule	Yu,X., et al. Unpublished
KU530193	PZHK1	China	<i>Pongamia pinnata</i>	root nodule	Yu,X., et al. Unpublished
EU252610	CCBAU 83502	No Country info	<i>No Host info</i>	No info	Han,T.X., Unpublished
EU252609	CCBAU 83335	No Country info	<i>No Host info</i>	No info	Han,T.X., Unpublished
MH194617	BRUESC1086	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194616	BRUESC1084	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194615	BRUESC1083	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194614	BRUESC1082	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194613	BRUESC1081	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194612	BRUESC1080	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194611	BRUESC1079	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194610	BRUESC1078	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194609	BRUESC1077	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194608	BRUESC1105	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194607	BRUESC1076	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194606	BRUESC1075	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194605	BRUESC1074	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194604	BRUESC1073	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194603	BRUESC1072	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194602	BRUESC1071	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194601	BRUESC1104	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194600	BRUESC1070	Brazil	<i>Inga cayennensis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194599	BRUESC1069	Brazil	<i>Inga ingoides</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194598	BRUESC1068	Brazil	<i>Inga ingoides</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194597	BRUESC1067	Brazil	<i>Inga ingoides</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194596	BRUESC1066	Brazil	<i>Inga ingoides</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194595	BRUESC1065	Brazil	<i>Inga ingoides</i>	nodules	Rhem,M.F.K., et al. Unpublished

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MH194594	BRUESC1064	Brazil	<i>Inga ingoides</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194593	BRUESC1063	Brazil	<i>Inga ingoides</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194592	BRUESC1062	Brazil	<i>Inga ingoides</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194591	BRUESC1061	Brazil	<i>Inga edulis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194590	BRUESC1060	Brazil	<i>Inga edulis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194589	BRUESC1059	Brazil	<i>Inga edulis</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194588	BRUESC1052	Brazil	<i>Inga leiocalycina</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194587	BRUESC1051	Brazil	<i>Inga leiocalycina</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194586	BRUESC1050	Brazil	<i>Inga leiocalycina</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194585	BRUESC048	Brazil	<i>Inga leiocalycina</i>	nodules	Rhem,M.F.K., et al. Unpublished
MH194584	BRUESC1054	Brazil	<i>Inga stipularis</i>	nodules	Rhem,M.F.K., et al. Unpublished
LC430378	SMY3-10	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430377	SMY3-9	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430376	SMY3-8	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430375	SMY3-7	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430374	SMY3-6	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430373	SMY3-5	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430372	SMY3-4	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430371	SMY3-3	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430370	SMY3-2	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430369	SMY3-1	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430368	SAY3-10	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430367	SAY3-9	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430366	SAY3-8	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430365	SAY3-7	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430364	SAY3-6	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430363	SAY3-5	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430362	SAY3-4	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430361	SAY3-3	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430360	SAY3-2	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430359	SAY3-1	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430358	MMY3-10	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430357	MMY3-9	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430356	MMY3-8	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430355	MMY3-7	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430354	MMY3-6	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430353	MMY3-5	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430352	MMY3-4	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430351	MMY3-3	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430350	MMY3-2	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430349	MMY3-1	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430348	BLY3-10	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430347	BLY3-9	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430346	BLY3-8	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430345	BLY3-7	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430344	BLY3-6	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430343	BLY3-5	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430342	BLY3-4	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430341	BLY3-3	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430340	BLY3-2	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430339	BLY3-1	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430338	AHY3-10	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430337	AHY3-9	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430336	AHY3-8	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430335	AHY3-7	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430334	AHY3-6	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430333	AHY3-5	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430332	AHY3-4	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430331	AHY3-3	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430330	AHY3-2	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430329	AHY3-1	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
KX690626	SEMIA 6404	Brazil	<i>Lonchocarpus costatus</i>	No info	Helene,L.C., et al. 2017
KY990681	CPS48	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KY990680	CPS42	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KY990679	CPS41	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KY990678	CPS40	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KY990677	CPS39	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KY990676	CPS38	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KY990675	CPS35	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KY990674	CPS19	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KY990673	CPS18	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KY990672	CPS17	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KY990671	CPS12	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KY990670	CPS10	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KY990669	CPS6	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KY990668	CPS3	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KY990667	CPS1	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
LC367313	TM124	Japan	No Host info	root of sorghum	Hara,S., et al. Unpublished
LC367312	TM124	Japan	No Host info	root of sorghum	Hara,S., et al. Unpublished
LC367311	TM122	Japan	No Host info	root of sorghum	Hara,S., et al. Unpublished
MF085041	SZCZ9	Poland	<i>Chamaecytisus ratisbonensis</i>	root nodules	Kalita,M. and Malek,W., 2017
MF085040	ZAR5	Poland	<i>Sarothamnus scoparius</i>	root nodules	Kalita,M. and Malek,W., 2017
MF085039	JAN2	Poland	<i>Genista tinctoria</i>	root nodules	Kalita,M. and Malek,W., 2017
MF085038	GER22	Poland	<i>Genista germanica</i>	root nodules	Kalita,M. and Malek,W., 2017
MF085037	GER4	Poland	<i>Genista germanica</i>	root nodules	Kalita,M. and Malek,W., 2017
KF615683	33S3	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Desmodium glutinosum</i>	Bromfield,E.S.P. et al. 2017
HQ174495	CCBAU 05705	China	<i>Glycine max</i>	No info	Li,Q.Q., et al. Unpublished
KY247025	SEMIA 6391	Brazil	<i>Acacia auriculiformis</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247024	SEMIA 6071	Brazil	<i>Stylosanthes sp.</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247023	SEMIA 6056	Zimbabwe	<i>Arachis hypogaea</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247022	SEMIA 5087	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247021	SEMIA 5086	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247020	SEMIA 5081	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247019	SEMIA 5074	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247018	SEMIA 5073	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247017	SEMIA 5072	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247016	SEMIA 5067	Nigeria	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247015	SEMIA 5066	Nigeria	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247014	SEMIA 5065	Uruguay	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247013	SEMIA 5064	Uruguay	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247012	SEMIA 5057	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247011	SEMIA 5052	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247010	SEMIA 5051	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247009	SEMIA 5046	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247008	SEMIA 5044	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247007	SEMIA 5039	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247006	SEMIA 5037	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247005	SEMIA 5034	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247004	SEMIA 5032	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247003	SEMIA 5028	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247002	SEMIA 5018	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247001	SEMIA 5015	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY247000	SEMIA 5014	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246999	SEMIA 5013	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246998	SEMIA 5010	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246997	SEMIA 5002	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246996	SEMIA 5001	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246995	SEMIA 938	USA	<i>Lupinus albus</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246994	SEMIA 621	USA	<i>Lespedeza striata</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246993	SEMIA 613	USA	<i>Vigna unguiculata</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246992	SEMIA 593	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246991	SEMIA 591	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246990	SEMIA 589	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246989	SEMIA 586	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246988	SEMIA 584	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246987	SEMIA 579	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246986	SEMIA 574	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246985	SEMIA 556	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246984	SEMIA 527	Brazil	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246983	SEMIA 516	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246982	SEMIA 513	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY246981	SEMIA 510	USA	<i>Glycine max</i>	No info	Delamuta,J.R.M.,et al. 2017
KY548283	BRUESC785	Brazil	<i>Chamaecrista flexuosa</i>	wild root nodule	Santos,J.M., et al. 2017
KY548282	BRUESC780	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos,J.M., et al. 2017
KY548281	BRUESC779	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos,J.M., et al. 2017
KY548280	BRUESC778	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos,J.M., et al. 2017

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KY548279	BRUEC806	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548278	BRUEC777	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548277	BRUEC805	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548276	BRUEC775	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548275	BRUEC774	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548274	BRUEC773	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548273	BRUEC772	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548272	BRUEC771	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548271	BRUEC770	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548270	BRUEC783	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548269	BRUEC782	Brazil	<i>Chamaecrista supplex</i>	wild root nodule	Santos, J.M., et al. 2017
KY548268	BRUEC765	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548267	BRUEC764	Brazil	<i>Chamaecrista desvauxii</i>	wild root nodule	Santos, J.M., et al. 2017
KY548266	BRUEC840	Brazil	<i>Chamaecrista desvauxii</i>	wild root nodule	Santos, J.M., et al. 2017
KY548265	BRUEC763	Brazil	<i>Chamaecrista serpens</i>	wild root nodule	Santos, J.M., et al. 2017
KY548264	BRUEC761	Brazil	<i>Chamaecrista serpens</i>	wild root nodule	Santos, J.M., et al. 2017
KY548263	BRUEC760	Brazil	<i>Chamaecrista serpens</i>	wild root nodule	Santos, J.M., et al. 2017
KY548262	BRUEC759	Brazil	<i>Chamaecrista pascuorum</i>	wild root nodule	Santos, J.M., et al. 2017
KY548261	BRUEC781	Brazil	<i>Chamaecrista supplex</i>	wild root nodule	Santos, J.M., et al. 2017
KY548260	BRUEC757	Brazil	<i>Chamaecrista supplex</i>	wild root nodule	Santos, J.M., et al. 2017
KY548259	BRUEC756	Brazil	<i>Chamaecrista supplex</i>	wild root nodule	Santos, J.M., et al. 2017
KY548258	BRUEC755	Brazil	<i>Chamaecrista supplex</i>	wild root nodule	Santos, J.M., et al. 2017
KY548257	BRUEC1043	Brazil	<i>Chamaecrista</i> sp. 2	wild root nodule	Santos, J.M., et al. 2017
KY548256	BRUEC1042	Brazil	<i>Chamaecrista</i> sp. 2	wild root nodule	Santos, J.M., et al. 2017
KY548255	BRUEC1041	Brazil	<i>Chamaecrista</i> sp. 2	wild root nodule	Santos, J.M., et al. 2017
KY548254	BRUEC1057	Brazil	<i>Chamaecrista</i> sp. 2	wild root nodule	Santos, J.M., et al. 2017
KY548253	BRUEC997	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548252	BRUEC991	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548251	BRUEC990	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548250	BRUEC987	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548249	BRUEC986	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548248	BRUEC984	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548247	BRUEC1006	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548246	BRUEC1001	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548245	BRUEC983	Brazil	<i>Chamaecrista rotundifolia</i>	wild root nodule	Santos, J.M., et al. 2017
KY548244	BRUEC978	Brazil	<i>Chamaecrista desvauxii</i>	wild root nodule	Santos, J.M., et al. 2017
KY548243	BRUEC617	Brazil	<i>Chamaecrista</i> sp. 1	wild root nodule	Santos, J.M., et al. 2017
KX790346	SSTag10	New Zealand	<i>Tagasaste</i>	root nodules	Li, S., Unpublished
KX790345	SSTag9	New Zealand	<i>Tagasaste</i>	root nodules	Li, S., Unpublished
KX790344	SSTag8	New Zealand	<i>Tagasaste</i>	root nodules	Li, S., Unpublished
HQ259567	SEMIA 6434	No Country info	<i>Inga</i> sp.	No info	Menna, P. and Hungria, M., 2011
HQ259566	SEMIA 6374	No Country info	<i>Arachis pintoi</i>	No info	Menna, P. and Hungria, M., 2011
HQ259565	SEMIA 6192	No Country info	<i>Tipuana tipa</i>	No info	Menna, P. and Hungria, M., 2011
HQ259564	SEMIA 6186	No Country info	<i>Acacia mearnsii</i>	No info	Menna, P. and Hungria, M., 2011
HQ259563	SEMIA 6164	No Country info	<i>Acacia mearnsii</i>	No info	Menna, P. and Hungria, M., 2011
HQ259562	SEMIA 6160	No Country info	<i>Albizia lebbbeck</i>	No info	Menna, P. and Hungria, M., 2011
HQ259561	SEMIA 6152	No Country info	<i>Calopogonium</i> sp.	No info	Menna, P. and Hungria, M., 2011
HQ259560	SEMIA 6146	No Country info	<i>Centrosema</i> sp.	No info	Menna, P. and Hungria, M., 2011
HQ259559	SEMIA 6099	No Country info	<i>Dimorphandra exaltata</i>	No info	Menna, P. and Hungria, M., 2011
HQ259558	SEMIA 6077	No Country info	<i>Stylosanthes</i> sp.	No info	Menna, P. and Hungria, M., 2011
HQ259556	SEMIA 6028	No Country info	<i>Desmodium uncinatum</i>	No info	Menna, P. and Hungria, M., 2011
HQ259554	SEMIA 5062	No Country info	<i>Glycine max</i>	No info	Menna, P. and Hungria, M., 2011
HQ259553	SEMIA 5027	No Country info	<i>Glycine max</i>	No info	Menna, P. and Hungria, M., 2011
HQ259552	SEMIA 5025	No Country info	<i>Glycine max</i>	No info	Menna, P. and Hungria, M., 2011
HQ259551	SEMIA 5011	No Country info	<i>Glycine max</i>	No info	Menna, P. and Hungria, M., 2011
HQ259550	SEMIA 695	No Country info	<i>Neonotonia wightii</i>	No info	Menna, P. and Hungria, M., 2011
HQ259549	SEMIA 587	No Country info	<i>Glycine max</i>	No info	Menna, P. and Hungria, M., 2011
HQ259548	SEMIA 512	No Country info	<i>Glycine max</i>	No info	Menna, P. and Hungria, M., 2011
HQ259547	SEMIA 6440	No Country info	<i>Arachis pintoi</i>	No info	Menna, P. and Hungria, M., 2011
HQ259546	SEMIA 6434	No Country info	<i>Inga</i> sp.	No info	Menna, P. and Hungria, M., 2011
HQ259545	SEMIA 6319	No Country info	<i>Arachis</i> sp.	No info	Menna, P. and Hungria, M., 2011
HQ259544	SEMIA 6187	No Country info	<i>Acacia mearnsii</i>	No info	Menna, P. and Hungria, M., 2011
HQ259543	SEMIA 6179	No Country info	<i>Acacia mearnsii</i>	No info	Menna, P. and Hungria, M., 2011
HQ259542	SEMIA 6163	No Country info	<i>Acacia mearnsii</i>	No info	Menna, P. and Hungria, M., 2011
HQ259541	SEMIA 6156	No Country info	<i>Crotalaria spectabilis</i>	No info	Menna, P. and Hungria, M., 2011
HQ259539	SEMIA 6101	No Country info	<i>Dalbergia nigra</i>	No info	Menna, P. and Hungria, M., 2011
HQ259538	SEMIA 6093	No Country info	<i>Aeschynomene americana</i> L.	No info	Menna, P. and Hungria, M., 2011
HQ259537	SEMIA 6069	No Country info	<i>Leucaena leucocephala</i>	No info	Menna, P. and Hungria, M., 2011

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
HQ259536	SEMIA 6053	No Country info	<i>Clitoria ternatea</i> L.	No info	Menna,P. and Hungria,M., 2011
HQ259535	SEMIA 6014	No Country info	<i>Stylosanthes guianensis</i>	No info	Menna,P. and Hungria,M., 2011
HQ259533	SEMIA 5045	No Country info	<i>Glycine max</i>	No info	Menna,P. and Hungria,M., 2011
HQ259532	SEMIA 5026	No Country info	<i>Glycine max</i>	No info	Menna,P. and Hungria,M., 2011
HQ259531	SEMIA 5019	No Country info	<i>Glycine max</i>	No info	Menna,P. and Hungria,M., 2011
HQ259530	SEMIA 928	No Country info	<i>Lupinus</i> sp.	No info	Menna,P. and Hungria,M., 2011
HQ259529	SEMIA 656	No Country info	<i>Neonotonia wightii</i>	No info	Menna,P. and Hungria,M., 2011
HQ259528	SEMIA 560	No Country info	<i>Glycine max</i>	No info	Menna,P. and Hungria,M., 2011
HQ259527	SEMIA 511	No Country info	<i>Glycine max</i>	No info	Menna,P. and Hungria,M., 2011
KJ135033	CzHD	Taiwan	<i>Crotalaria zanzibarica</i>	root nodules	Huang,C.T., et al. Unpublished
KJ135032	CpR3	Taiwan	<i>Crotalaria pallida</i>	root nodules	Huang,C.T., et al. Unpublished
BA000012	MAFF 303099	No Country info	No Host info	No info	Kaneko,T.,et al. 2000
AY934872	CCBAU 65199	No Country info	No Host info	No info	Gu,J., et al. 2005
AY934871	CCBAU 23230	No Country info	No Host info	No info	Gu,J., et al. 2005
AY934870	CCBAU 23174	No Country info	No Host info	No info	Gu,J., et al. 2005
AY599093	BES-1	Spain	<i>Chamaecytisus proliferus</i>	No info	Vinuesa,P., et al. 2005
AY599092	USDA 94	USA	<i>Glycine max</i>	No info	Vinuesa,P., et al. 2005
AY599091	USDA 46	USA	<i>Glycine max</i>	No info	Vinuesa,P., et al. 2005
AY599089	X6-9	China	<i>Glycine max</i>	No info	Vinuesa,P., et al. 2005
AY599088	Nep1	Nepal	<i>Glycine max</i>	No info	Vinuesa,P., et al. 2005
AY599086	X3-1	China	<i>Glycine max</i>	No info	Vinuesa,P., et al. 2005
AY599084	USDA 122	USA	<i>Glycine max</i>	No info	Vinuesa,P., et al. 2005
AY386784	BGA-1	Spain	<i>Teline stenopetala</i>	No info	Vinuesa,P., et al. 2005
AY386783	BTA-1	Spain	<i>Chamaecytisus proliferus</i>	No info	Vinuesa,P., et al. 2005
AY386782	BC-C2	Spain	<i>Chamaecytisus proliferus</i>	No info	Vinuesa,P., et al. 2005
JQ011357	CCBAU 45393	China	<i>Arachis hypogaea</i>	root nodules	Chang,Y.L., et al. Unpublished
JQ011356	CCBAU 25325	China	<i>Arachis hypogaea</i>	root nodules	Chang,Y.L., et al. Unpublished
JQ011355	CCBAU 45334	China	<i>Arachis hypogaea</i>	root nodules	Chang,Y.L., et al. Unpublished
JF789586	GZL13-3	No Country info	No Host info	No info	Jiang,C.L.,et al. 2011
HQ428049	CCBAU 23332	China	<i>Glycine max</i>	No info	Zhang,Y.M., et al. Unpublished
HQ428048	CCBAU 45502	China	<i>Glycine max</i>	No info	Zhang,Y.M., et al. Unpublished
HQ428047	CCBAU 25541	China	<i>Glycine max</i>	No info	Zhang,Y.M., et al. Unpublished
HQ428046	CCBAU 051161	China	<i>Glycine max</i>	No info	Zhang,Y.M., et al. Unpublished
HM063961	DG	China	<i>Pterocarpus macrocarpus</i>	nodules of legume trees	Lu,J., et al. Unpublished
AF484644	29d	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484643	2	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484639	55a	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484638	60	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484636	114d	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484634	48a	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484633	49b	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484631	125e	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484630	70b2	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484629	108a1	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484628	123b	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
KT880605	BRUESC452	Brazil	<i>Inga vera</i>	nodule	Rhem,M.F.K., et al. 2015
KT880604	BRUESC450	Brazil	<i>Inga vera</i>	nodule	Rhem,M.F.K., et al. 2015
KT880603	BRUESC441	Brazil	<i>Inga vera</i>	nodule	Rhem,M.F.K., et al. 2015
KT880602	BRUESC667	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K., et al. 2015
KT880601	BRUESC666	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K., et al. 2015
KT880600	BRUESC665	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K., et al. 2015
KT880599	BRUESC664	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K., et al. 2015
KT880598	BRUESC663	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K., et al. 2015
KT880597	BRUESC662	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K., et al. 2015
KT880596	BRUESC661	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K., et al. 2015
KT880595	BRUESC660	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K., et al. 2015
KT880594	BRUESC658	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K., et al. 2015
KT880593	BRUESC657	Brazil	<i>Inga laurina</i>	nodule	Rhem,M.F.K., et al. 2015
KT880592	BRUESC655	Brazil	<i>Inga laurina</i>	nodule	Rhem,M.F.K., et al. 2015
KT880591	BRUESC654	Brazil	<i>Inga laurina</i>	nodule	Rhem,M.F.K., et al. 2015
KT880590	BRUESC653	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K., et al. 2015
KT880589	BRUESC652	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K., et al. 2015
KT880588	BRUESC651	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K., et al. 2015
KT880587	BRUESC650	Brazil	<i>Inga subnuda</i>	nodule	Rhem,M.F.K., et al. 2015
KT880586	BRUESC649	Brazil	<i>Inga capitata</i>	nodule	Rhem,M.F.K., et al. 2015
KT880585	BRUESC648	Brazil	<i>Inga capitata</i>	nodule	Rhem,M.F.K., et al. 2015
KT880584	BRUESC647	Brazil	<i>Inga laurina</i>	nodule	Rhem,M.F.K., et al. 2015
KT880583	BRUESC644	Brazil	<i>Inga laurina</i>	nodule	Rhem,M.F.K., et al. 2015

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KT880582	BRUESC642	Brazil	<i>Inga laurina</i>	nodule	Rhem,M.F.K., et al. 2015
KT880581	BRUESC641	Brazil	<i>Inga laurina</i>	nodule	Rhem,M.F.K., et al. 2015
KP969225	CCBAU 11466	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969224	CCBAU 11456	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969223	CCBAU 11451	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969222	CCBAU 11450	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969221	CCBAU 11448	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969220	CCBAU 11445	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969219	CCBAU 11442	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969218	CCBAU 11440	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969217	CCBAU 11434	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969216	CCBAU 11350	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969215	CCBAU 11345	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969214	CCBAU 11361	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969213	CCBAU 11360	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969212	CCBAU 11357	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969211	CCBAU 11355	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969210	CCBAU 11472	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969209	CCBAU 11430	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969208	CCBAU 11427	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969207	CCBAU 11423	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969206	CCBAU 11419	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969205	CCBAU 11408	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969204	CCBAU 11386	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969203	CCBAU 11379	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KP969202	CCBAU 11315	China	<i>Arachis hypogaea</i>	No info	Zhang,Y., Unpublished
KT729544	TUTAHSA7	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KT729543	TUTAHSA115	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KT729542	TUTAHSA67	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KT729541	TUTAHSA40	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KT729540	TUTAHSA75	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KT729536	TUTAHSA27	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KT729535	TUTAHSA4	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KT729533	TUTAHSA10	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KT729531	TUTAHSA87	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KT729529	TUTAHSA80	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KT729528	TUTAHSA31	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KT729527	TUTAHSA118	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KT793162	INPA01-91A	Brazil	<i>Swartzia sp.</i>	root nodule	da Costa,E.M. and Moreira,F.M., Unpublished
KT793159	UFLA03-153	Brazil	<i>Vigna unguiculata</i>	root nodule from cowpea inoculated with soil	da Costa,E.M. and Moreira,F.M., Unpublished
KT793158	UFLA03-84	Brazil	<i>Vigna unguiculata</i>	root nodule from cowpea inoculated with soil	da Costa,E.M. and Moreira,F.M., Unpublished
KT793157	INPA237B	Brazil	<i>Pterocarpus sp.</i>	root nodule	da Costa,E.M. and Moreira,F.M., Unpublished
KT793156	UFLA03-268	Brazil	<i>Vigna unguiculata</i>	root nodule from cowpea inoculated with soil	da Costa,E.M. and Moreira,F.M., Unpublished
KT793155	UFLA03-144	Brazil	<i>Vigna unguiculata</i>	root nodule from cowpea inoculated with soil	da Costa,E.M. and Moreira,F.M., Unpublished
KT793154	UFLA06-22	Brazil	<i>Glycine max</i>	root nodule from Glycine max inoculated with soil	da Costa,E.M. and Moreira,F.M., Unpublished
KT793153	UFLA06-21	Brazil	<i>Glycine max</i>	root nodule from Glycine max inoculated with soil	da Costa,E.M. and Moreira,F.M., Unpublished
KT793152	UFLA06-13	Brazil	<i>Glycine max</i>	root nodule from Glycine max inoculated with soil	da Costa,E.M. and Moreira,F.M., Unpublished
KT793151	UFLA06-10	Brazil	<i>Glycine max</i>	root nodule from Glycine max inoculated with soil	da Costa,E.M. and Moreira,F.M., Unpublished
KT793150	UFLA06-06	Brazil	<i>Glycine max</i>	root nodule from Glycine max inoculated with soil	da Costa,E.M. and Moreira,F.M., Unpublished
KT793149	UFLA06-05	Brazil	<i>Glycine max</i>	root nodule from Glycine max inoculated with soil	da Costa,E.M. and Moreira,F.M., Unpublished
KT793148	UFLA06-15	Brazil	<i>Glycine max</i>	root nodule from Glycine max inoculated with soil	da Costa,E.M. and Moreira,F.M., Unpublished
KT793147	UFLA03-290	Brazil	<i>Vigna unguiculata</i>	root nodule from cowpea inoculated with soil	da Costa,E.M. and Moreira,F.M., Unpublished
JN186272	61A124	No Country info	No Host info	No info	Tang,J., et al. 2012
KR071041	JNVU VA7	India	<i>Vigna aconitifolia</i>	root nodule	Meghawal,R.R., et al. Unpublished
KR071040	JNVU TW14	India	<i>Tephrosia wallichii</i>	root nodule	Tak,N. and Gehlot,H.S., Unpublished
KR071039	JNVU TW7	India	<i>Tephrosia wallichii</i>	root nodule	Tak,N. and Gehlot,H.S., Unpublished
KR071038	JNVU TV10	India	<i>Tephrosia villosa</i>	root nodule	Tak,N. and Gehlot,H.S., Unpublished
KR071037	JNVU TV4	India	<i>Tephrosia villosa</i>	root nodule	Tak,N. and Gehlot,H.S., Unpublished
KR071036	JNVU TF10	India	<i>Tephrosia falciformis</i>	root nodule	Tak,N. and Gehlot,H.S., Unpublished
KR071035	JNVU TF4	India	<i>Tephrosia falciformis</i>	root nodule	Tak,N. and Gehlot,H.S., Unpublished
KR071034	JNVU DC11	India	<i>Dichrostachys cinerea</i>	root nodule	Jasmatiya,A.,et al. Unpublished
KR071033	JNVU CT11	India	<i>Cyamopsis tetragonoloba</i>	root nodule	Meghawal,R.R., et al. Unpublished
KR071032	JNVU CP30	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KR071031	JNVU CP24	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KR071030	JNVU CP19	India	<i>Chamaecrista pumila</i>	root nodule	Rathi,S., et al. Unpublished
KR071029	JNVU AV48	India	<i>Alysicarpus vaginalis</i>	root nodule	Rathi,S., et al. Unpublished
KR071028	JNVU AV46	India	<i>Alysicarpus vaginalis</i>	root nodule	Rathi,S., et al. Unpublished
KR071027	JNVU AV34	India	<i>Alysicarpus vaginalis</i>	root nodule	Rathi,S., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KT207612	TUTCS2.I	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207611	TUTCM1C	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207610	TUTCSA4.I	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207609	TUTCSA2.I	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207608	TUTCSA5A	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207607	TUTCSA4C	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207606	TUTCSA4B	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207605	TUTCSA4A	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207604	TUTCSA3C	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207603	TUTCSA3B	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207602	TUTCSA3A	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207601	TUTCSA2C	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207600	TUTCSA1B	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207599	TUTCSA1A	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207598	TUTCT1.I	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207597	TUTCT4A	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207596	TUTCT3A	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207595	TUTCT2A	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207594	TUTCG4.I	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KT207593	TUTCG2.I	Ghana	<i>Vigna unguiculata</i>	root nodules	Jaiswal, S.K., et al. Unpublished
KR491977	TUTRAB5B1	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491976	TUTRLR3B	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491975	TUTRAH5B2	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491974	TUTN17405	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491973	TUTMCJ7B	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491972	TUTMCJ5B	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491971	TUTMCJ9A	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491970	TUTMFJ1A1	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491969	TUTMIITA5A1	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491968	TUTDAIAP1A	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491967	TUTDAIAP8B	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491966	TUTDAIAP2A1	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491965	TUTDAIAP3B	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491964	TUTMFJ2B	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491963	TUTMIITA5A2	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491962	TUTMCJ4B	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KR491961	TUTNFM2A1	Mozambique	<i>Glycine max</i>	root nodule	Jaiswal, S.K., et al. Unpublished
KJ830740	JNVU RA63	India	<i>Rhynchosia aurea</i>	root nodule	Tak, A. and Gehlot, H.S., Unpublished
KF806462	LmjM6	No Country info	No Host info	No info	Duran, D., et al. 2014
KF828825	BR 3267	Brazil	<i>Vigna unguiculata</i>	nodules	Zilli, J.E., et al. Unpublished
KF828820	BR 3262	Brazil	<i>Vigna unguiculata</i>	nodules	Zilli, J.E., et al. Unpublished
KF472779	CCBAU 83699	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472778	CCBAU 83689	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472777	CCBAU 83678	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472776	CCBAU 83623	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472775	CCBAU 83614	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472774	CCBAU 83611	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472773	CCBAU 65008	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472772	CCBAU 53168	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472771	CCBAU 45539	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472770	CCBAU 45513	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472769	CCBAU 45505	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472768	CCBAU 45501	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472767	CCBAU 43298	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472766	CCBAU 43297	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472765	CCBAU 43292	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472764	CCBAU 43289	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472763	CCBAU 43261	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472762	CCBAU 43257	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472761	CCBAU 41314	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472760	CCBAU 41267	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472759	CCBAU 35157	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472758	CCBAU 33109	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472757	CCBAU 33099	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472756	CCBAU 33098	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472755	CCBAU 33079	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472754	CCBAU 25573	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014
KF472753	CCBAU 25549	China	<i>Glycine max</i>	No info	Zhang, X.X., et al. 2014

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KF472752	CCBAU 25548	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472751	CCBAU 25544	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472750	CCBAU 25537	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472749	CCBAU 25536	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472748	CCBAU 25534	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472747	CCBAU 25533	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472746	CCBAU 25530	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472745	CCBAU 25527	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472744	CCBAU 25466	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472743	CCBAU 25436	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472742	CCBAU 25435	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472741	CCBAU 25430	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472740	CCBAU 25021	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472739	CCBAU 23309	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472737	CCBAU 23136	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472736	CCBAU 15907	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472735	CCBAU 15891	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472734	CCBAU 15888	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472733	CCBAU 15868	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472732	CCBAU 15850	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472731	CCBAU 15839	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472730	CCBAU 15824	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472729	CCBAU 15773	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472727	CCBAU 15766	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472726	CCBAU 15635	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472725	CCBAU 15618	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472724	CCBAU 15615	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472723	CCBAU 15544	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472722	CCBAU 15543	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472721	CCBAU 15540	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472720	CCBAU 15517	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472719	CCBAU 15362	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472718	CCBAU 15354	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472717	CCBAU 05737	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472716	CCBAU 05727	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472715	CCBAU 05716	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472714	CCBAU 05656	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472713	CCBAU 05623	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472712	CCBAU 05588	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472711	CCBAU 05585	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472710	CCBAU 05525	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472709	CCBAU 05449	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472708	CCBAU 051157	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472707	CCBAU 051156	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472706	CCBAU 051155	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472705	CCBAU 051144	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF472704	CCBAU 051143	China	<i>Glycine max</i>	No info	Zhang,X.X., et al. 2014
KF483566	GV159	Spain	<i>Genista versicolor</i>	nodule	Cobo-Diaz,J.F.,et al. 2014
KF483565	GV144	Spain	<i>Genista versicolor</i>	nodule	Cobo-Diaz,J.F.,et al. 2014
KF483564	GV137	Spain	<i>Genista versicolor</i>	nodule	Cobo-Diaz,J.F.,et al. 2014
KF483563	GV135	Spain	<i>Genista versicolor</i>	nodule	Cobo-Diaz,J.F.,et al. 2014
KF483562	GV115	Spain	<i>Genista versicolor</i>	nodule	Cobo-Diaz,J.F.,et al. 2014
KF483561	GV104	Spain	<i>Genista versicolor</i>	nodule	Cobo-Diaz,J.F.,et al. 2014
KF483560	GV102	Spain	<i>Genista versicolor</i>	nodule	Cobo-Diaz,J.F.,et al. 2014
KF483559	GV101	Spain	<i>Genista versicolor</i>	nodule	Cobo-Diaz,J.F.,et al. 2014
KF749199	SDD43-2	China	<i>Glycine max</i>	root nodule	Xu,Y. and Chen,Q., Unpublished
KF749198	SDD42-1	China	<i>Glycine max</i>	root nodule	Xu,Y. and Chen,Q., Unpublished
KF749195	SDD24-1	China	<i>Glycine max</i>	root nodule	Xu,Y. and Chen,Q., Unpublished
KF749194	SDD23-1	China	<i>Glycine max</i>	root nodule	Xu,Y. and Chen,Q., Unpublished
KF749193	SDD22-4	China	<i>Glycine max</i>	root nodule	Xu,Y. and Chen,Q., Unpublished
KF749192	SDD21-3	China	<i>Glycine max</i>	root nodule	Xu,Y. and Chen,Q., Unpublished
KF749191	SDD21-1	China	<i>Glycine max</i>	root nodule	Xu,Y. and Chen,Q., Unpublished
KF749190	SDD14-1	China	<i>Glycine max</i>	root nodule	Xu,Y. and Chen,Q., Unpublished
KF749189	SDD12-1	China	<i>Glycine max</i>	root nodule	Xu,Y. and Chen,Q., Unpublished
KF749188	SDD10-1	China	<i>Glycine max</i>	root nodule	Xu,Y. and Chen,Q., Unpublished
KF787890	Y21	China	<i>Phaseolus vulgaris</i>	No info	Cao,Y. and Wei,G., Unpublished
KF787885	C9	China	<i>Phaseolus vulgaris</i>	No info	Cao,Y. and Wei,G., Unpublished
KF787875	L2	China	<i>Phaseolus vulgaris</i>	No info	Cao,Y. and Wei,G., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KF787874	L1	China	<i>Phaseolus vulgaris</i>	No info	Cao, Y. and Wei, G., Unpublished
KF859898	ISA2507	China	<i>Derris fordii</i>	root nodule	Liu, L., et al. Unpublished
KF859897	ISA2402	China	<i>Dalbergia hancei</i>	root nodule	Liu, L., et al. Unpublished
KF859896	ISA0901	China	<i>Campylotropis delavayi</i>	root nodule	Liu, L., et al. Unpublished
KF859895	ISA1001	China	<i>Campylotropis delavayi</i>	root nodule	Liu, L., et al. Unpublished
KF859894	ISA0506	China	<i>Pueraria montana</i>	root nodule	Liu, L., et al. Unpublished
KF859893	ISA0508	China	<i>Albizia odoratissima</i>	root nodule	Liu, L., et al. Unpublished
KF859892	ISA0406	China	<i>Pueraria montana</i>	root nodule	Liu, L., et al. Unpublished
KF859891	ISA0408	China	<i>Albizia odoratissima</i>	root nodule	Liu, L., et al. Unpublished
KF859890	ISA0403	China	<i>Dendrolobium triangulare</i>	root nodule	Liu, L., et al. Unpublished
KF859889	ISA1308	China	<i>Albizia odoratissima</i>	root nodule	Liu, L., et al. Unpublished
KF859888	ISA1301	China	<i>Campylotropis delavayi</i>	root nodule	Liu, L., et al. Unpublished
KF859887	ISA1501	China	<i>Campylotropis delavayi</i>	root nodule	Liu, L., et al. Unpublished
KF859886	ISA1601	China	<i>Campylotropis delavayi</i>	root nodule	Liu, L., et al. Unpublished
KF859885	ISA1605	China	<i>Callerya nitida</i>	root nodule	Liu, L., et al. Unpublished
KF859884	ISA1704	China	<i>Indigofera atropurpurea</i>	root nodule	Liu, L., et al. Unpublished
KF859883	ISA1901	China	<i>Campylotropis delavayi</i>	root nodule	Liu, L., et al. Unpublished
KF859882	ISA1904	China	<i>Indigofera atropurpurea</i>	root nodule	Liu, L., et al. Unpublished
KF859880	ISA1101	China	<i>Campylotropis delavayi</i>	root nodule	Liu, L., et al. Unpublished
KF859879	ISA0601	China	<i>Campylotropis delavayi</i>	root nodule	Liu, L., et al. Unpublished
KF859877	ISA2206	China	<i>Pueraria montana</i>	root nodule	Liu, L., et al. Unpublished
KF859876	ISA0304	China	<i>Indigofera atropurpurea</i>	root nodule	Liu, L., et al. Unpublished
KF859875	ISA0206	China	<i>Pueraria montana</i>	root nodule	Liu, L., et al. Unpublished
KF859874	ISA0203	China	<i>Dendrolobium triangulare</i>	root nodule	Liu, L., et al. Unpublished
AB470340	AT1	Japan	<i>Ipomoea batatas</i>	No info	Terakado-Tonooka, J., et al. 2013
KF031522	BRUESC119	Brazil	<i>Ormosia fastigiata</i>	trap pot nodule	Dos Santos, J.M., et al. Unpublished
KF031521	BRUESC22	Brazil	<i>Ormosia</i> sp.	trap pot nodule	Dos Santos, J.M., et al. Unpublished
AM980641	No Strain info	Sweden	No Host info	soil	Izumi, H., et al. 2013
AM980640	No Strain info	Sweden	No Host info	soil	Izumi, H., et al. 2013
KC445726	No Strain info	China	No Host info	soil	Tai, X.S., Unpublished
KC445725	No Strain info	China	No Host info	soil	Tai, X.S., Unpublished
KC445710	No Strain info	China	No Host info	soil	Tai, X.S., Unpublished
KC445708	No Strain info	China	No Host info	soil	Tai, X.S., Unpublished
KC445707	No Strain info	China	No Host info	soil	Tai, X.S., Unpublished
KC445687	No Strain info	China	No Host info	soil	Tai, X.S., Unpublished
KC445683	No Strain info	China	No Host info	soil	Tai, X.S., Unpublished
KC445676	No Strain info	China	No Host info	soil	Tai, X.S., Unpublished
KC445672	No Strain info	China	No Host info	soil	Tai, X.S., Unpublished
KC356373	CCBAU 101078	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356372	CCBAU 101077	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356371	CCBAU 101076	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356370	CCBAU 101075	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356369	CCBAU 101074	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356368	CCBAU 101073	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356367	CCBAU 101072	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356366	CCBAU 101071	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356365	CCBAU 101070	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356364	CCBAU 101069	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356363	CCBAU 101068	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356362	CCBAU 101067	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356361	CCBAU 101066	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356360	CCBAU 101065	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356359	CCBAU 101064	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356358	CCBAU 101063	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356357	CCBAU 101062	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356356	CCBAU 101061	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356355	CCBAU 101060	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356354	CCBAU 101059	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356353	CCBAU 101058	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356352	CCBAU 101057	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356351	CCBAU 61058	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356350	CCBAU 61051	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356349	CCBAU 61046	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356348	CCBAU 61035	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356347	CCBAU 61029	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356346	CCBAU 61025	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356345	CCBAU 61022	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished
KC356344	CCBAU 61018	No Country info	<i>Kummerowia stipulacea</i>	No info	Liu, T.Y. and Chen, W.F., Unpublished

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Accession #s	Strain	Country	Host ¹	Isolation source	Reference
JQ810131	USDA 136	USA	<i>Glycine max</i>	No info	Aserse, A.A., et al. 2012
JQ810130	SBR10B	Ethiopia	<i>Glycine max</i>	nodule	Aserse, A.A., et al. 2012
JQ810129	SBR10A	Ethiopia	<i>Glycine max</i>	nodule	Aserse, A.A., et al. 2012
JQ810128	SBR8C	Ethiopia	<i>Glycine max</i>	nodule	Aserse, A.A., et al. 2012
JQ810127	SBR8B	Ethiopia	<i>Glycine max</i>	nodule	Aserse, A.A., et al. 2012
JQ810126	SBR8A	Ethiopia	<i>Glycine max</i>	nodule	Aserse, A.A., et al. 2012
JQ810125	SBR7B	Ethiopia	<i>Glycine max</i>	nodule	Aserse, A.A., et al. 2012
JQ810124	SBR7A	Ethiopia	<i>Glycine max</i>	nodule	Aserse, A.A., et al. 2012
JQ810123	SBR6	Ethiopia	<i>Glycine max</i>	nodule	Aserse, A.A., et al. 2012
JQ810122	SBR5B	Ethiopia	<i>Glycine max</i>	nodule	Aserse, A.A., et al. 2012
JQ810121	SBR5A	Ethiopia	<i>Glycine max</i>	nodule	Aserse, A.A., et al. 2012
JQ810120	SBR2B	Ethiopia	<i>Glycine max</i>	nodule	Aserse, A.A., et al. 2012
JQ810119	SBR1B	Ethiopia	<i>Glycine max</i>	nodule	Aserse, A.A., et al. 2012
JQ810118	ERR14	Ethiopia	<i>Erythrina brucei</i>	nodule	Aserse, A.A., et al. 2012
JQ810117	ERR13	Ethiopia	<i>Erythrina brucei</i>	nodule	Aserse, A.A., et al. 2012
JQ810116	ERR11	Ethiopia	<i>Erythrina brucei</i>	nodule	Aserse, A.A., et al. 2012
JQ810115	ERR10	Ethiopia	<i>Erythrina brucei</i>	nodule	Aserse, A.A., et al. 2012
JQ810114	ERR9	Ethiopia	<i>Erythrina brucei</i>	nodule	Aserse, A.A., et al. 2012
JQ810113	ERR4	Ethiopia	<i>Erythrina brucei</i>	nodule	Aserse, A.A., et al. 2012
JQ810112	ERR2B	Ethiopia	<i>Erythrina brucei</i>	nodule	Aserse, A.A., et al. 2012
JQ810111	ERR2A	Ethiopia	<i>Erythrina brucei</i>	nodule	Aserse, A.A., et al. 2012
JQ810110	IAR36B	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810109	IAR36A	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810108	IAR21D	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810107	IAR21B	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810106	IAR21A	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810105	AURI21	Ethiopia	<i>Indigofera sp.</i>	nodule	Aserse, A.A., et al. 2012
JQ810104	IAR20	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810103	IAR19	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810102	IAR18B	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810101	IAR18A	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810100	IAR17	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810099	IAR16B	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810098	IAR16A	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810097	IAR15B	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810096	IAR15A	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810095	AURI14B	Ethiopia	<i>Indigofera sp.</i>	nodule	Aserse, A.A., et al. 2012
JQ810094	IAR12	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810093	IAM10	Ethiopia	<i>Indigofera amorphoides</i>	nodule	Aserse, A.A., et al. 2012
JQ810092	IAR9	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810091	IAR8	Ethiopia	<i>Indigofera arrecta</i>	nodule	Aserse, A.A., et al. 2012
JQ810090	AURI6	Ethiopia	<i>Indigofera sp.</i>	nodule	Aserse, A.A., et al. 2012
JQ810089	CSR10B	Ethiopia	<i>Crotalaria spinosa</i>	nodule	Aserse, A.A., et al. 2012
JQ810088	CSR10A	Ethiopia	<i>Crotalaria spinosa</i>	nodule	Aserse, A.A., et al. 2012
JQ810087	CIR48	Ethiopia	<i>Crotalaria incana</i>	nodule	Aserse, A.A., et al. 2012
JQ810086	CIR42	Ethiopia	<i>Crotalaria incana</i>	nodule	Aserse, A.A., et al. 2012
JQ810085	CIR24	Ethiopia	<i>Crotalaria incana</i>	nodule	Aserse, A.A., et al. 2012
JQ810084	CIR23	Ethiopia	<i>Crotalaria incana</i>	nodule	Aserse, A.A., et al. 2012
JQ810083	CIR22B	Ethiopia	<i>Crotalaria incana</i>	nodule	Aserse, A.A., et al. 2012
JQ810082	CIR21	Ethiopia	<i>Crotalaria incana</i>	nodule	Aserse, A.A., et al. 2012
JQ810081	CIR20	Ethiopia	<i>Crotalaria incana</i>	nodule	Aserse, A.A., et al. 2012
JQ810080	CIR18	Ethiopia	<i>Crotalaria incana</i>	nodule	Aserse, A.A., et al. 2012
JQ810079	CIR15	Ethiopia	<i>Crotalaria incana</i>	nodule	Aserse, A.A., et al. 2012
JQ810078	CIR3B	Ethiopia	<i>Crotalaria incana</i>	nodule	Aserse, A.A., et al. 2012
JQ810077	CIR3A	Ethiopia	<i>Crotalaria incana</i>	nodule	Aserse, A.A., et al. 2012
JQ810076	CIR1	Ethiopia	<i>Crotalaria incana</i>	nodule	Aserse, A.A., et al. 2012
JX013894	31S4	Canada	<i>Glycine max</i>	root nodule of <i>Glycine max</i> inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Tang, J., et al. 2012
JX013893	28S4	Canada	<i>Glycine max</i>	root nodule of <i>Glycine max</i> inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Tang, J., et al. 2012
JX013892	27S4	Canada	<i>Glycine max</i>	root nodule of <i>Glycine max</i> inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Tang, J., et al. 2012
JX013891	25S4	Canada	<i>Glycine max</i>	root nodule of <i>Glycine max</i> inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Tang, J., et al. 2012
JX013890	24S4	Canada	<i>Glycine max</i>	root nodule of <i>Glycine max</i> inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Tang, J., et al. 2012
JX013887	363S2	Canada	<i>Glycine max</i>	root nodule of <i>Glycine max</i> inoculated with root zone soil from <i>Desmodium canadense</i>	Tang, J., et al. 2012
JX013886	359S2	Canada	<i>Glycine max</i>	root nodule of <i>Glycine max</i> inoculated with root zone soil from <i>Desmodium canadense</i>	Tang, J., et al. 2012
JX013885	355S2	Canada	<i>Glycine max</i>	root nodule of <i>Glycine max</i> inoculated with root zone soil from <i>Desmodium canadense</i>	Tang, J., et al. 2012
JX013884	342S2	Canada	<i>Glycine max</i>	root nodule of <i>Glycine max</i> inoculated with root zone soil from <i>Desmodium canadense</i>	Tang, J., et al. 2012
JX013883	334S2	Canada	<i>Glycine max</i>	root nodule of <i>Glycine max</i> inoculated with root zone soil from <i>Desmodium canadense</i>	Tang, J., et al. 2012
JX013882	OO107	Canada	<i>Glycine max</i>	root nodule	Tang, J., et al. 2012
JX013881	OM55	Canada	<i>Glycine max</i>	root nodule	Tang, J., et al. 2012

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
JX013880	OM28	Canada	<i>Glycine max</i>	root nodule	Tang,J., et al. 2012
JX013879	HO199	Canada	<i>Glycine max</i>	root nodule	Tang,J., et al. 2012
JX013878	HO196	Canada	<i>Glycine max</i>	root nodule	Tang,J., et al. 2012
JX013877	HO186	Canada	<i>Glycine max</i>	root nodule	Tang,J., et al. 2012
JX013876	HO172	Canada	<i>Glycine max</i>	root nodule	Tang,J., et al. 2012
JX013875	HM155	Canada	<i>Glycine max</i>	root nodule	Tang,J., et al. 2012
JX013874	532C	No Country info	No Host info	obtained from T. Wacek, Becker Underwood/Urbana, St. Joseph, MO	Tang,J., et al. 2012
AB685466	USDA122	No Country info	No Host info	No info	Okubo,T., et al. Unpublished
JN993744	DrLT7	USA	<i>Desmodium rotundifolium</i>	No info	Parker,M.A., 2012
JN993743	BIRI4	USA	<i>Baptisia tinctoria</i>	No info	Parker,M.A., 2012
JN993742	Tep1	USA	<i>Tephrosia virginiana</i>	No info	Parker,M.A., 2012
JN993741	DpLT2	USA	<i>Desmodium paniculatum</i>	No info	Parker,M.A., 2012
JN993740	ApB8	USA	<i>Apios americana</i>	No info	Parker,M.A., 2012
JN993739	sbw5	USA	<i>Stylosanthes biflora</i>	No info	Parker,M.A., 2012
JN993738	abh10	USA	<i>Amphicarapaea bracteata</i>	No info	Parker,M.A., 2012
JN993737	zb36	USA	<i>Zornia bracteata</i>	No info	Parker,M.A., 2012
JN993736	zb15	USA	<i>Zornia bracteata</i>	No info	Parker,M.A., 2012
JN993735	zb1	USA	<i>Zornia bracteata</i>	No info	Parker,M.A., 2012
JN993734	cmw2	USA	<i>Clitoria mariana</i>	No info	Parker,M.A., 2012
JF821068	zb34	USA	<i>Zornia bracteata</i>	No info	Parker,M.A., 2012
JF821067	teva23	USA	<i>Tephrosia virginiana</i>	No info	Parker,M.A., 2012
JF821066	teva11	USA	<i>Tephrosia virginiana</i>	No info	Parker,M.A., 2012
JF821065	teph5	USA	<i>Tephrosia hispidula</i>	No info	Parker,M.A., 2012
JF821064	sbw22	USA	<i>Stylosanthes biflora</i>	No info	Parker,M.A., 2012
JF821063	sbw3	USA	<i>Stylosanthes biflora</i>	No info	Parker,M.A., 2012
JF821062	sba8	USA	<i>Stylosanthes biflora</i>	No info	Parker,M.A., 2012
JF821061	rhyl. 1a	USA	<i>Rhynchosia difformis</i>	No info	Parker,M.A., 2012
JF821060	rhw4	USA	<i>Rhynchosia reniformis</i>	No info	Parker,M.A., 2012
JF821059	lrw2	USA	<i>Lespedeza repens</i>	No info	Parker,M.A., 2012
JF821058	lrs5	USA	<i>Lespedeza repens</i>	No info	Parker,M.A., 2012
JF821057	lia4	USA	<i>Lespedeza intermedia</i>	No info	Parker,M.A., 2012
JF821056	gvg6	USA	<i>Galactia volubilis</i>	No info	Parker,M.A., 2012
JF821055	gvr5	USA	<i>Galactia volubilis</i>	No info	Parker,M.A., 2012
JF821054	gvr6	USA	<i>Galactia volubilis</i>	No info	Parker,M.A., 2012
JF821053	dpg39	USA	<i>Desmodium paniculatum</i>	No info	Parker,M.A., 2012
JF821052	dpg38	USA	<i>Desmodium paniculatum</i>	No info	Parker,M.A., 2012
JF821051	dps3	USA	<i>Desmodium paniculatum</i>	No info	Parker,M.A., 2012
JF821050	dnr7	USA	<i>Desmodium nudiflorum</i>	No info	Parker,M.A., 2012
JF821049	cmv17	USA	<i>Clitoria mariana</i>	No info	Parker,M.A., 2012
JF821048	cmv11	USA	<i>Clitoria mariana</i>	No info	Parker,M.A., 2012
JF821047	cmh1	USA	<i>Clitoria mariana</i>	No info	Parker,M.A., 2012
JF821046	cnw15	USA	<i>Chamaecrista nictitans</i>	No info	Parker,M.A., 2012
JF821045	cna3	USA	<i>Chamaecrista nictitans</i>	No info	Parker,M.A., 2012
JF821044	cfrr1	USA	<i>Chamaecrista fasciculata</i>	No info	Parker,M.A., 2012
JF821043	cfs5	USA	<i>Chamaecrista fasciculata</i>	No info	Parker,M.A., 2012
JF821042	cfs4	USA	<i>Chamaecrista fasciculata</i>	No info	Parker,M.A., 2012
JF821041	cfhr.1a	USA	<i>Chamaecrista fasciculata</i>	No info	Parker,M.A., 2012
JF821040	cvg25	USA	<i>Centrosema virginianum</i>	No info	Parker,M.A., 2012
JF821039	cvg10	USA	<i>Centrosema virginianum</i>	No info	Parker,M.A., 2012
JF821038	cvr1	USA	<i>Centrosema virginianum</i>	No info	Parker,M.A., 2012
JF821037	bth12	USA	<i>Baptisia tinctoria</i>	No info	Parker,M.A., 2012
JF821036	bth1	USA	<i>Baptisia tinctoria</i>	No info	Parker,M.A., 2012
JF821035	aai25	USA	<i>Apios americana</i>	No info	Parker,M.A., 2012
JF821034	aai2	USA	<i>Apios americana</i>	No info	Parker,M.A., 2012
JF821033	abw9	USA	<i>Amphicarapaea bracteata</i>	No info	Parker,M.A., 2012
JF821032	abs7	USA	<i>Amphicarapaea bracteata</i>	No info	Parker,M.A., 2012
JF821031	abh7	USA	<i>Amphicarapaea bracteata</i>	No info	Parker,M.A., 2012
JF821030	Tep17	USA	<i>Tephrosia virginiana</i>	No info	Parker,M.A., 2012
JF821029	Tep5	USA	<i>Tephrosia virginiana</i>	No info	Parker,M.A., 2012
JF821028	Lppb8	USA	<i>Lupinus perennis</i>	No info	Parker,M.A., 2012
JF821027	Lppb2	USA	<i>Lupinus perennis</i>	No info	Parker,M.A., 2012
JF821026	Lpsp3.4	USA	<i>Lupinus perennis</i>	No info	Parker,M.A., 2012
JF821025	Lpsp.1b	USA	<i>Lupinus perennis</i>	No info	Parker,M.A., 2012
JF821024	LcRI3	USA	<i>Lespedeza capitata</i>	No info	Parker,M.A., 2012
JF821023	LcCT6	USA	<i>Lespedeza capitata</i>	No info	Parker,M.A., 2012
JF821022	LcCT4	USA	<i>Lespedeza capitata</i>	No info	Parker,M.A., 2012
JF821021	Lei1	USA	<i>Lespedeza intermedia</i>	No info	Parker,M.A., 2012
JF821020	Lh15	USA	<i>Lespedeza hirta</i>	No info	Parker,M.A., 2012

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
JF821019	Lh10	USA	<i>Lespedeza hirta</i>	No info	Parker,M.A., 2012
JF821018	DrlT6	USA	<i>Desmodium rotundifolium</i>	No info	Parker,M.A., 2012
JF821017	DrlT5	USA	<i>Desmodium rotundifolium</i>	No info	Parker,M.A., 2012
JF821016	Dp6.5	USA	<i>Desmodium paniculatum</i>	No info	Parker,M.A., 2012
JF821015	Dp6.2	USA	<i>Desmodium paniculatum</i>	No info	Parker,M.A., 2012
JF821014	DesT10	USA	<i>Desmodium glutinosum</i>	No info	Parker,M.A., 2012
JF821013	DesT1	USA	<i>Desmodium glutinosum</i>	No info	Parker,M.A., 2012
JF821012	DcE3.6	USA	<i>Desmodium canadense</i>	No info	Parker,M.A., 2012
JF821011	DcE3.5	USA	<i>Desmodium canadense</i>	No info	Parker,M.A., 2012
JF821010	DcE2.8	USA	<i>Desmodium canadense</i>	No info	Parker,M.A., 2012
JF821009	Cf4	USA	<i>Chamaecrista fasciculata</i>	No info	Parker,M.A., 2012
JF821008	Cf3.6	USA	<i>Chamaecrista fasciculata</i>	No info	Parker,M.A., 2012
JF821007	Cf1	USA	<i>Chamaecrista fasciculata</i>	No info	Parker,M.A., 2012
JF821006	BlRI18	USA	<i>Baptisia tinctoria</i>	No info	Parker,M.A., 2012
JF821005	BlRI3	USA	<i>Baptisia tinctoria</i>	No info	Parker,M.A., 2012
JF821004	BlLT13	USA	<i>Baptisia tinctoria</i>	No info	Parker,M.A., 2012
JF821003	BlLT4	USA	<i>Baptisia tinctoria</i>	No info	Parker,M.A., 2012
JF821002	ApT12	USA	<i>Apios americana</i>	No info	Parker,M.A., 2012
JF821001	ApT2	USA	<i>Apios americana</i>	No info	Parker,M.A., 2012
JF821000	ApCV2	USA	<i>Apios americana</i>	No info	Parker,M.A., 2012
JF820999	ApE4.8	USA	<i>Apios americana</i>	No info	Parker,M.A., 2012
JF820998	ApB16	USA	<i>Apios americana</i>	No info	Parker,M.A., 2012
JF820997	onl92.10	USA	<i>Amphicarpaea bracteata</i>	No info	Parker,M.A., 2012
JF820996	onl92.6	USA	<i>Amphicarpaea bracteata</i>	No info	Parker,M.A., 2012
JF820995	rp3	USA	<i>Amphicarpaea bracteata</i>	No info	Parker,M.A., 2012
JF820994	th.b2	USA	<i>Amphicarpaea bracteata</i>	No info	Parker,M.A., 2012
AM110715	No Strain info	United Kingdom	<i>Suillus variegatus</i>	ectomycorrhiza	Izumi,H.et al. 2006
AM110714	No Strain info	United Kingdom	<i>Suillus variegatus</i>	ectomycorrhiza	Izumi,H.et al. 2006
AM110702	No Strain info	United Kingdom	<i>Suillus variegatus</i>	ectomycorrhiza	Izumi,H.et al. 2006
AB501133	NBRC 101127	Japan	<i>Erythrina variegata</i>	No info	Muramatsu,Y., et al. Unpublished
EU146014	CCBAU 83789	China	<i>Glycine max</i>	root nodules	Han,L.L., et al. Unpublished
EU146010	CCBAU 83698	China	<i>Glycine max</i>	root nodules	Han,L.L., et al. Unpublished
EU146008	CCBAU 83672	China	<i>Glycine max</i>	root nodules	Han,L.L., et al. Unpublished
EU146007	CCBAU 83669	China	<i>Glycine max</i>	root nodules	Han,L.L., et al. Unpublished
EU146005	CCBAU 83648	China	<i>Glycine max</i>	root nodules	Han,L.L., et al. Unpublished
EU146002	CCBAU 83626	China	<i>Glycine max</i>	root nodules	Han,L.L., et al. Unpublished
AB079690	IAM 12608	No Country info	No Host info	No info	Cantera,J.J., et al. 2004
AB079620	No Strain info	No Country info	No Host info	No info	Cantera,J.J., et al. 2004
AB079619	IAM 12608	No Country info	No Host info	No info	Cantera,J.J., et al. 2004
AB079617	No Strain info	No Country info	No Host info	No info	Cantera,J.J., et al. 2004
AB079616	No Strain info	No Country info	No Host info	No info	Cantera,J.J., et al. 2004
AB079615	No Strain info	No Country info	No Host info	No info	Cantera,J.J., et al. 2004
AF484642	70a	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484641	82a	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484635	48b	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484632	40a	No Country info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
MW855017	TUTSAM10N11	South Africa	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855016	TUTSAM5N2	South Africa	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855015	TUTSAM4N13	South Africa	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855014	TUTSALI07	South Africa	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855013	TUTGhN5	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855012	TUTGhW5	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855011	TUTGhW4	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855010	TUTGhT3	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855009	TUTGhN3	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855008	TUTGhM308	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855007	TUTGhM108	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855006	TUTGhM107	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855005	TUTGhM205	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855004	TUTGhM203	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855003	TUTGhM103	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855002	TUTGhD310	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855001	TUTGhD110	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW855000	TUTGhD209	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854999	TUTGhD308	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854998	TUTGhD107	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854997	TUTGhD306	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854996	TUTGhD205	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
MW854995	TUTGhD105	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854994	TUTGhD303	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854993	TUTGhD203	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854992	TUTGhD103	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854991	TUTGhD202	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854990	TUTGhD201	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854989	TUTGhD101	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854988	TUTGhY209	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854987	TUTGhY308	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854986	TUTGhY207	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854985	TUTGhY305	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854984	TUTGhY205	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854983	TUTGhY105	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854982	TUTGhY204	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854981	TUTGhY203	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854980	TUTGhY103	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854979	TUTGhY202	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854978	TUTGhY102	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854977	TUTGhY301	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854976	TUTGhY201	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MW854975	TUTGhY101	Ghana	<i>Glycine max</i>	root nodule	Ayuba,J., et al. 2021
MT767058	UFLA01-860	Brazil	<i>Machaerium nycitans</i>	root nodule	Lopez,B.D.O., et al. Unpublished
MT767056	UFLA01-1136	Brazil	<i>Platypodium elegans</i>	root nodule	Lopez,B.D.O., et al. Unpublished
MT767055	UFLA01-1164	Brazil	<i>Machaerium nycitans</i>	root nodule	Lopez,B.D.O., et al. Unpublished
MT767054	UFLA01-874	Brazil	<i>Platypodium elegans</i>	root nodule	Lopez,B.D.O., et al. Unpublished
MT767053	UFLA01-839	Brazil	<i>Machaerium nycitans</i>	root nodule	Lopez,B.D.O., et al. Unpublished
MT767052	UFLA01-814	Brazil	<i>Machaerium nycitans</i>	root nodule	Lopez,B.D.O., et al. Unpublished
MT904366	U1302	No Country info	<i>Glycine max</i>	root nodule	Rodriguez,N.E. et al. 2020
MT904365	U1301	No Country info	<i>Glycine max</i>	root nodule	Rodriguez,N.E. et al. 2020
MT904364	UYS-SO02	No Country info	<i>Glycine max</i>	root nodule	Rodriguez,N.E. et al. 2020
MT904363	UYS-SO01	No Country info	<i>Glycine max</i>	root nodule	Rodriguez,N.E. et al. 2020
MT904362	UYS-SJ01	No Country info	<i>Glycine max</i>	root nodule	Rodriguez,N.E. et al. 2020
MT904361	SEMIA5080	No Country info	<i>Glycine max</i>	root nodule	Rodriguez,N.E. et al. 2020
MT904360	E109	No Country info	<i>Glycine max</i>	root nodule	Rodriguez,N.E. et al. 2020
MT904359	UYS-CO02	No Country info	<i>Glycine max</i>	root nodule	Rodriguez,N.E. et al. 2020
MT904358	UYS-CO01	No Country info	<i>Glycine max</i>	root nodule	Rodriguez,N.E. et al. 2020
MT904357	UYS-CL03	No Country info	<i>Glycine max</i>	root nodule	Rodriguez,N.E. et al. 2020
MT904356	UYS-CL02	No Country info	<i>Glycine max</i>	root nodule	Rodriguez,N.E. et al. 2020
MT904355	UYS-CL01	No Country info	<i>Glycine max</i>	root nodule	Rodriguez,N.E. et al. 2020
MT904354	UYS-CA02	No Country info	<i>Glycine max</i>	root nodule	Rodriguez,N.E. et al. 2020
MT904353	UYS-CA01	No Country info	<i>Glycine max</i>	root nodule	Rodriguez,N.E. et al. 2020
LC585743	VMIp5	Venezuela	<i>Phaseolus vulgaris</i>	root nodules	Ramirez,M.D.A., et al. 2021
LC585742	VMIp4	Venezuela	<i>Phaseolus vulgaris</i>	root nodules	Ramirez,M.D.A., et al. 2021
LC585729	VLaW3	Venezuela	<i>Phaseolus vulgaris</i>	root nodules	Ramirez,M.D.A., et al. 2021
LC585728	VLaW27	Venezuela	<i>Phaseolus vulgaris</i>	root nodules	Ramirez,M.D.A., et al. 2021
LC585720	VGP9	Venezuela	<i>Phaseolus vulgaris</i>	root nodules	Ramirez,M.D.A., et al. 2021
LC585719	VGP6	Venezuela	<i>Phaseolus vulgaris</i>	root nodules	Ramirez,M.D.A., et al. 2021
LC585717	VGP2B	Venezuela	<i>Phaseolus vulgaris</i>	root nodules	Ramirez,M.D.A., et al. 2021
LC585700	VAW3	Venezuela	<i>Phaseolus vulgaris</i>	root nodules	Ramirez,M.D.A., et al. 2021
LC585691	VAFW14	Venezuela	<i>Phaseolus vulgaris</i>	root nodules	Ramirez,M.D.A., et al. 2021
LC585689	VAFP9	Venezuela	<i>Phaseolus vulgaris</i>	root nodules	Ramirez,M.D.A., et al. 2021
MW218435	V9i	Kenya	<i>Vigna unguiculata</i>	No info	Odori,C., et al. 2020
MW218434	B2ii	Kenya	<i>Vigna unguiculata</i>	No info	Odori,C., et al. 2020
MT948184	V5ii	Kenya	<i>Vigna unguiculata</i>	No info	Odori,C., et al. 2020
MT948183	M7b	Kenya	<i>Vigna unguiculata</i>	No info	Odori,C., et al. 2020
MT948182	B6ii	Kenya	<i>Vigna unguiculata</i>	No info	Odori,C., et al. 2020
EU357925	SR69	No Country info	<i>Glycine max</i>	No info	Appunu,C., et al. 2008
EU357924	SR66	No Country info	<i>Glycine max</i>	No info	Appunu,C., et al. 2008
EU357923	SR78	No Country info	<i>Glycine max</i>	No info	Appunu,C., et al. 2008
EU357922	SR106	No Country info	<i>Glycine max</i>	No info	Appunu,C., et al. 2008
EU357921	SR102	No Country info	<i>Glycine max</i>	No info	Appunu,C., et al. 2008
EU177593	CCBAU 65008	No Country info	<i>Vicia cracca</i>	No info	Lei,X., et al. Unpublished
EU177590	CCBAU 41236	No Country info	<i>Vicia kulingana</i>	No info	Lei,X., et al. Unpublished
EU177589	CCBAU 33230	No Country info	<i>Vicia villosa</i>	No info	Lei,X., et al. Unpublished
EU177586	CCBAU 23283	No Country info	<i>Pisum sativum</i>	No info	Lei,X., et al. Unpublished
EU177585	CCBAU 23109	No Country info	<i>Pisum sativum</i>	No info	Lei,X., et al. Unpublished
EU177582	CCBAU 05065	No Country info	<i>Vicia pseudo-orobus</i>	No info	Lei,X., et al. Unpublished
MW023878	DC-MP30	India	<i>Dichrostachys cinerea</i>	root nodule	Chouhan,B., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
MT411543	LL-MP86	India	<i>Leucaena leucocephala</i>	root nodule	Chouhan,B., Unpublished
MN973874	DC-ML39	India	<i>Dichrostachys cinerea</i>	root nodule	Chouhan,B., Unpublished
MN973873	DC-ML38	India	<i>Dichrostachys cinerea</i>	root nodule	Chouhan,B., Unpublished
MN973872	DC-PY37	India	<i>Dichrostachys cinerea</i>	root nodule	Chouhan,B., Unpublished
MN973871	DC-PY36	India	<i>Dichrostachys cinerea</i>	root nodule	Chouhan,B., Unpublished
MN973870	DC-PY35	India	<i>Dichrostachys cinerea</i>	root nodule	Chouhan,B., Unpublished
MN973869	DC-MP32	India	<i>Dichrostachys cinerea</i>	root nodule	Chouhan,B., Unpublished
MN973868	DC-MP31	India	<i>Dichrostachys cinerea</i>	root nodule	Chouhan,B., Unpublished
MN973867	DC-RJ13	India	<i>Dichrostachys cinerea</i>	root nodule	Chouhan,B., Unpublished
LC510362	No Strain info	Japan	<i>Saccharum officinarum</i>	root of sugarcane	Supriadi,S., et al. 2020
MT225386	PJ-TN45	India	<i>Prosopis juliflora</i>	Root nodule	Bissa,G., et al. Unpublished
MT225383	PJ-PY38	India	<i>Prosopis juliflora</i>	Root nodule	Bissa,G., et al. Unpublished
MT225382	PJ-MP30	India	<i>Prosopis juliflora</i>	Root nodule	Bissa,G., et al. Unpublished
MT225374	PC-NL30	India	<i>Prosopis cineraria</i>	Root nodule	Bissa,G., et al. Unpublished
MT225372	PC-MP62	India	<i>Prosopis cineraria</i>	Root nodule	Bissa,G., et al. Unpublished
MT225371	PC-ML82	India	<i>Prosopis cineraria</i>	Root nodule	Bissa,G., et al. Unpublished
MT225370	PC-ML80	India	<i>Prosopis cineraria</i>	Root nodule	Bissa,G., et al. Unpublished
MT225369	PC-ML78	India	<i>Prosopis cineraria</i>	Root nodule	Bissa,G., et al. Unpublished
MN820895	Vr73	Pakistan	<i>Vigna radiata</i>	root nodules	Hakim,S.,et al. 2020
MN820890	Vr63	Pakistan	<i>Vigna radiata</i>	root nodules	Hakim,S.,et al. 2020
MN820889	Vr61	Pakistan	<i>Vigna radiata</i>	root nodules	Hakim,S.,et al. 2020
MN820888	Vr57	Pakistan	<i>Vigna radiata</i>	root nodules	Hakim,S.,et al. 2020
MN738250	65090	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738249	65078	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738248	65059	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738247	65054	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738246	65010	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738245	62325	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738244	62318	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738243	62311	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738242	62303	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738241	62250	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738240	61103	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738239	61102	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738238	61077	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738237	60904	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738236	60896	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738235	60894	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN738234	60890	China	Peanut	root nodule	Shao,S. and Li,Y., 2019
MN380508	SRL55	Poland	<i>Chamaecytisus ruthenicus</i>	root nodules	Kalita,M., 2019
MN380507	SRL54	Poland	<i>Chamaecytisus ruthenicus</i>	root nodules	Kalita,M., 2019
MN380506	SRL50	Poland	<i>Chamaecytisus ruthenicus</i>	root nodules	Kalita,M., 2019
MN380505	SRL49	Poland	<i>Chamaecytisus ruthenicus</i>	root nodules	Kalita,M., 2019
MN380504	SRL48	Poland	<i>Chamaecytisus ruthenicus</i>	root nodules	Kalita,M., 2019
MN380503	SRL47	Poland	<i>Chamaecytisus ruthenicus</i>	root nodules	Kalita,M., 2019
MN380502	SRL37	Poland	<i>Chamaecytisus ruthenicus</i>	root nodules	Kalita,M., 2019
MN380501	SRL29	Poland	<i>Chamaecytisus ruthenicus</i>	root nodules	Kalita,M., 2019
MN380500	SRL28	Poland	<i>Chamaecytisus ruthenicus</i>	root nodules	Kalita,M., 2019
MN380499	SRL26	Poland	<i>Chamaecytisus ruthenicus</i>	root nodules	Kalita,M., 2019
MN380498	SRL15	Poland	<i>Chamaecytisus ruthenicus</i>	root nodules	Kalita,M., 2019
MN380497	SRL5	Poland	<i>Chamaecytisus ruthenicus</i>	root nodules	Kalita,M., 2019
MN380496	SRL2	Poland	<i>Chamaecytisus ruthenicus</i>	root nodules	Kalita,M., 2019
MN548776	Vr50	Pakistan	<i>Vigna radiata</i>	root nodules	Hakim,S.,et al. 2019
MK690348	LpA11	Portugal	<i>Lotus parviflorus</i>	root nodules	Soares,R., et al. 2019
MK671573	LpB26	Portugal	<i>Lotus parviflorus</i>	root nodules	Soares,R., et al. 2019
MK671572	LpB23b	Portugal	<i>Lotus parviflorus</i>	root nodules	Soares,R., et al. 2019
MK671571	LpB19a	Portugal	<i>Lotus parviflorus</i>	root nodules	Soares,R., et al. 2019
MK616804	TUTGh89	Ghana	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616803	TUTGh85	Ghana	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616802	TUTKa82	Mali	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616801	TUTNou76	Mali	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616800	TUTNou75	Mali	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616799	TUTNou74	Mali	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616798	TUTNou70	Mali	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616797	TUTNou69	Mali	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616796	TUTNou66	Mali	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616795	TUTNou64	Mali	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616794	TUTMa54	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
MK616793	TUTMa51	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616792	TUTMa50	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616791	TUTMa47	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616790	TUTMa44	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616789	TUTMa43	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616788	TUTMa41	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616787	TUTMa33	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616786	TUTMa28	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616785	TUTMa27	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616784	TUTMa24	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616783	TUTMa22	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616782	TUTMa21	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616781	TUTMa20	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616780	TUTMa19	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616779	TUTMa14	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616778	TUTMa13	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616777	TUTMa12	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616776	TUTMa10	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616775	TUTMa9	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616774	TUTMa8	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616773	TUTMa6	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616772	TUTMa5	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK616771	TUTMa2	South Africa	<i>Vigna subterranea</i>	root nodules	Ibny,F.Y.I., et al. 2019
MK496330	NAZ_750	Zimbabwe	No Host info	soil	Chiduwa,M.S., et al. 2019
MK496329	NAZ_728	Zimbabwe	No Host info	soil	Chiduwa,M.S., et al. 2019
MK496328	NAZ_692	Zimbabwe	No Host info	soil	Chiduwa,M.S., et al. 2019
MK496327	NAZ_584	Zimbabwe	No Host info	soil	Chiduwa,M.S., et al. 2019
MK496326	NAZ_572	Zimbabwe	No Host info	soil	Chiduwa,M.S., et al. 2019
MK496325	NAZ_521	Zimbabwe	No Host info	soil	Chiduwa,M.S., et al. 2019
MK496324	NAZ_519	Zimbabwe	No Host info	soil	Chiduwa,M.S., et al. 2019
MK372935	Ba-Z102	Poland	<i>Laburnum anagyroides</i>	root nodule	Sajnaga,E. and Jach,M., Unpublished
MK372934	Ba-Z95	Poland	<i>Laburnum anagyroides</i>	root nodule	Sajnaga,E. and Jach,M., Unpublished
MK372933	Ba-Z88	Poland	<i>Laburnum anagyroides</i>	root nodule	Sajnaga,E. and Jach,M., Unpublished
MK372932	Ba-Z45	Poland	<i>Laburnum anagyroides</i>	root nodule	Sajnaga,E. and Jach,M., Unpublished
LC107557	VA109-3B	Venezuela	<i>Glycine max</i>	valley soil	Ramirez,M.D.A., et al. 2019
LC107554	VAF1269	Venezuela	<i>Glycine max</i>	valley soil with inorganic fertilizer	Ramirez,M.D.A., et al. 2019
LC107552	V1011-2A	Venezuela	<i>Glycine max</i>	valley soil with inorganic fertilizer	Ramirez,M.D.A., et al. 2019
LC107551	VAm13-2	Venezuela	<i>Glycine max</i>	rain humid forest soil	Ramirez,M.D.A., et al. 2019
LC107549	VAn112	Venezuela	<i>Glycine max</i>	valley soil	Ramirez,M.D.A., et al. 2019
LC107546	VAF123A	Venezuela	<i>Glycine max</i>	valley soil	Ramirez,M.D.A., et al. 2019
LC107545	VAF123B	Venezuela	<i>Glycine max</i>	valley soil with inorganic fertilizer	Ramirez,M.D.A., et al. 2019
LC107542	VAn113	Venezuela	<i>Glycine max</i>	valley soil with inorganic fertilizer	Ramirez,M.D.A., et al. 2019
MK295081	TUTVUI122	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295080	TUTVUMm117	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295079	TUTVUMm116	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295078	TUTVUMm114	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295077	TUTVUMm113	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295076	TUTVUMm112	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295075	TUTVUMm110	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295074	TUTVUMm108	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295073	TUTVUMr99	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295072	TUTVUMr95	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295071	TUTVUMr93	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295070	TUTVUMr89	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295069	TUTVUMr85	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295068	TUTVUMr84	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295067	TUTVUMr82	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295066	TUTVUMr80	Mozambique	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295065	TUTVUMp75	South Africa	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295064	TUTVUMp65	South Africa	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295063	TUTVUMp60	South Africa	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295062	TUTVUMp56	South Africa	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295061	TUTVUMp53	South Africa	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295060	TUTVUMp50	South Africa	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295059	TUTVUMp48	South Africa	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295058	TUTVUMp8	South Africa	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MK295057	TUTVUMp5	South Africa	<i>Vigna unguiculata</i>	root nodules	Dabo,M.,et al. 2019
MH913192	BRUESC969	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves,P.A.C., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
MH913191	BRUESC968	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913190	BRUESC967	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913189	BRUESC966	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913188	BRUESC965	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913187	BRUESC964	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913186	BRUESC963	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913185	BRUESC962	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913184	BRUESC961	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913183	BRUESC960	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913182	BRUESC957	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913181	BRUESC956	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913180	BRUESC955	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913179	BRUESC952	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913178	BRUESC623	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913177	BRUESC1108	Brazil	<i>Chamaecrista duartei</i>	nodule	Alves, P.A.C., et al. Unpublished
MH913176	BRUESC1107	Brazil	<i>Chamaecrista duartei</i>	nodule	Alves, P.A.C., et al. Unpublished
MH913175	BRUESC1106	Brazil	<i>Chamaecrista duartei</i>	nodule	Alves, P.A.C., et al. Unpublished
MH913174	BRUESC1103	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913173	BRUESC1102	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913172	BRUESC1091	Brazil	<i>Chamaecrista duartei</i>	nodule	Alves, P.A.C., et al. Unpublished
MH913171	BRUESC1034	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913170	BRUESC1033	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913169	BRUESC1025	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913168	BRUESC1014	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913167	BRUESC1011	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MH913166	BRUESC1010	Brazil	<i>Chamaecrista</i> sp.	nodule	Alves, P.A.C., et al. Unpublished
MK368527	LLut6	Morocco	<i>Lupinus luteus</i>	No info	ElFaik, S., et al. Unpublished
MK368526	Laib41	Morocco	<i>L. albus</i>	No info	ElFaik, S., et al. Unpublished
LC383709	VERT01-STM11813	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383708	PIN03-STM11811	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383707	PMS08-STM7827	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383706	SERP03-STM11812	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383705	PN207-STM7813	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383704	PMS10-STM8863	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383703	PMS04-STM7844	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383702	PN206-STM7806	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383701	TIE06-STM7840	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383700	STM7788	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383699	PMS01-STM8865	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383698	PMS03-STM7828	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383697	PMB10-STM8856	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383696	PMB09-STM8853	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383695	PMB06-STM7803	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383694	PMB03-STM7809	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383693	PMS07-STM8870	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383692	PN209-STM7815	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383691	PN203-STM7784	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383689	PMB08-STM7824	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383688	PMB07-STM8855	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383687	PMB04-STM8849	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383686	PMB02-STM7808	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383685	PN210-STM8906	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383684	PN208-STM7814	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383683	PN205-STM7805	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
LC383690	PN202-STM7792	New Caledonia	<i>Acacia spirorbis</i>	No info	Vincent, B., et al. Unpublished
MH183142	ESA 117	Brazil	No Host info	Maize endophytic rhizobia nodulating cowpea	Cavalcanti, M.I.P. and Fernandes-Junior, P.I., Unpublished
MH183140	ESA 115	Brazil	No Host info	Maize endophytic rhizobia nodulating cowpea	Cavalcanti, M.I.P. and Fernandes-Junior, P.I., Unpublished
MH183139	ESA 114	Brazil	No Host info	Maize endophytic rhizobia nodulating cowpea	Cavalcanti, M.I.P. and Fernandes-Junior, P.I., Unpublished
LC435020	GEF120	Germany	<i>Glycine max</i>	No info	Yuan, K., Unpublished
LC435019	GEF119	Germany	<i>Glycine max</i>	No info	Yuan, K., Unpublished
LC435018	GEF118	Germany	<i>Glycine max</i>	No info	Yuan, K., Unpublished
LC435017	GEF117	Germany	<i>Glycine max</i>	No info	Yuan, K., Unpublished
LC435016	GEF116	Germany	<i>Glycine max</i>	No info	Yuan, K., Unpublished
LC435015	GEF115	Germany	<i>Glycine max</i>	No info	Yuan, K., Unpublished
LC435014	GEF114	Germany	<i>Glycine max</i>	No info	Yuan, K., Unpublished
LC435013	GEF113	Germany	<i>Glycine max</i>	No info	Yuan, K., Unpublished
LC435012	GEF112	Germany	<i>Glycine max</i>	No info	Yuan, K., Unpublished
LC435011	GEF111	Germany	<i>Glycine max</i>	No info	Yuan, K., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
LC435010	GEF110	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC435009	GEF109	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC435008	GEM108	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC435007	GEM107	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC435006	GEM106	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC435005	GEM105	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC435004	GEM104	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC435003	GEM103	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC435002	GEM102	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC435001	GEM101	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC435000	GEM100	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434999	GEM99	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434998	GEM98	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434997	GEM97	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434996	GEM96	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434995	GEM95	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434994	GEM94	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434993	GEM93	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434992	GEM87	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434991	GEF84	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434990	GEF83	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434989	GEF82	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434988	GEF81	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434987	GEK80	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434986	GEK79	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434985	GEK77	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434984	GMM71	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434983	GMM70	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434982	GMM67	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434981	GMM65	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434980	GMF57	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434979	GMM50	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434978	GMM49	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434977	GMS48	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434976	GMF46	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434975	GMF44	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434973	GMF42	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434972	GMM40	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434971	GMM37	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434970	GMM36	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434969	GMM35	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434968	GMM34	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434967	GMM33	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434966	GMM32	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434965	GMM31	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434964	GMM30	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434963	GMM29	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434962	GMM28	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434961	GMF24	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434960	GMF19	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434959	GMF14	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
LC434958	GMF10	Germany	<i>Glycine max</i>	No info	Yuan,K., Unpublished
KM378299	21B2-1	Namibia	<i>Vigna subterranea</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378298	1B1-1	Namibia	<i>Vigna subterranea</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378296	F1-1-1	Angola	<i>Vigna subterranea</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378295	AD1T2-3-1	Angola	<i>Vigna subterranea</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378294	18C-2-1	Namibia	<i>Vigna unguiculata</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378293	18C-1-1	Namibia	<i>Vigna unguiculata</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378281	51-1-3	Angola	<i>Vigna unguiculata</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378280	49-2-1	Angola	<i>Phaseolus vulgaris</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378279	47-1-1	Angola	<i>Vigna unguiculata</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378278	46-1-1	Angola	<i>Vigna unguiculata</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378277	45-1-4	Angola	<i>Vigna unguiculata</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378276	44-1-1	Angola	<i>Phaseolus vulgaris</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378273	42-1-1	Angola	<i>Phaseolus vulgaris</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378272	41-1-2	Angola	<i>Vigna unguiculata</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378271	40-3-1	Angola	<i>Vigna unguiculata</i>	root nodule	Groenemeyer,J.L., et al, 2014
KM378270	40-2-2	Angola	<i>Vigna unguiculata</i>	root nodule	Groenemeyer,J.L., et al, 2014

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KM378267	36-1-1	Namibia	<i>Vigna subterranea</i>	root nodule	Groenemeyer, J.L., et al, 2014
KM378263	31-1-1	Namibia	<i>Lablab purpureus</i>	root nodule	Groenemeyer, J.L., et al, 2014
KM378261	30-2-1	Namibia	<i>Lablab purpureus</i>	root nodule	Groenemeyer, J.L., et al, 2014
KM378258	26-3-1	Namibia	<i>Arachis hypogaea</i>	root nodule	Groenemeyer, J.L., et al, 2014
KM378257	26-1-1	Namibia	<i>Arachis hypogaea</i>	root nodule	Groenemeyer, J.L., et al, 2014
KM378250	6-8	Namibia	<i>Vigna unguiculata</i>	root nodule	Groenemeyer, J.L., et al, 2014
KM378248	4-8	Namibia	<i>Vigna unguiculata</i>	root nodule	Groenemeyer, J.L., et al, 2014
KM378247	3-2	Namibia	<i>Vigna unguiculata</i>	root nodule	Groenemeyer, J.L., et al, 2014
KM378246	2-13	Namibia	<i>Arachis hypogaea</i>	root nodule	Groenemeyer, J.L., et al, 2014
KM378245	1-7	Namibia	<i>Arachis hypogaea</i>	root nodule	Groenemeyer, J.L., et al, 2014
KY990684	CPUT49	India	<i>Chamaecrista pumila</i>	root nodule	Rathi, S., et al. Unpublished
KY990683	CPTN33	India	<i>Chamaecrista pumila</i>	root nodule	Rathi, S., et al. Unpublished
KY990682	CPJH29	India	<i>Chamaecrista pumila</i>	root nodule	Rathi, S., et al. Unpublished
MF144138	YJ1	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144137	ST7	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144136	ST5	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144135	ST4	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144134	ST1	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144133	SG2	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144132	MZ18	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144131	MZ8	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144130	MZ7	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144129	MZ5	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144128	MZ4	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144127	MZ3	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144126	MZ1	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144125	MM10	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144124	MM9	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144123	MM7	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144122	MM6	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144121	MM3	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144120	HZ2	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144119	HY7	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144118	HY5	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144117	HY4	China	peanut	nodules	Hu, M. and Gu, J., 2017
MF144116	HY1	China	peanut	nodules	Hu, M. and Gu, J., 2017
HM057568	CCBAU 05727	China	<i>Glycine max</i>	No info	Li, Q. Q., et al. 2011
HM057567	CCBAU 05724	China	<i>Glycine max</i>	No info	Li, Q. Q., et al. 2011
HM057564	CCBAU 05625	China	<i>Glycine max</i>	No info	Li, Q. Q., et al. 2011
HM057563	CCBAU 05588	China	<i>Glycine max</i>	No info	Li, Q. Q., et al. 2011
HM057562	CCBAU 05716	China	<i>Glycine max</i>	No info	Li, Q. Q., et al. 2011
HM057561	CCBAU 05707	China	<i>Glycine max</i>	No info	Li, Q. Q., et al. 2011
HM057559	CCBAU 05585	China	<i>Glycine max</i>	No info	Li, Q. Q., et al. 2011
KY040468	KNUST 1006	Ghana	<i>Vigna unguiculata</i>	nodules	Osei, O. and Rouws, L.F.M., Unpublished
KY040467	KNUST 1005	Ghana	<i>Vigna unguiculata</i>	nodules	Osei, O. and Rouws, L.F.M., Unpublished
KY040466	KNUST 1004	Ghana	<i>Vigna unguiculata</i>	nodules	Osei, O. and Rouws, L.F.M., Unpublished
KY040465	KNUST 1002	Ghana	<i>Vigna unguiculata</i>	nodules	Osei, O. and Rouws, L.F.M., Unpublished
KY040464	KNUST 1001	Ghana	<i>Vigna unguiculata</i>	nodules	Osei, O. and Rouws, L.F.M., Unpublished
KY914563	M7	No Country info	No Host info	No info	Annapurna, K., Unpublished
KX611786	No Strain info	Kuwait	No Host info	soil	Dashti, N., et al. Unpublished
KX611769	No Strain info	Kuwait	No Host info	soil	Dashti, N., et al. Unpublished
KX611765	No Strain info	Kuwait	No Host info	soil	Dashti, N., et al. Unpublished
LT630317	No Strain info	Greece	<i>Vigna unguiculata</i>	root nodule	Tampakaki, A.P., et al. 2017
LT630316	No Strain info	Greece	<i>Vigna unguiculata</i>	root nodule	Tampakaki, A.P., et al. 2017
LT630315	No Strain info	Greece	<i>Vigna unguiculata</i>	root nodule	Tampakaki, A.P., et al. 2017
LT630314	No Strain info	Greece	<i>Vigna unguiculata</i>	root nodule	Tampakaki, A.P., et al. 2017
KJ862844	CRRI-SW13	India	<i>Oryza sativa</i>	root endophyte of host	Banik, A., et al. 2016
KU947051	No Strain info	No Country info	No Host info	pristine corn cob	Dashti, N., et al. Unpublished
KU947050	No Strain info	No Country info	No Host info	pristine corn cob	Dashti, N., et al. Unpublished
KU947043	No Strain info	No Country info	No Host info	oily corn cob	Dashti, N., et al. Unpublished
KY020296	PV3.2	No Country info	<i>Glycine max</i>	root nodules	Annapurna, K., et al. Unpublished
KY020295	PV3.4	No Country info	<i>Glycine max</i>	root nodules	Annapurna, K., et al. Unpublished
KY020294	PV1.31	No Country info	<i>Glycine max</i>	root nodules	Annapurna, K., et al. Unpublished
KY020293	PV2.28	No Country info	<i>Glycine max</i>	root nodules	Annapurna, K., et al. Unpublished
KY020292	PV3.5	No Country info	<i>Glycine max</i>	root nodules	Annapurna, K., et al. Unpublished
KY020291	PV3.1	No Country info	<i>Glycine max</i>	root nodules	Annapurna, K., et al. Unpublished
KY020290	12.5(9)	No Country info	<i>Glycine max</i>	root nodules	Annapurna, K., et al. Unpublished
KY020289	PV1.14	No Country info	<i>Glycine max</i>	root nodules	Annapurna, K., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KY020288	PV1.15	No Country info	<i>Glycine max</i>	root nodules	Annapurna,K., et al. Unpublished
KY020287	PV3.17	No Country info	<i>Glycine max</i>	root nodules	Annapurna,K., et al. Unpublished
KY020286	PV1.1	No Country info	<i>Glycine max</i>	root nodules	Annapurna,K., et al. Unpublished
KY020285	PV3.3	No Country info	<i>Glycine max</i>	root nodules	Annapurna,K., et al. Unpublished
KY020284	12.5(19)	No Country info	<i>Glycine max</i>	root nodules	Annapurna,K., et al. Unpublished
KX019788	NPK8	China	<i>Glycine max</i>	No info	Yan,J., et al. 2017
KX019787	NK36	China	<i>Glycine max</i>	No info	Yan,J., et al. 2017
KX019786	NPK29	China	<i>Glycine max</i>	No info	Yan,J., et al. 2017
KX019785	PK12	China	<i>Glycine max</i>	No info	Yan,J., et al. 2017
KP774541	FVMY14	No Country info	<i>Flemingia procumbens</i>	root nodules	Ojha,A. and Rao,S.R., Unpublished
KP774540	FVJONG14	No Country info	<i>Flemingia procumbens</i>	root nodules	Ojha,A. and Rao,S.R., Unpublished
KP774538	FVNS4	No Country info	<i>Flemingia procumbens</i>	root nodules	Ojha,A. and Rao,S.R., Unpublished
KP774537	FVNS2	No Country info	<i>Flemingia procumbens</i>	root nodules	Ojha,A. and Rao,S.R., Unpublished
KP774536	EHNS18	No Country info	<i>Eriosema chinense</i>	root nodules	Ojha,A. and Rao,S.R., Unpublished
KP774535	EHNS8	No Country info	<i>Eriosema chinense</i>	root nodules	Ojha,A. and Rao,S.R., Unpublished
KP774534	EHJO10	No Country info	<i>Eriosema chinense</i>	root nodules	Ojha,A. and Rao,S.R., Unpublished
KP774533	EHJ08	No Country info	<i>Eriosema chinense</i>	root nodules	Ojha,A. and Rao,S.R., Unpublished
KP752041	EHUS6	No Country info	<i>Eriosema chinense</i>	root nodules	Ojha,A. and Rao,S.R., Unpublished
LT622120	No Strain info	No Country info	No Host info	rhizosphere of cotton	Arshad,M. and Sajjad Mirza,M., Unpublished
EU707168	CCBAU 15477	No Country info	No Host info	No info	Wang,H., et al. 2008
EU707167	CCBAU 15475	No Country info	No Host info	No info	Wang,H., et al. 2008
EU707166	CCBAU 15536	No Country info	No Host info	No info	Wang,H., et al. 2008
EU707165	CCBAU 15483	No Country info	No Host info	No info	Wang,H., et al. 2008
EU707162	CCBAU 15456	No Country info	No Host info	No info	Wang,H., et al. 2008
EU707157	CCBAU 15525	No Country info	No Host info	No info	Wang,H., et al. 2008
DQ085623	TAL 760	Mexico	<i>Indigofera hirsuta</i>	No info	Ormeno-Orrillo,E., et al. 2006
DQ085622	LMTR 28	Peru	<i>Phaseolus lunatus</i>	No info	Ormeno-Orrillo,E., et al. 2006
DQ085621	LMTR 42	Peru	<i>Phaseolus lunatus</i>	No info	Ormeno-Orrillo,E., et al. 2006
DQ085620	LMTR 41	Peru	<i>Phaseolus lunatus</i>	No info	Ormeno-Orrillo,E., et al. 2006
DQ085616	LMTR 3	Peru	<i>Phaseolus lunatus</i>	No info	Ormeno-Orrillo,E., et al. 2006
JN593339	JNVU TF17	No Country info	<i>Tephrosia falciformis</i>	root nodules	Tak,N. and Gehlot,H.S., Unpublished
JN571920	JNVU TV11	No Country info	<i>Tephrosia villosa</i>	root nodules	Tak,N. and Gehlot,H.S., Unpublished
JF266695	75m	Mexico	<i>Macroptilium atropurpureum</i>	No info	Fischer,D., et al. 2011
JF266694	1722m	Mexico	<i>Macroptilium atropurpureum</i>	No info	Fischer,D., et al. 2011
JF266693	1309v	Mexico	<i>Vigna unguiculata</i>	No info	Fischer,D., et al. 2011
JF266692	1234v	Mexico	<i>Vigna unguiculata</i>	No info	Fischer,D., et al. 2011
JF266691	1325v	Mexico	<i>Vigna unguiculata</i>	No info	Fischer,D., et al. 2011
JF266690	107m	Mexico	<i>Macroptilium atropurpureum</i>	No info	Fischer,D., et al. 2011
JF266689	1233v	Mexico	<i>Vigna unguiculata</i>	No info	Fischer,D., et al. 2011
JF266688	37m	Mexico	<i>Macroptilium atropurpureum</i>	No info	Fischer,D., et al. 2011
JF266687	1090v	Mexico	<i>Vigna unguiculata</i>	No info	Fischer,D., et al. 2011
JF266686	1064v	Mexico	<i>Vigna unguiculata</i>	No info	Fischer,D., et al. 2011
JF266685	1724m	Mexico	<i>Macroptilium atropurpureum</i>	No info	Fischer,D., et al. 2011
JF266684	1595v	Mexico	<i>Vigna unguiculata</i>	No info	Fischer,D., et al. 2011
JF266683	1609v	Mexico	<i>Vigna unguiculata</i>	No info	Fischer,D., et al. 2011
JF266682	1229v	Mexico	<i>Vigna unguiculata</i>	No info	Fischer,D., et al. 2011
JF266681	85v	Mexico	<i>Vigna unguiculata</i>	No info	Fischer,D., et al. 2011
JF266680	116m	Mexico	<i>Macroptilium atropurpureum</i>	No info	Fischer,D., et al. 2011
JF266679	1681v	Mexico	<i>Vigna unguiculata</i>	No info	Fischer,D., et al. 2011
FR850875	R45771	Belgium	<i>Ulex europaeus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850874	R45721	Belgium	<i>Cytisus scoparius</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850872	R45710	Belgium	<i>Lupinus polyphyllus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850871	R45700	Belgium	<i>Lupinus polyphyllus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850870	R45699	Belgium	<i>Lupinus polyphyllus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850814	R46136	Belgium	<i>Lotus pedunculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850787	R45695	Belgium	<i>Lupinus polyphyllus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850785	R45703	Belgium	<i>Lupinus polyphyllus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850784	R45696	Belgium	<i>Lupinus polyphyllus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850780	R45949	Belgium	<i>Lotus pedunculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850772	R45956	Belgium	<i>Lotus pedunculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850739	R46022	Belgium	<i>Lotus pedunculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850737	R46014	Belgium	<i>Lotus pedunculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850719	R45955	Belgium	<i>Lotus pedunculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850718	R45953	Belgium	<i>Lotus pedunculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
JF266678	99m	Mexico	<i>Macroptilium atropurpureum</i>	No info	Fischer,D., et al. 2011
JF266677	98m	Mexico	<i>Macroptilium atropurpureum</i>	No info	Fischer,D., et al. 2011
JF266676	28v	Mexico	<i>Vigna unguiculata</i>	No info	Fischer,D., et al. 2011
JF266675	1017v	Mexico	<i>Vigna unguiculata</i>	No info	Fischer,D., et al. 2011

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
JF266674	1730m	Mexico	<i>Macroptilium atropurpureum</i>	No info	Fischer,D., et al. 2011
JF266673	1110v	Mexico	<i>Vigna unguiculata</i>	No info	Fischer,D., et al. 2011
JF266672	109m	Mexico	<i>Macroptilium atropurpureum</i>	No info	Fischer,D., et al. 2011
JF266671	10m	Mexico	<i>Macroptilium atropurpureum</i>	No info	Fischer,D., et al. 2011
EF529814	CCBAU 33039	No Country info	No Host info	No info	Lin,D., et al. Unpublished
EF512288	CCBAU 33158	No Country info	No Host info	No info	Lin,D., et al. Unpublished
EF512283	CCBAU 45002	No Country info	No Host info	No info	Lin,D., et al. Unpublished
EF512282	CCBAU 33100	No Country info	No Host info	No info	Lin,D., et al. Unpublished
EF394171	CCBAU 65068	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF394170	CCBAU 35139	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF394169	CCBAU 33079	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF394168	CCBAU 33143	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF394167	CCBAU 33109	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF394166	CCBAU 65619	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF394165	CCBAU 53142	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF394164	CCBAU 43298	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF394163	CCBAU 43277	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF394162	CCBAU 65617	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF394161	CCBAU 53135	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF394160	CCBAU 53119	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF394159	CCBAU 53152	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF394158	CCBAU 41267	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF394157	CCBAU 53229	No Country info	No Host info	No info	Man,C.X., et al. Unpublished
EF070146	CCBAU 33128	No Country info	No Host info	No info	Lin,D.X., et al. 2007
EF070144	CCBAU 43058	No Country info	No Host info	No info	Lin,D.X., et al. 2007
EF070143	CCBAU 33037	No Country info	No Host info	No info	Lin,D.X., et al. 2007
EF070142	CCBAU 33062	No Country info	No Host info	No info	Lin,D.X., et al. 2007
EF153399	USDA 3203	No Country info	<i>Lespedeza capitata</i>	No info	Gu,C.T., et al. 2007
EF153398	USDA 3654	No Country info	<i>Lespedeza juncea</i>	No info	Gu,C.T., et al. 2007
EF153397	CCBAU 45079	No Country info	<i>Lespedeza juncea</i>	No info	Gu,C.T., et al. 2007
EF153396	CCBAU 61184	No Country info	<i>Lespedeza virgata</i>	No info	Gu,C.T., et al. 2007
EF153395	CCBAU 05036	No Country info	<i>Lespedeza davurica</i>	No info	Gu,C.T., et al. 2007
KR350547	No Strain info	No Country info	No Host info	pristine sugarcane bagasse	Radwan,S.,et al. Unpublished
KR350541	No Strain info	No Country info	No Host info	oily sugarcane bagasse	Radwan,S.,et al. Unpublished
KR350539	No Strain info	No Country info	No Host info	oily sugarcane bagasse	Radwan,S.,et al. Unpublished
KR350520	No Strain info	No Country info	No Host info	oily wheat straw	Radwan,S.,et al. Unpublished
KR350517	No Strain info	No Country info	No Host info	oily wheat straw	Radwan,S.,et al. Unpublished
KR350508	No Strain info	No Country info	No Host info	pristine wheat straw	Radwan,S.,et al. Unpublished
KU058248	BRUESC1011	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058247	BRUESC1010	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058246	BRUESC1014	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058245	BRUESC968	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058244	BRUESC967	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058243	BRUESC966	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058242	BRUESC965	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058241	BRUESC964	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058240	BRUESC963	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058239	BRUESC962	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058238	BRUESC969	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058237	BRUESC961	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058236	BRUESC960	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058235	BRUESC957	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058234	BRUESC956	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058233	BRUESC955	Brazil	<i>Chamaecrista ensiformis</i>	Wild nodule	Alves,P.C., et al. Unpublished
KU058232	BRUESC952	Brazil	<i>Chamaecrista bahiae</i>	Wild nodule	Alves,P.C., et al. Unpublished
KT957915	SCAU8	China	<i>Glycine max</i>	root nodule	Heng,N.N., et al. Unpublished
KT965792	ROM2	China	<i>Glycine max</i>	No info	Yan,J.,et al. Unpublished
KT965791	N+ROM18	China	<i>Glycine max</i>	No info	Yan,J.,et al. Unpublished
KT965790	NPK+ROM8	China	<i>Glycine max</i>	No info	Yan,J.,et al. Unpublished
KT965789	NPK+ROM11	China	<i>Glycine max</i>	No info	Yan,J.,et al. Unpublished
KT965788	CK3	China	<i>Glycine max</i>	No info	Yan,J.,et al. Unpublished
KT965787	N10	China	<i>Glycine max</i>	No info	Yan,J.,et al. Unpublished
KU179801	No Strain info	No Country info	No Host info	dried sludge	Sidhu,C., Unpublished
KP178137	No Strain info	China	<i>Glycine max</i>	soil	Liang,J., Unpublished
KP178120	No Strain info	China	<i>Glycine max</i>	soil	Liang,J., Unpublished
KP178118	No Strain info	China	<i>Glycine max</i>	soil	Liang,J., Unpublished
KT825892	INPA104A	Brazil	<i>Campsiandra surinamensis</i>	root nodule	Moreira,F.M.S.O.U.Z.A., 2015
KT825891	UFLA06-19	Brazil	<i>Glycine max</i>	root nodules	Moreira,F.M.S.O.U.Z.A., 2015

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KT825890	UFLA 03-321	Brazil	<i>Vigna unguiculata</i>	root nodules	Moreira,F.M.S.O.U.Z.A., 2015
KT825889	UFLA03-320	Brazil	<i>Vigna unguiculata</i>	root nodules	Moreira,F.M.S.O.U.Z.A., 2015
KT428750	TUTAHSA75	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KT428749	TUTAHSA155	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KT428748	TUTAHSA126	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K., et al. Unpublished
KR075971	R5-409	Singapore	<i>Jatropha</i> sp.	root	Madhaiyan,M., et al. 2015
KR259159	JNVU RA25	India	<i>Rhynchosia aurea</i>	root nodule	Tak,A. and Gehlot,H.S., Unpublished
KP774539	FVNS22	No Country info	<i>Flemingia procumbens</i>	root nodules	Ojha,A. and Rao,S.R., Unpublished
KP774532	EHNEHU6	No Country info	<i>Eriosema chinense</i>	root nodules	Ojha,A. and Rao,S.R., Unpublished
KP774531	EHJO1a	No Country info	<i>Eriosema chinense</i>	root nodules	Ojha,A. and Rao,S.R., Unpublished
JX154861	No Strain info	No Country info	No Host info	soil	Suyal,D.C., et al. 2015
JX154829	No Strain info	No Country info	No Host info	soil	Suyal,D.C., et al. 2015
JX154827	No Strain info	No Country info	No Host info	soil	Suyal,D.C., et al. 2015
JX154825	No Strain info	No Country info	No Host info	soil	Suyal,D.C., et al. 2015
JX154822	No Strain info	No Country info	No Host info	soil	Suyal,D.C., et al. 2015
JX154783	No Strain info	No Country info	No Host info	soil	Suyal,D.C., et al. 2015
JX154779	No Strain info	No Country info	No Host info	soil	Suyal,D.C., et al. 2015
JX154730	No Strain info	No Country info	No Host info	soil	Suyal,D.C., et al. 2015
JX154694	No Strain info	No Country info	No Host info	soil	Suyal,D.C., et al. 2015
KM052359	No Strain info	China	<i>Albizia odoratissima</i>	root nodule	Liu,L., et al. Unpublished
KM052358	No Strain info	China	<i>Pueraria montana</i>	root nodule	Liu,L., et al. Unpublished
KM052357	No Strain info	China	<i>Pithecellobium clypearia</i>	root nodule	Liu,L., et al. Unpublished
KM052356	No Strain info	China	<i>Albizia odoratissima</i>	root nodule	Liu,L., et al. Unpublished
KM052355	No Strain info	China	<i>Albizia odoratissima</i>	root nodule	Liu,L., et al. Unpublished
KM052354	No Strain info	China	<i>Dalbergia hancei</i>	root nodule	Liu,L., et al. Unpublished
KM052353	No Strain info	China	<i>Derris cf. fordii</i>	root nodule	Liu,L., et al. Unpublished
KM052352	No Strain info	China	<i>Campylotropis cf. delavayi</i>	root nodule	Liu,L., et al. Unpublished
KM052351	No Strain info	China	<i>Indigofera atropurpurea</i>	root nodule	Liu,L., et al. Unpublished
KM052350	No Strain info	China	<i>Albizia odoratissima</i>	root nodule	Liu,L., et al. Unpublished
KM052349	No Strain info	China	<i>Albizia odoratissima</i>	root nodule	Liu,L., et al. Unpublished
KM052348	No Strain info	China	<i>Albizia odoratissima</i>	root nodule	Liu,L., et al. Unpublished
KM052347	No Strain info	China	<i>Indigofera atropurpurea</i>	root nodule	Liu,L., et al. Unpublished
KM052346	No Strain info	China	<i>Lespedeza cuneata</i>	root nodule	Liu,L., et al. Unpublished
KP413105	RITF1653	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413104	RITF1658	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413103	RITF671	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413102	RITF1015	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413101	RITF1656	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413100	RITF1116	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413099	RITF1552	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413098	RITF1315	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413097	RITF522	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413096	RITF1551	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413095	RITF1556	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413094	RITF1654	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413093	RITF681	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413092	RITF1106	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413091	RITF1657	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413090	RITF1624	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413089	RITF1612	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413088	RITF651	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413087	RITF1323	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413086	RITF16241	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413085	RITF1102	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP413084	RITF1328	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished
KP219187	SCAUs46	China	<i>Glycine max</i>	root nodule	Xu,K., Unpublished
KP219186	SCAUs36	China	<i>Glycine max</i>	root nodule	Xu,K., Unpublished
KP219175	SCAUd29	China	<i>Desmodium gangeticum</i>	root nodule	Xu,K., Unpublished
KP219174	SCAUd24	China	<i>Desmodium elegans</i>	root nodule	Xu,K., Unpublished
KJ949659	WBOS18	India	<i>Oryza sativa</i>	root	Guha,S., et al. Unpublished
KJ949658	WBOS16	India	<i>Oryza sativa</i>	root	Guha,S., et al. Unpublished
KJ949657	WBOS13	India	<i>Oryza sativa</i>	root	Guha,S., et al. Unpublished
KJ949656	WBOS12	India	<i>Oryza sativa</i>	root	Guha,S., et al. Unpublished
KJ949655	WBOS10	India	<i>Oryza sativa</i>	root	Guha,S., et al. Unpublished
KJ949654	WBOS8	India	<i>Oryza sativa</i>	root	Guha,S., et al. Unpublished
KJ949653	WBOS7	India	<i>Oryza sativa</i>	root	Guha,S., et al. Unpublished
KJ949652	WBOS6	India	<i>Oryza sativa</i>	root	Guha,S., et al. Unpublished
KJ949651	WBOS5	India	<i>Oryza sativa</i>	root	Guha,S., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KJ949650	WBOS4	India	<i>Oryza sativa</i>	root	Guha,S., et al. Unpublished
KJ949649	WBOS3	India	<i>Oryza sativa</i>	root	Guha,S., et al. Unpublished
KJ949648	WBOS2	India	<i>Oryza sativa</i>	root	Guha,S., et al. Unpublished
KJ949647	WBOS1	India	<i>Oryza sativa</i>	root	Guha,S., et al. Unpublished
KJ949646	WBAH31	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949645	WBAH39	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949644	WBAH24	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949643	WBAH27	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949642	WBAH33	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949641	WBAH35	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949640	WBAH42	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949639	WBAH38	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949638	WBAH11	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949637	WBAH29	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949636	WBAH10	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949635	WBAH30	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949634	WBAH6	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949633	WBAH40	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949632	WBAH23	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949631	WBAH25	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KJ949630	WBAH41	India	<i>Arachis hypogaea</i>	root nodule	Guha,S., et al. Unpublished
KP339029	No Strain info	No Country info	No Host info	pristine olive pomace	Dashti,N., et al. 2015
KP339015	No Strain info	No Country info	No Host info	oily olive pomace	Dashti,N., et al. 2015
EU622091	CCBAU 65826	No Country info	<i>Desmodium microphyllum</i>	No info	Wang,Y.C., et al. 2013
EU622084	CCBAU 65788	No Country info	<i>Pueraria lobata</i>	No info	Wang,Y.C., et al. 2013
EU622083	CCBAU 65718	No Country info	<i>Indigofera spicata</i>	No info	Wang,Y.C., et al. 2013
EU622082	CCBAU 65799	No Country info	<i>Cajanus cajan</i>	No info	Wang,Y.C., et al. 2013
EU622081	CCBAU 65785	No Country info	<i>Crotalaria mucronata</i>	No info	Wang,Y.C., et al. 2013
EU622080	CCBAU 65668	No Country info	<i>Psophocarpus tetragonolobus</i>	No info	Wang,Y.C., et al. 2013
KM018145	ICMP 8377	Australia	<i>Ornithopus compressus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018144	ICMP 5798	Australia	No Host info	root nodule	Liu,W.Y.Y., Unpublished
KM018143	LupCI	New Zealand	<i>Lupinus polyphyllus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018141	ICMP 19842	New Zealand	<i>Ulex europaeus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018140	ICMP 19840	New Zealand	<i>Ulex europaeus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018139	ICMP 19839	New Zealand	<i>Ulex europaeus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018132	ICMP 11738	New Zealand	<i>Ornithopus pinnatus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018131	ICMP 11737	New Zealand	<i>Ornithopus pinnatus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018120	ICMP 3154	New Zealand	<i>Lotus suaveolens</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018119	ICMP 19848	New Zealand	<i>Lotus suaveolens</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018118	ICMP 10776	New Zealand	<i>Lotus pedunculatus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018117	ICMP 10768	New Zealand	<i>Lotus pedunculatus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018116	ICMP 7719	New Zealand	<i>Lotus pedunculatus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018115	ICMP 19847	New Zealand	<i>Lotus pedunculatus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018114	ICMP 19846	New Zealand	<i>Lotus pedunculatus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018113	ICMP 19845	New Zealand	<i>Lotus pedunculatus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018112	ICMP 19844	New Zealand	<i>Lotus angustissimus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018111	ICMP 19843	New Zealand	<i>Lotus angustissimus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018110	ICMP 19837	New Zealand	<i>Lupinus arboreus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018109	ICMP 19836	New Zealand	<i>Lupinus arboreus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018108	ICMP 19835	New Zealand	<i>Lupinus arboreus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018107	ICMP 19838	New Zealand	<i>Lupinus arboreus</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018101	ICMP 19832	New Zealand	<i>Cytisus scoparius</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018100	ICMP 19831	New Zealand	<i>Cytisus scoparius</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018099	ICMP 19829	New Zealand	<i>Cytisus scoparius</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018098	ICMP 19828	New Zealand	<i>Cytisus scoparius</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018097	ICMP 19827	New Zealand	<i>Cytisus scoparius</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018096	ICMP 19826	New Zealand	<i>Chamaecytisus prolifer</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018095	ICMP 19825	New Zealand	<i>Chamaecytisus prolifer</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018094	ICMP 19824	New Zealand	<i>Chamaecytisus prolifer</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018093	ICMP 19823	New Zealand	<i>Chamaecytisus prolifer</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018092	ICMP 19822	New Zealand	<i>Chamaecytisus prolifer</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018091	ICMP 14758	New Zealand	<i>Acacia longifolia</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018090	ICMP 14757	New Zealand	<i>Acacia longifolia</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018089	ICMP 14756	New Zealand	<i>Acacia longifolia</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018088	ICMP 14755	New Zealand	<i>Acacia longifolia</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018087	ICMP 12835	New Zealand	<i>Acacia dealbata</i>	root nodule	Liu,W.Y.Y., Unpublished
KP193077	RITF1432	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J.,et al. Unpublished
KP193076	RITF1115	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J.,et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KP193075	RITF1431	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J.,et al. Unpublished
KP193074	RITF1112	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J.,et al. Unpublished
KP193073	RITF1109	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J.,et al. Unpublished
KP193072	RITF1541	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J.,et al. Unpublished
KP193071	RITF1542	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J.,et al. Unpublished
KP193070	RITF1118	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J.,et al. Unpublished
KP193069	RITF1632	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J.,et al. Unpublished
KP193068	RITF1633	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J.,et al. Unpublished
KM396556	CCBAU 71331	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM396554	CCBAU 71342	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM396553	CCBAU 71325	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM396540	CCBAU 03416	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM076744	JNVU AL39	India	<i>Acacia leucophloea</i>	root nodule	Choudhary,S., et al. Unpublished
KM093817	Z15	China	<i>Glycine max</i>	root nodules	Wei,X.L. and Wei,G.H., Unpublished
KM093813	C8	China	<i>Glycine max</i>	root nodules	Wei,X.L. and Wei,G.H., Unpublished
KM093809	D1	China	<i>Glycine max</i>	root nodules	Wei,X.L. and Wei,G.H., Unpublished
KM093807	C6	China	<i>Glycine max</i>	root nodules	Wei,X.L. and Wei,G.H., Unpublished
KM093806	A1	China	<i>Glycine max</i>	root nodules	Wei,X.L. and Wei,G.H., Unpublished
KM093805	C2	China	<i>Glycine max</i>	root nodules	Wei,X.L. and Wei,G.H., Unpublished
KJ547756	M26	China	<i>Glycine max</i>	No info	Yan,J., et al.2014
KJ547755	S36	China	<i>Glycine max</i>	No info	Yan,J., et al.2014
KJ547754	B8	China	<i>Glycine max</i>	No info	Yan,J., et al.2014
KJ547753	C24	China	<i>Glycine max</i>	No info	Yan,J., et al.2014
KJ547752	G35	China	<i>Glycine max</i>	No info	Yan,J., et al.2014
KJ547751	M10	China	<i>Glycine max</i>	No info	Yan,J., et al.2014
KJ779067	SZCZ20	Poland	<i>Chamaecytisus ratisbonensis</i>	nodules	Kalita,M., Unpublished
KJ779066	SZCZ11	Poland	<i>Chamaecytisus ratisbonensis</i>	nodules	Kalita,M., Unpublished
KJ779065	SZCZ6	Poland	<i>Chamaecytisus ratisbonensis</i>	nodules	Kalita,M., Unpublished
KJ779064	ZAR12	Poland	<i>Sarothamnus scoparius</i>	nodules	Kalita,M., Unpublished
KJ779063	ZAR7	Poland	<i>Sarothamnus scoparius</i>	nodules	Kalita,M., Unpublished
KJ779062	ZAR4	Poland	<i>Sarothamnus scoparius</i>	nodules	Kalita,M., Unpublished
KJ779061	ZAR2	Poland	<i>Sarothamnus scoparius</i>	nodules	Kalita,M., Unpublished
KJ779060	JAN13	Poland	<i>Genista tinctoria</i>	nodules	Kalita,M., Unpublished
KJ779059	Jan10	Poland	<i>Genista tinctoria</i>	nodules	Kalita,M., Unpublished
KJ779058	JAN6	Poland	<i>Genista tinctoria</i>	nodules	Kalita,M., Unpublished
KJ779057	GER32	Poland	<i>Genista germanica</i>	nodules	Kalita,M., Unpublished
KJ779056	GER1	Poland	<i>Genista germanica</i>	nodules	Kalita,M., Unpublished
KJ747100	W1	China	<i>Glycine max</i>	No info	Yan,J., et al. Unpublished
AB825983	NGB-SR15	Egypt	<i>Glycine max</i>	root nodules	Youseif,S.H.,et al. 2014
AB825982	NGB-SR14	Egypt	<i>Glycine max</i>	root nodules	Youseif,S.H.,et al. 2014
AB825979	NGB-SR11	Egypt	<i>Glycine max</i>	root nodules	Youseif,S.H.,et al. 2014
AB825973	NGB-SR5	Egypt	<i>Glycine max</i>	root nodules	Youseif,S.H.,et al. 2014
AB825972	NGB-SR4	Egypt	<i>Glycine max</i>	root nodules	Youseif,S.H.,et al. 2014
KJ018170	JNVU CB4	India	<i>Crotalaria burhia</i>	root nodule	Sankhla,I.S.,et al. Unpublished
KF744656	H11	Spain	<i>Cytisus scoparius</i>	No info	Horn,K., et al. Unpublished
KF744655	Il4	USA	<i>Lupinus lepidus</i>	No info	Horn,K., et al. Unpublished
KF744654	csjp11	USA	<i>Cytisus scoparius</i>	No info	Horn,K., et al. Unpublished
KF744653	csIt5	USA	<i>Cytisus scoparius</i>	No info	Horn,K., et al. Unpublished
KF744652	csri27	USA	<i>Cytisus scoparius</i>	No info	Horn,K., et al. Unpublished
KF744651	csma27	USA	<i>Cytisus scoparius</i>	No info	Horn,K., et al. Unpublished
KF744650	csds5	USA	<i>Cytisus scoparius</i>	No info	Horn,K., et al. Unpublished
KF744649	csmx9	USA	<i>Cytisus scoparius</i>	No info	Horn,K., et al. Unpublished
KF744648	csc5	USA	<i>Cytisus scoparius</i>	No info	Horn,K., et al. Unpublished
KF744647	cspfl1	USA	<i>Cytisus scoparius</i>	No info	Horn,K., et al. Unpublished
KF588696	DLM1.1	New Zealand	<i>Dipogon lignosus</i>	root nodules	Liu,W.Y.Y., Unpublished
KF694979	LCM 3683	Senegal	<i>Vigna unguiculata</i>	nodule	Krasova-Wade,T., et al. Unpublished
KF694978	LCM 3682	Senegal	<i>Vigna unguiculata</i>	nodule	Krasova-Wade,T., et al. Unpublished
KF694977	ORS 3258	Senegal	<i>Vigna unguiculata</i>	nodule	Krasova-Wade,T., et al. Unpublished
KF694976	ORS 3257	Senegal	<i>Vigna unguiculata</i>	nodule	Krasova-Wade,T., et al. Unpublished
JX316104	CNL7	Uruguay	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013
JX316103	CNL9	Uruguay	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013
JX316102	LUG11	Uruguay	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013
JX316101	CNL1	Uruguay	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013
JX316100	CNG1	Uruguay	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013
JX316099	CNL2	Uruguay	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013
JX316098	LULIT25	Uruguay	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013
JX316097	LUP3	Uruguay	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013
JX316096	LUP27	Uruguay	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
JX316095	LULIT23	Uruguay	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013
JX316094	2309	New Zealand	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013
JX316093	LUP4	Uruguay	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013
HF536765	STM 7333	Brazil	<i>Piptadenia paniculata</i>	No info	Bournaud,C., et al. 2013
HF536764	STM 7334	Brazil	<i>Piptadenia paniculata</i>	No info	Bournaud,C., et al. 2013
HF536763	STM 7332	Brazil	<i>Piptadenia paniculata</i>	No info	Bournaud,C., et al. 2013
HF536762	STM 7378	Brazil	<i>Microlobius foetidus</i>	No info	Bournaud,C., et al. 2013
KC969243	RITF322	No Country info	No Host info	No info	Dou,Y. and Kang,L., Unpublished
HM107287	CCBAU 051011	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
HM107286	CCBAU 45281	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
HM107285	CCBAU 45384	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
HM107284	CCBAU 45389	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
HM107282	CCBAU 25360	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
HM107281	CCBAU 25374	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
HM107280	CCBAU 45394	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
HM107279	CCBAU 23283	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
HM107278	CCBAU 45370	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
HM107277	CCBAU 45321	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
HM107276	CCBAU 051018	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
HM107275	CCBAU 25319	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
HM107274	CCBAU 45291	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
HM107273	CCBAU 051021	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
HM107272	CCBAU 25338	No Country info	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
GU433562	CCBAU 61438	No Country info	<i>Arachis hypogaea</i>	No info	Chang,Y.L., et al. 2011
GU433561	CCBAU 21335	No Country info	<i>Arachis hypogaea</i>	No info	Chang,Y.L., et al. 2011
GU433560	CCBAU 21332	No Country info	<i>Lablab purpureus</i>	No info	Chang,Y.L., et al. 2011
GU433559	CCBAU 61432	No Country info	<i>Lablab purpureus</i>	No info	Chang,Y.L., et al. 2011
GU433558	CCBAU 65893	No Country info	<i>Lablab purpureus</i>	No info	Chang,Y.L., et al. 2011
GU433557	CCBAU 65884	No Country info	<i>Arachis hypogaea</i>	No info	Chang,Y.L., et al. 2011
GU433556	CCBAU 33023	No Country info	<i>Arachis hypogaea</i>	No info	Chang,Y.L., et al. 2011
GU433555	CCBAU 43003	No Country info	<i>Lablab purpureus</i>	No info	Chang,Y.L., et al. 2011
GU433554	CCBAU 23090	No Country info	<i>Lablab purpureus</i>	No info	Chang,Y.L., et al. 2011
GU433552	CCBAU 51257	No Country info	<i>Arachis hypogaea</i>	No info	Chang,Y.L., et al. 2011
GU433549	CCBAU 51010	No Country info	<i>Arachis hypogaea</i>	No info	Chang,Y.L., et al. 2011
GU433547	CCBAU 43129	No Country info	<i>Arachis hypogaea</i>	No info	Chang,Y.L., et al. 2011
GU433545	CCBAU 23005	No Country info	<i>Lablab purpureus</i>	No info	Chang,Y.L., et al. 2011
AB565989	Chi-14	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565988	Chi-12	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565987	Chi-10	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565986	Chi-9	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565985	Chi-8	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565984	Chi-7	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565983	Chi-6	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565982	Chi-5	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565981	Chi-4	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565980	Chi-3	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565979	Ram-7	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565978	Ram-4	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565977	Ram-3	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565976	Ram-1	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565975	Mug-5	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565974	Mug-2	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565973	Mug-1	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565972	Deu-5	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565971	Deu-4	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565970	Deu-3	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565969	Deu-2	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565968	Pac-6	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565967	Pac-5	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565966	Pac-4	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565965	Pac-2	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565964	Gho-8	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565963	Gho-3	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565962	Gho-2	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565961	Gho-1	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565960	Kha-10	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565959	Kha-9	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565958	Kha-8	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
AB565957	Kha-7	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565956	Kha-2	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565955	Kha-1	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565954	Pok-9	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565953	Pok-6	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565952	Khu-6	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565951	Khu-4	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565950	God-7	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565949	God-3	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565948	God-2	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565947	God-1	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565946	Nau-6	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565945	Nau-1	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565944	Cha-6	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565943	Cha-4	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565942	Cha-3	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
AB565941	Cha-2	Nepal	<i>Glycine max</i>	root nodules	Adhikari,D., et al. 2012
JQ362366	SCAU211	China	<i>Leucaena leucocephala</i>	No info	Xu,K.W., et al. 2013
EU418415	CCBAU 05185	No Country info	No Host info	No info	Zhao,C.T., et al. 2008
EU418414	CCBAU 05041	No Country info	No Host info	No info	Zhao,C.T., et al. 2008
EU418413	CCBAU 43170	No Country info	No Host info	No info	Zhao,C.T., et al. 2008
JX292086	RITF1313	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292085	RITF14115	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292084	RITF1631	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292083	RITF1622	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292082	RITF1621	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292080	RITF1558	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292079	RITF1482	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292078	RITF1417	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292077	RITF1416	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292076	RITF1412	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292073	RITF1110	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292072	RITF1024	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292071	RITF1023	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292070	RITF1022	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292069	RITF1002	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292064	RITF801	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292061	RITF512	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292059	RITF63	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX292058	RITF11	No Country info	No Host info	No info	Yajing,D., et al. Unpublished
JX079677	No Strain info	India	No Host info	contaminated soil BG-2	Lal,R., et al. Unpublished
JX079658	No Strain info	India	No Host info	contaminated soil BG-2	Lal,R., et al. Unpublished
JX079656	No Strain info	India	No Host info	contaminated soil BG-2	Lal,R., et al. Unpublished
JX079649	No Strain info	India	No Host info	contaminated soil BG-2	Lal,R., et al. Unpublished
JX079644	No Strain info	India	No Host info	contaminated soil BG-2	Lal,R., et al. Unpublished
JX079626	No Strain info	India	No Host info	contaminated soil BG-2	Lal,R., et al. Unpublished
JX079613	No Strain info	India	No Host info	contaminated soil BG-1	Lal,R., et al. Unpublished
JX079584	No Strain info	India	No Host info	contaminated soil BG-1	Lal,R., et al. Unpublished
JX079572	No Strain info	India	No Host info	contaminated soil BG-1	Lal,R., et al. Unpublished
JQ937256	CCBAU 45382	China	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
JQ937255	CCBAU 45377	China	<i>Arachis hypogaea</i>	No info	Zhang,D., et al. Unpublished
JQ349515	DW12.5	Brazil	<i>Dimorphandra wilsonii</i>	nodules	Barcelar-Fonseca,M., et al. Unpublished
JQ349514	DW10.1	Brazil	<i>Dimorphandra wilsonii</i>	nodules	Barcelar-Fonseca,M., et al. Unpublished
FR823313	STM4798	French Guiana	<i>Macroptilium atropurpureum</i>	No info	Mishra,R.P., et al. 2012
FR823312	STM4804	French Guiana	<i>Macroptilium atropurpureum</i>	No info	Mishra,R.P., et al. 2012
FR823311	STM4811	French Guiana	<i>Macroptilium atropurpureum</i>	No info	Mishra,R.P., et al. 2012
FM202376	22LB1	Portugal:Breja	<i>Lotus uliginosus</i>	nodules	Lorite,M.J., et al. 2012
FM202375	16LBIV	Portugal:Breja	<i>Lotus corniculatus</i>	nodules	Lorite,M.J., et al. 2012
FM202374	21LBIV	Portugal:Breja	<i>Lotus corniculatus</i>	nodules	Lorite,M.J., et al. 2012
FM202373	15LBIV	Portugal:Breja	<i>Lotus corniculatus</i>	nodules	Lorite,M.J., et al. 2012
FM202372	3LBIV	Portugal:Breja	<i>Lotus corniculatus</i>	nodules	Lorite,M.J., et al. 2012
FM202371	9LBC	Portugal:Povoa	<i>Lotus uliginosus</i>	nodules	Lorite,M.J., et al. 2012
FM202370	3LBC	Portugal:Povoa	<i>Lotus uliginosus</i>	nodules	Lorite,M.J., et al. 2012
FM202369	NZP2309	No Country info	No Host info	nodules	Lorite,M.J., et al. 2012
JN578860	SUTNE1	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578859	DOA10	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578858	DOA9	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578857	DOA8	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
JN578856	DOA7	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578855	DOA6	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578854	DOA4	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578853	DOA3	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578852	DOA2	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578851	DOA1	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578850	SUTN9_5	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578849	SUTN9_4	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578848	SUTN9_3	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578847	SUTN9_2	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578846	SUTN9_1	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578845	SUTN8_2	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578844	SUTN8_1	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578843	SUTN7_2	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578842	SUTN7_1	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578841	SUTN6_2	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578840	SUTN6_1	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578839	SUTN5_6	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578838	SUTN5_5	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578837	SUTN5_3	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578836	SUTN5_1	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578835	SUTN4_3	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578834	SUTN4_1	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578833	SUTN3_1	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578832	SUTN2_4	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578831	SUTN2_3	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578830	SUTN2_2	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578829	SUTN2_1	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578828	SUTN1_13	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578827	SUTN1_9	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578826	SUTN1_8	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578825	SUTN1_7	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578824	SUTN1_6	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578823	SUTN1_4	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578822	SUTN1_3	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
JN578821	SUTN1_2	Thailand	<i>Aeschynomene americana</i>	root nodules	Noisangiam,R., Unpublished
AB542355	TSA44	Japan	No Host info	rice paddy soil	Ishii,S., et al. 2011
AB542354	TSA43	Japan	No Host info	rice paddy soil	Ishii,S., et al. 2011
AB542352	TSA27s	Japan	No Host info	rice paddy soil	Ishii,S., et al. 2011
AB542351	TSA27b	Japan	No Host info	rice paddy soil	Ishii,S., et al. 2011
AB542350	TSA26	Japan	No Host info	rice paddy soil	Ishii,S., et al. 2011
AB542345	TSA15y	Japan	No Host info	rice paddy soil	Ishii,S., et al. 2011
AB367745	EPxn1	Japan	<i>Entada kosuensis</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367744	MAFF 210197	No Country info	No Host info	No info	Islam,M.S. and Kawasaki,H., Unpublished
AB367743	MAFF 210190	No Country info	No Host info	No info	Islam,M.S. and Kawasaki,H., Unpublished
AB367741	KO23	Japan	<i>Erythrina variegata</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367740	KO20A	Japan	<i>Erythrina variegata</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367739	KO19A	Japan	<i>Acacia</i> sp.	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367738	KO17	Japan	<i>Lespedeza pilosa</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367737	KO14	Japan	<i>Desmodium canum</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367736	KO13	Japan	<i>Pongamia pinnata</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367735	KO11	Japan	<i>Pongamia pinnata</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367734	KO5	Japan	<i>Pongamia pinnata</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367733	KO3H	Japan	<i>Pueraria montana</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367732	KO3G	Japan	<i>Pueraria montana</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367731	KO3F	Japan	<i>Pueraria montana</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367730	KO3E	Japan	<i>Pueraria montana</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367729	KO3D	Japan	<i>Pueraria montana</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367728	KO3C	Japan	<i>Pueraria montana</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367727	KO3B	Japan	<i>Pueraria montana</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
AB367726	KO3A	Japan	<i>Pueraria montana</i>	root nodule	Islam,M.S. and Kawasaki,H., Unpublished
CP011360	USDA 110	USA	No Host info	No info	Davis-Richardson,A.G., et al. 2016
LFJC01000003	TSA1	Japan	No Host info	soil	Ishii,S., et al. Unpublished
JXDL01000001	AT1	Japan	sweet potato	soil	Okubo,T. and Minamisawa,K., Unpublished
LFJD01000004	UNPA324	Japan	No Host info	soil	Jang,J., et al. Unpublished
CP013127	USDA 122	USA	<i>Glycine max</i>	soil	Sugawara,M., Unpublished
CP013949	CCGE-LA001	Mexico	<i>Phaseolus microcarpus</i>	root nodule	Servin-Garciduenas,L.E.,et al. 2014
JXJM01000001	DOA1	Thailand	<i>Aeschynomene americana</i>	rhizosphere soil	Okubo,T. and Minamisawa,K., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
LAXE01000001	SUTN9-2	Thailand	<i>Aeschynomene americana</i>	nodule	Piromyong, P., et al. 2015
CP010313	E109	Argentina	<i>Glycine max</i>	root nodule	Torres, D., et al. 2015
CP029426	39S1MB	Canada	<i>Glycine max</i>	root nodule	Bromfield, E.S.P., et al. 2017
CP029425	OO99	Canada	<i>Glycine max</i>	root nodule	Yu, X., Cloutier, S., et al. 2014
NZ_LFJC01000003	TSA1	Japan	No Host info	soil	Ishii, S., et al. Unpublished
LGUJ01000050	Is-1	Japan	No Host info	No info	Sakata, T., et al. 2015
LGUJ01000000	Is-1	Japan	No Host info	No info	Sakata, T., et al. 2015
NZ_LS398110	No Strain info	No Country info	No Host info	No info	Gully, D., 2018
LS398110	No Strain info	No Country info	No Host info	No info	Gully, D., 2018
CP017637	J5	Japan	<i>Glycine max</i>	root nodules	Kanehara, K., Unpublished
CP030050	CCBAU 051107	China	<i>Arachis hypogaea</i>	No info	Li, Y., Unpublished
CP022222	CCBAU 051011	China	<i>Arachis hypogaea</i>	nodule	Sui, X. and Li, Y., Unpublished
NZ_CP029426	39S1MB	Canada	<i>Glycine max</i>	root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield, E.S.P., et al. 2019
NZ_LFLZ01000010	SEMIA 6148	Brazil	<i>Neonotonia wightii</i>	nodule	Delamuta, J.R., et al. 2015
CP030038	CCBAU 51765	China	<i>Arachis hypogaea</i>	nodule	Li, Y., Unpublished
NZ_VKHP01000057	UFLA03-164	Brazil	<i>Vigna unguiculata</i>	soil	Cabral Michel, D., et al. 2020
NZ_PGVG01000016	INPA54B	Brazil	forest legume species	root nodules	Costa, E.M., et al. Unpublished
NZ_JACEGD010000022	CNPSo 4019 ^T	Australia	No Host info	root nodule	Klepa, M.S., Unpublished
NZ_JACCHP010000001	CNPSo 4010 ^T	Australia	No Host info	root nodule	Klepa, M.S., Unpublished
NZ_JACCHQ010000018	CNPSo 4016 ^T	Australia	No Host info	root nodule	Klepa, M.S., Unpublished
NZ_JAANI010000004	INPA 394B ^T	Brazil	<i>Campsiandra laurifolia</i>	nodules	Cabral Michel, D., et al. 2021
NZ_JAAVLW010000001	WSM 1744 ^T	Australia	<i>Muelleranthus trifoliolatus</i>	root nodule	Klepa, M.S., Unpublished
NZ_JAAVLX010000005	WSM 1791 ^T	Australia	<i>Indigofera</i> sp.	root nodule	Klepa, M.S., Unpublished
NZ_VSTH01000149	aSej3 ^T	Tunisia	<i>Lupinus angustifolius</i>	nodule	Off, K., et al. Unpublished
NZ_CP041656	58S1	Canada	<i>Glycine max</i>	Root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Wasai-Hara, S., et al. 2020
NZ_LFJD01000004	UNPA324	Japan: Niigata	No Host info	soil	Jang, J., et al. Unpublished
NZ_CP029425	OO99	Canada	<i>Glycine max</i>	root nodule	Nguyen, H.D.T., et al. 2018
NZ_LFIP02000006	SEMIA 6208	No Country info	<i>Grona heterocarpus</i>	nodule	Delamuta, J.R.M., et al. 2015
NZ_LVEM01000003	BR 446	Brazil	<i>Stylosanthes guianensis</i>	nodule	Hungria, M., Unpublished
NZ_LFIQ01000027	PAC 48	Costa Rica	<i>Pachyrhizus erosus</i>	nodule	Delamuta, J.R., et al. 2015
JACCHP010000000	CNPSo 4010	Australia	No Host info	root nodule	Klepa, M.S., Unpublished
JACEGD010000000	CNPSo 4019	Australia	No Host info	root nodule	Klepa, M.S., Unpublished
JACCHQ010000000	CNPSo 4016	Australia	No Host info	root nodule	Klepa, M.S., Unpublished
JAANI010000000	INPA 394B	Brazil	<i>Campsiandra laurifolia</i>	nodules	Cabral Michel, D., et al. 2020
CP041656	58S1	Canada	<i>Glycine max</i>	Root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Wasai-Hara, S., et al. 2020
JAAVLX010000000	WSM 1791	Australia	<i>Indigofera</i> sp.	root nodule	Klepa, M.S., Unpublished
JAAVLW010000000	WSM 1744	Australia	<i>Muelleranthus trifoliolatus</i>	root nodule	Klepa, M.S., Unpublished
VKHP01000000	UFLA03-164	Brazil	<i>Vigna unguiculata</i>	soil	Michel, D., et al. 2020
VSTH01000000	aSej3	Tunisia	<i>Lupinus angustifolius</i>	nodule	Off, K., et al. Unpublished
VSTH01000149	aSej3	Tunisia	<i>Lupinus angustifolius</i>	nodule	Off, K., et al. Unpublished
PGVG01000000	INPA54B	Brazil	forest legume species	root nodules	Costa, E.M., et al. Unpublished
PGVG01000016	INPA54B	Brazil	forest legume species	root nodules	Costa, E.M., et al. Unpublished
LFJC01000000	TSA1	Japan	No Host info	soil	Ishii, S., et al. Unpublished
LSEF01000026	BR 10247	Brazil	<i>Centrolobium paraense</i>	root nodule	Simoes-Araujo, J.L., et al. Unpublished
LUUB01000073	BR 10245	Brazil	<i>Centrolobium paraense</i>	root nodules	Simoes-Araujo, J.L., et al. Unpublished
LJYG01000013	BR 3351	Brazil	<i>Vigna unguiculata</i>	cowpea nodules	De Araujo, J.L. and Zilli, J.E., Unpublished
NZ_JABWSX020000001	66S1MB	Canada	<i>Glycine max</i>	Root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield, E.S.P. and Cloutier, S., 2021
NZ_JAAOLE030000001	1S1	Canada	<i>Glycine max</i>	Root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield, E.S.P. and Cloutier, S., 2021
JABWSX020000000	66S1MB	Canada	<i>Glycine max</i>	Root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield, E.S.P. and Cloutier, S., 2021
JAAOLE030000000	1S1	Canada	<i>Glycine max</i>	Root nodule from <i>G. max</i> plant inoculated with root zone soil from <i>Amphicarpa bracteata</i>	Bromfield, E.S.P. and Cloutier, S., 2021
NZ_KB900701	USDA 76	USA	<i>Glycine max</i>	Virginia	Kypides, N., et al. 2013
NZ_AXAU010000021	WSM 1741	Australia	<i>Rhynchosia minima</i>	No info	
NZ_CAADFC020000008	CI-1B	No Country info	No Host info	pigeonpea root nodule (farming soil)	Pothier, F.J., et al. 2019
NZ_KB902787	WSM2793	South Africa	<i>Rhynchosia totta</i>	Onderstepoort	Kypides, N., et al. 2013
NZ_JH600073	WSM1253	No Country info	No Host info	not provided; submitted under MIGS 2.1	Tiwari, R., et al. 2015
NC_004463	USDA110	No Country info	No Host info	No info	Kaneko, T., et al. 2002
NZ_MOXO01000020	TnphoA 33	Brazil	No Host info	soil	Lopes, E.M., et al. Unpublished
CAADFC020000000	CI-1B	No Country info	No Host info	pigeonpea root nodule (farming soil)	Pothier, F.J., et al. 2019
CAADFC020000008	CI-1B	No Country info	No Host info	pigeonpea root nodule (farming soil)	Pothier, F.J., et al. 2019
LWIG01000010	p9-20	Brazil	sugarcane cultivar RB867515	roots	Rouws, L.F.M., et al. Unpublished
LWIG01000056	p9-20	Brazil	sugarcane cultivar RB867515	roots	Rouws, L.F.M., et al. Unpublished
BA000040	USDA110	No Country info	No Host info	No info	Kaneko, T., et al. 2002
LNCU01000039	BR 10303	Brazil	<i>Centrolobium paraense</i>	plant root nodules	Zelli, J.E., et al. Unpublished
LLYA01000189	Ro19	Morocco	<i>Retama monosperma</i>	root nodules	Duran, D., et al. Unpublished
LLYB01000119	CCBAU 23086	China	<i>Lablab purpureus</i>	root nodules	Duran, D., et al. Unpublished
LLXZ01000033	PAC68	Honduras	<i>Pachyrhizus erosus</i>	root nodules	Duran, D., et al. Unpublished
LLXX01000167	LmjM3	Spai	<i>Lupinus mariae-josephae</i>	root nodules	Duran, D., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
LJYG01000019	BR 3351	Brazil	<i>Vigna unguiculata</i>	cowpea nodules	De Araujo,J.L. and Zilli,J.E., Unpublished
LJYG01000065	BR 3351	Brazil	<i>Vigna unguiculata</i>	cowpea nodules	De Araujo,J.L. and Zilli,J.E., Unpublished
CP000494	BTAi1	No Country info	No Host info	No info	Giraud,E., et al. 2007
NZ_VSST01000027	BTA-1	Spain	<i>Chamaecytisus prolifer</i>	nodule	Off,K., et al. Unpublished
VSST01000000	BTA-1	Spain	<i>Chamaecytisus prolifer</i>	nodule	Off,K., et al. Unpublished
NZ_CP076134	S2-20-1	China	No Host info	soil	Jin,L., Unpublished
CP076134	S2-20-1	China	No Host info	soil	Jin,L., Unpublished
NZ_CP058354	5038	China	<i>Glycine max</i>	root nodule	Li,J. and Zhu,J., Unpublished
NZ_CP011360	USDA 110	USA: Florida	No Host info	No info	Davis-Richardson,A.G., et al. 2016
NC_017249	USDA 6	No Country info	No Host info	No info	Kaneko,T., et al. 2011
NZ_CP067100	38_8	Australia	<i>Acacia acuminata</i>	legume nodule	Simonsen,A.K., Unpublished
NZ_CP067102	36_1	Australia	<i>Acacia acuminata</i>	legume nodule	Simonsen,A.K., Unpublished
NZ_CP067101	41_2	Australia	<i>Acacia acuminata</i>	legume nodule	Simonsen,A.K., Unpublished
NZ_CP067041	65_7	Australia	<i>Acacia acuminata</i>	legume nodule	Simonsen,A.K., Unpublished
NZ_CP030050	CCBAU 051107	China	<i>Arachis hypogaea</i>	No info	Li,Y., Unpublished
NZ_JAATTO010000053	INPA 384B	Brazil	<i>Campsiandra laurifolia</i>	nodules	Cabral Michel,D., et al. 2021
NZ_WQNF01000050	1040	Dominican Republic: Azua	<i>Cajanus cajan</i>	No info	Flores-Felix,J.D., et al. Unpublished
NZ_WQNE01000007	1010	Dominican Republic: Azua	<i>Cajanus cajan</i>	No info	Flores-Felix,J.D., et al. Unpublished
NZ_WQNG01000026	3051	Dominican Republic: Azua	<i>Cajanus cajan</i>	No info	Flores-Felix,J.D., et al. Unpublished
NZ_VSS01000037	CTAW71	Morocco	<i>Cytisus villosus</i>	nodule	Off,K., et al. Unpublished
NZ_VSSR01000014	CTAW11	Morocco	<i>Cytisus villosus</i>	nodule	Off,K., et al. Unpublished
NZ_CP042968	LMTR 21	Peru	<i>Phaseolus lunatus</i>	root nodule	Ormeno-Orrillo,E.,et al. Unpublished
NZ_BJNL01000061	NBRC 14791	No Country info	No Host info	No info	Hosoyama,A., et al. Unpublished
NZ_BJNK01000065	NBRC 14783	No Country info	No Host info	No info	Hosoyama,A., et al. Unpublished
NZ_RDQF01000014	LMG 28791	Namibia	<i>Arachis</i>	nodules	Li,Y., Unpublished
NZ_PYCN01000042	RST91	Algeria	<i>Retama sphaerocarpa</i>	root nodule	Ahnia,H., et al. 2018
NZ_LWIG01000056	p9-20	Brazil	sugarcane cultivar RB867515	roots	Unpublished
NZ_LWIG01000010	p9-20	Brazil	sugarcane cultivar RB867515	roots	Rouws,L.F.M., Unpublished
NZ_MKF01000003	SEMI 6399	Brazil	<i>Lonchocarpus costatus</i>	soil	Hungria,M., Unpublished
NZ_LNCU01000039	BR 10303	Brazil	<i>Centrolobium paraense</i>	root nodules	Zelli,J.E., et al. Unpublished
NZ_CP016428	LMTR 13	Peru	<i>Phaseolus lunatus</i>	root nodule	Ormeno-Orrillo,E., et al. Unpublished
NZ_LUUB01000073	BR 10245	Brazil	<i>Centrolobium paraense</i>	root nodules	Simoes-Araujo,J.L., et al. Unpublished
NZ_LSEF01000026	BR 10247	Brazil	<i>Centrolobium paraense</i>	root nodule	Simoes-Araujo,J.L., et al. Unpublished
NZ_LLYB01000119	CCBAU 23086	China	<i>Lablab purpureus</i>	root nodules	Duran,D.,et al. Unpublished
NZ_LLXX01000167	LmjM3	Spain	<i>Lupinus mariae-josephae</i>	root nodules	Duran,D.,et al. Unpublished
NZ_LLYA01000189	Ro19	Morocco	<i>Retama monosperma</i>	root nodules	Duran,D.,et al. Unpublished
NZ_LLXZ01000033	PAC68	Honduras	<i>Pachyrhizus erosus</i>	root nodules	Duran,D.,et al. Unpublished
NZ_LJYG01000065	BR 3351	Brazil	<i>Vigna unguiculata</i>	cowpea nodules	De Araujo,J.L. and Zilli,J.E., Unpublished
NZ_LJYG01000019	BR 3351	Brazil	<i>Vigna unguiculata</i>	cowpea nodules	De Araujo,J.L. and Zilli,J.E., Unpublished
NZ_LJYG01000013	BR 3351	Brazil	<i>Vigna unguiculata</i>	cowpea nodules	De Araujo,J.L. and Zilli,J.E., Unpublished
NZ_CP010313	E109	Argentina	<i>Glycine max</i>	Glycine max nodules	Torres,D., et al. 2015
NZ_KI519399	22	No Country info	No Host info	No info	Roden,E., et al. 2013
NC_020453	S58	No Country info	No Host info	No info	Okubo,T., et al. 2013
NZ_CM001442	WSM471	No Country info	No Host info	not provided; submitted under MICS 2.1	Lucas,S., et al. Unpublished
NZ_SPQT01000005	CNPSo 3448	USA	<i>Chamaecrista fasciculata</i>	No info	Klepa,M.S., et al. Unpublished
NZ_SPQU01000030	CNPSo 3424	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.O., et al. Unpublished
NZ_SPQS01000036	CNPSo 3426	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.O., et al. Unpublished
CP067102	36_1	Australia	<i>Acacia acuminata</i>	legume nodule	Simonsen,A.K., Unpublished
CP067101	41_2	Australia	<i>Acacia acuminata</i>	legume nodule	Simonsen,A.K., Unpublished
CP067100	38_8	Australia	<i>Acacia acuminata</i>	legume nodule	Simonsen,A.K., Unpublished
CP067041	65_7	Australia	<i>Acacia acuminata</i>	legume nodule	Simonsen,A.K., Unpublished
JAATTO010000000	INPA 384B	Brazil	<i>Campsiandra laurifolia</i>	nodules	Cabral Michel,D., et al. 2020
AP012279	S23321	No Country info	No Host info	No info	Okubo,T., et al. 2012
AP013103	USDA 61	No Country info	No Host info	No info	Miyazawa,K., et al. Unpublished
WQNF01000000	1040	Dominican Republic: Azua	<i>Cajanus cajan</i>	No info	Flores-Felix,J.D., et al. Unpublished
WQNE01000000	1010	Dominican Republic: Azua	<i>Cajanus cajan</i>	No info	Flores-Felix,J.D., et al. Unpublished
WQNG01000000	3051	Dominican Republic: Azua	<i>Cajanus cajan</i>	No info	Flores-Felix,J.D., et al. Unpublished
VSS01000000	CTAW71	Morocco	<i>Cytisus villosus</i>	nodule	Off,K., et al. Unpublished
VSS01000037	CTAW71	Morocco	<i>Cytisus villosus</i>	nodule	Off,K., et al. Unpublished
VSSR01000000	CTAW11	Morocco	<i>Cytisus villosus</i>	nodule	Off,K., et al. Unpublished
VSSR01000014	CTAW11	Morocco	<i>Cytisus villosus</i>	nodule	Off,K., et al. Unpublished
BJNL01000000	NBRC 14791	No Country info	No Host info	No info	Hosoyama,A., et al. Unpublished
BJNL01000061	NBRC 14791	No Country info	No Host info	No info	Hosoyama,A., et al. Unpublished
BJNK01000000	NBRC 14783	No Country info	No Host info	No info	Hosoyama,A., et al. Unpublished
BJNK01000065	NBRC 14783	No Country info	No Host info	No info	Hosoyama,A., et al. Unpublished
SPQS01000000	CNPSo 3426	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.O., et al. Unpublished
SPQS01000036	CNPSo 3426	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.O., et al. Unpublished
SPQT01000000	CNPSo 3448	USA	<i>Chamaecrista fasciculata</i>	No info	Klepa,M.S., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
SPQT01000005	CNPSo 3448	USA	<i>Chamaecrista fasciculata</i>	No info	Klepa,M.S., et al. Unpublished
SPQU01000000	CNPSo 3424	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.O., et al. Unpublished
SPQU01000030	CNPSo 3424	USA	<i>Chamaecrista fasciculata</i>	No info	Urquiaga,M.C.O., et al. Unpublished
LBJC01000002	CCBAU 53390	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
RDQF01000000	LMG 28791	Namibia	<i>Arachis</i>	nodules	Li,Y., Unpublished
RDQF01000014	LMG 28791	Namibia	<i>Arachis</i>	nodules	Li,Y., Unpublished
LWIG01000000	p9-20	Brazil	sugarcane	roots	Rouws,L.F.M., et al. Unpublished
LGHL01000034	NAS80.1	Brazil	<i>Lupinus albus</i>	root nodule	Granada,C., et al. Unpublished
LGHK01000001	NAS96.2	Brazil	<i>Lupinus albus</i>	root nodule	Granada,C., et al. Unpublished
AP012206	USDA 6	No Country info	No Host info	No info	Kaneko,T., et al. 2011
LSEF01000000	BR 10247	Brazil	<i>Centrolobium paraense</i>	root nodule	Simoes-Araujo,J.L., et al. Unpublished
LUUB01000000	BR 10245	Brazil	<i>Centrolobium paraense</i>	root nodules	Simoes-Araujo,J.L., et al. Unpublished
LNCU01000000	BR 10303	Brazil	<i>Centrolobium paraense</i>	plant root nodules	Zelli,J.E., et al. Unpublished
LLYA01000000	Ro19	Morocco	<i>Retama monosperma</i>	root nodules	Duran,D.,et al. Unpublished
LLYB01000000	CCBAU 23086	China: Anhui	<i>Lablab purpureus</i>	root nodules	Duran,D.,et al. Unpublished
LLXZ01000000	PAC68	Honduras	<i>Pachyrhizus erosus</i>	root nodules	Duran,D.,et al. Unpublished
LLXX01000000	LmjM3	Spain	<i>Lupinus mariae-josephae</i>	root nodules	Duran,D.,et al. Unpublished
LJYG01000000	BR 3351	Brazil	<i>Vigna unguiculata</i>	cowpea nodules	De Araujo,J.L. and Zilli,J.E., Unpublished
CP086136	144S4	Canada	<i>Glycine max</i>	Root nodule from G. max plant inoculated with root zone soil from A. bracteata	Bromfield,E.S.P. and Cloutier,S., Unpublished
NZ_JABXFA020000001	162S2	Canada	<i>Glycine max</i>	Root nodule from G. max plant inoculated with root zone soil from D. canadense	Bromfield,E.S.P. and Cloutier,S., Unpublished
NZ_JAGEPA020000001	12S5	Canada	<i>Glycine max</i>	root nodule from G. max plant inoculated with root zone soil from Apios americana	Bromfield,E.S.P. and Cloutier,S., Unpublished
JABXFA020000000	162S2	Canada	<i>Glycine max</i>	Root nodule from G. maxplant inoculated with root zone soil from D. canadense	Bromfield,E.S.P. and Cloutier,S., Unpublished
JAGEPA020000000	12S5	Canada	<i>Glycine max</i>	root nodule from G. max plant inoculated with root zone soil from Apios americana	Bromfield,E.S.P. and Cloutier,S., Unpublished
NZ_NAFI01000185	UBMA195	Algeria	<i>Lupinus angustifolius</i>	root nodules	Chekireb,D., et al. 2017
NZ_BMHC01000032	CGMCC 1.15034	No Country info	No Host info	No info	Wu,L. and Ma,J., 2019
NZ_JAAOLD020000001	41S5	Canada	<i>Glycine max</i>	Root nodule from G. maxplant inoculated with root zone soil from Apios americana	Bromfield,E.S.P. and Cloutier,S., Unpublished
NZ_JABFDP010000056	LMG 8443	No Country info	<i>Aeschynomene indica</i>	No info	Zhang,Z., Unpublished
NZ_JABFDP010000024	LMG 8443	No Country info	<i>Aeschynomene indica</i>	No info	Zhang,Z., Unpublished
NZ_JABFDO010000044	81013	China	<i>Aeschynomene indica</i>	No info	Zhang,Z., Unpublished
NZ_JABFDN010000047	83012	China	<i>Aeschynomene indica</i>	No info	Zhang,Z., Unpublished
NZ_VLLA01000047	CGMCC 1.10948	No Country info	No Host info	No info	Whitman,W.B.,et al. 2015
NZ_VLKL01000042	CGMCC 1.10947	No Country info	No Host info	No info	Whitman,W.B.,et al. 2015
NZ_CAADFB020000012	CI-41S	No Country info	No Host info	pigeonpea root nodule (farming soil)	Pothier,F.J., 2019
NZ_CP030052	CCBAU 51649	No Country info	peanut	roots of peanut	Li,Y., Unpublished
NZ_CP030054	CCBAU 51670	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
NZ_LBJC01000002	CCBAU 53390	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
NZ_CP022221	CCBAU 51778	China	<i>Arachis hypogaea</i>	nodule	Sui,X. and Li,Y., Unpublished
NZ_CP022220	CCBAU 53363	No Country info	peanut	roots	Sui,X. and Li,Y., Unpublished
NZ_CP022219	CCBAU 53363	No Country info	peanut	roots	Sui,X. and Li,Y., Unpublished
NZ_FPBO01000029	LMG 26795	No Country info	No Host info	No info	Varghese,N., 2016
NZ_FMAI01000005	ERR11	No Country info	No Host info	No info	Varghese,N., 2016
NZ_NAFD01000191	UBMA171	Algeria	<i>Lupinus micranthus</i>	root nodules	Chekireb,D., et al. 2017
NZ_NAFG01000177	UBMA183	Algeria	<i>Lupinus micranthus</i>	root nodules	Chekireb,D., et al. 2017
NZ_NAEZ01000178	UBMA052	Algeria	<i>Lupinus micranthus</i>	root nodules	Chekireb,D., et al. 2017
NZ_NAEY01000172	UBMA051	Algeria	<i>Lupinus angustifolius</i>	No info	Chekireb,D., et al. 2017
NZ_NAFL01000191	UBMA197	Algeria	<i>Lupinus angustifolius</i>	root nodules	Chekireb,D., et al. 2017
NZ_NAFF01000106	UBMA182	Algeria	<i>Lupinus micranthus</i>	root nodules	Chekireb,D., et al. 2017
NZ_NAFC01000141	UBMA122	Algeria	<i>Lupinus micranthus</i>	root nodules	Chekireb,D., et al. 2017
NZ_NAFJ01000105	UBMA510	Algeria	<i>Lupinus micranthus</i>	No info	Chekireb,D., et al. 2017
NZ_NAFK01000124	UBMAN05	Algeria	<i>Lupinus micranthus</i>	No info	Chekireb,D., et al. 2017
NZ_NAFE01000221	UBMA181	Algeria	<i>Lupinus micranthus</i>	root nodules	Chekireb,D., et al. 2017
NZ_NAFH01000175	UBMA192	Algeria	<i>Lupinus angustifolius</i>	root nodules	Chekireb,D., et al. 2017
NZ_NAFB01000169	UBMA061	Algeria	<i>Lupinus angustifolius</i>	root nodules	Chekireb,D., et al. 2017
NZ_NAFA01000198	UBMA060	Algeria	<i>Lupinus angustifolius</i>	No info	Chekireb,D., et al. 2017
NZ_NAEX01000182	UBMA050	Algeria	<i>Lupinus angustifolius</i>	No info	Chekireb,D., et al. 2017
NZ_LGHL01000034	NAS80.1	Brazil	<i>Lupinus albus</i>	root nodule	Granada,C., et al. Unpublished
NZ_FMAE01000036	CCBAU 10071	No Country info	No Host info	No info	Varghese,Neha., 2016
NZ_LGHK01000001	NAS96.2	Brazil	<i>Lupinus albus</i>	root nodule	Granada,C., et al. Unpublished
NZ_JXDL01000001	AT1	Japan	sweet potato	soil	Okubo,T. and Minamisawa,K., Unpublished
NZ_JXJM01000001	DOA1	Thailand	<i>Aeschynomene americana</i>	rhizosphere soil	Okubo,T. and Minamisawa,K., Unpublished
NZ_ADOU02000002	SEMIA 5080	Brazil	No Host info	Glycine max	Siqueira,A.F., et al. 2014
NZ_CP007569	SEMIA 5079	No Country info	No Host info	No info	Siqueira,A.F., et al. 2014
NZ_AXAV01000040	USDA 6	Japan	<i>Glycine max</i>	No info	Kyrpides,N.,et al. 2013
NZ_AUEZ01000168	Ai1a-2	Costa Rica	<i>Andira inermis</i>	No info	Tian,R., et al. 2015
NZ_AUEZ01000127	Ai1a-2	Costa Rica	<i>Andira inermis</i>	No info	Tian,R., et al. 2015
NZ_AXAZ01000002	WSM1743	Australia	<i>Indigofera</i> sp.	No info	Kyrpides,N.,et al. 2013
NZ_KI911783	WSM1417	Chile	<i>Lupinus</i>	not provided; submitted under MIGS 2.1	Reeve,W.,et al. 2013
NZ_KB890539	WSM4349	USA	<i>Acmispon glaber</i>	No info	Kyrpides,N.,et al. 2013

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
NZ_KI421499	CB756	No Country info	No Host info	No info	Kyrpides,N.,et al. 2013
JACRAW010000000	No Strain info	USA	No Host info	groundwater	He,C.Y., et al. Unpublished
CP030047	CCBAU 53421	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
CP030037	CCBAU 51753	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
CP030036	CCBAU 21365	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
BMHC01000000	CGMCC 1.15034	No Country info	No Host info	No info	Wu,L. and Ma,J., et al. 2019
BMHC01000032	CGMCC 1.15034	No Country info	No Host info	No info	Wu,L. and Ma,J., et al. 2019
LFJB01000083	UNPF46	Japan	No Host info	soil	Ishii,S., Unpublished
CAADFB020000000	CI-41S	No Country info	No Host info	pingeonea root nodule (farming soil)	Pothier,F.J.,et al. 2019
CAADFB020000012	CI-41S	No Country info	No Host info	pingeonea root nodule (farming soil)	Pothier,F.J.,et al. 2019
CP030054	CCBAU 51670	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
CP030052	CCBAU 51649	No Country info	peanut	roots of peanut	Li,Y., Unpublished
LBJC010000000	CCBAU 53390	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
LT859959	ORS 285	No Country info	No Host info	No info	Gully,D.,et al. 2017
LGHM01000016	AS23.2	Brazil	<i>Lupinus albescent</i>	No info	Granada,C., et al. Unpublished
LWUI01000018	BLY3-8	Myanmar	No Host info	Glycine max nodule	Zaw Htwe,A., et al. Unpublished
LXEM01000018	BL Y6-1	Myanmar	No Host info	Glycine max nodule	Zaw Htwe,A., et al. Unpublished
LUKO01000203	CCNWSX0360	China	<i>Vigna unguiculata</i>	root nodule	Liang,J., et al. Unpublished
LLXY01000011	LmjM6	Spain	<i>Lupinus mariae-josephae</i>	root nodules	Duran,D., et al. Unpublished
LJYE01000081	BR3262	Brazil	<i>Vigna unguiculata</i>	nodules	Simoës-Araujo,J.L. and Zilli,J.E., Unpublished
LJYF01000029	BR3267	Brazil	<i>Vigna unguiculata</i>	cowpea nodules	Simoës-Araujo,J.L. and Zilli,J.E., Unpublished
JGCL01000038	FN1	Canada	No Host info	field	Kohlmeier,M.G., et al. 2015
CU234118	ORS278	No Country info	No Host info	No info	Giraud,E., et al. 2007
JRPN01000070	Is-34	Japan	No Host info	Glycine max nodule	Tsurumaru,H.,et al. 2014
ADOU02000000	SEMIA 5080	Brazil	No Host info	Glycine max	Siqueira,A.F., et al. 2014
ADOU02000002	SEMIA 5080	Brazil	No Host info	Glycine max	Siqueira,A.F., et al. 2014
CP007569	SEMIA 5079	No Country info	No Host info	No info	Siqueira,A.F., et al. 2014
CAFK01000249	STM 3843	No Country info	No Host info	No info	Mornico,D., et al. 2011
CAFH01000025	ORS 285	No Country info	No Host info	No info	Mornico,D., et al. 2011
NZ_CP086136	144S4	Canada	<i>Glycine max</i>	Root nodule from G. max plant inoculated with root zone soil from A. bracteata	Bromfield,E.S.P. and Cloutier,S., Unpublished
NZ_JAGKJ010000038	CNPSo 4026	Australia	No Host info	root nodule	Klepa,M., et al. Unpublished
NZ_JAGKJK010000007	WSM 1738	Australia	No Host info	root nodule	Klepa,M., et al. Unpublished
NZ_JAGKJL010000082	WSM 4400	South Africa	No Host info	root nodule	Klepa,M., et al. Unpublished
JAGKJL010000000	WSM 4400	South Africa	No Host info	root nodule	Klepa,M., et al. Unpublished
JAGKJK010000000	WSM 1738	Australia	No Host info	root nodule	Klepa,M., et al. Unpublished
JAGKJ010000000	CNPSo 4026	Australia	No Host info	root nodule	Klepa,M., et al. Unpublished
NZ_JADYVR010001027	NBAIM08	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JAGEMJ020000001	38S5	Canada	<i>Glycine max</i>	Root nodule from G. max plant inoculated with root zone soil from Aplos americana	Bromfield,E.S.P. and Cloutier,S., Unpublished
NZ_JAALF030000012	2S1	Canada	<i>Glycine max</i>	Root nodule from G. max plant inoculated with root zone soil from A. bracteata	Bromfield,E.S.P. and Cloutier,S., Unpublished
NZ_JAALC040000001	1S5	Canada	<i>Glycine max</i>	Root nodule from G. max plant inoculated with root zone soil from Aplos americana	Bromfield,E.S.P. and Cloutier,S., Unpublished
NZ_JACBFH030000001	323S2	Canada	<i>Glycine max</i>	No info	Bromfield,E.S.P. and Cloutier,S., Unpublished
JAGEMJ020000000	38S5	Canada	<i>Glycine max</i>	Root nodule from G. max plant inoculated with root zone soil from Aplos americana	Bromfield,E.S.P. and Cloutier,S., Unpublished
JACBFH030000000	323S2	Canada	<i>Glycine max</i>	No info	Bromfield,E.S.P. and Cloutier,S., Unpublished
JAAOLC040000000	1S5	Canada	<i>Glycine max</i>	Root nodule from G. max plant inoculated with root zone soil from Aplos americana	Bromfield,E.S.P. and Cloutier,S., Unpublished
JAAOLF030000000	2S1	Canada	<i>Glycine max</i>	Root nodule from G. max plant inoculated with root zone soil from A. bracteata	Bromfield,E.S.P. and Cloutier,S., Unpublished
NZ_CP017637	J5	Japan	<i>Glycine max</i>	root nodules	Kanehara,K., Unpublished
NZ_AP013103	USDA 61	No Country info	No Host info	No info	Miyazawa,K., et al. Unpublished
NZ_JACOFR010000024	BR 10289	Brazil	<i>Saccharum</i> sp.	Non-lignified roots	de Matos,G.F., et al. 2021
NZ_JACOFQ010000006	BR 10261	Brazil	<i>Saccharum</i> sp.	surface disinfected roots	de Matos,G.F., et al. 2021
JACOFR010000000	BR 10289	Brazil	<i>Saccharum</i> sp.	Non-lignified roots	de Matos,G.F., et al. 2021
JACOFQ010000000	BR 10261	Brazil	<i>Saccharum</i> sp.	surface disinfected roots	de Matos,G.F., et al. 2021
NZ_CP076136	S2-11-4	China	No Host info	sediment	Jin,L., Unpublished
CP076136	S2-11-4	China	No Host info	sediment	Jin,L., Unpublished
NZ_JAFCKC010000125	SZCCT0342	China	No Host info	soil	Tao,J., ISME J In press
NZ_JAFCKI010000135	SZCCT0293	China	No Host info	soil	Tao,J., ISME J In press
NZ_JAFCKL010000176	SZCCT0285	China	No Host info	soil	Tao,J., ISME J In press
NZ_JAFCKO010000157	SZCCT0233	China	No Host info	soil	Tao,J., ISME J In press
NZ_JAFCLA010000132	SZCCT0133	China	No Host info	soil	Tao,J., ISME J In press
NZ_JAFDOJ010000037	SZCCT0046	China	No Host info	soil	Tao,J., ISME J In press
NZ_JAFDOH010000040	SZCCT0284	China	No Host info	soil	Tao,J., ISME J In press
NZ_JAFCLU010000037	AUGA SZCCT0283	China	No Host info	soil	Tao,J., ISME J In press
NZ_JAFCKP010000030	SZCCT0231	China	No Host info	soil	Tao,J., ISME J In press
NZ_JAFCLQ010000034	SZCCT0424	China	No Host info	soil	Tao,J., ISME J In press
NZ_JAFCKD010000212	SZCCT0341	China	No Host info	soil	Tao,J., ISME J In press
NZ_JAFCKE010000211	SZCCT0340	China	No Host info	soil	Tao,J., ISME J In press
NZ_JAFCKK010000206	SZCCT0287	China	No Host info	soil	Tao,J., ISME J In press
NZ_JAFCLJ010000003	SZCCT0346	China	No Host info	soil	Tao,J., ISME J In press
NZ_JAFCLP010000015	SZCCT0007	China	No Host info	soil	Tao,J., ISME J In press

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
NZ_JAFCLK010000014	SZCCT0094	China	No Host info	soil	Tao,J., ISME J In press
JAFDOJ010000000	SZCCT0046	China	No Host info	soil	Tao,J., ISME J In press
JAFDOH010000000	SZCCT0284	China	No Host info	soil	Tao,J., ISME J In press
JAFCLU010000000	AUGA SZCCT0283	China	No Host info	soil	Tao,J., ISME J In press
JAFCLQ010000000	SZCCT0424	China	No Host info	soil	Tao,J., ISME J In press
JAFCLP010000000	SZCCT0007	China	No Host info	soil	Tao,J., ISME J In press
JAFCLK010000000	SZCCT0094	China	No Host info	soil	Tao,J., ISME J In press
JAFCLA010000000	SZCCT0133	China	No Host info	soil	Tao,J., ISME J In press
JAFCKO010000000	SZCCT0233	China	No Host info	soil	Tao,J., ISME J In press
JAFCKI010000000	SZCCT0293	China	No Host info	soil	Tao,J., ISME J In press
JAFCKP010000000	SZCCT0231	China	No Host info	soil	Tao,J., ISME J In press
JAFCKL010000000	SZCCT0285	China	No Host info	soil	Tao,J., ISME J In press
JAFCKK010000000	SZCCT0287	China	No Host info	soil	Tao,J., ISME J In press
JAFCKE010000000	SZCCT0340	China	No Host info	soil	Tao,J., ISME J In press
JAFCKC010000000	SZCCT0342	China	No Host info	soil	Tao,J., ISME J In press
JAFCKD010000000	SZCCT0341	China	No Host info	soil	Tao,J., ISME J In press
JAFCJK010000000	SZCCT0346	China	No Host info	soil	Tao,J., ISME J In press
NZ_CP032617	110spc4	USA	No Host info	No info	Fernandez,N., et al.Unpublished
NZ_WVUF01000033	MPM11	India	<i>pigeonpea plant</i>	root nodule	Evv,R. and Podile,A.R., Unpublished
NZ_JAENXS010000001	182_5	Australia	<i>Acacia acuminata</i>	legume nodule	Simonsen,A.K., Unpublished
NZ_AP022638	F07S3	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
NZ_AP022639	H12S4	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
NZ_AP022641	HH15	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
NZ_AP022640	HF08	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
NZ_SWAN01000056	SEMIA 5019	Brazil	No Host info	Glycine max	Ambrosini,A., et al. Unpublished
NZ_SWAO01000082	SEMIA 587	Brazil	No Host info	Glycine max	Ambrosini,A., et al. Unpublished
NZ_CP055233	113-2	China	<i>Glycine max</i>	No info	Yuan,S., Li,R. and Zhou,X., Unpublished
NZ_PXZG01000014	WBAH10	India	<i>Arachis hypogaea</i>	root nodules	Guha,S., et al. Unpublished
NZ_JABFDM010000005	83002	China	<i>Aeschynomene indica</i>	No info	Zhang,Z., Unpublished
NZ_JABFDM010000003	83002	China	<i>Aeschynomene indica</i>	No info	Zhang,Z., Unpublished
NZ_CP029603	XF7	Japan	<i>Glycine max</i>	root nodules	Noda,R. et al. Unpublished
NZ_SNUC01000002	UFLA0613	Brazil	<i>Glycine max</i>	nodules	Costa,E.M., et al. Unpublished
NZ_CP050064	172S4	Canada	<i>Glycine max</i>	Root nodule from G. max plant inoculated with root zone soil from A. bracteata	Wasai-Hara,S., et al. 2020
NZ_CP049289	1S3	Canada	<i>Glycine max</i>	No info	Bromfield,E.S.P., et al. Unpublished
NZ_CP034432	LCT2	Japan	<i>Lespedeza cuneata</i>	nodule	Sugawara,M., et al. Unpublished
NZ_NFUH01000512	XS1150	China	<i>Arachis hypogaea</i>	root nodule	Xiang,Q., et al. Unpublished
NZ_SMYJ01000043	BR2003	Brazil	<i>Crotalaria spectabilis</i>	No info	Simoes-Araujo,J.L.S. and Zilli,J.E., Unpublished
NZ_AP021854	SG09	Japan	<i>Sorghum bicolor</i>	root matter	Wasai-Hara,S., et al. Unpublished
NZ_LFJB01000083	UNPF46	Japan	<i>No Host info</i>	soil	Ishii,S., et al. Unpublished
NZ_VIDU01000018	USDA 3456	USA	<i>Vigna unguiculata</i>	nodule	White,R.A. III, et al. Unpublished
NZ_SZZP01000010	Semia 938	Brazil	<i>Lupinus albus</i>	No info	Hungria,M., et al. Unpublished
NZ_SATS03000031	P10 130	Argentina	<i>Desmodium incanum</i>	soil	Torres Tejerizo,G.A. and Del Papa,M.F., Unpublished
NZ_PSR010000697	Leo170	South Africa	<i>Leobordea lanceolata</i>	root nodule	Avontuur,J.R., et al. 2019
NZ_PSR010000448	Leo121	South Africa	<i>Leobordea divaricata</i>	root nodule	Avontuur,J.R., et al. 2019
NZ_PSR010000006	Rp7b	South Africa	<i>Arachis hypogaea</i>	root nodule	Avontuur,J.R., et al. 2019
NZ_SEMA01000024	BR29	Brazil	<i>Glycine max</i>	nodules	Zilli,J.E. and Simoes-Araujo,J.L., Unpublished
NZ_RDQY01000039	CCBAU 53424	China	peanut	nodules	Li,Y., Unpublished
NZ_RDQZ01000047	CCBAU 53426	China	peanut	nodules	Li,Y., Unpublished
NZ_RKMK01000016	CCBAU 51770	China	peanut	nodule	Li,Y., Unpublished
NZ_RDRA01000016	CCBAU 51781	China	peanut	nodules	Li,Y., Unpublished
NZ_QZMV01000023	LVM 105	USA	<i>Chamaecrista fasciculata</i>	root nodules	Krishnan,H.B. and Givan,S.A., Unpublished
NZ_RQIT01000031	RP6	India	<i>Cajanus cajan</i>	root nodule	Eedara,R. and Podile,A.R., Unpublished
NZ_LAXE010000001	SUTN-9-2	Thailand	<i>Aeschynomene americana</i>	nodule	Piromyong,P., et al. 2015
NZ_PTFE01000008	AC87j1	Ethiopia	<i>Milletia ferruginea</i>	No info	Mania,D., et al. Unpublished
NZ_NSYJ01000020	UFLA03-84	Brazil	<i>Vigna unguiculata</i>	root nodules	Guimaraes,A., et al. Unpublished
NZ_MPVQ01000047	UFLA 03-321	Brazil	<i>Vigna unguiculata</i>	root nodules	Martins da Costa,E., et al. 2017
NZ_LGHM01000016	AS23.2	Brazil	<i>Lupinus albus</i>	No info	Granada,C., et al. Unpublished
NZ_CP013127	USDA 122	USA	<i>Glycine max</i>	soil	Sugawara,M., et al. Unpublished
NZ_LXEM01000018	BLY6-1	Myanmar	No Host info	root nodules	Zaw Htwe,A.,et al. Unpublished
NZ_LWUI01000018	BLY3-8	Myanmar	No Host info	root nodules	Zaw Htwe,A.,et al. Unpublished
NZ_DF820426	DOA9	No Country info	No Host info	No info	Okazaki,S., et al. 2015
NZ_DF820425	DOA9	No Country info	No Host info	No info	Okazaki,S., et al. 2015
NZ_LUKO010000203	CCNWSX0360	China	<i>Vigna unguiculata</i>	root nodule	Liang,J., et al. Unpublished
NZ_CP013949	CCGE-LA001	Mexicos	<i>Phaseolus microcarpus</i>	field-collected nodules	Servin-Garciduenas,L.E., et al. 2016
NZ_LLYY01000011	LmjM6	Spain	<i>Lupinus mariae-josephae</i>	root nodules	Duran,D., et al. Unpublished
NZ_LJYF01000029	BR3267	Brazil	<i>Vigna unguiculata</i>	cowpea nodules	Simoes-Araujo,J.L. and Zilli,J.E., Unpublished
NZ_LJYE01000081	BR3262	Brazil	<i>Vigna unguiculata</i>	cowpea nodules	Simoes-Araujo,J.L. and Zilli,J.E., Unpublished
NZ_LGUJ01000050	Is-1	Japan	No Host info	No info	Sakata,T., et al. 2015

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
NZ_JGCL01000038	FN1	Canada	No Host info	field	Kohlmeier,M.G., et al. 2015
NZ_JRP01000070	Is-34	Japan	No Host info	Glycine max nodule	Tsurumaru,H., et al. 2014
NZ_AUFA01000045	Cp5.3	Panama	<i>Centrosema pubescens</i>	No info	Kyrpides,N., et al. 2013
NZ_AXAS01000093	Ec3.3	Panama	<i>Erythrina costaricensis</i>	No info	Kyrpides,N., et al. 2013
NZ_AXAI01000075	Tv2a-2	Panama	<i>Tachigali versicolor</i>	No info	Kyrpides,N., et al. 2013
NZ_AWZU01000055	ARR65	Australia	<i>Stylosanthes viscosa</i>	No info	Kyrpides,N., et al. 2013
NZ_AWZU01000010	ARR65	Australia	<i>Stylosanthes viscosa</i>	No info	Kyrpides,N., et al. 2013
NC_017082	S23321	No Country info	No Host info	No info	Okubo,T., et al. 2012
NZ_CAFI01000497	ORS375	No Country info	No Host info	No info	Mornico,D.,et al. 2011
NZ_CAFI01000496	ORS375	No Country info	No Host info	No info	Mornico,D.,et al. 2011
NZ_JAGIKT010000021	ISRA400	Senegal	<i>Arachis hypogaea</i>	groundnut field	Tisa,L.S., et al. Unpublished
AP023108	XF19	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023107	XF18	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023106	XF17	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023105	XF16	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023104	XF15	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023103	XF14	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023102	XF13	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023101	XF12	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023100	XF11	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023099	XF10	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023098	XF9	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023097	XF8	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023096	XF6	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023095	XF5	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023094	XF4	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023093	XF3	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023092	XF2	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
AP023091	XF1	Japan	<i>Glycine max</i>	root nodule	Noda,R., et al. Unpublished
JAGIKT010000000	ISRA400	Senegal	<i>Arachis hypogaea</i>	groundnut field	Tisa,L.S., et al. Unpublished
WVUF01000000	MPM1	India	<i>pigeonpea plant</i>	root nodule	Evv,R. and Podile,A.R., Unpublished
JAENXS010000000	182_5	Australia	<i>Acacia acuminata</i>	legume nodule	Simonsen,A.K., Unpublished
CP046601	SEMIA	Zimbabwe	<i>Arachis hypogaea</i>	No info	Guha,S., et al. Unpublished
CP050064	172S4	Canada	<i>Glycine max</i>	Root nodule from G. max plant inoculated with root zone soil from Aphis americana	Wasai-Hara,S., et al. 2020
AP022641	HH15	Japan	<i>Glycine max</i>	field soil of root nodule	Noda,R., et al. Unpublished
AP022640	HF08	Japan	<i>Glycine max</i>	field soil of root nodule	Noda,R., et al. Unpublished
SWAO01000000	SEMIA 587	Brazil	No Host info	Glycine max	Ambrosini,A., et al. Unpublished
SWAN01000000	SEMIA 5019	Brazil	No Host info	Glycine max	Ambrosini,A., et al. Unpublished
CP055233	113-2	China	<i>Glycine max</i>	No info	Yuan,S., Li,R. and Zhou,X., Unpublished
JAAOLD020000000	41S5	Canada	<i>Glycine max</i>	Root nodule from G. max plant inoculated with root zone soil from Aphis americana	Bromfield,E.S.P. and Cloutier,S., Unpublished
PXZG01000000	WBAH10	India	<i>Arachis hypogaea</i>	root nodules	Guha,S., et al. Unpublished
JABFDO010000000	81013	China	<i>Aeschynomene indica</i>	No info	Zhang,Z., Unpublished
JABFDM010000000	83002	China	<i>Aeschynomene indica</i>	No info	Zhang,Z., Unpublished
JABFDN010000000	83012	China	<i>Aeschynomene indica</i>	No info	Zhang,Z., Unpublished
JABFDP010000000	LMG 8443	No Country info	<i>Aeschynomene indica</i>	No info	Zhang,Z., Unpublished
CP029603	XF7	Japan	<i>Glycine max</i>	root nodules	Noda,R., et al. Unpublished
SNUC01000000	UFLA0613	Brazil	<i>Glycine max</i>	nodules	Costa,E.M., et al. Unpublished
CP049289	1S3	Canada	<i>Glycine max</i>	No info	Bromfield,E.S.P., et al. Unpublished
CP034432	LCT2	Japan	<i>Lespedeza cuneata</i>	nodule	Sugawara,M., et al. Unpublished
SMYJ01000000	BR2003	Brazil	<i>Crotalaria spectabilis</i>	No info	Simoes-Araujo,J.L.S. and Zilli,J.E., Unpublished
AP021854	SG09	Japan	<i>Sorghum bicolor</i>	roots	Wasai-Hara,S., et al. Unpublished
LFJB01000000	UNPF46	Japan	No Host info	soil	Ishii,S., et al. Unpublished
LFJD01000000	UNPA324	Japan	No Host info	soil	Jang,J., et al. Unpublished
SZZP01000000	Semia 938	Brazil	<i>Lupinus albus</i>	No info	Hungria,M., et al. Unpublished
SZZP01000010	Semia 938	Brazil	<i>Lupinus albus</i>	No info	Hungria,M., et al. Unpublished
SATS03000000	P10 130	Argentina	<i>Desmonium incanum</i>	soil	Torres Tejerizo,G.A. and Del Papa,M.F., Unpublished
SATS03000031	P10 130	Argentina	<i>Desmonium incanum</i>	soil	Torres Tejerizo,G.A. and Del Papa,M.F., Unpublished
CP032617	110spc4	USA	No Host info	No info	Fernandez,N., et al. Unpublished
PSRR01000000	Leo170	South Africa	<i>Leobordea lanceolata</i>	root nodule	Avontuur,J.R., et al. Unpublished
PSRR01000697	Leo170	South Africa	<i>Leobordea lanceolata</i>	root nodule	Avontuur,J.R., et al. Unpublished
PSRS01000000	Leo121	South Africa	<i>Leobordea divaricata</i>	root nodule	Avontuur,J.R., et al. Unpublished
PSRT01000000	Rp7b	South Africa	<i>Arachis hypogaea</i>	root nodule	Avontuur,J.R., et al. Unpublished
PSRT01000006	Rp7b	South Africa	<i>Arachis hypogaea</i>	root nodule	Avontuur,J.R., et al. Unpublished
PSRS01000448	Leo121	South Africa	<i>Leobordea divaricata</i>	root nodule	Avontuur,J.R., et al. Unpublished
SEMA01000000	BR29	Brazil	<i>Glycine max</i>	nodules	Zilli,J.E. and Simoes-Araujo,J.L., Unpublished
SEMA01000024	BR29	Brazil	<i>Glycine max</i>	nodules	Zilli,J.E. and Simoes-Araujo,J.L., Unpublished
LBJM01000009	CCBAU 51787	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
LBQ01000006	CCBAU 51757	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
RDQY01000000	CCBAU 53424	China	peanut	nodules	Li,Y., Unpublished
RDQZ01000000	CCBAU 53426	China	peanut	nodules	Li,Y., Unpublished
RDQY01000039	CCBAU 53424	China	peanut	nodules	Li,Y., Unpublished
RDQZ01000047	CCBAU 53426	China	peanut	nodules	Li,Y., Unpublished
RKMK01000000	CCBAU 51770	China	peanut	nodule	Li,Y., Unpublished
RDRA01000000	CCBAU 51781	China	peanut	nodules	Li,Y., Unpublished
RKMK01000016	CCBAU 51770	China	peanut	nodule	Li,Y., Unpublished
RDRA01000016	CCBAU 51781	China	peanut	nodules	Li,Y., Unpublished
QZMV01000000	LVM 105	USA	<i>Chamaecrista fasciculata</i>	root nodules	Krishnan,H.B. and Givan,S.A., Unpublished
QZMV01000023	LVM 105	USA	<i>Chamaecrista fasciculata</i>	root nodules	Krishnan,H.B. and Givan,S.A., Unpublished
RQIT01000000	RP6	India	<i>Cajanus cajan</i>	root nodule	Eedara,R. and Podile,A.R., Unpublished
RQIT01000031	RP6	India	<i>Cajanus cajan</i>	root nodule	Eedara,R. and Podile,A.R., Unpublished
LAXE01000000	SUTN9-2	Thailand	<i>Aeschynomene americana</i>	nodule	Piromyou,P., et al. 2015
PTFE01000000	AC87j1	Ethiopia	<i>Milletia ferruginea</i>	No info	Mania,D., et al. Unpublished
PTFE01000008	AC87j1	Ethiopia	<i>Milletia ferruginea</i>	No info	Mania,D., et al. Unpublished
NSJY01000000	UFLA03-84	Brazil	<i>Vigna unguiculata</i>	root nodules	Guimaraes,A., et al. Unpublished
NSJY01000020	UFLA03-84	Brazil	<i>Vigna unguiculata</i>	root nodules	Guimaraes,A., et al. Unpublished
LGLH01000000	NAS80.1	Brazil	<i>Lupinus albescent</i>	root nodule	Granada,C., et al. Unpublished
LGHK01000000	NAS96.2	Brazil	<i>Lupinus albescent</i>	root nodule	Granada,C., et al. Unpublished
LWUI01000000	BLY3-8	Myanmar	No Host info	Glycine max nodule	Zaw Htwe,A., et al. Unpublished
LXEM01000000	BLY6-1	Myanmar	No Host info	Glycine max nodule	Zaw Htwe,A., et al. Unpublished
LUKO01000000	CCNWSX0360	China	<i>Vigna unguiculata</i>	root nodule	Liang,J., et al. Unpublished
LLXY01000000	LmjM6	Spain	<i>Lupinus mariae-josephae</i>	root nodules	Duran,D., et al. Unpublished
LJYE01000000	BR3262	Brazil	<i>Vigna unguiculata</i>	cowpea nodules	Simoes-Araujo,J.L. and Zilli,J.E., Unpublished
LJYF01000000	BR3267	Brazil	<i>Vigna unguiculata</i>	cowpea nodules	Simoes-Araujo,J.L. and Zilli,J.E., Unpublished
JGCL01000000	FN1	Canada	No Host info	field	Kohlmeier,M.G., et al. 2015
JRPN01000000	Is-34	Japan	No Host info	nodule	Tsurumaru,H., et al. 2014
NZ_JADYV101000009	IC3069	India	<i>Indigofera glandulosa</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000013	NBAIM18	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000020	IC3195	India	<i>Macroptilium atropurpureum</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000011	IC4061	India	<i>Pongamia pinnata</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000017	NBAIM01	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000012	NBAIM03	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYWA010000060	BRP14	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000006	NBAIM02	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000003	IC4060	India	<i>Pongamia pinnata</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000020	BRP19	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000023	BRP56	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000008	IC4059	India	<i>Pongamia pinnata</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000007	BRP23	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000015	NBAIM08	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000007	BRP05	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000026	NBAIM16	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000012	BRP20	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000006	NBAIM14	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYWB010000020	BRP09	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYVN010000007	NBAIM20	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000014	IC3123	India	<i>Arachis hypogaea</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000044	BRP22	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JADYV0010000084	NBAIM32	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYV0010000000	BRP19	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYV0010000000	NBAIM32	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYV0010000000	IC3069	India	<i>Indigofera glandulosa</i>	nodule	Jorin,B., et al. 2021
JADYV0010000000	IC3195	India	<i>Macroptilium atropurpureum</i>	nodule	Jorin,B., et al. 2021
JADYWB010000000	BRP09	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYVX010000000	BRP22	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYVY010000000	BRP20	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYVW010000000	BRP23	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYVW010000000	BRP56	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYVU010000000	NBAIM01	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYVT010000000	NBAIM02	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYVR010000000	NBAIM08	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYVS010000000	NBAIM03	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYVQ010000000	NBAIM14	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYVP010000000	NBAIM16	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYVO010000000	NBAIM18	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYVN010000000	NBAIM20	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYVK010000000	IC4061	India	<i>Pongamia pinnata</i>	nodule	Jorin,B., et al. 2021

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
JADYVJ010000000	IC4060	India	<i>Pongamia pinnata</i>	nodule	Jorin,B., et al. 2021
JADYVH010000000	IC4059	India	<i>Pongamia pinnata</i>	nodule	Jorin,B., et al. 2021
JADYVF010000000	IC3123	India	<i>Arachis hypogaea</i>	nodule	Jorin,B., et al. 2021
JADYWD010000000	BRP05	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
JADYWA010000000	BRP14	India	<i>Cajanus cajan</i>	nodule	Jorin,B., et al. 2021
NZ_JAFBBN010000001	USDA 3040	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_AJQD01000643	CCBAU 83689	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_JAAVUS010000002	dw_78	Czech Republic	No Host info	Decomposed wood of Picea abies, 5-15 years decomposition	Taskal,V. and Baldrian,P., 2021
NZ_JAHEAG010000065	SRL28	Poland	<i>Chamaecytisus ruthenicus</i>	nodule	Kalita,M. and Koper,P., 2021
JAHEAG010000000	SRL28	Poland	<i>Chamaecytisus ruthenicus</i>	nodule	Kalita,M. and Koper,P., 2021
NZ_JAGWDK010000050	sGM-13	Tunisia	<i>Arachis hypogaea</i>	root nodules	Bouznif,B., Unpublished
NZ_JAGWDJ010000036	sBnM-33	Tunisia	<i>Arachis hypogaea</i>	root nodules	Bouznif,B., Unpublished
NZ_CP030036	CCBAU 21365	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
NZ_CP030049	CCBAU 53338	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
NZ_CP030037	CCBAU 51753	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
NZ_CP030056	CCBAU 53340	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
NZ_CP030047	CCBAU 53421	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
NZ_CP030058	CCBAU 51658	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
NZ_CP030060	CCBAU 53351	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
NZ_CP030038	CCBAU 51765	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
NZ_JACIHD010000015	ERR14	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_JACIHG010000003	CIR48	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_JACIHE010000007	CIR1	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_JACIHF010000005	CIR18	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_JACIGL010000003	CIR3A	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_JACIHC010000022	SBR1B	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_JACBZW010000004	IAR9	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_CP022222	CCBAU 051011	China	<i>Arachis hypogaea</i>	nodule	Sui,X. and Li,Y., Unpublished
NZ_WWEZ01000028	5873	China	<i>Glycine max</i>	No info	Wang,P., et al. 2020
NZ_VITY01000016	BR 10355	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_VLKS01000044	CGMCC 1.3531	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_VITU01000010	BR 10555	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_VITU01000006	BR 10555	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_VITW01000009	BR 10556	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_VITW01000007	BR 10556	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_VITK01000005	BR 510	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_SMBR01000008	R2.2-H	USA	No Host info	No info	Kalyuzhnaya,M., Unpublished
NZ_SMBQ01000008	Y-H1	USA	No Host info	No info	Kalyuzhnaya,M., Unpublished
NZ_LBJM01000009	CCBAU 51787	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
NZ_LBJQ01000006	CCBAU 51757	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
NZ_NWTG01000003	C9	China	<i>Phaseolus vulgaris</i>	root nodule	Tong,W., Unpublished
NZ_NWTF01000033	L2	China	<i>Phaseolus vulgaris</i>	root nodule	Tong,W., Unpublished
NZ_NWTE01000044	Y21	China	<i>Phaseolus vulgaris</i>	root nodule	Tong,W., Unpublished
NZ_FOVU01000015	Ghvi	No Country info	No Host info	No info	Varghese,N. 2016
NZ_FOUS01000026	Rc3b	No Country info	No Host info	No info	Varghese,N. 2016
NZ_FOQM01000030	Gha	No Country info	No Host info	No info	Varghese,N. 2016
NZ_FOQJ01000002	CF659	No Country info	No Host info	No info	Varghese,N. 2016
NZ_FMZW01000018	R5	No Country info	No Host info	No info	Varghese,N. 2016
NZ_FNCU01000003	Rc2d	No Country info	No Host info	No info	Varghese,N. 2016
NZ_LT859959	ORS 285	No Country info	No Host info	No info	Gully,D., 2017
NZ_MAXC01000053	LMTR 3	Peru	<i>Phaseolus lunatus</i>	root nodule	Ormeno-Orrillo,E., et al. 2016
NZ_LSIC01000141	CCH5-F6	USA	No Host info	hospital shower hose biofilm	Konstantinidis,K.T. and Soto-Giron,M.J., Unpublished
NZ_AUGA01000068	th.b2	No Country info	No Host info	No info	Kyrpides,N., et al. 2013
NZ_JAFC01000047	USDA 94	USA	<i>Glycine max</i>	not provided; submitted under MIGS 2.1	Kyrpides,N., et al. 2013
NZ_AXAT01000267	USDA 135	USA	<i>Glycine max</i>	No info	Kyrpides,N., et al. 2013
NZ_AXAX01000042	USDA 122	USA	<i>Glycine max</i>	No info	Kyrpides,N., et al. 2013
NZ_AXAG01000045	USDA 38	Japan	<i>Glycine max</i>	No info	Kyrpides,N., et al. 2013
NZ_AXVP01000150	USDA 123	USA	<i>Glycine max</i>	No info	Kyrpides,N., et al. 2013
NZ_AXAF01000044	USDA 4	USA	<i>Glycine max</i>	No info	Kyrpides,N., et al. 2013
NZ_AXAD01000017	USDA 3384	No Country info	<i>Kennedia coccinea</i>	No info	Kyrpides,N., et al. 2013
NZ_AXAB01000026	WSM2254	No Country info	No Host info	No info	Kyrpides,N., et al. 2013
NZ_AXAY01000035	WSM3983	Australia	<i>Kennedia coccinea</i>	No info	Kyrpides,N., et al. 2013
NZ_AXAS01000037	Ec3.3	Panama	<i>Erythrina costaricensis</i>	No info	Kyrpides,N., et al. 2013
NZ_AXAI01000025	Tv2a-2	Panama	<i>Tachigali versicolor</i>	No info	Kyrpides,N., et al. 2013
NZ_AJQK01000362	CCBAU 25021	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_AJQJ01000365	CCBAU 05623	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_AJQI01000466	CCBAU 41267	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_AJQF01000506	CCBAU 15544	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
NZ_AJQE01000393	CCBAU 43298	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_AJQC01000866	CCBAU 05525	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_AJQB01000611	CCBAU 83623	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_AJQA01000397	CCBAU 25435	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_AJPZ01000493	CCBAU 15618	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_AJPY01000630	CCBAU 15517	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_AJPX01000730	CCBAU 15354	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_AJPW01000395	CCBAU 43297	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_AJPV01000402	CCBAU 05737	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_AJQL01000400	CCBAU 35157	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_AJQH01000357	CCBAU 15635	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_AJQG01000331	CCBAU 15615	China	<i>Glycine max</i>	No info	Tian,C.F., et al. 2012
NZ_CAFH01000025	ORS 285	No Country info	No Host info	No info	Mornico,D., et al. 2011
NZ_CAFK01000249	STM 3843	No Country info	No Host info	No info	Mornico,D., et al. 2011
NZ_CAFJ01000161	STM 3809	No Country info	No Host info	No info	Mornico,D., et al. 2011
NC_009485	BTAi1	No Country info	No Host info	No info	Giraud,E., et al. 2007
NC_009445	ORS278	No Country info	No Host info	No info	Giraud,E., et al. 2007
NZ_JAFICZ010000001	USDA 406	No Country info	No Host info	No info	Whitman,W., Unpublished
NZ_JAGIOM010000001	USDA 130	No Country info	No Host info	No info	Whitman,W., Unpublished
JAEMSD010000000	No Strain info	USA	No Host info	freshwater cyanobacterial bloom	Natwora,K., et al. Unpublished
CP030058	CCBAU 51658	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
CP030060	CCBAU 53351	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
CP030049	CCBAU 53338	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
CP030056	CCBAU 53340	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
LC461082	AFR13	Venezuela	<i>Vigna unguiculata</i>	soil	Artigas,R.M.D.,et al. 2020
NZ_AP014685	NK6	No Country info	No Host info	No info	Iida,T., et al. 2015
WWEZ01000000	5873	China	<i>Glycine max</i>	No info	Wang,P., et al. Unpublished
LBJM01000000	CCBAU 51787	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
LBJQ01000000	CCBAU 51757	China	<i>Arachis hypogaea</i>	nodule	Li,Y., Unpublished
NWTFG01000000	C9	China	<i>Phaseolus vulgaris</i>	root nodule	Tong,W., C Unpublished
NWTFG01000003	C9	China	<i>Phaseolus vulgaris</i>	root nodule	Tong,W., C Unpublished
NWTF01000000	L2	China	<i>Phaseolus vulgaris</i>	root nodule	Tong,W., C Unpublished
NWTF01000033	L2	China	<i>Phaseolus vulgaris</i>	root nodule	Tong,W., C Unpublished
NWTE01000000	Y21	China	<i>Phaseolus vulgaris</i>	root nodule	Tong,W., C Unpublished
NWTE01000044	Y21	China	<i>Phaseolus vulgaris</i>	root nodule	Tong,W., C Unpublished
LGHM01000000	AS23.2	Brazil	<i>Lupinus albus</i>	No info	Granada,C., et al. Unpublished
JXJM01000000	DOA1	Thailand	<i>Aeschynomene americana</i>	rhizosphere soil	Okubo,T. and Minamisawa,K., Unpublished
JXDL01000000	AT1	Japan	sweet potato	soil	Okubo,T. and Minamisawa,K., Unpublished
CAFK01000000	STM 3843	No Country info	No Host info	No info	Mornico,D., et al. 2011
CAFH01000000	ORS 285	No Country info	No Host info	No info	Mornico,D., et al. 2011
BX950851	SCRI1043	No Country info	No Host info	No info	Bell,K.S., et al. Unpublished
AB367742	MAFF 210245	No Country info	No Host info	No info	Islam,M.S. and Kawasaki,H., Unpublished
KJ649521	STM8089	Malaysia	<i>Acacia mangium</i>	root nodule	Perrineau,M.M., et al. 2014
FJ236862	CCBAU 83477	No Country info	<i>Glycine max</i>	No info	Han,L.L., et al. Unpublished
FJ236861	CCBAU 83476	No Country info	<i>Glycine max</i>	No info	Han,L.L., et al. Unpublished
HQ670655	CCGE 510	Mexico	<i>Phaseolus albus</i>	nodule from wild Phaseolus	Servin-Garciduenas,L.E., et al.Unpublished
HQ670652	ATCC 14482	No Country info	No Host info	No info	Servin-Garciduenas,L.E., et al.Unpublished
HQ670650	CCBAU 33202	No Country info	No Host info	No info	Servin-Garciduenas,L.E., et al.Unpublished
AB571543	AS2	Japan	<i>Ipomoea batatas</i>	No info	Terakado-Tonooka,J., et al. 2013
AB571541	T16	Japan	<i>Ipomoea batatas</i>	No info	Terakado-Tonooka,J., et al. 2013
EU146013	CCBAU 83765	China	<i>Glycine max</i>	root nodules	Han,L.L., et al. Unpublished
EU146012	CCBAU 83751	China	<i>Glycine max</i>	root nodules	Han,L.L., et al. Unpublished
EU146011	CCBAU 83742	China	<i>Glycine max</i>	root nodules	Han,L.L., et al. Unpublished
EU146006	CCBAU 83666	China	<i>Glycine max</i>	root nodules	Han,L.L., et al. Unpublished
EU146004	CCBAU 83647	China	<i>Glycine max</i>	root nodules	Han,L.L., et al. Unpublished
EU146003	CCBAU 83643	China	<i>Glycine max</i>	root nodules	Han,L.L., et al. Unpublished
EU146000	CCBAU 83475	China	<i>Glycine max</i>	root nodules	Han,L.L., et al. Unpublished
BLIZ01000001	AOG1	Japan	No Host info	paddy soil	Guo,Y., et al. Unpublished
AP022810	AOP6	Japan	No Host info	subseafloor sediment	Guo,Y., et al. Unpublished
AP014704	MA-22A	No Country info	No Host info	No info	Tani,A., et al. 2015
LGQW01000015	TSH64	Japan	No Host info	soil	Jang,J. and Ishii,S., Unpublished
LGQS01000028	TSA6c	Japan	No Host info	soil	Jang,J. and Ishii,S., Unpublished
CP015113	GXGL-4A	China	maize	root surface of maize	Chen,Y., et al. Unpublished
CP015064	WSM1284	Italy	<i>Biserrula pelecinus</i>	root nodule	Haskett,T., et al. 2016
CP015062	CC1192	Israel	<i>Cicer arietinum</i>	No info	Haskett,T., et al. 2016
LJYW01000001	16	USA	No Host info	freshwater	Daniel,J.J.,et al. 2015
CP005991	R4-368	No Country info	No Host info	No info	Madhaiyan,M., et al. 2013
AM412317	ATCC 3502	No Country info	No Host info	No info	Sebahia,M., et al. 2007

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
CP015287	MBTLJ-20	South Korea	<i>Rhodobacter sphaeroides</i>	No info	Park, J.-Y., et al. 2016
CP014137	FRB141	United Kingdom	<i>Quercus</i>	No info	Doonan, J., et al. 2016
CP010836	WHSC-8	China	No Host info	soil of Hengshui Lake	Wei, S., et al. 2015
AE006469	1021	No Country info	No Host info	No info	Barnett, M.J., et al. 2001
CP015210	MBTLJ-13	South Korea	<i>Rhodobacter sphaeroides</i>	No info	Park, J.-Y., et al. 2016
CP012960	MBTLJ-8	South Korea	No Host info	No info	Park, J.-Y., et al. 2016
JRXL01000012	CC275e	Australia	<i>Trifolium repens</i>	No info	Wakelin, S.A., et al. Unpublished
AM406670	BH72	No Country info	No Host info	No info	Krause, A., et al. 2006
CP025697	MUSA4	Brazil	No Host info	Banana tree leaf	Nascimento, F.X., Unpublished
CP009460	ND14b	Malaysia	No Host info	waterfall	Chan, K.G., et al. 2014
CP011602	CAV1151	USA	<i>Homo sapiens</i>	Perirectal	Sheppard, A.E., et al. Unpublished
CP015137	IPO 2222	Netherlands	No Host info	Solanum tuberosum	Khayl, S., et al. Unpublished
CP007744	JG10-08	No Country info	<i>Solanum tuberosum</i>	black leg symptoms of <i>Solanum tuberosum</i>	Zhu, J.-H., et al. Unpublished
CP005094	CA	No Country info	No Host info	No info	Noar, J.D. and Bruno-Barcena, J.M., et al. 2013
JGVN01000001	Az39	Argentina	<i>Triticum aestivum L.</i>	wheat rhizosphere	Torres, D., et al. Unpublished
AODU01000010	UGC32	Peru	potato	No info	Panda, P., et al. 2015
LXFV01000058	IFB5232	USA	No Host info	potato tuber	Waleron, M., et al. Unpublished
LUBB01000021	IFB5229	Peru	No Host info	potato tuber	Waleron, M., et al. Unpublished
CP014206	J2	Indian Ocean	No Host info	serpentinized peridotite in Indian Ocean	Cao, J., et al. 2016
CP015455	DSM 3246	Germany	No Host info	sediment	Sutton, J.M., et al. 2017
CP014673	DSM 9219	France	No Host info	cow manure	Schellenberg, J., et al. Unpublished
CP014672	DSM 2910	Japan	No Host info	mesophilic digester	Schellenberg, J., et al. Unpublished
CP015421	SNK001	Japan: Aichi	No Host info	No info	Nagao, N., et al. 2016
CP015418	DSM 1374	Netherlands	No Host info	marine mud	Nagao, N., et al. 2016
CP012401	BV-S	No Country info	No Host info	No info	Fomenkov, A., et al. 2016
CP012914	Sp 7	Brazil	<i>Digitaria eriantha</i>	root	Kwak, Y. and Shin, J.H., 2015
CP010869	EMB200-NS6	South Korea	No Host info	oil contaminated tidal flat	Jin, H.M., et al. Unpublished
CP009788	G13	USA	No Host info	kaolin clays	Badalamenti, J.P. and Bond, D.R., 2015
CP010430	AM-1	No Country info	No Host info	No info	Arkipova, O.V., et al. Unpublished
LAEL01000001	DSM 21654	Russia	No Host info	Bacterial mat of a sulfide mineral spring	Kwak, Y. and Shin, J.H., et al. 2015
JQHO01000001	NCPBP 3404	Canada	<i>Solanum tuberosum</i>	No info	Glover, R.H., et al. Unpublished
JQHK01000001	NCPBP 549	United Kingdom	<i>Solanum tuberosum</i>	No info	Glover, R.H., et al. Unpublished
CP007793	Az39	Argentina	<i>Triticum aestivum L.</i>	wheat rhizosphere	Rivera, D., et al. 2014
JJMI01000022	MFB070	India	No Host info	Aquaculture pond	Joseph, T.C., et al. 2014
CP025982	A-F18	China	<i>Homo sapiens</i>	No info	Zhang, Z., et al. Unpublished
CP024846	MG08	Norway	No Host info	subarctic landfill	Robinson, S.L., et al. 2017
CP023737	OB3b	United Kingdom	No Host info	soil	Heil, J.R., Let al. 2017
MKZW03000001	GT-16	USA	<i>Homo sapiens</i>	stomach	Tetz, G. and Tetz, V., D2016
CP015285	SgZ-5	China	No Host info	soil	Zhou, S., et al. 2013
CP026197	ENNIH3	USA	No Host info	No info	Weingarten, R.A., et al. Unpublished
CP026192	ENNIH2	USA	No Host info	No info	Weingarten, R.A., et al. Unpublished
CP026193	ENNIH1	USA	No Host info	No info	Weingarten, R.A., et al. Unpublished
CP025776	EA-1	Singapore	No Host info	Canal sediment microbiome	Doyle, L.E., et al. Unpublished
CP025084	ATCC 39006	USA	No Host info	Salt Marsh	Fineran, P.C., et al. 2013
CP025085	ATCC 39006	No Country info	No Host info	No info	Hampton, H.G., et al. Unpublished
CP024956	36A	Belarus	<i>Solanum tuberosum</i>	No info	Valentovich, L. and Nikolaichik, Y., Unpublished
CP025003	DSM 101947	China	<i>Pyrus pyrifolia</i>	No info	Tian, Y., Hu, B. and Zhao, Y., Unpublished
CP011835	B3	Russia	No Host info	soil	Zhang, X., 2015
MDLH01000001	SEMIA 3007	Mexico	No Host info	soil	Kishi, L.T., et al. Unpublished
CP006879	R602	France	<i>Phaseolus vulgaris</i>	Agricultural field	Bustos, P., et al. Unpublished
CP007053	TAV5	No Country info	No Host info	No info	Kotak, M., et al. 2015
KZ819023	LMG 27714	United Kingdom	<i>Quercus cerris</i>	No info	Li, Y., Unpublished
CP025086	BW863	No Country info	No Host info	acidic forest soil	Nguyen, L.N., et al. Unpublished
QESY01000029	SS26	Pakistan: Punjab	Potato	Plant stem	Sarraz, S., et al. Unpublished
QDKI01000002	LMG 27714	United Kingdom	<i>Quercus cerris</i>	No info	Li, Y., Unpublished
PYTZ01000001	H7A	Colombia	<i>Saccharum hybrid cultivar</i>	No info	Medina-Cordoba, L.K., et al. Unpublished
AM236084	3841	United Kingdom	No Host info	No info	Young, J.P., et al. 2006
CP017415	F5	Australia	No Host info	acidic saline drain; pH 2.1, 130 g/L chloride, 1.4 g/L iron(II)	Khaleque, H.N., et al. 2020
CP029829	M2T2B2	South Korea	No Host info	Cow dung	Anandham, R., et al. 2019
CP029353	CFH 70021	China	No Host info	hot spring	Zhao, Z.I., et al. 2020
CP044331	BRCS2	United Kingdom	No Host info	Bog sediment	Rumah, B.L., et al. Unpublished
CP026538	DSM 3852	Netherlands	No Host info	water	Wilbanks, E., et al. Unpublished
PDKG01000003	CECT 8986	Spain	mussel	No info	Perez-Cataluna, A. and Figueras, M.J., Unpublished
PDJX01000004	F91	Spain	mussel	No info	Perez-Cataluna, A. and Figueras, M.J., Unpublished
PDKC01000002	CECT 8985	Spain	mussel	No info	Perez-Cataluna, A. and Figueras, M.J., Unpublished
CP007268	A	No Country info	No Host info	No info	Singh, K.S., et al. 2014
JRTV01000011	223/14	Malaysia	<i>Homo sapiens</i>	Pus	Ahmad, N., et al. 2015
CP008700	KP5-1	USA	<i>Nezara viridula</i>	No info	Medrano, E.G., et al. 2014

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
CP030271	2.4.1	USA	No Host info	laboratory	Anton,B.P., et al. Unpublished
CP022253	Sp245	Brazi	No Host info	wheat root	Jang,J. and Ishii,S., Unpublished
CP022364	TSH58	Japan	No Host info	paddy soils	Jang,J. and Ishii,S., Unpublished
CP024955	EA-1	Portugal	No Host info	Hydrothermal Systems	Reiner,J.E., et al. 2018
CP021913	P11	Pacific Ocean	No Host info	sulfidic waters (60 m) from the Peruvian upwelling region	Martinez-Perez,C., et al. Unpublished
NXFY01000006	F98-3	Spain	Mussel	No info	Perez-Cataluna,A., et al. Unpublished
PDKW01000043	B2	Russia	No Host info	raised bog	Tikhonova,E.N., et al. 2019
CP022110	CBAmC	Brazi	No Host info	Sugarcane field	Schwab,S., et al. Unpublished
CP013985	LMG 23571	Singapore	No Host info	soil	Lin,L., et al. Unpublished
CP013456	MSMB608WGS	Australia	No Host info	plant roots	Sahl,J., et al. Unpublished
CP013441	HI2297	Indonesia	No Host info	Oryza sativa root	Sahl,J., et al. Unpublished
CP013434	AU1233	USA	<i>Homo sapien</i>	CF Blood	Sahl,J., et al. Unpublished
CP013421	MSMB0783	Australia	No Host info	soil	Sahl,J., et al. Unpublished
CP013395	FL-2-3-30-S1-D0	USA	No Host info	soil	Sahl,J., et al. Unpublished
CP008841	M1	South Korea	No Host info	soil	Shin,S.H., et al. Unpublished
CP007031	984	No Country info	No Host info	marine sponge	Bryant,D.A., et al. 2013
CP014360	DH-1	South Korea	No Host info	waste sludge of a brewery plant	Hur,D.H., et al. Unpublished
LUUH01000013	R-45371	Belgium	No Host info	top layer of a denitrification tank of a waste water treatment plant	Heylen,K., et al. 2016
CP011994	BSL-9	USA	No Host info	Big Soda Lake, Nevada	Saltikov,C., et al. Unpublished
CP011412	SIP-G1	USA	No Host info	salt marsh	Flood,B.E., et al. 2015
CP014476	FJG1	No Country info	No Host info	No info	Kits,K.D.,et al. 2015
LPCP01000092	AU25340	USA	<i>Homo sapiens</i>	CF Sputum	Sahl,J., et al. Unpublished
LOXD01000057	FL-7-4-30-S3-D0	USA	No Host info	soil	Sahl,J., et al. Unpublished
LOXB01000003	FL-7-4-10-S1-D0	USA	No Host info	soil	Sahl,J., et al. Unpublished
LOXA01000050	FL-7-3-30-S2-D0	USA	No Host info	soil	Sahl,J., et al. Unpublished
LOWZ01000025	FL-7-2-10-S2-D0	USA	No Host info	soil	Sahl,J., et al. Unpublished
LOWX01000066	FL-7-1-10-S1-D0	USA	No Host info	soil	Sahl,J., et al. Unpublished
LOWO01000022	FL-2-5-30-S1-D0	USA	No Host info	soil	Sahl,J., et al. Unpublished
LOWN01000049	FL-2-5-10-S1-D0	USA	No Host info	soil	Sahl,J., et al. Unpublished
LOWK01000038	FL-2-3-10-S1-D7	USA	No Host info	soil	Sahl,J., et al. Unpublished
LOVV01000002	AZ-3-1-30-S1-D7	USA	No Host info	soil	Sahl,J., et al. Unpublished
CP011636	CAV1374	USA	<i>Homo sapiens</i>	Perirectal	Sheppard,A.E., et al. Unpublished
CP009863	KPNIH29	USA	<i>Homo sapiens</i>	perirectal swab	Conlan,S., et al. 2014
CP010557	S12	China	No Host info	wood	Bao,W., et al. Unpublished
CP008788	KONIH1	USA	<i>Homo sapiens</i>	perirectal swab	Conlan,S., et al. Unpublished
KK020677	KOS6	Russia: Kazan	No Host info	chemical hydrocarbon sludge (waste waters from petrol industry factory)	Grigoryeva,T.V., et al. 2013
NZ_JAHKJX010000001	MJC1	South Korea	No Host info	peat bog	Naizabekov,S., et al. 2021
NZ_QHHQ01000003	PTG4-2	Indian Ocean	No Host info	deep-sea sediment	Liu,X., et al. Unpublished
NZ_JADNQW010000005	H3A	Netherlands	No Host info	riparian wetland soil	Bodelier,P.L.E., et al. Unpublished
NZ_CP044331	BRCS2	United Kingdom	No Host info	Bog sediment	Rumah,B.L., et al. Unpublished
NZ_CP023737	OB3b	United Kingdom	No Host info	soil	Heil,J.R., et al. 2017
NZ_ADVE02000001	OB3b	No Country info	No Host info	No info	Stein,L.Y., et al. 2010
NC_014664	ATCC 17100	No Country info	No Host info	No info	Lucas,S., et al. Unpublished
NC_011894	ORS 2060	No Country info	No Host info	No info	Lucas,S., et al. Unpublished
NZ_CP047475	HN897	China	No Host info	seawater	Liu,Y. and Zhao,Z., Unpublished
NC_017532	DSM 4166	No Country info	No Host info	No info	Yu,H., et al. 2011
CP047475	HN897	China	No Host info	seawater	Liu,Y. and Zhao,Z., Unpublished
CP024643	F107	China	<i>Homo sapiens</i>	sputum	Daixi,L. and Zhancheng,G., Unpublished
CP026013	13450	China	<i>Homo sapiens</i>	No info	Jia,X., et al. Unpublished
CP026368	A708	China	<i>Homo sapiens</i>	blood	Chen,F., 2018
CP020395	FDAARGOS_239	No Country info	No Host info	Oryza sativa, rhizosphere soil	Minogue,T., et al. Unpublished
CP014071	FDAARGOS_93	USA	<i>Homo sapiens</i>	Urine	Kerrigan,L., et al. Unpublished
QJUR01000002	P30C	United Kingdom	<i>Quercus robur</i>	Symptomatic Inner Bark	Bueno-Gonzalez,V. and Brady,C., Unpublished
QJUP01000003	P17C	United Kingdom	<i>Quercus robur</i>	Larval galleries created by Agrilus biguttatus	Bueno-Gonzalez,V. and Brady,C., Unpublished
AP014705	MA-22A	No Country info	No Host info	No info	Tani,A., et al. 2015
CP018307	X39	China	<i>Homo sapiens</i>	sputum	Zhai,Y., et al. 2016
PSYR01000002	m-1	USA	No Host info	coal strip mine refuse	Issotta,F., et al. Unpublished
CP030173	13450	China	<i>Homo sapiens</i>	No info	Liang,Q., Jiang,X. and Zhou,D., Unpublished
CP030171	A708	China	<i>Homo sapiens</i>	No info	Liang,Q., Jiang,X. and Zhou,D., Unpublished
QHHQ01000003	PTG4-2	Indian Ocean	No Host info	deep-sea sediment	Liu,X.,et al. Unpublished
CP029770	AACKY	Canada	No Host info	wastewater treatment plant	Ajayi,A.O. and Yost,C.K., Unpublished
CP029722	AR_0140	No Country info	No Host info	No info	Conlan,S., et al. Unpublished
CP027663	SPIII_3	Spain: Murcia	No Host info	Mining area near to La Esperanza in Murcia, Spain	Thyssen,C., et al. Unpublished
CP029597	ATCC 700603	USA	<i>Homo sapiens</i>	urine	Nicoloff,H., et al. Unpublished
CP029432	CAV2018	USA	No Host info	Hospital waste water	Mathers,A.J., et al. Unpublished
CP029437	CAV2013	USA	<i>Homo sapiens</i>	Peri-rectal	Mathers,A.J., et al. Unpublished
CP029443	CAV1947	USA	No Host info	Hospital waste water	Mathers,A.J., et al. Unpublished
CP028990	AR_0142	No Country info	No Host info	No info	Conlan,S., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
CP028953	AR_0141	No Country info	No Host info	No info	Conlan,S., et al. Unpublished
CP026715	AR_0028	No Country info	No Host info	No info	Conlan,S., et al. Unpublished
CP026285	KONIH2	USA	No Host info	No info	Weingarten,R.A., et al. Unpublished
CP026269	KONIH4	USA	No Host info	No info	Weingarten,R.A., et al. Unpublished
CP026275	KONIH5	USA	No Host info	No info	Weingarten,R.A., et al. Unpublished
JTBQ02000003	FDAARGOS_66	USA	<i>Homo sapiens</i>	Endotracheal aspirate	Campos,J., et al. Unpublished
PITQ01000001	AA	Denmark	No Host info	soil	Vangkilde,S.G., Unpublished
PIZT01000067	Kb3	India	No Host info	rice rhizosphere	Rahalkar,M.C. and Pandit,P., 2018
PEHS01000007	6TM	Romania	<i>Homo sapiens</i>	fecal screen	Phan,H.T.T.,et al. Unpublished
CP023185	K518	China	patient	China: The First Affiliated Hospital of Zhejiang University	Zheng,B., Unpublished
CP022823	KPN1705	USA	<i>Homo sapiens</i>	wound	Long,S.W., et al. Unpublished
CP022348	K516	China	<i>Homo sapiens</i>	feces	Zheng,B., Unpublished
CP022129	HV10_M2	Norway	No Host info	soil	Mateos-Rivera,A., Unpublished
CP002038	3937	No Country info	No Host info	No info	Glasner,J.D., Yet al. 2011
KF114598	CCBAU 53325	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2015
KJ818108	CCBAU 51502	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2015
CM001442	WSM471	No Country info	No Host info	No info	Lucas,S., et al. Unpublished
JH600073	WSM1253	No Country info	No Host info	No info	Lucas,S., et al. Unpublished
RHMNIFHW	No Strain info	No Country info	No Host info	No info	Fuhrmann,M. and Hennecke,H., 1984
KJ818107	CCBAU 53267	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2015
KJ818106	CCBAU 53266	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2015
FPBQ01000029	LMG 26795	No Country info	No Host info	No info	Varghese,Neha. 2016
VLLA01000047	CGMCC 1.10948	No Country info	No Host info	No info	Whitman,W.B., et al. 2015
VCLK01000042	CGMCC 1.10947	No Country info	No Host info	No info	Whitman,W.B., et al. 2015
FMAI01000005	ERR11	No Country info	No Host info	No info	Varghese,Neha. 2016
FMAE01000036	CCBAU 10071	No Country info	No Host info	No info	Varghese,Neha. 2016
VLKS01000044	CGMCC 1.3531	No Country info	No Host info	No info	Whitman,W., Unpublished
VITY01000016	BR 10355	No Country info	No Host info	No info	Whitman,W., Unpublished
VITW01000007	BR 10556	No Country info	No Host info	No info	Whitman,W., Unpublished
VITW01000009	BR 10556	No Country info	No Host info	No info	Whitman,W., Unpublished
VITU01000006	BR 10555	No Country info	No Host info	No info	Whitman,W., Unpublished
VITU01000010	BR 10555	No Country info	No Host info	No info	Whitman,W., Unpublished
VITK01000005	BR 510	No Country info	No Host info	No info	Whitman,W., Unpublished
FOQM01000030	Gha	No Country info	No Host info	No info	Varghese,N. 2016
FOQJ01000002	CF659	No Country info	No Host info	No info	Varghese,N. 2016
FOUS01000026	Rc3b	No Country info	No Host info	No info	Varghese,N. 2016
FOVU01000015	Ghvi	No Country info	No Host info	No info	Varghese,N. 2016
FNCU01000003	Rc2d	No Country info	No Host info	No info	Varghese,N. 2016
FMZW01000018	R5	No Country info	No Host info	No info	Varghese,N. 2016
GQ289568	No Strain info	China	No Host info	reddish paddy soil	Ding,Y. and Cao,H., Unpublished
KF114610	CCBAU 51529	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114609	CCBAU 51528	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114608	CCBAU 51523	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114607	CCBAU 51522	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114606	CCBAU 51515	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114605	CCBAU 51511	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114604	CCBAU 51495	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114603	CCBAU 51617	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114602	CCBAU 51607	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114601	CCBAU 51604	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114600	CCBAU 51595	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114599	CCBAU 53326	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114597	CCBAU 53278	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114596	CCBAU 53276	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114595	CCBAU 53273	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114594	CCBAU 53299	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114593	CCBAU 53298	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114592	CCBAU 53289	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114591	CCBAU 51578	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114590	CCBAU 51569	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114589	CCBAU 51568	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114588	CCBAU 51559	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
KF114587	CCBAU 51555	China	<i>Erythrophloeum fordii</i>	No info	Yao,Y., et al. 2014
CAFK01000219	STM 3843	No Country info	No Host info	No info	Mornico,D., et al. 2011
CAFK01000311	STM 3843	No Country info	No Host info	No info	Mornico,D., et al. 2011
CAFI01000496	ORS375	No Country info	No Host info	No info	Mornico,D., et al. 2011
CAFI01000497	ORS375	No Country info	No Host info	No info	Mornico,D., et al. 2011
AB079633	No Strain info	No Country info	No Host info	No info	Cantera,J.J.L., et al. 2004

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
LC461127	TrV5	Venezuela	<i>Vigna unguiculata</i>	soil	Artigas,R.M.D., et al. 2020
LC461126	TrV2B	Venezuela	<i>Vigna unguiculata</i>	root nodules	Artigas,R.M.D., et al. 2020
LC461125	TrV27	Venezuela	<i>Vigna unguiculata</i>	root nodules	Artigas,R.M.D., et al. 2020
LC461124	TrV26	Venezuela	<i>Vigna unguiculata</i>	root nodules	Artigas,R.M.D., et al. 2020
LC461120	MV7	Venezuela	<i>Vigna unguiculata</i>	soil	Artigas,R.M.D., et al. 2020
LC461116	MR1	Venezuela	<i>Vigna radiata</i>	soil	Artigas,R.M.D., et al. 2020
LC461112	LaR3	Venezuela	<i>Vigna radiata</i>	soil	Artigas,R.M.D., et al. 2020
LC461110	GV5	Venezuela	<i>Vigna unguiculata</i>	soil	Artigas,R.M.D., et al. 2020
LC461108	GV1	Venezuela	<i>Vigna unguiculata</i>	soil	Artigas,R.M.D., et al. 2020
LC461100	DCV2	Venezuela	<i>Vigna unguiculata</i>	soil	Artigas,R.M.D., et al. 2020
LC461098	ApV8	Venezuela	<i>Vigna unguiculata</i>	soil	Artigas,R.M.D., et al. 2020
LC461097	ApV4	Venezuela	<i>Vigna unguiculata</i>	soil	Artigas,R.M.D., et al. 2020
LC461096	ApV14	Venezuela	<i>Vigna unguiculata</i>	soil	Artigas,R.M.D., et al. 2020
LC461091	AmR3	Venezuela	<i>Vigna radiata</i>	soil	Artigas,R.M.D., et al. 2020
LC461085	AFV22	Venezuela	<i>Vigna unguiculata</i>	soil	Artigas,R.M.D., et al. 2020
MH091853	B2_9	No Country info	No Host info	soil	Soenens Martinez de Murguia,A., 2018
MH091852	B2_4	No Country info	No Host info	soil	Soenens Martinez de Murguia,A., 2018
MH091851	BSN_1	No Country info	<i>Macroptilium atropurpureum</i>	nodule	Soenens Martinez de Murguia,A., 2018
MH091850	BSN_7	No Country info	<i>Macroptilium atropurpureum</i>	nodule	Soenens Martinez de Murguia,A., 2018
MH091849	BSN_9	No Country info	<i>Macroptilium atropurpureum</i>	nodule	Soenens Martinez de Murguia,A., 2018
MH091848	BSN_11	No Country info	<i>Macroptilium atropurpureum</i>	nodule	Soenens Martinez de Murguia,A., 2018
MH091847	BSN_2	No Country info	<i>Macroptilium atropurpureum</i>	nodule	Soenens Martinez de Murguia,A., 2018
MH091846	BLN_3	No Country info	<i>Lupinus albus</i>	nodule	Soenens Martinez de Murguia,A., 2018
MH091845	BLN_2	No Country info	<i>Lupinus albus</i>	nodule	Soenens Martinez de Murguia,A., 2018
MH091844	BLN_10	No Country info	<i>Lupinus albus</i>	nodule	Soenens Martinez de Murguia,A., 2018
MH091843	BLN_1	No Country info	<i>Lupinus albus</i>	nodule	Soenens Martinez de Murguia,A., 2018
LC430323	SMY3-10	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430322	SMY3-9	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430321	SMY3-8	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430320	SMY3-7	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430319	SMY3-6	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430318	SMY3-5	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430317	SMY3-4	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430316	SMY3-3	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430315	SMY3-2	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430314	SMY3-1	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430313	SAY3-10	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430312	SAY3-9	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430311	SAY3-8	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430310	SAY3-7	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430309	SAY3-6	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430308	SAY3-5	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430307	SAY3-4	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430306	SAY3-3	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430305	SAY3-2	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430304	SAY3-1	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430303	MMY3-10	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430302	MMY3-9	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430301	MMY3-8	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430300	MMY3-7	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430299	MMY3-6	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430298	MMY3-5	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430297	MMY3-4	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430296	MMY3-3	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430295	MMY3-2	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430294	MMY3-1	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430293	BLY3-10	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430292	BLY3-9	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430291	BLY3-8	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430290	BLY3-7	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430289	BLY3-6	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430288	BLY3-5	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430287	BLY3-4	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430286	BLY3-3	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430285	BLY3-2	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430284	BLY3-1	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430283	AHY3-10	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430282	AHY3-9	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
LC430281	AHY3-8	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430280	AHY3-7	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430279	AHY3-6	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430278	AHY3-5	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430277	AHY3-4	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430276	AHY3-3	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430275	AHY3-2	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
LC430274	AHY3-1	Myanmar	No Host info	root nodule	Htwe,A.Z. and Yamakawa,T., Unpublished
MH444258	HCOKY	No Country info	<i>Chamaecrista fasciculata</i>	No info	Zawada,Z. and Prasad,G., 2018
MH444257	HUMN	No Country info	<i>Chamaecrista fasciculata</i>	No info	Zawada,Z. and Prasad,G., 2018
MH444256	RMN	No Country info	<i>Chamaecrista fasciculata</i>	No info	Zawada,Z. and Prasad,G., 2018
MH444255	MSOY	No Country info	<i>Chamaecrista fasciculata</i>	No info	Zawada,Z. and Prasad,G., 2018
MH444254	SDSOY	No Country info	<i>Chamaecrista fasciculata</i>	No info	Zawada,Z. and Prasad,G., 2018
MH444253	ASDSOY	No Country info	<i>Chamaecrista fasciculata</i>	No info	Zawada,Z. and Prasad,G., 2018
MH444252	ZZ1	No Country info	<i>Chamaecrista fasciculata</i>	No info	Zawada,Z. and Prasad,G., 2018
MH444251	USDA800	No Country info	<i>Chamaecrista fasciculata</i>	No info	Zawada,Z. and Prasad,G., 2018
MH444250	USDA798	No Country info	<i>Chamaecrista fasciculata</i>	No info	Zawada,Z. and Prasad,G., 2018
MH444249	USDA797	No Country info	<i>Chamaecrista fasciculata</i>	No info	Zawada,Z. and Prasad,G., 2018
MH444248	USDA794	No Country info	<i>Chamaecrista fasciculata</i>	No info	Zawada,Z. and Prasad,G., 2018
MH444247	Nodule4	No Country info	<i>Chamaecrista fasciculata</i>	No info	Zawada,Z. and Prasad,G., 2018
MH444246	Nodule1	No Country info	<i>Chamaecrista fasciculata</i>	No info	Zawada,Z. and Prasad,G., 2018
KM881661	ICMP 20566	New Zealand	<i>Lupinus polyphyllus</i>	root nodule	Ryan-Salter,T.P., Unpublished
KM881660	ICMP 20565	New Zealand	<i>Lupinus polyphyllus</i>	root nodule	Ryan-Salter,T.P., Unpublished
KM881659	ICMP 20564	New Zealand	<i>Lupinus polyphyllus</i>	root nodule	Ryan-Salter,T.P., Unpublished
KM881658	ICMP 20563	New Zealand	<i>Lupinus polyphyllus</i>	root nodule	Ryan-Salter,T.P., Unpublished
KM881657	ICMP 20562	New Zealand	<i>Lupinus polyphyllus</i>	root nodule	Ryan-Salter,T.P., Unpublished
KM881656	ICMP 20561	New Zealand	<i>Lupinus polyphyllus</i>	root nodule	Ryan-Salter,T.P., Unpublished
KM881655	ICMP 20560	New Zealand	<i>Lupinus polyphyllus</i>	root nodule	Ryan-Salter,T.P., Unpublished
KM881654	ICMP 20559	New Zealand	<i>Lupinus polyphyllus</i>	root nodule	Ryan-Salter,T.P., Unpublished
KM881653	ICMP 20558	New Zealand	<i>Lupinus polyphyllus</i>	root nodule	Ryan-Salter,T.P., Unpublished
KF439852	C8	China	No Host info	root nodule	Wei,X., Unpublished
KF439848	D1	China	No Host info	root nodule	Wei,X., Unpublished
KF439846	C6	China	No Host info	root nodule	Wei,X., Unpublished
KF439844	C2	China	No Host info	root nodule	Wei,X., Unpublished
KF439843	G7	China	No Host info	root nodule	Wei,X., Unpublished
E01169	No Strain info	No Country info	No Host info	No info	Edowaado,A.A., 1987
AB079683	No Strain info	No Country info	No Host info	No info	Cantera,J.J., et al. 2004
AB079677	No Strain info	No Country info	No Host info	No info	Cantera,J.J., et al. 2004
AB079676	No Strain info	No Country info	No Host info	No info	Cantera,J.J., et al. 2004
AB079675	No Strain info	No Country info	No Host info	No info	Cantera,J.J., et al. 2004
RHMNIFDKZ	No Strain info	No Country info	No Host info	No info	Adams,T.H. and Chelm,B.K., et al. 1984
RHM RSA7	No Strain info	No Country info	No Host info	No info	Kaluza,K., et al. 1985
RHM RSA10	No Strain info	No Country info	No Host info	No info	Kaluza,K., et al. 1985
BLJA01000001	AOG2	Japan:Hokkaido	No Host info	wetland soil	Guo,Y., et al. Unpublished
AM711867	NCPPB 382	No Country info	No Host info	No info	Garlemann,K.H., et al. 2008
BX470248	Tohama I	No Country info	No Host info	No info	Parkhill,J., et al. 2003
LT605205	M3/6	No Country info	No Host info	biogas sludge	Wibberg,D., 2016
AL645882	No Strain info	No Country info	No Host info	No info	Redenbach,M., et al. 1996
AZAJ01000001	DSM 2278	No Country info	No Host info	No info	Eisen,J., et al. 2013
CP006988	IE4771	Mexico	<i>Phaseolus vulgaris</i>	nodule	Bustos,P., Unpublished
CP005955	Mim1	Mexico	<i>Mimosa affinis</i>	No info	Rogel,M.A., et al. Unpublished
AP017457	KNC	No Country info	No Host info	No info	Nakai,R., et al. 2016
HG738867	K-12	No Country info	No Host info	No info	Laehnemann,D., et al. 2004
BX248353	NCTC 13129	No Country info	No Host info	No info	Cerdeno-Tarraga,A.M., et al. 2003
CP000830	DFL 12	No Country info	No Host info	No info	Copeland,A., Unpublished
CP016499	RAC06	USA	No Host info	Algal phycosphere	Fixen,K.R., et al. 2016
CP016464	RAC05	USA	No Host info	No info	Fixen,K.R., et al. 2016
CP016449	RAC07	USA	<i>Chrysochromulina tobin</i>	phycosphere	Fixen,K.R., et al. 2016
BX571856	MRSA252	No Country info	No Host info	No info	Holden,M.T., et al. 2004
BX640411	Tohama I	No Country info	No Host info	No info	Parkhill,J., et al. 2003
CP006777	SA-1	USA	No Host info	No info	Noar,J., et al. 2014
CP013242	CDC_67071	No Country info	No Host info	No info	Hill,K.K., Set al. 2015
AP017977	S13	No Country info	No Host info	No info	Yamagishi,J. and Yamaguchi,H., Unpublished
GU564257	DASA 68006	Thailand	<i>Derris elliptica</i>	root-nodule	Pongsilp,N. and Leelahawong,C., 2010
BX072543	TW08/27	No Country info	No Host info	No info	Bentley,S.D., et al. 2003
H8A92_RS04140	10BB	South Africa	<i>Acacia dealbata</i>	Root nodules	Avontuur JR., et al. 2021
H8A95_RS13860	Pear76	South Africa	<i>Pearsonia obovata</i>	Root nodules	Avontuur JR., et al. 2021
		South Africa	<i>Pearsonia obovata</i>	Root nodules	Avontuur JR., et al. 2021

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
H8B02_RS19890	Pear77			¹ Genisteae species are in a blue font	

Supplementary Table S3.1. Host, geography, and source information for *Mesorhizobium* type strains as well accession numbers for their protein coding genes *atpD*, *gyrB*, *recA*, *rpoB*, and *dnaK*

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. abyssinicae</i>	AC98c ^T	Root nodule	<i>Acacia abyssinica</i>	Ethiopia	NI	GQ84795 1	NI	GQ84801 1.1	GQ8478 66	NI	Degefu et al. 2013
<i>M. acaciae</i>	RITF741 ^T	Root nodule	<i>Acacia</i>	NI	KM35814 3.1	NI	NI	KM35815 8.1	NI	NI	Zhu et al. 2015
<i>M. albiziae</i>	DSM 21822 ^T	Root nodule	<i>Albizia kalkora</i>	China	F3H98_R S08285	F3H98_R S17265	F3H98_R S06425	F3H98_R S11375	F3H98_R S22885	NZ_FOSL0 1000003.1	Wang et al. 2007
" <i>M. alexandrii</i> " ¹	Z1-4 ^T	From Marine dinoflagellate	<i>dinoglagellate Alexandrium minutum</i>	East China sea	EP165_R S06735	EP165_R S03500	EP165_R S06190	EP165_R S17335	EP165_R S19940	NZ_RCIO0 1000001	Yang et al. 2020

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. alhagi</i>	CCNWXJ 12-2 ^T	Root nodule	<i>Alhagi sparsifolia</i>	Subtropical region of China	MAXJ12_RS04845	MAXJ12_RS02435	MAXJ12_RS03440	MAXJ12_14955	MAXJ12_RS19585	NZ_AHAM01000024	Chen et al. 2010
<i>M. amorphae</i>	ACCC19665 ^T	Soil	<i>Amorpha fruticosa</i>	China	KP251586.1	KP251506.1	KP251288.1	AY688612.1	FJ393285.1	NI	Wang et al. 1999
<i>M. atlanticum</i>	CNPS03140 ^T	Nodules	<i>Phaseolus vulgaris</i>	Atlantic forest of Brazil	DPM35_RS17545	DPM35_RS16425	DPM35_RS19725	DPM35_13485	DPM35_RS31795	NZ_QMBQ01000005	Ferraz Helene et al. 2019
<i>M. australicum</i>	WSM2073 ^T	Root nodule	<i>Biserrula pelecinus</i>	Northam Australia	MESAU_RS06045	MESAU_RS01470	MESAU_RS03470	MESAU_RS21645	MESAU_RS20770	NC_019973	Nandasena et al. 2009

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. calcicola</i>	ICMP 19560 ^T	limestone area	<i>Sophora longicarinata</i>	Waima/Ur e rivers, New Zealand	NI	NI	NI	KC237686.2	KJ450947.1	NI	De Meyer et al. 2016
<i>M. camelthorni</i>	CCNWXJ 40-4 ^T	No source info	<i>Alhagi sparsifolia</i>	China	G6N73_R S00725	G6N73_R S21290	G6N73_RS08655	G6N73_R S07330	G6N73_RS29210	NZ_JAAKZ F0100000	Chen et al. 2011
<i>M. cantuariense</i>	ICMP 19515 ^T	No source info	<i>Sophora prostrata</i>	Rakaia rive, Canterbury New Zealand	NI	NI	NI	NI	KJ450941.1	NI	De Meyer et al. 2015
<i>M. caraganae</i>	CCBAU 11299 ^T	Root nodules	<i>Caragana microphylla</i>	China	EU249379.1	KP251573.1	KP251355.1	EU249394.1	FJ393287.1	NI	Guan et al. 2008

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. caraganae</i>	CCBAU 01502	Root nodules	<i>Caraganae</i> sp.	China	AK97_RS 10680	AK97_RS 17065	AK97_R S22775	AK97_RS 12440	AK97_R S18540	NZ_JHQT0 1000043	Chen et al. unpublished
<i>M. carbonis</i>	B2.3 ^T	Coalbed water	No host info	China	EJC49_R S01495	EJC49_R S06465	EJC49_2 5190	EJC49_23 345	EJC49_R S24390	NZ_RWKW 00000000	Li et al. 2019
<i>M. carmichaelinearum</i>	ICMP 18942 ^T	Root nodules	<i>Carmichaeliella</i> sp.	New Zealand	CKW40_R S38155	CKW40_R S15845	CKW40_RS27320	CKW40_R S19360	CKW40_RS40055	NZ_FZQR0 1000006	De Meyer et al. 2019
<i>M. chacoense</i>	LMG 19008 ^T	Root nodules	<i>Prosopis alba</i>	Argentina	NI	GQ84793 2	AB25303 8.1	AB253230 .1	FJ39329 4.1	NI	Velázquez et al. 2001

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. ciceri</i>	NBRC 100389 ^T	Root nodules	<i>Cicer arietinum</i>	Spain	NI	NI	NI	NI	NI	NI	(Nour et al. 1994) Jarvis et al. 1997
<i>M. ciceri</i>	CC1192	No source info	<i>Cicer arietinum</i>	No country info	A4R28_R S22525	A4R28_26 725	A4R28_RS24800	A4R28_R S05170	A4R28_RS08520	CP015062.1	Haskett et al. 2016
<i>M. ciceri</i> biovar <i>biserrulae</i>	WSM128 4 ^T	No source info	<i>Biserrula pelecinus</i>	Bottida Sardinia Italy	A4R29_R S27545	A4R29_R S01845	A4R29_RS29855	A4R29_R S11580	A4R29_RS14950	NZ_CP015062	Nandasena et al
<i>M. composti</i>	CC-YTH430 ^T	compost	No host info	No country info	E6C48_R S10745	E6C48_05 280	E6C48_0 3460	E6C48_20 875	E6C48_RS06495	SSNY00000000	Lin et al. 2020

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. delmotii</i>	STM 462 ^T	Root nodules	<i>Anthyllis vulneraria</i>	Saint Laurent le Minier, Gard France	BQ8482_RS27445	BQ8482_RS03930	BQ8482_RS01985	BQ8482_RS24830	BQ8482_RS29320	NZ_FUIG0100001	Mohamad et al. 2018
<i>M. "denitrificans"</i>	LA-28 ^T	Sediment	No host info	Ha-nam, Gyeonggi Korea	DY251_RS06100	DY251_RS00845	DY251_00460	DY251_06935	DY251_RS15665	NZ_QURN00000000	Siddiqi et al. 2019
<i>M. erdmanii</i>	USDA 3471 ^T	Root nodules	<i>Lotus corniculatus</i> var. <i>tenuifolium</i>	New Zealand	A3AU_RS0112145	A3AU_RS0110410	A3AU_RS0110840	A3AU_RS0103800	A3AU_RS0126795	NZ_AXAE00000000	Martinez-Hidalgo et al. 2015
<i>M. ephedrae</i>	6GN-30 ^T	No source info	<i>Ephedra przewalskii</i>	Ephedra sinica, Kumtag desert, China	C7I84_RS26515	C7I84_RS03730	C7I84_RS16455	C7I84_00500	C7I84_RS27420	NZ_PXYK00000000	Liu et al. 2018

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. gobiense</i>	CCBAU 83330 ^T		No host info	Gobi desert China	EF549409.1	NI	KP251363.1	EF549481.	FJ393289.1	NI	Han et al. 2008
<i>Mesorhizobium hankyongii</i>	Gsoil 531 ^T	Ginseng soil No source info	No host info	Pocheon-si, Geonggi-do Korea,	NI	NI	NI	NI	NI	NI	Siddiqi et al. 2019
<i>M. hawassense</i>	AC99b ^T	Root nodules	<i>Sesbania sesban</i>	Hawassa, Ethiopia	DPM33_R S26165	DPM33_R S08545	DPM33_RS15325	DPM33_1 6795	DPM33_RS22550	NZ_QMBP01000003	Degefu et al. 2013
<i>M. helmanticense</i>	CSLC115 N ^T	Root nodules	<i>Lotus corniculatus</i>	No country info	C9427_R S22805	C9427_R S10860	C9427_R S29670	C9427_01 510	C9427_R S32680	NZ_PZJX01000024	Marcos-García et al. 2017

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
" <i>M. hominis</i> "	NBMC_P2-C13 ^T	Blood of a patient afflicted with fatal pulmonary illness	No host info	USA	K763_RS0107125	NI	K763_RS0127230	K763_RS0105215	K763_RS0123760	NZ_AVBN0000000.1	Lo et al. 2013
<i>M. huakuii</i>	IFO 15243 ^T	Root nodules	<i>Astragalus sinicus</i>	Nanjing China	NI	AB253033.1	NI	AB253225.1	NI	NI	(Chen et al. 1991) Jarvis et al. 1997
" <i>M. hungaricum</i> "	UASWS1009 ^T	No source info	No host info	Hungary	QV13_RS27905	QV13_RS21870	QV13_RS23120	QV13_RS19105	QV13_RS18060	NZ_MDEO0000000.	Crovadore et al. 2016
" <i>M. intechi</i> "	BD68 ^T	Nodules from soils of the Flooding Pampa, Argentina	<i>Lotus tenuis</i>	Argentina	C1D09_RS18960	C1D09_RS20850	C1D09_009685	C1D09_011520	C1D09_RS27700	NZ_PNOT02000239	Estrella et al. 2020

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. japonicum</i>	MAFF 303099 ^T	No source info	<i>Lotus corniculatus</i> L. var. <i>japonicus</i> (Japanese bird's-foot trefoil)	Tochigi Japan	MAFF_RS 16940	MAFF_RS 21250	MAFF_R S19575	MAFF_RS 01215	MAFF_R S02160	NC_002678.2	Martínez-Hidalgo et al. 2016
<i>M. jarvisii</i>	LMG 28313 ^T	No source info	<i>Lotus corniculatus</i>	New Zealand	D3242_R S09075	D3242_R S11425	D3242_R S11425	D3242_R S23180	D3242_R S31020	QZXA00000000.1	Martínez-Hidalgo et al. 2015
<i>M. kowhaii</i>	Ach-343 ^T	Root nodules	<i>Astragalus</i> sp.	Russia: Baikal Lake region, Siberia	B5V02_R S34385	B5V02_R S15080	B5V02_R S17405	B5V02_R S01785	B5V02_R S28000	NZ_MZXV01000000	et al. 2016
<i>M. loti</i>	LMG 6125 ^T	Root nodules	<i>Lotus corniculatus</i> var. <i>tenuifolium</i>	No country info	C7U62_21 870	C7U62_R S00070	AM06269 9.1	C7U62_1 4175	C7U62_0 9485	NZ_PYJO01000001	(Jarvis et al. 1982) Jarvis et al. 1997

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. mediterraneum</i>	LMG 17148 ^T	No source info	<i>Cicer arietinum</i> L.	Spain	AM41876 8.1	AM41881 6	AM18211 9.1	AM18215 7.1	AM29535 0.1	NI	(Nour et al. 1995) Jarvis et al. 1997
<i>M. metallidurans</i>	LMG 24485 ^T	metallicolous soil	<i>Anthyllis vulneraria</i>	Languedoc, France	KP251047 .1	KP251582	KP25136 4.1	KP252053 .1	KP25212 7.1	NI	Vidal et al. 2009
<i>M. muleiense</i>	CGMCC 1.11022 ^T	Root nodule	<i>Cicer arietinum</i>	Xinjiang (Mulei), China	NI	BLT09_R S10420	BLT09_R S07610	NI	BLT09_R S05295	NZ_FNEE01000004	Zhang et al. 2012
<i>M. microcysteis</i>	MaA-C15 ^T	culture of <i>Microcystis aeruginosa</i>	No host info	Republic of Korea	FY036_R S06200	FY036_R S22385	FY036_1 4590	FY036_16 695	FY036_R S00630	VSZS00000000	Jung et al. 2012

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. newzealandense</i>	ICMP 19545 ^T	Root nodule	<i>Sophora prostrata</i>	New Zealand	NI	NI	NI	KC237690.2	KJ450969.1	NI	De Meyer et al. 2016
<i>M. norvegicum</i>	10.2.2 ^T	Root nodule	<i>Lotus corniculatus</i>	Norway	FCU66_R S10410	FCU66_R S16875	FCU66_RS31115	FCU66_R S35625	FCU66_RS18520	NZ_SMYZ 01000041	Kabdullayeva et al. 2020
" <i>M. neociceri</i> "	CCANP3 5 ^T	Root nodules	<i>Cicer canariense</i>	Spain: Canary Island	H0241_R S30525	H0241_R S21580	H0241_R S06925	H0241_R S09970	H0241_R S34845	NZ_JACDT Y010000000	Leon-Barrios et al. 2021
<i>M. oceanicum</i>	B7 ^T	Sea water	No host info	China	BSQ44_R S01410	BSQ44_R S05960	BSQ44_RS02155	BSQ44_R S17355	BSQ44_RS16280	NZ_CP018171	Fu et al. 2017

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. olivaresii</i>	CPS13 ^T	Nodules	<i>Lotus corniculatus</i>	Granada Spain	FM203309.1	NI	NI	FN556460.1	NI	NI	Lorite et al. 2017
<i>M. opportunistum</i>	WSM207 5 ^T	Root nodule	<i>Biserrula peecinus</i>	Northam Australia	MESOP_RS05980	MESOP_RS01535	MESOP_RS03665	MESOP_RS23860	MESOP_RS22905	NC_015675	Nandasena et al. 2009
<i>M. plurifarum</i>	LMG 11892 ^T	No source info	<i>Acacia senegal</i>	Senegal	C7U60_19035	C7U60_20915	C7U60_00780	C7U60_10905	C7U60_07395	PYJP01000034	de Lajudie et al. 1998
<i>M. prunaredense</i>	LMG 29641 ^T (isolate 1)	Root nodule	<i>Anthyllis vulneraria</i>	La Prunarède , Herault France	BQ8794_RS21940	BQ8794_RS07780	BQ8794_RS05715	BQ8794_RS00490	BQ8794_RS23495	NZ_FTPD01000006	Mohamad et al. 2018

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. qingshengii</i>	CGMCC 1.12097 ^T	effective nodule	<i>Astragalus sinicus</i>	China	BLS48_R S06590	BLS48_R S19865	BLS48_R S04290	BLS48_R S13365	BLS48_R S32700	NZ_FMXM 01000012	Zheng et al. 2013
" <i>M. rhizophilum</i> "	YM1C-6-2 ^T	Rhizosphere of maize	Soil	China: Beijing	D8676_R S10160	D8676_R S10160	D8676_1 9100	D8676_15 145	D8676_R S14685	RCIZ00000 000.1	Gao et al. 2020
<i>M. robiniae</i>	CCNWC 115 ^T	Root nodules	<i>Robinia pseudoacacia</i>	China	NI	MH78608 4	NI	GQ85650 1.1	NI	NI	Zhou et al. 2010
<i>M. sangaii</i>	DSM 100039 ^T	Root nodules	<i>Astragalus luteolus</i>	China Ganzhi, Sichuan	HNQ71_R S10025	HNQ71_R S14485	HNQ71_ 002556	HNQ71_R S00935	HNQ71_ RS33975	NZ_JACHE F01000000 2	Zhou et al. 2013

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. sanjuanii</i>	BSA136 ^T	Nodules	<i>Lotus tenuis</i>	Argentina	CN311_R S14875	CN311_R S14635	CN311_ RS15510	CN311_2 1230	CN311_ RS17295	NZ_NWQG 01000084	Sannazzaro et al. 2018
<i>M. sediminum</i>	KCTC 42205 2 ^T	deep-sea sediment of 3386 M	No host	Indian Ocean	HK436_R S09135	HK436_R S04510	HK436_ RS07735	HK436_R S17000	HK436_ RS14830	NZ_JABET K010000001	Yuan et al. 2016
<i>M. septentrionale</i>	HAMBI 2582 ^T	No source info	<i>Astragalus adsurgens</i>	northern parts of China	DQ65949 8.1	GQ84794 0.1	AB25304 1	DQ44430 4.1	GQ8478 84	NI	Gao et al. 2004
<i>M. shangrilense</i>	CCBAU_65327 ^T	Root nodules	<i>Caragana bicolor</i>	Yunnan province China	EU672471 .1	KP251575	KP25135 7	NI	NI	NI	Lu et al. 2009

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. shonense</i>	AC39a ^T	Root nodules	<i>Acacia abyssinica</i>	Shone, Ethiopia	NI	GQ847945		GQ848018.1	GQ847877	NI	Degefu et al. 2013
<i>M. silamurunense</i>	CCBAU 01550 ^T	Root nodules	<i>Astragalus membranaceus</i>	China	DH10_RS20870	DH10_RS03410	DH10_RS24835	DH10_RS25030	DH10_RS30115	NZ_JHQR01000034	Zhao et al. 2012
<i>M. soli</i>	JCM 19897 ^T	Forest soil	<i>Robinia pseudoacacia</i>	South Korea	C7I85_RS06385	C7I85_RS13370	C7I85_RS07665	C7I85_14980	C7I85_RS03145	NZ_PXYL01000006	Nguyen et al. 2015
<i>Mesorhizobium s ophorae</i>	LMG 28223 ^T	Root nodules	<i>Sophora microphylla</i>	Pororari river, Westland New Zealand	CGZ66_RS16795	CGZ66_RS07195	CGZ66_RS09270	C7I85_14980	C7I85_RS03145	NZ_NNRI01000007	De Meyer et al. 2016

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. tamadayense</i>	DSM 28320 ^T	Root nodules	<i>Anagyris latifolia</i> ,	Spain	EH240_R S32740	EH240_R S15540	EH240_2 1155	EH240_R S09795	EH240_R S34760	NZ_RQXT 01000017	Ramírez-Bahena et al. 2012
<i>M. tarimense</i>	CCBAU 83306 ^T	Root nodules	<i>Lotus frondosus</i>	Tarim basin, China	EU371996 .1	NI	JQ01393 6.1	EU371998 .1	FJ39328 8	NI	Han et al. 2008
<i>M. temperatum</i>	SDW 018 ^T	temperate zones	<i>Astragalus adsurgens</i>	Northern regions of China	CIT26_RS 27435	CIT26_RS 18435	CIT26_R S03635	CIT26_00 895	CIT26_R S24700	NZ_NPKJ0 0000000	Gao et al. 2004
<i>M. terrae</i>	NIBRBA C000500 504 ^T	Soil	No host info	Jangsu, Korea	NI	NI	NI	NI	NI	CP044218. 1	Jung et al. 2021

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. thiogangeticum</i>	LMG 22697 ^T	Rhizosphere soil	No host info	Gangetic plains of India	NI	GQ847933	FM164389	NI	GQ847886	NI	Ghosh and Roy 2006
<i>M. tianshanense</i>	CGMCC1.2546 ^T	No source info	<i>Glycyrrhiza pallidiflora</i>	Tianshan Mountains, China	IQ26_RS28775	IQ26_RS15950	IQ26_RS08535	IQ26_RS06840	IQ26_RS36875	NZ_VLKT0000000	(Chen et al. 1995) Jarvis et al. 1997
<i>M. waimense</i>	ICMP 19557 ^T	Root nodules	<i>Sophora longicarinata</i>	Waima rivers, New Zealand	D3227_RS28180	D3227_RS01495	D3227_28890	D3227_17905	D3227_RS16870	NZ_QZWZ01000001	De Meyer et al. 2015
<i>M. waitakense</i>	ICMP 19523 ^T	Root nodules	<i>Sophora microphylla</i>	Waitaki river, New Zealand	NI	NI	NI	KC237693.2	KJ450952	NI	De Meyer et al. 2016

Species	Type strain	Source	Host	Country	<i>atpD</i>	<i>GyrB</i>	<i>dnaK</i>	<i>recA</i>	<i>rpoB</i>	Complete genome	Reference
<i>M. wenxiniae</i>	WYCCW R 10195 ^T	Root nodules	<i>Cicer arietinum</i>	China	CIT31_RS 07485	CIT31_RS 02810	CIT31_R S04600	CIT31_30 990	CIT31_R S01460	NZ_NPKH 01000011	Zhang et al. 2018
" <i>M. zhangyense</i> "	CGMCC 1.15528 ^T	Plant	<i>Thermopsis lanceolate</i>	Zhangye, China	G6N74_R S13645	G6N74_R S23725	G6N74_RS22030	G6N74_R S00995	G6N74_RS01900	NZ_JAAKZ G010000013	Xu et al. 2018
<i>Bradyrhizobium diazoefficiens</i> (outgroup)	USDA11 0 ^T	NI	NI	NI	BJA_RS0 2215	BJA_RS0 4155	BJA_RS 03430	BJA_RS2 9135	BJA_RS 27315	NC_00446 3.1	Kaneko et al., 2002

¹ Type strains whose names have not been validated are in inverted commas

"NI" Not Included, there could either be no accession available or the accession was not included (as it proved too short for comparison).

Supplementary Table S3.2. Accession numbers for *Mesorhizobium nodA* sequences used in this study as well host, country, and source information

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
NZ_NSGD01000017	WSM3864	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGD01000016	WSM3864	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFQ01000020	R7ANSx3876	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_NSFQ01000016	R7ANSx3876	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_QGGH01000021	DSM 2626	No Country info	No Host info	No info	Goeker,M., Unpublished
NZ_QGGH01000015	DSM 2626	No Country info	No Host info	No info	Goeker,M., Unpublished
NZ_CP051772	R7A	New Zealand	<i>Lotus</i>	No info	Ramsay,J.P., et al. Unpublished
NZ_CP051773	R7Astar	New Zealand	No Host info	No info	Ramsay,J.P., et al. Unpublished
NZ_CP052769	R7AstarV2	New Zealand	No Host info	No info	Ramsay,J.P., et al. Unpublished
CP052769	R7AstarV2	New Zealand	No Host info	No info	Ramsay,J.P., et al. Unpublished
NZ_SMYZ01000066	10.2.2 ^T	Norway	<i>Lotus corniculatus</i>	root nodule	Kabdullayeva,T., Unpublished
MN718817	LCM4584	Senegal	No Host info	soil	Fall,F., et al. 2019
MN718816	LCM4583	Senegal	No Host info	soil	Fall,F., et al. 2019
MN718815	LCM4580	Senegal	No Host info	soil	Fall,F., et al. 2019
MN718813	LCM4578	Senegal	No Host info	soil	Fall,F., et al. 2019
MN718812	LCM4577	Senegal	No Host info	soil	Fall,F., et al. 2019
MN718811	LCM4576	Senegal	No Host info	soil	Fall,F., et al. 2019
MN718810	LCM4575	Senegal	No Host info	soil	Fall,F., et al. 2019
MN718809	LCM4574	Senegal	No Host info	soil	Fall,F., et al. 2019
NZ_SMY01000023	10.2.3	Norway	<i>Lotus corniculatus</i>	root nodule	Kabdullayeva,T., Unpublished
CP051773	R7Astar	New Zealand	No Host info	No info	Ramsay,J.P., et al. Unpublished
CP051772	R7A	New Zealand	<i>Lotus</i>	No info	Ramsay,J.P., et al. Unpublished
NZ_VLKT01000047	CGMCC 1.2546	No Country info	No Host info	No info	Whitman,W.B., et al. 2015
NZ_PNOT02000154	BD68 ^T	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., et al. Unpublished
NZ_RQXT01000061	DSM 28320 ^T	Spain: Arico	No Host info	root nodule	Gao,J., tUnpublished
NZ_FUIG01000058	STM 462 ^T	No Country info	No Host info	periphery of the Zn-Pb mine	Brunel,B., 2016
NZ_QZWZ01000006	ICMP19557	New Zealand	<i>Sophora longicarinata</i>	root nodule	De Meyer,S.E., Unpublished
NZ_MZXV01000084	Ach-343 ^T	Russia	<i>Astragalus</i> sp.	root nodule	Safronova,V.I.,et al. 2017
NZ_PZJX01000067	CSLC115N ^T	Spain	<i>Lotus corniculatus</i>	No info	Sannazzaro,A.I., et al. Unpublished
NZ_NWQG01000214	BSA136 ^T	Argentina	<i>Lotus tenuis</i>	root nodules	Sannazzaro,A.I., et al. Unpublished
NZ_NPKH01000001	WYCCWR 10195 ^T	China: Gansu	<i>Cicer arietinum</i>	No info	Zhang,J., Unpublished
NZ_NPKI01000035	USDA 3392	France	<i>Cicer arietinum</i>	No info	Zhang,J., Unpublished
NZ_NNRI01000007	ICMP 19535	New Zealand	<i>Sophora microphylla</i>	root nodule	De Meyer,S.E., et al. Unpublished
NZ_FNEE01000043	CGMCC 1.11022 ^T	No Country info	No Host info	No info	Varghese,N. 2016
NZ_FMXM01000058	CGMCC 1.12097 ^T	China	<i>Astragalus sinicus</i>	No info	Varghese,N. 2016
NZ_FTPD01000017	No Strain info	No Country info	No Host info	No info	Brunel,B., D2017
NZ_CP015322	CCNWGS0123	China: Gansu	<i>Robinia pseudoacacia</i>	No info	Wang,X.,et al. Unpublished
NZ_CP015064	WSM1284 ^T	Italy	<i>Biserrula pelecinus</i>	root nodule	Haskett,T., et al. 2016
NZ_KI421454	USDA 3471 ^T	New Zealand	<i>Lotus corniculatus</i>	No info	Kyrpides,N., et al. 2013
NZ_CAUM01000171	STM 2683	No Country info	No Host info	No info	Genoscope,C.E.A., et al. 2013
NC_019973	WSM2073 ^T	Australia	<i>Biserrula pelecinus</i> L.	Antoni's farm, Antonio Rd.	Lucas,S., et al. Unpublished
NC_015675	WSM2075 ^T	Australia	No Host info	Antonio's farm, Antonio Rd.	Lucas,S., et al. Unpublished
NC_002678	MAFF 303099 ^T	No Country info	No Host info	No info	Kaneko,T., et al. 2000
NZ_SRUI01000018	M8A.F.Ca.ET.197.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRVK01000011	M1D.F.Ca.ET.234.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUB01000023	M1C.F.Ca.ET.189.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_CP016079	NZP2037	New Zealand	<i>Lotus</i>	No info	Ramsay,J.P., Unpublished
NZ_QMBP01000018	AC99b ^T	Ethiopia	<i>Sesbania sesban</i>	No info	Helene,L.C.F., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
NZ_AGSN01000089	CCNWGS0123	No Country info	<i>Robinia pseudoacacia</i>	No info	Hao,X., et al. 2012
NZ_KI912159	R88b	New Zealand	<i>Lotus corniculatus</i>	No info	Kyrpides,N., et al. 2013
NC_014923	WSM1271	Italy	<i>Astragalus pelecinus</i>	No info	Lucas,S., et al. Unpublished
NZ_CM002796	ca181	India	chickpea	root nodule	Singh,R.N., et al. Unpublished
NZ_JAAKZF010000030	CCNWXJ 40-4 ^T	China	<i>Alhagi sparsifolia</i>	root nodule	Gao,J. and Sun,J., Unpublished
NZ_JAAKZF010000014	CCNWXJ 40-4	China	<i>Alhagi sparsifolia</i>	root nodule	Gao,J. and Sun,J., Unpublished
NZ_CP034451	M3A.F.Ca.ET.080.04.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_MZXX01000003	Opo-242	Russia	<i>Oxytropis</i> sp.	root nodule	Safronova,V.I., et al. 2017
NZ_RZSP01000131	M1A.F.Ca.IN.020.32.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTS01000283	M7A.T.Ca.US.000.02.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQE01000023	M7A.F.Ca.US.002.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPH01000268	M7A.F.Ca.CA.004.04.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPF01000008	M7A.F.Ca.AU.001.01.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPC01000021	M7A.F.Ca.AU.002.03.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSX01000264	M5C.F.Ca.IN.020.32.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRM01000085	M7A.F.Ca.CA.002.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQH01000087	M7A.F.Ca.US.001.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQA01000031	M7A.F.Ca.US.006.04.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPG01000053	M6A.T.Cr.TU.014.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSR01000221	M1A.F.Ca.IN.020.06.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTF01000329	M7A.F.Ca.MR.362.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRV01000074	M7A.F.Ca.US.010.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQK01000327	M7A.F.Ca.CA.001.14.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPO01000119	M7A.F.Ca.CA.001.07.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPK01000088	M7A.F.Ca.CA.002.03.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPD01000104	M7A.F.Ca.AU.002.04.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSO01000014	M1A.F.Ca.IN.020.30.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSV01000122	M1A.F.Ca.IN.020.03.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTC01000185	M7A.F.Ca.MR.176.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTA01000129	M6A.T.Cr.TU.017.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRJ01000165	M7A.F.Ca.CA.004.08.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPN01000161	M7A.F.Ca.CA.001.16.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPL01000028	M7A.F.Ca.CA.002.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034779	M7A.F.Ce.TU.012.03.2.1	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQS01000137	M7A.F.Ca.CA.001.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQR01000281	M7A.F.Ca.CA.001.15.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRA01000046	M7A.F.Ca.CA.003.01.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQW01000139	M7A.F.Ca.CA.001.09.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPZ01000179	M7A.F.Ca.CA.004.09.1.2	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQX01000064	M7A.F.Ca.CA.001.09.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRS01000019	M7A.F.Ca.CA.002.14.1.2	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQB01000220	M7A.F.Ca.CA.004.10.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQL01000205	M7A.F.Ca.US.006.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRB01000111	M7A.F.Ca.CA.002.07.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSS01000145	M1A.F.Ca.IN.022.02.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRG01000158	M7A.F.Ca.CA.001.13.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPM01000015	M7A.F.Ca.CA.001.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPP01000004	M7A.F.Ca.CA.002.10.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRW01000043	M7A.F.Ca.US.014.04.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPW01000280	M7A.F.Ca.CA.001.08.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRE01000151	M7A.F.Ca.US.001.04.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
NZ_RZRO01000041	M7A.F.Ca.US.005.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRD01000050	M7A.F.Ca.CA.001.12.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQD01000047	M7A.F.Ca.CA.004.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRF01000142	M7A.F.Ca.US.001.04.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRK01000188	M7A.F.Ca.CA.004.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTB01000130	M7A.F.Ca.MR.148.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQU01000082	M7A.F.Ca.CA.004.05.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPQ01000236	M7A.F.Ca.CA.004.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQM01000136	M7A.F.Ca.US.006.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPS01000003	M7A.F.Ca.CA.004.07.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQG01000040	M7D.F.Ca.US.004.03.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPR01000158	M7A.F.Ca.CA.004.06.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPT01000011	M7A.F.Ca.CA.004.01.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQC01000298	M7A.F.Ca.CA.004.11.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQP01000163	M7A.F.Ca.US.007.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQO01000063	M7A.F.Ca.US.003.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRP01000046	M7A.F.Ca.US.005.03.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQO01000045	M7A.F.Ca.US.007.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSM01000371	M1A.F.Ca.IN.022.05.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTE01000081	M7A.F.Ca.MR.245.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRC01000075	M7A.F.Ca.CA.001.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZST01000131	M1A.F.Ca.IN.022.07.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTR01000070	M7A.T.Ca.TU.009.02.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSU01000132	M5C.F.Cr.IN.023.01.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPI01000047	M7A.F.Ca.CA.002.15.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRN01000083	M7A.F.Ca.CA.002.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRR01000249	M7A.F.Ca.CA.002.09.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPU01000227	M7A.F.Ca.CA.004.02.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRT01000092	M7A.F.Ca.US.011.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQV01000082	M7A.F.Ca.CA.002.15.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQY01000193	M7A.F.Ca.CA.001.10.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPB01000339	M7A.F.Ca.AU.002.02.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRL01000302	M7A.F.Ca.CA.004.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRI01000138	M7A.F.Ca.CA.004.08.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQI01000034	M7A.F.Ca.CA.002.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQJ01000108	M7A.F.Ca.CA.002.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRQ01000026	M7D.F.Ca.US.004.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRU01000024	M7A.F.Ca.US.008.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTV01000028	M1A.T.Ca.IN.004.03.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQZ01000327	M7A.F.Ca.CA.001.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSN01000149	M1A.F.Ca.IN.020.04.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSQ01000112	M1A.F.Ca.IN.020.03.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPV01000001	M7A.F.Ca.CA.001.08.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPE01000275	M7A.F.Ca.AU.002.06.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSJ01000031	M7A.F.Ca.CA.002.03.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQT01000209	M7A.F.Ca.CA.001.04.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPX01000548	M7A.F.Ca.CA.001.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSZ01000129	M1A.F.Ca.IN.022.04.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSW01000405	M5C.F.Ca.IN.020.29.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTI01000138	M6A.T.Ce.TU.002.03.1.1	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034452	M6A.T.Cr.TU.016.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
NZ_CP034453	M7D.F.Ca.US.005.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
JAACKZF010000000	CCNWXJ 40-4	China	<i>Alhagi sparsifolia</i>	root nodule	Gao,J. and Sun,J., Unpublished
NZ_CP048406	AA22	Ethiopia	<i>Astragalus pelecinus L.</i>	root nodule	Bekuma,A., et al. Unpublished
MN416020	HSB50	Morocco	<i>Hydesarum spinosissimum</i>	abandonned lead mine	Lamin,H., et al. Unpublished
MN416019	HSB48	Morocco	<i>Hydesarum spinosissimum</i>	abandonned lead mine	Lamin,H., et al. Unpublished
MN416018	HSB34	Morocco	<i>Hydesarum spinosissimum</i>	abandonned lead mine	Lamin,H., et al. Unpublished
MN416017	HSB29	Morocco	<i>Hydesarum spinosissimum</i>	abandonned lead mine	Lamin,H., et al. Unpublished
CP048406	AA22	Ethiopia	<i>Astragalus pelecinus L.</i>	root nodule	Bekuma,A., et al. Unpublished
NZ_AHAM01000338	CCNWXJ12-2 ^T	China	<i>Alhagi sparsifolia</i>	Root nodule	Zhou,M., et al. 2012
NZ_KI421462	CJ3sym	New Zealand	No Host info	No info	Reeve,W., et al. 2015
NZ_QKOD01000010	Opo-235	Russia	<i>Oxytropis popoviana</i>	root nodule	Safronova,V.I., et al. 2018
NZ_CP015062	CC1192	Israel	<i>Cicer arietinum</i>	No info	Haskett,T., et al. 2016
NZ_KI632510	R7A	New Zealand	<i>Lotus</i>	No info	Kyrpides,N., et al. 2013
NZ_MDFL01000187	ORS 3428	Senegal	<i>Acacia senegal</i>	Soil	Diagne,N., et al. 2017
NZ_MDDU01000019	LCM 4577	Senegal	<i>Prosopis juliflora</i>	Soil	Diagne,N., et al. 2017
NZ_MDDT01000056	LCM 4576	Senegal	<i>Prosopis juliflora</i>	Soil	Diagne,N., et al. 2017
NZ_LPWA01000114	UFLA 01-765	Brazil	<i>Leucaena leucocephala</i>	Soil	Rangel,W.M., et al. 2016
NZ_CP021070	WSM1497	Greece	<i>Biserrula pelecinus L.</i>	Root nodule	Brewer,R., et al. Unpublished
NZ_CP033366	R7A	New Zealand	<i>Lotus</i>	No info	Perry,B.J., et al. 2018
NZ_CAAF010000027	STM 4661	No Country info	No Host info	No info	Genoscope,C.E.A., 2013
CP033366	R7A	New Zealand	<i>Lotus</i>	No info	Perry,B.J., et al. 2018
NZ_ATY001000023	WSM3224	South Africa	<i>Otholobium candicans</i>	No info	Kyrpides,N., et al. 2013
NZ_AZUV01000017	WSM1293	Greece	<i>Lotus sp.</i>	No info	Kyrpides,N., et al. 2013
NZ_AZUX01000068	WSM2561	South Africa	<i>Lessertia diffusa</i>	No info	Kyrpides,N., et al. 2013
NZ_AZUX01000043	WSM2561	South Africa	<i>Lessertia diffusa</i>	No info	Kyrpides,N., et al. 2013
NZ_AZUY01000072	WSM3626	South Africa	<i>Lessertia diffusa</i>	No info	Kyrpides,N., et al. 2013
NZ_AZUY01000029	WSM3626	South Africa	<i>Lessertia diffusa</i>	No info	Kyrpides,N., et al. 2013
NZ_AYWV01000013	L2C089B000	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWU01000022	L48C026A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWT01000018	LNHC209A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWS01000019	LNHC220B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWR01000011	LNHC221B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWQ01000003	LNHC229A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWP01000015	LNHC232B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWO01000014	LNHC252B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWN01000017	LNJC372A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWM01000016	LNJC374B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWK01000004	LNJC384A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWI01000022	LNJC391B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWH01000017	LNJC394B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWG01000006	LNJC395A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWE01000005	LNJC399B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWC01000018	LNJC405B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWB01000014	LSHC412B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWA01000017	LSHC414A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVZ01000020	LSHC416B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVY01000009	LSHC420B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVX01000013	LSHC422A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVW01000027	LSHC424B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVV01000016	LSHC426A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVT01000022	LSHC440A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
NZ_AYVSO1000022	LSHC440B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVR01000015	LSJC255A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVQ01000051	LSJC264A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVP01000031	LSJC265A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVO01000013	LSJC268A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVN01000003	LSJC269B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVM01000020	LSJC277A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVL01000017	LSJC280B00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVK01000036	LSJC285A00	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_LYTP01000015	AA23	Ethiopia	<i>Biserrula pelecinus</i> L.	root nodule	Ramsay,J.P., 2016
NZ_LYTP01000007	AA23	Ethiopia	<i>Biserrula pelecinus</i> L.	root nodule	Ramsay,J.P., 2016
NZ_LYTP01000001	AA23	Ethiopia	<i>Biserrula pelecinus</i> L.	root nodule	Ramsay,J.P., 2016
NZ_LYTM01000014	WSM3873	Eritrea	<i>Biserrula pelecinus</i> Casbah	root nodule	Ramsay,J.P., 2016
NZ_WOTK01000003	R7ANSxWSM3873	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_WOTJ01000017	R7ANSxAA23	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_WOTJ01000014	R7ANSxAA23	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_WOTJ01000008	R7ANSxAA23	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
WOTK01000000	R7ANSxWSM3873	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
WOTJ01000000	R7ANSxAA23	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
CP006582	7653R	China	No Host info	Rice field soil	Wang,S. and Li,Y., Unpublished
NZ_JAFG01000014	WSM4083	Spain	<i>Bituminaria bituminosa</i>	no info	Kyrpides,N., et al. 2014
NZ_AWZS01000073	CMG6	Tunisia	<i>Cicer arietinum</i>	No info	Kyrpides,N., et al. 2013
NZ_AYXF01000015	L103C105A0	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYXE01000019	L103C119B0	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYXD01000017	L103C120A0	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYXC01000017	L103C131B0	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYXA01000020	L2C054A000	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWZ01000026	L2C066B000	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWY01000023	L2C067A000	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWX01000018	L2C084A000	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWW01000012	L2C085B000	No Country info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_LZTJ01000009	R7ANS::ICEMISym2042	New Zealand	<i>Lotus</i> sp.	conjugation and plant nodule	Ramsay,J.P., 2016
NZ_LZTJ01000002	R7ANS::ICEMISym2042	New Zealand	<i>Lotus</i> sp.	conjugation and plant nodule	Ramsay,J.P., 2016
NZ_LZTL01000031	R7ANS::ICEMISym343	New Zealand	<i>Lotus</i> sp.	conjugation and plant nodule	Ramsay,J.P., 2016
NZ_LZTL01000004	R7ANS::ICEMISym343	New Zealand	<i>Lotus</i> sp.	conjugation and plant nodule	Ramsay,J.P., 2016
NZ_LYTK01000023	NZP2042	New Zealand	<i>Lotus</i> sp.	No info	Ramsay,J.P., 2016
NZ_LYTK01000005	NZP2042	New Zealand	<i>Lotus</i> sp.	No info	Ramsay,J.P., 2016
NZ_LZTK01000014	R7ANS::ICEMcbSym1271	Australia	<i>Biserrula pelecinus</i>	conjugation and plant nodule	Ramsay,J.P., 2016
NZ_LYTJ01000021	NZP2014	New Zealand	<i>Lotus</i> sp.	No info	Ramsay,J.P., 2016
NZ_LZTH01000012	R7ANS::ICEMISym2037	New Zealand	<i>Lotus</i> sp.	conjugation and plant nodule	Ramsay,J.P., 2016
NZ_LZTH01000007	R7ANS::ICEMISym2037	New Zealand	<i>Lotus</i> sp.	conjugation and plant nodule	Ramsay,J.P., 2016
NZ_LZTI01000027	R7ANS::ICEMISym2014	New Zealand	<i>Lotus</i> sp.	conjugation and plant nodule	Ramsay,J.P., 2016
NZ_LZTI01000007	R7ANS::ICEMISym2014	New Zealand	<i>Lotus</i> sp.	conjugation and plant nodule	Ramsay,J.P., 2016
NZ_LYTL01000012	SU343	Australia	<i>Lotus</i> sp.	No info	Ramsay,J.P., 2016
NZ_LYTL01000003	SU343	Australia	<i>Lotus</i> sp.	No info	Ramsay,J.P., 2016
NZ_KB913026	NZP2037	New Zealand	No Host info	Adjacent Palmerston North Airport	Kyrpides,N., et al. 2013
EU291996	CFN ESH18	Mexico	<i>Acaciella angustissima</i>	No info	Rincon-Rosales,R., et al. 2009
EU291995	CFN ESH19	Mexico	<i>Acaciella angustissima</i>	No info	Rincon-Rosales,R., et al. 2009
EU291994	CFN ESH26	Mexico	<i>Acaciella angustissima</i>	No info	Rincon-Rosales,R., et al. 2009
NZ_SADT02000010	M2E.F.Ca.ET.219.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTM01000028	M4B.F.Ca.ET.172.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
NZ_SADN02000016	M00.F.Ca.ET.170.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_CP006583	7653R	China	No Host info	Rice field soil	Wang,S. and Li,Y., Unpublished
NZ_SRTW01000008	M8A.F.Ca.ET.182.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUS01000014	M8A.F.Ca.ET.207.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTG01000011	M5C.F.Ca.ET.164.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTV01000007	M8A.F.Ca.ET.181.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTI01000004	M8A.F.Ca.ET.167.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUN01000017	M8A.F.Ca.ET.202.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADU02000097	M00.F.Ca.ET.220.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_RSQ01000013	M8A.F.Ca.ET.142.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADM02000013	M2E.F.Ca.ET.166.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTD01000013	M8A.F.Ca.ET.161.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUM01000020	M3A.F.Ca.ET.201.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRSW01000031	M4B.F.Ca.ET.150.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTH01000006	M8A.F.Ca.ET.165.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_RZOW02000015	M1D.F.Ca.ET.183.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_RZOY02000022	M2D.F.Ca.ET.226.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_RZPA02000040	M2D.F.Ca.ET.232.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUY01000027	M4B.F.Ca.ET.215.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUC01000029	M4B.F.Ca.ET.190.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRSR01000006	M4B.F.Ca.ET.143.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADJ02000023	M2D.F.Ca.ET.153.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTP01000008	M3A.F.Ca.ET.175.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTO01000009	M3A.F.Ca.ET.174.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTK01000030	M4B.F.Ca.ET.169.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRSS01000023	M1C.F.Ca.ET.144.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUJ01000018	M8A.F.Ca.ET.198.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUX01000031	M4B.F.Ca.ET.214.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADQ02000023	M1C.F.Ca.ET.212.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRDV01000023	M2D.F.Ca.ET.224.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUP01000023	M1C.F.Ca.ET.204.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRSV01000025	M2D.F.Ca.ET.147.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADK02000012	M2E.F.Ca.ET.154.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTS01000032	M2D.F.Ca.ET.178.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTX01000015	M1D.F.Ca.ET.184.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_RZOV02000025	M2D.F.Ca.ET.148.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTL01000033	M2D.F.Ca.ET.171.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADP02000028	M2E.F.Ca.ET.209.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUV01000002	M8A.F.Ca.ET.213.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUU01000023	M1C.F.Ca.ET.210.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRLU01000029	M4B.F.Ca.ET.200.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADS02000007	M00.F.Ca.ET.217.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADS02000004	M00.F.Ca.ET.217.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADS02000003	M00.F.Ca.ET.217.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRVC01000021	M2D.F.Ca.ET.223.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_ML703276	SARCC-RB16n	South Africa	<i>Aspalathus linearis</i>	root nodule	Swanevelder,Z.H. and Hassen,A.I., Unpublished
NZ_SRUT01000004	M8A.F.Ca.ET.208.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUZ01000002	M8A.F.Ca.ET.218.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUO01000031	M4B.F.Ca.ET.203.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRVJ01000025	M2D.F.Ca.ET.233.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUG01000023	M1C.F.Ca.ET.195.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
NZ_SADR2000057	M00.F.Ca.ET.216.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTQ01000023	M1C.F.Ca.ET.176.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_RZOX02000023	M1C.F.Ca.ET.192.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTY01000032	M2D.F.Ca.ET.185.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUE01000023	M1C.F.Ca.ET.193.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUH01000023	M1C.F.Ca.ET.196.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTZ01000023	M1C.F.Ca.ET.187.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_RZOZ02000015	M1D.F.Ca.ET.231.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRVE01000081	M2D.F.Ca.ET.225.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUV01000031	M4B.F.Ca.ET.211.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUA01000023	M1C.F.Ca.ET.188.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_CP034445	M2A.F.Ca.ET.043.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSF01000169	M1A.F.Ca.ET.072.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOL01000126	M7A.F.Ca.ET.027.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSH01000027	M4B.F.Ca.ET.013.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOI01000192	M4A.F.Ca.ET.020.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSB01000062	M2A.F.Ca.ET.067.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOO01000085	M2A.F.Ca.ET.029.05.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOS01000114	M4B.F.Ca.ET.089.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOJ01000109	M4A.F.Ca.ET.022.05.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRY01000093	M2A.F.Ca.ET.039.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSG01000015	M4A.F.Ca.ET.050.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOT01000008	M4A.F.Ca.ET.090.04.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOM01001458	M7A.F.Ca.ET.027.03.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOU01000002	M2D.F.Ca.ET.140.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOH01000307	M4B.F.Ca.ET.019.03.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOG01000169	M2A.F.Ca.ET.017.03.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSE01000239	M4B.F.Ca.ET.049.02.1.2	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZR01000024	M2A.F.Ca.ET.042.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSL01000005	M1E.F.Ca.ET.041.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOF01000309	M4B.F.Ca.ET.017.02.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSJ01000092	M8A.F.Ca.ET.021.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSA01000012	M2A.F.Ca.ET.037.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSK01000256	M2A.F.Ca.ET.015.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSC01000068	M1E.F.Ca.ET.063.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034448	M1B.F.Ca.ET.045.04.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034447	M1E.F.Ca.ET.045.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034444	M1D.F.Ca.ET.043.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034449	M2A.F.Ca.ET.046.03.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034446	M2A.F.Ca.ET.043.05.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034450	M4B.F.Ca.ET.058.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034443	M9A.F.Ca.ET.002.03.1.2	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_FOSL01000006	DSM 21822	No Country info	No Host info	No info	Varghese,N. 2016
NZ_RZTT01000034	M7A.T.Ca.US.000.02.2.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTJ01000044	M6A.T.Ce.TU.016.01.1.1	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_QMBQ01000012	CNPSo 3140 ^T	Brazil	<i>Phaseolus vulgaris</i>	nodule	Helene,L.C.F., et al. Unpublished
NZ_NSF01000029	WSM4304	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFZ01000020	WSM3879	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFZ01000006	WSM3879	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFY01000018	WSM3882	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFY01000015	WSM3882	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
NZ_NSF01000030	WSM4308	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSF01000023	WSM4311	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSF01000034	WSM4312	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSG01000023	WSM3868	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSG01000001	WSM3868	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_FZQR01000085	No Strain info	No Country info	No Host info	No info	De Meyer E,S., 2017
PNOT02000138	BD68	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., Tet al. Unpublished
PNOT02000154	BD68	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., Tet al. Unpublished
NZ_VFTD01000032	WSM4305	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
NZ_VFTB01000024	WSM4307	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
NZ_VFSZ01000032	WSM4315	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
NZ_VFTE01000047	WSM4303	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
NZ_VFTA01000059	WSM4310	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
NZ_VFTC01000035	WSM4306	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTD01000000	WSM4305	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTE01000000	WSM4303	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTC01000000	WSM4306	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTE01000047	WSM4303	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTD01000032	WSM4305	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTA01000000	WSM4310	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTC01000035	WSM4306	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTB01000000	WSM4307	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFSZ01000000	WSM4315	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTB01000024	WSM4307	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTA01000059	WSM4310	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFSZ01000032	WSM4315	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
NZ_MDLH01000001	SEMIA 3007	Mexico	No Host info	soil	Kishi,L.T., et al. Unpublished
NZ_NSGC01000018	WSM3866	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGC01000014	WSM3866	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGG01000016	WSM3859	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGG01000015	WSM3859	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGF01000025	WSM3860	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGF01000005	WSM3860	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGA01000022	WSM3876	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGA01000012	WSM3876	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFO01000024	R7ANSxCC1192	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_NSFR01000012	R7ANSx3859	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_NSFR01000004	R7ANSx3859	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_NSFS01000017	R7ANSx1497	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_NSGE01000010	WSM3862	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGE01000002	WSM3862	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFP01000019	R7ANSxAA22	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_NSFT01000025	WSM4313	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NZ_VFUD01000007	B2-6-5	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUD01000007	B2-5-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFTS01000026	B2-8-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFTQ01000001	B2-8-9	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUJ01000002	B2-5-12	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUN01000016	B2-5-8	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUB01000017	B2-6-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUM01000001	B2-5-9	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
NZ_VFUK01000014	B2-5-11	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUC01000016	B2-6-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFTT01000023	B2-8-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUP01000002	B2-5-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFTR01000033	B2-8-8	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUL01000018	B2-5-10	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFTZ01000004	B2-7-2	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUG01000001	B2-6-2	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFTV01000039	B2-8-4	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUN01000000	B2-5-8	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUP01000000	B2-5-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUP01000002	B2-5-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUN01000016	B2-5-8	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUM01000000	B2-5-9	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUM01000001	B2-5-9	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUO01000000	B2-5-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUK01000000	B2-5-11	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUO01000007	B2-5-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUK01000014	B2-5-11	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUL01000000	B2-5-10	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUJ01000000	B2-5-12	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUJ01000002	B2-5-12	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUL01000018	B2-5-10	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUG01000000	B2-6-2	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUG01000001	B2-6-2	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUB01000000	B2-6-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUB01000017	B2-6-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUC01000000	B2-6-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUD01000000	B2-6-5	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUC01000016	B2-6-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUD01000007	B2-6-5	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTZ01000000	B2-7-2	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTZ01000004	B2-7-2	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTV01000000	B2-8-4	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTV01000039	B2-8-4	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTT01000000	B2-8-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTS01000000	B2-8-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTR01000000	B2-8-8	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTT01000023	B2-8-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTQ01000000	B2-8-9	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTQ01000001	B2-8-9	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTS01000026	B2-8-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTR01000033	B2-8-8	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
SWFQ01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWFQ01000155	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWAL01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWAL01001094	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWAH01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWAH01000132	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWAH01000187	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWAI01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished

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Accession #s	Strain	Country	Host ¹	Isolation source	Reference
SADL02000005	M00.F.Ca.ET.158.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADL02000014	M00.F.Ca.ET.158.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADH02000017	M00.F.Ca.ET.149.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTC01000000	M2D.F.Ca.ET.160.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTC01000026	M2D.F.Ca.ET.160.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSQ01000000	M8A.F.Ca.ET.142.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADO02000000	M00.F.Ca.ET.186.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADO02000002	M00.F.Ca.ET.186.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSQ01000013	M8A.F.Ca.ET.142.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSR01000000	M4B.F.Ca.ET.143.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSR01000006	M4B.F.Ca.ET.143.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTN01000000	M8A.F.Ca.ET.173.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTN01000011	M8A.F.Ca.ET.173.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADI02000000	M00.F.Ca.ET.151.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADI02000015	M00.F.Ca.ET.151.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSS01000000	M1C.F.Ca.ET.144.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSS01000023	M1C.F.Ca.ET.144.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSV01000000	M2D.F.Ca.ET.147.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOV02000000	M2D.F.Ca.ET.148.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSV01000025	M2D.F.Ca.ET.147.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOV02000025	M2D.F.Ca.ET.148.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSW01000000	M4B.F.Ca.ET.150.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSW01000031	M4B.F.Ca.ET.150.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADJ02000000	M2D.F.Ca.ET.153.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADJ02000023	M2D.F.Ca.ET.153.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTG01000000	M5C.F.Ca.ET.164.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTG01000011	M5C.F.Ca.ET.164.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTD01000000	M8A.F.Ca.ET.161.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTD01000013	M8A.F.Ca.ET.161.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADM02000000	M2E.F.Ca.ET.166.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADM02000013	M2E.F.Ca.ET.166.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADN02000016	M00.F.Ca.ET.170.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTI01000000	M8A.F.Ca.ET.167.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTI01000004	M8A.F.Ca.ET.167.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTK01000000	M4B.F.Ca.ET.169.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTH01000000	M8A.F.Ca.ET.165.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTH01000006	M8A.F.Ca.ET.165.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTK01000030	M4B.F.Ca.ET.169.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTM01000000	M4B.F.Ca.ET.172.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTO01000000	M3A.F.Ca.ET.174.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTM01000028	M4B.F.Ca.ET.172.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTO01000009	M3A.F.Ca.ET.174.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUW01000000	M8A.F.Ca.ET.213.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUW01000002	M8A.F.Ca.ET.213.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTL01000000	M2D.F.Ca.ET.171.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTL01000033	M2D.F.Ca.ET.171.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTS01000000	M2D.F.Ca.ET.178.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al.

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
SRTV01000007	M8A.F.Ca.ET.181.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTQ01000000	M1C.F.Ca.ET.176.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUM01000000	M3A.F.Ca.ET.201.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTQ01000023	M1C.F.Ca.ET.176.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOW02000000	M1D.F.Ca.ET.183.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUM01000020	M3A.F.Ca.ET.201.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOW02000015	M1D.F.Ca.ET.183.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTX01000000	M1D.F.Ca.ET.184.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTW01000000	M8A.F.Ca.ET.182.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTW01000008	M8A.F.Ca.ET.182.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTX01000015	M1D.F.Ca.ET.184.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTY01000000	M2D.F.Ca.ET.185.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTZ01000000	M1C.F.Ca.ET.187.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTY01000032	M2D.F.Ca.ET.185.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTZ01000023	M1C.F.Ca.ET.187.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUC01000000	M4B.F.Ca.ET.190.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADP02000000	M2E.F.Ca.ET.209.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUC01000029	M4B.F.Ca.ET.190.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADP02000028	M2E.F.Ca.ET.209.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUA01000000	M1C.F.Ca.ET.188.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUA01000023	M1C.F.Ca.ET.188.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVC01000000	M2D.F.Ca.ET.223.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUE01000000	M1C.F.Ca.ET.193.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUB01000000	M1C.F.Ca.ET.189.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVC01000021	M2D.F.Ca.ET.223.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUE01000023	M1C.F.Ca.ET.193.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUB01000023	M1C.F.Ca.ET.189.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOX02000000	M1C.F.Ca.ET.192.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOX02000023	M1C.F.Ca.ET.192.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUJ01000000	M8A.F.Ca.ET.198.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUG01000000	M1C.F.Ca.ET.195.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUG01000023	M1C.F.Ca.ET.195.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUJ01000018	M8A.F.Ca.ET.198.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUN01000000	M8A.F.Ca.ET.202.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUH01000000	M1C.F.Ca.ET.196.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUI01000000	M8A.F.Ca.ET.197.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUH01000023	M1C.F.Ca.ET.196.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUI01000018	M8A.F.Ca.ET.197.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUN01000017	M8A.F.Ca.ET.202.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUL01000000	M4B.F.Ca.ET.200.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUP01000000	M1C.F.Ca.ET.204.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUO01000000	M4B.F.Ca.ET.203.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUP01000023	M1C.F.Ca.ET.204.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUL01000029	M4B.F.Ca.ET.200.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUO01000031	M4B.F.Ca.ET.203.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUT01000000	M8A.F.Ca.ET.208.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUT01000004	M8A.F.Ca.ET.208.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUS01000000	M8A.F.Ca.ET.207.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUS01000014	M8A.F.Ca.ET.207.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADQ02000000	M1C.F.Ca.ET.212.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADQ02000023	M1C.F.Ca.ET.212.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
SRUV01000000	M4B.F.Ca.ET.211.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUU01000000	M1C.F.Ca.ET.210.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUV01000031	M4B.F.Ca.ET.211.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUU01000023	M1C.F.Ca.ET.210.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADU02000000	M00.F.Ca.ET.220.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADR02000000	M00.F.Ca.ET.216.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUX01000000	M4B.F.Ca.ET.214.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADR02000057	M00.F.Ca.ET.216.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUX01000031	M4B.F.Ca.ET.214.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADU02000097	M00.F.Ca.ET.220.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADS02000000	M00.F.Ca.ET.217.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADS02000003	M00.F.Ca.ET.217.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADS02000004	M00.F.Ca.ET.217.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUY01000000	M4B.F.Ca.ET.215.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADT02000000	M2E.F.Ca.ET.219.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADS02000007	M00.F.Ca.ET.217.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADT02000010	M2E.F.Ca.ET.219.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUY01000027	M4B.F.Ca.ET.215.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUZ01000000	M8A.F.Ca.ET.218.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUZ01000002	M8A.F.Ca.ET.218.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVD01000000	M2D.F.Ca.ET.224.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVE01000000	M2D.F.Ca.ET.225.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVD01000023	M2D.F.Ca.ET.224.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOY02000000	M2D.F.Ca.ET.226.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVE01000081	M2D.F.Ca.ET.225.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOY02000022	M2D.F.Ca.ET.226.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVK01000000	M1D.F.Ca.ET.234.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZPA02000000	M2D.F.Ca.ET.232.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVK01000011	M1D.F.Ca.ET.234.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZO202000000	M1D.F.Ca.ET.231.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZPA02000040	M2D.F.Ca.ET.232.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVJ01000000	M2D.F.Ca.ET.233.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZO202000015	M1D.F.Ca.ET.231.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVJ01000025	M2D.F.Ca.ET.233.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
MH787779	YH9	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787778	YH8	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787777	YH15	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787776	YH14	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787775	YH13	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787774	YH12	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787773	YH11	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787772	YH10	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787771	YH1	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787770	XZ8	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787769	XZ7	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787768	XZ6	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787767	XZ5	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787766	XZ4	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787765	XZ3	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787764	XZ2	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787763	XZ1	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
MH787762	XY28	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787761	XY27	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787760	XY22	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787759	XY21	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787758	XY1	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787757	WH37	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787756	WH35	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787755	WH31	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787754	WH30	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787753	WH29	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787752	WH28	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787751	WH27	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787750	WH26	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787749	WH17	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787748	WH16	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787747	WH12	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787746	WH11	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787745	WF8	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787744	WF7	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787743	WF1	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787742	TH30	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787741	TH28	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787740	TH26	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787739	TH25	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787738	TH24	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787737	TH20	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787736	TH2	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787735	TH13	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787734	T64	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787733	T63	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787732	T56	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787731	T52	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787730	T51	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787729	T45	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787728	T44	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787727	T42	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787726	T37	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787725	T36	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787724	T30	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787723	T20	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787722	T14	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787721	SM13	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787720	QD9	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787719	QD6	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787718	QD2	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787717	P3T23	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787716	P2T13	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787715	P1T11	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787714	N99	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787713	N98	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787712	N97	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
MH787711	N96	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787710	N95	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787709	N94	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787708	N93	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787707	N92	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787706	N90	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787705	N89	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787704	N88	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787703	N87	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787702	N86	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787701	N85	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787700	N80	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787699	N71	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787698	N70	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787697	N7	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787696	N64	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787695	N58	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787694	N51	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787693	N4	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787692	N38	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787691	N37	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787690	N32	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787689	N19	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787688	N168	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787687	N167	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787686	N166	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787685	N162	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787684	N158	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787683	N157	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787682	N156	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787681	N155	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787680	N154	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787679	N151	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787678	N150	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787677	N148	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787676	N145	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787675	N144	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787674	N143	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787673	N141	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787672	N140	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787671	N139	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787670	N138	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787669	N136	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787668	N133	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787667	N129	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787666	N127	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787665	N125	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787664	N121	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787663	N119	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787662	N118	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787661	N117	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
MH787660	N116	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787659	N101	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787658	N100	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787657	KY9	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787656	KY8	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787655	KY6	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787654	KY13	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787653	KY12	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787652	JN33	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787651	JN32	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787650	JJ17	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787649	HZ9	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787648	HZ8	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787647	HZ7	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787646	HZ63	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787645	HZ61	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787644	HZ6	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787643	HZ59	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787642	HZ58	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787641	HZ57	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787640	HZ56	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787639	HZ55	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787638	HZ53	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787637	HZ51	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787636	HZ50	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787635	HZ5	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787634	HZ49	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787633	HZ47	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787632	HZ46	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787631	HZ45	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787630	HZ4_4	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787629	HZ44	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787628	HZ43	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787627	HZ42	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787626	HZ41	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787625	HZ40	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787624	HZ4	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787623	HZ39	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787622	HZ37	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787621	HZ36	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787620	HZ35	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787619	HZ3_3	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787618	HZ33	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787617	HZ32	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787616	HZ31	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787615	HZ30	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787614	HZ3	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787613	HZ29	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787612	HZ28	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787611	HZ26	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787610	HZ24	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
MH787609	HZ23	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787608	HZ22	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787607	HZ21	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787606	HZ2	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787605	HZ19	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787604	HZ17	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787603	HZ16	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787602	HZ15	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787601	HZ14	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787600	HZ13	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787599	HZ12	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787598	HZ11	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787597	HL9	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787596	HL21	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787595	HL2	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787594	HL19	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787593	HL18	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787592	HL17	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787591	HL16	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787590	HL11	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787589	HL1	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787588	GX8	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787587	GX53	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787586	GX52	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787585	GX49	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787584	GX48	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787583	GX47	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787582	GX45	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787581	GX44	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787580	GX43	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787579	GX42	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787578	GX41	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787577	GX40	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787576	GX38	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787575	GX37	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787574	GX35	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787573	GX34	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787572	GX32	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787571	GX31	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787570	GX30	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787569	GX29	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787568	GX28	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787567	GX27	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787566	GX26	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787565	GX25	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787564	GX24	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787563	GX23	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787562	GX22	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787561	GX21	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787560	GX2	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787559	GX19	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
MH787558	GX16	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787557	GX12	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787556	GX10	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787555	GX1	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787554	Ger9	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787553	Ger8	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787552	Ger7	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787551	Ger6	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787550	Ger5	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787549	Ger48	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787548	Ger47	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787547	Ger43	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787546	Ger42	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787545	Ger41	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787544	Ger40	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787543	Ger4	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787542	Ger39	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787541	Ger38	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787540	Ger37	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787539	Ger35	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787538	Ger34	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787537	Ger33	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787536	Ger32	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787535	Ger31	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787534	Ger30	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787533	Ger3	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787532	Ger29	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787531	Ger28	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787530	Ger27	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787529	Ger26	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787528	Ger24	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787527	Ger23	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787526	Ger22	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787525	Ger21	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787524	Ger2	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787523	Ger19	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787522	Ger17	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787521	Ger16	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787520	Ger15	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787519	Ger13	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787518	Ger12	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787517	Ger11	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787516	G7	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787515	G37	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787514	G27	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787513	G22	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787512	G20	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787511	CCNWYC 115 ^T	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787510	CCNWSX0192	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787509	CCNWSX0144	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787508	CCNWSX0132	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
MH787507	CCNWSX0125	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787506	CCNWSX0079	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787505	CCNWSX0123	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787504	B32	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787503	B30	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787502	B29	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787501	B26	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787500	B25	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787499	B24	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787498	B20	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787497	B2	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787496	B19	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787495	B17	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
MH787494	B15	No Country info	<i>Robinia pseudoacacia</i>	nodules	Liu,Z., Unpublished
LC376476	T_1_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376475	T_1_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376474	N_3_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376473	N_2_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376472	N_2_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376471	L_8_8	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376470	L_8_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376469	L_8_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376468	L_8_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376467	L_8_11	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376466	L_8_10	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376465	L_4_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376464	L_3_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376463	L_3_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376462	L_3_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376461	L_2_7	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376460	L_2_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376459	L_2_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376458	L_2_12	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376457	L_2_11	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376456	K_3_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376455	K_3_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376454	K_3_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376453	K_3_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376452	K_2_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376451	K_1_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376450	K_1_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376449	133_3_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376448	133_2_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376447	133_2_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376446	133_2_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376445	133_2_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376444	133_2_19	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376443	133_2_18	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376442	133_2_16	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376441	133_2_15	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376440	133_2_13	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
LC376439	133_2_11	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376438	133_2_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376437	133_1_9	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376436	133_1_7	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376435	133_1_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376434	131_5_10	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376433	131_3_8	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376432	131_3_7	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376431	131_3_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376430	131_3_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376429	131_3_11	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376428	131_2_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376427	131_2_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376426	131_2_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376425	131_1_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376424	131_1_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376423	130_3_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376422	130_3_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376421	130_2_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376420	129_5_8	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376419	129_5_7	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376418	129_5_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376417	129_4_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376416	129_2_7	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376415	128_5_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376414	128_5_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376413	128_5_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376412	128_5_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376411	128_1_7	Japan	<i>Lotus corniculatus</i>	nodule	Bamba,M., et al. Unpublished
LC376410	128_1_17	Japan	<i>Lotus corniculatus</i>	nodule	Bamba,M., et al. Unpublished
LC376409	127_14_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376408	127_13_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376407	127_12_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376406	127_12_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376405	127_12_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376404	127_11_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376403	127_11_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376402	127_11_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376401	127_10_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376400	127_10_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376399	117_3_9	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376398	117_2_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376397	114_5_8	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376396	114_3_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376395	114_1_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376394	113_3_9	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376393	113_3_7	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376392	113_3_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376391	113_3_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376390	113_3_19	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376389	113_3_17	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
LC376388	113_3_16	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376387	113_3_15	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376386	113_3_14	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376385	113_3_13	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376384	113_1_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376383	112_5_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376382	112_3_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376381	112_3_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376380	112_2_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376379	112_2_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376378	112_1_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376377	108_3_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376376	108_3_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376375	108_2_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376374	108_2_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376373	108_1_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376372	107_2_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376371	107_1_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
NZ_CCNC01000179	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
SASY01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASY01000055	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASZ01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASW01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASZ01000071	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASX01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASV01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASX01000047	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASW01000081	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASU01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASV01000139	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SAST01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASU01000105	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASS01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SAST01000116	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASR01000000	No Strain info	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
SASQ01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASS01000100	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASR01000040	No Strain info	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
SASQ01000072	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASP01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASO01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASN01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASP01000063	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASO01000059	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASN01000102	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASM01000000	No Strain info	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
SASL01000000	No Strain info	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
SASK01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASMO1000060	No Strain info	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
SASJ01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SASL01000122	No Strain info	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished

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Accession #s	Strain	Country	Host ¹	Isolation source	Reference
RZOK01000176	M8A.F.Ca.ET.023.02.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOM01001458	M7A.F.Ca.ET.027.03.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOH01000000	M4B.F.Ca.ET.019.03.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOI01000000	M4A.F.Ca.ET.020.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOI01000192	M4A.F.Ca.ET.020.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOH01000307	M4B.F.Ca.ET.019.03.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOF01000000	M4B.F.Ca.ET.017.02.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOL01000000	M7A.F.Ca.ET.027.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOF01000309	M4B.F.Ca.ET.017.02.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOL01000126	M7A.F.Ca.ET.027.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOO01000000	M2A.F.Ca.ET.029.05.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOO01000085	M2A.F.Ca.ET.029.05.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOG01000000	M2A.F.Ca.ET.017.03.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOG01000169	M2A.F.Ca.ET.017.03.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOJ01000000	M4A.F.Ca.ET.022.05.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOQ01000000	M2A.F.Ca.ET.046.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOQ01000001	M2A.F.Ca.ET.046.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOJ01000109	M4A.F.Ca.ET.022.05.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOP01000000	M00.F.Ca.ET.038.03.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOP01000146	M00.F.Ca.ET.038.03.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOR01000000	M4B.F.Ca.ET.088.02.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOQ01001627	M2A.F.Ca.ET.046.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOR01000499	M4B.F.Ca.ET.088.02.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOT01000000	M4A.F.Ca.ET.090.04.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZOT01000008	M4A.F.Ca.ET.090.04.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPH01000000	M7A.F.Ca.CA.004.04.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPH01000268	M7A.F.Ca.CA.004.04.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPB01000000	M7A.F.Ca.AU.002.02.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPB01000339	M7A.F.Ca.AU.002.02.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPF01000000	M7A.F.Ca.AU.001.01.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPF01000008	M7A.F.Ca.AU.001.01.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPI01000000	M7A.F.Ca.CA.002.15.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPI01000047	M7A.F.Ca.CA.002.15.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPE01000000	M7A.F.Ca.AU.002.06.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPE01000275	M7A.F.Ca.AU.002.06.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPD01000000	M7A.F.Ca.AU.002.04.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPL01000000	M7A.F.Ca.CA.002.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPC01000000	M7A.F.Ca.AU.002.03.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPL01000028	M7A.F.Ca.CA.002.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPC01000021	M7A.F.Ca.AU.002.03.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPD01000104	M7A.F.Ca.AU.002.04.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPG01000000	M6A.T.Cr.TU.014.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPQ01000000	M7A.F.Ca.CA.004.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPG01000053	M6A.T.Cr.TU.014.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPQ01000236	M7A.F.Ca.CA.004.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPK01000000	M7A.F.Ca.CA.002.03.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPK01000088	M7A.F.Ca.CA.002.03.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPM01000000	M7A.F.Ca.CA.001.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPM01000015	M7A.F.Ca.CA.001.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPJ01000000	M7A.F.Ca.CA.002.03.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPY01000000	M7A.F.Ca.CA.004.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
RZPJ01000031	M7A.F.Ca.CA.002.03.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPY01000120	M7A.F.Ca.CA.004.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPN01000000	M7A.F.Ca.CA.001.16.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPO01000000	M7A.F.Ca.CA.001.07.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPN01000161	M7A.F.Ca.CA.001.16.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPO01000119	M7A.F.Ca.CA.001.07.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPP01000000	M7A.F.Ca.CA.002.10.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPP01000004	M7A.F.Ca.CA.002.10.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPR01000000	M7A.F.Ca.CA.004.06.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPS01000000	M7A.F.Ca.CA.004.07.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPS01000003	M7A.F.Ca.CA.004.07.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPR01000158	M7A.F.Ca.CA.004.06.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPU01000000	M7A.F.Ca.CA.004.02.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPT01000000	M7A.F.Ca.CA.004.01.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPT01000011	M7A.F.Ca.CA.004.01.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPU01000227	M7A.F.Ca.CA.004.02.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQA01000000	M7A.F.Ca.US.006.04.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQA01000031	M7A.F.Ca.US.006.04.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPW01000000	M7A.F.Ca.CA.001.08.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPX01000000	M7A.F.Ca.CA.001.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPW01000280	M7A.F.Ca.CA.001.08.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPX01000548	M7A.F.Ca.CA.001.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPV01000000	M7A.F.Ca.CA.001.08.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPV01000001	M7A.F.Ca.CA.001.08.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPZ01000000	M7A.F.Ca.CA.004.09.1.2	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQF01000000	M7A.F.Ca.US.001.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQF01000009	M7A.F.Ca.US.001.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPZ01000179	M7A.F.Ca.CA.004.09.1.2	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQC01000000	M7A.F.Ca.CA.004.11.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQC01000298	M7A.F.Ca.CA.004.11.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQB01000000	M7A.F.Ca.CA.004.10.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQG01000000	M7D.F.Ca.US.004.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQG01000040	M7D.F.Ca.US.004.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQB01000220	M7A.F.Ca.CA.004.10.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQD01000000	M7A.F.Ca.CA.004.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQD01000047	M7A.F.Ca.CA.004.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQI01000000	M7A.F.Ca.CA.002.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQI01000034	M7A.F.Ca.CA.002.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQE01000000	M7A.F.Ca.US.002.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQE01000023	M7A.F.Ca.US.002.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQH01000000	M7A.F.Ca.US.001.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQH01000087	M7A.F.Ca.US.001.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQM01000000	M7A.F.Ca.US.006.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQM01000136	M7A.F.Ca.US.006.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQN01000000	M7A.F.Ca.US.003.02.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQN01000032	M7A.F.Ca.US.003.02.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQK01000000	M7A.F.Ca.CA.001.14.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQK01000327	M7A.F.Ca.CA.001.14.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
RZQQ01000045	M7A.F.Ca.US.007.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQJ01000000	M7A.F.Ca.CA.002.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQJ01000108	M7A.F.Ca.CA.002.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQU01000000	M7A.F.Ca.CA.004.05.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQU01000082	M7A.F.Ca.CA.004.05.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQO01000000	M7A.F.Ca.US.003.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQO01000063	M7A.F.Ca.US.003.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQR01000000	M7A.F.Ca.CA.001.15.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQS01000000	M7A.F.Ca.CA.001.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQR01000281	M7A.F.Ca.CA.001.15.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQS01000137	M7A.F.Ca.CA.001.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQP01000000	M7A.F.Ca.US.007.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQW01000000	M7A.F.Ca.CA.001.09.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQP01000163	M7A.F.Ca.US.007.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQW01000139	M7A.F.Ca.CA.001.09.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQV01000000	M7A.F.Ca.CA.002.15.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQV01000082	M7A.F.Ca.CA.002.15.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQT01000000	M7A.F.Ca.CA.001.04.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRD01000000	M7A.F.Ca.CA.001.12.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRD01000050	M7A.F.Ca.CA.001.12.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQT01000209	M7A.F.Ca.CA.001.04.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRA01000000	M7A.F.Ca.CA.003.01.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRA01000046	M7A.F.Ca.CA.003.01.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQY01000000	M7A.F.Ca.CA.001.10.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQY01000193	M7A.F.Ca.CA.001.10.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQX01000000	M7A.F.Ca.CA.001.09.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQX01000064	M7A.F.Ca.CA.001.09.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQZ01000000	M7A.F.Ca.CA.001.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRG01000000	M7A.F.Ca.CA.001.13.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRG01000158	M7A.F.Ca.CA.001.13.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQZ01000327	M7A.F.Ca.CA.001.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRH01000000	M7A.F.Ca.CA.001.13.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRC01000000	M7A.F.Ca.CA.001.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRC01000075	M7A.F.Ca.CA.001.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRH01000156	M7A.F.Ca.CA.001.13.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRB01000000	M7A.F.Ca.CA.002.07.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRE01000000	M7A.F.Ca.US.001.04.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRB01000111	M7A.F.Ca.CA.002.07.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRE01000151	M7A.F.Ca.US.001.04.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRK01000000	M7A.F.Ca.CA.004.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRF01000000	M7A.F.Ca.US.001.04.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRK01000188	M7A.F.Ca.CA.004.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRF01000142	M7A.F.Ca.US.001.04.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRP01000000	M7A.F.Ca.US.005.03.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRF01000046	M7A.F.Ca.US.005.03.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRZ01000000	M2A.F.Ca.ET.040.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRZ01000015	M2A.F.Ca.ET.040.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRL01000000	M7A.F.Ca.CA.004.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRL01000302	M7A.F.Ca.CA.004.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRQ01000000	M7D.F.Ca.US.004.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRQ01000026	M7D.F.Ca.US.004.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
RZRI01000000	M7A.F.Ca.CA.004.08.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRI01000138	M7A.F.Ca.CA.004.08.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRJ01000000	M7A.F.Ca.CA.004.08.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRO01000000	M7A.F.Ca.US.005.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRO01000041	M7A.F.Ca.US.005.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRJ01000165	M7A.F.Ca.CA.004.08.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRW01000000	M7A.F.Ca.US.014.04.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRW01000043	M7A.F.Ca.US.014.04.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRN01000000	M7A.F.Ca.CA.002.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRR01000000	M7A.F.Ca.CA.002.09.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRN01000083	M7A.F.Ca.CA.002.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRR01000249	M7A.F.Ca.CA.002.09.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSG01000000	M4A.F.Ca.ET.050.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSG01000015	M4A.F.Ca.ET.050.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRM01000000	M7A.F.Ca.CA.002.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRM01000085	M7A.F.Ca.CA.002.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZR01000000	M2A.F.Ca.ET.042.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZR01000024	M2A.F.Ca.ET.042.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRT01000000	M7A.F.Ca.US.011.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSA01000000	M2A.F.Ca.ET.037.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSA01000012	M2A.F.Ca.ET.037.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRT01000092	M7A.F.Ca.US.011.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRS01000000	M7A.F.Ca.CA.002.14.1.2	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRS01000019	M7A.F.Ca.CA.002.14.1.2	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSD01000000	M8A.F.Ca.ET.059.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSI01000000	M8A.F.Ca.ET.023.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSD01000486	M8A.F.Ca.ET.059.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSI01000727	M8A.F.Ca.ET.023.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRV01000000	M7A.F.Ca.US.010.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRV01000074	M7A.F.Ca.US.010.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSC01000000	M1E.F.Ca.ET.063.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSC01000068	M1E.F.Ca.ET.063.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSB01000000	M2A.F.Ca.ET.067.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSB01000062	M2A.F.Ca.ET.067.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSE01000000	M4B.F.Ca.ET.049.02.1.2	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSE01000239	M4B.F.Ca.ET.049.02.1.2	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRU01000000	M7A.F.Ca.US.008.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRU01000024	M7A.F.Ca.US.008.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSJ01000000	M8A.F.Ca.ET.021.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSF01000000	M1A.F.Ca.ET.072.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSJ01000092	M8A.F.Ca.ET.021.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSF01000169	M1A.F.Ca.ET.072.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSK01000000	M2A.F.Ca.ET.015.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSL01000000	M1E.F.Ca.ET.041.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSL01000005	M1E.F.Ca.ET.041.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSR01000000	M1A.F.Ca.IN.020.06.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSK01000256	M2A.F.Ca.ET.015.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSR01000221	M1A.F.Ca.IN.020.06.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSH01000000	M4B.F.Ca.ET.013.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSH01000027	M4B.F.Ca.ET.013.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSQ01000000	M1A.F.Ca.IN.020.03.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
RZSM01000000	M1A.F.Ca.IN.022.05.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSQ01000112	M1A.F.Ca.IN.020.03.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSM01000371	M1A.F.Ca.IN.022.05.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSN01000000	M1A.F.Ca.IN.020.04.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZST01000000	M1A.F.Ca.IN.022.07.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSY01000000	M5C.F.Ca.IN.020.14.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSN01000149	M1A.F.Ca.IN.020.04.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSY01000044	M5C.F.Ca.IN.020.14.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZST01000131	M1A.F.Ca.IN.022.07.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSP01000000	M1A.F.Ca.IN.020.32.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSP01000131	M1A.F.Ca.IN.020.32.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSO01000000	M1A.F.Ca.IN.020.30.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSU01000000	M5C.F.Cr.IN.023.01.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSO01000014	M1A.F.Ca.IN.020.30.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSU01000132	M5C.F.Cr.IN.023.01.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSS01000000	M1A.F.Ca.IN.022.02.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSW01000000	M5C.F.Ca.IN.020.29.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSO01000145	M1A.F.Ca.IN.022.02.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSW01000405	M5C.F.Ca.IN.020.29.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTD01000000	M7A.F.Ca.MR.228.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTD01000316	M7A.F.Ca.MR.228.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTV01000000	M1A.T.Ca.IN.004.03.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTV01000028	M1A.T.Ca.IN.004.03.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTB01000000	M7A.F.Ca.MR.148.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTB01000130	M7A.F.Ca.MR.148.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSX01000000	M5C.F.Ca.IN.020.32.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSX01000264	M5C.F.Ca.IN.020.32.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSZ01000000	M1A.F.Ca.IN.022.04.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTE01000000	M7A.F.Ca.MR.245.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSZ01000129	M1A.F.Ca.IN.022.04.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTE01000081	M7A.F.Ca.MR.245.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTL01000000	M7A.T.Ca.TU.009.01.3.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTL01000018	M7A.T.Ca.TU.009.01.3.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSV01000000	M1A.F.Ca.IN.020.03.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTA01000000	M6A.T.Cr.TU.017.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSV01000122	M1A.F.Ca.IN.020.03.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTA01000129	M6A.T.Cr.TU.017.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTC01000000	M7A.F.Ca.MR.176.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTM01000000	M7A.T.Ca.TU.009.01.1.2	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTM01000086	M7A.T.Ca.TU.009.01.1.2	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTC01000185	M7A.F.Ca.MR.176.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTF01000000	M7A.F.Ca.MR.362.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTF01000329	M7A.F.Ca.MR.362.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTK01000000	M7A.T.Ca.TU.009.01.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTK01000063	M7A.T.Ca.TU.009.01.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTP01000000	M6A.T.Ca.TU.002.02.2.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTP01000011	M6A.T.Ca.TU.002.02.2.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTI01000000	M6A.T.Ce.TU.002.03.1.1	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTI01000138	M6A.T.Ce.TU.002.03.1.1	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTJ01000000	M6A.T.Ce.TU.016.01.1.1	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTJ01000044	M6A.T.Ce.TU.016.01.1.1	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
RZTQ01000000	M7A.T.Ca.TU.009.01.3.2	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTU01000000	USDA-HM6	No Country info	No Host info	root nodule	Greenlon,A., et al. Unpublished
RZTU01000012	USDA-HM6	No Country info	No Host info	root nodule	Greenlon,A., et al. Unpublished
RZTQ01000664	M7A.T.Ca.TU.009.01.3.2	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTR01000000	M7A.T.Ca.TU.009.02.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTR01000070	M7A.T.Ca.TU.009.02.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTT01000000	M7A.T.Ca.US.000.02.2.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTT01000034	M7A.T.Ca.US.000.02.2.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTS01000000	M7A.T.Ca.US.000.02.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTS01000283	M7A.T.Ca.US.000.02.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034448	M1B.F.Ca.ET.045.04.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034452	M6A.T.Cr.TU.016.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034449	M2A.F.Ca.ET.046.03.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034447	M1E.F.Ca.ET.045.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034444	M1D.F.Ca.ET.043.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034453	M7D.F.Ca.US.005.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034446	M2A.F.Ca.ET.043.05.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034454	M8A.F.Ca.ET.057.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034445	M2A.F.Ca.ET.043.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034443	M9A.F.Ca.ET.002.03.1.2	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034455	M1A.F.Ca.IN.022.06.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034450	M4B.F.Ca.ET.058.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034451	M3A.F.Ca.ET.080.04.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
MK226197	LMS-1	Portugal	<i>Cicer arietinum</i>	root nodule	Alexandre,A., et al. 2018
RQXT01000000	DSM 28320	Spain	No Host info	root nodule	Gao,J., Unpublished
RQXT01000061	DSM 28320	Spain	No Host info	root nodule	Gao,J., Unpublished
FUIG01000000	STM 462	No Country info	No Host info	periphery of the Zn-Pb mine	Brunel,B., 2016
FUIG01000058	STM 462	No Country info	No Host info	periphery of the Zn-Pb mine	Brunel,B., 2016
QZWZ01000000	ICMP19557	New Zealand	<i>Sophora longicarinata</i>	root nodule	De Meyer,S.E., Unpublished
QZWZ01000006	ICMP19557	New Zealand	<i>Sophora longicarinata</i>	root nodule	De Meyer,S.E., Unpublished
KU984256	STM4891	France	No Host info	Anthyllis vulneraria	Mohamad,R., et al. 2017
KU984255	STM4623	France	No Host info	Anthyllis vulneraria	Mohamad,R., et al. 2017
KP729631	STM4676	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. 2017
KP735769	STM4864	France	No Host info	Anthyllis vulneraria	Mohamad,R., et al. 2017
KP735749	STM4864	France	No Host info	Anthyllis vulneraria	Mohamad,R., et al. 2017
LM655202	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
KY864167	23-3-2	China	<i>Thermopsis lanceolate</i>	root nodule	Xu,L., 2017
KY073226	HZ85	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073225	HZ84	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073224	HZ83	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073223	HZ82	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073222	HZ81	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073221	HZ79	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073220	HZ78	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073219	HZ77	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073218	HZ76	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073216	HZ74	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073215	HZ72	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073214	HZ71	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073213	HZ70	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073212	HZ69	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished

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KY073211	HZ68	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073210	HZ67	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073209	HZ66	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073208	HZ65	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073207	HZ64	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073206	HZ63	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073205	HZ62	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073204	HZ61	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073201	HZ43	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073200	HZ42	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073199	HZ40	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073198	HZ39	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073197	HZ38	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073196	HZ37	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073195	HZ36	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073194	HZ33	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073193	HZ31	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073192	HZ30	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073191	HZ27	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073190	HZ22	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073189	HZ15	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073187	HZ13	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073186	HZ9	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
FTPD01000000	No Strain info	No Country info	No Host info	No info	Brunel,B., 2017
FTPD01000017	No Strain info	No Country info	No Host info	No info	Brunel,B., 2017
KU753940	LB4	Tunisia	Lens culinaris	root nodules	Dhaoui,S.,et al. Unpublished
EU697981	CCNWNX0117	No Country info	No Host info	No info	Bi,J.T., et al. Unpublished
EU697979	CCNWNX0083	No Country info	No Host info	No info	Bi,J.T., et al. Unpublished
EU697977	CCNWNX0068	No Country info	No Host info	No info	Bi,J.T., et al. Unpublished
EU697975	CCNWNX0062	No Country info	No Host info	No info	Bi,J.T., et al. Unpublished
EU697974	CCNWNX0058	No Country info	No Host info	No info	Bi,J.T., et al. Unpublished
EU849559	CCNWYC116	China	<i>Robinia pseudoacacia</i>	No info	Wei,G., et al. 2009
EU849557	CCNWYC 132	China	<i>Robinia pseudoacacia</i>	No info	Wei,G., et al. 2009
EU849556	CCNWYC131	China	<i>Robinia pseudoacacia</i>	No info	Wei,G., et al. 2009
EU849554	CCNWYC 147	China	<i>Robinia pseudoacacia</i>	No info	Wei,G., et al. 2009
EU849553	CCNWYC 124	China	<i>Robinia pseudoacacia</i>	No info	Wei,G., et al. 2009
EU849552	CCNWYC 120	China	<i>Robinia pseudoacacia</i>	No info	Wei,G., et al. 2009
EU722479	CCNWX25-1	China	<i>Alhagi sparsifolia</i>	No info	Wei,G., et al. 2009
EU722471	CCNWX24-1	China	<i>Alhagi sparsifolia</i>	No info	Wei,G., et al. 2009
EU722470	CCNWX45-1	China	<i>Alhagi sparsifolia</i>	No info	Wei,G., et al. 2009
EU722469	CCNWXJ35-1	China	<i>Alhagi sparsifolia</i>	No info	Wei,G., et al. 2009
EU849558	CCNWYC 115	China	<i>Robinia pseudoacacia</i>	No info	Wei,G., et al. 2009
EU722474	CCNWXJ12-2	China	<i>Alhagi sparsifolia</i>	No info	Wei,G., et al. 2009
DQ100407	ICMP 13640	No Country info	No Host info	No info	Wei,G., et al. 2009
DQ100406	ICMP 11541	New Zealand	<i>Clanthus puniceus</i>	No info	Wei,G., et al. 2009
DQ100405	ICMP 14319	New Zealand	<i>Carmichaelia odorata</i>	No info	Wei,G., et al. 2009
DQ100404	ICMP 12690	New Zealand	<i>Montigena novae-zelandiae</i>	No info	Wei,G., et al. 2009
DQ100402	ICMP 11736	New Zealand	<i>Sophora microphylla</i>	No info	Wei,G., et al. 2009
DQ100401	ICMP 14330	New Zealand	<i>Sophora microphylla</i>	No info	Wei,G., et al. 2009
DQ100400	ICMP 11719	New Zealand	<i>Sophora tetraptera</i>	No info	Wei,G., et al. 2009
DQ100395	ICMP 15054	New Zealand	<i>Carmichaelia australis</i>	No info	Wei,G., et al. 2009

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DQ100394	ICMP 11722	New Zealand	<i>Carmichaelia nana</i>	No info	Wei, G., et al. 2009
DQ100393	ICMP 11720	New Zealand	<i>Clanthus puniceus</i>	No info	Wei, G., et al. 2009
DQ100392	ICMP 11721	New Zealand	<i>Clanthus puniceus</i>	No info	Wei, G., et al. 2009
DQ100391	ICMP 11726	New Zealand	<i>Clanthus puniceus</i>	No info	Wei, G., et al. 2009
DQ100390	ICMP 12680	New Zealand	<i>Clanthus puniceus</i>	No info	Wei, G., et al. 2009
DQ100389	ICMP 11708	New Zealand	<i>Carmichaelia nana</i>	No info	Wei, G., et al. 2009
DQ100388	ICMP 12649	New Zealand	<i>Carmichaelia petriei</i>	No info	Wei, G., et al. 2009
DQ100387	ICMP 12685	New Zealand	<i>Montigena novae-zelandiae</i>	No info	Wei, G., et al. 2009
DQ100386	ICMP 13190	New Zealand	<i>Carmichaelia australis</i>	No info	Wei, G., et al. 2009
AY601531	WSM2076	No Country info	No Host info	No info	Nandasena, K.G., et al. 2006
AY601530	WSM2075	No Country info	No Host info	No info	Nandasena, K.G., et al. 2006
AY601529	WSM2074	No Country info	No Host info	No info	Nandasena, K.G., et al. 2006
AY601528	WSM2073	No Country info	No Host info	No info	Nandasena, K.G., et al. 2006
AY601527	WSM1497	No Country info	No Host info	No info	Nandasena, K.G., et al. 2006
AY601526	WSM1271	No Country info	No Host info	No info	Nandasena, K.G., et al. 2006
JF260929	TM1	No Country info	<i>Thermopsis fabacea</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424980	R7	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424979	H8	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424978	YB6	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424976	UB7	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424975	UC5	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424974	Up4	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424973	UC4	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424972	R6	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424971	O8	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424970	UC3	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424969	R4	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424968	UB6	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424967	UB5	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424966	H4	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424965	UA6	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424964	UA5	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424963	UA1	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424962	R2	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424961	UB8	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424960	O7	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424959	YB3	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424958	YB5	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424957	YB4	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424956	O4	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424953	B3	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424952	B1	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424951	UC2	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424950	R3	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424949	Up3	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424948	R5	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424947	UC1	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424946	UB4	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HQ424944	YA2	Sweden	<i>Lotus corniculatus</i>	root nodules	Ampomah, O.Y. and Huss-Danell, K., 2011
HM346606	PG10	No Country info	No Host info	No info	Fterich, A., Met al. 2011
GU111362	DB7	China	<i>Sophora alopecuroides</i>	No info	Zhao, L., et al. 2010

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GU111358	DBT26	China	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010
GU111357	DBT6-3	China	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010
GU111356	ZY11-1	China	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010
GU111355	DBT14	China	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010
GQ375854	RPP20	No Country info	No Host info	soil	Mierzwa,B., et al. 2010
GQ375853	RPP14	No Country info	No Host info	soil	Mierzwa,B., et al. 2010
GQ375852	RPJ16	No Country info	No Host info	soil	Mierzwa,B., et al. 2010
GQ375851	RPJ6	No Country info	No Host info	soil	Mierzwa,B., et al. 2010
GQ375850	RPJ5	No Country info	No Host info	soil	Mierzwa,B., et al. 2010
GQ375849	RPJ3	No Country info	No Host info	soil	Mierzwa,B., et al. 2010
GQ167254	CCBAU 11257	China	<i>Caragana microphylla</i>	No info	Guan,S., et al. Unpublished
GQ167253	CCBAU 11244	China	<i>Caragana microphylla</i>	No info	Guan,S., et al. Unpublished
GQ167252	CCBAU 11242	China	<i>Caragana microphylla</i>	No info	Guan,S., et al. Unpublished
GQ167251	CCBAU 11231	China	<i>Caragana arborescens</i>	No info	Guan,S., et al. Unpublished
GQ167249	CCBAU 11270	China	<i>Caragana microphylla</i>	No info	Guan,S., et al. Unpublished
GQ167248	CCBAU 11226	China	<i>Caragana arborescens</i>	No info	Guan,S., et al. Unpublished
GQ167247	CCBAU 11217	China	<i>Caragana sinica</i>	No info	Guan,S., et al. Unpublished
GQ167246	CCBAU 11214	China	<i>Caragana sinica</i>	No info	Guan,S., et al. Unpublished
GQ167245	CCBAU 11208	China	<i>Caragana sinica</i>	No info	Guan,S., et al. Unpublished
GQ167244	CCBAU 11206	China	<i>Caragana sinica</i>	No info	Guan,S., et al. Unpublished
GQ167243	CCBAU 11196	China	<i>Caragana intermedia</i>	No info	Guan,S., et al. Unpublished
GQ167242	CCBAU 11185	China	<i>Caragana intermedia</i>	No info	Guan,S., et al. Unpublished
GQ167241	USDA 3392	Spain	<i>Cicer arietinum</i>	No info	Guan,S., et al. Unpublished
GQ167240	USDA 3378	Spain	<i>Cicer arietinum</i>	No info	Guan,S., et al. Unpublished
FJ619293	CCNWSGS112	China	<i>Caragana korshinskii</i>	nodules	Zhu,W.F., et al. Unpublished
FJ619287	CCNWNX170	China	<i>Caragana opulens</i>	nodules	Zhu,W.F., et al. Unpublished
FJ619285	CCNWSX551	China	<i>Caragana korshinskii</i>	nodules	Zhu,W.F., et al. Unpublished
FJ619284	CCNWSX531	China	<i>Caragana korshinskii</i>	nodules	Zhu,W.F., et al. Unpublished
FJ619283	CCNWNX168	China	<i>Caragana korshinskii</i>	nodules	Zhu,W.F., et al. Unpublished
FJ619282	CCNWSX546	China	<i>Caragana korshinskii</i>	nodules	Zhu,W.F., et al. Unpublished
FJ619281	CCNWSX544	China	<i>Caragana korshinskii</i>	nodules	Zhu,W.F., et al. Unpublished
GU111372	MQ15	China	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010
GU111371	YM13	China	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010
GU111370	YM18-1	China	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010
GU111369	MQ6	China	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010
GU111368	ZW5-3	China	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010
GU111367	ZW10-1	China	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010
GU111366	ZW10-3	China	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010
GQ375855	ICMP 15022	(Poland/Japan)	<i>Robinia pseudoacacia</i>	soil	Mierzwa,B., et al. 2010
GQ167250	CCBAU 11299 ^T	China	<i>Caragana microphylla</i>	No info	Guan,S., et al. Unpublished
GQ167239	CCBAU 3306	China	<i>Glycyrrhiza pallidiflora</i>	No info	Guan,S., et al. Unpublished
GQ167237	SDW014	China	<i>Astragalus adsurgens</i>	No info	Guan,S., et al. Unpublished
GQ167236	CCBAU 61158	China	<i>Albizia kalkora</i>	No info	Guan,S., et al. Unpublished
EF566979	DUS835	South Africa	<i>Aspalathus linearis</i>	No info	Elliott,G.N.,et al 2007
EF446920	ACMP18	No Country info	<i>Astragalus cicer</i>	No info	Malek,W. and Wdowiak-Wrobel,S., Unpublished
EF446919	USDA 3350	No Country info	<i>Astragalus cicer</i>	No info	Malek,W. and Wdowiak-Wrobel,S., Unpublished
EF446918	CIAM0210	No Country info	<i>Astragalus cicer</i>	No info	Malek,W. and Wdowiak-Wrobel,S., Unpublished
EF115500	ICMP 12840	Indonesia	<i>Sophora flavescens</i>	No info	Weir,B.S., Unpublished
EF115499	ICMP 12709	Australia	<i>Sophora howinsula</i>	soil	Weir,B.S., Unpublished
EF115498	ICMP 14894	New Zealand	<i>Sophora microphylla</i>	No info	Weir,B.S., Unpublished
EF115497	ICMP 14311	New Zealand	<i>Sophora microphylla</i>	No info	Weir,B.S., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KC237542	ICMP 19540	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237541	ICMP 19539	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237540	ICMP 19538	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237539	ICMP 19537	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237538	ICMP 19536	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237537	ICMP 19535	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237525	ICMP 19547	New Zealand	<i>Sophora prostrata</i>	No info	Tan,H.W., et al. 2015
KC237524	ICMP 19546	New Zealand	<i>Sophora prostrata</i>	No info	Tan,H.W., et al. 2015
KC237522	ICMP 19563	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., et al. 2015
KC237521	ICMP 19562	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., et al. 2015
KC237520	ICMP 19561	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., et al. 2015
KC237519	ICMP 19560 ^T	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., et al. 2015
KC237518	ICMP 19522	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237517	ICMP 19521	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237512	ICMP 19517	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237511	ICMP 19516	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237506	ICMP 19569	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., et al. 2015
KC237505	ICMP 19568	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., et al. 2015
KC237504	ICMP 19566	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., et al. 2015
KC237503	ICMP 19565	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., et al. 2015
KC237501	ICMP 19558	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., et al. 2015
KC237496	ICMP 19559	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., et al. 2015
KC237536	ICMP 19533	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237535	ICMP 19532	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237534	ICMP 19531	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237533	ICMP 19530	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237532	ICMP 19529	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237531	ICMP 19528	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237530	ICMP 19527	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237529	ICMP 19526	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237528	ICMP 19525	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237527	ICMP 19524	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237526	ICMP 19523 ^T	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237523	ICMP 19545 ^T	New Zealand	<i>Sophora prostrata</i>	No info	Tan,H.W., et al. 2015
KC237516	ICMP 19520	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237515	ICMP 19519	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237514	ICMP 19518	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237513	ICMP 19551	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237510	ICMP 19515 ^T	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237509	ICMP 19514	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237508	ICMP 19513	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237507	ICMP 19512	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237502	ICMP 19564	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., et al. 2015
KC237500	ICMP 19557 ^T	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., et al. 2015
KC237499	ICMP 19419	New Zealand	<i>Carmichaelia petriei</i>	No info	Tan,H.W., et al. 2015
KC237498	ICMP 19550	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., et al. 2015
KC237497	ICMP 19567	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., et al. 2015
KU216555	NWXJ43	No Country info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A.,et al. 2016
KU216554	NWXJ42	No Country info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A.,et al. 2016
KU216553	NWXJ40	No Country info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A.,et al. 2016

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KU216552	NWXJ39	No Country info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A.,et al. 2016
KU216551	NWXJ36	No Country info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A.,et al. 2016
KU216550	NWXJ33	No Country info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A.,et al. 2016
KU216549	NWXJ32	No Country info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A.,et al. 2016
KU216548	NWXJ31	No Country info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A.,et al. 2016
KU216547	NWXJ30	No Country info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A.,et al. 2016
KU216546	NWXJ28	No Country info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A.,et al. 2016
KU216545	NWXJ27	No Country info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A.,et al. 2016
KU216544	NWXJ25	No Country info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A.,et al. 2016
KU216543	NWXJ21	No Country info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A.,et al. 2016
KU216542	NWXJ18	No Country info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A.,et al. 2016
KU216541	NWXJ16	No Country info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A.,et al. 2016
KU216540	NWXJ08	No Country info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A.,et al. 2016
KU216539	NWXJ02	No Country info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A.,et al. 2016
KU216538	NWSX25	No Country info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A.,et al. 2016
KU216537	NWSX24	No Country info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A.,et al. 2016
KU216536	NWSX23	No Country info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A.,et al. 2016
KU216535	NWSX22	No Country info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A.,et al. 2016
KU216534	NWSX20	No Country info	<i>Glycyrrhiza sp.</i>	No info	Mousavi,S.A.,et al. 2016
KU216533	NWSX19	No Country info	<i>Glycyrrhiza sp.</i>	No info	Mousavi,S.A.,et al. 2016
KU216532	NWSX06	No Country info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A.,et al. 2016
KU216531	NWNX05	No Country info	<i>Glycyrrhiza sp.</i>	No info	Mousavi,S.A.,et al. 2016
KU216530	NWGS09	No Country info	<i>Glycyrrhiza sp.</i>	No info	Mousavi,S.A.,et al. 2016
KU216529	NWGS05	China	<i>Glycyrrhiza sp.</i>	No info	Mousavi,S.A.,et al. 2016
KU216528	NWGS03	No Country info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A.,et al. 2016
KU216527	NWGS01	No Country info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A.,et al. 2016
KU900708	STM 9388	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KU900707	STM 9294	France	<i>Lotus corniculatus</i>	No info	Mohamad,R., et al. Unpublished
KU900706	STM 9393	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KU900705	STM 9368	France	<i>Lotus corniculatus</i>	No info	Mohamad,R., et al. Unpublished
KU900704	STM 9304	France	<i>Lotus corniculatus</i>	No info	Mohamad,R., et al. Unpublished
KU900703	STM 9407	France	<i>Lotus corniculatus</i>	No info	Mohamad,R., et al. Unpublished
KU900702	STM 9345	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KU900701	STM 9336	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KU900700	STM 9362	France	<i>Lotus corniculatus</i>	No info	Mohamad,R., et al. Unpublished
KU900699	STM 9757	France	<i>Lotus corniculatus</i>	No info	Mohamad,R., et al. Unpublished
KU900698	STM 9372	France	<i>Lotus corniculatus</i>	No info	Mohamad,R., et al. Unpublished
KU900697	STM 9811	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KU900696	STM 9340	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KU900695	STM 9348	France	<i>Lotus corniculatus</i>	No info	Mohamad,R., et al. Unpublished
KU900694	STM 9796	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KU900693	STM 9314	France	<i>Lotus corniculatus</i>	No info	Mohamad,R., et al. Unpublished
KU900692	STM 9799	France	<i>Lotus corniculatus</i>	No info	Mohamad,R., et al. Unpublished
KU900691	STM 9355	France	<i>Lotus corniculatus</i>	No info	Mohamad,R., et al. Unpublished
KU984258	STM 5069	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KU984257	STM 4922	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP251744	USDA 3392	China	<i>Cicer arietinum</i>	No info	Ji,Z., et al. 2015
KP251743	SDW 018 ^T	China	<i>Astragalus adsurgens</i>	No info	Ji,Z., et al. 2015
KP251742	SDW 014	China	<i>Astragalus adsurgens</i>	No info	Ji,Z., et al. 2015
KP251741	LMG 24485	China	<i>Anthyllis vulneraria</i>	No info	Ji,Z., et al. 2015
KP251740	CCBAU 83330 ^T	China	<i>Oxytropis glabra</i>	No info	Ji,Z., et al. 2015

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KP251739	CCBAU 75063	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251738	CCBAU 75061	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251737	CCBAU 75059	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251736	CCBAU 65333	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251735	CCBAU 65328	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251734	CCBAU 65327 ^T	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251733	CCBAU 65318	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251732	CCBAU 11299	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251731	CCBAU 11270	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251730	CCBAU 11257	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251729	CCBAU 11244	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251728	CCBAU 11242	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251727	CCBAU 11231	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251726	CCBAU 11226	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251725	CCBAU 11217	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251724	CCBAU 11214	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251723	CCBAU 11208	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251722	CCBAU 11206	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251721	CCBAU 11196	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251720	CCBAU 11185	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251719	CCBAU 3306	China	<i>Glycyrrhiza pallidiflora</i>	No info	Ji,Z., et al. 2015
KP251718	CCBAU 03299	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251717	CCBAU 03254	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251716	CCBAU 01602	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251715	CCBAU 01597	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251714	CCBAU 01583	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251713	CCBAU 01582	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251712	CCBAU 01577	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251711	CCBAU 01570	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251710	CCBAU 01502	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251709	CCBAU 01499	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251708	CCBAU 01477	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251707	CCBAU 01461	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251706	CCBAU 01405	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251705	CCBAU 01636	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251704	CCBAU 01750	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251703	CCBAU 01661	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251702	CCBAU 01648	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251701	CCBAU 01752	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251700	CCBAU 01751	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251699	CCBAU 01654	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251698	CCBAU 01754	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251697	CCBAU 01641	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251696	CCBAU 01668	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251695	CCBAU 01822	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251694	CCBAU 01670	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251693	CCBAU 01739	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251692	CCBAU 01728	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251691	CCBAU 01643	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251690	CCBAU 01821	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251689	CCBAU 01820	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KP251688	CCBAU 01788	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251687	CCBAU 01646	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251686	CCBAU 01669	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251685	CCBAU 01687	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251684	CCBAU 01660	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251683	CCBAU 01701	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251682	CCBAU 01819	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251681	CCBAU 01662	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251680	CCBAU 01634	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251679	CCBAU 01810	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251678	CCBAU 01645	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251677	CCBAU 01753	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251676	CCBAU 01656	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251675	CCBAU 01800	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251674	CCBAU 01764	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251673	CCBAU 01718	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251672	CCBAU 01790	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251671	CCBAU 01647	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251670	CCBAU 01731	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251669	CCBAU 01757	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251668	CCBAU 01655	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251667	CCBAU 01722	China	<i>Caragana</i>	No info	Ji,Z., et al. 2015
KP251666	ACCC 19665 ^T	China	<i>Amorpha fruticosa</i>	No info	Ji,Z., et al. 2015
CCMY01000000	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
LN824201	CCANP133	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824200	CCANP122	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824199	CCANP113	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824198	CCANP96	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824197	CCANP87	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824196	CCANP84	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824195	CCANP64	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824194	CCANP63	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824193	CCANP61	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824192	CCANP58	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824191	CCANP55	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824190	CCANP33	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824189	CCANP29	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824188	CCANP20	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824187	CCANP14	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824186	CCANP11	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
LN824185	CCANP1	Spain	<i>Cicer canariense</i>	No info	Martinez-Hidalgo,et al. 2015
CCND01000000	No Strain info	Senegal	<i>Acacia senegal</i>	No info	Moulin,Lionel., 2014
CCND01000015	No Strain info	Senegal	<i>Acacia senegal</i>	No info	Moulin,Lionel., 2014
GQ847991	AC100e	Ethiopia	<i>Acacia senegal</i>	root nodule	Degefu,T., et al, 2011
GQ847990	AC100c	Ethiopia	<i>Acacia senegal</i>	root nodule	Degefu,T., et al, 2011
GQ847989	AC98e	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al, 2011
GQ847988	AC98c ^T	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al, 2011
GQ847987	AC98b	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al, 2011
GQ847986	AC98a	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al, 2011
GQ847985	AC39e2	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al, 2011
GQ847984	AC39e1	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al, 2011

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
GQ847983	AC39d	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al, 2011
GQ847982	AC39c1	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al, 2011
GQ847981	AC39a ^T	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al, 2011
GQ847980	AC28c2	Ethiopia	<i>Acacia tortilis</i>	root nodule	Degefu,T., et al, 2011
GQ847979	AC21c2	Ethiopia	<i>Acacia tortilis</i>	root nodule	Degefu,T., et al, 2011
GQ847978	AC21a2	Ethiopia	<i>Acacia tortilis</i>	root nodule	Degefu,T., et al, 2011
KP729637	STM6526	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP729636	STM4661	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP729635	STM3971	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP729634	STM4636	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP729633	STM6521	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP729632	STM3880	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP729630	STM4655	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP729629	STM3976	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP729628	STM6539	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735771	STM5071	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735770	STM4878	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735768	STM4894	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735767	STM4879	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735766	STM4631	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735765	STM4874	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735764	STM4871	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735763	STM5072	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735762	STM4616	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735761	STM4929	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735760	STM5973	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735759	STM5068	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735758	STM5067	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735757	STM4890	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735756	STM3310	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735755	STM4869	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735754	STM4916	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735753	STM4619	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735752	STM6546	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735751	STM5071	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735750	STM4878	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735748	STM4894	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735747	STM4879	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735746	STM4631	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735745	STM4874	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735744	STM4871	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735743	STM5072	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735742	STM4616	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735741	STM4929	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735740	STM5973	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735739	STM5068	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735738	STM5067	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735737	STM4890	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735736	STM3310	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735735	STM4869	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735734	STM4916	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KP735733	STM4619	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
KP735732	STM6546	France	<i>Anthyllis vulneraria</i>	No info	Mohamad,R., et al. Unpublished
AL672111	R7A	No Country info	No Host info	No info	Sullivan,J.T., et al, 2002
AL672113	R7A	No Country info	No Host info	No info	Sullivan,J.T., et al, 2002
KP013170	BL639	No Country info	<i>Psoralea pinnata</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KP013169	BL637	No Country info	<i>Psoralea pinnata</i>	No info	Lemaire,B. and Muasya,M., Unpublished
CAAF010000000	STM 4661	No Country info	No Host info	No info	Unknown author, No title, No journal
KM188418	BL34-R2	No Country info	<i>Podalyria leipoldtii</i>	No info	Lemaire,B., Unpublished
KM188417	BL34-R1	South Africa	<i>Podalyria leipoldtii</i>	No info	Lemaire,B., Unpublished
EU722481	CCNWAX33-1	China	<i>Alhagi sparsifolia</i>	No info	Wei,G., et al. 2009
EU722480	CCNWAX44-1	China	<i>Alhagi sparsifolia</i>	No info	Wei,G., et al. 2009
EU722475	CCNWXJ05-1	China	<i>Alhagi sparsifolia</i>	No info	Wei,G., et al. 2009
EU722473	CCNWXJ12-1	China	<i>Alhagi sparsifolia</i>	No info	Wei,G., et al. 2009
EU722472	CCNWXJ05-2	China	<i>Alhagi sparsifolia</i>	No info	Wei,G., et al. 2009
CCMZ01000000	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
CCMZ01000018	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
CCNE01000000	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
CCNE01000009	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
CCNC01000000	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
CCNC01000179	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
CCNB01000000	No Strain info	Senegal	<i>Acacia senegal</i>	No info	Moulin,Lionel., 2014
CCNB01000012	No Strain info	Senegal	<i>Acacia senegal</i>	No info	Moulin,Lionel., 2014
CCMY01000077	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
CCNA01000000	No Strain info	Senegal	<i>Acacia senegal</i>	No info	Moulin,Lionel., 2014
CCNA01000027	No Strain info	Senegal	<i>Acacia senegal</i>	No info	Moulin,Lionel., 2014
KJ649502	STM8089	Malaysia	<i>Acacia mangium</i>	root nodule	Perrineau,M.M., et al. 2014
KC854803	SwgP1N3	New Zealand	<i>Swainsona galegifolia</i>	No info	Tan,H.W., et al. 2013
KC854802	SwgP1N1	New Zealand	<i>Swainsona galegifolia</i>	No info	Tan,H.W., et al. 2013
KF802701	OD52	South Africa	<i>Psoralea brilliantissima</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802700	MM5343	South Africa	<i>Psoralea rigidula</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802699	OD118	South Africa	<i>Psoralea oligophylla</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802698	OD119	South Africa	<i>Psoralea laxa</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802697	MM5462	South Africa	<i>Psoralea congesta</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802696	OD15	South Africa	<i>Psoralea asarina</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802695	MM5675	South Africa	<i>Otholobium zeyheri</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802694	MM5357	South Africa	<i>Otholobium virgatum</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802693	MM5369	South Africa	<i>Argyrolobium lunare</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802692	MM5382	South Africa	<i>Otholobium hirtum</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802691	MM5334	South Africa	<i>Otholobium hirtum</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802690	OD32	South Africa	<i>Otholobium hirtum</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802689	OD42	South Africa	<i>Otholobium bracteolatum</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802687	MM5377	South Africa	<i>Indigofera venusta</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802683	MM5734	South Africa	<i>Aspalathus uniflora</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802682	OD26	South Africa	<i>Aspalathus uniflora</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802681	MM5440	South Africa	<i>Aspalathus spicata</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802680	MM5398	No Country info	<i>Aspalathus spicata</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802677	MM5757	No Country info	<i>Aspalathus perfoliata</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802676	MM5352	No Country info	<i>Aspalathus ericifolia</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802675	OD31	No Country info	<i>Aspalathus ericifolia</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802674	OD13	No Country info	<i>Aspalathus cordata</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802673	MM5361	South Africa	<i>Aspalathus ciliaris</i>	No info	Lemaire,B. and Muasya,M., Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
KF802672	OD108	South Africa	<i>Aspalathus ciliaris</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802671	MM5618	South Africa	<i>Aspalathus bracteata</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802670	MM5397	South Africa	<i>Aspalathus aurantiaca</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802669	OD18	South Africa	<i>Aspalathus astroites</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802668	OD47	South Africa	<i>Argyrobium velutinum</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802667	OD48	South Africa	<i>Argyrobium lunare</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802666	OD14	South Africa	<i>Argyrobium</i> sp.	No info	Lemaire,B. and Muasya,M., Unpublished
CAAF010000027	STM 4661	No Country info	No Host info	No info	Genoscope,C.E.A., 2013
JQ889859	WUR2	mixed European origin	<i>Parasponia andersonii</i>	nodules origin	Op den Camp,R.H., et al. 2012
AP012557	NZP2037	No Country info	No Host info	No info	Kasai-Maita,H.,et al. 2013
JN375836	WSM3920	South Africa	<i>Lessertia incana</i>	No info	Gerding,M., et al. 2012
JN375835	WSM3919	South Africa	<i>Lessertia incana</i>	No info	Gerding,M., et al. 2012
JN375834	WSM3917	South Africa	<i>Lessertia diffusa</i>	No info	Gerding,M., et al. 2012
JN375833	WSM3900	South Africa	<i>Lessertia excisa</i>	No info	Gerding,M., et al. 2012
JN375832	WSM3898	South Africa	<i>Lessertia excisa</i>	No info	Gerding,M., et al. 2012
JN375831	WSM3894	South Africa	<i>Lessertia excisa</i>	No info	Gerding,M., et al. 2012
JN375830	WSM3893	South Africa	<i>Lessertia excisa</i>	No info	Gerding,M., et al. 2012
JN375829	WSM3891	South Africa	<i>Lessertia excisa</i>	No info	Gerding,M., et al. 2012
JN375828	WSM3806	South Africa	<i>Lessertia herbacea</i>	No info	Gerding,M., et al. 2012
JN375827	WSM3805	South Africa	<i>Lessertia herbacea</i>	No info	Gerding,M., et al. 2012
JN375826	WSM3803	South Africa	<i>Lessertia herbacea</i>	No info	Gerding,M., et al. 2012
JN375825	WSM3513	South Africa	<i>Lessertia diffusa</i>	No info	Gerding,M., et al. 2012
JN375824	WSM3507	South Africa	<i>Lessertia capitata</i>	No info	Gerding,M., et al. 2012
JN375823	WSM3503	South Africa	<i>Lessertia diffusa</i>	No info	Gerding,M., et al. 2012
JN375822	WSM3492	South Africa	<i>Lessertia diffusa</i>	No info	Gerding,M., et al. 2012
JN375821	WSM3472	South Africa	<i>Lessertia excisa</i>	No info	Gerding,M., et al. 2012
JN375820	WSM3804	South Africa	<i>Lessertia herbacea</i>	No info	Gerding,M., et al. 2012
JN375819	WSM3636	South Africa	<i>Lessertia capitata</i>	No info	Gerding,M., et al. 2012
JN375818	WSM3626	South Africa	<i>Lessertia diffusa</i>	No info	Gerding,M., et al. 2012
JN375817	WSM3620	South Africa	<i>Lessertia diffusa</i>	No info	Gerding,M., et al. 2012
JN375816	WSM3612	South Africa	<i>Lessertia excisa</i>	No info	Gerding,M., et al. 2012
JN375815	WSM3598	South Africa	<i>Lessertia herbacea</i>	No info	Gerding,M., et al. 2012
JN375814	WSM3565	South Africa	<i>Lessertia diffusa</i>	No info	Gerding,M., et al. 2012
JN375813	WSM3564	South Africa	<i>Lessertia diffusa</i>	No info	Gerding,M., et al. 2012
JN375812	WSM3502	South Africa	<i>Lessertia diffusa</i>	No info	Gerding,M., et al. 2012
JN375811	WSM3495	South Africa	<i>Lessertia capitata</i>	No info	Gerding,M., et al. 2012
JN375810	WSM3310	South Africa	<i>Lessertia frutescens</i>	No info	Gerding,M., et al. 2012
JN375809	WSM3270	South Africa	<i>Lessertia annularis</i>	No info	Gerding,M., et al. 2012
JN375808	WSM2622	South Africa	<i>Lessertia microphylla</i>	No info	Gerding,M., et al. 2012
JN375807	WSM2607	South Africa	<i>Lessertia microphylla</i>	No info	Gerding,M., et al. 2012
JN375806	WSM2566	South Africa	<i>Lessertia pauciflora</i>	No info	Gerding,M., et al. 2012
JN375805	WSM2561	South Africa	<i>Lessertia diffusa</i>	No info	Gerding,M., et al. 2012
JN375804	WSM2559	South Africa	<i>Lessertia microphylla</i>	No info	Gerding,M., et al. 2012
JQ963071	CnP1N1	New Zealand	<i>Carmichaelia nana</i>	No info	Tan,H.W., et al. 2012
JQ963070	CmP1N1	New Zealand	<i>Carmichaelia monroi</i>	No info	Tan,H.W., et al. 2012
JQ963069	Ca004	New Zealand	<i>Carmichaelia australis</i>	No info	Tan,H.W., et al. 2012
JQ963068	CaP1N1	New Zealand	<i>Carmichaelia australis</i>	No info	Tan,H.W., et al. 2012
JQ963067	MonP4N1	New Zealand	<i>Montigena novae-zelandiae</i>	No info	Tan,H.W., et al. 2012
JQ963066	MonP2N1	New Zealand	<i>Montigena novae-zelandiae</i>	No info	Tan,H.W., et al. 2012
JQ963065	MonP1N1	New Zealand	<i>Montigena novae-zelandiae</i>	No info	Tan,H.W., et al. 2012
JX024249	ORS 3628	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
JX024248	ORS 3610	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX024247	ORS 3607	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX024246	ORS 3604	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX024245	ORS 3603	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX024244	ORS 3600	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX024243	ORS 3598	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX024242	ORS 3596	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX024241	ORS 3593	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX024240	ORS 3588	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX024239	ORS 3578	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX024238	ORS 3576	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX024237	ORS 3574	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX024236	ORS 3573	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JN089691	AN11	No Country info	No Host info	No info	Fterich,A., et al. 2012
FJ745282	ORS 3404	Senegal	<i>Acacia seyal</i>	root nodule	Diouf,D., et al. 2009
FJ745281	ORS 3369	Senegal	<i>Acacia seyal</i>	root nodule	Diouf,D., et al. 2009
FJ745280	ORS 3365	Senegal	<i>Acacia seyal</i>	root nodule	Diouf,D., et al. 2009
FJ745279	ORS 3359	Senegal	<i>Acacia seyal</i>	root nodule	Diouf,D., et al. 2009
FJ745278	ORS 3356	Senegal	<i>Acacia seyal</i>	root nodule	Diouf,D., et al. 2009
FJ745277	ORS 3355	Senegal	<i>Acacia seyal</i>	root nodule	Diouf,D., et al. 2009
FJ745276	ORS 3324	Senegal	<i>Acacia seyal</i>	root nodule	Diouf,D., et al. 2009
FJ745275	ORS 1032	Senegal	<i>Acacia senegal</i>	root nodule	Diouf,D., et al. 2009
FR869683	STM 4664	France	<i>Anthyllis vulneraria</i>	host growing on Zn-Pb mine soil	Maynaud,G., et al. 2012
FR869682	STM 4662	France	<i>Anthyllis vulneraria</i>	host growing on Zn-Pb mine soil	Maynaud,G., et al. 2012
JF907685	CCNWGS0123	China	<i>Robinia pseudoacacia</i>	nodules	Osama,A.M., et al. Unpublished
EU722478	CCNWXJ 40-4	China	<i>Alhagi sparsifolia</i>	No info	Wei,G., et al. 2009
EU722477	CCNWXJ 32-3	China	<i>Alhagi sparsifolia</i>	No info	Wei,G., et al. 2009
EU722476	CCNWXJ 16-1	China	<i>Alhagi sparsifolia</i>	No info	Wei,G., et al. 2009
FN436266	STM2683	France	<i>Anthyllis vulneraria</i>	No info	Vidal,C., Unpublished
FN436265	STM2683T	France	<i>Anthyllis vulneraria</i>	No info	Vidal,C., Unpublished
FN436242	STM3971	France	<i>Anthyllis vulneraria</i>	No info	Vidal,C., Unpublished
FN436267	STM3445	France	<i>Anthyllis vulneraria</i>	No info	Vidal,C., Unpublished
AB289611	Ch90	Japan	No Host info	No info	Shiraishi,A., et al. 2010
FJ827064	WSM3883	No Country info	No Host info	No info	Nandasena,K.G., Unpublished
FJ827063	WSM3881	No Country info	No Host info	No info	Nandasena,K.G., Unpublished
FJ827062	WSM3875	No Country info	No Host info	No info	Nandasena,K.G., Unpublished
FJ827061	WSM3872	No Country info	No Host info	No info	Nandasena,K.G., Unpublished
FJ827060	WSM3869	No Country info	No Host info	No info	Nandasena,K.G., Unpublished
FJ827059	WSM3866	No Country info	No Host info	No info	Nandasena,K.G., Unpublished
FJ827058	WSM3865	No Country info	No Host info	No info	Nandasena,K.G., Unpublished
FJ827057	WSM3862	No Country info	No Host info	No info	Nandasena,K.G., Unpublished
FJ619294	CCNWGS115	China	<i>Caragana roborovskyi</i>	nodules	Zhu,W.F., et al. Unpublished
FJ619286	CCNWGS100	China	<i>Caragana opulens</i>	nodules	Zhu,W.F., et al. Unpublished
FJ619279	CCNWSX534	China	<i>Caragana korshinskii</i>	nodules	Zhu,W.F., et al. Unpublished
AM748916	No Strain info	Italy	<i>Anagyris foetida</i>	No info	Cardinale,M., et al. 2008
AM748915	No Strain info	Italy	<i>Anagyris foetida</i>	No info	Cardinale,M., et al. 2008
AM748914	No Strain info	Italy	<i>Anagyris foetida</i>	No info	Cardinale,M., et al. 2008
AM748912	No Strain info	Italy	<i>Anagyris foetida</i>	No info	Cardinale,M., et al. 2008
AM748911	No Strain info	Italy	<i>Anagyris foetida</i>	No info	Cardinale,M., et al. 2008
AM748909	No Strain info	Italy	<i>Teline monspessulanna</i>	No info	Cardinale,M., et al. 2008
AM748908	No Strain info	Italy	<i>Teline monspessulanna</i>	No info	Cardinale,M., et al. 2008

Accession #s	Strain	Country	Host ¹	Isolation source	Reference
AM748907	No Strain info	Italy	<i>Teline monspessulanna</i>	No info	Cardinale,M., et al. 2008
AJ302680	ORS1255	Senegal	<i>Acacia tortilis subsp. raddiana</i>	No info	Ba,S., et al. 2002
AJ302678	ORS1096	Senegal	<i>Acacia tortilis subsp. raddiana</i>	No info	Ba,S., et al. 2002
X65620	NZP2213	No Country info	No Host info	No info	Scott,D.B., et al. 1996
AJ300249	ORS1001	Senegal	<i>Acacia senegal</i>	No info	Chen,W.M., et al. 2003
AJ300247	UPM-Ca7	Spain	<i>Cicer arietinum</i>	No info	Chen,W.M., et al. 2003
AJ579893	SDW014	China	<i>Astragalus adsurgens</i>	No info	Gao,J., et al. 2001
AJ579892	SDW072	China	<i>Astragalus adsurgens</i>	No info	Gao,J., et al. 2001
AJ579891	SDW040	China	<i>Astragalus adsurgens</i>	No info	Gao,J., et al. 2001
AJ579888	SDW037	China	<i>Astragalus adsurgens</i>	No info	Gao,J., et al. 2001
AJ579887	SDW018	China	<i>Astragalus adsurgens</i>	No info	Gao,J., et al. 2001
AJ579886	SDW068	China	<i>Astragalus adsurgens</i>	No info	Gao,J., et al. 2001
AJ300250	BR3804	Brazil	<i>Chamaecrista ensiformis</i>	No info	Moulin,L., 2000
AJ300248	UPM-Ca36	Spain	<i>Cicer arietinum</i>	No info	Moulin,L., 2000
AJ300246	NZP2037	New Zealand	<i>Lotus divaricatus</i>	No info	Moulin,L., 2000
AJ300245	CIAM1801	No Country info	<i>Lotus japonicus</i>	No info	Moulin,L., 2000
AJ300244	E1R	Netherlands	<i>Lotus corniculatus</i>	No info	Moulin,L., 2000
AJ300243	Ra5	China	<i>Astragalus sinicus</i>	No info	Moulin,L., 2000
AJ250142	USDA3592	No Country info	No Host info	No info	Zhang,X.X., et al. 2000
AJ250141	USDA3392	No Country info	No Host info	No info	Zhang,X.X., et al. 2000
AJ250140	USDA 3383	No Country info	No Host info	No info	Zhang,X.X., et al. 2000
AJ249353	7653R	China:Jiangsu	<i>Astragalus sinicus</i>	No info	Zhang,X.X., et al. 2000
Z95250	INPA78B	No Country info	<i>Leucaena diversifolia</i>	No info	Haukka,K., et al. 1998
Z95249	BR3804	No Country info	<i>Chamaecrista ensiformis</i>	No info	Haukka,K., et al. 1998
Z95248	DWO366	Kenya	<i>Acacia polyacantha</i>	No info	Haukka,K., et al. 1998
Z95247	DUS466	No Country info	<i>Acacia arenaria</i>	No info	Haukka,K., et al. 1998
Z95246	HAMBI260	No Country info	<i>Acacia senegal</i>	No info	Haukka,K., et al. 1998
Z95245	HAMBI1487	No Country info	<i>Acacia senegal</i>	No info	Haukka,K., et al. 1998
NIBRBAC000500504	NIBRBAC000500504	Japan	Soil	Soil	Jung,Y.J.,et al. unpublished

¹ Genisteeae species are illustrated in a blue font

Supplementary Table S3.3. Accession numbers for *Mesorhizobium nifH* sequences used in this study as well host, country, and source information

Accession #s	Strain	Country	Host	Isolation source	Reference
NZ_NSGD01000020	WSM3864	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGD01000016	WSM3864	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFQ01000028	R7ANSx3876	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_QGGH01000015	DSM 2626	No info	No Host info	No info	Goeker,M., Unpublished
NZ_CP051772	R7A	New Zealand	<i>Lotus</i> sp.	No info	Ramsay,J.P., et al. Unpublished
NZ_CP051773	R7Astar	New Zealand	No Host info	No info	Ramsay,J.P., et al. Unpublished
NZ_CP052769	R7AstarV2	New Zealand	No Host info	No info	Ramsay,J.P., et al. Unpublished
CP052769	R7AstarV2	New Zealand	No Host info	No info	Ramsay,J.P., et al. Unpublished
NZ_SMYZ01000081	10.2.2	Norway	<i>Lotus corniculatus</i>	root nodule	Kabdullayeva,T., Unpublished
MN756505	LCM4584	Senegal	No Host info	soil	Fall,F., et al. Unpublished
MN756504	LCM4583	Senegal	No Host info	soil	Fall,F., et al. Unpublished
MN756503	LCM4580	Senegal	No Host info	soil	Fall,F., et al. Unpublished
MN756501	LCM4578	Senegal	No Host info	soil	Fall,F., et al. Unpublished
MN756500	LCM4577	Senegal	No Host info	soil	Fall,F., et al. Unpublished
MN756499	LCM4576	Senegal	No Host info	soil	Fall,F., et al. Unpublished
MN756498	LCM4575	Senegal	No Host info	soil	Fall,F., et al. Unpublished
MN756497	LCM4574	Senegal	No Host info	soil	Fall,F., et al. Unpublished
NZ_SMYY01000021	10.2.3	Norway	<i>Lotus corniculatus</i>	root nodule	Kabdullayeva,T., Unpublished
CP051773	R7Astar	New Zealand	No Host info	No info	Ramsay,J.P., et al. Unpublished
CP051772	R7A	New Zealand	<i>Lotus</i>	No info	Ramsay,J.P., et al. Unpublished
NZ_VLKT01000071	CGMCC 1.2546	No info	No Host info	No info	Whitman,W.B., et al. 2015
NZ_PNOT02000271	BD68	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., et al. Unpublished
NZ_PNOT02000101	BD68	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., et al. Unpublished
NZ_RQXT01000042	DSM 28320	Spain: Arico	No Host info	root nodule	Gao,J., Unpublished
NZ_FUIG01000049	STM 462	No info	No Host info	periphery of the Zn-Pb mine	Brunel,B., 2016
NZ_QZWZ01000047	ICMP19557	New Zealand	<i>Sophora longicarinata</i>	root nodule	De Meyer,S.E., Unpublished
NZ_MZXV01000045	Ach-343	Russia	<i>Astragalus</i> sp.	root nodule	Safronova,V.I., et al. 2017
NZ_PZJX01000070	CSLC115N	Spain	<i>Lotus corniculatus</i>	No info	Sannazzaro,A.I.,et al. Unpublished
NZ_NWQG01000104	BSA136	Argentina	<i>Lotus tenuis</i>	root nodules	Sannazzaro,A.I.,et al. Unpublished
NZ_NWQG01000012	BSA136	Argentina	<i>Lotus tenuis</i>	root nodules	Sannazzaro,A.I.,et al. Unpublished
NZ_NPKH01000001	WYCCWR 10195	China: Gansu	<i>Cicer arietinum</i>	No info	Zhang,J., et al. Unpublished
NZ_NPKJ01000057	SDW018	China	<i>Astragalus adsurgens</i>	No info	Zhang,J., et al. Unpublished
NZ_NPKI01000050	USDA 3392	France	<i>Cicer arietinum</i>	No info	Zhang,J., et al. Unpublished
NZ_NNRI01000021	ICMP 19535	New Zealand	<i>Sophora microphylla</i>	root nodule	De Meyer,S.E., Unpublished
NZ_FNEE01000025	CGMCC 1.11022	No info	No Host info	No info	Varghese,N. 2016
NZ_FMXM01000054	CGMCC 1.12097	No info	No Host info	No info	Varghese,N. 2016
NZ_FTPD01000017	No Strain info	No info	No Host info	No info	Brunel,B., 2017
NZ_CP015322	CCNWGS0123	China: Gansu	<i>Robinia pseudoacacia</i>	No info	Wang,X., et al. Unpublished
NZ_CP015064	WSM1284	Italy	<i>Biserrula pelecinus</i>	root nodule	Haskett,T., et al. 2016
NZ_KI421454	USDA 3471	New Zealand	<i>Lotus corniculatus</i>	No info	Kyrpides,et al. 2013
NZ_CAUM01000170	STM 2683	No info	No Host info	No info	Genoscope , C.E.A., 2013
NC_019973	WSM2073	Australia	<i>Biserrula pelecinus</i> L.	Antonio's farm, Antonio Rd.	Lucas,S.,et al. Unpublished
NC_015675	WSM2075	Australia	No Host info	Antonio's farm, Antonio Rd.	Lucas,S.,et al. Unpublished
NC_002678	MAFF 303099	No info	No Host info	No info	Kaneko,T.,et al. 2000
NZ_SRUI01000031	M8A.F.Ca.ET.197.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRVK01000011	M1D.F.Ca.ET.234.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUB01000042	M1C.F.Ca.ET.189.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_CP016079	NZP2037	New Zealand	<i>Lotus</i>	No info	Ramsay,J.P., et al. Unpublished
NZ_QMBP01000030	AC99b	Ethiopia	<i>Sesbania sesban</i>	No info	Helene,L.C.F.,et al. Unpublished
NZ_AGSN01000010	CCNWGS0123	No info	<i>Robinia pseudoacacia</i>	nodules	Hao,X., et al. 2012
NZ_KI912159	R88b	New Zealand	<i>Lotus corniculatus</i>	No info	Kyrpides,et al. 2013
NC_014923	WSM1271	Italy	<i>Astragalus pelecinus</i>	No info	Lucas,S.,et al. Unpublished
NZ_CM002796	ca181	India	<i>Cicer arietinum</i>	root nodule	Singh,R.N., et al. Unpublished
NZ_JAAKZF01000030	CCNWXJ 40-4	China	<i>Alhagi sparsifolia</i>	root nodule	Gao,J. and Sun,J., Unpublished
NZ_CP034451	M3A.F.Ca.ET.080.04.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_MZXX01000018	Opo-242	Russia	<i>Oxytropis</i> sp.	root nodule	Safronova,V.I., et al. 2017
NZ_RZSP01000030	M1A.F.Ca.IN.020.32.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTS01000102	M7A.T.Ca.US.000.02.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQE01000003	M7A.F.Ca.US.002.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPH01000009	M7A.F.Ca.CA.004.04.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPF01000233	M7A.F.Ca.AU.001.01.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPC01000006	M7A.F.Ca.AU.002.03.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSX01000063	M5C.F.Ca.IN.020.32.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRM01000005	M7A.F.Ca.CA.002.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQH01000077	M7A.F.Ca.US.001.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQA01000002	M7A.F.Ca.US.006.04.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPG01000034	M6A.T.Cr.TU.014.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSR01000028	M1A.F.Ca.IN.020.06.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTF01000042	M7A.F.Ca.MR.362.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRV01000033	M7A.F.Ca.US.010.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQK01000022	M7A.F.Ca.CA.001.14.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPO01000022	M7A.F.Ca.CA.001.07.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
NZ_RZPK01000122	M7A.F.Ca.CA.002.03.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPD01000030	M7A.F.Ca.AU.002.04.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSO01000038	M1A.F.Ca.IN.020.30.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSV01000002	M1A.F.Ca.IN.020.03.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTC01000043	M7A.F.Ca.MR.176.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTA01000060	M6A.T.Cr.TU.017.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRJ01000012	M7A.F.Ca.CA.004.08.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPN01000002	M7A.F.Ca.CA.001.16.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPL01000006	M7A.F.Ca.CA.002.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034779	M7A.F.Ce.TU.012.03.2.1	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQS01000004	M7A.F.Ca.CA.001.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQR01000018	M7A.F.Ca.CA.001.15.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRA01000003	M7A.F.Ca.CA.003.01.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQW01000017	M7A.F.Ca.CA.001.09.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPZ01000047	M7A.F.Ca.CA.004.09.1.2	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRS01000079	M7A.F.Ca.CA.002.14.1.2	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZXO01000015	M7A.F.Ca.CA.001.09.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQB01000107	M7A.F.Ca.CA.004.10.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQL01000165	M7A.F.Ca.US.006.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRB01000018	M7A.F.Ca.CA.002.07.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSS01000008	M1A.F.Ca.IN.022.02.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRG01000038	M7A.F.Ca.CA.001.13.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPM01000075	M7A.F.Ca.CA.001.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPP01000043	M7A.F.Ca.CA.002.10.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRW01000019	M7A.F.Ca.US.014.04.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPW01000010	M7A.F.Ca.CA.001.08.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRE01000090	M7A.F.Ca.US.001.04.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRO01000005	M7A.F.Ca.US.005.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRD01000021	M7A.F.Ca.CA.001.12.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQD01000006	M7A.F.Ca.CA.004.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRF01000017	M7A.F.Ca.US.001.04.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRK01000195	M7A.F.Ca.CA.004.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTB01000064	M7A.F.Ca.MR.148.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQU01000029	M7A.F.Ca.CA.004.05.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPQ01000002	M7A.F.Ca.CA.004.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQM01000009	M7A.F.Ca.US.006.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPS01000042	M7A.F.Ca.CA.004.07.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQG01000013	M7D.F.Ca.US.004.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPR01000147	M7A.F.Ca.CA.004.06.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPT01000275	M7A.F.Ca.CA.004.01.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQC01000165	M7A.F.Ca.CA.004.11.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQP01000045	M7A.F.Ca.US.007.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQO01000055	M7A.F.Ca.US.003.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRP01000014	M7A.F.Ca.US.005.03.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQO01000018	M7A.F.Ca.US.007.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSM01000010	M1A.F.Ca.IN.022.05.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTE01000043	M7A.F.Ca.MR.245.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRC01000022	M7A.F.Ca.CA.001.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZST01000002	M1A.F.Ca.IN.022.07.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTR01000036	M7A.T.Ca.TU.009.02.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSU01000021	M5C.F.Cr.IN.023.01.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPI01000004	M7A.F.Ca.CA.002.15.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRN01000033	M7A.F.Ca.CA.002.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRR01000026	M7A.F.Ca.CA.002.09.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPU01000006	M7A.F.Ca.CA.004.02.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRT01000067	M7A.F.Ca.US.011.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQV01000080	M7A.F.Ca.CA.002.15.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQY01000057	M7A.F.Ca.CA.001.10.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPB01000001	M7A.F.Ca.AU.002.02.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRL01000051	M7A.F.Ca.CA.004.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRI01000025	M7A.F.Ca.CA.004.08.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQI01000019	M7A.F.Ca.CA.002.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRQ01000001	M7D.F.Ca.US.004.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQJ01000001	M7A.F.Ca.CA.002.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRU01000010	M7A.F.Ca.US.008.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTV01000025	M1A.T.Ca.IN.004.03.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQZ01000014	M7A.F.Ca.CA.001.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSN01000017	M1A.F.Ca.IN.020.04.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSQ01000017	M1A.F.Ca.IN.020.03.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPV01000001	M7A.F.Ca.CA.001.08.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPE01000012	M7A.F.Ca.AU.002.06.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZPJ01000079	M7A.F.Ca.CA.002.03.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZQT01000020	M7A.F.Ca.CA.001.04.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
NZ_RZPX01000026	M7A.F.Ca.CA.001.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSZ01000075	M1A.F.Ca.IN.022.04.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSW01000375	M5C.F.Ca.IN.020.29.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTI01000031	M6A.T.Ce.TU.002.03.1.1	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034452	M6A.T.Cr.TU.016.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034453	M7D.F.Ca.US.005.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
JAACKZF010000000	CCNWXJ 40-4	China	<i>Alhagi sparsifolia</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP048406	AA22	Ethiopia	<i>Astragalus pelecinus L.</i>	root nodule	Bekuma,A.,et al. Unpublished
MN416016	HSB50	Morocco	<i>Hydesarum spinosissimum</i>	Sidi Bouabker abandoned lead mine	Lamin,H., et al. Unpublished
MN416015	HSB48	Morocco	<i>Hydesarum spinosissimum</i>	Sidi Bouabker abandoned lead mine	Lamin,H., et al. Unpublished
MN416014	HSB34	Morocco	<i>Hydesarum spinosissimum</i>	Sidi Bouabker abandoned lead mine	Lamin,H., et al. Unpublished
MN416013	HSB29	Morocco	<i>Hydesarum spinosissimum</i>	Sidi Bouabker abandoned lead mine	Lamin,H., et al. Unpublished
CP048406	AA22	Ethiopia	<i>Astragalus pelecinus L.</i>	root nodule	Bekuma,A., et al. Unpublished
NZ_AXAL01000020	CJ3sym	New Zealand	No Host info	No info	Reeve,W., et al. 2015
NZ_QKOD01000010	Opo-235	Russia	<i>Oxytropis popoviana</i>	root nodule	Safronova,V.I., et al. 2018
NZ_CP015062	CC1192	Israel	<i>Cicer arietinum</i>	No info	Haskett,T., et al. 2016
NZ_KI632510	R7A	New Zealand	<i>Lotus</i>	No info	Kyrpides,N., et al. 2013
NZ_MDFL01000162	ORS 3428	Senegal	<i>Acacia senegal</i>	soil from surrounding area	Diagne,N., Set al. 2017
NZ_MDFL01000019	ORS 3428	Senegal	<i>Acacia senegal</i>	soil from surrounding area	Diagne,N., Set al. 2017
NZ_MDFL01000007	ORS 3428	Senegal	<i>Acacia senegal</i>	soil from surrounding area	Diagne,N., Set al. 2017
NZ_MDDU01000014	LCM 4577	Senegal	<i>Prosopis juliflora</i>	soil from surrounding area	Diagne,N., Set al. 2017
NZ_MDDT01000051	LCM 4576	Senegal	<i>Prosopis juliflora</i>	soil from surrounding area	Diagne,N., Set al. 2017
NZ_MDDT01000042	LCM 4576	Senegal	<i>Prosopis juliflora</i>	soil from surrounding area	Diagne,N., Set al. 2017
NZ_LPWA01000161	UFLA 01-765	Brazil	<i>Leucaena leucocephala</i>	Soil from zinc mining area	Rangel,W.M., et al. 2016
NZ_CP021070	WSM1497	Greece	<i>Biserrula pelecinus L.</i>	Root nodule	Brewer,R., et al. Unpublished
NZ_CP033366	R7A	New Zealand	<i>Lotus</i>	No info	Perry,B.J.,et al. 2018
NZ_CAAF010000045	STM 4661	No info	No Host info	No info	Genoscope ,C.E.A., 2013
CP033366	R7A	New Zealand	<i>Lotus</i>	No info	Perry,B.J.,et al. 2018
NZ_ATYO01000023	WSM3224	South Africa	<i>Otholobium candicans</i>	No info	Kyrpides,N., et al. 2013
NZ_AZUV01000017	WSM1293	Greece	<i>Lotus</i> sp.	No info	Kyrpides,N., et al. 2013
NZ_AZUX01000043	WSM2561	South Africa	<i>Lessertia diffusa</i>	No info	Kyrpides,N., et al. 2013
NZ_AZUY01000029	WSM3626	South Africa	<i>Lessertia diffusa</i>	No info	Kyrpides,N., et al. 2013
NZ_AYVV01000019	L2C089B000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWU01000022	L48C026A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWT01000023	LNHC209A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWS01000018	LNHC220B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWR01000011	LNHC221B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWQ01000030	LNHC229A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWP01000015	LNHC232B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWO01000056	LNHC252B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWN01000017	LNJC372A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWM01000016	LNJC374B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWK01000004	LNJC384A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWI01000021	LNJC391B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWH01000012	LNJC394B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWG01000006	LNJC395A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWE01000005	LNJC399B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWC01000043	LNJC405B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWB01000014	LSHC412B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWA01000025	LSHC414A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVZ01000020	LSHC416B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVY01000051	LSHC420B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVY01000043	LSHC420B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVX01000013	LSHC422A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVW01000020	LSHC424B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVV01000019	LSHC426A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVT01000022	LSHC440A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVS01000022	LSHC440B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVR01000015	LSJC255A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVP01000025	LSJC265A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVO01000013	LSJC268A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVN01000024	LSJC269B00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVM01000020	LSJC277A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYVK01000046	LSJC285A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_LYTP01000015	AA23	Ethiopia	<i>Biserrula pelecinus L.</i>	root nodule	Ramsay,J.P. and Bekuma,A., 2016
NZ_LYTP01000007	AA23	Ethiopia	<i>Biserrula pelecinus L.</i>	root nodule	Ramsay,J.P. and Bekuma,A., 2016
NZ_LYTM01000014	WSM3873	Eritrea	<i>Biserrula pelecinus Casbah</i>	root nodule	Ramsay,J.P. and Bekuma,A., 2016
NZ_LYTM01000010	WSM3873	Eritrea	<i>Biserrula pelecinus Casbah</i>	root nodule	Ramsay,J.P. and Bekuma,A., 2016
NZ_WOTK01000003	R7ANSxWSM3873	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_WOTJ01000017	R7ANSxAA23	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_WOTJ01000014	R7ANSxAA23	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
WOTK01000000	R7ANSxWSM3873	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
WOTJ01000000	R7ANSxAA23	Australia	No Host info	No info	Bekuma,A., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
CP006583	7653R	China	No Host info	Rice field soil	Wang,S. and Li,Y., Unpublished
NZ_JAFG01000014	WSM4083	Spain	<i>Bituminaria bituminosa</i>	No info	Kyrpides,N., et al. 201
NZ_JAFG01000012	WSM4083	Spain	<i>Bituminaria bituminosa</i>	No info	Kyrpides,N., et al. 201
NZ_AWZS01000036	CMG6	Tunisia	<i>Cicer arietinum</i>	No info	Kyrpides,N., et al. 201
NZ_AYXF01000015	L103C105A0	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYXE01000019	L103C119B0	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYXD01000017	L103C120A0	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYXC01000017	L103C131B0	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYXA01000017	L2C054A000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWZ01000024	L2C066B000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWY01000029	L2C067A000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWX01000023	L2C084A000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_AYWW01000021	L2C085B000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
NZ_LZTJ01000002	R7ANS::ICEMISym2042	New Zealand	<i>Lotus</i> sp.	nodule	Ramsay,J.P., 2016
NZ_LZTL01000004	R7ANS::ICEMISym343	New Zealand	<i>Lotus</i> sp.	nodule	Ramsay,J.P., 2016
NZ_LYTK01000023	NZP2042	New Zealand	<i>Lotus</i> sp.	No info	Ramsay,J.P., 2016
NZ_LZTK01000014	R7ANS::ICEMcbSym1271	Australia: Perth	<i>Biserrula pelecinus</i>	nodule	Ramsay,J.P., 2016
NZ_LYTJ01000012	NZP2014	New Zealand	<i>Lotus</i> sp.	No info	Ramsay,J.P., 2016
NZ_LZTH01000007	R7ANS::ICEMISym2037	New Zealand	<i>Lotus</i> sp.	nodule	Ramsay,J.P., 2016
NZ_LZTI01000007	R7ANS::ICEMISym2014	New Zealand	<i>Lotus</i> sp.	nodule	Ramsay,J.P., 2016
NZ_LYTL01000003	SU343	Australia	<i>Lotus</i> sp.	No info	Ramsay,J.P., 2016
NZ_KB913026	NZP2037	New Zealand	No Host info	No info	Kyrpides,N., et al. 2013
EU130425	CCBAU 11206	China	<i>Caragana sinica</i>	nodule	Chen,W.F., et al. Unpublished
EU130424	CCBAU 11231	China	<i>Caragana arborescens</i>	nodule	Chen,W.F., et al. Unpublished
EU130423	CCBAU 11300	China	<i>Caragana microphylla</i>	nodule	Chen,W.F., et al. Unpublished
EU130421	CCBAU 11270	China	<i>Caragana microphylla</i>	nodule	Chen,W.F., et al. Unpublished
EU130420	CCBAU 11257	China	<i>Caragana microphylla</i>	nodule	Chen,W.F., et al. Unpublished
EU130417	CCBAU 11226	China	<i>Caragana arborescens</i>	nodule	Chen,W.F., et al. Unpublished
EU130416	CCBAU 11217	China	<i>Caragana sinica</i>	nodule	Chen,W.F., et al. Unpublished
EU130415	CCBAU 11214	China	<i>Caragana sinica</i>	nodule	Chen,W.F., et al. Unpublished
EU130413	CCBAU 11196	China	<i>Caragana intermedia</i>	nodule	Chen,W.F., et al. Unpublished
EU130412	CCBAU 11185	China	<i>Caragana intermedia</i>	nodule	Chen,W.F., et al. Unpublished
EU252608	CCBAU 83321	No info	No Host info	No info	Han,T.X., et al. Unpublished
EU252607	CCBAU 83306	No info	No Host info	No info	Han,T.X., et al. Unpublished
EU252606	CCBAU 83330	No info	No Host info	No info	Han,T.X., et al. Unpublished
EU252605	CCBAU 83346	No info	No Host info	No info	Han,T.X., et al. Unpublished
EU252604	CCBAU 83511	No info	No Host info	No info	Han,T.X., et al. Unpublished
EU252603	CCBAU 83278	No info	No Host info	No info	Han,T.X., et al. Unpublished
EU252602	CCBAU 83284	No info	No Host info	No info	Han,T.X., et al. Unpublished
EU252601	CCBAU 83281	No info	No Host info	No info	Han,T.X., et al. Unpublished
EU291986	CFN ESH19	Mexico	<i>Acaciella angustissima</i>	No info	Rincon-Rosales,R., et al. 2009
EU291985	CFN ESH26	Mexico	<i>Acaciella angustissima</i>	No info	Rincon-Rosales,R., et al. 2009
EU267718	CCBAU 3306	No info	No Host info	No info	Chen,W.F., et al. Unpublished
EU267717	LMG 11892	No info	No Host info	No info	Chen,W.F., et al. Unpublished
EU267714	ACCC 19665	No info	No Host info	No info	Chen,W.F., et al. Unpublished
EU130422	CCBAU 11299	China	<i>Caragana microphylla</i>	nodule	Guan,S.H., et al. 2008
EU130411	SDW014	China	<i>Astragalus adsurgens</i>	nodule	Chen,W.F., et al. Unpublished
EU130410	SDW018	China	<i>Astragalus adsurgens</i>	nodule	Chen,W.F., et al. Unpublished
NZ_SADT02000011	M2E.F.Ca.ET.219.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
MN529985	NG48	China	<i>Cicer arietinum</i>	No info	Zhang,J.,et al. Unpublished
MN529984	NG24	China	<i>Cicer arietinum</i>	No info	Zhang,J.,et al. Unpublished
MN529983	NG7	China	<i>Cicer arietinum</i>	No info	Zhang,J.,et al. Unpublished
MN529982	NG3	China	<i>Cicer arietinum</i>	No info	Zhang,J.,et al. Unpublished
MN529981	NG1	China	<i>Cicer arietinum</i>	No info	Zhang,J.,et al. Unpublished
NZ_SRTM01000018	M4B.F.Ca.ET.172.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADN02000030	M00.F.Ca.ET.170.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_CP006583	7653R	China	No Host info	Rice field soil	Wang,S. and Li,Y., Unpublished
NZ_SRTW01000008	M8A.F.Ca.ET.182.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUS01000024	M8A.F.Ca.ET.207.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTG01000010	M5C.F.Ca.ET.164.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTV01000007	M8A.F.Ca.ET.181.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTI01000004	M8A.F.Ca.ET.167.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUN01000030	M8A.F.Ca.ET.202.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADU02000264	M00.F.Ca.ET.220.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADU02000178	M00.F.Ca.ET.220.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADU02000065	M00.F.Ca.ET.220.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRSQ01000015	M8A.F.Ca.ET.142.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADM02000014	M2E.F.Ca.ET.166.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTD01000032	M8A.F.Ca.ET.161.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUM01000014	M3A.F.Ca.ET.201.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRSW01000019	M4B.F.Ca.ET.150.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRTH01000017	M8A.F.Ca.ET.165.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_RZOW02000015	M1D.F.Ca.ET.183.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
NZ_RZOY02000024	M2D.F.Ca.ET.226.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_RZPA02000029	M2D.F.Ca.ET.232.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUY01000021	M4B.F.Ca.ET.215.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRUC01000019	M4B.F.Ca.ET.190.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SRSR01000020	M4B.F.Ca.ET.143.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADJ02000027	M2D.F.Ca.ET.153.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RTP01000025	M3A.F.Ca.ET.175.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RTO01000021	M3A.F.Ca.ET.174.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RTK01000018	M4B.F.Ca.ET.169.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RSS01000042	M1C.F.Ca.ET.144.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RUJ01000031	M8A.F.Ca.ET.198.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RUX01000020	M4B.F.Ca.ET.214.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADQ02000042	M1C.F.Ca.ET.212.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RVD01000025	M2D.F.Ca.ET.224.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RUP01000042	M1C.F.Ca.ET.204.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RSV01000026	M2D.F.Ca.ET.147.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADK02000016	M2E.F.Ca.ET.154.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RTS01000025	M2D.F.Ca.ET.178.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RTX01000015	M1D.F.Ca.ET.184.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RZOV02000029	M2D.F.Ca.ET.148.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RTL01000027	M2D.F.Ca.ET.171.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADP02000033	M2E.F.Ca.ET.209.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RUW01000002	M8A.F.Ca.ET.213.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RUU01000042	M1C.F.Ca.ET.210.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RUL01000019	M4B.F.Ca.ET.200.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADS02000010	M00.F.Ca.ET.217.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADS02000003	M00.F.Ca.ET.217.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RVC01000022	M2D.F.Ca.ET.223.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_ML703276	SARCC-RB16n	Ethiopia	<i>Aspalathus linearis</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RUT01000004	M8A.F.Ca.ET.208.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RUZ01000002	M8A.F.Ca.ET.218.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RUO01000023	M4B.F.Ca.ET.203.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RVJ01000027	M2D.F.Ca.ET.233.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RUG01000042	M1C.F.Ca.ET.195.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADR02000029	M00.F.Ca.ET.216.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_SADR02000028	M00.F.Ca.ET.216.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RTQ01000042	M1C.F.Ca.ET.176.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RZX02000042	M1C.F.Ca.ET.192.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RTY01000026	M2D.F.Ca.ET.185.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RUE01000042	M1C.F.Ca.ET.193.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RUH01000042	M1C.F.Ca.ET.196.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RZT01000042	M1C.F.Ca.ET.187.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_RZOT02000015	M1D.F.Ca.ET.231.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RUV01000019	M4B.F.Ca.ET.211.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_S RUA01000042	M1C.F.Ca.ET.188.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_CP034445	M2A.F.Ca.ET.043.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSF01000063	M1A.F.Ca.ET.072.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSF01000001	M1A.F.Ca.ET.072.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOL01000179	M7A.F.Ca.ET.027.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSH01000001	M4B.F.Ca.ET.013.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOI01000003	M4A.F.Ca.ET.020.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSB01000001	M2A.F.Ca.ET.067.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOO01000032	M2A.F.Ca.ET.029.05.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOS01000001	M4B.F.Ca.ET.089.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOJ01000005	M4A.F.Ca.ET.022.05.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRY01000803	M2A.F.Ca.ET.039.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRY01000130	M2A.F.Ca.ET.039.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSG01000008	M4A.F.Ca.ET.050.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOT01000014	M4A.F.Ca.ET.090.04.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOM01000376	M7A.F.Ca.ET.027.03.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOH01000041	M4B.F.Ca.ET.019.03.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOG01000041	M2A.F.Ca.ET.017.03.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSE01000004	M4B.F.Ca.ET.049.02.1.2	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZRX01000066	M2A.F.Ca.ET.042.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSL01000261	M1E.F.Ca.ET.041.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSL01000001	M1E.F.Ca.ET.041.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZOF01000048	M4B.F.Ca.ET.017.02.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSJ01000101	M8A.F.Ca.ET.021.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSA01000018	M2A.F.Ca.ET.037.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSK01000002	M2A.F.Ca.ET.015.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZSC01000109	M1E.F.Ca.ET.063.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034448	M1B.F.Ca.ET.045.04.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034447	M1E.F.Ca.ET.045.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
NZ_CP034444	M1D.F.Ca.ET.043.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034449	M2A.F.Ca.ET.046.03.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034446	M2A.F.Ca.ET.043.05.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034450	M4B.F.Ca.ET.058.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_CP034443	M9A.F.Ca.ET.002.03.1.2	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
ML703276	SARCC-RB16n	South Africa	<i>Aspalathus linearis</i>	root nodule	Swanevelder,Z.H. and Hassen,A.I., Unpublished
PXXM01000000	SARCC-RB16n	South Africa	<i>Aspalathus linearis</i>	root nodule	Swanevelder,Z.H. and Hassen,A.I., Unpublished
NZ_FOSL01000033	DSM 21822	No info	No Host info	No info	Varghese,N. 2016
MK402244	Oku 3.2	Russia	<i>Oxytropis kungurensis</i>	nodule	Baymiev,A.K., et al. Unpublished
MK402243	Oku 2.1	Russia	<i>Oxytropis kungurensis</i>	nodule	Baymiev,A.K., et al. Unpublished
MK402242	Ogm 1	Russia	<i>Oxytropis gmelinii</i>	nodule	Baymiev,A.K., et al. Unpublished
MK402241	Oba 3.4	Russia	<i>Oxytropis baschkiriensis</i>	nodule	Baymiev,A.K., et al. Unpublished
MK402240	Oba 3.2	Russia	<i>Oxytropis baschkiriensis</i>	nodule	Baymiev,A.K., et al. Unpublished
MK402239	Oba 1.6	Russia	<i>Oxytropis baschkiriensis</i>	nodule	Baymiev,A.K., et al. Unpublished
MK402238	Oap 4.2	Russia	<i>Oxytropis approximata</i>	nodule	Baymiev,A.K., et al. Unpublished
MK402237	Oap 3.4	Russia	<i>Oxytropis approximata</i>	nodule	Baymiev,A.K., et al. Unpublished
NZ_RZTT01000173	M7A.T.Ca.US.000.02.	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_RZTJ01000026	M6A.T.Ce.TU.016.01.	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_QMBQ01000012	CNPSo 3140	Brazil	<i>Phaseolus vulgaris</i>	nodule	Helene,L.C.F., et al. Unpublished
NZ_SRVE01000048	M2D.F.Ca.ET.225.01.	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
NZ_RZOU01000080	M2D.F.Ca.ET.140.01.	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
NZ_NSF01000033	WSM4304	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFZ01000019	WSM3879	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFZ01000006	WSM3879	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFY01000023	WSM3882	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFY01000015	WSM3882	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFV01000036	WSM4308	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFV01000032	WSM4311	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFU01000040	WSM4312	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGB01000026	WSM3868	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGB01000001	WSM3868	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_FZQR01000114	No Strain info	No info	No Host info	No info	De Meyer E,S., 2017
PNOT02000000	BD68	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., Tet al. Unpublished
PNOT02000101	BD68	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., Tet al. Unpublished
PNOT02000245	BD68	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., Tet al. Unpublished
PNOT02000271	BD68	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., Tet al. Unpublished
NZ_VFTD01000051	WSM4305	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
NZ_VFTB01000022	WSM4307	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
NZ_VFSZ01000040	WSM4315	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
NZ_VFTE01000055	WSM4303	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
NZ_VFTA01000055	WSM4310	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
NZ_VFTC01000029	WSM4306	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTD01000000	WSM4305	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTE01000000	WSM4303	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTC01000000	WSM4306	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTE01000055	WSM4303	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTC01000029	WSM4306	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTA01000000	WSM4310	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTD01000051	WSM4305	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTB01000000	WSM4307	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFSZ01000000	WSM4315	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTB01000022	WSM4307	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFTA01000055	WSM4310	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
VFSZ01000040	WSM4315	Australia	<i>Cicer arietinum</i>	root nodule	Bonello,E. and Haskett,T., Unpublished
NZ_MDLH01000001	SEMIA 3007	Mexico	No Host info	soil	Kishi,L.T., et al. Unpublished
NZ_NSGC01000026	WSM3866	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGG01000015	WSM3859	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGF01000031	WSM3860	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSGA01000029	WSM3876	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFO01000021	R7ANSxCC1192	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_NSFR01000012	R7ANSx3859	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_NSFS01000017	R7ANSx1497	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_NSGE01000010	WSM3862	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NZ_NSFP01000023	R7ANSxAA22	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NZ_NSFT01000033	WSM4313	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NZ_VFUD01000007	B2-6-5	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUO01000007	B2-5-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFTS01000022	B2-8-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFTQ01000001	B2-8-9	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUJ01000002	B2-5-12	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUN01000016	B2-5-8	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUB01000017	B2-6-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUM01000001	B2-5-9	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
NZ_VFUK01000014	B2-5-11	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUC01000016	B2-6-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFTT01000028	B2-8-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUP01000002	B2-5-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFTR01000030	B2-8-8	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUL01000018	B2-5-10	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFTZ01000004	B2-7-2	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFUG01000001	B2-6-2	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
NZ_VFTV01000035	B2-8-4	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUN01000000	B2-5-8	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUP01000000	B2-5-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUP01000002	B2-5-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUN01000016	B2-5-8	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUM01000000	B2-5-9	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUM01000001	B2-5-9	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUO01000000	B2-5-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUK01000000	B2-5-11	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUO01000007	B2-5-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUK01000014	B2-5-11	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUL01000000	B2-5-10	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUJ01000000	B2-5-12	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUJ01000002	B2-5-12	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUL01000018	B2-5-10	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUG01000000	B2-6-2	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUG01000001	B2-6-2	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUB01000000	B2-6-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUB01000017	B2-6-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUC01000000	B2-6-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUD01000000	B2-6-5	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUC01000016	B2-6-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFUD01000007	B2-6-5	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTZ01000000	B2-7-2	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTZ01000004	B2-7-2	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTV01000000	B2-8-4	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTV01000035	B2-8-4	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTT01000000	B2-8-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTS01000000	B2-8-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTR01000000	B2-8-8	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTT01000028	B2-8-6	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTQ01000000	B2-8-9	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTQ01000001	B2-8-9	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTS01000022	B2-8-7	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
VFTR01000030	B2-8-8	Australia	No Host info	soil	Hill,Y. and Terpolilli,J., Unpublished
SWFQ01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWFQ01000072	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWAL01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWAL01000008	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWAH01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWAH01000002	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWAH01000022	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWAI01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWAI01000037	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SWAI01000406	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURW01000000	No Strain info	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURQ01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURQ01000007	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURW01000008	No Strain info	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURO01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURO01000003	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURO01000666	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURM01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURM01000028	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURP01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURP01000004	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURZ01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SUSA01000000	No Strain info	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SUSA01000036	No Strain info	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SUSA01000128	No Strain info	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURS01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURS01000096	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURN01000000	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURZ01001000	No Strain info	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
SURN01000019	No Strain info	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished

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[illegible]

Accession #s	Strain	Country	Host	Isolation source	Reference
SUJM01000055	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJQ01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJQ01000031	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJR01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJR01000035	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJU01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJU01000015	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJX01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJW01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJT01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJW01000042	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJT01000014	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJV01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJV01000004	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJY01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJX01001094	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
SUJY01000030	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
MK495261	IARI-V2-5	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK495260	IARI-V2-4	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK495259	IARI-V2-3	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK495258	IARI-V2-2	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK495257	IARI-V2-1	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK495241	IARI-V3-5	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK495240	IARI-V3-4	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK495239	IARI-V3-3	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK495238	IARI-V3-2	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK495237	IARI-V3-1	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK495236	HISAR-V3-5	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK495235	HISAR-V3-4	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK495234	HISAR-V3-2	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK495233	HISAR-V3-1	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK415733	HISAR-V2-5	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK415732	HISAR-V2-4	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK415731	HISAR-V2-3	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK415730	HISAR-V2-2	India	No Host info	nodule	Sharma,M., et al. Unpublished
MK415729	HISAR-V2-1	India	No Host info	nodule	Sharma,M., et al. Unpublished
SADN02000000	M00.F.Ca.ET.170.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRST01000000	M2D.F.Ca.ET.145.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRST01000025	M2D.F.Ca.ET.145.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADK02000000	M2E.F.Ca.ET.154.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADK02000016	M2E.F.Ca.ET.154.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADL02000000	M00.F.Ca.ET.158.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADH02000000	M00.F.Ca.ET.149.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADL02000008	M00.F.Ca.ET.158.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADL02000017	M00.F.Ca.ET.158.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADH02000032	M00.F.Ca.ET.149.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTC01000000	M2D.F.Ca.ET.160.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTC01000028	M2D.F.Ca.ET.160.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSQ01000000	M8A.F.Ca.ET.142.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADO02000000	M00.F.Ca.ET.186.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSQ01000015	M8A.F.Ca.ET.142.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADO02000021	M00.F.Ca.ET.186.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSR01000000	M4B.F.Ca.ET.143.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSR01000020	M4B.F.Ca.ET.143.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTN01000000	M8A.F.Ca.ET.173.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTN01000016	M8A.F.Ca.ET.173.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADI02000000	M00.F.Ca.ET.151.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADI02000015	M00.F.Ca.ET.151.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSS01000000	M1C.F.Ca.ET.144.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSS01000042	M1C.F.Ca.ET.144.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSV01000000	M2D.F.Ca.ET.147.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOV02000000	M2D.F.Ca.ET.148.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSV01000026	M2D.F.Ca.ET.147.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOV02000029	M2D.F.Ca.ET.148.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSW01000000	M4B.F.Ca.ET.150.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRSW01000019	M4B.F.Ca.ET.150.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADJ02000000	M2D.F.Ca.ET.153.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADJ02000027	M2D.F.Ca.ET.153.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTG01000000	M5C.F.Ca.ET.164.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTG01000010	M5C.F.Ca.ET.164.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTD01000032	M8A.F.Ca.ET.161.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADM02000000	M2E.F.Ca.ET.166.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADM02000014	M2E.F.Ca.ET.166.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
SRTI01000000	M8A.F.Ca.ET.167.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADN02000030	M00.F.Ca.ET.170.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTI01000004	M8A.F.Ca.ET.167.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTK01000000	M4B.F.Ca.ET.169.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTH01000000	M8A.F.Ca.ET.165.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTK01000018	M4B.F.Ca.ET.169.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTH01000017	M8A.F.Ca.ET.165.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTM01000000	M4B.F.Ca.ET.172.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRT0010000000	M3A.F.Ca.ET.174.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTM01000018	M4B.F.Ca.ET.172.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRT001000021	M3A.F.Ca.ET.174.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUW01000000	M8A.F.Ca.ET.213.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUW01000002	M8A.F.Ca.ET.213.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTL01000000	M2D.F.Ca.ET.171.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTL01000027	M2D.F.Ca.ET.171.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTS01000000	M2D.F.Ca.ET.178.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTS01000025	M2D.F.Ca.ET.178.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTP01000000	M3A.F.Ca.ET.175.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTV01000000	M8A.F.Ca.ET.181.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTP01000025	M3A.F.Ca.ET.175.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTV01000007	M8A.F.Ca.ET.181.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTQ01000000	M1C.F.Ca.ET.176.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUM01000000	M3A.F.Ca.ET.201.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTQ01000042	M1C.F.Ca.ET.176.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOW02000000	M1D.F.Ca.ET.183.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUM01000014	M3A.F.Ca.ET.201.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOW02000015	M1D.F.Ca.ET.183.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTX01000000	M1D.F.Ca.ET.184.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTW01000000	M8A.F.Ca.ET.182.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTW010000018	M8A.F.Ca.ET.182.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTX01000005	M1D.F.Ca.ET.184.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTY01000000	M2D.F.Ca.ET.185.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTZ01000000	M1C.F.Ca.ET.187.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTY01000026	M2D.F.Ca.ET.185.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUC01000000	M4B.F.Ca.ET.190.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRTZ01000042	M1C.F.Ca.ET.187.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADP02000000	M2E.F.Ca.ET.209.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUC01000019	M4B.F.Ca.ET.190.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADP02000033	M2E.F.Ca.ET.209.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUA01000000	M1C.F.Ca.ET.188.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUA01000042	M1C.F.Ca.ET.188.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVC01000000	M2D.F.Ca.ET.223.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUE01000000	M1C.F.Ca.ET.193.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUB01000000	M1C.F.Ca.ET.189.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVC01000022	M2D.F.Ca.ET.223.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUE01000042	M1C.F.Ca.ET.193.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUB01000042	M1C.F.Ca.ET.189.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOX02000000	M1C.F.Ca.ET.192.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOX02000042	M1C.F.Ca.ET.192.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUJ01000000	M8A.F.Ca.ET.198.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUG01000000	M1C.F.Ca.ET.195.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUG01000042	M1C.F.Ca.ET.195.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUJ01000031	M8A.F.Ca.ET.198.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUN01000000	M8A.F.Ca.ET.202.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUH01000000	M1C.F.Ca.ET.196.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUI01000000	M8A.F.Ca.ET.197.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUH01000042	M1C.F.Ca.ET.196.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUI01000031	M8A.F.Ca.ET.197.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUN01000030	M8A.F.Ca.ET.202.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUL01000000	M4B.F.Ca.ET.200.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUP01000000	M1C.F.Ca.ET.204.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUO01000000	M4B.F.Ca.ET.203.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUL01000019	M4B.F.Ca.ET.200.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUP01000042	M1C.F.Ca.ET.204.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUO01000023	M4B.F.Ca.ET.203.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUT01000000	M8A.F.Ca.ET.208.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUT01000004	M8A.F.Ca.ET.208.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUS01000000	M8A.F.Ca.ET.207.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUS01000024	M8A.F.Ca.ET.207.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADQ02000000	M1C.F.Ca.ET.212.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADQ02000042	M1C.F.Ca.ET.212.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUV01000000	M4B.F.Ca.ET.211.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUU01000000	M1C.F.Ca.ET.210.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
SRUV01000019	M4B.F.Ca.ET.211.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUU01000042	M1C.F.Ca.ET.210.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADU02000000	M00.F.Ca.ET.220.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADRO20000000	M00.F.Ca.ET.216.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUX01000000	M4B.F.Ca.ET.214.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADRO20000028	M00.F.Ca.ET.216.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADRO20000029	M00.F.Ca.ET.216.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUX01000020	M4B.F.Ca.ET.214.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADU02000065	M00.F.Ca.ET.220.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADS02000000	M00.F.Ca.ET.217.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADU02000178	M00.F.Ca.ET.220.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADU02000264	M00.F.Ca.ET.220.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADS02000003	M00.F.Ca.ET.217.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUY01000000	M4B.F.Ca.ET.215.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADT02000000	M2E.F.Ca.ET.219.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADS02000010	M00.F.Ca.ET.217.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUY01000021	M4B.F.Ca.ET.215.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SADT02000011	M2E.F.Ca.ET.219.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUZ01000000	M8A.F.Ca.ET.218.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRUZ01000002	M8A.F.Ca.ET.218.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVD01000000	M2D.F.Ca.ET.224.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVE01000000	M2D.F.Ca.ET.225.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVD01000025	M2D.F.Ca.ET.224.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOY02000000	M2D.F.Ca.ET.226.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVE01000048	M2D.F.Ca.ET.225.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZOY02000024	M2D.F.Ca.ET.226.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVK01000000	M1D.F.Ca.ET.234.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZPA02000000	M2D.F.Ca.ET.232.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZPA02000029	M2D.F.Ca.ET.232.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVK01000011	M1D.F.Ca.ET.234.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZO202000000	M1D.F.Ca.ET.231.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVJ01000000	M2D.F.Ca.ET.233.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
RZO202000015	M1D.F.Ca.ET.231.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
SRVJ01000027	M2D.F.Ca.ET.233.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Muleta,A., et al. Unpublished
MK404217	IARI-V1-5	India	No Host info	nodule	Sharma,M.,et al. Unpublished
MK404216	IARI-V1-4	India	No Host info	nodule	Sharma,M.,et al. Unpublished
MK404215	IARI-V1-3	India	No Host info	nodule	Sharma,M.,et al. Unpublished
MK404214	IARI-V1-2	India	No Host info	nodule	Sharma,M.,et al. Unpublished
MK370490	HISAR-V1-5	India	No Host info	nodule	Annapurna,K., et al. Unpublished
MK370489	HISAR-V1-4	India	No Host info	nodule	Annapurna,K., et al. Unpublished
MK370488	HISAR-V1-3	India	No Host info	nodule	Annapurna,K., et al. Unpublished
MK370487	HISAR-V1-1	India	No Host info	nodule	Annapurna,K., et al. Unpublished
MH788351	YH9	No info	Black locust	nodules	Liu,Z., Unpublished
MH788350	YH8	No info	Black locust	nodules	Liu,Z., Unpublished
MH788349	YH15	No info	Black locust	nodules	Liu,Z., Unpublished
MH788348	YH14	No info	Black locust	nodules	Liu,Z., Unpublished
MH788347	YH13	No info	Black locust	nodules	Liu,Z., Unpublished
MH788346	YH12	No info	Black locust	nodules	Liu,Z., Unpublished
MH788345	YH11	No info	Black locust	nodules	Liu,Z., Unpublished
MH788344	YH10	No info	Black locust	nodules	Liu,Z., Unpublished
MH788343	YH1	No info	Black locust	nodules	Liu,Z., Unpublished
MH788342	XZ8	No info	Black locust	nodules	Liu,Z., Unpublished
MH788341	XZ7	No info	Black locust	nodules	Liu,Z., Unpublished
MH788340	XZ6	No info	Black locust	nodules	Liu,Z., Unpublished
MH788339	XZ5	No info	Black locust	nodules	Liu,Z., Unpublished
MH788338	XZ4	No info	Black locust	nodules	Liu,Z., Unpublished
MH788337	XZ3	No info	Black locust	nodules	Liu,Z., Unpublished
MH788336	XZ2	No info	Black locust	nodules	Liu,Z., Unpublished
MH788335	XZ1	No info	Black locust	nodules	Liu,Z., Unpublished
MH788334	XY28	No info	Black locust	nodules	Liu,Z., Unpublished
MH788333	XY27	No info	Black locust	nodules	Liu,Z., Unpublished
MH788332	XY22	No info	Black locust	nodules	Liu,Z., Unpublished
MH788331	XY21	No info	Black locust	nodules	Liu,Z., Unpublished
MH788330	XY1	No info	Black locust	nodules	Liu,Z., Unpublished
MH788329	WH37	No info	Black locust	nodules	Liu,Z., Unpublished
MH788328	WH35	No info	Black locust	nodules	Liu,Z., Unpublished
MH788327	WH31	No info	Black locust	nodules	Liu,Z., Unpublished
MH788326	WH30	No info	Black locust	nodules	Liu,Z., Unpublished
MH788325	WH29	No info	Black locust	nodules	Liu,Z., Unpublished
MH788324	WH28	No info	Black locust	nodules	Liu,Z., Unpublished
MH788323	WH27	No info	Black locust	nodules	Liu,Z., Unpublished
MH788322	WH26	No info	Black locust	nodules	Liu,Z., Unpublished
MH788321	WH17	No info	Black locust	nodules	Liu,Z., Unpublished

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Accession #s	Strain	Country	Host	Isolation source	Reference
MH788101	Ger26	No info	Black locust	nodules	Liu,Z., Unpublished
MH788100	Ger24	No info	Black locust	nodules	Liu,Z., Unpublished
MH788099	Ger23	No info	Black locust	nodules	Liu,Z., Unpublished
MH788098	Ger22	No info	Black locust	nodules	Liu,Z., Unpublished
MH788097	Ger21	No info	Black locust	nodules	Liu,Z., Unpublished
MH788096	Ger2	No info	Black locust	nodules	Liu,Z., Unpublished
MH788095	Ger19	No info	Black locust	nodules	Liu,Z., Unpublished
MH788094	Ger17	No info	Black locust	nodules	Liu,Z., Unpublished
MH788093	Ger16	No info	Black locust	nodules	Liu,Z., Unpublished
MH788092	Ger15	No info	Black locust	nodules	Liu,Z., Unpublished
MH788091	Ger13	No info	Black locust	nodules	Liu,Z., Unpublished
MH788090	Ger12	No info	Black locust	nodules	Liu,Z., Unpublished
MH788089	Ger11	No info	Black locust	nodules	Liu,Z., Unpublished
MH788088	G7	No info	Black locust	nodules	Liu,Z., Unpublished
MH788087	G37	No info	Black locust	nodules	Liu,Z., Unpublished
MH788086	G27	No info	Black locust	nodules	Liu,Z., Unpublished
MH788085	G22	No info	Black locust	nodules	Liu,Z., Unpublished
MH788084	G20	No info	Black locust	nodules	Liu,Z., Unpublished
MH788083	CCNWYC 115	No info	Black locust	nodules	Liu,Z., Unpublished
MH788082	CCNWSX0192	No info	Black locust	nodules	Liu,Z., Unpublished
MH788081	CCNWSX0144	No info	Black locust	nodules	Liu,Z., Unpublished
MH788080	CCNWSX0132	No info	Black locust	nodules	Liu,Z., Unpublished
MH788079	CCNWSX0125	No info	Black locust	nodules	Liu,Z., Unpublished
MH788078	CCNWSX0079	No info	Black locust	nodules	Liu,Z., Unpublished
MH788077	CCNWGS0123	No info	Black locust	nodules	Liu,Z., Unpublished
MH788076	B32	No info	Black locust	nodules	Liu,Z., Unpublished
MH788075	B30	No info	Black locust	nodules	Liu,Z., Unpublished
MH788074	B29	No info	Black locust	nodules	Liu,Z., Unpublished
MH788073	B26	No info	Black locust	nodules	Liu,Z., Unpublished
MH788072	B25	No info	Black locust	nodules	Liu,Z., Unpublished
MH788071	B24	No info	Black locust	nodules	Liu,Z., Unpublished
MH788070	B20	No info	Black locust	nodules	Liu,Z., Unpublished
MH788069	B2	No info	Black locust	nodules	Liu,Z., Unpublished
MH788068	B19	No info	Black locust	nodules	Liu,Z., Unpublished
MH788067	B17	No info	Black locust	nodules	Liu,Z., Unpublished
MH788066	B15	No info	Black locust	nodules	Liu,Z., Unpublished
MH711914	IARI-V1-1	No info	<i>Cicer arietinum</i>	nodules	Annapurna,K. and Kumar,A., Unpublished
LC376794	T_1_4	Japan	<i>Lotus japonicus</i>	nodules	Bamba,M., et al. Unpublished
LC376793	T_1_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376792	N_3_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376791	N_2_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376790	N_2_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376789	L_8_8	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376788	L_8_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376787	L_8_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376786	L_8_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376785	L_8_11	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376784	L_8_10	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376783	L_4_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376782	L_3_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376781	L_3_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376780	L_3_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376779	L_2_7	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376778	L_2_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376777	L_2_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376776	L_2_12	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376775	L_2_11	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376774	K_3_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376773	K_3_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376772	K_3_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376771	K_3_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376770	K_2_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376769	K_1_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376768	K_1_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376767	133_3_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376766	133_2_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376765	133_2_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376764	133_2_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376763	133_2_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376762	133_2_19	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376761	133_2_18	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376760	133_2_16	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376759	133_2_15	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
LC376758	133_2_13	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376757	133_2_11	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376756	133_2_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376755	133_1_9	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376754	133_1_7	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376753	133_1_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376752	131_5_10	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376751	131_3_8	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376750	131_3_7	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376749	131_3_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376748	131_3_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376747	131_3_11	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376746	131_2_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376745	131_2_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376744	131_2_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376743	131_1_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376742	131_1_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376741	130_3_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376740	130_3_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376739	130_2_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376738	129_5_8	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376737	129_5_7	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376736	129_5_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376735	129_4_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376734	129_2_7	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376733	128_5_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376732	128_5_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376731	128_5_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376730	128_5_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376729	128_1_7	Japan	<i>Lotus corniculatus</i>	nodule	Bamba,M., et al. Unpublished
LC376728	128_1_17	Japan	<i>Lotus corniculatus</i>	nodule	Bamba,M., et al. Unpublished
LC376727	127_14_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376726	127_13_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376725	127_12_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376724	127_12_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376723	127_12_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376722	127_11_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376721	127_11_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376720	127_11_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376719	127_10_5	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376718	127_10_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376717	117_3_9	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376716	117_2_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376715	114_5_8	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376714	114_3_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376713	114_1_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376712	113_3_9	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376711	113_3_7	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376710	113_3_6	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376709	113_3_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376708	113_3_19	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376707	113_3_17	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376706	113_3_16	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376705	113_3_15	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376704	113_3_14	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376703	113_3_13	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376702	113_1_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376701	112_5_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376700	112_3_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376699	112_3_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376698	112_2_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376697	112_2_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376696	112_1_1	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376695	108_3_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376694	108_3_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376693	108_2_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376692	108_2_2	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376691	108_1_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376690	107_2_3	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
LC376689	107_1_4	Japan	<i>Lotus japonicus</i>	nodule	Bamba,M., et al. Unpublished
NZ_CCNC01000179	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
MK070840	HISAR-V1-2	India	No Host info	nodule	Kumar,A. and Annapurna,K., Unpublished
SASY01000000	No Strain info	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished

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[illegible]

[illegible]

Accession #s	Strain	Country	Host	Isolation source	Reference
RZPI01000000	M7A.F.Ca.CA.002.15.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPI01000004	M7A.F.Ca.CA.002.15.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPF01000233	M7A.F.Ca.AU.001.01.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPE01000000	M7A.F.Ca.AU.002.06.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPE01000012	M7A.F.Ca.AU.002.06.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPD01000000	M7A.F.Ca.AU.002.04.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPL01000000	M7A.F.Ca.CA.002.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPC01000000	M7A.F.Ca.AU.002.03.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPL01000006	M7A.F.Ca.CA.002.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPC01000006	M7A.F.Ca.AU.002.03.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPD01000030	M7A.F.Ca.AU.002.04.1.1	Australia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPG01000000	M6A.T.Cr.TU.014.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPQ01000000	M7A.F.Ca.CA.004.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPQ01000002	M7A.F.Ca.CA.004.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPG01000034	M6A.T.Cr.TU.014.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPK01000000	M7A.F.Ca.CA.002.03.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPK01000122	M7A.F.Ca.CA.002.03.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPM01000000	M7A.F.Ca.Ca.001.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPM01000075	M7A.F.Ca.CA.001.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPJ01000000	M7A.F.Ca.CA.002.03.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPY01000000	M7A.F.Ca.CA.004.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPY01000124	M7A.F.Ca.CA.004.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPJ01000079	M7A.F.Ca.CA.002.03.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPN01000000	M7A.F.Ca.CA.001.16.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPN01000002	M7A.F.Ca.Ca.001.16.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPO01000000	M7A.F.Ca.CA.001.07.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPO01000022	M7A.F.Ca.CA.001.07.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPP01000000	M7A.F.Ca.CA.002.10.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPP01000043	M7A.F.Ca.CA.002.10.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPR01000000	M7A.F.Ca.CA.004.06.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPS01000000	M7A.F.Ca.CA.004.07.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPR01000147	M7A.F.Ca.Ca.004.06.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPS01000042	M7A.F.Ca.CA.004.07.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPU01000000	M7A.F.Ca.CA.004.02.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPU01000006	M7A.F.Ca.CA.004.02.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPT01000000	M7A.F.Ca.CA.004.01.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQA01000000	M7A.F.Ca.US.006.04.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQA01000002	M7A.F.Ca.US.006.04.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPT01000275	M7A.F.Ca.Ca.004.01.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPW01000000	M7A.F.Ca.CA.001.08.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPW01000010	M7A.F.Ca.CA.001.08.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPX01000000	M7A.F.Ca.CA.001.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPX01000026	M7A.F.Ca.CA.001.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPV01000000	M7A.F.Ca.CA.001.08.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPV01000001	M7A.F.Ca.CA.001.08.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPZ01000000	M7A.F.Ca.Ca.004.09.1.2	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZPZ01000047	M7A.F.Ca.CA.004.09.1.2	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQF01000000	M7A.F.Ca.US.001.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQF01000087	M7A.F.Ca.US.001.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQC01000000	M7A.F.Ca.CA.004.11.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQC01000165	M7A.F.Ca.CA.004.11.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQB01000000	M7A.F.Ca.CA.004.10.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQB01000107	M7A.F.Ca.Ca.004.10.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQG01000000	M7D.F.Ca.US.004.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQG01000013	M7D.F.Ca.US.004.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQD01000000	M7A.F.Ca.CA.004.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQD01000006	M7A.F.Ca.CA.004.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQI01000000	M7A.F.Ca.CA.002.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQI01000019	M7A.F.Ca.CA.002.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQE01000000	M7A.F.Ca.US.002.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQE01000003	M7A.F.Ca.US.002.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQH01000000	M7A.F.Ca.US.001.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQH01000077	M7A.F.Ca.US.001.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQM01000000	M7A.F.Ca.US.006.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQM01000009	M7A.F.Ca.US.006.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQN01000000	M7A.F.Ca.US.003.02.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQK01000000	M7A.F.Ca.Ca.001.14.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQK01000022	M7A.F.Ca.CA.001.14.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQN01000219	M7A.F.Ca.US.003.02.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQL01000000	M7A.F.Ca.US.006.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQL01000165	M7A.F.Ca.US.006.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQQ01000000	M7A.F.Ca.US.007.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQQ01000018	M7A.F.Ca.US.007.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
RZQJ01000000	M7A.F.Ca.CA.002.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQJ01000001	M7A.F.Ca.CA.002.06.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQU01000000	M7A.F.Ca.CA.004.05.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQU01000029	M7A.F.Ca.Ca.004.05.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQO01000000	M7A.F.Ca.US.003.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQO01000055	M7A.F.Ca.US.003.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQR01000000	M7A.F.Ca.CA.001.15.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQR01000018	M7A.F.Ca.CA.001.15.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQS01000000	M7A.F.Ca.CA.001.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQS01000004	M7A.F.Ca.CA.001.04.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQP01000000	M7A.F.Ca.US.007.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQP01000045	M7A.F.Ca.US.007.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQW01000000	M7A.F.Ca.CA.001.09.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQW01000017	M7A.F.Ca.CA.001.09.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQV01000000	M7A.F.Ca.CA.002.15.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQV01000080	M7A.F.Ca.CA.002.15.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQT01000000	M7A.F.Ca.CA.001.04.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQT01000020	M7A.F.Ca.Ca.001.04.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRD01000000	M7A.F.Ca.CA.001.12.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRD01000021	M7A.F.Ca.CA.001.12.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRA01000000	M7A.F.Ca.CA.003.01.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRA01000003	M7A.F.Ca.CA.003.01.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQY01000000	M7A.F.Ca.CA.001.10.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQY01000057	M7A.F.Ca.CA.001.10.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZXQ01000000	M7A.F.Ca.Ca.001.09.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZXQ01000015	M7A.F.Ca.CA.001.09.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQZ01000000	M7A.F.Ca.CA.001.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZQZ01000014	M7A.F.Ca.CA.001.05.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRG01000000	M7A.F.Ca.CA.001.13.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRG01000038	M7A.F.Ca.CA.001.13.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRH01000000	M7A.F.Ca.CA.001.13.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRC01000000	M7A.F.Ca.Ca.001.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRC01000022	M7A.F.Ca.CA.001.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRH01000117	M7A.F.Ca.CA.001.13.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRB01000000	M7A.F.Ca.CA.002.07.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRB01000018	M7A.F.Ca.Ca.002.07.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRE01000000	M7A.F.Ca.US.001.04.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRE01000090	M7A.F.Ca.US.001.04.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRK01000000	M7A.F.Ca.Ca.004.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRF01000000	M7A.F.Ca.US.001.04.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRF01000017	M7A.F.Ca.US.001.04.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRK01000195	M7A.F.Ca.CA.004.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRP01000000	M7A.F.Ca.US.005.03.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRP01000014	M7A.F.Ca.US.005.03.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRZ01000000	M2A.F.Ca.ET.040.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRZ01000083	M2A.F.Ca.ET.040.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRL01000000	M7A.F.Ca.CA.004.04.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRL01000051	M7A.F.Ca.CA.004.04.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRQ01000000	M7D.F.Ca.US.004.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRQ01000001	M7D.F.Ca.US.004.01.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRI01000000	M7A.F.Ca.CA.004.08.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRI01000025	M7A.F.Ca.CA.004.08.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRJ01000000	M7A.F.Ca.Ca.004.08.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRJ01000012	M7A.F.Ca.Ca.004.08.2.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRO01000000	M7A.F.Ca.US.005.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRO01000005	M7A.F.Ca.US.005.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRW01000000	M7A.F.Ca.US.014.04.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRW010000019	M7A.F.Ca.US.014.04.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRN01000000	M7A.F.Ca.CA.002.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRR01000000	M7A.F.Ca.CA.002.09.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRR01000026	M7A.F.Ca.CA.002.09.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRN01000033	M7A.F.Ca.CA.002.12.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSG01000000	M4A.F.Ca.ET.050.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSG01000008	M4A.F.Ca.ET.050.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRM01000000	M7A.F.Ca.CA.002.11.2.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRM01000005	M7A.F.Ca.CA.004.08.1.1	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRX01000000	M2A.F.Ca.ET.042.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRT01000000	M7A.F.Ca.US.011.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRX01000066	M2A.F.Ca.ET.042.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRT01000067	M7A.F.Ca.US.011.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSA01000000	M2A.F.Ca.ET.037.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSA01000018	M2A.F.Ca.ET.037.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRS01000000	M7A.F.Ca.CA.002.14.1.2	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
RZRS01000079	M7A.F.Ca.CA.002.14.1.2	Canada	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSD01000000	M8A.F.Ca.ET.059.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSD01000052	M8A.F.Ca.ET.059.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSI01000000	M8A.F.Ca.ET.023.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSI01001200	M8A.F.Ca.ET.023.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRV01000000	M7A.F.Ca.US.010.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRV01000033	M7A.F.Ca.US.010.02.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSC01000000	M1E.F.Ca.ET.063.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSC010000109	M1E.F.Ca.ET.063.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSB01000000	M2A.F.Ca.ET.067.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSB01000001	M2A.F.Ca.ET.067.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSE01000000	M4B.F.Ca.ET.049.02.1.2	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSE01000004	M4B.F.Ca.ET.049.02.1.2	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRU01000000	M7A.F.Ca.US.008.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZRU01000010	M7A.F.Ca.US.008.03.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSJ01000000	M8A.F.Ca.ET.021.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSF01000000	M1A.F.Ca.ET.072.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSF01000001	M1A.F.Ca.ET.072.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSJ01000101	M8A.F.Ca.ET.021.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSF01000063	M1A.F.Ca.ET.072.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSK01000000	M2A.F.Ca.ET.015.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSK01000002	M2A.F.Ca.ET.015.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSL01000000	M1E.F.Ca.ET.041.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSL01000001	M1E.F.Ca.ET.041.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSR01000000	M1A.F.Ca.IN.020.06.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSR01000028	M1A.F.Ca.IN.020.06.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSL01000261	M1E.F.Ca.ET.041.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSH01000000	M4B.F.Ca.ET.013.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSH01000001	M4B.F.Ca.ET.013.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSQ01000000	M1A.F.Ca.IN.020.03.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSM01000000	M1A.F.Ca.IN.022.05.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSM01000010	M1A.F.Ca.IN.022.05.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSN01000000	M1A.F.Ca.IN.020.04.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSN01000017	M1A.F.Ca.IN.020.04.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZST01000000	M1A.F.Ca.IN.022.07.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSY01000000	M5C.F.Ca.IN.020.14.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZST01000002	M1A.F.Ca.IN.022.07.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSY01000137	M5C.F.Ca.IN.020.14.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSP01000000	M1A.F.Ca.IN.020.32.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSP01000030	M1A.F.Ca.IN.020.32.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSO01000000	M1A.F.Ca.IN.020.30.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSU01000000	M5C.F.Cr.IN.023.01.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSU01000021	M5C.F.Cr.IN.023.01.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSO01000038	M1A.F.Ca.IN.020.30.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSS01000000	M1A.F.Ca.IN.022.02.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSW01000000	M5C.F.Ca.IN.020.29.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSS01000008	M1A.F.Ca.IN.022.02.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSW01000375	M5C.F.Ca.IN.020.29.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTD01000000	M7A.F.Ca.MR.228.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTD01000014	M7A.F.Ca.MR.228.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTV01000000	M1A.T.Ca.IN.004.03.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTV01000025	M1A.T.Ca.IN.004.03.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTB01000000	M7A.F.Ca.MR.148.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTB01000064	M7A.F.Ca.MR.148.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSX01000000	M5C.F.Ca.IN.020.32.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSX01000063	M5C.F.Ca.IN.020.32.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSZ01000000	M1A.F.Ca.IN.022.04.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSZ01000075	M1A.F.Ca.IN.022.04.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTE01000000	M7A.F.Ca.MR.245.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTE01000043	M7A.F.Ca.MR.245.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTL01000000	M7A.T.Ca.TU.009.01.3.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTL01000020	M7A.T.Ca.TU.009.01.3.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSV01000000	M1A.F.Ca.IN.020.03.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZSV01000002	M1A.F.Ca.IN.020.03.2.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTA01000000	M6A.T.Cr.TU.017.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTA01000060	M6A.T.Cr.TU.017.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTC01000000	M7A.F.Ca.MR.176.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTM01000000	M7A.T.Ca.TU.009.01.1.2	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTC01000043	M7A.F.Ca.MR.176.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTM01000077	M7A.T.Ca.TU.009.01.1.2	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTF01000000	M7A.F.Ca.MR.362.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTF01000042	M7A.F.Ca.MR.362.00.0.0	Morocco	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTK01000000	M7A.T.Ca.TU.009.01.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
RZTK01000024	M7A.T.Ca.TU.009.01.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTP01000000	M6A.T.Ca.TU.002.02.2.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTP01000036	M6A.T.Ca.TU.002.02.2.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTP01000068	M6A.T.Ca.TU.002.02.2.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTI01000000	M6A.T.Ce.TU.002.03.1.1	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTI01000031	M6A.T.Ce.TU.002.03.1.1	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTJ01000026	M6A.T.Ce.TU.016.01.1.1	Turkey	<i>Cicer echinospermum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTQ01000000	M7A.T.Ca.TU.009.01.3.2	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTQ01000273	M7A.T.Ca.TU.009.01.3.2	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTU01000000	USDA-HM6	No info	No Host info	root nodule	Greenlon,A., et al. Unpublished
RZTU01000022	USDA-HM6	No info	No Host info	root nodule	Greenlon,A., et al. Unpublished
RZTR01000000	M7A.T.Ca.TU.009.02.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTR01000036	M7A.T.Ca.TU.009.02.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTT01000000	M7A.T.Ca.US.000.02.2.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTT01000173	M7A.T.Ca.US.000.02.2.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTS01000000	M7A.T.Ca.US.000.02.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTS01000102	M7A.T.Ca.US.000.02.1.1	Turkey	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
RZTU01001830	USDA-HM6	No info	No Host info	root nodule	Greenlon,A., et al. Unpublished
CP034448	M1B.F.Ca.ET.045.04.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034452	M6A.T.Cr.TU.016.01.1.1	Turkey	<i>Cicer reticulatum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034449	M2A.F.Ca.ET.046.03.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034447	M1E.F.Ca.ET.045.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034444	M1D.F.Ca.ET.043.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034453	M7D.F.Ca.US.005.01.1.1	USA	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034446	M2A.F.Ca.ET.043.05.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034454	M8A.F.Ca.ET.057.01.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034445	M2A.F.Ca.ET.043.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034443	M9A.F.Ca.ET.002.03.1.2	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034455	M1A.F.Ca.IN.022.06.1.1	India	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034450	M4B.F.Ca.ET.058.02.1.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
CP034451	M3A.F.Ca.ET.080.04.2.1	Ethiopia	<i>Cicer arietinum</i>	root nodule	Greenlon,A., et al. Unpublished
MK226192	LMS-1	Portugal	<i>Cicer arietinum</i>	nodules	Alexandre,A., Yet al. 2018
RQXT01000000	DSM 28320	Spain	No Host info	root nodule	Gao,J., Unpublished
RQXT01000042	DSM 28320	Spain	No Host info	root nodule	Gao,J., Unpublished
QKOD01000000	Opo-235	Russia	<i>Oxytropis popoviana</i>	root nodule	Safronova,V., et al. 2018
QKOD01000010	Opo-235	Russia	<i>Oxytropis popoviana</i>	root nodule	Safronova,V., et al. 2018
FUIG01000000	STM 462	No info	No Host info	periphery of the Zn-Pb mine	Brunel,B., 2016
FUIG01000049	STM 462	No info	No Host info	periphery of the Zn-Pb mine	Brunel,B., 2016
QZWZ01000000	ICMP19557	New Zealand	<i>Sophora longicarinata</i>	root nodule	De Meyer,S.E., Unpublished
QZWZ01000047	ICMP19557	New Zealand	<i>Sophora longicarinata</i>	root nodule	De Meyer,S.E., Unpublished
MG429765	PHD2	India	No Host info	No info	Pandey,R.P., et al. Unpublished
MG429764	PHD1	India	No Host info	No info	Pandey,R.P., et al. Unpublished
MG429763	VAR2.2	India	No Host info	No info	Pandey,R.P., et al. Unpublished
MG429762	PHD8	India	No Host info	No info	Pandey,R.P., et al. Unpublished
MG429761	PHD11	India	No Host info	No info	Pandey,R.P., et al. Unpublished
MG429760	S3N1	India	No Host info	No info	Pandey,R.P., et al. Unpublished
MDFL01000000	ORS 3428	Senegal	<i>Senegalia senegal</i>	soil from surrounding area	Diagne,N.,et al. 2017
QMBP01000000	AC99b	Ethiopia	<i>Sesbania sesban</i>	No info	Helene,L.C.F., et al. Unpublished
QMBP01000030	AC99b	Ethiopia	<i>Sesbania sesban</i>	No info	Helene,L.C.F., et al. Unpublished
QMBQ01000000	CNPSo 3140	Brazil	<i>Phaseolus vulgaris</i>	nodule	Helene,L.C.F., et al. Unpublished
QMBQ01000012	CNPSo 3140	Brazil	<i>Phaseolus vulgaris</i>	nodule	Helene,L.C.F., et al. Unpublished
MZXV01000000	Ach-343	Russia	<i>Astragalus</i> sp.	root nodule	Safronova,V.I., et al. 2017
MZXV01000011	Ach-343	Russia	<i>Astragalus</i> sp.	root nodule	Safronova,V.I., et al. 2017
MZXV01000038	Ach-343	Russia	<i>Astragalus</i> sp.	root nodule	Safronova,V.I., et al. 2017
MZXV01000045	Ach-343	Russia	<i>Astragalus</i> sp.	root nodule	Safronova,V.I., et al. 2017
MG549934	WYCCWR10900	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549933	WYCCWR10884	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549932	WYCCWR10785	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549931	WYCCWR10783	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549930	WYCCWR10779	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549929	WYCCWR10774	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549928	WYCCWR10765	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549927	WYCCWR10758	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549926	WYCCWR10753	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549925	WYCCWR10750	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549924	WYCCWR10838	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549923	WYCCWR10835	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549922	WYCCWR10682	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549921	WYCCWR10668	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549920	WYCCWR10727	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MG549919	WYCCWR10704	China	<i>Astragalus sinicus</i> L.	No info	Zhang,J., Unpublished
MF461637	23-3-2	China	<i>Thermopsis lanceolata</i>	No info	Xu,L., Unpublished
MF805711	WYCCWR 10198	China	<i>Cicer arietinum</i> L.	No info	Zhang,J. and Guo,C., Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
MF805710	WYCCWR 10200	China	<i>Cicer arietinum</i> L.	No info	Zhang,J. and Guo,C., Unpublished
NZ_LM655202	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
LM655202	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
PZJX01000000	CSLC115N	Spain	<i>Lotus corniculatus</i>	No info	Sannazzaro,A.I., et al. Unpublished
PZJX01000070	CSLC115N	Spain	<i>Lotus corniculatus</i>	No info	Sannazzaro,A.I., et al. Unpublished
KY073184	HZ85	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073183	HZ84	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073182	HZ83	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073181	HZ82	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073180	HZ81	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073179	HZ79	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073178	HZ78	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073177	HZ77	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073176	HZ76	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073174	HZ74	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073173	HZ72	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073172	HZ71	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073171	HZ70	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073170	HZ69	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073169	HZ68	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073168	HZ67	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073167	HZ66	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073166	HZ65	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073165	HZ64	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073164	HZ63	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073163	HZ62	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073162	HZ61	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073160	HZ43	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073159	HZ42	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073158	HZ40	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073157	HZ39	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073156	HZ38	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073155	HZ37	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073154	HZ36	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073153	HZ33	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073152	HZ31	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073151	HZ30	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073150	HZ27	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073149	HZ22	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073148	HZ15	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073147	HZ13	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
KY073146	HZ9	China	<i>Robinia pseudoacacia</i>	contaminated soil	Fan,M. and Lin,Y., Unpublished
NPKI01000000	USDA 3392	France	<i>Cicer arietinum</i>	No info	Zhang,J.,et al. Unpublished
NPKH01000000	WYCCWR 10195	China	<i>Cicer arietinum</i>	No info	Zhang,J.,et al. Unpublished
NPKH01000001	WYCCWR 10195	China	<i>Cicer arietinum</i>	No info	Zhang,J.,et al. Unpublished
NWQG01000000	BSA136	Argentina	<i>Lotus tenuis</i>	root nodules	Sannazzaro,A.I., et al. Unpublished
NWQG01000012	BSA136	Argentina	<i>Lotus tenuis</i>	root nodules	Sannazzaro,A.I., et al. Unpublished
NWQG01000104	BSA136	Argentina	<i>Lotus tenuis</i>	root nodules	Sannazzaro,A.I., et al. Unpublished
NZ_AP017605	TONO	Japan	<i>Lotus japonicus</i>	soil	Shimoda,Y., et al. Unpublished
NSFV01000000	WSM4311	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NSFV01000032	WSM4311	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NSFS01000000	R7ANSx1497	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NSFS01000017	R7ANSx1497	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NSGG01000000	WSM3859	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGG01000015	WSM3859	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGF01000000	WSM3860	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGF01000031	WSM3860	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGE01000000	WSM3862	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGE01000010	WSM3862	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGD01000000	WSM3864	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGD01000016	WSM3864	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGD01000020	WSM3864	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGA01000000	WSM3876	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGA01000012	WSM3876	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGA01000029	WSM3876	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSFZ01000000	WSM3879	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSFZ01000006	WSM3879	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSFZ01000019	WSM3879	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSFW01000000	WSM4308	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NSFU01000000	WSM4312	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NSFW01000036	WSM4308	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NSFU01000040	WSM4312	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NSFQ01000000	R7ANSx3876	Australia	No Host info	No info	Bekuma,A., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
NSFQ01000016	R7ANSx3876	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NSFQ01000028	R7ANSx3876	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NSFP01000000	R7ANSxAA22	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NSFP01000023	R7ANSxAA22	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NSFO01000000	R7ANSxCC1192	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NSFO01000021	R7ANSxCC1192	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NSGC01000000	WSM3866	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGC01000014	WSM3866	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGC01000026	WSM3866	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGB01000000	WSM3868	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGB01000001	WSM3868	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSFY01000000	WSM3882	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSGB01000026	WSM3868	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSFY01000015	WSM3882	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSFY01000023	WSM3882	Eritrea	<i>Astragalus pelecinus</i>	No info	Bekuma,A., et al. Unpublished
NSFX01000000	WSM4304	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NSFX01000033	WSM4304	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NSFT01000000	WSM4313	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NSFT01000033	WSM4313	Australia	<i>Cicer arietinum</i>	No info	Bekuma,A., et al. Unpublished
NSFR01000000	R7ANSx3859	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NSFR01000012	R7ANSx3859	Australia	No Host info	No info	Bekuma,A., et al. Unpublished
NPKJ01000000	SDW018	China	<i>Astragalus adsurgens</i>	No info	Zhang,J.,et al. Unpublished
NPKJ01000057	SDW018	China	<i>Astragalus adsurgens</i>	No info	Zhang,J.,et al. Unpublished
NPKI01000050	USDA 3392	France	<i>Cicer arietinum</i>	No info	Zhang,J.,et al. Unpublished
KZ247985	CCBAU 01583	No info	<i>Caragana</i>	roots	Ji,Z., Unpublished
JHUP01000000	CCBAU 01583	No info	<i>Caragana</i>	roots	Ji,Z., Unpublished
JHUP01000074	CCBAU 01583	No info	<i>Caragana</i>	roots	Ji,Z., Unpublished
KY823560	PHD15	India	No Host info	root nodule	Pandey,R.P.,et al. Unpublished
KY823559	PHD12	India	No Host info	root nodule	Pandey,R.P.,et al. Unpublished
KY823558	PHD3	India	No Host info	root nodule	Pandey,R.P.,et al. Unpublished
KY823557	VAR2.7	India	No Host info	rhizospheric soil	Pandey,R.P.,et al. Unpublished
KX156761	WYCCWR 10195	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.,et al. Unpublished
KX156760	WYCCWR 10192	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.,et al. Unpublished
KX156759	WYCCWR 10201	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.,et al. Unpublished
KX156758	WYCCWR 10206	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.,et al. Unpublished
KX156757	WYCCWR 10203	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.,et al. Unpublished
KX156756	WYCCWR 10191	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.,et al. Unpublished
KJ729249	CCBAU 75263	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729248	CCBAU 75259	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729247	CCBAU 75225	China	<i>Astragalus membranaceus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729246	CCBAU 75224	China	<i>Astragalus membranaceus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729245	CCBAU 75220	China	<i>Astragalus membranaceus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729244	CCBAU 75206	China	<i>Astragalus membranaceus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729243	CCBAU 75179	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729242	CCBAU 75176	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729241	CCBAU 75140	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729240	CCBAU 75138	China	<i>Astragalus membranaceus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729239	CCBAU 75133	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729238	CCBAU 75128	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729237	CCBAU 75122	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729236	CCBAU 75119	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729235	CCBAU 75095	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729234	CCBAU 75093	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729233	CCBAU 75084	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729232	CCBAU 75066	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729231	CCBAU 73255	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729230	CCBAU 73254	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729229	CCBAU 73248	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729228	CCBAU 73245	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729227	CCBAU 73223	China	<i>Hedysarum polybotrys</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729226	CCBAU 73204	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729225	CCBAU 73199	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729224	CCBAU 051169	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729223	CCBAU 03611	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729222	CCBAU 03605	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729221	CCBAU 03603	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729220	CCBAU 03599	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729219	CCBAU 03535	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729218	CCBAU 03524	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729217	CCBAU 03505	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
KJ729216	CCBAU 03485	China	<i>Astragalus mongholicus</i>	root	Yan,H. and Chen,W.F., Unpublished
LT614674	LLAN67	No info	No Host info	root nodule	Leon-Barrios,M., et al. Unpublished
LT614673	LLAN66	No info	No Host info	root nodule	Leon-Barrios,M., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
LT614672	LLAN64	No info	No Host info	root nodule	Leon-Barrios,M., et al. Unpublished
LT614671	LLAN46	No info	No Host info	root nodule	Leon-Barrios,M., et al. Unpublished
KU894856	SAM106	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894855	SAM125	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894854	SAM96	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894853	SAM156	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894852	SAM154	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894851	SAM144	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894850	SAM130	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894849	SAM126	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894848	SAM123	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894847	SAM122	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894846	SAM121	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894845	SAM116	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894844	SAM104	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894843	SAM102	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894842	SAM93	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894841	SAM80	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894840	SAM78	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894839	SAM76	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894838	SAM56	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894837	SAM77	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
KU894836	SAM75	Algeria	<i>Cicer arietinum</i>	nodule	Dekkiche,S., et al. Unpublished
FM203330	CPS13	Spain	<i>Lotus corniculatus</i>	nodules	Lorite,M.J., et al. 2010
KX013240	X96B1	No info	<i>Acacia xanthophloea</i>	No info	Teixeira,H. and Rodriguez-Echeverria,S.,2016
KX013239	X874D	No info	<i>Acacia xanthophloea</i>	No info	Teixeira,H. and Rodriguez-Echeverria,S.,2016
FTPD01000000	No Strain info	No info	No Host info	No info	Brunel,B., 2017
FTPD01000017	No Strain info	No info	No Host info	No info	Brunel,B., 2017
KX790341	SSAC3	New Zealand	<i>Astragalus cicer</i>	root nodules	Li,S., Unpublished
KX790340	SSAC1	New Zealand	<i>Astragalus cicer</i>	root nodules	Li,S., Unpublished
KX774741	SSCV4	New Zealand	<i>Coronilla varia</i>	root nodules	Li,S., Unpublished
KX774740	SSCV3	New Zealand	<i>Coronilla varia</i>	root nodules	Li,S., Unpublished
KX774739	SSCV2	New Zealand	<i>Coronilla varia</i>	root nodules	Li,S., Unpublished
KX774738	SSCV1	New Zealand	<i>Coronilla varia</i>	root nodules	Li,S., Unpublished
KU729782	KHD78	No info	<i>Oxytropis</i> sp.	No info	Ampomah,O.Y., et al. 2016
KU729781	KHD77	No info	<i>Astragalus alpinus</i>	No info	Ampomah,O.Y., et al. 2016
KU729780	KHD75	No info	<i>Astragalus inopinatus</i>	No info	Ampomah,O.Y., et al. 2016
KU729779	KHD74	No info	<i>Astragalus inopinatus</i>	No info	Ampomah,O.Y., et al. 2016
KU729778	KHD73	No info	<i>Astragalus inopinatus</i>	No info	Ampomah,O.Y., et al. 2016
KU729777	KHD70	No info	<i>Oxytropis</i> sp.	No info	Ampomah,O.Y., et al. 2016
KU729776	KHD66	No info	<i>Oxytropis revoluta</i>	No info	Ampomah,O.Y., et al. 2016
KU729775	KHD65	No info	<i>Astragalus alpinus</i>	No info	Ampomah,O.Y., et al. 2016
KU729774	KHD63	No info	<i>Astragalus frigidus</i>	No info	Ampomah,O.Y., et al. 2016
KU729773	KHD52	No info	<i>Oxytropis revoluta</i>	No info	Ampomah,O.Y., et al. 2016
KU729772	KHD34	No info	<i>Astragalus alpinus</i>	No info	Ampomah,O.Y., et al. 2016
KU729771	KHD33	No info	<i>Astragalus alpinus</i>	No info	Ampomah,O.Y., et al. 2016
KU729770	KHD20	No info	<i>Astragalus frigidus</i>	No info	Ampomah,O.Y., et al. 2016
MDFL01000162	ORS 3428	Senegal: Kamb	<i>Acacia senegal</i>	soil	Diagne,N., et al. 2017
LT604903	NFY13	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LT604902	NFY12	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LT604901	NFY11	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LT604900	NTY10	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LT604899	NTY9	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LT604898	NTY7	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LT604897	NTY6	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LT604896	NTY5	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LT604895	NTY4	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LT604894	NTY3	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
MDLH01000000	SEMIA 3007	Mexico	No Host info	soil	Kishi,L.T., et al. Unpublished
MDLH01000001	SEMIA 3007	Mexico	No Host info	soil	Kishi,L.T., et al. Unpublished
EU698008	CCNWNX0152	No info	No Host info	No info	Bi,J.T.,Unpublished
EU698007	CCNWNX0147	No info	No Host info	No info	Bi,J.T.,Unpublished
EU698006	CCNWNX0143	No info	No Host info	No info	Bi,J.T.,Unpublished
EU698005	CCNWNX0104	No info	No Host info	No info	Bi,J.T.,Unpublished
EU698004	CCNWNX0083	No info	No Host info	No info	Bi,J.T.,Unpublished
EU698003	CCNWNX0068	No info	No Host info	No info	Bi,J.T.,Unpublished
EU698002	CCNWNX0058	No info	No Host info	No info	Bi,J.T.,Unpublished
EU698001	CCNWNX0154	No info	No Host info	No info	Bi,J.T.,Unpublished
EU697999	CCNWNX0085	No info	No Host info	No info	Bi,J.T.,Unpublished
EU697995	CCNWNX0062	No info	No Host info	No info	Bi,J.T.,Unpublished
FR850941	R46328	Belgium	<i>Lotus corniculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850937	R45768	Belgium	<i>Lotus corniculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850931	R46321	Belgium	<i>Robinia pseudoacacia</i>	root nodules	De Meyer,S.E. and Willems,A., 2011

Accession #s	Strain	Country	Host	Isolation source	Reference
FR850913	R45976	Belgium	<i>Robinia pseudoacacia</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850911	R45975	Belgium	<i>Robinia pseudoacacia</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850903	R45863	Belgium	<i>Ononis repens</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850890	R45843	Belgium	<i>Ononis repens</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850889	R45834	Belgium	<i>Ononis spinosa</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850884	R45817	Belgium	<i>Lotus corniculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850834	R46209	Belgium	<i>Robinia pseudoacacia</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850804	R45755	Belgium	<i>Lotus corniculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850799	R45754	Belgium	<i>Lotus corniculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850778	R46110	Belgium	<i>Robinia pseudoacacia</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850769	R46072	Belgium	<i>Robinia pseudoacacia</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850768	R46045	Belgium	<i>Lotus corniculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850767	R46043	Belgium	<i>Lotus corniculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850759	R46108	Belgium	<i>Lotus corniculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850756	R46071	Belgium	<i>Robinia pseudoacacia</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850755	R46074	Belgium	<i>Robinia pseudoacacia</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850754	R46044	Belgium	<i>Lotus corniculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850747	R46042	Belgium	<i>Lotus corniculatus</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850729	R45994	Belgium	<i>Robinia pseudoacacia</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850711	R45615	Belgium	<i>Anthyllis vulneraria 1</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
FR850690	R45553	Belgium	<i>Wisteria sinensis</i>	root nodules	De Meyer,S.E. and Willems,A., 2011
EU707169	CCBAU 15514	No info	No Host info	No info	Wang,H., et al. 2008
EU707164	CCBAU 15527	No info	No Host info	No info	Wang,H., et al. 2008
EU707163	CCBAU 15528	No info	No Host info	No info	Wang,H., et al. 2008
EU748943	ML108	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., et al. 2009
EU748942	ML105	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., et al. 2009
EU748941	BD56	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., et al. 2009
EU748940	BA134	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., et al. 2009
EU748939	ML93	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., et al. 2009
EU748938	BA151	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., et al. 2009
EU748937	ML128	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., et al. 2009
EU748936	BD68	Argentina	<i>Lotus tenuis</i>	root nodules	Estrella,M.J., et al. 2009
EU770976	No Strain info	China	<i>Astragalus membranaceus</i>	nodule	Zhao,C.T., et al. 2008
EU770975	No Strain info	China	<i>Astragalus membranaceus</i>	nodule	Zhao,C.T., et al. 2008
EU770974	No Strain info	China	<i>Astragalus capillipes</i>	nodule	Zhao,C.T., et al. 2008
EU514546	SCAU11	No info	No Host info	No info	Li,Q., et al. 2009
EU514545	SCAU9	No info	No Host info	No info	Li,Q., et al. 2009
EU514543	SCAU5	No info	No Host info	No info	Li,Q., et al. 2009
EU514542	SCAU2	No info	No Host info	No info	Li,Q., et al. 2009
EU267716	USDA 3392	No info	No Host info	No info	Chen,W.F., et al. Unpublished
EU267715	USDA 3378	No info	No Host info	No info	Chen,W.F., et al. Unpublished
EU252616	CCBAU 01528	No info	<i>Caragana intermedia</i>	No info	Guan,S.H., et al. Unpublished
EU252615	CCBAU 01519	No info	<i>Caragana intermedia</i>	No info	Guan,S.H., et al. Unpublished
EU252614	CCBAU 01502	No info	<i>Caragana intermedia</i>	No info	Guan,S.H., et al. Unpublished
EU177587	CCBAU 25062	No info	<i>Vicia unijuga</i>	No info	Lei,X., et al. Unpublished
EU130419	CCBAU 11244	China	<i>Caragana microphylla</i>	nodule	Chen,W.F., et al. Unpublished
EU130418	CCBAU 11242	China	<i>Caragana microphylla</i>	nodule	Chen,W.F., et al. Unpublished
EU130414	CCBAU 11208	China	<i>Caragana sinica</i>	nodule	Chen,W.F., et al. Unpublished
DQ450934	No Strain info	China	<i>Glycyrrhiza pallidiflora</i>	No info	Laranjo,M., et al. 2008
DQ450933	No Strain info	China	<i>Astragalus adsurgens</i>	No info	Laranjo,M., et al. 2008
DQ450932	No Strain info	China	<i>Astragalus adsurgens</i>	No info	Laranjo,M., et al. 2008
DQ450931	No Strain info	Senegal	<i>Acacia senegal</i>	No info	Laranjo,M., et al. 2008
DQ450930	No Strain info	Spain	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ450929	NZP2213	New Zealand	<i>Lotus corniculatus</i>	No info	Laranjo,M., et al. 2008
DQ450928	No Strain info	Spain	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ450927	No Strain info	Argentina	<i>Prosopis alba</i>	No info	Laranjo,M., et al. 2008
DQ431752	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431751	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431750	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431749	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431748	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431747	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431746	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431745	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431744	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431743	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431742	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431741	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431740	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431739	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431738	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431737	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431736	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008

Accession #s	Strain	Country	Host	Isolation source	Reference
DQ431735	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431734	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431733	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ431732	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Laranjo,M., et al. 2008
DQ407296	UPM-Ca36	Spain	<i>Cicer arietinum</i>	No info	Rivas,R.,et al. Unpublished
DQ407295	UPM-Ca7	Spain	<i>Cicer arietinum</i>	No info	Rivas,R.,et al. Unpublished
DQ407294	USDA 3592	China	<i>Glycyrrhiza pallidiflora</i>	No info	Rivas,R.,et al. Unpublished
DQ407288	RCAN08	Spain	<i>Cicer arietinum</i>	No info	Rivas,R.,et al. Unpublished
DQ407287	RCAN03	Spain	<i>Cicer arietinum</i>	No info	Rivas,R.,et al. Unpublished
DQ402941	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Rivas,R.,et al. Unpublished
DQ402940	No Strain info	Portugal	<i>Cicer arietinum</i>	No info	Rivas,R.,et al. Unpublished
DQ311093	CCBAU 61158	No info	No Host info	No info	Wang,F.Q., et al. 2007
DQ022841	RCAN13	Spain	<i>Cicer arietinum</i>	No info	Rivas,R.,et al. Unpublished
DQ022840	RCAN10	Spain	<i>Cicer arietinum</i>	No info	Rivas,R., et al. Unpublished
DQ022839	RCAN02	Spain	<i>Cicer arietinum</i>	No info	Rivas,R., et al. Unpublished
AY318755	C-15	No info	No Host info	No info	Asgharzadeh,A. and Hosseini-Mazinani,S.M., Unpublished
AY688619	Ss140	Venezuela	<i>Sesbania sericea</i>	No info	Vinuesa,P., et al. 2005
AY688618	Sp45	Venezuela	<i>Sesbania punicea</i>	No info	Vinuesa,P., et al. 2005
AY688617	Sp42	Venezuela	<i>Sesbania punicea</i>	No info	Vinuesa,P., et al. 2005
AY601525	N2076	No info	No Host info	No info	Nandasena,K.G., et al. 2016
AY601524	WSM2075	No info	No Host info	No info	Nandasena,K.G., et al. 2016
AY601523	WSM2074	No info	No Host info	No info	Nandasena,K.G., et al. 2016
AY601522	WSM2073	No info	No Host info	No info	Nandasena,K.G., et al. 2016
AY601521	WSM1271	No info	No Host info	No info	Nandasena,K.G., et al. 2016
AY601520	WSM1283	No info	No Host info	No info	Nandasena,K.G., et al. 2016
AY601519	WSM1284	No info	No Host info	No info	Nandasena,K.G., et al. 2016
AY601518	WSM1497	No info	No Host info	No info	Nandasena,K.G., et al. 2016
GU201871	Qtx-24	China	<i>Sphaerophysa salsula</i>	No info	Deng,Z.S., Z et al. 2011
GU201870	Zy-2	China	<i>Sphaerophysa salsula</i>	No info	Deng,Z.S., Z et al. 2011
GU201867	Zw-19	China	<i>Sphaerophysa salsula</i>	No info	Deng,Z.S., Z et al. 2011
GU201865	Zw-2-1	China	<i>Sphaerophysa salsula</i>	No info	Deng,Z.S., Z et al. 2011
GU083831	ZW5-3	No info	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010)
GU083829	DB7	No info	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010)
GU083828	YM18-1	No info	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010)
GU083827	MQ15	No info	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010)
GU083825	DBT26	No info	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010)
GU083824	DBT7-3	No info	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010)
GU083823	DBT6-3	No info	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010)
GU083822	DBT14	No info	<i>Sophora alopecuroides</i>	No info	Zhao,L., et al. 2010)
GQ871229	CCNWSX0012-2	China	<i>Thermopsis lanceolata</i>	No info	Zhao,M.L., et al. Unpublished
GQ871228	CCNWGS0015-1	China	<i>Thermopsis lanceolata</i>	No info	Zhao,M.L., et al. Unpublished
GQ871227	CCNWGS0010-1	China	<i>Thermopsis lanceolata</i>	No info	Zhao,M.L., et al. Unpublished
GQ871225	CCNWGS0011	China	<i>Thermopsis lanceolata</i>	No info	Zhao,M.L., et al. Unpublished
GQ871223	CCNWGS0020	China	<i>Thermopsis lanceolata</i>	No info	Zhao,M.L., et al. Unpublished
GQ167295	CCBAU 11270	China	<i>Caragana microphylla</i>	No info	Guan,S., et al. Unpublished
GQ167294	CCBAU 11257	China	<i>Caragana microphylla</i>	No info	Guan,S., et al. Unpublished
GQ167293	CCBAU 11244	China	<i>Caragana microphylla</i>	No info	Guan,S., et al. Unpublished
GQ167292	CCBAU 11242	China	<i>Caragana microphylla</i>	No info	Guan,S., et al. Unpublished
GQ167291	CCBAU 11231	China	<i>Caragana arborescens</i>	No info	Guan,S., et al. Unpublished
GQ167290	CCBAU 11217	China	<i>Caragana sinica</i>	No info	Guan,S., et al. Unpublished
GQ167289	CCBAU 11214	China	<i>Caragana sinica</i>	No info	Guan,S., et al. Unpublished
GQ167288	CCBAU 11208	China	<i>Caragana sinica</i>	No info	Guan,S., et al. Unpublished
GQ167287	CCBAU 11206	China	<i>Caragana sinica</i>	No info	Guan,S., et al. Unpublished
GQ167286	CCBAU 11196	China	<i>Caragana intermedia</i>	No info	Guan,S., et al. Unpublished
GQ167283	USDA 3378	Spain	<i>Cicer arietinum</i>	No info	Guan,S., et al. Unpublished
GQ167281	CCBAU 11185	China	<i>Caragana intermedia</i>	No info	Guan,S., et al. Unpublished
GQ167280	USDA 3392	Spain	<i>Cicer arietinum</i>	No info	Guan,S., et al. Unpublished
GQ167279	CCBAU 11226	China	<i>Caragana arborescens</i>	No info	Guan,S., et al. Unpublished
FJ827066	WSM3865	No info	No Host info	No info	Nandasena,K.G., Unpublished
FJ827065	WSM3862	No info	No Host info	No info	Nandasena,K.G., Unpublished
AF484650	128a	No info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484649	xhj26	No info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484648	xhj7	No info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484646	xhj23	No info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484645	xhj20	No info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
GQ167298	LMG 19008	China	<i>Amorpha fruticosa</i>	No info	Guan,S., et al. Unpublished
GQ167297	LMG 11892	Senegal	<i>Acacia senegal</i>	No info	Guan,S., et al. Unpublished
GQ167296	CCBAU 11299	China	<i>Caragana microphylla</i>	No info	Guan,S., et al. Unpublished
GQ167285	SDW018	China	<i>Astragalus adsurgens</i>	No info	Guan,S., et al. Unpublished
GQ167284	SDW014	China	<i>Astragalus adsurgens</i>	No info	Guan,S., et al. Unpublished
GQ167282	CCBAU 3306	China	<i>Glycyrrhiza pallidiflora</i>	nodule	Guan,S., et al. Unpublished
AF484654	LMG 11892	No info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished
AF484651	LMG 18977	No info	No Host info	No info	Jaftha,J.B. and Steyn,P.L., Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
AF484647	LMG 6125	No info	No Host info	No info	Jaffha,J.B. and Steyn,P.L., Unpublished
EF446927	ACMP18	No info	<i>Astragalus cicer</i>	No info	Malek,W. and Wdowiak-Wrobel,S., Unpublished
EF446917	USDA 3350	No info	<i>Astragalus cicer</i>	No info	Malek,W. and Wdowiak-Wrobel,S., Unpublished
EF446916	CIAM0210	No info	<i>Astragalus cicer</i>	No info	Malek,W. and Wdowiak-Wrobel,S., Unpublished
CP015322	CCNWGS0123	China	<i>Robinia pseudoacacia</i>	No info	Wang,X., et al. Unpublished
EF213662	WSM3883	No info	<i>Biserrula pelecinus</i>	No info	Nandasena,K.G., et al. Unpublished
EF213661	WSM3877	No info	<i>Biserrula pelecinus</i>	No info	Nandasena,K.G., et al. Unpublished
EF213660	WSM3875	No info	<i>Biserrula pelecinus</i>	No info	Nandasena,K.G., et al. Unpublished
EF213659	WSM3872	No info	<i>Biserrula pelecinus</i>	No info	Nandasena,K.G., et al. Unpublished
EF213658	WSM3871	No info	<i>Biserrula pelecinus</i>	No info	Nandasena,K.G., et al. Unpublished
EF213657	WSM3869	No info	<i>Biserrula pelecinus</i>	No info	Nandasena,K.G., et al. Unpublished
EF213656	WSM3866	No info	<i>Biserrula pelecinus</i>	No info	Nandasena,K.G., et al. Unpublished
EF153402	CCBAU 25056	No info	<i>Lespedeza inschanica</i>	No info	Gu,C.T., et al. 2007
EF153401	CCBAU 45224	No info	<i>Lespedeza davurica</i>	No info	Gu,C.T., et al. 2007
KM068067	CCBAU 73277	China	<i>Astragalus mongholicus</i>	No info	Yan,H. and Chen,W.F., Unpublished
KM068063	CCBAU 03474	China	<i>Astragalus mongholicus</i>	No info	Yan,H. and Chen,W.F., Unpublished
KU702941	Lpe15	Russia	<i>Trifolium lupinaster</i>	root nodules	Ivanova,E., et al. Unpublished
KU702940	Lpe12	Russia	<i>Trifolium lupinaster</i>	root nodules	Ivanova,E., et al. Unpublished
KU702939	Lpe11	Russia	<i>Trifolium lupinaster</i>	root nodules	Ivanova,E., et al. Unpublished
KU702937	Lal2	Russia	<i>Trifolium lupinaster</i>	root nodules	Ivanova,E., et al. Unpublished
KU702936	Lal1	Russia	<i>Trifolium lupinaster</i>	root nodules	Ivanova,E., et al. Unpublished
CP015064	WSM1284	Italy	<i>Biserrula pelecinus</i>	root nodule	Haskett,T., et al. 2016
CP015062	CC1192	Israel	<i>Cicer arietinum</i>	No info	Haskett,T., et al. 2016
KC237490	ICMP 19537	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237489	ICMP 19536	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237487	ICMP 19533	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237486	ICMP 19532	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237483	ICMP 19529	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237481	ICMP 19527	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237480	ICMP 19526	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237478	ICMP 19524	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237476	ICMP 19547	New Zealand	<i>Sophora prostrata</i>	No info	Tan,H.W., Het al. 2015
KC237475	ICMP 19546	New Zealand	<i>Sophora prostrata</i>	No info	Tan,H.W., Het al. 2015
KC237473	ICMP 19563	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., Het al. 2015
KC237472	ICMP 19562	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., Het al. 2015
KC237471	ICMP 19561	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., Het al. 2015
KC237470	ICMP 19560	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., Het al. 2015
KC237469	ICMP 19522	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237463	ICMP 19517	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237462	ICMP 19516	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237456	ICMP 14330	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237454	ICMP 19569	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., Het al. 2015
KC237453	ICMP 19568	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., Het al. 2015
KC237452	ICMP 19566	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., Het al. 2015
KC237451	ICMP 19565	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., Het al. 2015
KC237449	ICMP 19558	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., Het al. 2015
KC237448	ICMP 19557	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., Het al. 2015
KC237493	ICMP 19540	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237492	ICMP 19539	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237491	ICMP 19538	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237488	ICMP 19535	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237485	ICMP 19531	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237484	ICMP 19530	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237482	ICMP 19528	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237479	ICMP 19525	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237477	ICMP 19523	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237474	ICMP 19545	New Zealand	<i>Sophora prostrata</i>	No info	Tan,H.W., Het al. 2015
KC237468	ICMP 19521	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237467	ICMP 19520	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237466	ICMP 19519	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237465	ICMP 19518	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237464	ICMP 19551	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237461	ICMP 19515	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237460	ICMP 19514	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237459	ICMP 19513	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237458	ICMP 19512	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237457	ICMP 11736	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237455	ICMP 11719	New Zealand	<i>Sophora tetraptera</i>	No info	Tan,H.W., Het al. 2015
KC237450	ICMP 19564	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., Het al. 2015
KC237447	ICMP 11726	New Zealand	<i>Clanthus puniceus</i>	No info	Tan,H.W., Het al. 2015
KC237446	ICMP 11721	New Zealand	<i>Clanthus puniceus</i>	No info	Tan,H.W., Het al. 2015
KC237445	ICMP 11720	New Zealand	<i>Clanthus puniceus</i>	No info	Tan,H.W., Het al. 2015
KC237444	ICMP 12635	New Zealand	<i>Carmichaelia petriei</i>	No info	Tan,H.W., Het al. 2015

Accession #s	Strain	Country	Host	Isolation source	Reference
KC237443	ICMP 14319	New Zealand	<i>Carmichaelia odorata</i>	No info	Tan,H.W., Het al. 2015
KC237442	ICMP 11722	New Zealand	<i>Carmichaelia nana</i>	No info	Tan,H.W., Het al. 2015
KC237441	ICMP 11708	New Zealand	<i>Carmichaelia nana</i>	No info	Tan,H.W., Het al. 2015
KC237440	ICMP 12649	New Zealand	<i>Carmichaelia petriei</i>	No info	Tan,H.W., Het al. 2015
KC237439	ICMP 19419	New Zealand	<i>Carmichaelia petriei</i>	No info	Tan,H.W., Het al. 2015
KC237438	ICMP 19550	New Zealand	<i>Sophora microphylla</i>	No info	Tan,H.W., Het al. 2015
KC237437	ICMP 19567	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., Het al. 2015
KC237436	ICMP 19559	New Zealand	<i>Sophora longicarinata</i>	No info	Tan,H.W., Het al. 2015
KP193087	RITF741	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J., et al. 2015
KP193083	RITF1220	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J., et al. 2015
JX292068	RITF909	No info	No Host info	No info	Zhu,Y.J., et al. 2015
KJ953900	CCBAU 75238	China	<i>Astragalus mongholicus</i>	No info	Yan,H. and Chen,W.F., Unpublished
KJ953899	CCBAU 03483	China	<i>Astragalus mongholicus</i>	No info	Yan,H. and Chen,W.F., Unpublished
KU216670	NWXJ43	No info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A., et al. 2016
KU216669	NWXJ42	No info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A., et al. 2016
KU216668	NWXJ40	No info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A., et al. 2016
KU216667	NWXJ39	No info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A., et al. 2016
KU216666	NWXJ36	No info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A., et al. 2016
KU216665	NWXJ33	No info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A., et al. 2016
KU216664	NWXJ32	No info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A., et al. 2016
KU216663	NWXJ31	No info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A., et al. 2016
KU216662	NWXJ30	No info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A., et al. 2016
KU216661	NWXJ28	No info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A., et al. 2016
KU216660	NWXJ27	No info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A., et al. 2016
KU216659	NWXJ25	No info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A., et al. 2016
KU216658	NWXJ21	No info	<i>Glycyrrhiza glabra</i>	No info	Mousavi,S.A., et al. 2016
KU216657	NWXJ18	No info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A., et al. 2016
KU216656	NWXJ08	No info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A., et al. 2016
KU216655	NWSX25	No info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A., et al. 2016
KU216654	NWSX24	No info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A., et al. 2016
KU216653	NWSX23	No info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A., et al. 2016
KU216652	NWSX22	No info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A., et al. 2016
KU216651	NWSX20	No info	<i>Glycyrrhiza sp.</i>	No info	Mousavi,S.A., et al. 2016
KU216650	NWSX19	No info	<i>Glycyrrhiza sp.</i>	No info	Mousavi,S.A., et al. 2016
KU216649	NWSX06	No info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A., et al. 2016
KU216648	NWNX05	No info	<i>Glycyrrhiza sp.</i>	No info	Mousavi,S.A., et al. 2016
KU216647	NWGS09	No info	<i>Glycyrrhiza sp.</i>	No info	Mousavi,S.A., et al. 2016
KU216646	NWGS05	No info	<i>Glycyrrhiza sp.</i>	No info	Mousavi,S.A., et al. 2016
KU216645	NWGS03	No info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A., et al. 2016
KU216644	NWGS01	No info	<i>Glycyrrhiza uralensis</i>	No info	Mousavi,S.A., et al. 2016
LPWA01000000	UFLA 01-765	Brazil	<i>Leucaena leucocephala</i>	Soil from zinc mining area	Rangel,W.M., et al. 2016
KT820417	CPN32	India	<i>Cicer arietinum</i>	root nodule	Singh,R.P., et al. Unpublished
KT729539	TUTAHSA144	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K.,et al. Unpublished
KT729538	TUTAHSA150	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K.,et al. Unpublished
KT729537	TUTAHSA57	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K.,et al. Unpublished
KT729532	TUTAHSA41	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K.,et al. Unpublished
KT729530	TUTAHSA45	South Africa	<i>Arachis hypogaea</i>	root nodules	Jaiswal,S.K.,et al. Unpublished
JN129449	SCAU27	China	<i>Astragalus ernestii</i>	No info	Zhou,S., et al. Unpublished
EU514544	SCAU7	No info	No Host info	No info	Li,Q.,et al. 2009
KJ656146	No Strain info	Mexico	No Host info	rhizosphere from Zea mays	Rosenblueth,M., et al. Unpublished
CCMY01000000	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
LN824202	Ala-3	Spain	<i>Anagyris latifolia</i>	southern Tenerife ravine	Martinez-Hidalgo,P., Unpublished
LPWA01000161	UFLA 01-765	Brazil	<i>Leucaena leucocephala</i>	Soil from zinc mining area	Rangel,W.M., et al. 2016
KR075962	S6-271	Singapore	<i>Jatropha sp.</i>	stem	Madhaiyan,M., et al. 2015
KR075961	S2-45	Singapore	<i>Jatropha sp.</i>	stem	Madhaiyan,M., et al. 2015
LN713527	CCANP133	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713526	CCANP130	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713525	CCANP122	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713524	CCANP117	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713523	CCANP113	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713522	CCANP96	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713521	CCANP95	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713520	CCANP87	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713519	CCANP84	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713518	CCANP79	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713517	CCANP68	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713516	CCANP64	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713515	CCANP63	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713514	CCANP61	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713513	CCANP58	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713512	CCANP55	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713511	CCANP48	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713510	CCANP38	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015

Accession #s	Strain	Country	Host	Isolation source	Reference
LN713509	CCANP35	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713508	CCANP34	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713507	CCANP33	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713506	CCANP29	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713505	CCANP20	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713504	CCANP14	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713503	CCANP11	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713502	CCANP3	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
LN713501	CCANP1	No info	<i>Cicer canariense</i>	root nodules	Martinez-Hidalgo,P., et al. 2015
CCND01000000	No Strain info	Senegal	<i>Acacia senegal</i>	No info	Moulin,Lionel., 2014
CCND01000010	No Strain info	Senegal	<i>Acacia senegal</i>	No info	Moulin,Lionel., 2014
JQ339928	CCBAU 33477	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339927	CCBAU 33423	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339926	CCBAU 33464	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339925	CCBAU 33385	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339924	CCBAU 33406	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339923	CCBAU 33436	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339922	CCBAU 35339	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339921	CCBAU 23335	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339920	CCBAU 23361	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339919	CCBAU 33443	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339918	CCBAU 35350	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339917	CCBAU 33475	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339916	CCBAU 33455	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339915	CCBAU 33451	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339914	CCBAU 35343	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339913	CCBAU 35356	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339912	CCBAU 23359	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339911	CCBAU 33460	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339910	CCBAU 35331	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339909	CCBAU 33395	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339908	CCBAU 33431	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339907	CCBAU 33359	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339906	CCBAU 33454	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339905	CCBAU 35357	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339904	CCBAU 33366	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339903	CCBAU 23368	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339902	CCBAU 33470	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339901	CCBAU 33404	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339900	CCBAU 35340	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. 2013
JQ339899	CCBAU 33430	China	<i>Astragalus sinicus</i>	No info	Degefu,T., et al. 2011
GQ847977	AC100e	Ethiopia	<i>Acacia senegal</i>	root nodule	Degefu,T., et al. 2011
GQ847976	AC100c	Ethiopia	<i>Acacia senegal</i>	root nodule	Degefu,T., et al. 2011
GQ847975	AC99e	Ethiopia	<i>Sesbania sesban</i>	root nodule	Degefu,T., et al. 2011
GQ847974	AC99c	Ethiopia	<i>Sesbania sesban</i>	root nodule	Degefu,T., et al. 2011
GQ847973	AC99b	Ethiopia	<i>Sesbania sesban</i>	root nodule	Degefu,T., et al. 2011
GQ847972	AC99a	Ethiopia	<i>Sesbania sesban</i>	root nodule	Degefu,T., et al. 2011
GQ847971	AC98e	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al. 2011
GQ847970	AC98c	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al. 2011
GQ847969	AC98b	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al. 2011
GQ847968	AC98a	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al. 2011
GQ847967	AC39e2	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al. 2011
GQ847966	AC39e1	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al. 2011
GQ847965	AC39d	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al. 2011
GQ847964	AC39c1	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al. 2011
GQ847963	AC39a	Ethiopia	<i>Acacia abyssinica</i>	root nodule	Degefu,T., et al. 2011
GQ847962	AC28c2	Ethiopia	<i>Acacia tortilis</i>	root nodule	Degefu,T., et al. 2011
GQ847961	AC21c2	Ethiopia	<i>Acacia tortilis</i>	root nodule	Degefu,T., et al. 2011
GQ847960	AC21a2	Ethiopia	<i>Acacia tortilis</i>	root nodule	Degefu,T., et al. 2011
KP413108	RITF1206	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J., et al. Unpublished
KP413107	RITF903	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J., et al. Unpublished
KP413106	RITF731	China	<i>Acacia melanoxylon</i>	root nodules	Zhu,Y.J., et al. Unpublished
JF428151	Lo5-9	Mexico	<i>Lotus oroboides</i>	No info	Ardley,J.K., et al. 2012
KP219173	SCAUD6	China	<i>Desmodium sequax</i>	root nodule	Xu,K. and Zhang,X., Unpublished
GU220806	CCNWXJ 40-4	China	<i>Alhagi sparsifolia</i>	No info	Chen,W.M., et al. 2011
GU220805	CCNWXJ 16-1	China	<i>Alhagi sparsifolia</i>	No info	Chen,W.M., et al. 2011
GU220804	CCNWXJ 32-3	China	<i>Alhagi sparsifolia</i>	No info	Chen,W.M., et al. 2011
AL672111	R7A	No info	No Host info	No info	Sullivan,J.T., et al. 2002
AL672114	R7A	No info	No Host info	No info	Sullivan,J.T., et al. 2002
CAAF010000000	STM 4661	No info	No Host info	No info	Unknown author, No title, No journal
CAUM01000000	STM 2683	No info	No Host info	No info	Genoscope,C.E.A., 2013
KM018138	ICMP 12638	New Zealand	<i>Psoralea pinnata</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018137	ICMP 11539	New Zealand	<i>Psoralea pinnata</i>	root nodule	Liu,W.Y.Y., Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
KM018136	ICMP 19852	New Zealand	<i>Robinia pseudoacacia</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018135	ICMP 19851	New Zealand	<i>Robinia pseudoacacia</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018134	ICMP 19850	New Zealand	<i>Robinia pseudoacacia</i>	root nodule	Liu,W.Y.Y., Unpublished
KM018133	ICMP 13193	New Zealand	<i>Robinia pseudoacacia</i>	root nodule	Liu,W.Y.Y., Unpublished
KP193088	RITF1217	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J., et al. Unpublished
KP193086	RITF1218	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J., et al. Unpublished
KP193085	RITF721	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J., et al. Unpublished
KP193084	RITF905	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J., et al. Unpublished
KP193082	RITF902	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J., et al. Unpublished
KP193081	RITF742	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J., et al. Unpublished
KP193080	RITF1214	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J., et al. Unpublished
KP193079	RITF908	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J., et al. Unpublished
KP193078	RITF1215	China	<i>Acacia melanoxylon</i>	rood nodules	Zhu,Y.J., et al. Unpublished
KM396555	CCBAU 71358	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM396552	CCBAU 71320	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM396551	CCBAU 71303	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM396550	CCBAU 11528	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM396549	CCBAU 11523	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM396548	CCBAU 11510	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM396545	CCBAU 03430	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM396544	CCBAU 03427	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM396543	CCBAU 03423	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM396541	CCBAU 03418	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM396538	CCBAU 03405	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
KM396537	CCBAU 03399	China	<i>Sophora flavescens</i>	No info	Jiao,Y. and Chen,W., Unpublished
LN558860	9H	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558859	K36	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558858	K28b	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558857	K28a	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558856	K27b	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558855	K27a	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558854	K26	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558853	K21	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558852	K18	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558851	K13a	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558850	D35	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558849	D34	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558848	D27	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558847	D26a	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558846	D25a	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558845	D23	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558844	D22a	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558843	D21b	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558842	D17	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558841	D15	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
LN558840	D11b	No info	No Host info	No info	Zaheer,A. and Sajjad Mirza,M., Unpublished
FJ481883	CCNWXJ05-1	China	<i>Alhagi sparsifolia</i>	No info	Chen,W.M., Zet al. 2010
FJ481882	CCNWXJ05-2	China	<i>Alhagi sparsifolia</i>	No info	Chen,W.M., Zet al. 2010
FJ481881	CCNWXJ12-1	China	<i>Alhagi sparsifolia</i>	No info	Chen,W.M., Zet al. 2010
FJ481880	CCNWX44-1	China	<i>Alhagi sparsifolia</i>	No info	Chen,W.M., Zet al. 2010
FJ481879	CCNWX33-1	China	<i>Alhagi sparsifolia</i>	No info	Chen,W.M., Zet al. 2010
CCMZ01000000	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
CCMZ01000028	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
CCNE01000000	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
CCNE01000009	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
CCNC01000000	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
CCNC01000179	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
CCNB01000000	No Strain info	Senegal	<i>Acacia senegal</i>	No info	Moulin,Lionel., 2014
CCNB01000015	No Strain info	Senegal	<i>Acacia senegal</i>	No info	Moulin,Lionel., 2014
CCMY01000077	No Strain info	Senegal	<i>Acacia seyal</i>	No info	Moulin,Lionel., 2014
CCNA01000000	No Strain info	Senegal	<i>Acacia senegal</i>	No info	Moulin,Lionel., 2014
CCNA01000013	No Strain info	Senegal	<i>Acacia senegal</i>	No info	Moulin,Lionel., 2014
KJ649521	STM8089	Malaysia	<i>Acacia mangium</i>	root nodule	Perrineau,M.M., et al. 2014
HQ316771	CCBAU 83994	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012
HQ316770	CCBAU 83980	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012
HQ316769	CCBAU 83979	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012
HQ316768	CCBAU 83978	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012
HQ316767	CCBAU 83963	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012
HQ316766	CCBAU 83953	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012
HQ316765	CCBAU 83951	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012
HQ316764	CCBAU 83948	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012
HQ316763	CCBAU 83943	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012
HQ316762	CCBAU 83939	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012

Accession #s	Strain	Country	Host	Isolation source	Reference
HQ316761	CCBAU 83935	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012
HQ316760	CCBAU 83923	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012
HQ316759	CCBAU 83919	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012
HQ316758	CCBAU 83908	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012
HQ316757	CCBAU 831015	China	<i>Cicer arietinum L.</i>	No info	Zhang,J.J., et al. 2012
KF649627	BIHB 4158	No info	<i>Caragana jubata</i>	root nodules	Gulati,A., et al. Unpublished
KF649626	BIHB 4154	No info	<i>Caragana jubata</i>	root nodules	Gulati,A., et al. Unpublished
KF649625	BIHB 4151	No info	<i>Caragana jubata</i>	root nodules	Gulati,A., et al. Unpublished
KF806559	2-5-1	China	<i>Astragalus sinicus</i>	host nodules	Liu,X. Sr., Unpublished
KF806558	2-10-2	China	<i>Astragalus sinicus</i>	host nodules	Liu,X. Sr., Unpublished
KC854801	SwgP1N3	New Zealand	<i>Swainsona galegifolia</i>	No info	Tan,H.W., et al. 2013
KC854800	SwgP1N1	New Zealand	<i>Swainsona galegifolia</i>	No info	Tan,H.W., et al. 2013
AGSN01000000	CCNWGS0123	No info	<i>Robinia pseudoacacia</i>	host nodules	Hao,X., et al. 2012
KF802659	MM5364	No info	<i>Psoralea usitata</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802658	MM5343	No info	<i>Psoralea rigidula</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802657	MM5336	No info	<i>Psoralea pinnata</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802656	OD119	No info	<i>Psoralea laxa</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802655	MM5462	No info	<i>Psoralea congesta</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802654	MM5360	No info	<i>Psoralea asarina</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802653	OD15	No info	<i>Psoralea asarina</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802649	MM5675	No info	<i>Otholobium zeyheri</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802648	MM5357	No info	<i>Otholobium virgatum</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802647	MM5333	No info	<i>Otholobium virgatum</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802646	MM5370	No info	<i>Otholobium sp.</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802645	MM5369	No info	<i>Argyrobium lunare</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802644	MM5382	No info	<i>Otholobium hirtum</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802643	MM5376	No info	<i>Otholobium hirtum</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802642	MM5334	No info	<i>Otholobium hirtum</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802641	OD32	No info	<i>Otholobium hirtum</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802640	OD42	No info	<i>Otholobium bracteolatum</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802637	MM5377	No info	<i>Indigofera venusta</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802631	MM5734	No info	<i>Aspalathus spicata</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802630	OD26	No info	<i>Aspalathus uniflora</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802629	MM5440	No info	<i>Aspalathus spicata</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802627	MM5757	No info	<i>Aspalathus perfoliata</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802626	MM5372	No info	<i>Aspalathus laricifolia</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802625	MM5352	No info	<i>Aspalathus ericifolia</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802624	OD31	No info	<i>Aspalathus ericifolia</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802623	OD13	No info	<i>Aspalathus cordata</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802622	CS13166	No info	<i>Aspalathus ciliaris</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802621	MM5361	No info	<i>Aspalathus ciliaris</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802620	OD108	No info	<i>Aspalathus ciliaris</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802617	MM5618	No info	<i>Aspalathus bracteata</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802616	MM5397	No info	<i>Aspalathus aurantiaca</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802615	OD18	No info	<i>Aspalathus astroites</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802614	OD47	No info	<i>Argyrobium velutinum</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802613	OD48	No info	<i>Argyrobium lunare</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF802612	OD14	No info	<i>Argyrobium sp.</i>	No info	Lemaire,B. and Muasya,M., Unpublished
KF859878	ISA0605	China	<i>Callerya nitida</i>	root nodule	Liu,L.,et al. Unpublished
AYXF01000015	L103C105A0	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYXE01000019	L103C119B0	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYXD01000017	L103C120A0	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYXC01000017	L103C131B0	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYXA01000017	L2C054A000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYWZ01000024	L2C066B000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYWY01000029	L2C067A000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYWX01000023	L2C084A000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYWU01000022	L48C026A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYWW01000021	L2C085B000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYWV01000019	L2C089B000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYXF01000000	L103C105A0	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYXE01000000	L103C119B0	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYXD01000000	L103C120A0	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYXC01000000	L103C131B0	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYXA01000000	L2C054A000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYWZ01000000	L2C066B000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYWY01000000	L2C067A000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYWX01000000	L2C084A000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYWU01000000	L48C026A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYWW01000000	L2C085B000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYWV01000000	L2C089B000	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYWT01000000	LNHC209A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished
AYWQ01000000	LNHC229A00	No info	No Host info	No info	Porter,S.S., et al. Unpublished

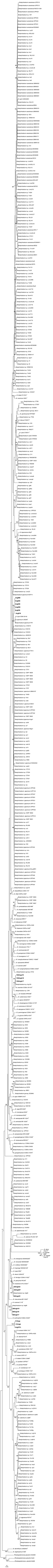
Accession #s	Strain	Country	Host	Isolation source	Reference
AYWT01000023	LNHC209A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWS01000000	LNHC220B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWQ01000030	LNHC229A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWR01000000	LNHC221B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWS01000018	LNHC220B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWR01000011	LNHC221B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWO01000000	LNHC252B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWP01000000	LNHC232B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWP01000015	LNHC232B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWO01000056	LNHC252B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWN01000000	LNJC372A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWM01000000	LNJC374B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWN01000017	LNJC372A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWM01000016	LNJC374B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWK01000000	LNJC384A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWK01000004	LNJC384A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWI01000000	LNJC391B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWG01000000	LNJC395A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWH01000000	LNJC394B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWI01000021	LNJC391B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWG01000006	LNJC395A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWH01000012	LNJC394B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWE01000000	LNJC399B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWE01000005	LNJC399B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWC01000000	LNJC405B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWB01000000	LSHC412B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWB01000014	LSHC412B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWC01000043	LNJC405B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVY01000000	LSHC420B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWA01000000	LSHC414A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVZ01000000	LSHC416B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVZ01000020	LSHC416B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYWA01000025	LSHC414A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVY01000043	LSHC420B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVX01000000	LSHC422A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVW01000000	LSHC424B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVX01000013	LSHC422A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVV01000000	LSHC426A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVW01000020	LSHC424B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVT01000000	LSHC440A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVV01000019	LSHC426A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVT01000022	LSHC440A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVS01000000	LSHC440B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVQ01000000	LSJC264A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVR01000000	LSJC255A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVS01000022	LSHC440B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVR01000015	LSJC255A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVP01000000	LSJC265A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVQ01000047	LSJC264A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVP01000025	LSJC265A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVO01000000	LSJC268A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVO01000013	LSJC268A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVN01000000	LSJC269B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVL01000000	LSJC280B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVN01000024	LSJC269B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVL01000031	LSJC280B00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVM01000000	LSJC277A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVK01000046	LSJC285A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
AYVM01000020	LSJC277A00	No info	No Host info	No info	Porter, S.S., et al. Unpublished
KF636526	CPN52	India	<i>Cicer arietinum</i>	root nodule	Singh, R.P., et al. Unpublished
KF636525	CPN45	India	<i>Cicer arietinum</i>	root nodule	Singh, R.P., et al. Unpublished
KF636524	CPN39	India	<i>Cicer arietinum</i>	root nodule	Singh, R.P., et al. Unpublished
KF636523	CPN35	India	<i>Cicer arietinum</i>	root nodule	Singh, R.P., et al. Unpublished
KF636522	CPN34	India	<i>Cicer arietinum</i>	root nodule	Singh, R.P., et al. Unpublished
KF636521	CPN32	India	<i>Cicer arietinum</i>	root nodule	Singh, R.P., et al. Unpublished
KF636520	CPN29	India	<i>Cicer arietinum</i>	root nodule	Singh, R.P., et al. Unpublished
KF636519	CPN22	India	<i>Cicer arietinum</i>	root nodule	Singh, R.P., et al. Unpublished
KF636518	CPN21	India	<i>Cicer arietinum</i>	root nodule	Singh, R.P., et al. Unpublished
KF636517	CPN16	India	<i>Cicer arietinum</i>	root nodule	Singh, R.P., et al. Unpublished
KF636516	CPN10	India	<i>Cicer arietinum</i>	root nodule	Singh, R.P., et al. Unpublished
KF636515	CPN8	India	<i>Cicer arietinum</i>	root nodule	Singh, R.P., et al. Unpublished
KF636514	CPN7	India	<i>Cicer arietinum</i>	root nodule	Singh, R.P., et al. Unpublished
KF636513	CPN6	India	<i>Cicer arietinum</i>	root nodule	Singh, R.P., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
KF636512	CPN3	India	<i>Cicer arietinum</i>	root nodule	Singh,R.P., et al. Unpublished
KF636511	CPN1	India	<i>Cicer arietinum</i>	root nodule	Singh,R.P., et al. Unpublished
JX316107	U510	Australia	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013
JX316106	No Strain info	New Zealand	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013
JX316105	LuLit12	Uruguay	<i>Lotus uliginosus</i>	nodule	Batista,L., et al. 2013
CAAF010000045	STM 4661	No info	No Host info	No info	Genoscope -,C.E.A., 2013
KC521438	SBB-POLY	No info	No Host info	Meganerilla bactericola	Summers,M.M., et al. 2013
AP012557	NZP2037	No info	No Host info	No info	Kasai-Maita,H., et al. 2013
CAUM01000170	STM 2683	No info	No Host info	No info	Genoscope -,C.E.A., D2013
JQ033941	LM-18-Lamego	Portugal	No Host info	root nodules	Brigido,C. and Oliveira,S., Unpublished
JQ033940	G-10-Guarda	Portugal	No Host info	root nodules	Brigido,C. and Oliveira,S., Unpublished
JQ033939	CR-32-Caldas da Rai	Portugal	No Host info	root nodules	Brigido,C. and Oliveira,S., Unpublished
JQ033938	C-25-Coimbra	Portugal	No Host info	root nodules	Brigido,C. and Oliveira,S., Unpublished
JQ033937	C-3-Coimbra	Portugal	No Host info	root nodules	Brigido,C. and Oliveira,S., Unpublished
JQ033936	BR-8-Braganca	Portugal	No Host info	root nodules	Brigido,C. and Oliveira,S., Unpublished
JQ033935	LMS-1	Portugal	No Host info	root nodules	Brigido,C. and Oliveira,S., Unpublished
JQ033934	STR-2-Santarem	Portugal	No Host info	root nodules	Brigido,C. and Oliveira,S., Unpublished
JQ033933	S-26-Sintra	Portugal	No Host info	root nodules	Brigido,C. and Oliveira,S., Unpublished
JQ033932	LM-9-Lamego	Portugal	No Host info	root nodules	Brigido,C. and Oliveira,S., Unpublished
JQ033931	G-55-Guarda	Portugal	No Host info	root nodules	Brigido,C. and Oliveira,S., Unpublished
JQ033930	C-9-Coimbra	Portugal	No Host info	root nodules	Brigido,C. and Oliveira,S., Unpublished
JQ364749	CCNWSX691	China	<i>Coronilla varia</i>	root nodule	Yang,W., et al. 2013
JQ364748	CCNWSX661	China	<i>Coronilla varia</i>	root nodule	Yang,W., et al. 2013
JF273843	CCNWSX672	China	<i>Coronilla varia</i>	No info	Yang,W., et al. 2013
JF273842	CCNWSX667	China	<i>Coronilla varia</i>	No info	Yang,W., et al. 2013
JF273840	CCNWSX622	China	<i>Coronilla varia</i>	No info	Yang,W., et al. 2013
JQ362371	SCAU215	China	<i>Leucaena leucocephala</i>	No info	Xu,K.W., et al. 2013
JQ362365	SCAU202A	China	<i>Leucaena leucocephala</i>	No info	Xu,K.W., et al. 2013
JX885706	CKR16	Iran	<i>Cicer arietinum</i>	nodules	Alavian,E., et al. Unpublished
JX885705	CB8	Iran	<i>Cicer arietinum</i>	nodules	Alavian,E., et al. Unpublished
FJ824661	CCBAU 25300	China	<i>Astragalus adsurgens</i>	root nodule	Zhao,C.T., et al. 2012
EU877532	CCBAU 65327	No info	No Host info	No info	Lu,Y.L., Cet al. 2009
EU872237	CCBAU 65336	No info	No Host info	No info	Lu,Y.L., Cet al. 2009
EU872236	CCBAU 65324	No info	No Host info	No info	Lu,Y.L., Cet al. 2009
EU872235	CCBAU 65323	No info	No Host info	No info	Lu,Y.L., Cet al. 2009
EU872234	CCBAU 65321	No info	No Host info	No info	Lu,Y.L., Cet al. 2009
EU418427	CCBAU 25288	No info	No Host info	No info	Zhao,C.T., et al. 2008
EU418426	CCBAU 45272	No info	No Host info	No info	Zhao,C.T., et al. 2008
EU418425	CCBAU 25282	No info	No Host info	No info	Zhao,C.T., et al. 2008
EU418424	CCBAU 45265	No info	No Host info	No info	Zhao,C.T., et al. 2008
EU418423	CCBAU 01550	No info	No Host info	No info	Zhao,C.T., et al. 2008
EU418422	CCBAU 01545	No info	No Host info	No info	Zhao,C.T., et al. 2008
EU418421	CCBAU 73184	No info	No Host info	No info	Zhao,C.T., et al. 2008
EU418420	CCBAU 11166	No info	No Host info	No info	Zhao,C.T., et al. 2008
EU418419	CCBAU 03074	No info	No Host info	No info	Zhao,C.T., et al. 2008
JQ963082	USDA 4779	China	<i>Astragalus sinicus</i>	No info	Tan,H.W., et al. 2012
JQ963081	No Strain info	New Zealand	<i>Clanthus puniceus</i>	No info	Tan,H.W., et al. 2012
JQ963080	CnP1N1	New Zealand	<i>Carmichaelia nana</i>	No info	Tan,H.W., et al. 2012
JQ963079	CmP1N1	New Zealand	<i>Carmichaelia monroi</i>	No info	Tan,H.W., et al. 2012
JQ963078	Ca004	New Zealand	<i>Carmichaelia australis</i>	No info	Tan,H.W., et al. 2012
JQ963077	No Strain info	New Zealand	<i>Carmichaelia australis</i>	No info	Tan,H.W., et al. 2012
JQ963076	CaP1N1	New Zealand	<i>Carmichaelia australis</i>	No info	Tan,H.W., et al. 2012
JQ963075	No Strain info	New Zealand	<i>Montigena novae-zelandiae</i>	No info	Tan,H.W., et al. 2012
JQ963074	MonP4N1	New Zealand	<i>Montigena novae-zelandiae</i>	No info	Tan,H.W., et al. 2012
JQ963073	MonP2N1	New Zealand	<i>Montigena novae-zelandiae</i>	No info	Tan,H.W., et al. 2012
JQ963072	MonP1N1	New Zealand	<i>Montigena novae-zelandiae</i>	No info	Tan,H.W., et al. 2012
JX292081	RITF1564	No info	No Host info	No info	Yajing,D., et al. Unpublished
JX292075	RITF1213	No info	No Host info	No info	Yajing,D., et al. Unpublished
JX292074	RITF1212	No info	No Host info	No info	Yajing,D., et al. Unpublished
JX292067	RITF907	No info	No Host info	No info	Yajing,D., et al. Unpublished
JX292063	RITF712	No info	No Host info	No info	Yajing,D., et al. Unpublished
JX292062	RITF711	No info	No Host info	No info	Yajing,D., et al. Unpublished
JX079567	No Strain info	India	No Host info	contaminated soil BG-1	Lal,R., et al. Unpublished
JX064535	ORS 3359	Senegal	<i>Acacia seyal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX064534	ORS 3628	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX064533	ORS 3610	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX064532	ORS 3607	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX064531	ORS 3604	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX064530	ORS 3603	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX064529	ORS 3600	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX064528	ORS 3598	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX064527	ORS 3596	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX064526	ORS 3593	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished

Accession #s	Strain	Country	Host	Isolation source	Reference
JX064525	ORS 3588	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX064524	ORS3578	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX064523	ORS 3576	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX064522	ORS 3574	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JX064521	ORS 3573	Senegal	<i>Acacia senegal</i>	root nodule	Bakhoun,N., et al. Unpublished
JQ885917	CCBAU 41335	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. Unpublished
JQ885916	CCBAU 41350	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. Unpublished
JQ885915	CCBAU 41384	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. Unpublished
JQ885914	CCBAU 41403	China	<i>Astragalus sinicus</i>	No info	Zheng,W.T., et al. Unpublished
JN991121	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
JN991120	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
JN991119	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
JN991118	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
JN991117	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
JN991116	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
JN991115	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
JN991114	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
JN991113	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
JN991112	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
JN991111	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
JN991110	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
JN991109	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
JN991106	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
JN991104	No Strain info	China	<i>Caragana intermedia</i>	No info	Li,M., et al. 2012
GQ500641	N441	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500640	N3	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500678	S792	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500677	U510	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500676	S1302	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500675	S1274	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500674	S956	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500673	S948	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500672	S828	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500671	S789	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500670	S786	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500669	S673	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500668	N441	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500667	N362	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500666	N141	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500664	N105	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500663	N33	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
GQ500662	N3	No info	<i>Lotus corniculatus</i>	nodule	Sotelo,M., et al. 2011
FJ745298	ORS 3404	Senegal	<i>Acacia seyal</i>	root nodule	Diouf,D., et al. 2009
FJ745297	ORS 3369	Senegal	<i>Acacia seyal</i>	root nodule	Diouf,D., et al. 2009
FJ745296	ORS 3365	Senegal	<i>Acacia seyal</i>	root nodule	Diouf,D., et al. 2009
FJ745295	ORS 3356	Senegal	<i>Acacia seyal</i>	root nodule	Diouf,D., et al. 2009
FJ745294	ORS 3355	Senegal	<i>Acacia seyal</i>	root nodule	Diouf,D., et al. 2009
FJ745293	ORS 3324	Senegal	<i>Acacia seyal</i>	root nodule	Diouf,D., et al. 2009
FJ745292	ORS 1096	Senegal	<i>Acacia tortilis</i>	root nodule	Diouf,D., et al. 2009
EU849574	CCNWYC 147	China	<i>Robinia pseudoacacia</i>	No info	Wei,G., et al. 2009
EU849573	CCNWYC 132	China	<i>Robinia pseudoacacia</i>	No info	Wei,G., et al. 2009
EU849572	CCNWYC 120	China	<i>Robinia pseudoacacia</i>	No info	Wei,G., et al. 2009
EU849571	CCNWYC116	China	<i>Robinia pseudoacacia</i>	No info	Wei,G., et al. 2009
EU849569	CCNWYC131	China	<i>Robinia pseudoacacia</i>	No info	Wei,G., et al. 2009
EU849568	CCNWYC 124	China	<i>Robinia pseudoacacia</i>	No info	Wei,G., et al. 2009
EU849570	CCNWYC 115	China	<i>Robinia pseudoacacia</i>	No info	Wei,G., et al. 2009
JF907684	CCNWGS0123	China	<i>Robinia pseudoacacia</i>	nodules	Osama,A.M., et al. Unpublished
AGSN01000010	CCNWGS0123	No info	<i>Robinia pseudoacacia</i>	nodules	Hao,X., et al. 2012
AB519450	No Strain info	Japan	black locust	nodules	Shiraishi,A., et al. 2010
GQ503352	Rcd301	No info	No Host info	No info	Agrawal,P., Det al. 2009
FM203337	M75P	Spain	<i>Lotus maritimus</i>	root nodules	Lorite,M.J., et al. 2010
FM203336	GMSS11	Spain	<i>Lotus tenuis</i>	root nodules	Lorite,M.J., et al. 2010
FM203335	GGs23	Spain	<i>Lotus tenuis</i>	root nodules	Lorite,M.J., et al. 2010
FM203334	GGs20	Spain	<i>Lotus tenuis</i>	root nodules	Lorite,M.J., et al. 2010
FM203333	GAC138P	Spain	<i>Lotus maritimus</i>	root nodules	Lorite,M.J., et al. 2010
FM203332	GA16P	Spain	<i>Lotus maritimus</i>	root nodules	Lorite,M.J., et al. 2010
FM203331	CPS13	Spain	<i>Lotus corniculatus</i>	root nodules	Lorite,M.J., et al. 2010
FM203329	CPS12	Spain	<i>Lotus corniculatus</i>	root nodules	Lorite,M.J., et al. 2010
FM203328	CMSS27	Spain	<i>Lotus corniculatus</i>	root nodules	Lorite,M.J., et al. 2010
FM203327	GGs10	Spain	<i>Lotus corniculatus</i>	root nodules	Lorite,M.J., et al. 2010
FM203326	GGs20	Spain	<i>Lotus corniculatus</i>	root nodules	Lorite,M.J., et al. 2010
FN397449	GMSS22	Spain	<i>L. tenuis</i>	root nodules	Lorite,M.J., et al. 2010
FN397448	M72P	Spain	<i>L. corniculatus crassifolius</i>	root nodules	Lorite,M.J., et al. 2010

Accession #s	Strain	Country	Host	Isolation source	Reference
FN397447	GMSS1	Spain	<i>L. tenuis</i>	root nodules	Lorite,M.J., et al. 2010
FJ481884	CCNWXJ12-2	China	<i>Alhagi sparsifolia</i>	No info	Chen,W.M., et al. 2010
EU812079	Sp45	No info	<i>Sesbania punicea</i>	root nodules	Cummings,S.P., Unpublished
EU812078	KFR647	No info	No Host info	No info	Cummings,S.P., Unpublished
AB367742	MAFF 210245	No info	No Host info	No info	Islam,M.S. and Kawasaki,H., et al.Unpublished
Z95228	INPA78B	No info	<i>Leucaena diversifolia</i>	No info	Haukka,K., et al, 1998
Z95226	DWO366	No info	<i>Acacia polyacantha</i>	No info	Haukka,K., et al, 1998
Z95225	HAMBI1487	No info	<i>Acacia senegal</i>	No info	Haukka,K., et al, 1998
Z95227	BR3804	No info	<i>Chamaecrista ensiformis</i>	No info	Haukka,K., et al, 1998
AJ457918	Rch-981	Morocco	<i>Cicer arietinum</i>	No info	Maatallah,J.,et al. Unpublished
AJ457917	Rch-9865	Morocco	<i>Cicer arietinum</i>	No info	Maatallah,J.,et al. Unpublished
AJ457916	Rch-984	Morocco	<i>Cicer arietinum</i>	No info	Maatallah,J.,et al. Unpublished
AJ457915	Rch-9816	Morocco	<i>Cicer arietinum</i>	No info	Maatallah,J.,et al. Unpublished
AJ457914	Rch-10B	Morocco	<i>Cicer arietinum</i>	No info	Maatallah,J.,et al. Unpublished
AJ457913	IC2091	No info	<i>Cicer arietinum</i>	No info	Maatallah,J.,et al. Unpublished
AJ457912	IC60	No info	<i>Cicer arietinum</i>	No info	Maatallah,J.,et al. Unpublished
NIBRBAC000500504	NIBRBAC000500504	Japan	Soil	Soil	Jung,Y.J., Kim,H.J. and Hur,M., unpublished

Supplementary Figures



Supplementary Figure S2.1. Maximum-likelihood MLSA phylogeny including all type strains as well Genisteae associated *Bradyrhizobium* strains. *Rhodopseudomonas palustris* (strains CGA009, BisB5, and HaA2) was used for outgroup purposes. Established *Bradyrhizobium* supergroups are indicated while strains from this study are in bold and highlighted in the colours pink (Lineage I), red, blue, and yellow (Lineage II). Sequence accession numbers obtained from the GenBank (National Centre for Biotechnology Information (NCBI); <http://www.ncbi.nlm.nih.gov/>; Benson et al., 2004) are shown in Supplementary Table S2.2

nodA

Clade II
Europe & Mediterranean

Clade IV
Australia + Spain + Morocco + China

Clade X Australia

Clade XI Spain

South Africa
Clade XV

29 **1** **For**

Clade V Tropical & subtropical Americas

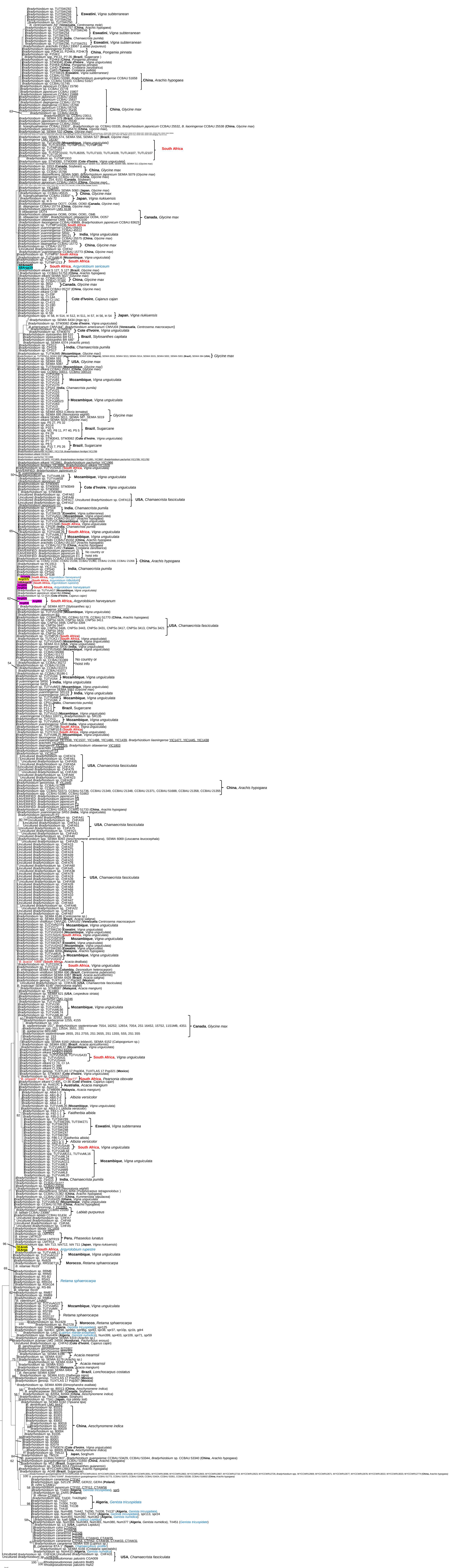
Clade I Australia

Cosmopolitan Clade III

Clade XII Nepal
S352, ORS364 Clade VI Photosynthetic

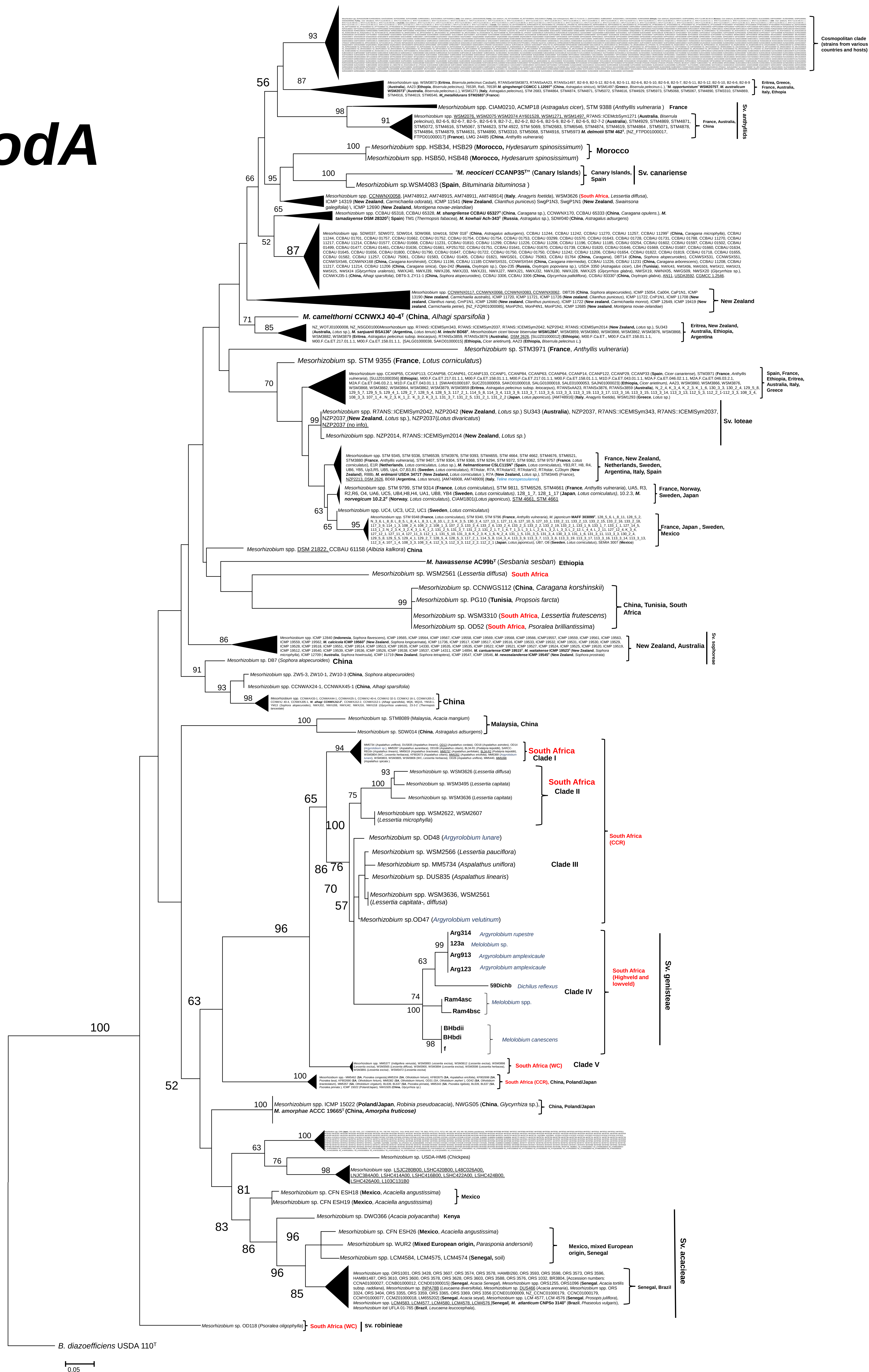
Clade VIII Tropical and subtropical Americas + Japan

Supplementary Figure S2.2. Maximum-likelihood phylogenetic tree based on 283 *Bradyrhizobium nodA* aligned sequences of 642bp. *Methylobacterium nodulans* ORS2060 was used for outgroup purposes. Strains from this study are in bold and highlighted. GenBank accession numbers are listed in Supplementary Table S2. of the Beukes et al., 2016 study and Supplementary Table S2.3 of this study. Bootstrap values greater than 70% are indicated at the nodes. The scale bar represents 1% substitutions per site



Supplementary Figure S2.3. Maximum-likelihood phylogenetic tree based on 584 *Bradyrhizobium nifH* aligned sequences (426 bp) showing the strains from this study are in bold. *Rhodopseudomonas palustris* (strains CGA009, BisB5, and HaA2) was used for outgroup purposes. Information regarding accession numbers-, strain, host, source, country, and reference information) is listed in Supplementary Table S2.4. The scale bar represents 2% substitutions per site

nodA



Supplementary Figure S3.1. Maximum-likelihood phylogenetic tree based on 283 *nodA* aligned sequences of 642bp. *B. diazoefficiens* USDA 110^T was used for outgroup purposes. The scale bar represents 0.5% substitutions per site. Strains obtained from this study are in bold. GenBank accession numbers are listed in Supplementary Table S3.2. Bootstrap values greater than 70% are indicated at the nodes.

[illegible]

Supplementary Figure S3.2. Maximum-likelihood phylogenetic tree based on 584 *nifH* aligned sequences (426 bp) showing the strains from this study is in bold. *B. diazoefficiens* USDA 110^T was used for outgroup purposes. The scale bar represents 1% substitutions per site. Strains obtained from this study are in bold and Genisteae hosts are in blue. If no strain info was available, accessions were in [...], if both host and country info was unavailable, strains or accessions were underlined, and strains that appeared more than once are in purple. Information regarding accession numbers-, strain, host, source, country, and reference information) is listed in Supplementary Table S2.4. The scale bar represents 2% substitutions per site.

Haplotypes that had too many sequences are listed below with their accession numbers:

Haplotype 34: NZ_RZSP01000030 NZ_RZQE01000003 NZ_RZPH01000009 NZ_RZPF01000233 NZ_RZPC01000006
NZ_RZRM01000005 NZ_RZQH01000077 NZ_RZQA01000002 NZ_RZSR01000028 NZ_RZRV01000033 NZ_RZQK01000022
NZ_RZPO01000022 NZ_RZPK01000122 NZ_RZPD01000030 NZ_RZSO01000038 NZ_RZSV01000002 NZ_RZTC01000043
NZ_RZRJ01000012 NZ_RZPN01000002 NZ_RZPL01000006 NZ_RZQS01000004 NZ_RZQR01000018 NZ_RZRA01000003
NZ_RZQW01000017 NZ_RZPZ01000047 NZ_RZRS01000079 NZ_RZQX01000015 NZ_RZQB01000107 NZ_RZQL01000165
NZ_RZRB01000018 NZ_RZSS01000008 NZ_RZRG01000038 NZ_RZPM01000075 NZ_RZPP01000043 NZ_RZRW01000019
NZ_RZPW01000010 NZ_RZRE01000090 NZ_RZRO01000005 NZ_RZRD01000021 NZ_RZQD01000006 NZ_RZRF01000017
NZ_RZRK01000195 NZ_RZQU01000029 NZ_RZPQ01000002 NZ_RZQM01000009 NZ_RZPS01000042 NZ_RZQG01000013
NZ_RZPR01000147 NZ_RZPT01000275 NZ_RZQC01000165 NZ_RZQP01000045 NZ_RZQO01000055 NZ_RZRP01000014
NZ_RZQQ01000018 NZ_RZSM01000010 NZ_RZRC01000022 NZ_RZSU01000021 NZ_RZPI01000004 NZ_RZRN01000033
NZ_RZRR01000026 NZ_RZPU01000006 NZ_RZRT01000067 NZ_RZQV01000080 NZ_RZQY01000057 NZ_RZPB01000001
NZ_RZRL01000051 NZ_RZRI01000025 NZ_RZQI01000019 NZ_RZRQ01000001 NZ_RZQJ01000001 NZ_RZRU01000010
NZ_RZTV01000025 NZ_RZQZ01000014 NZ_RZPV01000001 NZ_RZPE01000012 NZ_RZPJ01000079 NZ_RZQT01000020
NZ_RZPX01000026 NZ_RZSZ01000075 NZ_CP034453 NZ_CP015062 NZ_AWZS01000036 NZ_SADM02000014
NZ_RZOY02000024 NZ_RZPA02000029 NZ_SADJ02000027 NZ_SRSV01000026 NZ_SADK02000016 NZ_SRTS01000025
NZ_RZOV02000029 NZ_SRTL01000027 NZ_SRTY01000026 NZ_RZSJ01000101 NZ_CP034448 NZ_NSFX01000033
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NZ_VFTE01000055 NZ_VFTA01000055 NZ_VFTC01000029 VFTE01000055 VFTC01000029 VFTD01000051 VFTB01000022
VFTA01000055 VFSZ01000040 NZ_NSFO01000021 NZ_NSFT01000033 NZ_VFTS01000022 NZ_VFTT01000028
NZ_VFTR01000030 NZ_VFTV01000035 VFTV01000035 VFTT01000028 VFTS01000022 VFTR01000030 SURV01000050
SURR01000034 SURX01000037 SURU01000098 SUSB01000042 SUSC01000085 SUSG01000062 SUSF01000036 SUSQ01000019
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SUIJ01000031 SUIH01000006 SUII01000055 SUIO01000114 SUIR01000081 SUIS01000034 SRST01000025 SADK02000016
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NZ_SRTV01000007 NZ_SRTI01000004 NZ_SRUN01000030 NZ_SRTH01000017 NZ_RZOW02000015
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SART01000018 SARP01000025 SARH01000015 SARB01000019 SAQY01000051 SAQZ01000022 SAQX01000041
SAQW01000019 SAOG01000036 SAMD01000046 SAMA01000004 SAMB01000089 SALX01000007 SALW01000016
SALU01000043 SALV01000056 SALQ01000039 SALP01000028 SALN01000003 SALL01000052 SALK01000027
SALI01000028 SALJ01000065 SALH01000043 SALG01000056 SALE01000073 SALD01000006 SALB01000064
SALA01000051 SAKX01000056 SAKY01000036 SAKV01000010 SAKT01000066 SAKQ01000065 SAKO01000026
SAKN01000116 SAKK01000025 SAKJ01000039 SAKI01000036 SAKH01000071 SAKF01000039 SAKG01000054
SAKA01000069 SAJW01000048 SAJT01000007 SAJR01000044 SAJQ01000030 SAJO01000019 SAJN01000048
SAJJ01000048 SAJF01000039 SAJE01000037 SAJD01000041 SAJC01000044 RZOS01000001 RZRY01000485
NZ_SADO01000027 NZ_SADL01000015 CP034779 RZOM01000376 RZOH01000041 RZOL01000179 RZOO01000032
RZOG01000041 RZSJ01000005 RZOP01000029 RZPG01000034 RZSG01000008 RZRX01000066 RZSA01000018
RZSD01000052 RZSI01001200 RZSB01000001 RZSE01000004 RZSF01000001 RZSK01000002 RZSL01000001
RZSH01000001 RZTD01000014 RZTB01000064 RZTE01000043 RZTM01000077 RZTF01000042 RZTK01000024
RZTR01000036 RZTT01000173 RZTS01000102 CP034446 CP034454 CP034445 CP034451 NPKI01000050]

Haplotype 17: NZ_NPKH01000001 NZ_FNEE01000025 NZ_RZSX01000063 NZ_RZST01000002 NZ_RZTI01000031
NZ_CP034452 NZ_SRTM01000018 NZ_SADU02000178 NZ_SRUM01000014 NZ_SRSW01000019 NZ_SRUY01000021
NZ_SRUC01000019 NZ_SRTK01000018 NZ_SRUX01000020 NZ_SRUL01000019 NZ_SRUO01000023
NZ_SADR02000029 NZ_SRUV01000019 NZ_RZOI01000003 NZ_RZOT01000014 NZ_RZOF01000048
NZ_RZSC01000109 NZ_CP034450 NZ_CP034443 SURW01000008 SUSP01000130 SUSO01000106 SUAV01000004
SUAW01000022 SUAU01000002 SUBG01000004 SUBO01000001 SUBM01000011 SUBQ01000077 SUBR01000084
SUBS01000001 SUBX01000025 SUBW01000008 SUBU01000007 SUCM01000002 SUDA01000004 SUDG01000024
SUDX01000858 SUEM01000005 SUFI01000029 SUEU01000005 SUGZ01000927 SUGD01000037 SUGI01000114
SUGT01000037 SUGV01001067 SUGS01000134 SUGX01000037 SUHM01000002 SUHQ01000035 SUIX01000004
SUIZ01000034 SUJG01000041 SUJF01000030 SUJH01000027 SUJI01000026 SUJM01000055 SUJR01000035
SRSW01000019 SRTK01000018 SRTM01000018 SRUM01000014 SRUC01000019 SRUL01000019 SRUO01000023
SRUV01000019 SADR02000029 SRUX01000020 SADU02000178 SRUY01000021 SASZ01000039 SASN01000045
SASJ01000107 SASF01000039 SASA01000034 SARO01000003 SARK01000005 SAQV01000019 SAQU01000020
SAQR01000020 SAQT01000019 SAQQ01000034 SAQN01000002 SAQJ01000004 SAQE01000027 SAPO01000023
SAPF01000108 SAPL01000017 SAPK01000017 SAPG01000018 SAPE01000040 SAOV01000018 SAOU01000016
SAOS01000023 SAOQ01000022 SAOO01000019 SAON01000020 SAOM01000027 SAOI01000023 SAOD01000008
SAOE01000025 SAOB01000021 SANU01000007 SANR01000011 SANQ01000006 SANP01000006 SANO01000006
SANL01000026 SANJ01000007 SAMR01000009 SAMH01000023 SALZ01000010 SALY01000019 SALT01000030
SAKW01000011 SAKR01000017 SAKC01000008 SAKB01000026 SAJZ01000012 SAJU01000019 SAJL01000363
SAJA01000020 RZON01000055 RZOI01000003 RZOF01000048 RZOR01000002 RZOT01000014 RZSC01000109
RZST01000002 RZSY01000137 RZSX01000063 RZTI01000031 CP034452 CP034443 CP034450 NPKH01000001]

Haplotype 194: MH788349 MH788341 MH788322 MH788316 MH788314 MH788312 MH788311 MH788310 MH788308
MH788306 MH788304 MH788303 MH788295 MH788285 MH788283 MH788282 MH788280 MH788279 MH788278
MH788276 MH788274 MH788271 MH788269 MH788264 MH788263 MH788262 MH788261 MH788258 MH788257
MH788256 MH788255 MH788254 MH788253 MH788252 MH788251 MH788250 MH788249 MH788248 MH788247
MH788246 MH788245 MH788243 MH788242 MH788240 MH788239 MH788238 MH788234 MH788233 MH788231
MH788230 MH788227 MH788222 MH788214 MH788195 MH788178 MH788159 MH788158 MH788157 MH788156
MH788154 MH788153 MH788144 MH788141 MH788136 MH788132 MH788130 MH788127 MH788082 MH788081
MH788080 MH788079 MH788078 MH788077 MH788075 MH788068 EU849571 EU849569 EU849568]

Haplotype 195: MH788347 MH788346 MH788320 MH788318 MH788313 MH788309 MH788307 MH788305 MH788300
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MH788265 MH788235 MH788232 MH788229 MH788226 MH788224 MH788223 MH788221 MH788218 MH788217
MH788216 MH788213 MH788212 MH788211 MH788209 MH788208 MH788207 MH788206 MH788205 MH788204
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MH788188 MH788185 MH788184 MH788181 MH788180 MH788179 MH788177 MH788176 MH788175 MH788174
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MH788145 MH788143 MH788139 MH788138 MH788137 MH788135 MH788134 MH788133 MH788131 MH788128
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Haplotype 206: MH788289 MH788288 MH788287 MH788215 MH788198 MH788190 MH788189 MH788187 MH788183
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MH788117 MH788116 MH788115 MH788114 MH788113 MH788112 MH788111 MH788110 MH788109 MH788108
MH788107 MH788106 MH788105 MH788104 MH788103 MH788102 MH788101 MH788100 MH788099 MH788098
MH788097 MH788096 MH788095 MH788094 MH788093 MH788092 MH788091 MH788090 MH788089]