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Using whole genome comparison to detect sequence similarities between plants and microbes

By

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DECLARATION

I declare that this thesis, which I hereby submit for the degree, Philosophiae Doctor (Plant Science-Plant Biotechnology) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at any other University

A handwritten signature in black ink, appearing to read 'A. van der ...'.

Signed _____

15 December 2007

Date _____



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Summary

With an increasing amount of whole genome sequence data becoming available on a daily basis we have an opportunity to study the interactions and dynamics of different organisms on a whole genome level. In the past, reports of horizontal gene transfer have focused mainly on the identification of single genes that show distorted phylogenetic profiles to that of the organism it was isolated from. This study firstly did whole genome comparisons between the rice nuclear and plastid genomes to determine the level and dynamics gene transfer and insertion of the chloroplast and mitochondrial genomes into that of the nuclear genome of rice. Secondly, it looked to identify sequence similarities between the rice genome and microbial genomes by performing whole genome comparisons between the rice genome and that of several microbial genomes. These sequences were analyzed further to identify possible instances of horizontal transfer of DNA from microbes to the rice genome. Using this approach, this study reports several fragments in the rice genome with significant sequence similarity to that of microbial DNA fragments. This study also provides evidence supporting horizontal transfer of several of these fragments. This study provides valuable information regarding intra- as well as inter-genome DNA transfer dynamics.



Thesis Composition

The following thesis comprises of five sections. **1 Introduction and literature review** presents an overview regarding the origin and evolution of the eukaryotic genome as well as the origin of the chloroplast and mitochondrion. It also review previous reports regarding DNA transfer between the organelles and nucleus, as well as those regarding transfer of DNA between various microbes and plants. It also discusses the proposed models whereby transfer occurs. **2 Materials and Methods** outlines the different strategies and methods and sequences used in the whole genome comparisons and the analysis of the results. **3 Results** describes the results obtained from each of the different comparisons. **4 Discussion** provides an overall discussion of the study and provide some future perspectives of research in the field of horizontal DNA transfer. In the **Annex** the tables detailing the sequence similarities found between the rice genome and the various other genomes used are presented.

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1

Introduction and literature review

With the onset of whole genome analysis, made possible by the increasing amount of available sequence data, our view on horizontal gene transfer (HGT) is rapidly changing. Scientists are becoming aware that transfer of DNA between non-related species is occurring at much higher rates than was previously thought. This introduction presents an overview of the relevant literature available on this subject, particularly focusing on transfer events involving plant genomes as the recipient genome from various donor genomes including plants, viruses, bacteria and fungi.

1.1 **The eukaryotic genome**

Genomics and proteomics have greatly increased our awareness of the differences between eukaryotic and prokaryotic cells. The origin of the eukaryotic cell is enigmatic and complex. Early studies of nuclear-encoded enzymes, transfer RNAs, ribosome structures and ribosomal RNA catalogues implied deep, but unresolved, connections between prokaryotes and eukaryotes (Rivera and Lake, 2004). Informational genes (genes involved in transcription and translation) are most closely related to archaeal genes, whereas operational genes (genes involved in cellular metabolic processes, such as amino acid biosynthesis, cell envelope and lipid synthesis), are most closely related to eubacterial genes (Rivera *et al.*, 1998). It has been difficult to reconcile these conflicting results with the origin of eukaryotes because of the complicating effects of genome fusions and horizontal gene transfer (HGT) on phylogenetic reconstructions. Several groups have inferred that the eukaryotic nuclear genome derives from HGT through the fusion of archaebacterial and eubacterial genomes (Feng *et al.*, 1997; Moreira and Lopez-Garcia, 1998; Rivera *et al.*, 1998; Horiike *et al.* 2001; Rivera and Lake, 2004), but this interpretation has recently been called into question (Kurland *et al.*, 2006).

Using a recently developed algorithm to do a conditioned reconstruction based on the two character states of gene presence and absence, which can reconstruct genome fusions, Rivera and Lake (2004) presented evidence that the eukaryotic genome arose through the fusion of two diverse prokaryotic genomes. One fusion partner branches from deep within an ancient photosynthetic clade, and the other is related to the archaeal prokaryotes. The eubacterial organism is either a proteobacterium or a member of a larger photosynthetic clade that includes the Cyanobacteria and the Proteobacteria. They therefore suggested that a more accurate representation of the classic tree of life should be a ring of life (Figure 1.1). However, to state

that the eukaryotic cell is the result of a simple fusion of an archaeon and bacterium is an oversimplification. This is supported by the existence of 347 eukaryotic signature proteins (ESPs) identified by Hartman and Federoy (2002). This finding agrees with the predictions of the ABC hypothesis. This hypothesis assumes that the nucleus formed from the endosymbiosis of an archaeon and a bacterium in a third cell, C. One can symbolize this new conjecture as $E = A + B + C$. This theory would imply that there are three cellular domains despite the large infusion of prokaryotic proteins into the eukaryotic cell because of endosymbiosis (Hartman and Federoy, 2002).

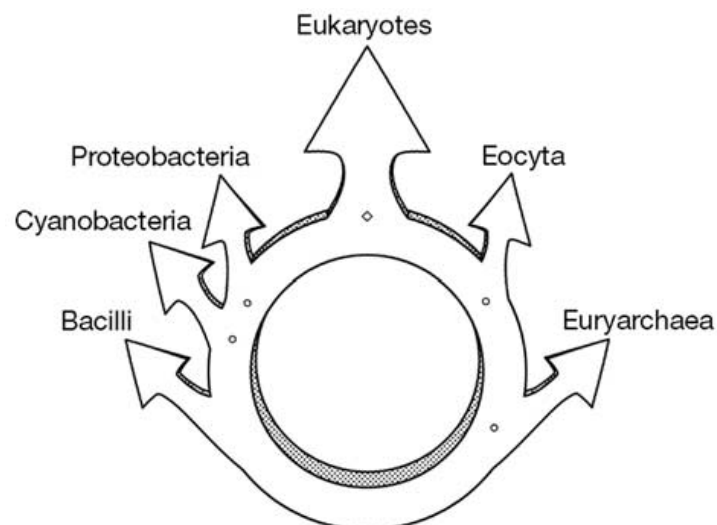


Figure 1.1: A schematic diagram of the ring of life. The eukaryotes plus the two eukaryotic root organisms (the operational and informational ancestors) comprise the eukaryotic realm. Ancestors defining major groups in the prokaryotic realm are indicated by small circles on the ring. The Archaea, shown on the bottom right, includes the Euryarchaea, the Eocyta and the informational eukaryotic ancestor. The Karyota, shown on the upper right of the ring, includes the Eocyta and the informational eukaryotic ancestor. The upper left circle includes the Proteobacteria and the operational eukaryotic ancestor. The most basal node on the left represents the photosynthetic prokaryotes and the operational eukaryotic ancestor (adapted from Rivera and Lake, 2004).

These hypotheses that attribute eukaryote origins to genome fusion between archaea and bacteria (Feng *et al.*, 1997; Ribeiro and Golding, 1998; Lopez-Garcia and Moreira, 1999; Cavalier-Smith 2002; Rivera and Lake, 2004) are uninformative about the emergence of the cellular and genomic signatures of eukaryotes namely the subdivision into subcellular compartments (SSCs) and the eukaryotic signature proteins (ESPs). The presence of ESPs and SSCs are used to suggest an alternative hypothesis: while archaea, bacteria and eukaryotes might have shared common ancestors, the eukaryotic subdivision into sub-cellular compartments (SSCs) define a unique cell type that cannot be deconstructed into features inherited directly from archaea and bacteria (Kurland *et al.*, 2006). Because their cells appear simpler, prokaryotes have traditionally been considered ancestors of eukaryotes (Knoll, 1992; Baldauf, 2003). Nevertheless, comparative genomics has confirmed a lesson from paleontology: evolution does not proceed monotonically from the simpler to the more complex (Andersson and Kurland, 1998; Klasson and Andersson, 2004; Olsen, 1999). The many ESPs within the subcellular structures of eukaryote cells provide landmarks to track the trajectory of eukaryote genomes from their origins. It is agreed that the unrooted tree of life divides into archaea, bacteria, and eukaryotes (Figure 1.2), whether using gene content, protein-fold families, or RNA sequences (Woese *et al.*, 1990; Korbelt *et al.*, 2002; Snel *et al.*, 2002),

On such unrooted trees, the three domains diverge from a population that can be called the last universal common ancestor (LUCA). In this case it is the hypothetical node at which the three domains combine in unrooted trees (Kurland *et al.*, 2006). Once the data based on the best-match BLAST protocol are set aside, there seems to be no phylogenetic data available to support the idea that the eukaryotic genome originated as a fusion of bacterial and archaeal genomes. Rather, there are phylogenetic data, such as that for the translation apparatus, the transcription apparatus, and glycolysis, suggesting that all three domains are vertical descendents of a common ancient ancestor (Olsen and Woese, 1996; Canback *et al.*, 2002; Woese, 1998; 2000; 2002).

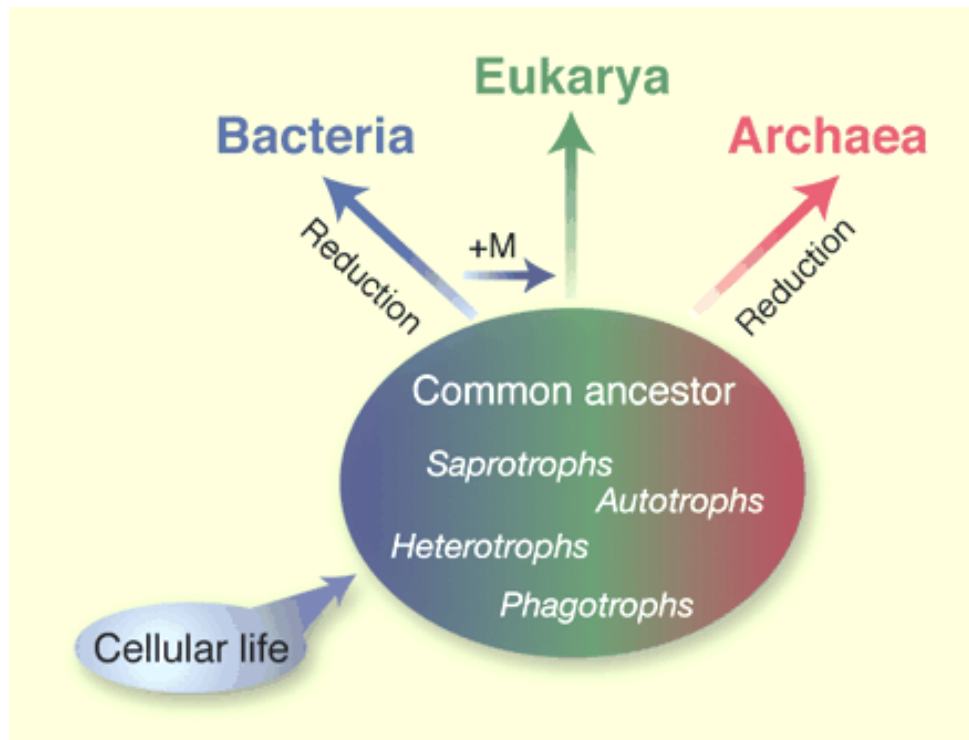


Figure 1.2: The common ancestor of eukaryotes, bacteria, and archaea may have been a community of organisms containing the following: autotrophs that produced organic compounds from CO_2 either photosynthetically or by inorganic chemical reactions; heterotrophs that obtained organics by leakage from other organisms; saprotrophs that absorbed nutrients from decaying organisms; and phagotrophs that were sufficiently complex to envelop and digest prey. +M: endosymbiosis of mitochondrial ancestor. (adapted from Kurland *et al.*, 2006).

Regardless of the exact origin of eukaryotic cells, it is believed that they acquired genetic material through horizontal transfer events from various sources and that it is an ongoing process. There is evidence of gene transfer in all lineages of life such as the recently described transfer of genes from bacteria and nematodes to insects (Hotopp *et al.*, 2007). The following review however only focuses on the documented transfer events between plants and various microbial donors.

1.2 Origin of the chloroplast and mitochondrion

Chloroplasts and mitochondria are in many aspects similar to each other. Both function to generate metabolic energy and both have their own sets of genes that are more similar to those of prokaryotes than those of eukaryotes and as well as their own protein-synthesizing machinery. It is now commonly believed that both chloroplast and mitochondria are the consequence of endosymbiotic events. The 'Endosymbiotic Theory' was first proposed by former Boston University Biologist Lynn Margulis in the 1960's and officially in her 1981 book "Symbiosis in Cell Evolution". Although now accepted as a well-supported theory, both she and the theory were ridiculed by mainstream biologists for a number of years. Thanks to her persistence, and the large volumes of data that support this hypothesis gathered by her and many other scientists over the last 40 years, biology can now offer a plausible explanation for the evolution of eukaryotes. According to the 'Endosymbiotic Theory', eukaryotes evolved when archaeal and eubacterial cells merged in anaerobic symbiosis. The archaeal cell provided the cytoplasm while the eubacterial cell (a spirochete) allowed for mobility and, eventually, mitosis. Some of these anaerobic cells then incorporated oxygen-respiring eubacteria to become mitochondria-containing aerobes from which most protists, animals, and fungi evolved. Finally, some of these aerobes went on to incorporate photosynthesizing cyanobacteria to become chloroplast-containing algae and plants. The divisions or domains implied by this description (Archaea, (true) Bacteria, and Eukarya) are consistent with the widely acknowledged classification system described by Olsen *et al.* (1994).

Mitochondrial genome sizes are variable (Table 1.1) and are unrelated to the complexity of the organism. Most multicellular animals have small mitochondrial genomes with a compact genetic organization, the genes being close together with little space between them. Lower eukaryotes, as well as flowering plants, have larger and less compact mitochondrial genomes, with a number of the genes containing introns. Chloroplast genomes have less variable sizes (Table 1.1). In many eukaryotes the circular genomes coexist in the organelles with linear versions and, in the case of chloroplasts, with smaller circles that contain subcomponents of the genome as a whole. The latter pattern reaches its extreme in the marine algae called dinoflagellates, whose chloroplast genomes are split into many small circles, each containing just a single gene (Zhang *et al.*, 1999). We also now realize that the mitochondrial genomes of some microbial eukaryotes (e.g. *Paramecium*, *Chlamydomonas* and several yeasts) are always linear (Nosek *et al.*, 1998).

Table 1.1: Mitochondrial and chloroplast genome sizes

| Species | Type of organism | Genome size (kb) |
|---------------------------------|---------------------------|------------------|
| <u>Mitochondrial genomes</u> | | |
| <i>Plasmodium falciparum</i> | Protozoan | 6 |
| <i>Mus musculus</i> | Vertebrate (mouse) | 16 |
| <i>Homo sapiens</i> | Vertebrate (human) | 17 |
| <i>Aspergillus nidulans</i> | Ascomycete fungus | 33 |
| <i>Saccharomyces cerevisiae</i> | Yeast | 75 |
| <i>Brassica oleracea</i> | Flowering plant | 160 |
| <i>Arabidopsis thaliana</i> | Flowering plant | 367 |
| <i>Oryza sativa</i> | Flowering plant | 490 |
| <i>Zea mays</i> | Flowering plant | 570 |
| <i>Cucumis melo</i> | Flowering plant | 2500 |
| <u>Chloroplast genomes</u> | | |
| <i>Pinus tunbergii</i> | Conifer | 120 |
| <i>Pisum sativum</i> | Flowering plant (pea) | 120 |
| <i>Marchantia polymorpha</i> | Liverwort | 121 |
| <i>Oryza sativa</i> | Flowering plant (rice) | 136 |
| <i>Triticum aestivum</i> | Flowering plant | 136 |
| <i>Zea mais</i> | Flowering plant | 140 |
| <i>Arabidopsis thaliana</i> | Flowering plant | 155 |
| <i>Nicotiana tabacum</i> | Flowering plant (tobacco) | 156 |
| <i>Nephroselmis olivacea</i> | Algae | 201 |
| Genome sizes obtained from NCBI | | |

1.3 DNA transfer

1.3.1 DNA transfer between the organelles and nucleus

Fragments of chloroplast and mitochondrial DNA are often found in nuclear genomes (Farrelly and Butow 1983; Scott and Timmis 1984; Ayliffe and Timmis 1992; Thorsness and Fox 1990; Sun and Callis, 1993; Yuan *et al.*, 2002) and the transfer of DNA from the chloroplast to the nucleus is known to be an ongoing and frequent process (Matsuo *et al.*, 2005; Shahmuradov *et al.*, 2003; Ayliffe and Timmis, 1992, Stegemann *et al.*, 2003). Throughout evolution, chloroplasts and mitochondria appear to have lost most of their ancestral genes. It is thought that many genes have been either transferred to the nucleus (i.e. by an 'endosymbiotic gene transfer') or lost completely (Martin and Hermann, 1998; Race *et al.*, 1999). During evolution, organelles export their genes to the nucleus, but re-import the products with the help of transit peptides and protein-import machinery, so that proteins are retained in organelles, but most of the genes are not. This process, over time, concentrates genetic material in nuclear chromosomes. Gene-regulatory processes under the control of the nucleus are more complex and interrelated than those under the control of organelles (Herrmann, 1997).

Some chloroplast genes have been extensively studied, especially the *rbcL* gene for the large subunit of Rubisco (reviewed by Clegg, 1993). In land plants and green algae, the *rbcL* locus is found on the large single copy region (LSC) in the chloroplast genome, and the *rbcS* locus for the small subunit of Rubisco is found in the nuclear genome (Clegg *et al.*, 1997). However, in cyanobacteria, the *rbcL* and *rbcS* genes are adjacent to one another (Nierzwicki-Bauer *et al.*, 1984). Thus, the *rbcS* gene in plants was probably transferred to the nucleus, and subsequently lost, from the chloroplast very early in the evolution of the plants. An example of a more recent transfer is the *rpl22* gene in legumes (Gantt *et al.*, 1991). Gantt *et al.* (1991) also found that tobacco *rpl22* probes hybridized in all angiosperm cpDNA tested, except in legumes. However, *rpl22* was confirmed to be in the nucleus, thus legumes has lost *rpl22* from the chloroplast genome after its transfer to the nuclear genome. An example from the mitochondrion is the α -subunit of F_1 ATPase which exists in mitochondrial DNA in some eukaryotes but in nuclear DNA in others (Gray, 1992). Furthermore the ribosomal protein gene *rps10* exists in the mitochondrial genome in some angiosperm species, but in the nuclear genome in others (Wischmann and Schuster, 1995; Adams *et al.*, 2000). It has also been reported that the respiratory gene *cox2*, which is normally present in mitochondria, is variably involved in the nuclear genome in legume

species. Some legume species possess the gene in both mitochondrial and nuclear genomes, some in the mitochondrial genome only, and others in the nuclear genome only (Adams *et al.*, 1999). Gene transfer also takes place between the organelles (Joyce and Gray, 1989; Menaud *et al.*, 1998). In *Arabidopsis thaliana* for example, a gene coding for methionyl-tRNA synthetase in the mitochondrial genome may have originated in the chloroplast (Menaud *et al.* 1998). In wheat, three tRNA mitochondrial genes were found that show high sequence similarity to chloroplast genes (Joyce and Gray, 1989).

1.3.2 DNA transfer between viruses and plants

Unlike animal and bacterial viruses, it was believed that plant viruses integrate rarely, if at all, into their host genomes (Grierson and Covey, 1988). Observations over the past few years have changed this view, as an increasing number of integrated plant viral sequences are being found in plant genomes. Most plant viruses have single-stranded RNA genomes. There are however two groups of DNA viruses that infect plants: the single-stranded DNA *Geminiviridae* that replicate via a rolling circle mechanism and the double-stranded DNA (dsDNA) *Caulimoviridae*, comprising the caulimoviruses and the badnaviruses, that replicate by reverse transcription (Grierson and Covey, 1988). Examples of viral sequences that have been found integrated into plant genomes are a single insertion of sequences related to a geminivirus, which has a single-stranded circular DNA genome, into tobacco nuclear DNA were of multiple direct repeats of partial geminivirus sequence (Kenton *et al.*, 1995; Bejarano *et al.*, 1996; Ashby *et al.*, 1997). These sequences included only the origin of replication and the adjacent viral replication protein, transcription was not detectable and there was no associated virus infection. Examples of integrated viral sequences in plant genomes include:

I. The banana streak virus (BSV)

BSV is a member of the *Badnavirus* genus and the causal agent of viral leaf streak of banana and plantain (Lockhart, 1986). BSV contain a circular dsDNA genome of 7.4 kbp in size (Harper and Hull, 1998). During tissue culture, infections can arise in healthy plants from integrated BSV sequences (Harper *et al.*, 1999). Every *Musa* spp. examined to date contains BSV DNA integrated into its DNA. Probing of *Musa* genomic libraries with BSV probes has identified two classes of BSV integrants. The first class of

sequences consists of partial BSV sequences (Geering *et al.*, 2001; Ndowora *et al.*, 1999). The second class consists of multiple copies of a complete BSV genome, which are believed to be the source of BSV infections that arise during tissue culture (Harper *et al.*, 1999; Ndowora *et al.*, 1999).

II. Tobacco vein clearing virus (TVCV)

TVCV is a distinct member of the family *Caulimoviridae*, differing from typical caulimoviruses in both genome organization and biological properties. It is a plant pararetrovirus that occurs only in *Nicotiana edwardsonii* (Lockhart *et al.*, 2000). The first evidence of TVCV sequences integrated in the *N. edwardsonii* genome was established by hybridization analysis. Cloned TVCV genomic DNA hybridized to Eco R1- and Hind III-restriction digested fragments of *N. edwardsonii* total genomic DNA that were larger than virion genomic DNA, suggesting that the plant DNA moiety hybridizing to TVCV DNA was an integral part of the host genome and not free virion DNA (Lockhart *et al.*, 2000). At present, no genomic clone containing the entire TVCV genome has been identified.

The genome of *N. tabacum* also contains pararetrovirus-like sequences, tobacco pararetrovirus-like (TPV-L) (Jakowitsch *et al.*, 1999). Despite a copy number of thousands in the *N. tabacum* genome, there was no evidence of any functionally intact viral sequences, the TPV-L clones sequenced containing frameshifts and stop codons. No episomal infections were detected, although there was evidence that the sequences were transcribed. Based on an analysis of the junctions between plant and viral sequences, it was proposed that integration occurred by illegitimate recombination events involving gap regions of open circular viral DNA. TPV-L sequences have, like TVCV, been detected in various other *Nicotiana* species including *N. otophora*, *N. sylvestris* and *N. tomentosiformis*, and are also detected in *Datura* and tomato but not in petunia, *Arabidopsis*, or pea (Jakowitsch *et al.*, 1999).

III. Petunia vein clearing virus (PVCV)

PVCV is a member of the family *Caulimoviridae* and the coding information is present as one large open reading frame within the viral genome. Data indicate that the entire PVCV genome is present in the *P. hybrida* cv Himmelsroschen genome (Richert-Pöggeler and Shepherd, 1997). The restriction endonuclease pattern and copy number of the PVCV integrant in the white flowered *P. axillaris* ssp. *axillaris* plants resembles more closely those of *P. hybrida* than do those of *P. integrifolia* ssp. *inflata*. The correlation of integrated sequence, stress or physiological change, and detectable virus indicates a similar phenomenon to BSV and TVCV (Harper et al., 2002).

IV. Rice tungro bacilliform virus (RTBV)

There are also two reports by Nagano *et al.*, (2000) and Kunii *et al.*, (2004) regarding segments of the rice tungro bacilliform virus (RTBV), in the nuclear genome of rice. Kunii *et al.*, (2004) characterized RTBV-like sequences in the Japonica (cv. Nipponbare) genome. These sequences denoted endogenous RTBV-like sequences (ERTBVs), were highly rearranged and dispersed throughout the rice genome. It was found that these sequences were unlikely to have functional potential as a virus, while phylogenetic analysis showed that at least three times integrations of authentic ERTBVs occurred during *Oryza* speciation

1.3.3 DNA transfer between bacteria and plants

Nuclear HGT is rare in multicellular eukaryotes, with most known cases involving bacteria as donors (Garcia-Vallve *et al.*, 2000; Rosewich and Kistler, 2000; Screen and St Leger, 2000; Intrieri and Buiatti, 2001; Veronico *et al.*, 2001; Watts *et al.*, 2001; Wolf and Koonin, 2001; Kondo *et al.*, 2002; Zardoya *et al.*, 2002; Hall *et al.*, 2005). The best characterized example of horizontal DNA transfer between bacteria and plants is the *Agrobacterium* system (Figure 1.3). Although plants represent the natural hosts for *Agrobacterium*, this microorganism can also genetically transform a wide range of other eukaryotic species, from yeast (Bundock *et al.*, 1995; Piers *et al.*, 1996; Sawasaki *et al.*, 1998) to fungi (de Groot *et al.*, 1998; Gouka *et al.*, 1999;

Chen *et al.*, 2000; Rho *et al.*, 2001) as well as human cells (Kunik *et al.*, 2001). Unlike other plant pathogenic bacteria which affect the host-plant physiology by secreting compounds such as toxins or growth regulators, *Agrobacterium tumefaciens* and its related pathogenic species, *A. rhizogenes* and *A. vitis*, directly modify the genetic material of their hosts. This genetic modification results from the transfer and integration into the plant genome of a specific DNA segment termed transferred DNA or T-DNA, from the bacterial Ti (tumor inducing) plasmid (Jouanin, 1984). Plant genetic transformation by *A. tumefaciens* requires the presence of two genetic components located on the bacterial Ti plasmid: (i) T-DNA, the actual genetic element transferred into the plant cell genome; and (ii) the virulence (*vir*) region composed of seven major loci (*virA*, *virB*, *virC*, *virD*, *virE*, *virG* and *virH*), encoding most components of the protein machinery mediating T-DNA transfer. In addition, a set of *A. tumefaciens* chromosomal virulence (*chv*) genes participates in the early stages of the bacterial chemotaxis and attachment to the plant cells (Hooykaas and Beijersbergen, 1994; Sheng and Citovsky, 1996; Zambryski, 1992).

A. rhizogenes is responsible for the formation of adventitious roots known as "hairy roots." The agropine-type strain of *A. rhizogenes* has two distinct T-DNA regions, left transferred DNA (TL-DNA) and right transferred DNA, in its Ri plasmid. Four loci involved in root induction have been identified from an analysis of TL-DNA by insertional mutagenesis. They are designated *rolA*, *rolB*, *rolC*, and *rolD* (White *et al.*, 1985). *Ngrol* genes (*NgrolB*, *NgrolC*, *NgORF13*, and *NgORF14*) that are similar in sequence to genes in the left transferred DNA (TL-DNA) of *A. rhizogenes* have been found in the genome of untransformed plants of *Nicotiana glauca* (Aoki and Syano, 1999). It has been suggested that a bacterial infection resulted in transformation of *Ngrol* genes early in the evolution of the genus *Nicotiana*. It has been demonstrated that other bacterial species outside the *Agrobacterium* genus transformed with the Ti-plasmid were also able to transfer T-DNA to facilitate the transfer of foreign DNA to plants (Broothaerts *et al.* 2005). Other examples of bacterium-to-plant nuclear genome HGT include the acquisition of aquaglyceroporins from a eubacterium ~1200 million years ago (Zardoya *et al.*, 2002), and of glutathione biosynthesis genes from an alpha-proteobacterium (Copley and Dhillon, 2002), but the mechanisms of transfer remains unclear.

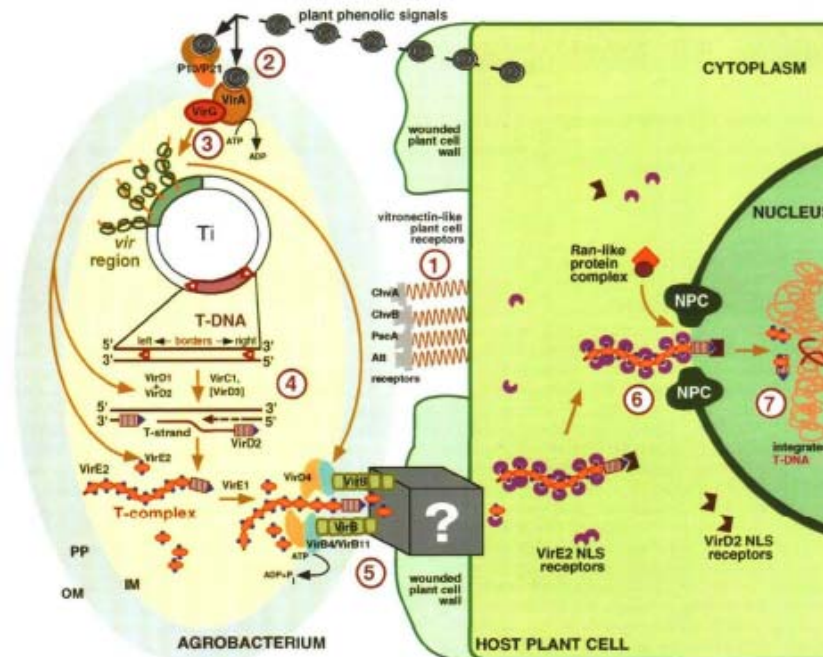


Figure 1.3: A diagrammatic summarization of all major cellular reactions involved in *Agrobacterium* T-DNA transport. Steps 1 through 7 indicate sequential processes that occur during *Agrobacterium* infection. Step 1, binding of *Agrobacterium* to the host cell surface receptors; step 2, recognition of plant signal molecules by the bacterial *VirA/VirG* sensor-transducer system; step 3, activation of the bacterial *vir* genes; step 4, production of the transferable T-strand; step 5, formation of the T-complex and its transport into the host plant cell; step 6, nuclear import of the T-complex; and step 7, T-DNA integration. IM, bacterial inner membrane; NPC, nuclear pore complex; OM, bacterial outer membrane; PP, bacterial periplasm (adapted from: Sheng and Cithosky, 1996).

1.3.4 DNA transfer between fungi and plants

Probably the best example of horizontal transfer to plants from a fungal donor involves the *cox1* mitochondrial intron. During a survey of plant mitochondrial cytochrome oxidase subunit 1 (*cox1*) genes, Vaughn *et al.* (1995) discovered a group I intron in the angiosperm *Peperomia polybotrya*. This was surprising, in so far as only group II introns had previously been found to be associated with plant mitochondria. Phylogenetic analysis revealed different evolutionary histories for the intron and the exon at that locus and clustered the intron together with group I

mitochondrial introns from fungi. It was therefore hypothesized that *P. polybotrya* acquired the intron from a fungal donor. A follow-up study (Adams *et al.*, 1998) determined the intron to be present in all *Peperomia* species tested, therefore dating the transfer event(s) before the divergence of the genus. Cho *et al.* (1998) revealed its presence in 48 genera, albeit with an extremely patchy distribution. This is in stark contrast to a nearly universal presence of a cox2 group II mitochondrial intron.

In another example of DNA transfer from fungi to plants, sequences similar to fungal cytoplasmic and mitochondrial virus RNA-dependent RNA polymerase (RdRp) proteins have also been identified in translated protein sequences from the mitochondrial genomes of *Arabidopsis thaliana* and *Vicia faba* (Marienfeld *et al.*, 1997). Marienfeld *et al.* (1997) therefore suggested horizontal transfer probably from fungi to those plant species. Plasmids are another genetic element in fungi that are involved in HGT between fungal strains as well as between different species (Taylor, 1986; Collins and Saville 1990; Masel *et al.*, 1993; Yang and Griffiths, 1993; Griffiths *et al.*, 1994; Arganoza *et al.*, 1994; Debets *et al.*, 1994; Kempken, 1995; Van der Graag *et al.*, 1998). Plasmids have been identified in many fungal species, but are only infrequently encountered in other eukaryotes (Kempken *et al.*, 1992; Griffiths, 1995). In yeasts, plasmids are located in the cytoplasm, whereas in filamentous fungi, plasmids are ordinarily associated with mitochondria (Griffiths, 1995). The S1 plasmid of maize appears to be closely related to linear plasmids of ascomycetes (Kempken *et al.*, 1992) and might have been acquired through a horizontal transfer event. However no model exists to explain DNA transfer from fungi to plants.

1.3.5 DNA transfer between plants and plant mitochondria

There is evidence that nuclear transposable elements have moved horizontally on numerous occasions in multicellular eukaryotes. The last couple of years have seen an explosion of studies reporting additional cases of horizontal transfer of genes in plants (Kidwell and Lisch, 2001; Feschotte and Wessler, 2002; Bergthorsson *et al.*, 2004; Davis and Wurdack, 2004; Mower *et al.*, 2004; Woloszynska *et al.*, 2004; Nickrent *et al.*, 2004; Davis *et al.*, 2005; Schöenberger *et al.*, 2005; Diao *et al.*, 2006). DNA transfer facilitated by direct plant-to-plant contact through parasitism has emerged as a common mechanism of HGT with several reported HGT events involving parasitic plants as donors (Mower *et al.*, 2004; Davis *et al.*, 2005) or as

recipients (Davis and Wurdack, 2004; Nickrent *et al.*, 2004). However, this mechanism is unlikely to explain all the transfers, as many of the donor and recipient groups do not have a host–parasite relationship. Other possible mechanisms that have been postulated include illegitimate pollination, herbivory, bacterial or viral transfer, uptake of naked DNA in the soil, and fungal pathogens or symbionts (Bergthorsson *et al.*, 2003; Won and Renner, 2003; Davis *et al.*, 2005). Plant mitochondrial genomes especially experience frequent and evolutionarily widespread horizontal transfer of genes acquired from other eukaryotes in particular from other plants. Table 1.2 gives a summary of mitochondrial genes acquired through horizontal gene transfer. In one case it was shown that *Amborella trichopoda* has acquired, via HGT, partial or full-length copies of 20 of its 31 mitochondrial genes (Bergthorsson *et al.*, 2004).

In all but one of the 40 plant-to-plant HGT cases reported thus far, the transferred gene is a mitochondrial gene (encoding a housekeeping respiratory or ribosomal protein), and thus the dominant mode of HGT in plants reported thus far is mitochondrion-to-mitochondrion. The one apparent exception, involving chloroplast *pvs-trnA* in *Phaseolus* (Woloszynska *et al.*, 2004), may actually represent mitochondrion-to-mitochondrion transfer too. This is because chloroplast sequences frequently become incorporated into mitochondrial genomes (Unseld *et al.*, 1997; Clifton *et al.*, 2004; Sugiyama *et al.*, 2005), and it is therefore possible that *Phaseolus* acquired this chloroplast sequence via intermediate transfer through the donor's mitochondrial genome.

Although plant mtDNAs usually contain numerous nuclear- and chloroplast-derived sequences (Unseld *et al.*, 1997; Clifton *et al.*, 2004; Sugiyama *et al.*, 2005), there is not yet any good evidence of a plant chloroplast genome containing DNA from other cellular compartments (Rice and Palmer, 2006). Plant mitochondria possess an active DNA uptake system (Koulintchenko *et al.*, 2003), though there is no information on a similar system in chloroplast, the ability to transform chloroplasts in intact plant cells indicate that chloroplast might have a similar DNA uptake system (Svab *et al.*, 1990). Such an uptake system may be critically important in the incorporation of both foreign and native DNA. Another well-documented difference between the two organelles that may account for their differential susceptibility towards HGT is their tendency to fuse. Plant mitochondria regularly fuse (Arimura *et al.*, 2004; Sheahan *et al.*, 2005), promoting recombination between parental mitochondrial genomes, whereas chloroplasts very rarely fuse (Kanno *et al.*, 1997; Mohapatra *et al.*, 1998).

Table 1.2: Published accounts of horizontally acquired genes shown or thought to be located in plant mitochondrial genomes

| Citation | Recipient ^a | Donor ^b | Gene |
|------------------------------------|------------------------|-------------------------|---|
| Bergthorsson <i>et al.</i> (2003) | <i>Actinidia</i> | Monocot | <i>rps2</i> |
| | <i>Amborella</i> | Eudicot | <i>atp1</i> |
| | Betulaceae | Unclear | <i>rps11</i> |
| | Caprifoliaceae | Ranunculales | <i>rps11</i> |
| | <i>Sanguinaria</i> | Monocot | 3' <i>rps11</i> |
| Won and Renner (2003) | <i>Gnetum</i> | Asterid | <i>nad1B-C</i> |
| Davis and Wurdack (2004) | Rafflesiaceae | Vitaceae | <i>nad1B-C</i> |
| Mower <i>et al.</i> (2004) | <i>Plantago</i> | Orobanchaceae | <i>atp1</i> |
| | <i>Plantago</i> | Convolvulaceae | <i>atp1</i> |
| Nickrent <i>et al.</i> (2004) | Apodanthaceae | Fabales | <i>atp1</i> |
| Woloszynska <i>et al.</i> (2004) | <i>Phaseolus</i> | Angiosperm | cp <i>pvs-trnA</i> |
| Bergthorsson <i>et al.</i> (2004) | <i>Amborella</i> | Angiosperm ^c | <i>atp4, atp6, atp8, atp9, ccmB, ccmC, ccmF_{N1}, cox2 (2x), cox3, nad1, nad2, nad4, nad5, nad7, rpl16, rps19, sdh4</i> |
| | | Moss | <i>cox2, nad2, nad3, nad4, nad5, nad6, nad7</i> |
| Schönenberger <i>et al.</i> (2005) | <i>Ternstroemia</i> | Ericaceae | <i>atp1</i> |
| | <i>Bruinsmia</i> | Cyrillaceae | <i>atp1</i> |
| Davis <i>et al.</i> (2005) | <i>Botrychium</i> | Santalales | <i>nad1B-C, matR</i> |

^a Recipient lineages are indicated by the genus examined, or when multiple related genera were found to share the same foreign gene, the family name. Parasitic plants are in bold.

^b Donor lineages as best defined by current data. Parasitic plants are in bold.

^c All but *atp9, nad5, nad7*, and *cox3* are from eudicots, a derived group within angiosperms.

(Table adapted from: Richardson and Palmer, 2007)

1.4 Models for gene transfer and integration

There are no models available for the exact mechanism of transfer and integration of foreign DNA into a new genome. The best studied system is that of *Agrobacterium*-mediated transfer. Though the early events that lead to recognition and transfer are reasonably well characterized (Sheng and Cithosky, 1996) (also see Figure 1.3), the mechanism that leads to DNA integration is still largely unknown. T-DNA integration is the culmination point of the entire process of the *Agrobacterium*-plant cell DNA transfer. T-DNA does not encode enzymatic activities required for integration (Tinland *et al.*, 1995; Mysore *et al.*, 1998) and plant DNA ligases, must provide these functions (Ziemienowicz *et al.*, 2000; Friesner and Britt, 2003). Chilton and Que (2003) provide strong evidence for T-DNA integration into double-stranded breaks created in the plant genome by a transiently expressed rare cutting endonuclease I-CeuI. Nucleotide sequence analysis of the plant DNA/T-DNA junctions indicated that T-DNA integration occurred by a non-homologous end-joining mechanism (Chilton and Que, 2003). Tzfira *et al.* (2003) utilized the double-stranded DNA breaks created by transient expression of another endonuclease, I-SceI, to demonstrate preferential T-DNA integration into these 18 bp long I-SceI recognition sites as determined by sequencing analyses of integration junctions from 620 independent transgenic lines (Tzfira *et al.*, 2003). Both studies suggested that T-strands are first converted to double-stranded intermediates and only then are integrated into the plant DNA (Chilton and Que, 2003; Tzfira *et al.*, 2003).

Illegitimate recombination has also been proposed as a model for integration (Gheysen *et al.*, 1991). Illegitimate recombination is basically a two-step process: DNA ends are first generated and then joined. For T-DNA integration, the ends of the T-DNA would be joined to plant chromosomal breaks. The T-DNA most likely enters the plant as a linear molecule (Zambryski, 1988; Bakkeren *et al.*, 1989). Free ends within the plant DNA, which is the other substrate for the reaction, can be generated in a variety of ways, such as errors during replication or repair, or nicks during exposure of single strands in transcription (Roth and Wilson, 1988). Several enzymes involved in these processes, such as topoisomerases I and II, are known to nick or break DNA. There are indications that T-DNA would preferentially integrate in transcriptionally active regions (Koncz *et al.*, 1989; Herman *et al.*, 1990). This could be explained by the higher likelihood of nicks in these regions, as well as the better accessibility of the target due to unraveling of the nucleosomes of transcribed DNA by comparison with tightly coiled, transcriptionally silent sequences (Patient and Allan, 1989). It has also been hypothesized that

histone H2A plays an important role in illegitimate recombination of T-DNA into the plant genome. *Arabidopsis* plants with mutants in this gene are recalcitrant to *Agrobacterium* root transformation (Mysore et al., 2000).

The infection cycle of plant viruses, unlike those that infect vertebrates and bacteria, is not known to involve an integration event. In the two groups of DNA viruses that infect plants, the single-stranded DNA *Geminiviridae* replicates via a rolling circle mechanism and the double-stranded DNA *Caulimoviridae*, replicate by reverse transcription, making use of a virally encoded reverse transcriptase (Grierson and Covey, 1988). They are classified as pararetroviruses to distinguish them from true retroviruses, which have RNA genomes. Retrovirus DNA integrates into host chromosomes by means of a virally encoded integrase (Patience *et al.*, 1997), pararetroviruses generally lack the gene for this enzyme, and integration is not required for virus replication. With the absence of an integrase enzyme, the integration of viral sequences into the plant genome must take place *via* illegitimate recombination, in cells undergoing active genetic processes (Hull *et al.*, 2000).

Fungi have no known infectious viruses analogous to transducing bacteriophage that transport foreign DNA from one individual to another in prokaryotes. However, several experimental systems point to potential ways in which DNA could move between fungi or between fungi and other organisms. Gene transfer through mechanisms similar to DNA transformation appears to take place in culture or in natural settings, as evidenced by transfer of genes and plasmids (Hoffmann *et al.*, 1994; Kempken, 1995).

With the ever increasing amount of available sequence and complete genome data such as the rice genome (Goff *et al.* 2002; International Rice Genome Sequencing Project 2005), comparing whole genomes using computational biology offers a new way to search and identify possible instances of DNA transfer and sharing between non-related genomes. The aim of this study was to identify sequences in the rice nuclear genome sharing similarities with non-rice nuclear sequences, originating either from the rice chloroplast or mitochondrial genomes, or from other possible sources such as viruses, bacteria and fungi associated with plants. Since it is possible that 'accidental' DNA transfer, in contrast to the specific and directed transfer seen with *Agrobacterium*, might occur as well between rice and its associated microorganisms, an important focus of this study was not to limit the search to possible transferred genes but to assess the total amount of sequence similarities between the different genomes, including

functional and non-functional sequences. The thesis describes the results found when looking at chloroplast and mitochondrial DNA transfer to the rice nuclear genome. It also provides a comparison between the amount and representation of the different organellar genomes in the nuclear genome of rice. It further describes the different searches done in order to identify sequence similarities in the rice nuclear genome and several rice related viruses, three different bacterial genomes, namely *Bacillus cereus*, *Pseudomonas syringae pv. syringae* and *Xanthomonas oryzae pv. oryzae*, chosen because of their different degrees of association with rice. Lastly it provides a description of the shared sequences between the nuclear genome of rice and that of the rice blast fungi, *Magnaporthe grisea*.

2

Materials and Methods

2.1 Blast analysis

All homology searches were done against the *Oryza sativa* cv. *japonica* genome database release 16.0 available from TIGR.

Blastn searches were done on a local server against the rice genome (release 16.0 downloaded from the TIGR website) using the following Perl scripts.

Larger genomes were firstly divided into 100 000 bp sections using the splitter script in Perl

Example:

```
splitter -size 100000 -sequence 'Sequence name' -outseq 'Sequence
name'.split

#creates an output file with FASTA records 100000 bases long

#'Sequence name' = name of the sequence file to be divided
```

The subset of sequences was then saved as separate *.fasta* files in a folder named *fastafiles*. These files were searched against the rice genome database on the local server using the following script:

```
use strict;

use Bio::SeqIO;

use Bio::Tools::Run::StandAloneBlast;

my $DB="RICE";           #Which blast database

my $DIR="fastafiles";   #where are the query files
```



```
my @files = `ls $DIR`; #get a list of all files in $DIR

my $element=""; #init $element;

foreach $element (@files){ #put the next element in @files
into $element

    chomp $element; #remove extraneous \n

    my $FILE = "$DIR/$element"; # setup a var with path to file

    my $OUTPUT = "blast.out.". $element;

    my @params = ('program' =>'blastn','database' => $DB,'outfile'
=> $OUTPUT,'_READMETHOD' => 'Blast');

    #blast.out.$element should generate an output file for each
query file so you do not overwrite previous blasts

    my $factory = Bio::Tools::Run::StandAloneBlast->new(@params);

    my $seq_in = Bio::SeqIO->new (-file => $FILE ,'-format' =>
'fasta');

    my $query = $seq_in->next_seq();

    print "Starting blast on $FILE","\n"; #let the user know
where we are
```

This script resulted in a output file for each sequence file to be searched against the database containing the alignment results (if any). The individual fragments from the different genomes that produced alignments with e-values e^{-20} or smaller were then realigned with the rice genome database on the *Gramene* genome browser (<http://www.gramene.org>) to obtain the specific start and end positions on the various rice chromosomes. The results of these alignments were then combined in excel spreadsheets for each genome comparison for further analysis. Mapping the alignment data back onto the karyotype of rice was done using the various facilities provided by *Gramene*.

The specific criteria and sequences used for each analysis are as follows:

2.1.1 Chloroplast and Mitochondrial Comparison

The *Oryza sativa* cv. *japonica* chloroplast genome (NC_001320) of 134525 bp as well as the mitochondrial genome (BA000029) of 490520 bp were obtained from the *National Center for Biotechnology Information* (NCBI) website (<http://www.ncbi.nlm.nih.gov/index.html>).

For the chloroplast and mitochondrial genomes the intact sequence were used in homology searches against the rice. Only alignments greater than 100 bp with a homology of 95% and greater were kept for further analysis. Each of these 100bp and greater fragments were then re-aligned with the rice genome using the *Gramene* genome browser. This provided the specific start and end positions of the alignments on the different rice chromosomes. Once again only alignments of 100 bp and greater with an expectation value of e^{-20} and smaller were used. All repeated sequences within the plastid genomes that aligned to the same positions on the rice genome as well as internal and smaller alignments within larger alignments in the rice chromosomes were removed from the data sets. Where more than one fragment aligned to the same position in the rice nuclear genome, the one with the lower homology or greater e-value were removed.

2.1.2 Viral Comparison

The viral genomes used in the comparison included: Magnaporthe grisea virus 1 (NC_006367); *Oryza rufipogon* endornavirus (NC_007649); *Oryza sativa* endornavirus (NC_007647); Rice dwarf virus (Taxonomy id: 10991); Rice gall dwarf virus (Taxonomy id: 10986); Rice black streaked dwarf virus (Taxonomy id: 10990); Rice grassy stunt virus (Taxonomy id: 66266); Rice ragged stunt virus (Taxonomy id: 42275); Rice stripe virus (Taxonomy id: 12331); Rice tungro bacilliform virus (NC_001914); Rice tungro spherical virus (NC_001632); Rice yellow mottle virus (NC_001575); Rice yellow stunt virus (NC_003746) and the Soil-borne cereal mosaic virus (Taxonomy id: 100887); Wheat dwarf virus (NC_003326); Maize streak virus (NC_001346); Sugarcane streak virus (NC_003744); Panicum streak virus (NC_001647); Wheat streak mosaic

virus (NC_001886); Wheat eglid mosaic virus (NC_009805); Sorghum mosaic virus (NC_004035) and Maize dwarf mosaic virus (NC_003377).

Full length DNA sequences of the viral genomes were submitted to the *Gramene* Blastn server (<http://www.gramene.org/multi/blastview>) for homology and similarity searches against the rice (*Oryza sativa* cv. *japonica*) genome. Searches were done to identify and include distant homologies with a word size of 9; mismatches scored at -1; gap open penalties at 2 and gap extension penalties at 1. Results were limited to matches with e-values of e^{-5} and smaller and fragments of 100 bp and longer.

2.1.3 Bacterial Comparison

The following bacterial genomes were used in the comparative studies: *Bacillus cereus* ATCC 10987 (NC_003909), *Pseudomonas syringae* pv. *syringae* B728a (NC_007005) and *Xanthomonas oryzae* pv. *oryzae* KACC10331 (NC_006834).

The bacterial genomes were divided into 100 Kb fragments that were each aligned with the rice genome using the Blastn algorithm. Only alignments greater than 100 bp were kept for further analysis. Each of these 100 bp and greater fragments were then re-aligned with the rice genome using the *Gramene* genome browser (<http://www.gramene.org/multi/blastview>). This provided the specific start and end positions of the alignments on the different rice chromosomes. Once again only alignments of 100 bp and greater with and expectation values of e^{-20} and smaller were used. Further identification and characterization of the sequences were done using the facilities provided by the National centre for biotechnology information (<http://www.ncbi.nlm.nih.gov/index.html>). All repeated sequences within the bacterial genomes that aligned to the same positions on the rice genome as well as internal and smaller alignments within larger alignments in the rice chromosomes were removed from the data sets.

2.1.4 Fungal Comparison

The *Magnaporthe grisea* genome (Data Version 10/31/2003; Release 2.3) were downloaded from *Magnaporthe* Sequencing Project, Ralph Dean, Fungal Genomics Laboratory at North

Carolina State University (www.fungalgenomics.ncsu.edu), and Centre for Genome Research (www.broad.mit.edu).

The *Magnaporthe* genome was used in the contigs of various lengths in which it was downloaded and aligned against the rice genome on a local server using Perl scripts. Only alignments of 100 bp and greater with an expectation value of e^{-20} and smaller were used. All repeated sequences within fungal genomes that aligned to the same positions on the rice genome as well as internal and smaller alignments within larger alignments in the rice chromosomes were removed from the data sets. Sequence dendograms were created by multiple alignments using ClustalW and sequence fragments with the best homologies compared to the rice genomic fragments found with Blastn.



3

Results

3.1 Chloroplast and Mitochondrial Comparison

3.1.1 Chloroplast homologies in the rice nuclear genome.

A substantial amount of homologies were found between the chloroplast and nuclear genomes. Table A-1 (Appendix, pp 101-193) shows the alignment data, including all the alignments found during the initial BLAST search. In order to eliminate small sequence repeats and non-significant alignments only fragments 100 bp and greater with 95% or higher homology were used. This 95% threshold was also used to limit the inclusion of sequences of mitochondrial origin in the chloroplast analysis and *vice versa*.

Using the above mentioned parameters, the rice chloroplast genome aligned to a total of 778678 bp in the nuclear genome. Figure 3.1 shows the distribution of these homologous regions over the rice karyotype. A total of 1070 alignments that made up the 778678 bp were used to draw the map. However fewer positions are visible on the map as insertions tend to group together in certain areas rather than being randomly distributed over the whole genome.

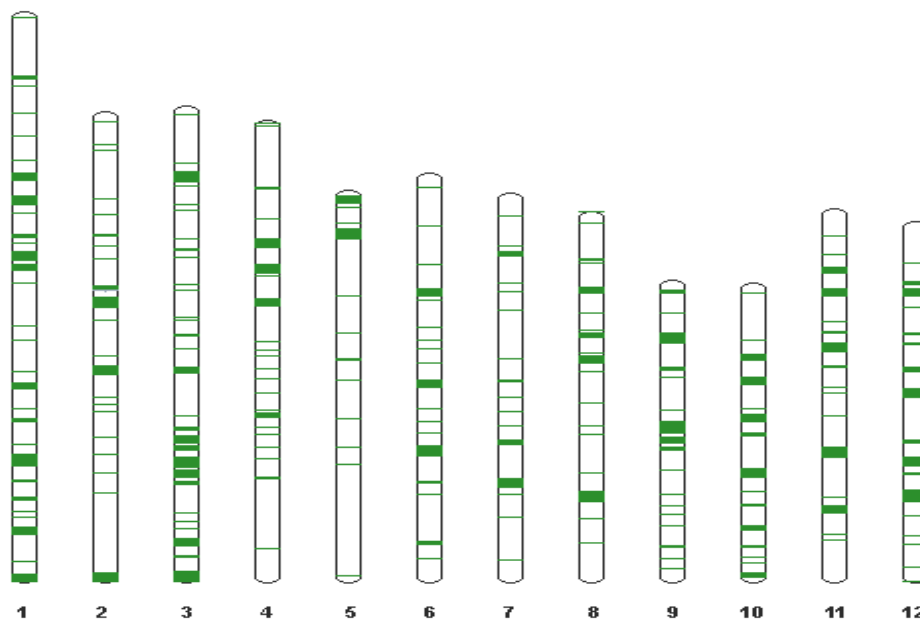


Figure 3.1: Distribution of chloroplast homologies in the rice nuclear genome.

3.1.2 Representation of the chloroplast genome in the rice nuclear genome

Figure 3.2 shows the frequency in which each region of the chloroplast genome is represented in the nuclear genome of rice. It is clear from this figure that while most of the chloroplast genome is present to some level in the nucleus there are some areas like 16S rRNA and the NADH dehydrogenase subunits that is present at a much higher frequency than the rest of the chloroplast genome.

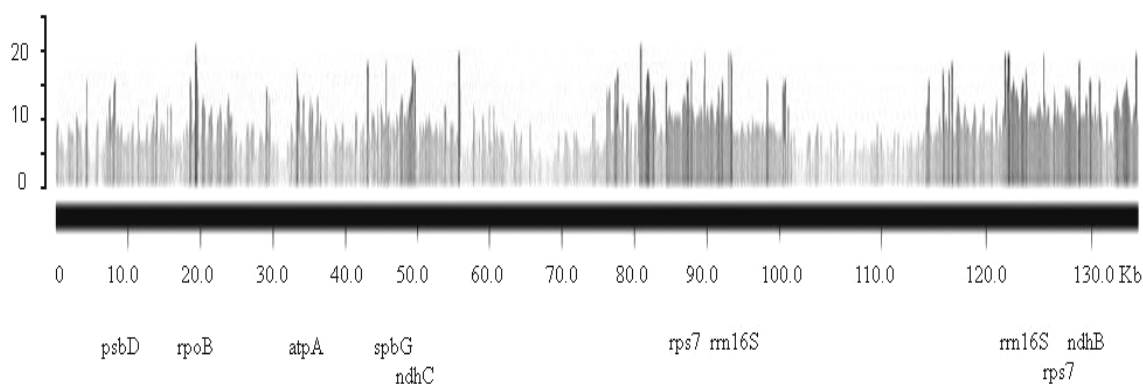


Figure 3.2: Representation of the chloroplast genome in the nuclear genome of rice. Vertical bars indicate the frequency (number of insertions) in which each area is present in the nuclear genome. Below are some of the genes that present in the areas that are highly represented. These are: *psbD* – PSII D2-protein; *rpoB* – RNA polymerase subunit B; *atpA* - H⁺-ATPase subunit CF1 α ; *spbG* – PSII G protein; *ndhC* - NADH dehydrogenase ND3 subunit; *rps3* - 30S r-protein CS3; *rpl2* - 50S r-protein CL2; *rps7* - 30S r-protein CS7; *rrn16S* – 16 S rRNA; *ndhB* - NADH dehydrogenase ND2 subunit.

3.1.3 Chloroplast rRNA genes in the rice nuclear genome

As mentioned one of the chloroplast genome regions that is present at a high frequency in the nuclear genome is that of the rRNA genes. Thirty-nine fragments of the 16S rRNA larger than 100 bp make up 29035 bp (3.7%) of the total chloroplast homology with the nuclear genome. For the 23S rRNA gene 46 fragments and 38012 bp make up 4.8% of the total chloroplast insertions. The 5S rRNA gene is only present 26 times in fragments larger than 100 bp that

accounts for 9071 bp (1.2%). Together these account for 9.8% of the chloroplast insertions in the rice nuclear genome. Figure 3.3 shows the distribution and frequency of these rRNA subunits in the rice nuclear genome.

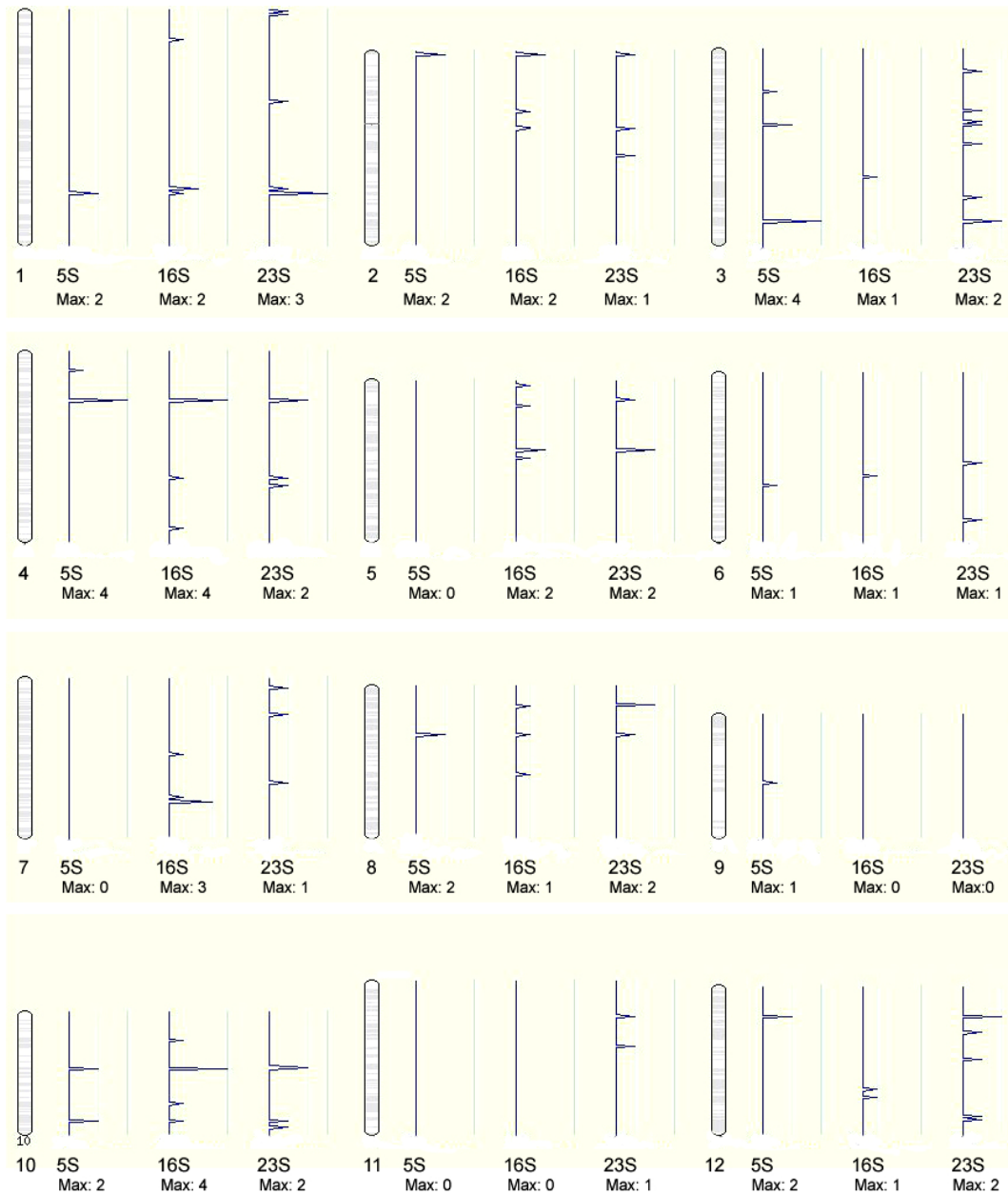


Figure 3.3: Chloroplast rRNA insertions in the nuclear genome showing the position and the density of the insertions. Max refers to the density or number of insertions in a particular region.

3.1.4 Nature of the chloroplast insertions

Though some chloroplast insertions represent large or whole chloroplast genome insertions with subsequent deletions, there are areas that seem to have arisen from the insertion of multiple fragments in the same area. Figure 3.4 shows the composition of such an area on chromosome 12 of rice. The numbers on top shows the position in relation to the chloroplast genome, measured in base pairs from the origin of replication, while the bottom numbers represent the start and end positions of the insertions on chromosome 12. The spacer sequences between the insertions were found contain a high number of thiamine (T) repeats.

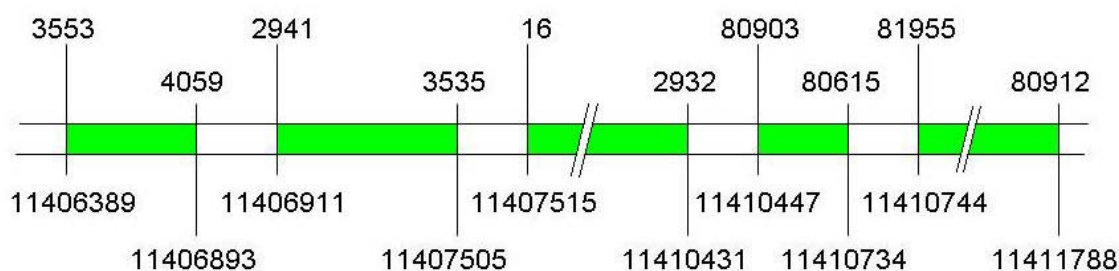


Figure 3.4: Chloroplast insertions on rice chromosome 12.

3.1.5 Mitochondrial homologies in the rice nuclear genome

Homologies between the mitochondrial and nuclear genomes were less than compared with the chloroplast genome. Table A-2 (Appendix, pp 194-264) shows the raw alignment data, including all the alignments found during the initial BLAST search. This includes fragments less than 100 pb with less than 95% homology that were discarded during further analysis.

Using the above mentioned parameters, the rice mitochondrial genome aligned to a total of 614165 bp in the nuclear genome. Figure 3.5 shows the distribution of these homologous regions over the rice karyotype. A total of 1329 alignments were used to draw the map. However as for the chloroplast, individual insertions seem to be grouped together in certain areas rather than being randomly distributed over the whole genome.

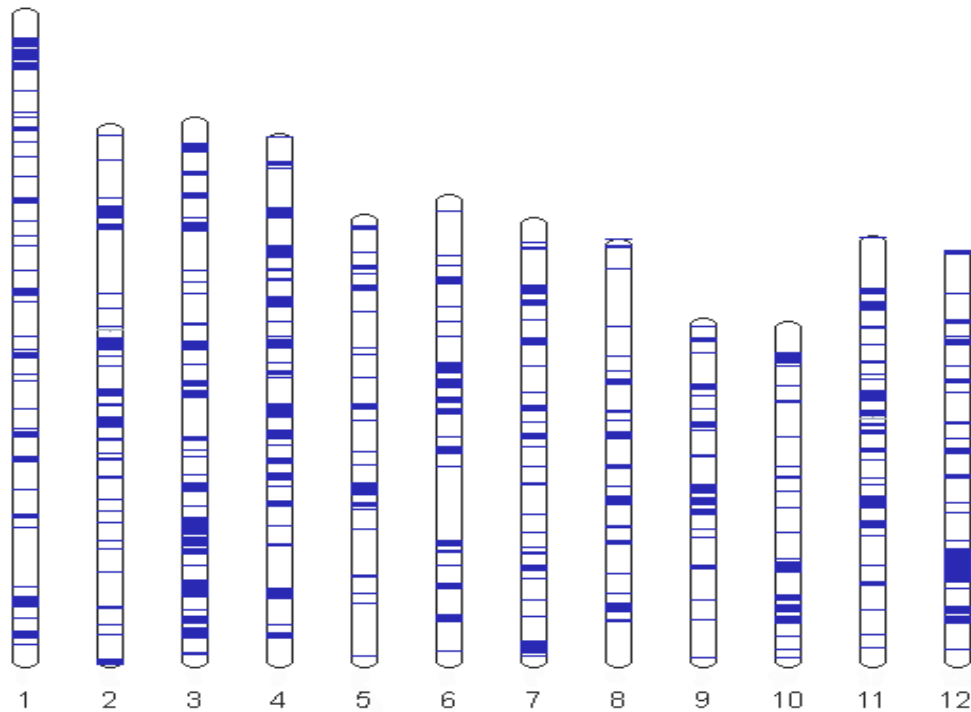


Figure 3.5: Distribution of mitochondrial homologies in the rice nuclear genome.

3.1.6 Representation of the mitochondrial genome in the rice nuclear genome

The representation profile of the mitochondrial genome on the nucleus is shown in Figure 3.6. The distribution pattern shows that only small parts of the genome is represented at high frequencies while most parts are absent from the nuclear genome. Although the NADH dehydrogenase subunits are present at high frequencies in the nuclear genome it is mostly present as fragments rather than complete gene sequences and account for 14841 bp in the nuclear genome. Figure 3.7 and 3.8 shows the frequency and position of these insertions.

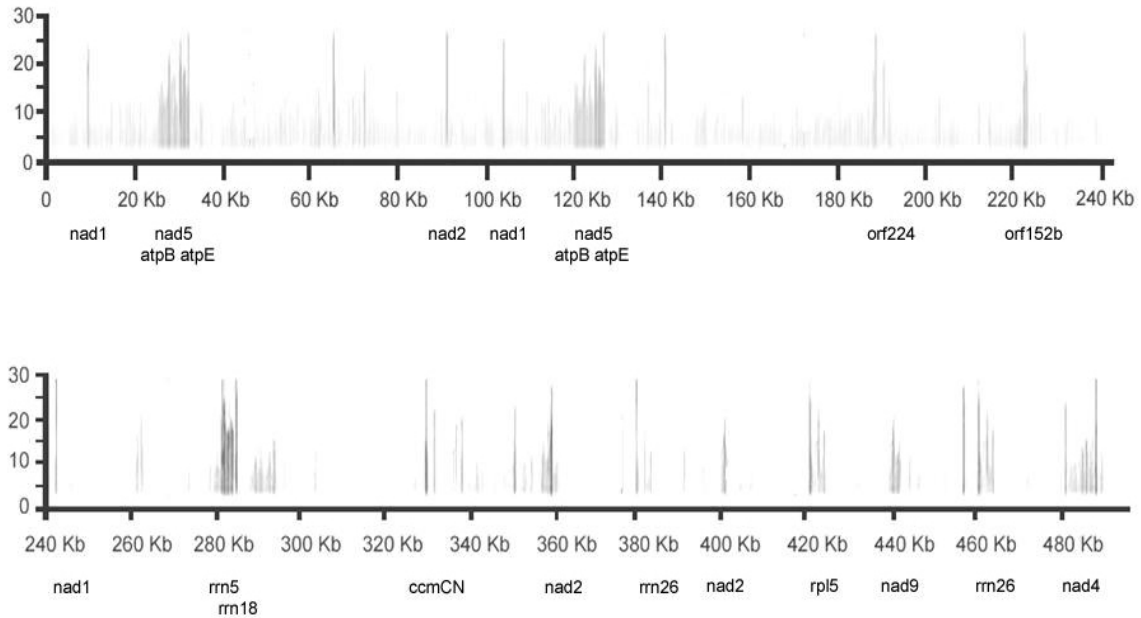


Figure 3.6: Representation of the mitochondrial genome in the nuclear genome of rice. Vertical bars indicate the frequency in which each area is present in the nuclear genome. Below are some of the features in the regions that are highly represented, like the NADH dehydrogenase subunits (*nad*) the ATPase subunits (*atpB* and *atpE* as well as the rRNA genes (*rrn5*, *rrn18* and *rrn26*).

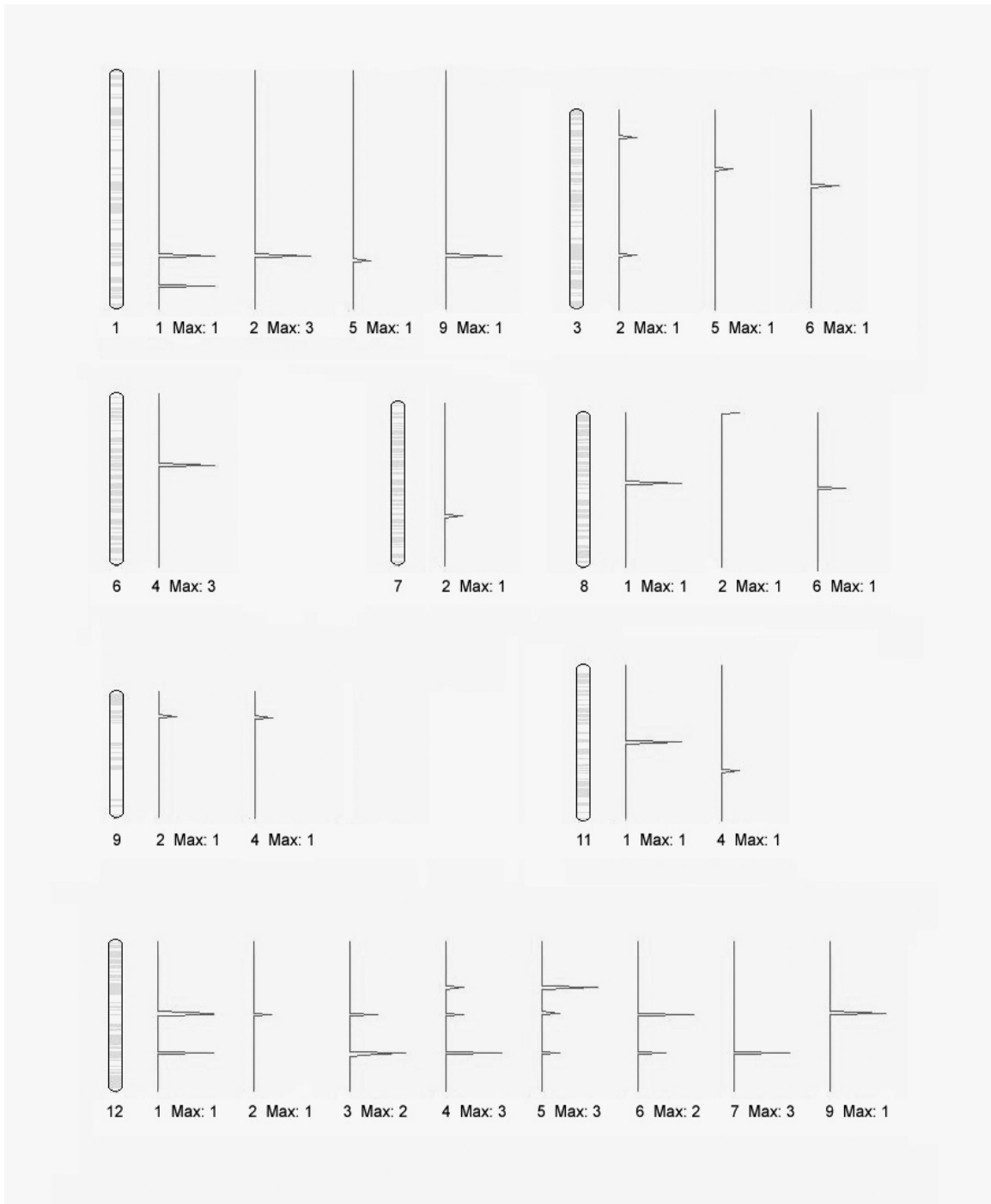


Figure 3.7: Localization of plastid NADH dehydrogenase subunits in the nuclear genome of rice. Max indicates the number of fragments in that area, the height of the peaks is also an indication of the length of the insertions.

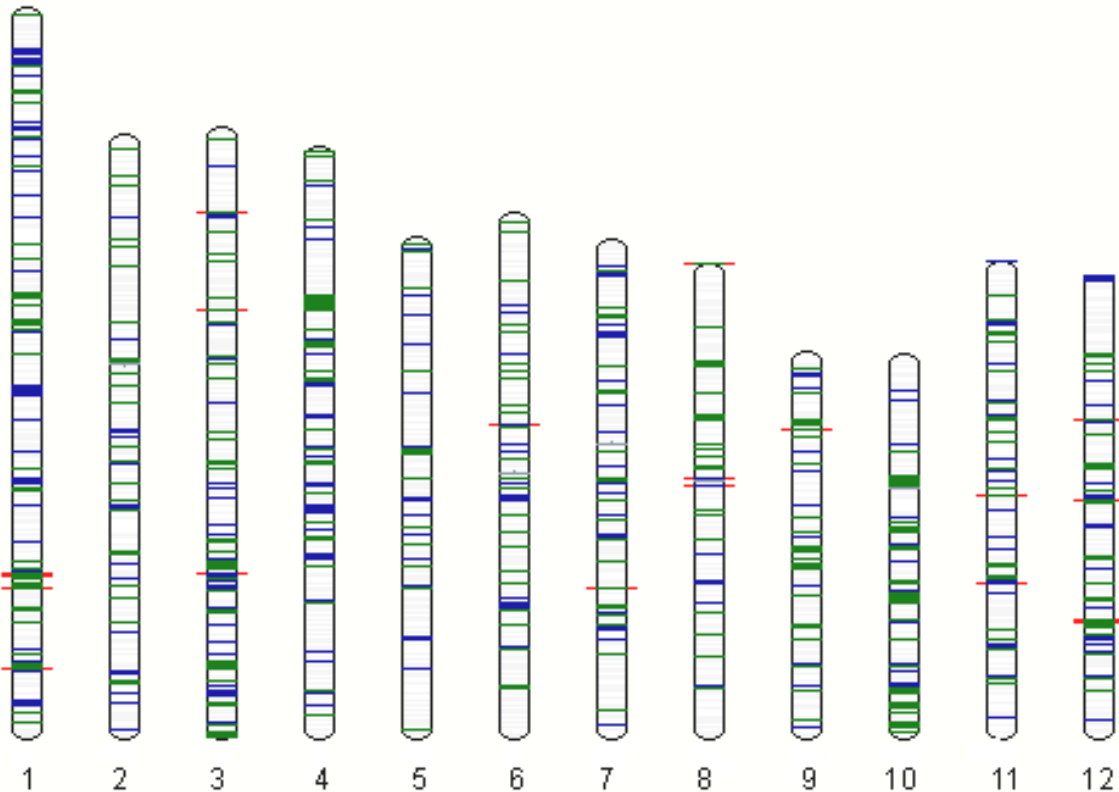


Figure 3.8: Position of the NADH subunits (red wide box) relative to the chloroplast (green) and mitochondrial (blue) insertions.

3.1.7 Mitochondrial ATPase- β genes in the nucleus

Five copies of the chloroplast ATPase CF₁ β -subunit that formed part of the chloroplast insertions in the nuclear genome were found (Chr. 1:14120102-14121600; 5:20783405-20784761; 6:23544648-23546144; 10:10349658-10351154 and 12:5610836-5612332). Two more copies of the ATPase β -subunit were found in the nuclear genome (Chr. 1:28257351-28261681 and 5:27245171-27249646). The first is located between two mitochondrial insertions (1:28097561-28097714 and 1:28361408-28361977) but the second is located well outside of any plastid DNA insertions, (Figure 3.9). One of the distinguishing features of these two copies is eight intron-like sequences that interrupt the coding sequence compared to the chloroplast copies.

A similar copy is found in the genome of *Arabidopsis thaliana* (Chr. 5:2825714-2828663; At5g08690.1). This has been well annotated in terms of intron and exon positions. The intron-like sequences of the two rice copies is located in the same positions as that of the one in *Arabidopsis*. While the exon-sequences were well conserved between the 3 copies the intron-sequences showed no homology between the three copies. Figure 3.9 shows the location of the five chloroplast ATPase CF₁ β-subunit copies and the two intron-containing copies in relation to the chloroplast insertions in the nuclear genome of rice.

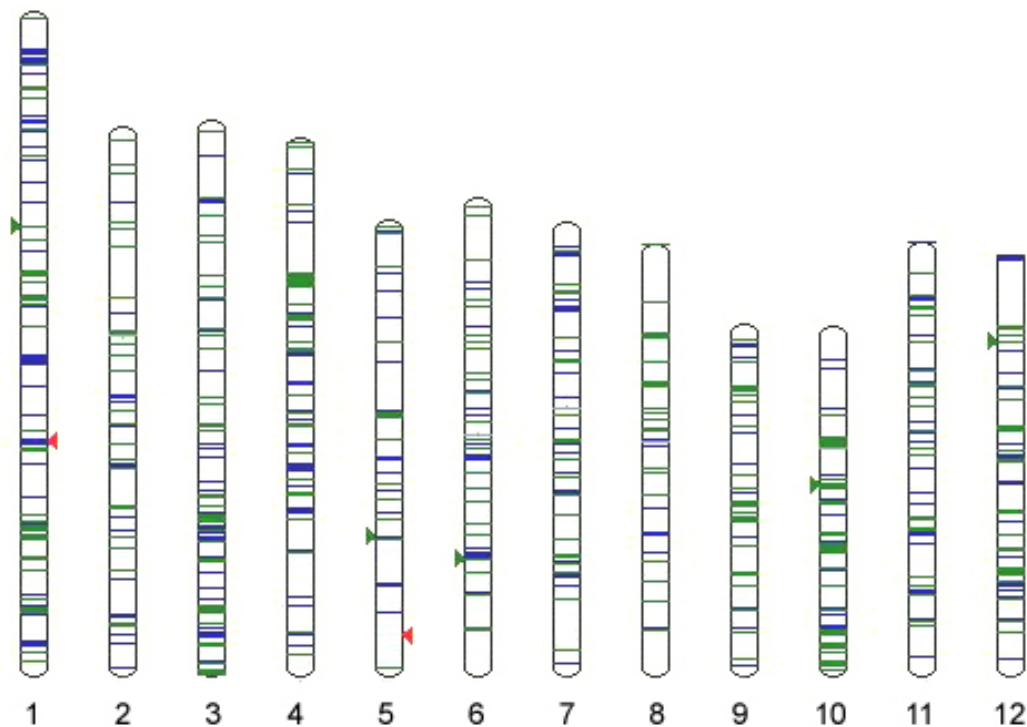


Figure 3.9: Location of the five chloroplast ATPase CF₁ β-subunit copies (green arrow, left) and the two intron-containing copies (red arrows right) in relation to the chloroplast insertions (green boxes) in the nuclear genome of rice.

When the intron sequences are removed from these copies and the translated protein sequences compared to that of the ATPase-β peptide from the chloroplast (NP_039390) as well as the mitochondrial ATPase-β (BAA01372) they show a high degree of homology with the mitochondrial peptide (Figure 3.10), and to a lesser degree with the chloroplast peptide.



Figure 3.10: Alignment of the translated coding sequences of the two nuclear ATPase- β copies in rice (Rice1 and Rice5) and the rice mitochondrial copy (Mt).

3.1.8 Co-alignments between the chloroplast and mitochondria

Co-alignment of the chloroplast and mitochondrion accounts for some of the homology in the nuclear genome; 8997 bp of the rice chloroplast genome align to 17168 bp in the rice mitochondrial genome, corresponding mainly to the ATP synthase B and E subunits as well as to NADH dehydrogenase subunits 1, 2 and 5. This accounts for 64453 bp of shared homology in the rice nuclear genome. Table A-3 (Appendix, pp 265-269) shows the exact positions of

these co-alignments in the rice nuclear genome. Figure 3.9 gives a summary of the chloroplast, mitochondrial and shared homology on each chromosome.

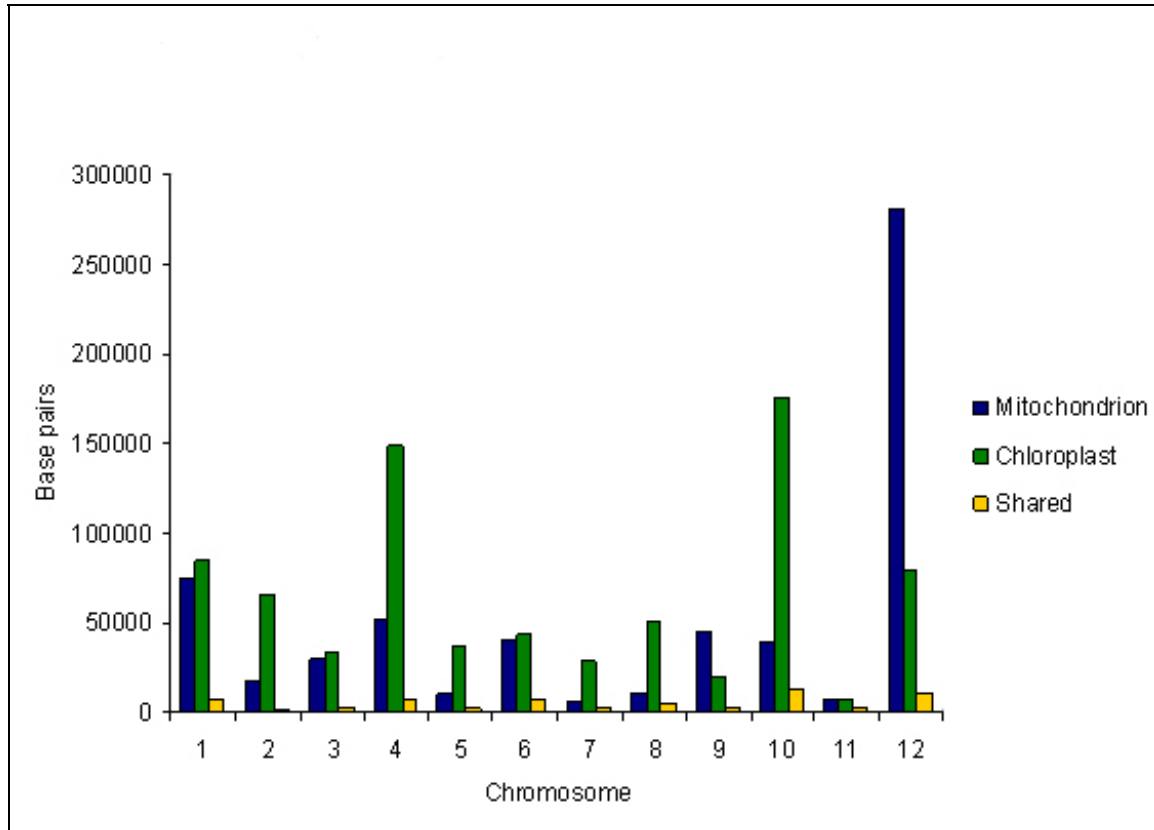


Figure 3.11: Mitochondrion, chloroplast and mitochondrion-chloroplast co-alignments on each of the rice nuclear chromosomes.

3.1.9 Size distribution of insertions

Figure 3.12 shows the size distribution of the chloroplast and mitochondrial insertions. In the filtered data set, using only alignments longer than 100 bp with a homology of 95% and greater, for both the chloroplast as well as the mitochondria the majority of fragments were between 100 - 200 bp in size with a steady decline in the number of fragments with an increase in fragment length.

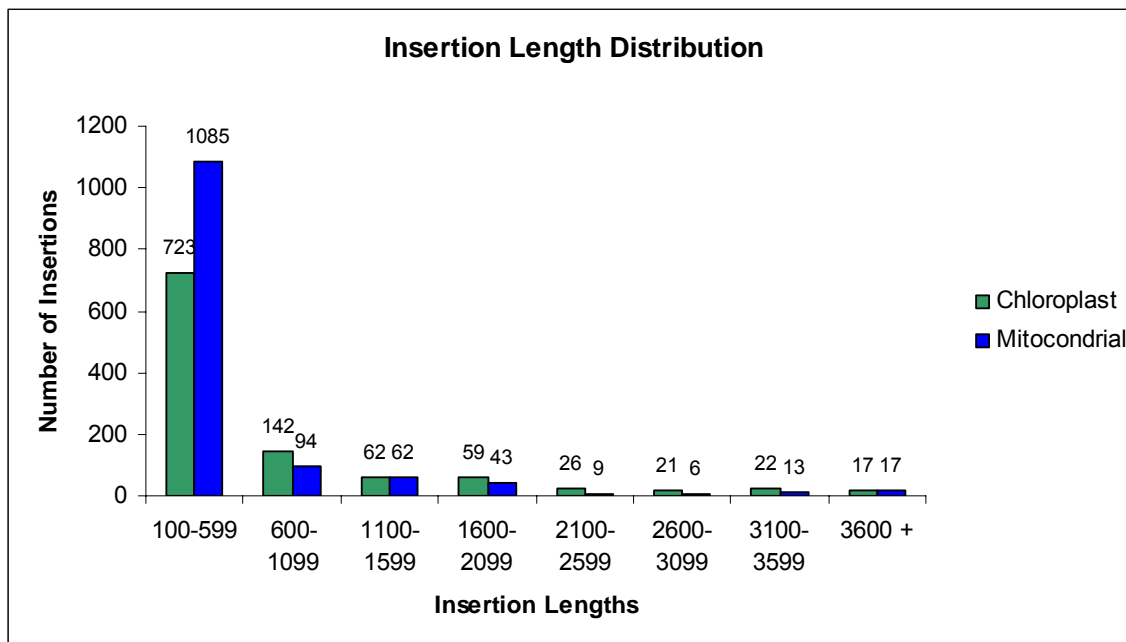


Figure 3.12: Size distribution of plastid insertions in the nuclear genome. The number of insertions in each increment is indicated on top of each bar.

3.2 Viral Comparison

Comparisons between the genomes of several rice- and grass related viruses resulted in the identification of a variety of fragments in the rice genome with distant homology to viral sequences. Figure 3.13 shows the position of the different fragments mapped on the rice karyotype. The largest number of fragments was found in the comparison between the rice genome and the Rice tungro bacilliform virus (RTBV). Previous reports on RTBV-like sequences in the rice genome identified 29 fragments (with a total length of 225 719 bp) (Kunii *et al.*, 2004). In this study we identified 409 fragments between 100 and 2443 bps (with a total length of 280 912) with 56 to 71% identity covering most of the RTBV genome (Table B-1, Appendix pp 270-284). Some of the RTBV fragments are represented up to 40 times. Fragments of the RTBV virus in the rice genome include a 844 bp sequence on chromosome 11 (26839202-26839983) corresponding to TIGR Locus LOC_Os11g45180.1 which is a putative disease resistance peptide. There is also a 2436 bp fragment (8: 11221697-11223971) that falls within TIGR Locus LOC_Os08g18820.1 (novel transcript, zinc knuckle family protein). This fragment forms part of the last intron and half of the last exon of this gene in rice. Using the complete gene sequence to do a blastn search identifies the sequence in the *Oryza sativa* Japonica, Indica and

Nipponbare groups as well as in the RTB virus. A translated search (blastx) of this sequence identifies it as a hypothetical protein from RTBV (FAA00012.1) (e=0.0). A third fragment of 2322 bp (8: 11161887-11164077) that falls within TIRG Locus LOC_Os08g18220.1 is annotated as a putative unclassified retrotransposon protein. Using blastn to search the complete gene sequence gives results in *Oryza sativa* Japonica and Indica as well as in the RTB virus and blastx searches identifies the rice gene as a hypothetical protein from RTBV (FAA00009.1) (e=0.0). Using the complete genome of the RTB virus in a blastn search on the NCBI non-redundant database, the top 174 hits include only RTBV (0.0), *Vitis vinifera* (792 bp, 65%, 8e-25), *Oryza sativa Japonica* (6e-14) and Tobacco vein-clearing virus (248 bp, 69%, 3e-10).

Fifty-one additional fragments with sequence similarities between the rice genome and 5 RNA viruses were also found that has not yet been reported in the literature (Table B-2, Appendix pp 285-286). These included the *Oryza rufipogon* endornavirus (ORE) (NC_007649), *Oryza sativa* endornavirus (OSE) (NC_007647), Rice black streaked dwarf virus (RBSDV) (segment 4, NC_003735), Rice grassy stunt virus (RGSV) (segment 3, NC_002325 and segment 6, NC_002328) and the Rice stripe virus (RSV) (RNA4, NC_003753) were also found to have similarities to the rice genome. These fragments of similarity ranged between 167 to 1800 bp in length, with an average size of 460 bp and were unevenly spread among the viruses. Fragments from the Rice grassy stunt virus fragment 3 include a 1800 bp fragment on chromosome 6 (6644000-6645675) that does not fall within any expressed portion of the rice genome as well as a 350 bp fragment on chromosome 2 (21462026-21462352) that is also in a 'non-functional' portion of the rice genome and that can only be identified in *Oryza sativa* Japonica using a blast search in the plant database of NCBI. A 550 bp fragment with sequence similarity to *Oryza sativa* endornavirus is found within the intron of a putative potassium transporter 1 (2:18870105-18870616) in the rice genome. Using this fragment to search the plant database on NCBI only identifies this sequence fragment in *Oryza sativa* Japonica. There is also a 1034 bp fragment with similarity to *Oryza rufipogon* endornavirus in a non-genic region of chromosome 12 (13977633-13978583) that is also only found within *Oryza sativa* Japonica.

A genome comparison were also done between the rice genome and 8 other monocot-related viral genomes (4 ssDNA and 4 ssRNA) namely the Wheat dwarf virus (NC_003326); Maize streak virus (NC_001346); Sugarcane streak virus (NC_003744); Panicum streak virus (NC_001647); Wheat streak mosaic virus (NC_001886); Wheat eglid mosaic virus (NC_009805); Sorghum mosaic virus (NC_004035) and the Maize dwarf mosaic virus

(NC_003377). Even with low stringency parameters no significant sequence similarities were found between these genomes and the rice genome

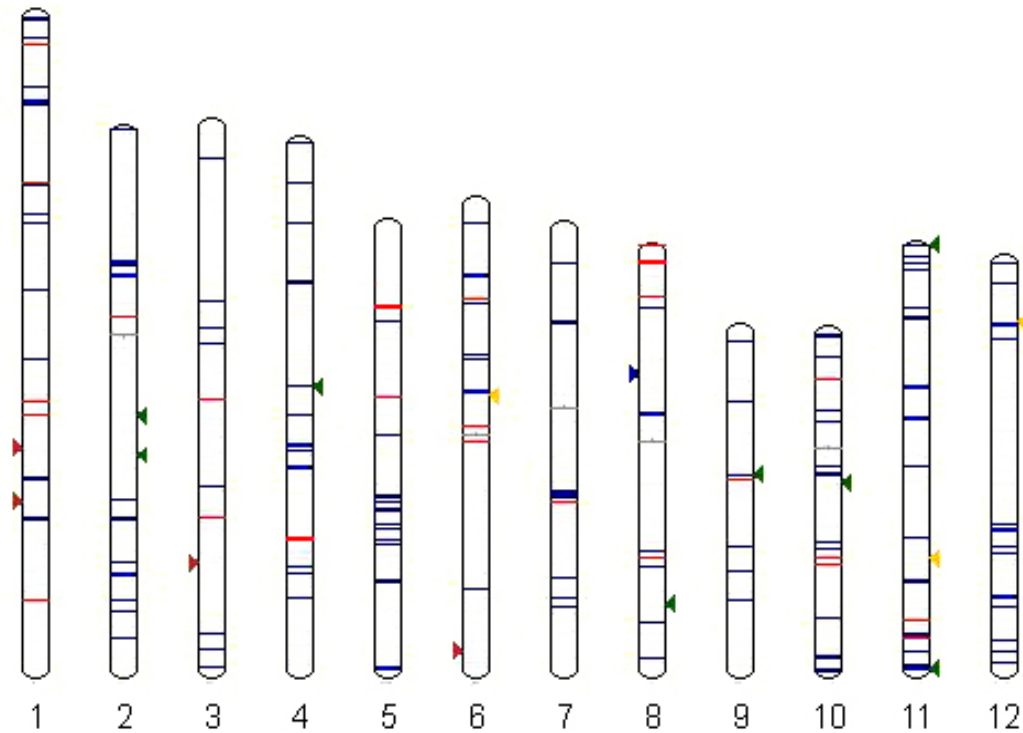


Figure 3.13: Positions of the viral homologies in rice. *Oryza rufipogon* endornavirus (blue left hand arrow); *Oryza sativa* endornavirus (green right hand arrows); Rice black streaked dwarf virus (brown left hand arrows); Rice stripe virus (yellow right hand arrows); Rice grassy stunt virus (red filled box) and RTBV (blue filled box).

3.3 Bacterial comparison

3.3.1 Bacillus sequence similarities in the rice nuclear genome

Comparisons between the genomes of *Bacillus cereus* and that of rice resulted in the identification of a great number of regions with sequence similarity. Limiting the results only to fragments 100 bp or longer with an e-value equal smaller than 10^{-20} resulted in 74 fragments totaling 12123 bp. The positions of these fragments are shown in figure 3.14.

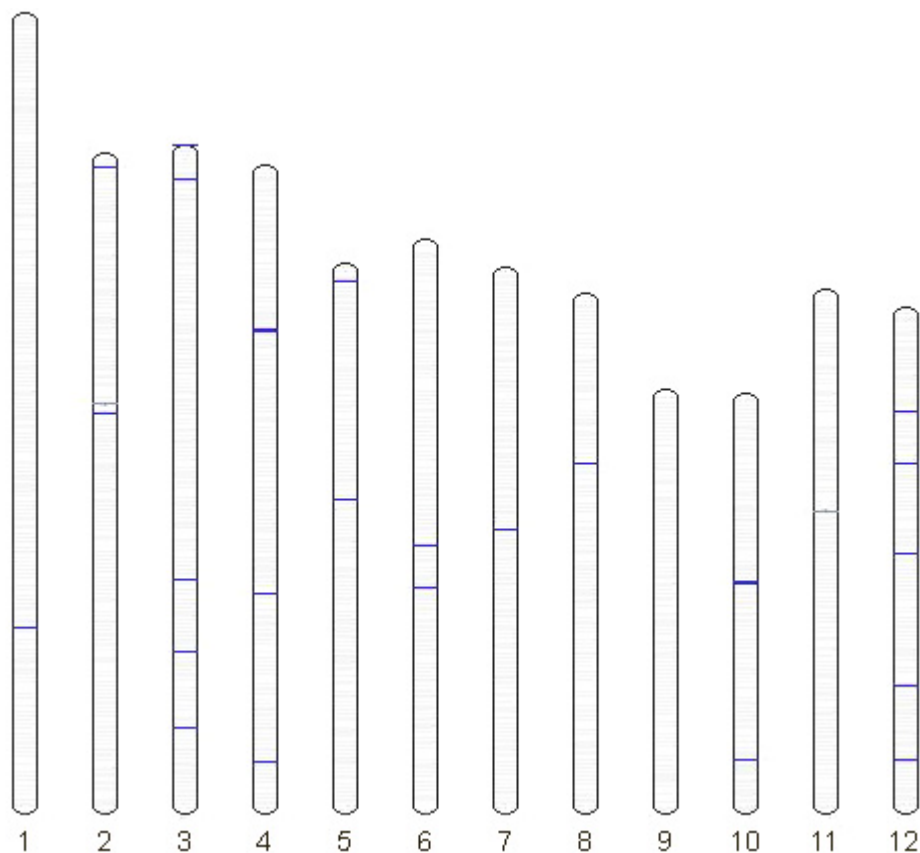


Figure 3.14: Distribution of *Bacillus cereus* alignments on the rice karyotype.

The majority of alignments represent repeats in the *Bacillus* aligning to the same position in the rice genome. The figure of 12123 bp counted regions in rice regardless of the number of alignments in the *Bacillus* genome. Table C-1 (Appendix, pp 287- 306) shows the alignments found in rice.

Taking the results found with *Xanthomonas* and *Pseudomonas*, discussed below into account, and eliminating cross-alignments between these and *Bacillus*, 39 of the 74 fragments totaling 6139 bp were unique between *Bacillus* and rice.

All but one of the alignments between the *Bacillus* genome and the rice genome were within the 23S and 16S rRNA subunits of *Bacillus* and the chloroplast subunits located in the nuclear genome of rice. The cross-homology between the *Bacillus*, *Xanthomonas* and *Pseudomonas* alignments also occurred in this regions. Comparing the 23S subunits of the three bacteria and the chloroplast subunit found a higher degree of homology between the rice chloroplast and *Bacillus* 23S subunits that between *Bacillus* and *Xanthomonas* or *Pseudomonas*. The one fragment found exclusively between *Bacillus* and rice genome (excluding the rRNA fragments), which also had the highest similarity of the fragments identified between rice and *Bacillus* (0.0) was a fragment of 770 bp (3:1817627-1818395) in rice showed 100% (0.0e) sequence similarity with part of the HD domain protein from *Bacillus* (AE017194.1). This region is within the known gene in the rice genome TB2_DP1_HVA22; TB2/DP1, HVA22 family. This family includes members from a wide variety of eukaryotes. It is interesting to note that the similarity with this fragment starts in an intron, includes 2 exons and then terminates in a longer intron. Using Blastn on the NCBI website the two top results (100%) is in rice and *Bacillus* followed by alignments 99% and less in various organisms, including *Arabidopsis thaliana*. Limiting the results just to plants using the NCBI database the only two plants with significant sequence similarities are rice and *Arabidopsis*, but with 8 different annotations in *Arabidopsis*. Using the Gramene database, no results are found with *Arabidopsis* but 5 fragments varying between 656 to 143 bp are found within the maize genome, not shown in searches using the NCBI database. Using Blastx the translated protein sequence gave significant matches in various bacteria, limiting the search to eukaryotes resulted in only one hit (AAN17394.1, $7e^{-88}$) in *Oryza sativa cv. japonica* annotated as putative *InsB* from *Escherichia coli*.

Various other alignments with different regions in the rice genome not related to the rRNA subunits were also found with the initial alignments but were either less than 100 bp long or had e-values lower than e^{-20} .

3.3.2 *Xanthomonas* sequence similarities in the rice nuclear genome

Comparisons between the genomes of *Xanthomonas oryzae pv. oryzae* and that of rice resulted in the identification of 37 homologous regions 100 bp or longer with an e-value equal smaller than 10^{-20} totaling 5673 bp. The positions of these fragments are shown in figure 3.15. As with the *Bacillus* alignments most alignments represented repeats in the bacterial genome aligning to the same positions in the rice genome, once again the figure of 5673 bp counted regions in rice regardless of the number of alignments in the *Xanthomonas* genome. Table C-2 (Appendix, pp 307-309) shows all the alignments found in rice. Accounting for cross-alignments with the other two bacterial genomes tested, 5 of the 37 fragments totaling 698 bp were unique alignments between *Xanthomonas* and rice. Cross-alignments between *Bacillus* and *Xanthomonas* all occurred in the 16 and 23S sequences, which are discussed above under the *Bacillus* results.

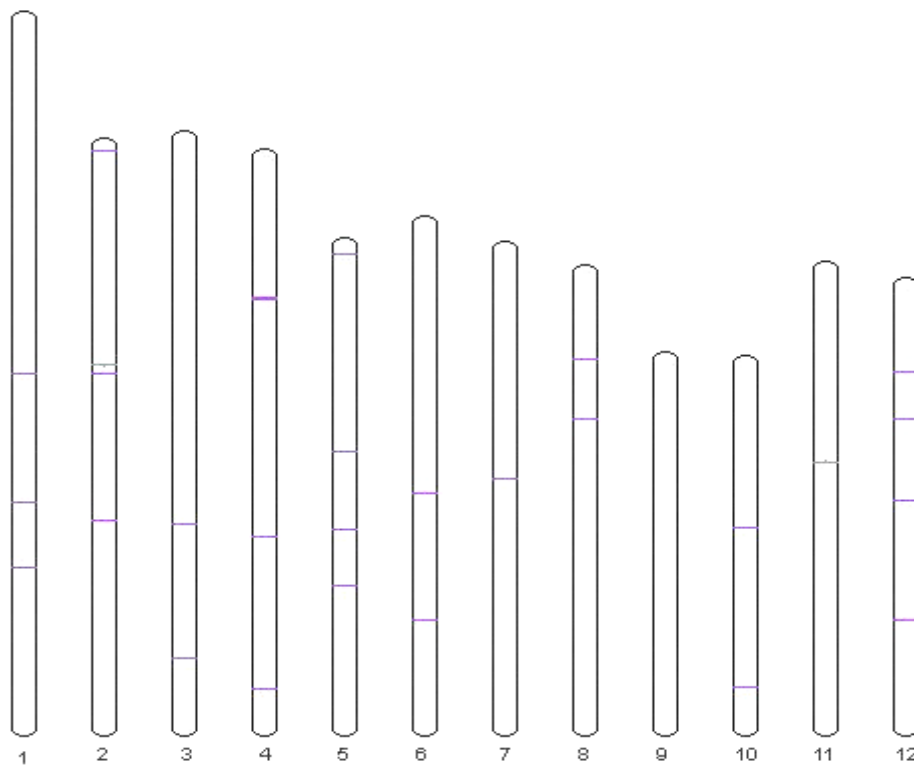


Figure 3.15: Distribution of *Xanthomonas* alignments on the rice karyotype.

Sequences unique to *Xanthomonas* include a 145 bp fragment (AE013598.1) in *Xanthomonas* that aligned to chromosome 1: 21872692-21872833 in rice ($1.4e^{-33}$) that is part of the carbamoyl-phosphate synthase large subunit in *Xanthomonas*; a 147 bp fragment (AE013598.1; elongation factor Tu) aligning to 2: 23057548 – 23057691 in rice ($2.3e^{-32}$); and 3 alignments with the molecular chaperone DnaK (AP008229.1) of 162 bp (5:17472623-17472780; $6.4e^{-22}$), a 101 bp fragment (5:20846967-20847064; $4.5e^{-23}$) and a 143 bp fragment (8:5640788-5640925; $1.6e^{-22}$). Using the 100 bp fragments on each side of the of the 3 alignments resulted in hits only in rice with the first two sequences but using the fragment from chromosome 8 plus 100 bp flanking on each side (8: 5640688 – 5641025), resulted in significant alignments in *Scherffelia dubia* (AJ312020.1|SDU312020; $5.0e^{-34}$) partial mRNA for luminal binding protein, *Triticum aestivum* (AF005993; $2.0e^{-30}$) 70 kDa heat shock protein, *Lilium longiflorum* (D21824.1|LILLIM18; $8.0e^{-30}$) as well as *Sorghum bicolor* (AY503363.1; $7.0e^{-27}$). The best alignment with this extended fragment other than rice was with the fungal *Blastocladiella emersonii* heat shock protein (hsp70) gene (L22497.1|BSIAHSP70X; $2e^{-58}$).

The only other sequence similarities found between *Xanthomonas* and rice of were 3 fragments of which 2 were also shared with *Pseudomonas* that are annotated as the glycine dehydrogenase gene in the bacterial genomes, aligning to these 3 positions in rice respectively 1:29540592-29540764 (177 bp; $5.7e^{-37}$) (1:29540592-29540767; 181 bp; $3.8e^{-26}$ with *Pseudomonas*); 6:24360517-24360642 (128 bp; $1.3e^{-26}$) (6:24360464-24360643; 185 bp; $5.9e^{-31}$ with *Pseudomonas*) and 8:9239422-9239630 (217 bp; $1.5e^{-52}$).

3.3.3 *Pseudomonas* sequence similarities in the rice nuclear genome

Comparisons between the genomes of *Pseudomonas syringae pv. syringae* and that of rice resulted in the identification of 33 fragments with significant sequence similarity 100 bp or longer with an e-value equal smaller than 10^{-20} totaling 6332 bp. The positions of these fragments are shown in figure 3.16. As discussed in the results above there was substantial cross-homology between the bacterial sequences that aligned with the rice genome. Excluding these the *Pseudomonas* genome had 655 bp of unique similarity with that of the rice genome. This 655 is made up of three fragments of the 23S gene a 156 bp fragment on chromosome 2 in rice (2: 815417 – 815567; $6.2e^{-40}$) and a smaller piece of the same fragment on chromosome 11 (11: 13074159 – 13074260; $9.0 e^{-21}$).

A 128 bp fragment (CP000075.1) that is part of the *Pseudomonas* catalase gene with 87% (7e-60) sequence similarity to rice (3:1767897-1768024). The region in the rice genome containing this fragment falls close to the end of the TIGR Locus LOC_Os03g03910 catalase-1 (86 bases past the end of the gene) and prior to the TIGR Locus LOC_Os03g03920 ubiquilin-1 gene. However, when the rice catalase gene was used in Blastx against the *Pseudomonas* genome sequence a region of 374 amino acids (Identities = 201/374, Positives = 260/374) with an e value of e-115 was identified. When the rice catalase gene is used in a Blastn against the nr database, then the first non-plant homology that is identified is the *Pseudomonas* catalase gene fragment. In fact the *Pseudomonas* similarity is greater than that for *Arabidopsis*.

Table C-3 (Appendix, pp 310 - 313) shows the detailed search results.

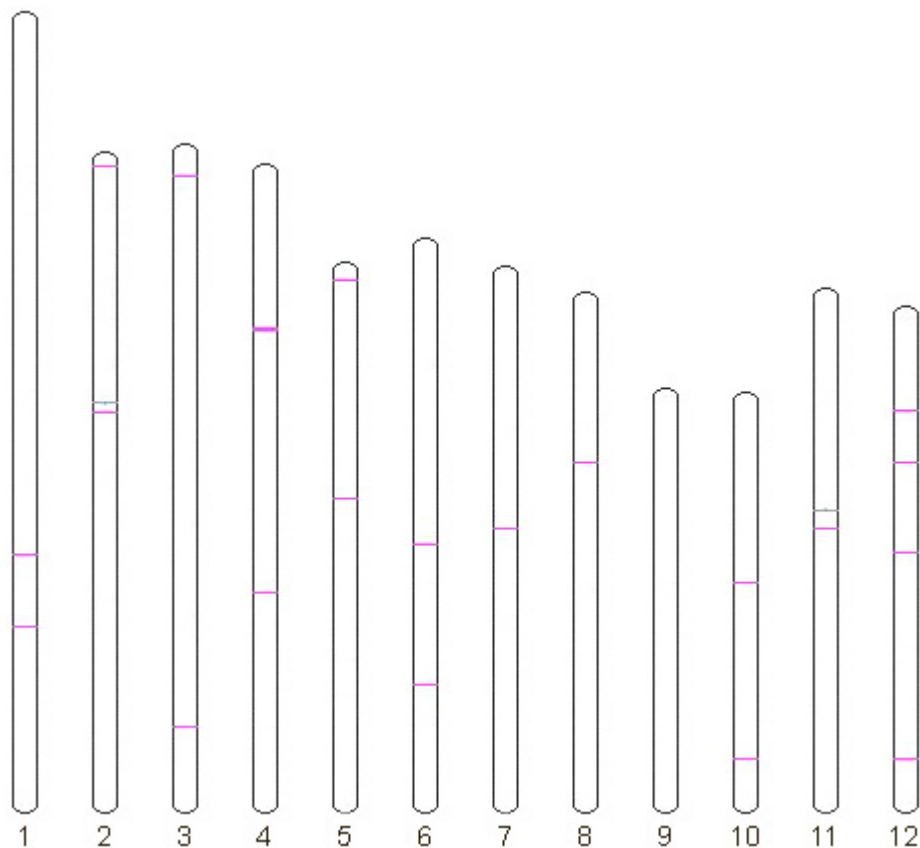


Figure 3.16: Distribution of *Pseudomonas* alignments on the rice karyotype.

3.4 Fungal Comparison

3.4.1 Magnaporthe sequence similarities in the rice nuclear genome

Comparisons between the genomes of *Magnaporthe grisea* and that of rice resulted in the identification of 46 fragments (totaling 8274 bp) in the *Magnaporthe* genome and 144 fragments (totaling 25033 bp) of in the rice genome of 100 bp and longer that share significant sequence similarity, with e-values equal smaller than 10^{-20} . Figure 3.17 show the position of these regions on the rice karyotype. Table D-1 (Appendix, pp 314 - 320) shows all the results of the comparison between rice and *Magnaporthe* that were 100 bp and longer, including repeats that were subsequently removed in further analysis.

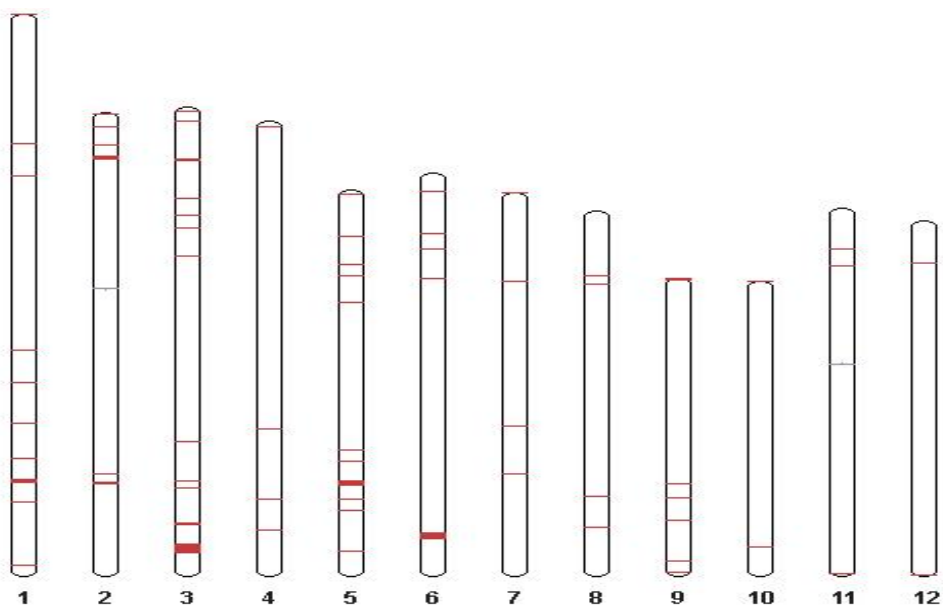


Figure 3.17: Distribution of *Magnaporthe grisea* alignments on the rice karyotype.

There were no co-alignments between the *Magnaporthe* genome and any of the nuclear plastid sequences or with the bacteria and viral sequences. Ninety one percent of the alignments were between conserved regions of genic sequences such as beta-tubulin and polyubiquitin while nine percent were either in unknown or *Magnaporthe* related sequences. When the rice sequences identified as similar were used in the reverse blast, these similarities were greatest between rice or monocots and *Magnaporthe*, but there was also wide homology

across different fungi and plants. Some insertions showed significant sequence similarity only to *Magnaporthe grisea* such as the 131 bp insertion on chromosome 5 (5775966 - 5776097) to locus XM_370434.1 of *Magnaporthe grisea* ($9e^{-27}$; 87% identical without gaps), this falls within the TIGR Locus LOC_Os05g10630.1 (putative O-sialoglycoprotein endopeptidase). Another such fragment was a 109 bp sequence on chromosome 4 (23876766-23876857) to locus XM_365128.1 ($9e^{-11}$; 83% identical without any gaps) although the latter of these was eliminated from the final statistics of similarity due to the high e-value. Another fragment on rice chromosome 6: 4668751-4669004 shows significant sequence similarity only in maize (AY104186.1; $8e^{-63}$) and the fungus *Coprinopsis cinerea okayama* (XM_001833442.1; $4e^{-31}$). In rice this forms part of TIGR Locus LOC_Os06g09290.1 (putative 26S protease regulatory subunit 7).

Multiple sequence alignments using the best fungal and plant related alignments found in Blastn searches on the NCBI database showed three patterns in the sequence dendogram trees as described below.

3.4.2 Dendogram type 1:

This sets of sequences group the fungal sequences together and the plant sequences together. In figures 3.18 and 3.19 *Magnaporthe grisea* groups closest to the plants from the set of fungal sequences used, while in figure 3.20 *Blastocladiella emersonii* is the closest grouping fungi.

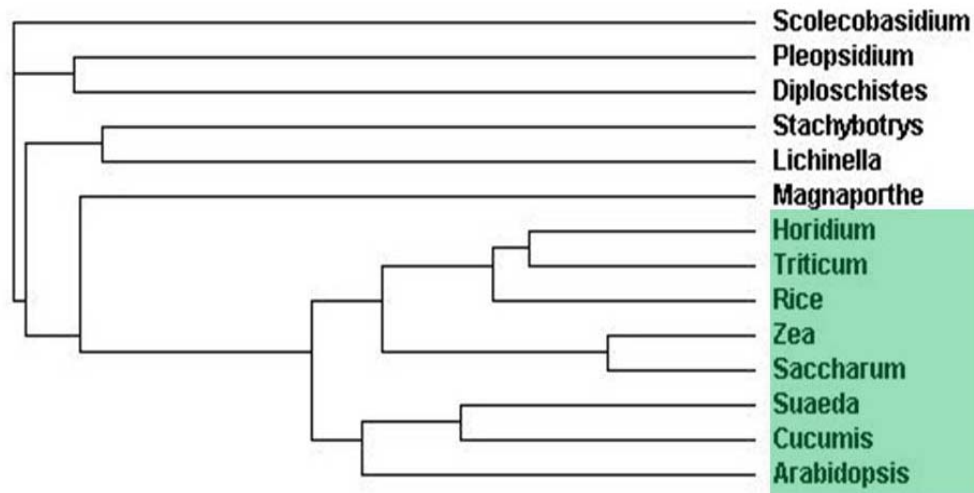


Figure 3.18: Sequence dendrogram from a multiple sequence alignment with the rice fragment 3:4074435:4074559 compared to *Hordeum vulgare* (emb|Z50789.1|HVEF1ALFA); *Triticum aestivum* (gb|M90077.1|WHTTEF1X); *Zea mays* (gb|BT016514.1); *Saccharum officinarum* (gb|AF281361.1); *Suaeda japonica* (dbj|AB073630.1); *Arabidopsis thaliana* (ref|NM_125432.3); *Cucumis sativus* (gb|EF446145.1); *Scolecobasidium humicola* (gb|DQ307355.1); *Magnaporthe grisea* (ref|XM_361098.1); *Stachybotrys chlorohalonata* (gb|AY180269.1); *Lichinella iodopulchra* (gb|DQ832327.1); *Pleopsidium chlorophanum* (gb|DQ782920.1) and *Diploschistes ocellatus* (gb|DQ366251.1). Green blocks indicate the plant sequences.

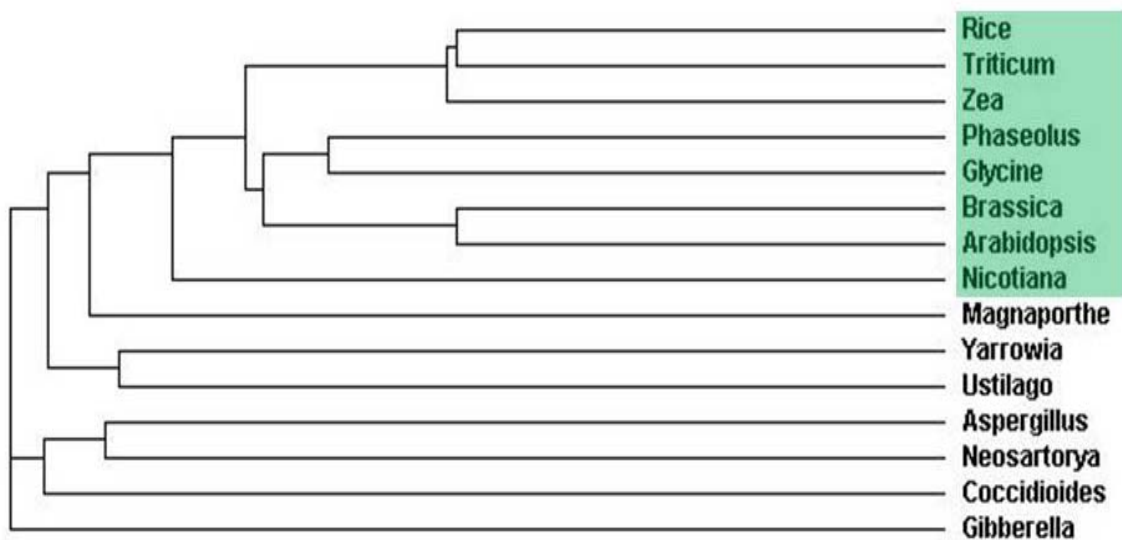


Figure 3.19: Sequence dendrogram from a multiple sequence alignment with the rice fragment 10:65974:66122 compared to *Triticum aestivum* (gb|DQ150097.1); *Zea mays* (gb|AY106100.1); *Phaseolus vulgaris* (gb|AY007525.1); *Glycine max* (gb|DQ139265.1); *Nicotiana tabacum* (gb|AY532656.1); *Brassica rapa* (gb|AC189362.1); *Medicago truncatula* (gb|AC145022.29); *Arabidopsis thaliana* (ref|NM_129380.2); *Magnaporthe grisea* (ref|XM_369484.1); *Aspergillus terreus* (ref|XM_001216938.1); *Gibberella zeae* (ref|XM_385211.1); *Neosartorya fischeri* (ref|XM_001259876.1); *Yarrowia lipolytica* (ref|XM_502217.1); *Ustilago maydis*(ref|XM_754878.1); *Coccidioides immitis* (ref|XM_001242284.1) and *Ashbya gossypii* (gb|AE016815.3). Green blocks indicate the plant sequences.

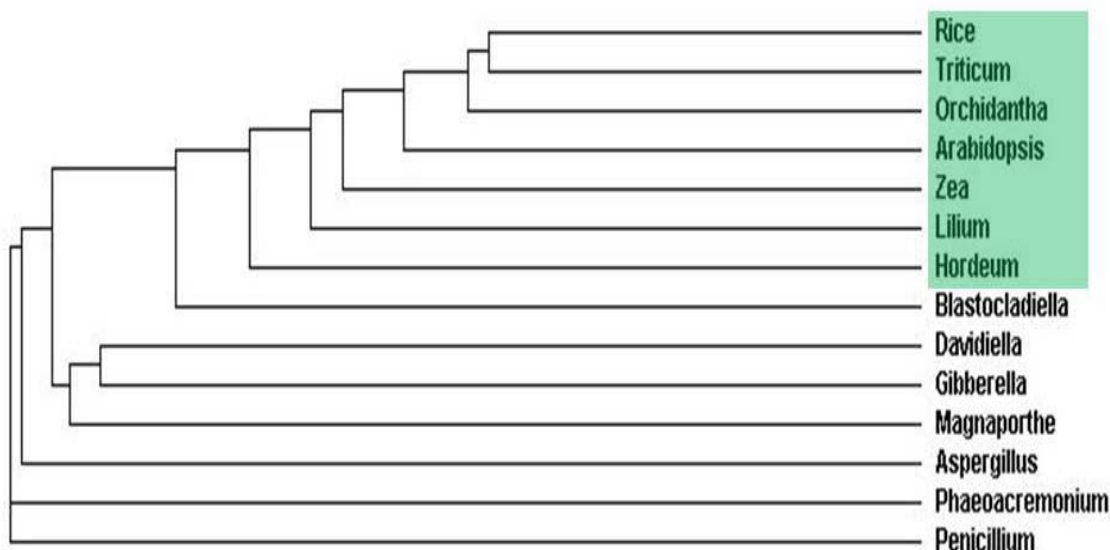


Figure 3.20: Sequence dendrogram from a multiple sequence alignment with the rice fragment 3:11502555 - 11502670 compared to *Triticum aestivum* (gb|U49105.1|TAU49105); *Hordeum vulgare* (gb|DQ995512.1); *Zea mays* (gb|BT017909.1); *Orchidantha sp.* (gb|AF430094.1); *Arabidopsis thaliana* (ref|NM_123137.3); *Lilium longiflorum* (emb|Z12839.1|LLCALMOD); *Aspergillus terreus* (ref|XM_001210822.1); *Blastocladiella emersonii* (gb|AF264065.1); *Phaeoacremonium australiense* (gb|AY579280.1); *Davidiella tassiana* (gb|DQ289831.1); *Penicillium roseopurpureum* (gb|AY678541.1); *Gibberella zeae* (ref|XM_382067.1) and *Magnaporthe grisea* (ref|XM_370387.2). Green blocks indicate the plant sequences.

5.3.3 Dendrogram type 2:

In this set of dendograms rice sequences group with the fungal sequences. In figures 3.21 and 3.22 the rice sequence group with the fungal sequences and closest to the *Magnaporthe* sequence. In Figure 3.23 Rice as well as maize group with the fungi based on sequence similarity, while the grass species *Setaria italica* group with the other plant sequences used in the alignment. In figure 3.24 the sequence from rice japonica cultivar groups with that of the other plants while the sequence from the indica cultivar group closer to *Magnaporthe* and the other fungi.

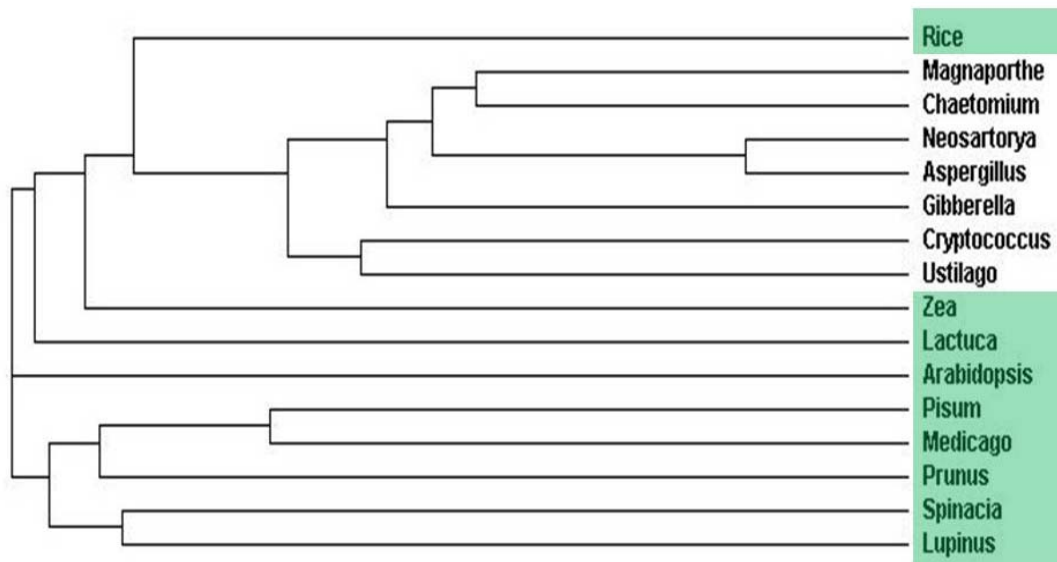


Figure 3.21: Sequence dendrogram showing the relationship between a DNA fragment from a multiple sequence alignment with the rice fragment 6:4668751 – 4669004 compared to *Arabidopsis thaliana* (ref|NM_104252.2); *Zea mays* (gb|AY104186.1); *Pisum sativum* (gb|AY623108.1); *Lactuca sativa* (gb|AY243359.1); *Prunus persica* (gb|AF041258.1 AF041258); *Lupinus albus* (gb|DQ118122.1); *Spinacia oleracea* (dbj|D86121.1|SPI26SPAS); *Medicago truncatula* (gb|AC135796.25); *Aspergillus fumigates* (ref|XM_749738.1); *Neosartorya fischeri* (ref|XM_001263659.1); *Cryptococcus neoformans* (gb|AE017347.1); *Gibberella zeae* (ref|XM_380735.1); *Magnaporthe grisea* (ref|XM_363655.1); *Chaetomium globosum* (ref|XM_001220658.1); *Ustilago maydis* (ref|XM_751676). Green blocks indicate the plant sequences.

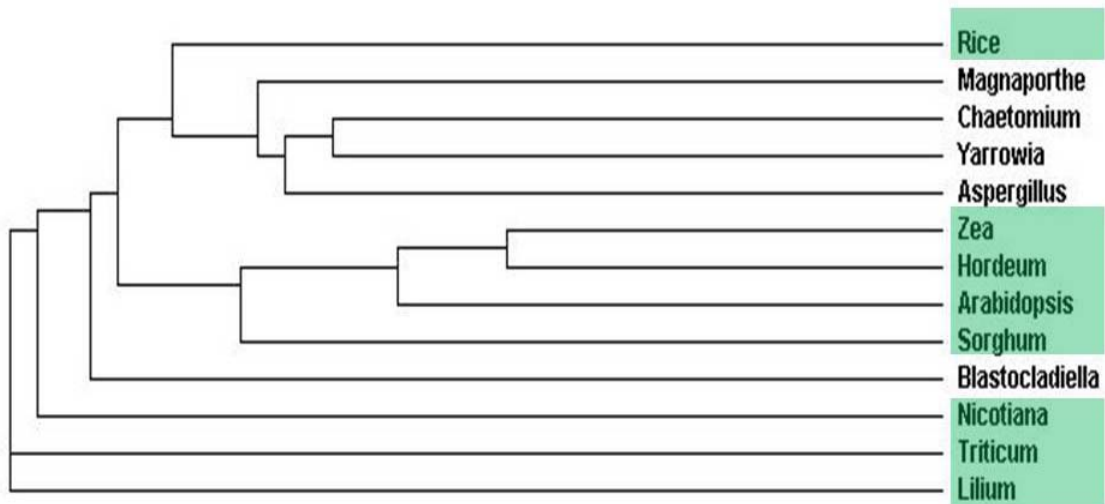


Figure 3.22: Sequence dendrogram showing the relationship between DNA fragments from a multiple sequence alignment with the rice fragment 8: 5640822 – 5640946 compared to *Triticum aestivum* (gb|AF005993.1|AF005993); *Zea mays* (gb|U58209.1|ZMU58209); *Hordeum vulgare* (gb|L32165.1|BLYHSPHAA); *Lilium longiflorum* (dbj|D21824.1|LILLIM18); *Sorghum bicolor* (gb|U41653.1|SBU41653); *Nicotiana tabacum* (gb|AY372070.1); *Arabidopsis thaliana* (ref|NM_180788.2); (gb|L22497.1); *Chaetomium globosum* (ref|XM_001227132.1); *Aspergillus kawachii* (gb|AF183893.1); *Yarrowia lipolytica* (ref|XM_503913.1) and *Magnaporthe grisea* (ref|XM_361717.1). Green blocks indicate the plant sequences.

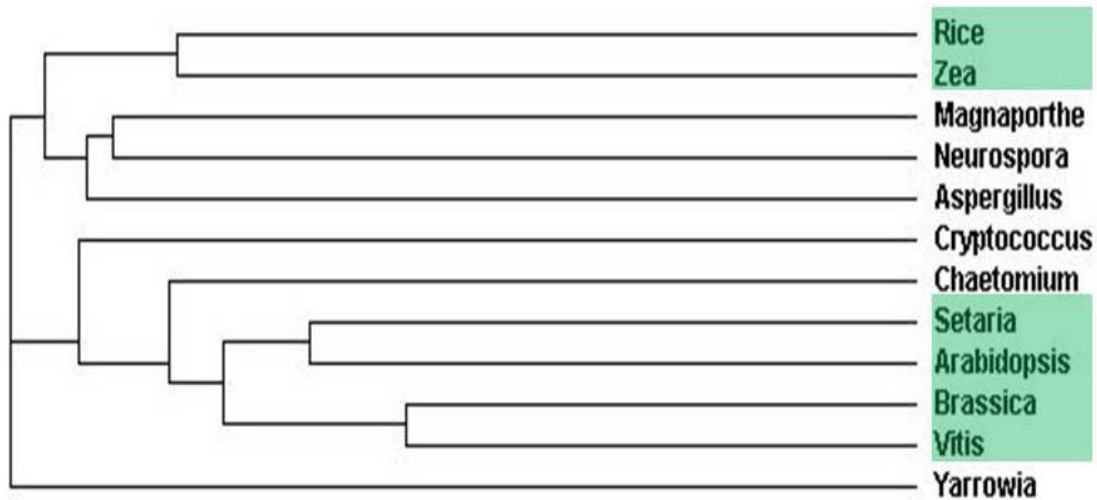


Figure 3.23: Sequence dendrogram showing the relationship between DNA fragments from a multiple sequence alignment with the rice fragment 6: 5884317:5884417; *Zea mays* (gb|AY921640.1); *Setaria italica* (gb|DQ393721.1); *Brassica rapa* (gb|AC189331.1); *Vitis vinifera* (emb|AM437355.2); *Arabidopsis thaliana* (emb|BX816218.1|CNS0ABRK); *Magnaporthe grisea* (ref|XM_362751.2); *Aspergillus terreus* (ref|XM_001217694.1); *Cryptococcus neoformans* (ref|XM_572706.1); *Chaetomium globosum* (ref|XM_001223430.1); *Neurospora crassa* (ref|XM_959546.1) and *Yarrowia lipolytica* (emb|CR382127.1). Green blocks indicate the plant sequences.

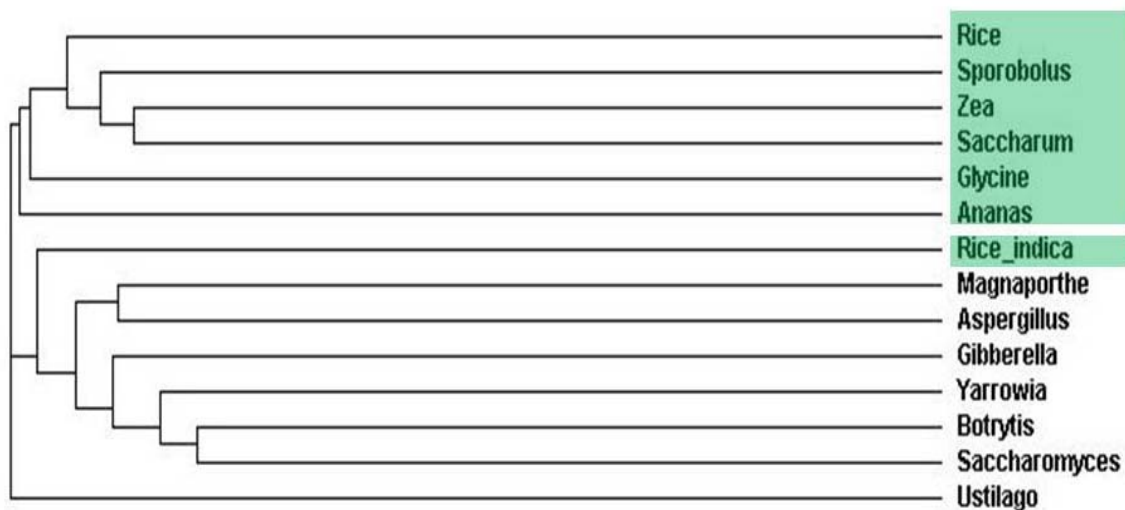


Figure 3.24: Sequence dendrogram showing the relationship between DNA fragments from a multiple sequence alignment with the rice fragment 2: 3341370: 3342015; *Oryza sativa indica* cultivar-group (emb|CT837820.1|); *Sporobolus stapfianus* (gb|AF148448.1|AF148448); *Zea mays* (gb|BT016652.1); *Saccharum hybrid* (gb|L41658.1|SCFPOLY); *Ananas comosus* (gb|AY098526.1); *Ustilago maydis* (ref|XM_753127.1); *Glycine max* (dbj|D16248.1|SOYUBI); *Magnaporthe grisea* (ref|XM_363356.1); *Aspergillus niger* (ref|XM_001401978.1); *Gibberella zeae* (ref|XM_388944.1); *Yarrowia lipolytica* (ref|XM_504128.1); *Botrytis cinerea* (emb|AL114489.1|CNS01BOH) and *Saccharomyces cerevisiae* (emb|X05731.1). Green blocks indicate the plant sequences.

5.3.4 Dendrogram type 3:

This set of dendograms is characterized by the fact that there seems to be no or little evolutionary order present in the grouping of the species using these sequences. In figure 3.25 rice and *Magnaporthe* group closer than rice and sorghum or maize which groups with the fungi *Chaetomium globosum*. The other cereals wheat and barley group separately while Arabidopsis, grape vine and cotton group with the fungi *Aspergillus terreus* and *Ustilago maydis*. In Figure 3.26 the fungi *Blastocladiella emersonii* interrupts the plant sequences while Nicotiana and Brassica interrupts the fungal sequences.

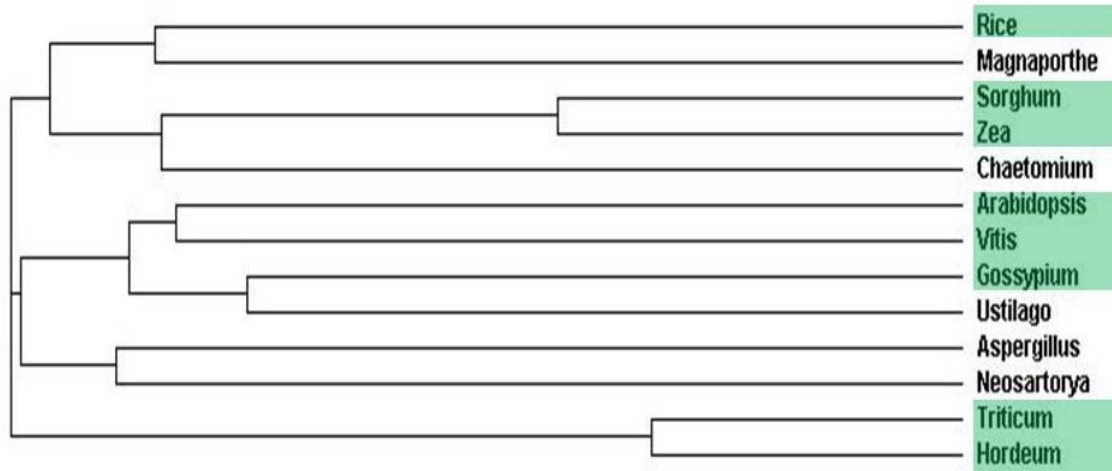


Figure 3.25: Sequence dendrogram showing the relationship between DNA fragments from a multiple sequence alignment with the rice fragment 4: 23876766:23876875; *Sorghum bicolor* (gb|AY372819.1); *Zea mays* (gb|AY366085.1); *Arabidopsis thaliana* (ref|NM_116413.1); *Vitis vinifera* (emb|AM472754.2); *Triticum monococcum* (gb|AF459639.1); *Gossypium hirsutum* (gb|AF216497.1); *Hordeum vulgare* (dbj|AB063580.1); *Magnaporthe grisea* (ref|XM_001413121.1); *Chaetomium globosum* (ref|XM_001224928.1); *Aspergillus terreus* (ref|XM_001216110.1) and *Ustilago maydis* (ref|XM_757063.1). Green blocks indicate the plant sequences.

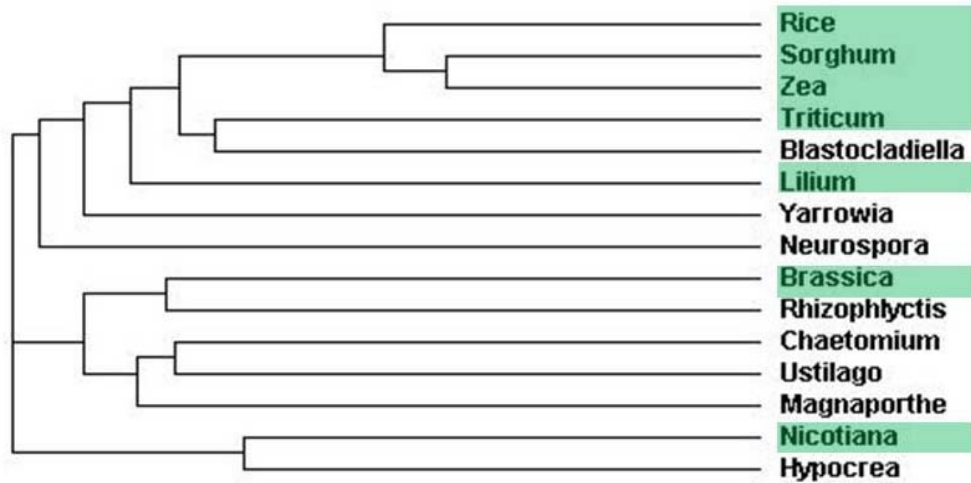


Figure 3.26: Sequence dendrogram showing the relationship between DNA fragments from a multiple sequence alignment with the rice fragment 1: 36368256: 36368446; *Sorghum bicolor* (gb|U41653.1|SBU41653); *Zea mays* (gb|BT016692.1); *Triticum aestivum* (gb|AF005993.1); *Lilium longiflorum* (dbj|D21824.1|LILLIM18); *Brassica rapa* subsp. *pekinensis* (gb|AC189429.1); *Nicotiana tabacum* (gb|AY372070.1); *Blastocladiella emersonii* (gb|L22497.1); *Neurospora crassa* (emb|BX284745.1); *Hypocrea jecorina* (gb|AY281746.1); *Yarrowia lipolytica* (ref|XM_503148.1); *Rhizophlyctis rosea* (gb|AY582832.1); *Chaetomium globosum* (ref|XM_001225917.1); *Ustilago maydis* (ref|XM_754845.1) and *Magnaporthe grisea* (ref|XM_370461.2). Green blocks indicate the plant sequences.



4

Discussion

4.1 Motivation for this study

Two sets of results obtained within our research group prompted this study. The first was an observation that when using representational difference analysis (RDA) to compare highly similar genomes for DNA differences between them, chloroplast fragments, especially the ribosomal subunits, located in the nuclear genome were isolated as RDA products from various plant species. These results indicated that the chloroplast insertions in the nuclear genome were highly variable within different plants of the same species or cultivar and even between different individual plants obtained from the same tissue culture process. It was therefore decided to do a detailed analysis of the plastid insertions in the nuclear genome to better understand the dynamics of nuclear located plastid insertions. The second observation was the isolation of a 215 bp sequence from tobacco with high similarity to a *Bacillus cereus* sequence. Subsequent analysis identified similar fragments within the genome of the grass *Monocymbium ceressiiforme* as well as white clover, *Trifolium repens*. Submitted manuscripts incorporating these results have been met with criticism that the fragments were most likely artifacts of DNA contamination rather than genuine differences between the genomes being compared. It was therefore decided to assess the rice nuclear genome for the presence of all sequences similar to any part of the completely sequenced microbes with which rice was likely to have been in intimate contact, rather than just focusing on genes.

4.2 Discussion of techniques and results

4.2.1 Search techniques and parameters

The first objective of this study was to establish and refine the techniques and parameters used with which these comparisons were done by comparing these results to existing reports of chloroplast insertions in the rice genome.

In this study the raw alignment data for the chloroplast shows a combined length of homology of over 1 Kb in the nuclear genome, this however include a number of repeats. Eliminating all the repeats as well as fragments shorter than 100 bp and with homology of less than 95% or E-values larger than 10^{-20} the combined length was 0.78 Kb. This is less than the 0.9 Kb obtained by Matsuo *et al.*, (2005) but since they used E-values of $<10^{-10}$ with unspecified homology, with

the higher stringency used in this study this is to be expected. The reason for the higher stringency was to distinguish between fragments from possible mitochondrial or chloroplast origin, as well as to eliminate older smaller and older fragments. This was achieved when looking at the small amount of co-alignment shown in figure 3.11.

Overall the search results indicate that the methods and parameters used to do the homology analysis was effective and could be used for the further analysis of viral, bacterial and fungal insertions.

4.2.2 DNA homology between the plastid genomes and the rice nuclear genome

This study confirmed the presence of large amounts of plastid DNA in the nuclear genome of rice. While other studies have reported on the nuclear location of plastid DNA in various eukaryotic species, it was mostly reports of specific fragments or more general findings. Matsuo *et al.*, 2005 was the first to publish a genome wide analysis of chloroplast insertions. This study provides the first comparative analysis of both the chloroplast and mitochondrial genome insertions in the nuclear genome of any plant species. It is then interesting to find that there is a marked difference in the representation of these two plastids in the nuclear genome of rice. This leads to a hypothesis that firstly the process of transfer and insertion or secondly that the process of elimination of the inserted fragments differs between the chloroplast and mitochondria.

To examine the hypothesis that there is a possible difference in the transfer and insertion of the chloroplast and mitochondria to the nuclear genome and rice, one has to consider studies on transfer rates. Recently, two research groups experimentally detected plastid–nuclear DNA transfer in tobacco, with an apparent transfer rate of a marker gene of 1 per 16,000 pollen grains (Huang *et al.*, 2003) or 1 per 5 million leaf cells (Stegemann *et al.*, 2003). Interestingly, the number of cells in a mature tobacco leaf (Possingham, 1980) is at least 10 times higher than the average number of leaf cells required to select one chloroplast gene transfer event, which indicates that cells within a single leaf are not genetically identical but may differ in their nuclear genome with respect to the pattern of chloroplast DNA integrations. Taking this transfer rate into account, a given gene locus on the tobacco plastid genome is expected to translocate to the nucleus 63×10^{-6} times per plant generation or 0.2×10^{-6} times per somatic cell division. Matsuo

et al., (2005) estimate that a given gene locus of the rice chloroplast genome should have transferred to the nucleus at least 4×10^{-6} times per plant generation. Rice fields generally produce 100 to 300×10^6 grains/hectare. Therefore, in a rice field of 1 hectare, there may be hundreds of grains in which a given gene of the chloroplast genome has newly transferred to the nucleus. The occurrence of grains in which the nuclear genome had newly integrated any part of the chloroplast genome would be far higher. The rate of transfer for mitochondrial DNA was determined in yeast by Thorsness and Fox (1990) and was similar to the rates of chloroplast DNA transfer in tobacco leaf cells found by Stegemann *et al.*, (2003) at $\approx 2 \times 10^{-5}$ per cell per generation.

While the total length of insertions for both the chloroplast and mitochondria were similar in this study (1070 fragments totaling 779 Kb for the chloroplast and 1329 fragments totaling 614 Kb) their genomes show a remarkable difference in the way they are represented in the nuclear genome (see figures 3.2 and 3.6), with the chloroplast genome represented on average approximately 5.8 times and that of the mitochondria is only represented on average less than 2.1 times. While most of the chloroplast genome is present to some extent, only parts of the mitochondrial genome are present in the nuclear genome, most of the areas of the mitochondrial genome present in high frequencies are the NADH subunits that also account for most of the shared homology with the chloroplast. To differentiate between NADH copies from the chloroplast and the mitochondrion, fragments were assigned to one or the other by identification of the flanking sequences as either chloroplast or mitochondrial. Two copies of the ATPase β -subunit were found in the nuclear genome. The first is located between two mitochondrial insertions while the second is located well outside of any plastid DNA insertions, (see figure 3.9). One of the distinguishing features of these two copies is eight intron-like sequences that interrupt the coding sequence compared to the chloroplast copies. While there are TATA promoter-like motives in the 5' sequence of these copies no data is available on whether they are indeed expressed. In literature the function ATPase β -subunit has not been shown to have been transferred to the nucleus though these results would seem to indicate that it might be in the process of being transferred.

It has been shown that while plastid DNA is frequently transferred to the nucleus, it is also rapidly eliminated (Matsuo *et al.*, 2005). If the insertion rates are indeed similar for chloroplasts and mitochondria in rice as well, then there must be some system operating in the nucleus that preferentially eliminate mitochondrial DNA from the nucleus. Unfortunately there is no evidence

available to support this hypothesis. Comparing the two different representation profiles, that of the chloroplast have a high base representation with a few areas that are represented at a much higher frequency while that of the mitochondria show only a few areas that are highly represented. Assuming that the base in the chloroplast representation is the result of younger insertions that has not yet been through the process of elimination and the areas that are highly represented are the remains of older insertions, similar to the mitochondrial profile. If the chloroplast and Mitochondrial DNA is eliminated at the same rate, then a higher insertion rate of the chloroplast might explain this difference in representation observed.

Taking into account that the rates were estimated in tobacco leaf cells for tobacco and yeast cells for the mitochondria, we should consider that in plants only fragments transferred in the gametophytic cells would stand a chance of being transferred to the next generation, after which it could be incorporated into the general population over time. Therefore what happens in the somatic cells does not necessarily reflect the situation in the gametophytic cells. And unless these somatic cells are involved in vegetatively propagated structures, these insertions will be lost. There is no research available to support a hypothesis for a different transfer rate in gametophytic cells, we might speculate about this from other data. It has been proposed by Richly and Leister, (2004) that because extranuclear DNA is usually maternally inherited in flowering plants. We also know from observations in tobacco by Yu and Russell (1993) that while the chloroplast content decreased to an average of 0.48 plastids/generative cell mitochondria were present in larger numbers at approximately 80 mitochondria per generative cell. Thus if we assume a similar situation in rice, coupled with the hypothesis of Richly and Leister that organelle-to-nucleus transfer of DNA should preferentially occur during the degradation of plastids during pollen formation, the higher decrease of chloroplast should result in a larger amount of free chloroplast DNA in the cell available for transfer to the nucleus. Although this cannot be proven in this study, this would explain the higher abundance of chloroplast DNA in the nucleus observed in this study.

Another contributing factor that might explain this difference is that if insertion happens mainly as whole genome insertions as postulated by Matsuo *et al.*, (2005). We know from studies on transformation of *Escherichia coli* with plasmids by Hanahan (1983) that the transformation efficiency declines linearly with increasing plasmid size. Therefore the smaller genome of the rice chloroplast (130 Kb) would be more efficiently transferred and incorporated into the nucleus than the much larger genome of the rice mitochondrion (490 Kb). Although Matsuo *et al.*, (2005)

view the process of insertion to occur mainly through the insertion of whole genome fragments or fairly large fragments with the subsequent deletion and fragmentation of these pieces, it is also reasonable to consider that it might occur through multiple insertions of small fragments, some of which might act like transposable elements. A fragment on chromosome 12 of the rice genome shows a position where possible multiple independent insertions of chloroplast fragments took place (see figure 3.4). These insertions are interspersed with short highly repetitive T-rich DNA sequences. The non-contiguous nature of the fragments seems to indicate multiple independent insertions rather than insertion with subsequent deletion of parts of the fragment.

It also appears that the insertions are not randomly distributed over the whole nuclear genome, but rather that they tend to be concentrated in specific areas. There are at least three possible explanations for this: (1) Insertions occur throughout the genome but some regions are “swept” more effectively than others. (2) Some regions of the genome are more available/ receptive than others to insertion events and therefore these regions have a higher number of insertions. (3) Insertions in other areas are mostly deleterious or decrease the cells fitness to such an extent that they are selected against.

Furthermore the size distribution of the insertions shows that the majority of fragments are between 100 – 599 bps long. If we consider that most insertions occur as whole genomes of as large pieces, this indicates that the insertions we are observing for both the chloroplast and mitochondrion is fairly old and has been degraded significantly, but that they are efficiency with which they are degraded decrease significantly once they reach this size class. Combined with this, the insertion of fragments might also occur most efficiently for this size class.

4.2.3 Sequence similarities between the viral genomes and the rice nuclear genome

In this analysis we confirmed a previous report that the Rice tungro bacilliform virus (RTBV) is integrated into the rice nuclear genome. Nagano *et al.*, (2000) reported a highly variable region on chromosome 6 with homology (54 – 59%) to RTBV that was also highly variable in copy number between rice cultivars. Kunii *et al.*, (2004) reported on 29 segments homologous to RTBV. Previous studies focused on the characterization of specific fragments through PCR, sequencing and Southern Blot Analysis rather than a whole genome comparison. Using this

approach this study identified additional fragments that have not yet been reported. Up to 40 copies of some regions of the Rice tungro bacilliform virus were found to be present in the rice genome, indicating either multiple integrations or subsequent duplication of some regions. If indeed the RTBV genome has been inserted more than 40 times over the course of time, it would seem that it has been accompanied by extensive elimination. Even so most of the genome is still represented in the rice nuclear genome at various copy levels. It is interesting that we find similar fragments of RTBV only in one other plant species namely *Vitis vinifera*. We could find no reports of RTBV infecting *Vitis*, but it seems likely that it does or that there is a as yet unidentified/ un-sequenced counterpart of RTBV associated with *Vitis*.

Furthermore this study provides evidence of possible integration events between rice and five different RNA viruses and the rice genome were also identified. Fifty-one fragments that show similarity to rice related RNA viruses have been identified. The integration of RNA viruses into the plant genome has not yet been reported (Harper *et al.*, 2002), except for the finding that grapevine genomic DNA carries the entire gene of a potyviral coat protein (CP) and the potyviral 3'UTR. Potyviral-homologous sequences were also found in tobacco DNA, albeit in a rearranged form (Tanne and Sela, 2005). The sequence fragments identified in this study show between 40 – 70% identity with the viral genome and range in length between 184 and 1800 bps. This variation in homology would seem to indicate different times of integration during the evolution of the rice genome. Only fragments of the viral genomes are present. Since many of the RNA viruses of rice have genomes containing several fragments rather than circular genomes, partial integration would be more likely. With animal and bacterial retroviruses the early steps of replication involve reverse transcription of the viral RNA genome to make a cDNA copy followed by the integration of that cDNA copy into a chromosome of the host cell. The integration reaction requires specific sequences at the ends of the viral cDNA, which bind the viral-encoded integrase and other proteins to form pre-integration complexes (Schröder *et al.*, 2002). The infection cycle of plant viruses is not known to include an integration event, mainly because integration of retroviral DNA is facilitated by a virally encoded integrase (Patience *et al.*, 1997). Plant pararetroviruses generally lack the gene for this enzyme, and integration is not required for virus replication (Jakowitsch *et al.*, 1999), even so there is evidence of the integration of non-retroviral genomes into plant genomes (Tanne and Sela, 2005; Staginnus and Richert-Pöggeler, 2006).

With the absence of an integrase enzyme the integration of viral sequences into the plant genome must involve a recombination event. In the absence of viral sequence in the host genome, recombination must be non-homologous (Jakowitsch *et al.*, 1999). If there are already viral sequences already present, the recombination could be homologous. It is still unknown if the complete viral DNA genome itself integrates or whether integration occurs through replication intermediates such as cDNAs. During replication, pararetrovirus genomes form multiple copies of nuclear mini-chromosomes and gapped dsDNA replication intermediates, and the ssDNA geminivirus genomes are replicated to high levels in the nucleus. Both modes of replication provide potential recombinogenic sequences for integration, via illegitimate recombination, in cells undergoing active genetic processes (Hull *et al.*, 2000). Integrated sequences of banana streak virus and RTBV integrated sequences suggest that the cDNAs can integrate as well (Harper *et al.*, 1999; Ndwora *et al.*, 1999; Jakowitsch *et al.*, 1999; Kunii *et al.*, 2004). It is however possible that a retroelement integrase function can be used *in trans*, as has been suggested for SINE element integration from LINE element integrase (Eikbush, 1992). It might also be plausible that RNA virus segments are integrated after the viral segments get reverse-transcribed by reversetranscriptase used by other viruses in the cell.

It would seem likely that viral sequence integration can occur during every infection. However, as most viruses do not infect meristematic tissues, the integrations are not usually fixed and are lost on passage through seed. Furthermore cells and plants in which functional copies of the integrated virus can readily excise, be transcribed or otherwise result in disease might not be viable. Rapid rearrangement and/or deletion of viral sequences through recombination would effectively disrupt the process. This is a possible reason for all reported cases of integration involving rearrangement or deletions.

The possibility that viral DNA might insert regularly into plant genomes, has considerable implications for plant genome evolution. Little is yet known about the contribution of integrated viral sequences to plant genome organization, function and evolution. Similar to vertebrate endogenous retroviruses (Patience *et al.*, 1997), integrated pararetroviral DNA could act as insertional mutagens; could contribute strong constitutive promoters to neighboring plant genes, altering gene expression patterns; or they could accumulate to generate new repetitive sequence families. As components of the genome, they can be altered, recombined and amplified, providing another source of variation.

Overall this analysis presents the first comprehensive assessment of viral integration and contribution to the rice nuclear genome.

4.4.4 Sequence similarities between the bacterial genomes and the rice nuclear genome

With the exception of *Agrobacterium tumefaciens*, transfer of DNA from bacteria to plants remains a controversial subject. Recent research by Broothaerts *et al.* (2005) has shown that several bacterial species outside the *Agrobacterium* genus, modified with a Ti-plasmid were able to facilitate the transfer of foreign DNA to plants. We know that various eukaryotic genes are of bacterial origin, presumably acquired during endosymbiosis and subsequent transfer of DNA from the pre-chloroplast and pre-mitochondria (Timmis *et al.*, 2004).

This analysis aimed to identify recent lateral DNA transfer events from bacterial genomes to that of the rice genome. In the first whole genome comparison between a bacterium and rice, done with the *Bacillus subtilis* genome, various sequences with a significant degree of similarity were identified. On closer analysis of these sequences the similarity were found to be mostly between the 16S and 23S rDNA genes of the chloroplast located in the nuclear genome of rice. This is not a surprising observation since the chloroplasts are thought to have originated from cyanobacteria (McFadden, 2001). When cross similarities between the bacteria especially within the rRNA regions were eliminated as possible HGT events then the possible contributions from the various organisms became more differentiated with a ten-fold greater amount of similarity between rice and *Bacillus* than either of the other two bacterial species. These similarities are unlikely to be simply due to chance events or more regions would have been expected to be identified with the other organisms and/or regions of the microbial genomes.

The 770 bp fragment found exclusively between *Bacillus* and rice genome (excluding the rRNA fragments), which also had the highest similarity of the fragments identified between rice and *Bacillus* with sequence similarity with part of the HD domain protein from *Bacillus*. This region is within the known gene in the rice genome. This gene family includes members from a wide variety of eukaryotes. It is interesting to note that the similarity with this fragment starts in an intron, includes 2 exons and then terminates in a longer intron. Using Blastn on the NCBI website the two top results (100%) is in rice and *Bacillus* followed by alignments 99% and less in various organisms, including *Arabidopsis thaliana*. This sequence seems to represent a good

candidate of a transfer event of DNA from bacteria to plants. The transfer could have occurred before the split between monocots and angiosperms, thus its presence in *Arabidopsis* as well as maize and rice. Its absence from other plants can be due to lack of sequence information, or can point either to multiple transfer events or the loss of that sequences from these genomes.

The sequence similarities found between the rice genome and *Pseudomonas* included a possible candidate for horizontal acquisition namely the 181 bp fragment (1:29540592-29540767) that showed sequence similarity to a Glycine cleavage system P-protein from *Pseudomonas syringae*. Since the fragment falls within an intergenic region of about 80,000bp and is not part of a functional gene in rice the sequence similarity is unlikely to be as a result of sequence conservation during the course of evolution. It is also possible that this might have been part of a larger sequence fragment that has been degraded to its current form as is the case for inserted fragments of the mitochondrion and chloroplast.

Xanthomonas might have been expected to have the highest number of similarities due to its intimate association with rice. However, since *Xanthomonas* is a rice pathogen, the association mostly results in the death of the infected cells. Further, the interaction occurs mostly on leaf tissue not contributing to the formation of seeds. Therefore, any DNA transferred during the interaction is unlikely to be incorporated in the progeny of the plant. In contrast, *Bacillus* has a beneficial relationship with the plant by suppressing the growth of pathogens. This provides a greater chance of stable integration of transferred DNA into the progeny and this expectation is borne out by the higher degree of homology found between rice and *Bacillus*. The similarities identified here are unlikely to be simply due to chance events or more regions would have been expected to be identified with the other organisms and/or regions of the microbial genomes.

From literature as well as this study we can see that there are a lot of sequences in plants with similarity to bacterial sequences that cannot be explained by conventional evolutionary theories, and where horizontal gene transfer seems to offer the best explanation. Though it is assumed to be rare events, the data for transfer of chloroplast and mitochondrial DNA to the nucleus demonstrate that though it happens quite frequently in leaf tissue the actual incorporation into the general plant population is much lower since only DNA incorporated into the nucleus of cells that will give rise to progeny will stand a chance of being incorporated into the plant population. A similar scenario will be true for horizontal transfer of bacterial DNA. While it might happen much more often in stems and leaves we might never observe these. Another important factor

will be the specific association of the bacterium and the plant, since pathogens usually kill the cells they invade or the cells are killed by a hypersensitive response in the plant to prevent further infection, any transfer of DNA will be lost. Gene transfer between bacteria in a symbiotic association with the plant such as *Rhizobacteria* in roots could be much higher but since roots are seldom the progenitors of new offspring these transfers would not be transferred to subsequent generations.

This analysis demonstrates that a whole genome comparative analysis can be useful in identifying similarities between genomes that can be attributed to horizontal DNA transfer events between unrelated genomes.

4.4.5 Sequence similarities between the *Magnaporthe* genome and the rice nuclear genome

The whole genome comparison between rice and *Magnaporthe* revealed 144 sequences, 100 bp or longer, with significant similarity in the rice genome. These sequence fragments are spread over the rice genome (as shown in figure 3.17). Ninety one percent of the of the alignments were between conserved regions of genic sequences such as beta-tubulin and polyubiquitin while nine percent were either in unknown or *Magnaporthe* related sequences. There were also a number of fragments identified as putative heat-shock proteins while other fragments could not be identified. When the rice sequences identified as similar were used in the reverse blast, these similarities were greatest between rice or monocots and *Magnaporthe*, but there was also wide homology across different fungi and plants. The higher amount of sequence similarity found between *Magnaporthe* and rice can be attributed to the higher number of conserved genes between fungi and plants. However, a number of examples of DNA sequences were found with the only significant homology being between rice and *Magnaporthe grisea*, of either unknown function in both organisms or annotated only in *Magnaporthe* as hypothetical proteins. Some insertions showed significant homology only to *Magnaporthe grisea* such as the 131 bp insertion on chromosome 5 (5775966 - 5776097) to locus XM_370434.1 of *Magnaporthe grisea* ($9e^{-27}$; 87% identical without gaps), this falls within the TIGR Locus LOC_Os05g10630.1 (putative O-sialoglycoprotein endopeptidase). Another such fragment was a 109 bp sequence on chromosome 4 (23876766-23876857) to locus XM_365128.1 ($9e^{-11}$; 83% identical without any gaps) although the latter of these was eliminated from the final statistics of similarity due to the high e-value. Another fragment on rice chromosome 6: 4668751-4669004

shows significant sequence similarity only in maize (AY104186.1; $8e-63$) and the fungus *Coprinopsis cinerea okayama* (XM_001833442.1; $4e-31$). In rice this forms part of TIGR Locus LOC_Os06g09290.1 (putative 26S protease regulatory subunit 7). This mitigates against evolutionarily-related genes being the only source of these genomic similarities. The non-genic conserved fragments are most likely to represent concrete examples of horizontally transferred DNA between *Magnaporthe* and rice, but each would require in-depth analysis.

Analysis of the fragments to determine the relatedness between the rice and *Magnaporthe* sequences were done by using similar fungal and plant sequences identified using Blastn homology searches in the plant and fungal databases to do multiple sequence alignments and draw sequence dendograms. Since these sequences are mostly less than a 1000 bp long a significant phylogenetic analysis was not possible. Using these as guides some conclusions can be drawn about the origin and relationships between the fragments found to be similar between rice and *Magnaporthe*. The first set of dendograms (figures 3.18 - 20) would seem to indicate conserved sequences inherited *via* a common ancestor since the plant and fungi group separately. *Magnaporthe* is the closest grouping fungi to the plants which could be explained by its close evolution with the cereals as a cereal pathogen.

The second set of dendograms (figures 3.21 – 5.24) supports horizontal DNA transfer events between *Magnaporthe* and rice or a common ancestor of maize and rice (figure 3.23). The first dendogram in this set (figure 3.21) represents a 253 bp sequence only identifiable as a hypothetical protein in rice, but with similar sequences in different plants and fungi present. It is clear however that the sequence from rice groups well away from the other plants with that of the fungi as would be expected for a horizontal transferred sequence. The second dendogram in this set (figure 3.24) represents a 124 bp hypothetical protein sequence from rice and the dendogram again suggest a transfer event rather than homology via a common ancestor. In this dendogram the fungus *Blastocladiella emersonii* group between the plants. It is thought that *Blastocladiella emersonii* which is an aquatic fungus of the Chytridiomycete class, and lying at the base of the fungal phylogenetic tree could have retained some ancestral characteristics of fungi and animals or fungi and that were lost in members of late-diverging fungal species (Ribichich et al., 2006). The third dendogram (figure 3.23) also represents a sequence that could only be classified as a hypothetical protein in rice of 100 bp. The dendogram would again support a transfer event from an early ancestor of *Magnaporthe grisea*, *Aspergillus terreus* and

Neurospora crassa to an early ancestor of both rice and maize. The fourth dendrogram (figure 3.24) was constructed using a 645 bp sequence annotated as *rub1 mRNA for polyubiquitin*. This dendrogram also shows that the sequence from the *indica* cultivar group of rice groups with the fungi and separate from the sequence in the *japonica* cultivar group, indicating a DNA transfer event that took place after the two cultivars split an estimated 0.4 mya (Zhu and Ge, 2005).

The third set of dendrograms support a hypothesis for multiple DNA transfer events between plants and fungi. The first dendrogram (figure 3.25) that were drawn using a 109 bp fragment identified as a hypothetical protein from *Magnaporthe grisea*, groups *Magnaporthe* and rice together while sorghum and maize are grouped with the fungus *Chaetomium globosum* an ascomycete found on grasses with known antifungal activity against the *Magnaporthe grisea* and wheat leaf rust *Puccinia recondita* (Kim *et al.*, 2005). The other two cereals wheat and barley grouped separately. Cotton (*Gossypium hirsutum*) grouped with the fungus *Ustilago maydis* as well as *Arabidopsis* and grape (*Vitis vinifera*). The second dendrogram in this group (figure 3.26) that was constructed using a 190 bp fragment identified as a putative heat shock protein in rice, shows the cereal sequences group together while wheat (*Triticum aestivum*) group closer to the fungus *Blastocladiella emersonii* than rice maize and sorghum. The rest of the fungi follow interrupted by *Lilium longiflorum*, *Brassica rapa* subsp. *pekinensis* and tobacco (*Nicotiana tabacum*); the only other plants in which a sequence of significant similarity could be found.

This analysis shows that while some of the sequence similarities between the genome of rice and that of *Magnaporthe* may originate as a result of a common ancestor there are some sequences for which this similarity can only be explained by a transfer event from a fungi (*Magnaporthe grisea* or related fungi) to the rice genome or that of an ancestor of rice and the other cereals. The exact model of how transfer and integration is facilitated is still unclear but illegitimate recombination is a likely explanation.

4.3 Insertion dynamics

This study clearly shows that there are sequence similarities in the rice genome with “non-plant” sequences. For rice genome assembly 80% of the sequences were from paired (forward and reverse) reads with an average clone size of ~1700 bp (18.5-fold genome coverage). More than fivefold coverage was from randomly selected clones, with the remainder from resequencing gaps or low-quality regions. The resulting sequences were analyzed for contamination from non-rice DNA sources (~500,000 reads) or rice repetitive DNA (~1,500,000 reads) (Goff et al., 2002). Since the fragments identified in this study are all relatively short (shorter than the BAC reads as well as the stringency with which the rice genome has been assembled and the fact that these fragments are flanked by rice-related sequences; it is highly unlikely that they are artifacts of contaminating microorganisms in the original DNA preparations.

Through the various analyses of the insertion sites, it is also clear that the insertion sites of these sequences do not appear to be randomly distributed throughout the genome and has at least three possible explanations:

- i. More transfer occurs but some regions are “swept” more effectively than others due to adverse consequences of exogenous DNA insertions.
- ii. Some regions of the genome are more available/ receptive than others to insertion events and therefore these regions have a higher number of insertions or,
- iii. Insertions in other areas are mostly deleterious or decrease the cells fitness to such an extent that they are directly selected against.

One view is that only genes that convey a certain benefit will be transferred between organisms (Jain *et al.*, 1999; Gogarten and Townsend, 2005) but it is unlikely that benefit could be the determining factor in the actual transfer. Any benefit would rather affect the persistence of the transferred DNA. Alternatively, the degradation and/or rearrangement of any inserted fragment might itself possibly confer a benefit. Therefore it would be more accurate to state that certain genes or regions have a better chance of surviving the mechanisms in the nucleus responsible for degrading insertions and repetitive elements and therefore will be maintained and integrated into the functioning of the organism by conferring a positive selection pressure. Another factor that must be considered is that the position of insertion might play an equal or greater role than its actual coding function, through the influence of the inserted fragment on the adjacent genes and sequences and *vice versa*. It is also clear with the analysis of the organellar insertions that

not all regions of the organellar genomes are present in the nuclear genome at the same frequency. This is especially true for the sequences of the 16S and 23S ribosomal subunits of the chloroplast and the NADH subunits of the mitochondrion. Possible reasons for this are that they either are preferentially inserted, or, more likely, because they are not removed at the same rate as the other insertions. This might be because the genome has an evolutionary built-in mechanism to recognize and protect these essential gene sequences.

4.4 Models for DNA transfer

For the insertion of foreign DNA to take place, the DNA firstly has to enter the nucleus and secondly need to be incorporated into the genome. For the mitochondrion and chloroplast the only obstacle to cross would be the nuclear envelope. While for viruses, bacteria and fungi the cell wall and cell membrane would present an initial and more robust barrier. In host-pathogen interactions, the invading microorganism generally does not invent novel metabolic pathways; instead it insinuates into the existing cellular processes and adapts them for its life cycle. Thus, nuclear uptake of foreign DNA such as the T-complex from *Agrobacterium* spp and viral genomes probably follows one of the pathways for nuclear transport of cellular RNAs.

Transport of nucleic acids through cell membranes is a biological process basic to all living organisms. Nucleic acid molecules are transported through membrane channels during host-pathogen interactions (e.g. transport of viral genomes into the host cell) as well as during normal cellular processes (e.g. nuclear export/import of mRNA) (Citovsky and Zambryski, 1993). Molecular transport across the nuclear envelope involves many different proteins and nucleic acids. This transport is bidirectional and occurs exclusively through the nuclear pore complex (NPC), integrated into the two membranes of the nuclear envelope (Akey, 1992). In the passive state, the NPC allows diffusion of small molecules (up to 40 kDa) (Akey, 1992), while the transport of larger molecules occurs by an active mechanism mediated by specific nuclear localization signal (NLS) sequences contained in the transported molecule (Garcia-Bustos *et al.*, 1991). The best studied case of nuclear import of DNA in plants is the *Agrobacterium* T-DNA system. As discussed in the introduction *Agrobacterium* transforms plant cells through the Ti plasmid. The Ti plasmid has two important genetic components. One, the T-DNA, is copied and transferred to the plant cell and the second component of the Ti plasmid, the virulence (*vir*) region, provides most of the trans-acting products for T-DNA transfer. In addition to functioning

in nuclear targeting, VirE2 acts as a single-stranded (ss) DNA binding protein (SSB) (Christie, *et al.*, 1988; Citovsky *et al.*, 1988). The T-strand with a molecule of VirD2 covalently attached to its 5'-end likely exists as a folded and collapsed structure. Following cooperative binding of VirE2, the ssDNA is unfolded to form a long and thin protein-ssDNA T-complex. The T-complex is composed of three structural elements: one copy of the T-strand, one VirD2 molecule, and more than 600 copies of VirE2 (Citovsky *et al.*, 1988). The T-strand is not sequence specific, and any DNA sequence located between the 25-bp T-DNA border repeats can be transported to plants and function as T-DNA (Citovsky *et al.*, 1992). Thus, the T-strand probably does not possess specific nucleotide sequences for nuclear uptake; instead it likely is passively transported into the nucleus by its associated proteins, leaving the other two components of the T-complex, the VirD2 and VirE2 proteins, to function in nuclear transport (Citovsky and Zambryski, 1993). There may be plant cellular proteins analogous to VirE2 that serve as molecular chaperones coating and unfolding nucleic acids and targeting them to and through nuclear pores. If true, this could explain observations that VirE2 function is not essential on some hosts (Stachel and Nester, 1986); in this case, one can argue that another plant-cell SSB can provide the VirE2-like function. This idea supports the possibility that nuclear transport of *Agrobacterium* spp. T-complex may represent a generalized process by which ssDNA or RNA molecules move within the cell; i.e. as unfolded nucleic acid-protein complex.

In plants, however, nucleic acids also can be transported between cells. Plant cells are connected by cytoplasmic channels called plasmodesmata (PD) that allow the transfer of nutrients and signals necessary for growth and development. Although plasmodesmata and nuclear pores are structurally different, both are complex proteinaceous pores involved in active bidirectional traffic of macromolecules (Citovsky and Zambryski, 1993). Although essential for plant development and function, plasmodesmata represent an 'Achilles heel' that can be exploited and manipulated by viruses to allow them to spread throughout plant tissues (Oparka and Roberts, 2001). Most plant viruses enter the initially infected cell following mechanical damage inflicted by a biological carrier (insect, fungus, etc) or by abrasion. After initial infection, plant viruses move into adjacent healthy cells through plasmodesmata, the only direct link between plant cells. Some viruses move through plasmodesmata as intact virions, causing permanent modification to plasmodesmal structure. Viruses such as the Cauliflower mosaic virus (CaMV) and the Tomato spotted wilt virus use protein tubules, encoded by viral proteins to pass through the PD (Hull, 1992; Storms *et al.*, 1995). Others viruses, such as the Dahlia mosaic virus and Tobacco etch virus (TEV) pass through the PD as intact virions (Santa *et al.*,

1998). Other viruses such as the Tobacco mosaic virus, cause more subtle and often transient alterations to plasmodesmata, allowing the viral genome to move as a ribonucleoprotein complex, and encode for viral MPs which modify plasmodesmata (Citovsky and Zambryski, 1993). The variety of viral movement mechanisms suggests that a unified 'strategy' for viral movement is unlikely to occur, given the variety of viral proteins and genome organizations involved (Roberts and Oparka, 2003).

Though the exact method of DNA transfer between the organelles and the nucleus as well as between the genomes of species remains largely unclear. Transfer of mitochondrial DNA to the nucleus has been inferred to occur by an RNA intermediate (Adams *et al.*, 1999), because the nuclear copy resembles an edited mitochondrial mRNA rather than an unedited gene. The exact model for chloroplast insertions is unknown but is thought to occur mainly as complete insertions or in large tracts (Matsuo *et al.*, 2005) rather than through an mRNA intermediate and, as proposed in this thesis, to occur during pollen formation. It is possible that DNA from the plastids as well as invading bacteria and fungi are non-specifically bound to movement proteins and transported into the nucleus or to adjacent cells and then to the nucleus where it is incorporated into the genome through non-homologous recombination or even through homologous recombination with similar plant sequences.

4.5 Benefits of insertions

Continuous transfer of DNA from the plastid to the nucleus must either have a neutral effect or confer some sort of positive selective advantage otherwise natural selection would have selected against a phenomena that is undirected. A possible benefit of translocation of genes from the plastids to the nucleus is that genes are moved from the plastid with no recombination and a high redox-load to an environment with recombination and without the associated redox-load of the plastids. This would be beneficial to the genes of the plastids but the continuous addition of more DNA into the nucleus could eventually lead to 'genome obesity' (Bennetzen and Kellogg, 1997). A report by Van der Vyver *et al.* (publication submitted) has shown that the mutation frequency in the nuclear located plastid sequences is far higher than in other nuclear sequences and that similar mutations occur in the same regions of these nuclear located plastid regions during independent radiation experiments. This would suggest that these 'non-functional' plastid sequences in the nucleus might play an important role as mutation buffers in

the nuclear genome. The incorporation of DNA of microbial origin in the plant nucleus might lead to the acquisition of new genes increasing the fitness of the plant. Inserted tracts of non-coding DNA are probably dealt with in the same way as that of the plastids which is continually eliminated. Acquisition of microbial and viral sequences might also lead to increased resistance against the specific pathogen.

4.3 Contribution of this study to science

It is clear from this study that whole genome comparative analysis can provide valuable information on genome regulation, variability and interactions. This study details some of the dynamics of the nuclear genome of rice and the potentially fluctuating contributions from plastid and mitochondrial genomes, their internal interaction, as well as potential their interaction with microbial genomes resulting in DNA exchange. The starting hypothesis of this study was that the rice genome contains DNA fragments acquired through horizontal DNA transfer events from the genomes of its plastids and mitochondria as well as from microorganism living in association with rice. To evaluate this hypothesis a bioinformatical approach was used to make whole genome comparisons between the rice genome and each of the plastid and mitochondrial genomes, as well as with various completed viral, bacterial and a fungal genome. While insertions of the plastid genomes into the nuclear genome of plants and in particular rice is well documented (Matsuo *et al.*, 2005), this study was the first to do a comprehensive comparison of the mitochondrial and chloroplast insertions in the nuclear rice genome regarding the total amount of each in the nucleus, the representation of the different regions of the plastid and mitochondrial genomes in the nucleus and the specific sites of insertion of each within the nuclear genome. This study presented new evidence that showed that there is a difference in the representations of the mitochondrial and chloroplast genomes in the nuclear genome. It is hypothesized that this is either due to the different sizes of the two genomes or to different mechanisms that regulate the insertion and deletion of DNA from the different organelles. The data from this study supported the second alternative showing that not all areas of the organellar genomes are equally represented, but that some sequences, like the rDNA sequences from the chloroplast and the NADH sequences from the mitochondrion, are represented at a much higher frequency, consistent with the notion that there are processes of selective insertion or deletion of these transferred sequences.

A further contribution of this study towards the understanding the dynamics of the nuclear plant genome was to investigate the insertion of viral DNA sequences. Overall this study presents the first comprehensive assessment of viral integration and contribution to the rice nuclear genome. The study confirmed a previous report of inserted fragments of the rice tungro bacilliform virus (RTBV) (Nagano *et al.*, 2000) but also identified additional fragments that have not yet been reported. Another important finding was the identification of possible integration events of five different RNA viruses into the rice nuclear genome. Fifty-one fragments that show similarity to rice related RNA viruses were identified. The integration of RNA viruses into the plant genome has not previously been reported. These viruses could form an important source of foreign DNA contribution to the variation in plant genomes that has previously been ignored.

A third leg of this study investigated the possible contribution of bacterial genomes to that of the rice genome. By comparing the genomes of three diverse bacteria with different levels of association with plants, this study was able to identify a number of sequence similarities between the rice and the bacterial genomes. While some of these sequence similarities may be ascribed to conservation of sequences during evolution others point to horizontal transfer events. The methods followed in this study, using different diverse bacteria in the comparison proved valuable in distinguishing between evolutionarily conserved sequences and sequences that are potential candidates for horizontal transfer events.

The fourth part of this study investigated the possible DNA contributions to the plant genome by fungi. Performing a whole genome comparison between the nuclear genome of rice and that of *Magnaporthe grisea* resulted in the identification of 144 sequences that shared significant sequence similarity between the two genomes. Further analysis of these fragments showed that while some of the similarity could be contributed to conserved evolution, others were most likely due to a horizontal transfer event. The events could be the result of transfers either from fungi to plants (and specifically between rice and *Magnaporthe*) or from plants to fungi.

From this study it appears that exogenous DNA insertions might be targeted to certain regions of the chromosome rather than occurring at random. The identification and characterization of these regions might be a powerful tool to develop highly polymorphic markers in rice or other organisms. These regions might be especially valuable in clonal plants with low genetic diversity that would otherwise hinder the use of genetic markers. Furthermore, understanding which areas are more receptive to insertions could be valuable in the application of genetic

transformation of crop plants in targeting gene insertion into certain regions that would ensure stable expression and inheritance of the transgene. Understanding the dynamics between plant nuclei and the organelles as well as between plants and the microbes in their environment in terms of gene transfer is also important in the debate about ‘gene escape’ from genetically engineered organisms. In plants, one strategy to limit gene escape is so called ‘transgene containment’ (Daniell *et al.*, 1998), whereby the transgene is located in the chloroplast rather than the nucleus. Because chloroplasts are degraded during pollen formation, it is thought that the pollen will therefore be free of the transgene and thereby will prevent gene escape through pollen to non-transgenic plants. As discussed in Chapter 2 of this thesis, degradation of chloroplast during pollen formation might be the preferred stage for transfer of the chloroplast DNA to the plant nucleus and a strategy for ‘gene containment’ through chloroplast transformation might limit gene escape but is not a failsafe method to prevent it.

Because of the recorded relative high frequency with which mitochondria exchange genes, researchers have focused on chloroplast sequences “which seem essentially immune to HGT” (Bergthorsson *et al.*, 2003) to do phylogenetic studies in plants (including DNA barcoding; Chase *et al.*, 2005; Rubinoff *et al.*, 2006). This study clearly shows that caution is necessary when interpreting plant phylogenies using chloroplast genes as they may not reflect the underlying phylogeny of the organism.

4.6 **Future perspectives**

The mechanisms whereby horizontal transfer and insertion of foreign DNA take place are still poorly understood. While further bioinformatical comparative studies like this could provide important information on this subject and help to elucidate some of the important factors, they are limited by the fact that we are looking only at a representative genome of any species that might not reflect the diversity of insertions that might be present in a given population of plants or even the diversity within a plant. Another clear need is to uncover very recent transfers that could provide further insight into the transfer process and answer several outstanding questions: how long are the DNA tracts that are transferred; does DNA move back and forth between donors and recipients, or is transfer unidirectional; are there lineages experiencing higher levels of DNA transfer which have common characteristics that might suggest a transfer mechanism? Addressing these questions will require both broad surveys and dense sampling.

To determine or demonstrate horizontal DNA transfer between microbes and plants *in vivo* is difficult, since the major criticism of such studies would be that the observed results are simply a measure of the contamination of the plant DNA sample with the microbe, rather than gene transfer between the two genomes. One possible experiment to address the question would be to co-culture a microbe containing an antibiotic resistance gene, with the appropriate plant-specific signals to be functional in the plant, and a plant cell-suspension or callus culture. Treating the culture with an appropriate antibiotic treatment to kill the microbe it does not have resistance to and subsequently selecting plant cells with antibiotic resistance acquired through transfer of the antibiotic resistance gene from the microbe to the plant would confirm transfer. Further analysis can then determine the exact position of the insertion of this gene into the plant genome and the extent of the transferred DNA. The selection would also indicate the rate at which a single gene is transferred and if regions outside the functional gene were co-transferred then it would also give a frequency for the transfer of any microbial fragment. However this experiment would not address the question of how frequently such a transfer would be maintained in the absence of strong positive selection, an event that would occur most likely at a far lower frequency than would the transfer of 'non-functional' DNA sequences between the plant and microbe. Massive PCR screening and sequence analysis would be necessary to identify the presence of non-functional sequences, and care would have to be taken to eliminate the possibility of genetic contamination of the samples.

Another shortfall of current research in horizontal transfer of DNA is that so far all reported cases of horizontal gene transfer in plants involve evolutionarily distant donors and recipients (Mower *et al.*, 2004; Wikström *et al.*, 2001; Bergthorsson *et al.*, 2004). This is most likely because studies rely on the phylogenetic signal of the donated DNA being discordant with that of the host to confidently detect horizontal transfer events. If transfer events occur within a plant family or between closely related species, gene sequences may not be divergent enough to provide strong enough evidence to support a hypothesis involving horizontal transfer. This limitation may present a significant barrier to obtaining a comprehensive view of the tempo and pattern of plant-to-plant transfer events. If any of the dominant modes of transfer involve mechanisms, such as illegitimate pollination, that favor closely related donors and recipients it would not be detected or accepted using the current criteria needed to support such observations as likely resulting from a horizontal transfer event.



5

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Appendix

Description of table headings:

Start and **End** provides reference points on the respective genomes for the start and end of each aligned fragment.

Ori shows the orientation of the alignment (5'-3' as + or 3'-5' as -) relative to its orientation in its native genome

Name gives the chromosome number of each of the rice chromosomes

Stats provide the specific statistics associated with each alignment as follows:

Score: The bit score value is derived from the raw alignment score in which the statistical properties of the scoring system used have been taken into account. Because bit scores have been normalized with respect to the scoring system, they can be used to compare alignment scores from different searches.

E-val: Expectation value. The number of different alignments with scores equivalent to or better than S that are expected to occur in a database search by chance. The lower the E-value, the more significant the score.

%ID: Percentage identity, the extent to which two sequences are identical.

Length: Length of the alignment in base pairs.

Table A-1 Chloroplast DNA homologies in the rice nuclear genome

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 96210 | 96425 | + | 1 | 525553 | 525762 | + | 179 | 8.30E-94 | 96 | 215 |
| 49008 | 49091 | + | 1 | 2521305 | 2521393 | + | 61 | 1.50E-44 | 92 | 89 |
| 49097 | 49224 | + | 1 | 2521393 | 2521514 | + | 57 | 1.50E-44 | 86 | 129 |
| 21846 | 21953 | - | 1 | 3561919 | 3562026 | + | 100 | 1.60E-48 | 98 | 108 |
| 6536 | 6934 | + | 1 | 5002377 | 5002775 | + | 379 | 0 | 99 | 399 |
| 42532 | 42965 | + | 1 | 5002776 | 5003204 | + | 390 | 0 | 97 | 434 |
| 45519 | 45574 | + | 1 | 5003204 | 5003259 | + | 56 | 0 | 100 | 56 |
| 45613 | 45754 | + | 1 | 5003298 | 5003439 | + | 130 | 0 | 98 | 142 |
| 57885 | 58006 | - | 1 | 5180980 | 5181100 | + | 117 | 4.90E-109 | 99 | 121 |
| 57756 | 57875 | - | 1 | 5181111 | 5181229 | + | 107 | 4.90E-109 | 97 | 119 |
| 57885 | 58006 | - | 1 | 5182800 | 5182920 | + | 117 | 4.90E-109 | 99 | 121 |
| 57756 | 57875 | - | 1 | 5182931 | 5183049 | + | 107 | 4.90E-109 | 97 | 119 |
| 91192 | 91345 | - | 1 | 5726538 | 5726690 | + | 145 | 1.50E-73 | 99 | 153 |
| 82949 | 83035 | + | 1 | 5732527 | 5732612 | + | 70 | 7.30E-29 | 95 | 86 |
| 19358 | 19387 | + | 1 | 7189094 | 7189123 | + | 30 | 0.0016 | 100 | 30 |
| 22311 | 22367 | - | 1 | 7226377 | 7226433 | + | 53 | 7.40E-16 | 98 | 57 |
| 94325 | 94399 | - | 1 | 7226581 | 7226654 | + | 66 | 1.80E-26 | 97 | 74 |
| 12512 | 13987 | + | 1 | 7758510 | 7759987 | + | 1470 | 0 | 100 | 1478 |
| 13997 | 15200 | + | 1 | 7759996 | 7761198 | + | 1196 | 0 | 100 | 1204 |
| 19231 | 19341 | + | 1 | 8307163 | 8307274 | + | 45 | 5.20E-11 | 85 | 113 |
| 6407 | 6487 | - | 1 | 8474004 | 8474085 | + | 54 | 5.90E-18 | 91 | 82 |
| 43490 | 43683 | + | 1 | 9517040 | 9517231 | + | 160 | 6.50E-138 | 95 | 196 |
| 43700 | 43829 | + | 1 | 9517249 | 9517378 | + | 118 | 6.50E-138 | 98 | 130 |
| 56309 | 56410 | + | 1 | 11345224 | 11345325 | + | 56 | 1.60E-20 | 88 | 104 |
| 5683 | 5857 | + | 1 | 11419187 | 11419359 | + | 115 | 6.70E-66 | 91 | 175 |
| 5877 | 5937 | + | 1 | 11419362 | 11419421 | + | 41 | 6.70E-66 | 92 | 61 |
| 40083 | 40141 | - | 1 | 11424887 | 11424945 | + | 35 | 1.40E-05 | 90 | 59 |
| 89199 | 89625 | - | 1 | 12345480 | 12345904 | + | 326 | 2.10E-181 | 94 | 426 |
| 125496 | 125922 | + | 1 | 12345480 | 12345904 | + | 326 | 2.10E-177 | 94 | 426 |
| 126638 | 126654 | + | 1 | 12379680 | 12379695 | + | 16 | 2.10E-177 | 100 | 16 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 11817 | 11882 | + | 1 | 12842604 | 12842669 | + | 62 | 5.70E-21 | 98 | 66 |
| 81712 | 81770 | + | 1 | 12927880 | 12927937 | + | 54 | 7.10E-190 | 98 | 58 |
| 133351 | 133409 | - | 1 | 12927880 | 12927937 | + | 54 | 3.70E-188 | 98 | 58 |
| 81761 | 82163 | + | 1 | 12929119 | 12929514 | + | 306 | 7.10E-190 | 94 | 402 |
| 132958 | 133360 | - | 1 | 12929119 | 12929514 | + | 306 | 3.70E-188 | 94 | 402 |
| 31790 | 31842 | + | 1 | 13407835 | 13407887 | + | 49 | 8.80E-13 | 98 | 53 |
| 51627 | 53330 | + | 1 | 14119934 | 14121638 | + | 1546 | 0 | 98 | 1706 |
| 53424 | 53871 | + | 1 | 14121733 | 14122179 | + | 397 | 0 | 97 | 449 |
| 53859 | 53993 | + | 1 | 14122182 | 14122315 | + | 134 | 0 | 100 | 134 |
| 54010 | 54169 | + | 1 | 14122333 | 14122491 | + | 151 | 0 | 99 | 159 |
| 67855 | 68195 | - | 1 | 14122489 | 14122826 | + | 289 | 2.40E-159 | 96 | 341 |
| 38650 | 38731 | - | 1 | 14158933 | 14159014 | + | 39 | 3.10E-09 | 87 | 83 |
| 90814 | 91043 | + | 1 | 14724876 | 14725105 | + | 143 | 2.30E-72 | 90 | 231 |
| 22540 | 22826 | + | 1 | 15109868 | 15110154 | + | 263 | 6.40E-139 | 98 | 287 |
| 44985 | 45028 | - | 1 | 15792161 | 15792204 | + | 36 | 5.20E-08 | 95 | 44 |
| 36305 | 36423 | - | 1 | 16273246 | 16273364 | + | 65 | 1.50E-23 | 88 | 121 |
| 35827 | 35899 | - | 1 | 16678584 | 16678656 | + | 69 | 8.50E-25 | 99 | 73 |
| 95687 | 95863 | - | 1 | 17022813 | 17022988 | + | 168 | 3.00E-87 | 99 | 176 |
| 60691 | 61075 | + | 1 | 17321637 | 17322025 | + | 365 | 1.20E-204 | 98 | 389 |
| 79196 | 79509 | + | 1 | 17735430 | 17735741 | + | 277 | 5.40E-210 | 97 | 313 |
| 79567 | 79699 | + | 1 | 17735800 | 17735932 | + | 117 | 5.40E-210 | 97 | 133 |
| 39462 | 39556 | + | 1 | 18041405 | 18041497 | + | 30 | 0.0028 | 83 | 98 |
| 69142 | 69338 | - | 1 | 18315759 | 18315954 | + | 122 | 7.70E-60 | 90 | 198 |
| 4125 | 4200 | + | 1 | 18445151 | 18445228 | + | 51 | 5.50E-60 | 91 | 79 |
| 4257 | 4313 | + | 1 | 18445269 | 18445326 | + | 46 | 1.70E-56 | 95 | 58 |
| 4355 | 4435 | + | 1 | 18445365 | 18445446 | + | 54 | 1.70E-56 | 91 | 82 |
| 4156 | 4200 | + | 1 | 18460337 | 18460381 | + | 37 | 7.00E-52 | 96 | 45 |
| 4203 | 4316 | + | 1 | 18460379 | 18460492 | + | 63 | 5.50E-60 | 89 | 115 |
| 4355 | 4435 | + | 1 | 18460529 | 18460609 | + | 49 | 5.50E-60 | 90 | 81 |
| 24788 | 25264 | - | 1 | 18664084 | 18664560 | + | 465 | 1.40E-257 | 99 | 477 |
| 19839 | 19908 | - | 1 | 18806633 | 18806702 | + | 66 | 1.90E-24 | 99 | 70 |
| 129406 | 129421 | - | 1 | 18928121 | 18928135 | + | 15 | 0 | 100 | 15 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 124362 | 124378 | + | 1 | 18941120 | 18941135 | + | 16 | 0.00021 | 100 | 16 |
| 122359 | 122392 | + | 1 | 18952057 | 18952089 | + | 25 | 1.40E-09 | 94 | 33 |
| 100861 | 100876 | + | 1 | 18953988 | 18954002 | + | 15 | 3.80E-35 | 100 | 15 |
| 114300 | 114315 | + | 1 | 18971096 | 18971110 | + | 15 | 3.80E-35 | 100 | 15 |
| 133575 | 133590 | - | 1 | 19000471 | 19000485 | + | 15 | 0 | 100 | 15 |
| 85781 | 87335 | + | 1 | 19004491 | 19006043 | + | 1499 | 0 | 99 | 1555 |
| 127786 | 129340 | - | 1 | 19004491 | 19006043 | + | 1499 | 0 | 99 | 1555 |
| 128784 | 128814 | + | 1 | 19005016 | 19005045 | + | 30 | 1.40E-09 | 100 | 30 |
| 87329 | 87682 | + | 1 | 19009465 | 19009815 | + | 333 | 0 | 99 | 353 |
| 127439 | 127792 | - | 1 | 19009465 | 19009815 | + | 333 | 0 | 99 | 353 |
| 118117 | 118192 | - | 1 | 19011938 | 19012013 | + | 22 | 0 | 82 | 78 |
| 65773 | 66154 | + | 1 | 19014684 | 19015064 | + | 369 | 5.00E-207 | 99 | 381 |
| 99204 | 99290 | - | 1 | 19016193 | 19016278 | + | 86 | 2.20E-38 | 100 | 86 |
| 115831 | 115917 | + | 1 | 19016193 | 19016278 | + | 86 | 3.80E-35 | 100 | 86 |
| 121995 | 122013 | - | 1 | 19016201 | 19016218 | + | 18 | 0 | 100 | 18 |
| 109286 | 109301 | - | 1 | 19020803 | 19020817 | + | 15 | 0 | 100 | 15 |
| 109286 | 109301 | - | 1 | 19021451 | 19021465 | + | 15 | 0 | 100 | 15 |
| 100663 | 100678 | - | 1 | 19042940 | 19042954 | + | 15 | 0 | 100 | 15 |
| 103688 | 103703 | - | 1 | 19046636 | 19046650 | + | 15 | 0 | 100 | 15 |
| 88675 | 88804 | - | 1 | 19072483 | 19072611 | + | 81 | 2.10E-35 | 91 | 129 |
| 49675 | 49722 | + | 1 | 19301664 | 19301711 | + | 37 | 1.50E-06 | 94 | 49 |
| 63343 | 63443 | + | 1 | 19322527 | 19322625 | + | 92 | 3.10E-179 | 98 | 100 |
| 63434 | 63502 | + | 1 | 19323722 | 19323789 | + | 68 | 3.10E-179 | 100 | 68 |
| 63515 | 63761 | + | 1 | 19323804 | 19324048 | + | 201 | 3.10E-179 | 95 | 249 |
| 63780 | 64449 | + | 1 | 19324067 | 19324735 | + | 617 | 0 | 98 | 669 |
| 17208 | 17257 | - | 1 | 19442501 | 19442548 | + | 30 | 6.50E-15 | 90 | 50 |
| 17120 | 17198 | - | 1 | 19442550 | 19442623 | + | 39 | 6.50E-15 | 87 | 79 |
| 94523 | 94632 | - | 1 | 19789806 | 19789914 | + | 77 | 5.00E-33 | 93 | 109 |
| 56718 | 57010 | + | 1 | 20766806 | 20767098 | + | 273 | 0 | 98 | 293 |
| 57099 | 57875 | + | 1 | 20767167 | 20767940 | + | 736 | 0 | 99 | 776 |
| 57883 | 58265 | + | 1 | 20767949 | 20768330 | + | 346 | 0 | 98 | 382 |
| 58314 | 58674 | + | 1 | 20768380 | 20768741 | + | 342 | 0 | 99 | 362 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 58689 | 59130 | + | 1 | 20768761 | 20769201 | + | 425 | 0 | 99 | 441 |
| 59161 | 59410 | + | 1 | 20769234 | 20769482 | + | 233 | 0 | 98 | 249 |
| 59468 | 59548 | + | 1 | 20769541 | 20769618 | + | 68 | 0 | 96 | 80 |
| 59580 | 60031 | + | 1 | 20769619 | 20770068 | + | 431 | 0 | 99 | 451 |
| 60039 | 60639 | + | 1 | 20770076 | 20770674 | + | 556 | 0 | 98 | 600 |
| 60680 | 60828 | + | 1 | 20770716 | 20770863 | + | 148 | 0 | 100 | 148 |
| 60847 | 61075 | + | 1 | 20770869 | 20771100 | + | 208 | 0 | 97 | 232 |
| 61162 | 61319 | + | 1 | 20771187 | 20771343 | + | 153 | 0 | 99 | 157 |
| 61312 | 61984 | + | 1 | 20772415 | 20773085 | + | 632 | 0 | 99 | 672 |
| 1974 | 2176 | - | 1 | 22814887 | 22815087 | + | 104 | 3.00E-45 | 88 | 204 |
| 3553 | 3829 | - | 1 | 23599715 | 23599988 | + | 185 | 3.30E-95 | 91 | 281 |
| 24666 | 24714 | - | 1 | 23754948 | 23754996 | + | 41 | 1.30E-08 | 96 | 49 |
| 88677 | 88837 | - | 1 | 24018229 | 24018384 | + | 104 | 1.20E-87 | 91 | 160 |
| 88498 | 88662 | - | 1 | 24018382 | 24018548 | + | 84 | 1.20E-87 | 88 | 168 |
| 53591 | 53687 | - | 1 | 24482114 | 24482210 | + | 81 | 2.10E-35 | 96 | 97 |
| 22209 | 22423 | - | 1 | 24586006 | 24586223 | + | 37 | 1.90E-06 | 79 | 225 |
| 23130 | 23366 | - | 1 | 24730249 | 24730480 | + | 142 | 1.10E-68 | 90 | 238 |
| 115509 | 115525 | + | 1 | 25125613 | 25125628 | + | 16 | 1.70E-113 | 100 | 16 |
| 106988 | 107004 | + | 1 | 25135827 | 25135842 | + | 16 | 1.30E-111 | 100 | 16 |
| 83625 | 83931 | - | 1 | 25167332 | 25167640 | + | 215 | 2.90E-115 | 92 | 311 |
| 131190 | 131496 | + | 1 | 25167332 | 25167640 | + | 215 | 1.70E-113 | 92 | 311 |
| 50186 | 50267 | - | 1 | 26594624 | 26594704 | + | 57 | 4.10E-21 | 93 | 81 |
| 65222 | 65358 | + | 1 | 27573564 | 27573699 | + | 108 | 1.70E-51 | 95 | 136 |
| 93522 | 93632 | - | 1 | 28444635 | 28444745 | + | 80 | 8.10E-35 | 93 | 112 |
| 48525 | 48563 | - | 1 | 28575868 | 28575906 | + | 31 | 0.00048 | 95 | 39 |
| 82620 | 82958 | + | 1 | 28741733 | 28742071 | + | 319 | 3.10E-177 | 99 | 339 |
| 132163 | 132501 | - | 1 | 28741733 | 28742071 | + | 319 | 1.90E-172 | 99 | 339 |
| 55866 | 55957 | - | 1 | 28741789 | 28741880 | + | 76 | 2.00E-32 | 96 | 92 |
| 108419 | 108435 | - | 1 | 28751141 | 28751156 | + | 16 | 2.50E-171 | 100 | 16 |
| 109312 | 109819 | + | 1 | 28857412 | 28857918 | + | 479 | 2.70E-266 | 99 | 507 |
| 76238 | 76519 | - | 1 | 28857919 | 28858199 | + | 261 | 7.10E-159 | 98 | 281 |
| 121285 | 121304 | + | 1 | 28858879 | 28858898 | + | 16 | 2.70E-266 | 95 | 20 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 23457 | 23496 | + | 1 | 29484695 | 29484734 | + | 40 | 3.00E-09 | 100 | 40 |
| 49097 | 49170 | - | 1 | 29649160 | 29649229 | + | 35 | 2.30E-06 | 87 | 75 |
| 54489 | 54826 | - | 1 | 30408357 | 30408693 | + | 182 | 1.40E-95 | 88 | 338 |
| 43757 | 43866 | + | 1 | 30752874 | 30752981 | + | 58 | 4.60E-174 | 88 | 110 |
| 43909 | 44046 | + | 1 | 30753007 | 30753144 | + | 107 | 4.60E-174 | 94 | 139 |
| 43976 | 44028 | + | 1 | 30753149 | 30753202 | + | 38 | 9.90E-134 | 93 | 54 |
| 44021 | 44289 | + | 1 | 30753313 | 30753576 | + | 189 | 4.60E-174 | 93 | 269 |
| 77337 | 77526 | - | 1 | 31309861 | 31310049 | + | 103 | 1.60E-48 | 88 | 191 |
| 13639 | 13675 | - | 1 | 32289319 | 32289356 | + | 30 | 0.0036 | 95 | 38 |
| 23733 | 23767 | - | 1 | 32537633 | 32537667 | + | 31 | 0.0007 | 97 | 35 |
| 38396 | 38482 | - | 1 | 32730866 | 32730953 | + | 84 | 2.90E-35 | 99 | 88 |
| 123788 | 123805 | - | 1 | 33018677 | 33018693 | + | 17 | 5.30E-109 | 100 | 17 |
| 109572 | 109591 | + | 1 | 33023312 | 33023330 | + | 19 | 3.20E-93 | 100 | 19 |
| 98918 | 98981 | + | 1 | 33077890 | 33077952 | + | 59 | 2.60E-22 | 98 | 63 |
| 116140 | 116203 | - | 1 | 33077890 | 33077952 | + | 59 | 2.90E-19 | 98 | 63 |
| 67009 | 67109 | + | 1 | 33077952 | 33078051 | + | 88 | 5.20E-152 | 97 | 100 |
| 92040 | 92159 | + | 1 | 33078135 | 33078253 | + | 103 | 5.20E-152 | 97 | 119 |
| 122962 | 123081 | - | 1 | 33078135 | 33078253 | + | 103 | 5.30E-109 | 97 | 119 |
| 95701 | 95811 | - | 1 | 33078253 | 33078362 | + | 98 | 8.90E-95 | 97 | 110 |
| 119310 | 119420 | + | 1 | 33078253 | 33078362 | + | 98 | 3.20E-93 | 97 | 110 |
| 90684 | 90802 | - | 1 | 33078362 | 33078479 | + | 102 | 8.90E-95 | 97 | 118 |
| 124319 | 124437 | + | 1 | 33078362 | 33078479 | + | 102 | 3.20E-93 | 97 | 118 |
| 92696 | 92836 | + | 1 | 33078816 | 33078954 | + | 124 | 5.20E-152 | 97 | 140 |
| 122285 | 122425 | - | 1 | 33078816 | 33078954 | + | 124 | 5.30E-109 | 97 | 140 |
| 98545 | 98630 | + | 1 | 33359897 | 33359981 | + | 81 | 2.00E-35 | 99 | 85 |
| 13082 | 13422 | + | 1 | 33484586 | 33484926 | + | 341 | 0 | 100 | 341 |
| 15980 | 16301 | - | 1 | 33484964 | 33485285 | + | 322 | 0 | 100 | 322 |
| 15911 | 15940 | - | 1 | 33485325 | 33485354 | + | 30 | 0 | 100 | 30 |
| 15500 | 15902 | - | 1 | 33485363 | 33485765 | + | 403 | 0 | 100 | 403 |
| 15422 | 15491 | - | 1 | 33485774 | 33485843 | + | 70 | 0 | 100 | 70 |
| 15263 | 15418 | - | 1 | 33488995 | 33489150 | + | 156 | 0 | 100 | 156 |
| 14949 | 15219 | - | 1 | 33489194 | 33489463 | + | 263 | 0 | 99 | 271 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|-------|-----|-----------------|----------|----------|-----|-------|-------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 13997 | 14909 | - | 1 | 33489503 | 33490413 | + | 893 | 0 | 99 | 913 |
| 13668 | 13987 | - | 1 | 33490424 | 33490744 | + | 317 | 0 | 100 | 321 |
| 21967 | 25531 | + | 1 | 33492335 | 33495899 | + | 3549 | 0 | 100 | 3565 |
| 44892 | 45431 | + | 1 | 33496051 | 33496593 | + | 295 | 0 | 88 | 547 |
| 47041 | 47170 | + | 1 | 33496831 | 33496960 | + | 90 | 0 | 92 | 130 |
| 47379 | 47635 | + | 1 | 33497242 | 33497497 | + | 206 | 0 | 95 | 258 |
| 47658 | 47823 | + | 1 | 33497579 | 33497741 | + | 119 | 0 | 93 | 167 |
| 47824 | 49055 | + | 1 | 33497752 | 33498988 | + | 1050 | 0 | 96 | 1238 |
| 48136 | 49091 | + | 1 | 33498069 | 33499029 | + | 833 | 0 | 97 | 961 |
| 49097 | 49224 | + | 1 | 33499029 | 33499150 | + | 77 | 0 | 90 | 129 |
| 36762 | 41364 | + | 1 | 33502201 | 33506803 | + | 4545 | 0 | 100 | 4605 |
| 41374 | 41491 | + | 1 | 33506813 | 33506930 | + | 118 | 0 | 100 | 118 |
| 41535 | 42468 | + | 1 | 33506974 | 33507907 | + | 920 | 0 | 100 | 936 |
| 42477 | 43683 | + | 1 | 33507916 | 33509114 | + | 1157 | 0 | 99 | 1209 |
| 43700 | 43898 | + | 1 | 33509131 | 33509329 | + | 195 | 0 | 100 | 199 |
| 43909 | 44314 | + | 1 | 33509341 | 33509744 | + | 398 | 0 | 100 | 406 |
| 30468 | 30738 | + | 1 | 33528293 | 33528563 | + | 227 | 0 | 96 | 271 |
| 29541 | 30299 | - | 1 | 33534404 | 33535162 | + | 755 | 0 | 100 | 759 |
| 29149 | 29503 | - | 1 | 33535200 | 33535554 | + | 355 | 0 | 100 | 355 |
| 27483 | 29137 | - | 1 | 33535567 | 33537221 | + | 1640 | 0 | 100 | 1656 |
| 49511 | 49583 | - | 1 | 33539456 | 33539528 | + | 73 | 0 | 100 | 73 |
| 49286 | 49502 | - | 1 | 33539537 | 33539753 | + | 217 | 0 | 100 | 217 |
| 46504 | 49273 | - | 1 | 33539764 | 33542536 | + | 2749 | 0 | 100 | 2773 |
| 46286 | 46495 | - | 1 | 33542545 | 33542754 | + | 210 | 0 | 100 | 210 |
| 46201 | 46276 | - | 1 | 33542764 | 33542839 | + | 76 | 0 | 100 | 76 |
| 45968 | 46165 | - | 1 | 33542873 | 33543065 | + | 178 | 0 | 97 | 198 |
| 45613 | 45946 | - | 1 | 33543087 | 33543420 | + | 330 | 0 | 100 | 334 |
| 45314 | 45552 | - | 1 | 33543456 | 33543694 | + | 239 | 0 | 100 | 239 |
| 8101 | 8203 | + | 1 | 33546519 | 33546621 | + | 103 | 0 | 100 | 103 |
| 8212 | 8513 | + | 1 | 33546630 | 33546931 | + | 302 | 0 | 100 | 302 |
| 8561 | 8607 | + | 1 | 33546979 | 33547025 | + | 43 | 0 | 98 | 47 |
| 8623 | 11432 | + | 1 | 33547041 | 33549855 | + | 2795 | 0 | 100 | 2815 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 11487 | 13987 | + | 1 | 33549910 | 33552407 | + | 2451 | 0 | 99 | 2503 |
| 36195 | 36238 | + | 1 | 33551207 | 33551250 | + | 36 | 0 | 95 | 44 |
| 13997 | 14346 | + | 1 | 33552417 | 33552764 | + | 338 | 0 | 99 | 350 |
| 43009 | 43044 | + | 1 | 33559890 | 33559925 | + | 32 | 0 | 97 | 36 |
| 16160 | 16195 | - | 1 | 33567267 | 33567302 | + | 36 | 0 | 100 | 36 |
| 94601 | 94767 | - | 1 | 33824661 | 33824826 | + | 166 | 0 | 100 | 166 |
| 120354 | 120520 | + | 1 | 33824661 | 33824826 | + | 166 | 0 | 100 | 166 |
| 121590 | 121607 | + | 1 | 33824800 | 33824816 | + | 17 | 0 | 100 | 17 |
| 71468 | 71749 | + | 1 | 33824834 | 33825114 | + | 281 | 0 | 100 | 281 |
| 71784 | 74265 | + | 1 | 33825150 | 33827634 | + | 2444 | 0 | 100 | 2488 |
| 74282 | 74547 | + | 1 | 33827652 | 33827916 | + | 261 | 0 | 100 | 265 |
| 74585 | 75875 | + | 1 | 33827955 | 33829244 | + | 1282 | 0 | 100 | 1290 |
| 75987 | 76222 | + | 1 | 33829356 | 33829590 | + | 231 | 0 | 100 | 235 |
| 76238 | 76511 | + | 1 | 33829606 | 33829878 | + | 273 | 0 | 100 | 273 |
| 76597 | 77696 | + | 1 | 33829964 | 33831063 | + | 1084 | 0 | 100 | 1100 |
| 129478 | 129495 | - | 1 | 33830294 | 33830310 | + | 17 | 0 | 100 | 17 |
| 77724 | 78372 | + | 1 | 33831092 | 33831738 | + | 637 | 0 | 100 | 649 |
| 118587 | 118615 | + | 1 | 33831736 | 33831763 | + | 28 | 0 | 100 | 28 |
| 119712 | 119735 | - | 1 | 33833112 | 33833134 | + | 19 | 0 | 96 | 23 |
| 119666 | 119686 | - | 1 | 33833160 | 33833180 | + | 17 | 0 | 95 | 21 |
| 119407 | 119454 | - | 1 | 33833546 | 33833592 | + | 35 | 0 | 94 | 47 |
| 120354 | 120374 | - | 1 | 33836123 | 33836142 | + | 20 | 0 | 100 | 20 |
| 126422 | 126438 | + | 1 | 33837256 | 33837271 | + | 16 | 0 | 100 | 16 |
| 93471 | 94212 | + | 1 | 33837965 | 33838705 | + | 741 | 0 | 100 | 741 |
| 120909 | 121650 | - | 1 | 33837965 | 33838705 | + | 741 | 0 | 100 | 741 |
| 120493 | 120510 | - | 1 | 33838008 | 33838024 | + | 17 | 0 | 100 | 17 |
| 93382 | 93487 | - | 1 | 33838701 | 33838805 | + | 101 | 0 | 99 | 105 |
| 121634 | 121739 | + | 1 | 33838701 | 33838805 | + | 101 | 0 | 99 | 105 |
| 93007 | 93374 | - | 1 | 33838814 | 33839180 | + | 355 | 0 | 99 | 367 |
| 121747 | 122114 | + | 1 | 33838814 | 33839180 | + | 355 | 0 | 99 | 367 |
| 115839 | 115857 | - | 1 | 33839062 | 33839079 | + | 18 | 0 | 100 | 18 |
| 122028 | 122047 | - | 1 | 33839095 | 33839113 | + | 19 | 0 | 100 | 19 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 92673 | 92998 | - | 1 | 33839194 | 33839518 | + | 325 | 0 | 100 | 325 |
| 122123 | 122448 | + | 1 | 33839194 | 33839518 | + | 325 | 0 | 100 | 325 |
| 120912 | 120931 | - | 1 | 33844478 | 33844496 | + | 19 | 0 | 100 | 19 |
| 115878 | 115894 | + | 1 | 33848162 | 33848177 | + | 16 | 0 | 100 | 16 |
| 111208 | 111226 | + | 1 | 33855621 | 33855638 | + | 18 | 0 | 100 | 18 |
| 94774 | 96546 | + | 1 | 33858780 | 33860551 | + | 1772 | 0 | 100 | 1772 |
| 118575 | 120347 | - | 1 | 33858780 | 33860551 | + | 1772 | 0 | 100 | 1772 |
| 55891 | 55969 | - | 1 | 33860589 | 33860666 | + | 78 | 0 | 100 | 78 |
| 82676 | 82742 | + | 1 | 33860601 | 33860666 | + | 62 | 0 | 98 | 66 |
| 132379 | 132445 | - | 1 | 33860601 | 33860666 | + | 62 | 0 | 98 | 66 |
| 54738 | 55539 | - | 1 | 33860717 | 33861517 | + | 797 | 0 | 100 | 801 |
| 51115 | 52639 | + | 1 | 33866500 | 33868023 | + | 1520 | 0 | 100 | 1524 |
| 84794 | 87093 | - | 1 | 33868069 | 33870367 | + | 2284 | 0 | 100 | 2300 |
| 128028 | 130327 | + | 1 | 33868069 | 33870367 | + | 2284 | 0 | 100 | 2300 |
| 128784 | 128814 | - | 1 | 33868825 | 33868854 | + | 30 | 0 | 100 | 30 |
| 129822 | 129873 | - | 1 | 33869863 | 33869913 | + | 19 | 0 | 84 | 55 |
| 84793 | 84845 | - | 1 | 33870267 | 33870318 | + | 48 | 0 | 98 | 52 |
| 130276 | 130328 | + | 1 | 33870267 | 33870318 | + | 48 | 0 | 98 | 52 |
| 130103 | 130119 | - | 1 | 33870405 | 33870420 | + | 16 | 0 | 100 | 16 |
| 107037 | 107232 | + | 1 | 33870460 | 33870654 | + | 195 | 0 | 100 | 195 |
| 119712 | 119735 | - | 1 | 33871744 | 33871766 | + | 19 | 0 | 96 | 23 |
| 119407 | 119454 | - | 1 | 33872178 | 33872224 | + | 35 | 0 | 94 | 47 |
| 53117 | 53330 | + | 1 | 33880027 | 33880239 | + | 209 | 0 | 100 | 213 |
| 53424 | 53871 | + | 1 | 33880333 | 33880779 | + | 417 | 0 | 98 | 449 |
| 53859 | 53993 | + | 1 | 33880782 | 33880915 | + | 134 | 0 | 100 | 134 |
| 54010 | 54668 | + | 1 | 33880933 | 33881590 | + | 658 | 0 | 100 | 658 |
| 60055 | 60639 | + | 1 | 33884444 | 33885027 | + | 584 | 0 | 100 | 584 |
| 60680 | 61075 | + | 1 | 33885069 | 33885468 | + | 376 | 0 | 99 | 400 |
| 61162 | 62242 | + | 1 | 33885556 | 33886634 | + | 1068 | 0 | 100 | 1080 |
| 120912 | 120931 | + | 1 | 33888772 | 33888790 | + | 19 | 0 | 100 | 19 |
| 87852 | 88349 | - | 1 | 33890880 | 33891377 | + | 494 | 0 | 100 | 498 |
| 126772 | 127269 | + | 1 | 33890880 | 33891377 | + | 494 | 0 | 100 | 498 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 85928 | 87815 | - | 1 | 33891415 | 33893296 | + | 1845 | 0 | 99 | 1889 |
| 127306 | 129193 | + | 1 | 33891415 | 33893296 | + | 1845 | 0 | 99 | 1889 |
| 128784 | 128814 | - | 1 | 33892888 | 33892917 | + | 30 | 0 | 100 | 30 |
| 52773 | 53109 | + | 1 | 33893370 | 33893705 | + | 336 | 0 | 100 | 336 |
| 126422 | 126438 | - | 1 | 33899927 | 33899942 | + | 16 | 0 | 100 | 16 |
| 55828 | 57010 | + | 1 | 33899948 | 33901131 | + | 1156 | 0 | 99 | 1184 |
| 132180 | 132219 | + | 1 | 33899948 | 33899985 | + | 27 | 0 | 92 | 39 |
| 82676 | 82767 | - | 1 | 33899986 | 33900076 | + | 87 | 0 | 99 | 91 |
| 132354 | 132445 | + | 1 | 33899986 | 33900076 | + | 87 | 0 | 99 | 91 |
| 57099 | 57653 | + | 1 | 33901210 | 33901762 | + | 542 | 0 | 99 | 554 |
| 57648 | 57875 | + | 1 | 33904937 | 33905163 | + | 227 | 0 | 100 | 227 |
| 57883 | 58265 | + | 1 | 33905172 | 33905553 | + | 378 | 0 | 100 | 382 |
| 58314 | 58674 | + | 1 | 33905603 | 33905964 | + | 354 | 0 | 99 | 362 |
| 58689 | 59081 | + | 1 | 33905980 | 33906372 | + | 385 | 0 | 99 | 393 |
| 88615 | 89655 | + | 1 | 33906372 | 33907410 | + | 1020 | 0 | 100 | 1040 |
| 125466 | 126506 | - | 1 | 33906372 | 33907410 | + | 1020 | 0 | 100 | 1040 |
| 89702 | 90135 | + | 1 | 33907458 | 33907891 | + | 426 | 0 | 100 | 434 |
| 124986 | 125419 | - | 1 | 33907458 | 33907891 | + | 426 | 0 | 100 | 434 |
| 86603 | 87815 | + | 1 | 33907909 | 33909115 | + | 1185 | 0 | 99 | 1213 |
| 127306 | 128518 | - | 1 | 33907909 | 33909115 | + | 1185 | 0 | 99 | 1213 |
| 87851 | 87977 | + | 1 | 33909152 | 33909277 | + | 126 | 0 | 100 | 126 |
| 127144 | 127270 | - | 1 | 33909152 | 33909277 | + | 126 | 0 | 100 | 126 |
| 125519 | 125542 | - | 1 | 33910616 | 33910638 | + | 19 | 0 | 96 | 23 |
| 117147 | 117164 | + | 1 | 33913611 | 33913627 | + | 17 | 1.10E-152 | 100 | 17 |
| 117204 | 117275 | + | 1 | 33913672 | 33913742 | + | 39 | 1.10E-152 | 89 | 71 |
| 117305 | 117452 | + | 1 | 33913773 | 33913919 | + | 50 | 1.10E-152 | 83 | 154 |
| 117833 | 117927 | + | 1 | 33914286 | 33914379 | + | 50 | 1.10E-152 | 88 | 94 |
| 97453 | 98367 | + | 1 | 33914493 | 33915406 | + | 903 | 0 | 100 | 915 |
| 116754 | 117668 | - | 1 | 33914493 | 33915406 | + | 903 | 0 | 100 | 915 |
| 98383 | 99592 | + | 1 | 33915423 | 33916634 | + | 1192 | 0 | 100 | 1212 |
| 115529 | 116738 | - | 1 | 33915423 | 33916634 | + | 1192 | 0 | 100 | 1212 |
| 121995 | 122013 | + | 1 | 33916307 | 33916324 | + | 18 | 1.10E-152 | 100 | 18 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 52750 | 52997 | - | 1 | 34038281 | 34038526 | + | 227 | 2.10E-122 | 98 | 247 |
| 2133 | 2293 | - | 1 | 34107535 | 34107695 | + | 129 | 3.90E-60 | 95 | 161 |
| 40558 | 40638 | - | 1 | 34351432 | 34351512 | + | 81 | 6.20E-31 | 100 | 81 |
| 35461 | 35566 | + | 1 | 34352704 | 34352809 | + | 86 | 1.60E-34 | 95 | 106 |
| 37142 | 37293 | - | 1 | 34588936 | 34589094 | + | 84 | 2.50E-35 | 88 | 160 |
| 52264 | 52402 | - | 1 | 34698144 | 34698281 | + | 134 | 5.40E-67 | 99 | 138 |
| 80657 | 80749 | + | 1 | 34698382 | 34698473 | + | 88 | 1.40E-39 | 99 | 92 |
| 91512 | 91579 | - | 1 | 34698889 | 34698955 | + | 63 | 1.10E-24 | 99 | 67 |
| 100540 | 100912 | + | 1 | 35791859 | 35792230 | + | 364 | 6.20E-200 | 99 | 372 |
| 114302 | 114581 | - | 1 | 35791859 | 35792137 | + | 271 | 5.20E-152 | 99 | 279 |
| 100618 | 100670 | - | 1 | 35791937 | 35791988 | + | 44 | 7.80E-11 | 96 | 52 |
| 114451 | 114503 | + | 1 | 35791937 | 35791988 | + | 44 | 2.10E-11 | 96 | 52 |
| 114209 | 114240 | - | 1 | 35792200 | 35792230 | + | 31 | 5.20E-152 | 100 | 31 |
| 111103 | 111119 | - | 1 | 35802942 | 35802957 | + | 16 | 5.20E-152 | 100 | 16 |
| 108718 | 108734 | - | 1 | 35803528 | 35803543 | + | 16 | 5.20E-152 | 100 | 16 |
| 125493 | 125509 | + | 1 | 35854786 | 35854801 | + | 16 | 6.20E-200 | 100 | 16 |
| 57556 | 57660 | + | 1 | 35907449 | 35907552 | + | 92 | 8.80E-98 | 97 | 104 |
| 57731 | 57813 | + | 1 | 35907550 | 35907631 | + | 78 | 5.10E-77 | 99 | 82 |
| 57782 | 57847 | + | 1 | 35907633 | 35907697 | + | 65 | 2.60E-69 | 100 | 65 |
| 57731 | 57848 | + | 1 | 35907729 | 35907845 | + | 113 | 8.80E-98 | 99 | 117 |
| 7183 | 7420 | - | 1 | 36736060 | 36736297 | + | 234 | 6.20E-124 | 100 | 238 |
| 7119 | 7214 | - | 1 | 36736297 | 36736392 | + | 76 | 2.40E-30 | 95 | 96 |
| 45839 | 45879 | + | 1 | 37230687 | 37230727 | + | 29 | 0.0011 | 93 | 41 |
| 87922 | 88203 | + | 1 | 37346806 | 37347090 | + | 167 | 1.20E-86 | 90 | 287 |
| 88127 | 88212 | + | 1 | 37347091 | 37347173 | + | 65 | 7.00E-26 | 94 | 85 |
| 24757 | 24787 | + | 1 | 37703686 | 37703716 | + | 31 | 0.00026 | 100 | 31 |
| 52778 | 52899 | + | 1 | 38167315 | 38167434 | + | 66 | 2.60E-40 | 89 | 122 |
| 65684 | 65764 | - | 1 | 38349283 | 38349362 | + | 49 | 2.40E-16 | 90 | 81 |
| 61083 | 62502 | - | 1 | 38596514 | 38597931 | + | 1415 | 0 | 100 | 1419 |
| 60680 | 61075 | - | 1 | 38597940 | 38598334 | + | 395 | 0 | 100 | 395 |
| 60039 | 60651 | - | 1 | 38598364 | 38598975 | + | 612 | 0 | 100 | 612 |
| 59161 | 60031 | - | 1 | 38598984 | 38599851 | + | 862 | 0 | 100 | 870 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 58938 | 59130 | - | 1 | 38599883 | 38600074 | + | 192 | 0 | 100 | 192 |
| 21254 | 21506 | + | 1 | 39093615 | 39093867 | + | 245 | 8.00E-189 | 99 | 253 |
| 49030 | 49091 | + | 1 | 39095008 | 39095074 | + | 43 | 1.70E-142 | 91 | 67 |
| 44934 | 45018 | + | 1 | 39095080 | 39095163 | + | 54 | 5.60E-149 | 91 | 86 |
| 35055 | 35237 | - | 1 | 39097197 | 39097379 | + | 179 | 8.50E-148 | 99 | 183 |
| 35350 | 35481 | + | 1 | 39097590 | 39097721 | + | 120 | 8.00E-189 | 98 | 132 |
| 37254 | 37330 | - | 1 | 39101503 | 39101579 | + | 77 | 4.90E-89 | 100 | 77 |
| 34411 | 34528 | - | 1 | 39102379 | 39102496 | + | 118 | 8.50E-148 | 100 | 118 |
| 91307 | 91404 | - | 1 | 39293454 | 39293550 | + | 57 | 4.10E-21 | 90 | 97 |
| 10626 | 10685 | - | 1 | 39303574 | 39303633 | + | 29 | 0.00065 | 87 | 61 |
| 103905 | 103925 | - | 1 | 39406157 | 39406176 | + | 16 | 5.80E-236 | 95 | 20 |
| 105157 | 105175 | - | 1 | 39438775 | 39438792 | + | 18 | 3.30E-274 | 100 | 18 |
| 85065 | 85156 | + | 1 | 39443181 | 39443271 | + | 91 | 9.30E-66 | 100 | 91 |
| 129965 | 130056 | - | 1 | 39443181 | 39443271 | + | 91 | 0 | 100 | 91 |
| 52016 | 52214 | - | 1 | 39445747 | 39445944 | + | 194 | 9.60E-103 | 99 | 198 |
| 55819 | 55904 | - | 1 | 39447874 | 39447958 | + | 85 | 8.50E-38 | 100 | 85 |
| 132354 | 132392 | - | 1 | 39447874 | 39447911 | + | 38 | 0 | 100 | 38 |
| 132171 | 132219 | - | 1 | 39447912 | 39447958 | + | 36 | 0 | 94 | 48 |
| 59757 | 59856 | + | 1 | 39448499 | 39448597 | + | 99 | 1.70E-70 | 100 | 99 |
| 54654 | 54953 | + | 1 | 39448764 | 39449062 | + | 279 | 2.20E-177 | 98 | 299 |
| 91597 | 91657 | + | 1 | 39450172 | 39450231 | + | 60 | 2.20E-177 | 100 | 60 |
| 123464 | 123524 | - | 1 | 39450172 | 39450231 | + | 60 | 0 | 100 | 60 |
| 103904 | 103988 | - | 1 | 39451842 | 39451925 | + | 84 | 0 | 100 | 84 |
| 103472 | 103896 | - | 1 | 39451934 | 39452358 | + | 421 | 0 | 100 | 425 |
| 85733 | 85908 | - | 1 | 39912329 | 39912503 | + | 135 | 1.40E-67 | 94 | 175 |
| 36617 | 36747 | + | 1 | 40330387 | 40330516 | + | 68 | 1.40E-26 | 88 | 132 |
| 35064 | 35165 | + | 1 | 40924507 | 40924607 | + | 74 | 4.50E-35 | 93 | 102 |
| 49184 | 49224 | + | 1 | 41479818 | 41479858 | + | 33 | 3.10E-05 | 95 | 41 |
| 26309 | 26369 | - | 1 | 41861482 | 41861542 | + | 57 | 1.70E-26 | 98 | 61 |
| 3094 | 3146 | - | 1 | 41874240 | 41874293 | + | 30 | 1.70E-26 | 89 | 54 |
| 52240 | 52591 | - | 1 | 42048687 | 42049037 | + | 351 | 2.70E-196 | 100 | 351 |
| 20352 | 20438 | + | 1 | 42137042 | 42137128 | + | 71 | 1.90E-27 | 95 | 87 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 39187 | 39615 | + | 1 | 42648642 | 42649070 | + | 393 | 1.90E-211 | 98 | 429 |
| 23245 | 23286 | - | 1 | 42708152 | 42708193 | + | 30 | 2.00E-06 | 93 | 42 |
| 1900 | 2482 | - | 1 | 43195709 | 43196290 | + | 449 | 1.50E-250 | 94 | 589 |
| 92115 | 92700 | - | 2 | 807670 | 808254 | + | 541 | 0 | 98 | 585 |
| 122421 | 123006 | + | 2 | 807670 | 808254 | + | 541 | 0 | 98 | 585 |
| 132956 | 132976 | - | 2 | 810967 | 810987 | + | 17 | 0 | 95 | 21 |
| 90815 | 92120 | - | 2 | 811408 | 812712 | + | 1185 | 0 | 98 | 1305 |
| 123001 | 124306 | + | 2 | 811408 | 812712 | + | 1185 | 0 | 98 | 1305 |
| 89669 | 90808 | - | 2 | 812727 | 813864 | + | 1059 | 0 | 98 | 1143 |
| 124313 | 125418 | + | 2 | 812727 | 813830 | + | 1029 | 0 | 98 | 1109 |
| 89142 | 89658 | - | 2 | 813875 | 814387 | + | 472 | 0 | 98 | 516 |
| 125463 | 125979 | + | 2 | 813875 | 814387 | + | 472 | 0 | 98 | 516 |
| 96830 | 98367 | + | 2 | 814398 | 815938 | + | 1410 | 0 | 98 | 1542 |
| 116754 | 118291 | - | 2 | 814398 | 815938 | + | 1410 | 0 | 98 | 1542 |
| 98383 | 100002 | + | 2 | 815956 | 817575 | + | 1542 | 0 | 99 | 1622 |
| 114302 | 116738 | - | 2 | 815956 | 818393 | + | 2332 | 0 | 99 | 2440 |
| 100002 | 100872 | + | 2 | 817576 | 818445 | + | 835 | 0 | 99 | 871 |
| 114451 | 114503 | + | 2 | 818193 | 818244 | + | 44 | 6.70E-11 | 96 | 52 |
| 100618 | 100670 | - | 2 | 818193 | 818244 | + | 44 | 0 | 96 | 52 |
| 100870 | 101001 | + | 2 | 818435 | 818565 | + | 119 | 0 | 98 | 131 |
| 114120 | 114240 | - | 2 | 818446 | 818565 | + | 108 | 0 | 98 | 120 |
| 105735 | 105751 | - | 2 | 822100 | 822115 | + | 16 | 0 | 100 | 16 |
| 115509 | 115525 | + | 2 | 837295 | 837310 | + | 16 | 0 | 100 | 16 |
| 43788 | 43827 | + | 2 | 912959 | 912998 | + | 32 | 0.00024 | 95 | 40 |
| 15651 | 15896 | + | 2 | 1025239 | 1025482 | + | 154 | 7.20E-79 | 91 | 246 |
| 88924 | 89001 | - | 2 | 2430726 | 2430802 | + | 77 | 5.00E-33 | 100 | 77 |
| 13888 | 13958 | + | 2 | 2490393 | 2490464 | + | 64 | 1.70E-23 | 97 | 72 |
| 88951 | 89141 | + | 2 | 2490507 | 2490694 | + | 166 | 1.10E-100 | 97 | 190 |
| 111574 | 111801 | - | 2 | 2944012 | 2944241 | + | 198 | 7.50E-222 | 97 | 230 |
| 111336 | 111564 | - | 2 | 2944249 | 2944476 | + | 216 | 7.50E-222 | 99 | 228 |
| 101822 | 101840 | - | 2 | 2960541 | 2960558 | + | 18 | 7.50E-222 | 100 | 18 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 48054 | 48130 | - | 2 | 3097087 | 3097167 | + | 61 | 3.90E-22 | 94 | 81 |
| 20057 | 20114 | + | 2 | 3449847 | 3449904 | + | 39 | 9.40E-09 | 92 | 59 |
| 51852 | 51905 | + | 2 | 4706185 | 4706237 | + | 53 | 9.90E-19 | 100 | 53 |
| 24377 | 24469 | - | 2 | 5815627 | 5815722 | + | 69 | 4.10E-26 | 93 | 97 |
| 30936 | 31077 | - | 2 | 6171945 | 6172086 | + | 135 | 3.70E-64 | 99 | 143 |
| 32792 | 33065 | + | 2 | 6648926 | 6649199 | + | 246 | 8.50E-127 | 97 | 274 |
| 18760 | 18820 | + | 2 | 6680240 | 6680299 | + | 41 | 1.10E-43 | 92 | 61 |
| 18811 | 18923 | + | 2 | 6680301 | 6680413 | + | 78 | 1.10E-43 | 92 | 114 |
| 7513 | 7550 | + | 2 | 7759551 | 7759588 | + | 34 | 1.30E-06 | 97 | 38 |
| 12555 | 12831 | + | 2 | 7858580 | 7858853 | + | 241 | 7.20E-126 | 97 | 277 |
| 36195 | 36238 | + | 2 | 7858810 | 7858853 | + | 36 | 1.10E-07 | 95 | 44 |
| 49922 | 49982 | + | 2 | 8144701 | 8144761 | + | 46 | 2.40E-14 | 94 | 62 |
| 31878 | 32006 | + | 2 | 8414079 | 8414207 | + | 29 | 7.30E-08 | 80 | 133 |
| 52727 | 52801 | - | 2 | 9082463 | 9082536 | + | 58 | 1.00E-21 | 95 | 74 |
| 79220 | 79505 | + | 2 | 9415245 | 9415530 | + | 216 | 7.40E-116 | 94 | 288 |
| 34219 | 34629 | + | 2 | 9463408 | 9463821 | + | 314 | 3.20E-169 | 94 | 414 |
| 96561 | 96656 | + | 2 | 9726302 | 9726396 | + | 83 | 1.30E-36 | 97 | 95 |
| 64154 | 64975 | + | 2 | 10310944 | 10311762 | + | 484 | 4.7e-313 | 90 | 832 |
| 65010 | 65164 | + | 2 | 10311782 | 10311934 | + | 83 | 4.7e-313 | 88 | 159 |
| 33180 | 33255 | + | 2 | 10337585 | 10337661 | + | 36 | 1.20E-06 | 86 | 80 |
| 5370 | 5411 | - | 2 | 10864500 | 10864541 | + | 38 | 1.30E-06 | 98 | 42 |
| 92108 | 92178 | + | 2 | 11195300 | 11195369 | + | 62 | 4.60E-80 | 97 | 70 |
| 92294 | 92439 | + | 2 | 11195880 | 11196024 | + | 113 | 4.60E-80 | 94 | 145 |
| 9703 | 9811 | + | 2 | 11196650 | 11196758 | + | 93 | 3.00E-81 | 96 | 109 |
| 22761 | 22878 | + | 2 | 11196831 | 11196948 | + | 86 | 3.00E-81 | 93 | 118 |
| 47539 | 47635 | + | 2 | 12183572 | 12183668 | + | 73 | 1.20E-30 | 94 | 97 |
| 13452 | 13581 | + | 2 | 12184872 | 12185002 | + | 100 | 2.00E-44 | 94 | 132 |
| 111574 | 112893 | - | 2 | 13297302 | 13298623 | + | 1286 | 0 | 99 | 1322 |
| 113071 | 113087 | - | 2 | 13298333 | 13298348 | + | 16 | 0 | 100 | 16 |
| 110200 | 111564 | - | 2 | 13298631 | 13300000 | + | 1283 | 0 | 98 | 1371 |
| 110121 | 110194 | - | 2 | 13300000 | 13300072 | + | 65 | 0 | 97 | 73 |
| 21554 | 21658 | + | 2 | 13301518 | 13301622 | + | 73 | 1.00E-52 | 92 | 105 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|-------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 28038 | 28102 | + | 2 | 13403456 | 13403520 | + | 61 | 1.00E-52 | 98 | 65 |
| 29057 | 29101 | - | 2 | 13403540 | 13403585 | + | 30 | 7.10E-05 | 91 | 46 |
| 58946 | 59130 | + | 2 | 13540571 | 13540753 | + | 172 | 2.00E-177 | 98 | 184 |
| 59161 | 59344 | + | 2 | 13540784 | 13540966 | + | 167 | 2.00E-177 | 98 | 183 |
| 43009 | 43044 | + | 2 | 14188838 | 14188873 | + | 32 | 0 | 97 | 36 |
| 48096 | 48939 | + | 2 | 14202863 | 14203706 | + | 836 | 0 | 100 | 844 |
| 27388 | 28622 | - | 2 | 14203718 | 14204952 | + | 1228 | 0 | 100 | 1236 |
| 27257 | 27349 | - | 2 | 14204991 | 14205083 | + | 89 | 0 | 99 | 93 |
| 27117 | 27248 | - | 2 | 14205092 | 14205223 | + | 132 | 0 | 100 | 132 |
| 26602 | 27108 | - | 2 | 14205232 | 14205738 | + | 507 | 0 | 100 | 507 |
| 22488 | 22766 | + | 2 | 14210381 | 14210659 | + | 267 | 0 | 99 | 279 |
| 19789 | 20614 | + | 2 | 14210659 | 14211484 | + | 818 | 0 | 100 | 826 |
| 20624 | 21291 | + | 2 | 14211494 | 14212161 | + | 664 | 0 | 100 | 668 |
| 26501 | 27106 | + | 2 | 14212171 | 14212776 | + | 606 | 0 | 100 | 606 |
| 27117 | 27248 | + | 2 | 14212787 | 14212918 | + | 132 | 0 | 100 | 132 |
| 27257 | 27341 | + | 2 | 14212927 | 14213011 | + | 85 | 0 | 100 | 85 |
| 27387 | 29137 | + | 2 | 14213057 | 14214805 | + | 1712 | 0 | 99 | 1752 |
| 29149 | 29503 | + | 2 | 14214816 | 14215170 | + | 351 | 0 | 100 | 355 |
| 29541 | 30629 | + | 2 | 14215208 | 14216296 | + | 1085 | 0 | 100 | 1089 |
| 20624 | 25379 | - | 2 | 14216292 | 14221047 | + | 4728 | 0 | 100 | 4756 |
| 18642 | 20614 | - | 2 | 14221057 | 14223029 | + | 1949 | 0 | 100 | 1973 |
| 17380 | 18625 | - | 2 | 14223045 | 14224290 | + | 1238 | 0 | 100 | 1246 |
| 17118 | 17331 | - | 2 | 14224345 | 14224558 | + | 210 | 0 | 100 | 214 |
| 17001 | 17043 | - | 2 | 14224633 | 14224675 | + | 43 | 0 | 100 | 43 |
| 16679 | 16968 | - | 2 | 14224679 | 14224968 | + | 290 | 0 | 100 | 290 |
| 16880 | 16927 | + | 2 | 14224720 | 14224767 | + | 40 | 8.20E-16 | 96 | 48 |
| 15980 | 16670 | - | 2 | 14224977 | 14225667 | + | 679 | 0 | 100 | 691 |
| 15911 | 15940 | - | 2 | 14225707 | 14225736 | + | 30 | 0 | 100 | 30 |
| 15500 | 15902 | - | 2 | 14225745 | 14226147 | + | 399 | 0 | 100 | 403 |
| 15263 | 15491 | - | 2 | 14226156 | 14226384 | + | 229 | 0 | 100 | 229 |
| 14949 | 15219 | - | 2 | 14226428 | 14226697 | + | 267 | 0 | 100 | 271 |
| 13997 | 14909 | - | 2 | 14226737 | 14227647 | + | 897 | 0 | 100 | 913 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 11505 | 13987 | - | 2 | 14227657 | 14230141 | + | 2445 | 0 | 100 | 2485 |
| 36195 | 36238 | - | 2 | 14228815 | 14228858 | + | 36 | 0 | 95 | 44 |
| 8623 | 11436 | - | 2 | 14230211 | 14233025 | + | 2791 | 0 | 100 | 2815 |
| 8561 | 8607 | - | 2 | 14233041 | 14233087 | + | 43 | 0 | 98 | 47 |
| 8212 | 8516 | - | 2 | 14233132 | 14233436 | + | 305 | 0 | 100 | 305 |
| 8067 | 8203 | - | 2 | 14233445 | 14233581 | + | 137 | 0 | 100 | 137 |
| 7592 | 8058 | - | 2 | 14233590 | 14234056 | + | 459 | 0 | 100 | 467 |
| 44496 | 44524 | + | 2 | 14233791 | 14233819 | + | 29 | 0 | 100 | 29 |
| 108753 | 110120 | - | 2 | 14233804 | 14235170 | + | 1347 | 0 | 100 | 1367 |
| 7513 | 7582 | - | 2 | 14234066 | 14234135 | + | 70 | 0 | 100 | 70 |
| 6890 | 7482 | - | 2 | 14234166 | 14234758 | + | 593 | 0 | 100 | 593 |
| 86620 | 87815 | + | 2 | 14235165 | 14236354 | + | 1164 | 0 | 99 | 1196 |
| 127306 | 128501 | - | 2 | 14235165 | 14236354 | + | 1164 | 0 | 99 | 1196 |
| 87851 | 89655 | + | 2 | 14236391 | 14238193 | + | 1756 | 0 | 99 | 1804 |
| 125466 | 127270 | - | 2 | 14236391 | 14238193 | + | 1756 | 0 | 99 | 1804 |
| 89702 | 92998 | + | 2 | 14238240 | 14241537 | + | 3235 | 0 | 100 | 3299 |
| 122123 | 125419 | - | 2 | 14238240 | 14241537 | + | 3235 | 0 | 100 | 3299 |
| 93007 | 93374 | + | 2 | 14241546 | 14241912 | + | 363 | 0 | 100 | 367 |
| 121747 | 122114 | - | 2 | 14241546 | 14241912 | + | 363 | 0 | 100 | 367 |
| 115839 | 115857 | + | 2 | 14241647 | 14241664 | + | 18 | 0 | 100 | 18 |
| 93382 | 95184 | + | 2 | 14241924 | 14243724 | + | 1774 | 0 | 100 | 1802 |
| 119937 | 121739 | - | 2 | 14241924 | 14243724 | + | 1774 | 0 | 100 | 1802 |
| 86620 | 87295 | - | 2 | 14243722 | 14244396 | + | 675 | 0 | 100 | 675 |
| 127826 | 128501 | + | 2 | 14243722 | 14244396 | + | 675 | 0 | 100 | 675 |
| 108753 | 111564 | + | 2 | 14244391 | 14247207 | + | 2757 | 0 | 99 | 2817 |
| 111573 | 113486 | + | 2 | 14247216 | 14249129 | + | 1894 | 0 | 100 | 1914 |
| 113502 | 113762 | + | 2 | 14249146 | 14249405 | + | 260 | 0 | 100 | 260 |
| 101359 | 101393 | - | 2 | 14249372 | 14249405 | + | 34 | 0 | 100 | 34 |
| 84217 | 84408 | + | 2 | 14249404 | 14249594 | + | 187 | 0 | 99 | 191 |
| 130713 | 130904 | - | 2 | 14249404 | 14249594 | + | 187 | 0 | 99 | 191 |
| 84416 | 86241 | + | 2 | 14249603 | 14251427 | + | 1802 | 0 | 100 | 1826 |
| 128880 | 130705 | - | 2 | 14249603 | 14251427 | + | 1802 | 0 | 100 | 1826 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 129822 | 129873 | + | 2 | 14250435 | 14250485 | + | 19 | 0 | 84 | 55 |
| 91503 | 91823 | + | 2 | 14251430 | 14251749 | + | 316 | 0 | 100 | 320 |
| 123298 | 123618 | - | 2 | 14251430 | 14251749 | + | 316 | 0 | 100 | 320 |
| 83264 | 83373 | + | 2 | 14251776 | 14251884 | + | 109 | 4.00E-68 | 100 | 109 |
| 131748 | 131857 | - | 2 | 14251776 | 14251884 | + | 109 | 1.20E-46 | 100 | 109 |
| 61084 | 62137 | - | 2 | 14254866 | 14255918 | + | 1035 | 0 | 100 | 1055 |
| 60680 | 61075 | - | 2 | 14255927 | 14256321 | + | 387 | 0 | 99 | 395 |
| 60039 | 60651 | - | 2 | 14256351 | 14256962 | + | 608 | 0 | 100 | 612 |
| 59161 | 60031 | - | 2 | 14256971 | 14257838 | + | 854 | 0 | 100 | 870 |
| 58693 | 59130 | - | 2 | 14257870 | 14258306 | + | 437 | 0 | 100 | 437 |
| 57883 | 58674 | - | 2 | 14258326 | 14259118 | + | 773 | 0 | 99 | 793 |
| 57612 | 57875 | - | 2 | 14259127 | 14259389 | + | 263 | 0 | 100 | 263 |
| 126422 | 126438 | + | 2 | 14276325 | 14276340 | + | 16 | 0 | 100 | 16 |
| 51360 | 51617 | - | 2 | 14938974 | 14939229 | + | 205 | 3.00E-126 | 95 | 257 |
| 51286 | 51342 | - | 2 | 14939230 | 14939285 | + | 48 | 3.00E-126 | 96 | 56 |
| 37331 | 37518 | - | 2 | 15444308 | 15444495 | + | 134 | 1.20E-67 | 93 | 190 |
| 90827 | 90919 | - | 2 | 15756913 | 15757004 | + | 84 | 3.40E-37 | 98 | 92 |
| 133 | 303 | + | 2 | 15901774 | 15901943 | + | 139 | 9.40E-66 | 95 | 171 |
| 83505 | 83654 | + | 2 | 15950960 | 15951107 | + | 121 | 3.00E-59 | 95 | 149 |
| 9728 | 9789 | - | 2 | 16412719 | 16412785 | + | 35 | 3.10E-06 | 88 | 67 |
| 376 | 433 | - | 2 | 17996493 | 17996550 | + | 46 | 1.60E-14 | 95 | 58 |
| 20482 | 20523 | + | 2 | 17996764 | 17996804 | + | 38 | 1.00E-09 | 98 | 42 |
| 19151 | 19235 | + | 2 | 18561262 | 18561346 | + | 81 | 1.00E-31 | 99 | 85 |
| 81535 | 81647 | + | 2 | 18610761 | 18610873 | + | 109 | 4.20E-52 | 99 | 113 |
| 86158 | 86221 | - | 2 | 18762116 | 18762178 | + | 55 | 6.40E-20 | 97 | 63 |
| 45188 | 45270 | + | 2 | 19359786 | 19359868 | + | 63 | 1.90E-21 | 94 | 83 |
| 36638 | 36749 | - | 2 | 19359876 | 19359987 | + | 104 | 2.80E-161 | 98 | 112 |
| 36616 | 36678 | - | 2 | 19359987 | 19360049 | + | 63 | 2.70E-136 | 100 | 63 |
| 36541 | 36607 | - | 2 | 19360060 | 19360126 | + | 67 | 2.80E-161 | 100 | 67 |
| 36481 | 36531 | - | 2 | 19360136 | 19360186 | + | 51 | 2.80E-161 | 100 | 51 |
| 10168 | 10280 | + | 2 | 19360271 | 19360383 | + | 109 | 7.50E-57 | 99 | 113 |
| 44338 | 44384 | + | 2 | 19360504 | 19360551 | + | 32 | 7.50E-57 | 92 | 48 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 26003 | 26144 | - | 2 | 19361080 | 19361221 | + | 130 | 2.80E-161 | 98 | 142 |
| 95258 | 95400 | - | 2 | 19408658 | 19408799 | + | 142 | 4.20E-103 | 100 | 142 |
| 74477 | 74549 | - | 2 | 19409428 | 19409499 | + | 72 | 4.20E-103 | 100 | 72 |
| 54731 | 54798 | + | 2 | 19409879 | 19409945 | + | 67 | 1.00E-68 | 100 | 67 |
| 98087 | 98184 | + | 2 | 19410240 | 19410336 | + | 89 | 1.00E-68 | 98 | 97 |
| 93554 | 93891 | + | 2 | 20018538 | 20018874 | + | 243 | 6.00E-132 | 93 | 339 |
| 121230 | 121567 | - | 2 | 20018538 | 20018874 | + | 243 | 4.30E-126 | 93 | 339 |
| 82018 | 82143 | + | 2 | 20104613 | 20104733 | + | 77 | 5.00E-33 | 90 | 125 |
| 24833 | 24935 | - | 2 | 20800834 | 20800936 | + | 91 | 3.10E-39 | 97 | 103 |
| 77303 | 77378 | + | 2 | 20849779 | 20849853 | + | 59 | 2.60E-22 | 95 | 75 |
| 5443 | 5476 | - | 2 | 20870425 | 20870458 | + | 30 | 0.00088 | 97 | 34 |
| 34816 | 35055 | + | 2 | 21792977 | 21793217 | + | 177 | 1.40E-246 | 93 | 241 |
| 35062 | 35422 | + | 2 | 21793237 | 21793597 | + | 286 | 1.40E-246 | 95 | 362 |
| 21485 | 21540 | + | 2 | 22250879 | 22250934 | + | 40 | 1.10E-08 | 93 | 56 |
| 39598 | 39670 | - | 2 | 22307345 | 22307415 | + | 37 | 7.60E-14 | 88 | 73 |
| 110801 | 111127 | - | 2 | 22317190 | 22317515 | + | 318 | 2.10E-170 | 99 | 326 |
| 33275 | 33331 | + | 2 | 22804392 | 22804443 | + | 33 | 7.00E-36 | 89 | 57 |
| 33399 | 33503 | + | 2 | 22804470 | 22804572 | + | 73 | 7.00E-36 | 92 | 105 |
| 83749 | 83882 | + | 2 | 22853267 | 22853399 | + | 73 | 1.20E-30 | 89 | 133 |
| 36110 | 36158 | - | 2 | 23972317 | 23972365 | + | 33 | 2.70E-05 | 92 | 49 |
| 33215 | 33364 | + | 2 | 24783729 | 24783881 | + | 137 | 3.00E-280 | 97 | 153 |
| 33399 | 33577 | + | 2 | 24783916 | 24784094 | + | 175 | 3.00E-280 | 99 | 179 |
| 33618 | 33861 | + | 2 | 24784136 | 24784379 | + | 220 | 3.00E-280 | 98 | 244 |
| 77725 | 78413 | - | 2 | 24891555 | 24892240 | + | 610 | 0 | 97 | 690 |
| 77500 | 77697 | - | 2 | 24892268 | 24892464 | + | 165 | 0 | 96 | 197 |
| 76070 | 76188 | + | 2 | 26155603 | 26155721 | + | 91 | 2.30E-41 | 94 | 119 |
| 6846 | 7028 | + | 2 | 26896715 | 26896897 | + | 179 | 8.60E-88 | 99 | 183 |
| 24875 | 24946 | + | 2 | 27441692 | 27441762 | + | 56 | 5.10E-19 | 94 | 72 |
| 102373 | 102853 | - | 2 | 27604729 | 27605208 | + | 468 | 5.30E-261 | 99 | 480 |
| 80733 | 80793 | + | 2 | 27667594 | 27667653 | + | 52 | 3.90E-18 | 97 | 60 |
| 22124 | 22156 | - | 2 | 28025169 | 28025201 | + | 29 | 3.20E-07 | 97 | 33 |
| 33952 | 34021 | + | 2 | 28429351 | 28429420 | + | 42 | 3.50E-82 | 90 | 70 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|-------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 34194 | 34449 | + | 2 | 28429560 | 28429815 | + | 140 | 3.50E-82 | 88 | 260 |
| 7766 | 8017 | - | 2 | 29019182 | 29019432 | + | 232 | 3.80E-121 | 98 | 252 |
| 44496 | 44524 | + | 2 | 29019341 | 29019369 | + | 29 | 0.00036 | 100 | 29 |
| 43120 | 43245 | + | 2 | 29317383 | 29317508 | + | 95 | 4.00E-41 | 94 | 127 |
| 63872 | 63946 | - | 2 | 29935149 | 29935223 | + | 47 | 3.70E-15 | 91 | 75 |
| 1808 | 1980 | + | 2 | 32501863 | 32502036 | + | 154 | 1.40E-76 | 97 | 174 |
| 7825 | 7977 | - | 2 | 32639447 | 32639599 | + | 153 | 2.20E-73 | 100 | 153 |
| 15814 | 15900 | + | 2 | 33330216 | 33330302 | + | 83 | 8.90E-71 | 99 | 87 |
| 15980 | 16049 | + | 2 | 33330382 | 33330451 | + | 70 | 8.90E-71 | 100 | 70 |
| 33470 | 33551 | + | 2 | 33534505 | 33534586 | + | 54 | 4.00E-16 | 91 | 82 |
| 14443 | 14532 | + | 2 | 35130193 | 35130282 | + | 66 | 1.20E-211 | 93 | 90 |
| 14535 | 14637 | + | 2 | 35130274 | 35130376 | + | 76 | 1.20E-211 | 93 | 104 |
| 14643 | 15004 | + | 2 | 35130375 | 35130741 | + | 276 | 1.20E-211 | 94 | 368 |
| 47517 | 47957 | - | 2 | 35784625 | 35785065 | + | 293 | 4.40E-159 | 91 | 445 |
| 47517 | 47580 | - | 2 | 35785075 | 35785138 | + | 44 | 1.10E-11 | 92 | 64 |
| 2947 | 3096 | + | 3 | 81353 | 81502 | + | 99 | 3.40E-42 | 91 | 151 |
| 94738 | 94928 | + | 3 | 685792 | 685981 | + | 170 | 1.90E-88 | 97 | 190 |
| 39350 | 39392 | + | 3 | 1094624 | 1094666 | + | 35 | 2.90E-06 | 95 | 43 |
| 14324 | 14385 | - | 3 | 2311481 | 2311540 | + | 42 | 2.80E-09 | 92 | 62 |
| 18563 | 18625 | - | 3 | 2577276 | 2577338 | - | 47 | 1.60E-41 | 94 | 63 |
| 18650 | 18728 | - | 3 | 2577365 | 2577443 | - | 67 | 1.60E-41 | 96 | 79 |
| 19305 | 19352 | - | 3 | 3028197 | 3028244 | - | 44 | 1.60E-10 | 98 | 48 |
| 25432 | 25515 | + | 3 | 3425670 | 3425752 | - | 68 | 1.80E-24 | 95 | 84 |
| 97585 | 97743 | + | 3 | 4315440 | 4315596 | - | 94 | 3.70E-43 | 90 | 158 |
| 33400 | 33441 | - | 3 | 4842555 | 4842596 | + | 30 | 1.20E-19 | 93 | 42 |
| 33144 | 33235 | - | 3 | 4842764 | 4842856 | + | 38 | 1.20E-19 | 85 | 94 |
| 54921 | 55204 | + | 3 | 4991086 | 4991368 | - | 259 | 1.60E-156 | 98 | 283 |
| 81779 | 81896 | - | 3 | 5166875 | 5166991 | - | 82 | 5.20E-36 | 92 | 118 |
| 35598 | 35663 | + | 3 | 5626070 | 5626135 | + | 50 | 1.50E-12 | 94 | 66 |
| 35540 | 35582 | - | 3 | 5701299 | 5701341 | - | 35 | 0.0001 | 95 | 43 |
| 67008 | 67377 | + | 3 | 5730542 | 5730913 | - | 269 | 1.90E-147 | 93 | 373 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 28941 | 29007 | - | 3 | 5795598 | 5795664 | + | 63 | 1.70E-22 | 99 | 67 |
| 66270 | 66431 | + | 3 | 6128249 | 6128408 | + | 145 | 3.30E-88 | 98 | 161 |
| 18642 | 18686 | - | 3 | 6632804 | 6632848 | + | 41 | 4.40E-53 | 98 | 45 |
| 18552 | 18625 | - | 3 | 6632866 | 6632939 | + | 63 | 4.40E-53 | 96 | 75 |
| 14535 | 14592 | - | 3 | 6750924 | 6750980 | + | 46 | 4.40E-53 | 95 | 58 |
| 133297 | 133319 | - | 3 | 7557875 | 7557896 | + | 22 | 4.20E-209 | 100 | 22 |
| 81804 | 82193 | + | 3 | 7557897 | 7558285 | + | 373 | 2.10E-209 | 99 | 389 |
| 132928 | 133317 | - | 3 | 7557897 | 7558285 | + | 373 | 4.20E-209 | 99 | 389 |
| 98421 | 98920 | + | 3 | 7935200 | 7935697 | + | 477 | 2.20E-271 | 99 | 501 |
| 116201 | 116700 | - | 3 | 7935200 | 7935697 | + | 477 | 9.40E-264 | 99 | 501 |
| 15625 | 15672 | - | 3 | 7940371 | 7940418 | + | 44 | 1.50E-11 | 98 | 48 |
| 37067 | 37121 | + | 3 | 7940414 | 7940468 | + | 47 | 5.70E-13 | 96 | 55 |
| 100550 | 100566 | - | 3 | 7954100 | 7954115 | + | 16 | 9.40E-264 | 100 | 16 |
| 27393 | 27473 | + | 3 | 7987008 | 7987088 | + | 43 | 3.10E-11 | 88 | 83 |
| 47709 | 47752 | - | 3 | 8431937 | 8431979 | + | 32 | 1.30E-05 | 93 | 44 |
| 22717 | 22794 | - | 3 | 8893880 | 8893956 | + | 47 | 2.20E-13 | 90 | 79 |
| 54249 | 54360 | + | 3 | 10113399 | 10113509 | + | 103 | 1.60E-48 | 98 | 111 |
| 23568 | 23620 | + | 3 | 10119828 | 10119880 | + | 53 | 2.90E-16 | 100 | 53 |
| 17971 | 18078 | + | 3 | 10581614 | 10581721 | + | 52 | 1.10E-14 | 87 | 108 |
| 59933 | 60031 | - | 3 | 10882101 | 10882198 | - | 94 | 2.40E-123 | 99 | 98 |
| 60039 | 60209 | - | 3 | 10882206 | 10882373 | - | 154 | 2.40E-123 | 98 | 170 |
| 18985 | 19352 | + | 3 | 10887531 | 10887898 | - | 352 | 2.50E-189 | 99 | 368 |
| 86623 | 86792 | - | 3 | 10995621 | 10995787 | + | 81 | 2.10E-35 | 87 | 169 |
| 103769 | 103794 | + | 3 | 11516778 | 11516802 | + | 18 | 1.30E-220 | 92 | 26 |
| 96201 | 96601 | - | 3 | 11518626 | 11519025 | + | 400 | 1.70E-225 | 100 | 400 |
| 118520 | 118920 | + | 3 | 11518626 | 11519025 | + | 400 | 1.30E-220 | 100 | 400 |
| 28120 | 28160 | + | 3 | 11863782 | 11863822 | - | 37 | 5.60E-06 | 98 | 41 |
| 18024 | 18080 | + | 3 | 12859172 | 12859229 | - | 30 | 3.60E-12 | 88 | 58 |
| 123752 | 123812 | - | 3 | 13620215 | 13620274 | + | 32 | 3.20E-56 | 88 | 60 |
| 64246 | 64368 | - | 3 | 13620632 | 13620753 | + | 94 | 3.70E-43 | 94 | 122 |
| 96815 | 96922 | + | 3 | 13623739 | 13623846 | + | 104 | 4.00E-49 | 99 | 108 |
| 118199 | 118306 | - | 3 | 13623739 | 13623846 | + | 104 | 3.20E-56 | 99 | 108 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 80935 | 81139 | + | 3 | 13624253 | 13624456 | + | 196 | 6.10E-104 | 99 | 204 |
| 133982 | 134186 | - | 3 | 13624253 | 13624456 | + | 196 | 1.90E-100 | 99 | 204 |
| 53426 | 53573 | + | 3 | 13625786 | 13625932 | + | 115 | 2.70E-69 | 95 | 147 |
| 20236 | 20434 | + | 3 | 13637442 | 13637640 | + | 191 | 4.10E-96 | 99 | 199 |
| 132216 | 132232 | - | 3 | 13689626 | 13689641 | + | 16 | 2.90E-100 | 100 | 16 |
| 106333 | 106349 | - | 3 | 13721589 | 13721604 | + | 16 | 1.90E-100 | 100 | 16 |
| 131083 | 131099 | - | 3 | 13730664 | 13730679 | + | 16 | 2.90E-100 | 100 | 16 |
| 117341 | 117357 | - | 3 | 13738319 | 13738334 | + | 16 | 1.90E-100 | 100 | 16 |
| 107363 | 107379 | - | 3 | 13887749 | 13887764 | + | 16 | 1.60E-206 | 100 | 16 |
| 107028 | 107043 | + | 3 | 13903730 | 13903744 | + | 15 | 0 | 100 | 15 |
| 110589 | 110604 | + | 3 | 13916889 | 13916903 | + | 15 | 0 | 100 | 15 |
| 8832 | 8975 | - | 3 | 13927645 | 13927795 | + | 83 | 1.40E-35 | 89 | 151 |
| 8797 | 8909 | - | 3 | 13927718 | 13927836 | + | 67 | 3.70E-26 | 89 | 119 |
| 103607 | 103622 | - | 3 | 13930980 | 13930994 | + | 15 | 1.60E-206 | 100 | 15 |
| 105757 | 105772 | - | 3 | 13931210 | 13931224 | + | 15 | 1.60E-206 | 100 | 15 |
| 106896 | 106911 | + | 3 | 13933080 | 13933094 | + | 15 | 0 | 100 | 15 |
| 101519 | 101534 | - | 3 | 13950397 | 13950411 | + | 15 | 1.60E-206 | 100 | 15 |
| 112803 | 112818 | - | 3 | 13958316 | 13958330 | + | 15 | 9.30E-210 | 100 | 15 |
| 116391 | 116406 | - | 3 | 13963063 | 13963077 | + | 15 | 9.30E-210 | 100 | 15 |
| 104716 | 104731 | + | 3 | 13963095 | 13963109 | + | 15 | 0 | 100 | 15 |
| 116391 | 116406 | + | 3 | 13963171 | 13963185 | + | 15 | 1.10E-113 | 100 | 15 |
| 113371 | 113386 | + | 3 | 13971220 | 13971234 | + | 15 | 0 | 100 | 15 |
| 103640 | 103655 | + | 3 | 13981840 | 13981854 | + | 15 | 0 | 100 | 15 |
| 116391 | 116406 | + | 3 | 14009206 | 14009220 | + | 15 | 1.60E-112 | 100 | 15 |
| 122845 | 122860 | - | 3 | 14010319 | 14010333 | + | 15 | 9.30E-210 | 100 | 15 |
| 114731 | 115438 | + | 3 | 14011403 | 14012111 | + | 685 | 0 | 99 | 709 |
| 100002 | 100390 | - | 3 | 14011403 | 14011792 | + | 378 | 9.30E-210 | 99 | 390 |
| 99683 | 100002 | - | 3 | 14011793 | 14012111 | + | 307 | 0 | 99 | 319 |
| 98383 | 99672 | - | 3 | 14012110 | 14013399 | + | 1251 | 0 | 99 | 1291 |
| 115449 | 116738 | + | 3 | 14012110 | 14013399 | + | 1251 | 0 | 99 | 1291 |
| 98141 | 98367 | - | 3 | 14013416 | 14013641 | + | 222 | 0 | 100 | 226 |
| 116754 | 116980 | + | 3 | 14013416 | 14013641 | + | 222 | 0 | 100 | 226 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 4652 | 4713 | + | 3 | 14263164 | 14263225 | + | 34 | 2.20E-06 | 89 | 62 |
| 46986 | 47214 | + | 3 | 14857541 | 14857767 | + | 198 | 1.40E-102 | 97 | 230 |
| 71112 | 71371 | - | 3 | 16161833 | 16162095 | - | 200 | 1.10E-119 | 94 | 264 |
| 56536 | 56712 | - | 3 | 16379897 | 16380068 | + | 128 | 2.00E-63 | 93 | 176 |
| 80912 | 81072 | + | 3 | 17479056 | 17479215 | + | 109 | 3.40E-65 | 92 | 161 |
| 98056 | 98240 | - | 3 | 17527679 | 17527862 | + | 84 | 3.40E-37 | 86 | 184 |
| 33618 | 33672 | + | 3 | 17574622 | 17574676 | - | 39 | 1.10E-164 | 93 | 55 |
| 33489 | 33576 | + | 3 | 17574722 | 17574809 | - | 72 | 1.10E-164 | 95 | 88 |
| 33399 | 33476 | + | 3 | 17574808 | 17574885 | - | 58 | 1.10E-164 | 94 | 78 |
| 33072 | 33356 | + | 3 | 17574925 | 17575206 | - | 187 | 1.10E-164 | 91 | 291 |
| 21520 | 21681 | + | 3 | 18108906 | 18109067 | - | 146 | 6.80E-70 | 98 | 162 |
| 47455 | 47839 | + | 3 | 18565283 | 18565666 | - | 344 | 1.80E-189 | 97 | 388 |
| 123400 | 123417 | + | 3 | 19863220 | 19863236 | - | 17 | 6.10E-253 | 100 | 17 |
| 108536 | 108552 | + | 3 | 19865908 | 19865923 | - | 16 | 6.10E-253 | 100 | 16 |
| 112245 | 112732 | - | 3 | 19909145 | 19909631 | - | 479 | 1.00E-272 | 100 | 487 |
| 69758 | 69950 | + | 3 | 19909629 | 19909821 | - | 189 | 9.10E-100 | 99 | 193 |
| 27117 | 27248 | + | 3 | 19912977 | 19913108 | - | 128 | 0 | 99 | 132 |
| 26985 | 27108 | + | 3 | 19913117 | 19913240 | - | 116 | 0 | 98 | 124 |
| 26193 | 26988 | + | 3 | 19913225 | 19914017 | - | 741 | 0 | 98 | 797 |
| 105571 | 106042 | + | 3 | 19930641 | 19931111 | - | 457 | 6.10E-253 | 99 | 473 |
| 105762 | 105794 | - | 3 | 19930889 | 19930920 | - | 32 | 2.30E-06 | 100 | 32 |
| 58077 | 58265 | + | 3 | 20343390 | 20343577 | + | 172 | 2.60E-161 | 98 | 188 |
| 58314 | 58454 | + | 3 | 20343627 | 20343766 | + | 140 | 2.60E-161 | 100 | 140 |
| 84729 | 84813 | + | 3 | 20938413 | 20938496 | + | 52 | 3.90E-18 | 90 | 84 |
| 19176 | 19240 | + | 3 | 21389623 | 21389687 | + | 37 | 1.60E-41 | 89 | 65 |
| 19269 | 19352 | + | 3 | 21389688 | 21389770 | + | 76 | 1.60E-41 | 98 | 84 |
| 12605 | 12660 | - | 3 | 23321904 | 23321959 | + | 36 | 1.80E-06 | 91 | 56 |
| 92127 | 92246 | - | 3 | 23613477 | 23613595 | - | 68 | 1.10E-42 | 89 | 120 |
| 30132 | 30179 | + | 3 | 23931960 | 23932007 | + | 40 | 3.60E-08 | 96 | 48 |
| 30144 | 30179 | + | 3 | 23932050 | 23932085 | + | 32 | 0.00066 | 97 | 36 |
| 48526 | 48928 | + | 3 | 24487446 | 24487841 | - | 295 | 1.50E-160 | 93 | 403 |
| 4979 | 5212 | - | 3 | 24555722 | 24555956 | - | 231 | 4.10E-121 | 100 | 235 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 76238 | 76511 | + | 3 | 24703566 | 24703838 | + | 257 | 0 | 99 | 273 |
| 76598 | 77384 | + | 3 | 24703924 | 24704709 | + | 755 | 0 | 99 | 787 |
| 78277 | 78413 | - | 3 | 24704754 | 24704889 | + | 128 | 2.00E-63 | 99 | 136 |
| 77382 | 77696 | + | 3 | 24704888 | 24705201 | + | 302 | 0 | 99 | 314 |
| 77724 | 78271 | + | 3 | 24705231 | 24705776 | + | 492 | 0 | 97 | 548 |
| 111620 | 111635 | - | 3 | 25150169 | 25150183 | + | 15 | 0 | 100 | 15 |
| 103936 | 103951 | + | 3 | 25152925 | 25152939 | + | 15 | 0.00053 | 100 | 15 |
| 116391 | 116406 | - | 3 | 25167407 | 25167421 | + | 15 | 0 | 100 | 15 |
| 129976 | 129993 | - | 3 | 25178651 | 25178667 | + | 17 | 0 | 100 | 17 |
| 104755 | 104770 | - | 3 | 25198388 | 25198402 | + | 15 | 0 | 100 | 15 |
| 106397 | 106502 | - | 3 | 25200272 | 25200376 | + | 105 | 0 | 100 | 105 |
| 106134 | 106389 | - | 3 | 25200385 | 25200639 | + | 243 | 0 | 99 | 255 |
| 105446 | 106144 | - | 3 | 25200638 | 25201333 | + | 652 | 0 | 98 | 700 |
| 105762 | 105794 | + | 3 | 25200987 | 25201018 | + | 32 | 0.00053 | 100 | 32 |
| 104191 | 105428 | - | 3 | 25201334 | 25202576 | + | 1187 | 0 | 99 | 1243 |
| 109988 | 110003 | + | 3 | 25201827 | 25201841 | + | 15 | 0.00053 | 100 | 15 |
| 114241 | 114256 | + | 3 | 25202480 | 25202494 | + | 15 | 0.00053 | 100 | 15 |
| 100865 | 100880 | - | 3 | 25202480 | 25202494 | + | 15 | 0 | 100 | 15 |
| 103904 | 104131 | - | 3 | 25202637 | 25202861 | + | 215 | 0 | 99 | 227 |
| 103196 | 103896 | - | 3 | 25202870 | 25203572 | + | 671 | 0 | 99 | 703 |
| 103056 | 103188 | - | 3 | 25203581 | 25203712 | + | 116 | 0 | 97 | 132 |
| 102748 | 103047 | - | 3 | 25203730 | 25204029 | + | 288 | 0 | 99 | 300 |
| 102748 | 102885 | - | 3 | 25204042 | 25204178 | + | 129 | 0 | 99 | 137 |
| 123825 | 123840 | + | 3 | 25223144 | 25223158 | + | 15 | 0.0016 | 100 | 15 |
| 103391 | 103406 | - | 3 | 25229135 | 25229149 | + | 15 | 0 | 100 | 15 |
| 130055 | 130070 | + | 3 | 25283346 | 25283360 | + | 15 | 0.0016 | 100 | 15 |
| 121163 | 121179 | + | 3 | 25283368 | 25283383 | + | 16 | 0.00053 | 100 | 16 |
| 129893 | 129908 | + | 3 | 25293359 | 25293373 | + | 15 | 0.00053 | 100 | 15 |
| 61944 | 62363 | + | 3 | 25755329 | 25755747 | - | 419 | 8.10E-237 | 100 | 419 |
| 2409 | 2465 | + | 3 | 25757635 | 25757691 | - | 38 | 1.60E-09 | 91 | 58 |
| 103745 | 103761 | - | 3 | 25945892 | 25945907 | - | 16 | 1.60E-107 | 100 | 16 |
| 73542 | 73603 | - | 3 | 25961613 | 25961673 | - | 61 | 5.40E-159 | 100 | 61 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 82425 | 82509 | - | 3 | 25961756 | 25961839 | - | 80 | 5.40E-159 | 99 | 84 |
| 132612 | 132696 | + | 3 | 25961756 | 25961839 | - | 80 | 2.20E-143 | 99 | 84 |
| 117915 | 117976 | - | 3 | 25961839 | 25961900 | - | 46 | 1.80E-55 | 94 | 62 |
| 93016 | 93126 | - | 3 | 25961898 | 25962007 | - | 82 | 2.30E-97 | 94 | 110 |
| 121995 | 122105 | + | 3 | 25961898 | 25962007 | - | 82 | 8.60E-143 | 94 | 110 |
| 122028 | 122047 | - | 3 | 25961956 | 25961974 | - | 19 | 7.50E-14 | 100 | 19 |
| 115839 | 115857 | - | 3 | 25961990 | 25962007 | - | 18 | 2.30E-39 | 100 | 18 |
| 130803 | 130845 | + | 3 | 25962011 | 25962052 | - | 42 | 2.20E-143 | 100 | 42 |
| 123778 | 123812 | + | 3 | 25962208 | 25962241 | - | 30 | 4.70E-127 | 97 | 34 |
| 70506 | 70658 | + | 3 | 25962335 | 25962486 | - | 140 | 2.50E-100 | 98 | 152 |
| 104750 | 104889 | - | 3 | 25962486 | 25962624 | - | 135 | 1.60E-107 | 99 | 139 |
| 96217 | 96292 | + | 3 | 25962623 | 25962697 | - | 67 | 2.80E-57 | 97 | 75 |
| 118829 | 118904 | - | 3 | 25962623 | 25962697 | - | 67 | 1.60E-107 | 97 | 75 |
| 63871 | 63966 | - | 3 | 25962750 | 25962844 | - | 87 | 7.70E-123 | 98 | 95 |
| 121525 | 121569 | - | 3 | 25962844 | 25962888 | - | 41 | 1.60E-107 | 98 | 45 |
| 89208 | 89276 | - | 3 | 25962885 | 25962951 | - | 56 | 5.40E-159 | 96 | 68 |
| 125845 | 125913 | + | 3 | 25962885 | 25962951 | - | 56 | 2.20E-143 | 96 | 68 |
| 109943 | 110009 | - | 3 | 25962955 | 25963020 | - | 62 | 1.70E-88 | 98 | 66 |
| 109478 | 109624 | + | 3 | 25963019 | 25963164 | - | 142 | 2.20E-143 | 99 | 146 |
| 91931 | 91989 | - | 3 | 25963160 | 25963217 | - | 54 | 5.40E-159 | 98 | 58 |
| 123132 | 123190 | + | 3 | 25963160 | 25963217 | - | 54 | 6.50E-133 | 98 | 58 |
| 92501 | 92592 | - | 3 | 25963217 | 25963307 | - | 87 | 5.40E-159 | 99 | 91 |
| 122529 | 122620 | + | 3 | 25963217 | 25963307 | - | 87 | 6.50E-133 | 99 | 91 |
| 18371 | 18413 | - | 3 | 25965835 | 25965877 | - | 43 | 1.20E-78 | 100 | 43 |
| 47749 | 47894 | - | 3 | 25965877 | 25966022 | - | 138 | 1.20E-78 | 99 | 146 |
| 45376 | 45421 | + | 3 | 25966026 | 25966071 | - | 46 | 1.50E-67 | 100 | 46 |
| 25614 | 25670 | - | 3 | 25966073 | 25966129 | - | 57 | 3.10E-60 | 100 | 57 |
| 20421 | 20458 | - | 3 | 25966128 | 25966165 | - | 38 | 2.00E-49 | 100 | 38 |
| 34468 | 34532 | + | 3 | 25966165 | 25966229 | - | 57 | 1.50E-67 | 97 | 65 |
| 40797 | 40850 | - | 3 | 25966322 | 25966375 | - | 42 | 3.10E-60 | 94 | 54 |
| 47019 | 47137 | + | 3 | 25966669 | 25966787 | - | 103 | 8.10E-77 | 97 | 119 |
| 44208 | 44245 | - | 3 | 25966788 | 25966825 | - | 38 | 3.10E-60 | 100 | 38 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 40318 | 40368 | - | 3 | 25966857 | 25966907 | - | 51 | 1.70E-52 | 100 | 51 |
| 26021 | 26067 | + | 3 | 25966907 | 25966953 | - | 39 | 8.10E-77 | 96 | 47 |
| 19477 | 19529 | + | 3 | 25967313 | 25967365 | - | 53 | 8.10E-77 | 100 | 53 |
| 61645 | 61999 | + | 3 | 26222322 | 26222675 | - | 330 | 8.70E-184 | 98 | 354 |
| 27257 | 27303 | - | 3 | 26241769 | 26241815 | - | 43 | 1.00E-15 | 98 | 47 |
| 42013 | 42215 | + | 3 | 26848645 | 26848847 | + | 203 | 3.90E-106 | 100 | 203 |
| 96303 | 97289 | - | 3 | 27560209 | 27561196 | + | 940 | 0 | 99 | 988 |
| 117832 | 118818 | + | 3 | 27560209 | 27561196 | + | 940 | 0 | 99 | 988 |
| 32860 | 33364 | + | 3 | 27563371 | 27563876 | + | 486 | 0 | 99 | 506 |
| 33399 | 33577 | + | 3 | 27563911 | 27564094 | + | 144 | 0 | 95 | 184 |
| 33618 | 34184 | + | 3 | 27564135 | 27564702 | + | 528 | 0 | 98 | 568 |
| 34194 | 34297 | + | 3 | 27564711 | 27564814 | + | 104 | 0 | 100 | 104 |
| 34194 | 34222 | + | 3 | 27565812 | 27565840 | + | 29 | 0 | 100 | 29 |
| 35033 | 35936 | + | 3 | 27565835 | 27566739 | + | 862 | 0 | 99 | 906 |
| 35972 | 36143 | + | 3 | 27566775 | 27566946 | + | 160 | 0 | 98 | 172 |
| 77252 | 77417 | - | 3 | 27797942 | 27798105 | - | 118 | 1.80E-57 | 93 | 166 |
| 81980 | 82126 | + | 3 | 27798104 | 27798244 | - | 83 | 1.30E-36 | 89 | 147 |
| 109098 | 109114 | - | 3 | 28345386 | 28345401 | - | 16 | 3.00E-131 | 100 | 16 |
| 82544 | 82866 | + | 3 | 28349675 | 28350000 | - | 168 | 3.00E-87 | 88 | 328 |
| 132255 | 132577 | - | 3 | 28349675 | 28350000 | - | 168 | 3.00E-131 | 88 | 328 |
| 132588 | 132764 | - | 3 | 28350000 | 28350177 | - | 95 | 3.00E-131 | 88 | 179 |
| 69398 | 69533 | + | 3 | 28666922 | 28667055 | + | 123 | 1.90E-60 | 98 | 135 |
| 7364 | 7467 | - | 3 | 28668632 | 28668734 | + | 96 | 8.30E-50 | 98 | 104 |
| 1462 | 1506 | - | 3 | 28722578 | 28722622 | + | 33 | 8.30E-50 | 93 | 45 |
| 73961 | 74116 | - | 3 | 28826201 | 28826355 | - | 155 | 1.30E-90 | 100 | 155 |
| 35798 | 35912 | + | 3 | 28827464 | 28827578 | - | 115 | 1.40E-51 | 100 | 115 |
| 60039 | 60433 | - | 3 | 28833882 | 28834269 | - | 338 | 2.50E-199 | 96 | 394 |
| 18747 | 18775 | + | 3 | 30309511 | 30309539 | - | 29 | 0.00047 | 100 | 29 |
| 26100 | 26179 | + | 3 | 30379203 | 30379279 | - | 44 | 3.80E-22 | 89 | 80 |
| 25936 | 26071 | + | 3 | 30379307 | 30379443 | - | 37 | 3.80E-22 | 82 | 137 |
| 83757 | 83988 | - | 3 | 31068060 | 31068290 | - | 118 | 1.90E-57 | 88 | 234 |
| 8681 | 8736 | - | 3 | 31275104 | 31275159 | - | 40 | 8.50E-08 | 93 | 56 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 53219 | 53317 | + | 3 | 31749883 | 31749980 | - | 94 | 3.70E-43 | 99 | 98 |
| 94931 | 98367 | - | 3 | 31750379 | 31753818 | - | 3417 | 0 | 100 | 3441 |
| 116754 | 120190 | + | 3 | 31750379 | 31753818 | - | 3417 | 0 | 100 | 3441 |
| 98383 | 98707 | - | 3 | 31753835 | 31754159 | - | 321 | 0 | 100 | 325 |
| 116414 | 116738 | + | 3 | 31753835 | 31754159 | - | 321 | 0 | 100 | 325 |
| 97569 | 98367 | - | 3 | 31754152 | 31754950 | - | 795 | 0 | 100 | 799 |
| 116754 | 117552 | + | 3 | 31754152 | 31754950 | - | 795 | 0 | 100 | 799 |
| 98383 | 99962 | - | 3 | 31754967 | 31756548 | - | 1570 | 0 | 100 | 1582 |
| 115159 | 116738 | + | 3 | 31754967 | 31756548 | - | 1570 | 0 | 100 | 1582 |
| 50357 | 50466 | - | 3 | 31757590 | 31757698 | - | 109 | 0 | 100 | 109 |
| 50474 | 52949 | - | 3 | 31757706 | 31760182 | - | 2461 | 0 | 100 | 2477 |
| 108172 | 108188 | + | 3 | 31781302 | 31781317 | - | 16 | 0 | 100 | 16 |
| 32805 | 32874 | - | 3 | 31799479 | 31799548 | - | 35 | 5.40E-31 | 87 | 71 |
| 32879 | 33008 | - | 3 | 31799579 | 31799704 | - | 59 | 5.40E-31 | 86 | 131 |
| 113812 | 113828 | + | 3 | 31804218 | 31804233 | - | 16 | 0 | 100 | 16 |
| 831 | 938 | - | 3 | 31975740 | 31975848 | + | 61 | 6.40E-45 | 89 | 109 |
| 698 | 815 | - | 3 | 31975847 | 31975962 | + | 51 | 6.40E-45 | 86 | 119 |
| 77372 | 77653 | + | 3 | 32243299 | 32243579 | + | 253 | 6.60E-138 | 98 | 281 |
| 106600 | 106794 | - | 3 | 33002281 | 33002474 | - | 194 | 1.10E-99 | 100 | 194 |
| 110974 | 110993 | - | 3 | 33048926 | 33048944 | - | 19 | 1.10E-99 | 100 | 19 |
| 54937 | 55046 | - | 3 | 33548676 | 33548784 | + | 74 | 3.10E-31 | 92 | 110 |
| 114366 | 114383 | - | 3 | 34136083 | 34136099 | - | 17 | 1.90E-198 | 100 | 17 |
| 93382 | 93528 | + | 3 | 34288764 | 34288909 | - | 126 | 2.90E-202 | 97 | 146 |
| 121593 | 121739 | - | 3 | 34288764 | 34288909 | - | 126 | 1.10E-198 | 97 | 146 |
| 93088 | 93374 | + | 3 | 34288915 | 34289200 | - | 255 | 2.90E-202 | 97 | 287 |
| 121747 | 122033 | - | 3 | 34288915 | 34289200 | - | 255 | 1.10E-198 | 97 | 287 |
| 11350 | 11432 | + | 3 | 34430262 | 34430344 | + | 79 | 0 | 99 | 83 |
| 11487 | 12304 | + | 3 | 34430401 | 34431218 | + | 798 | 0 | 99 | 818 |
| 12350 | 12398 | + | 3 | 34431220 | 34431268 | + | 41 | 0 | 96 | 49 |
| 100447 | 100632 | + | 3 | 35541563 | 35541750 | - | 176 | 3.50E-92 | 98 | 188 |
| 114489 | 114674 | - | 3 | 35541563 | 35541750 | - | 176 | 4.30E-137 | 98 | 188 |
| 103984 | 104131 | - | 3 | 35541936 | 35542082 | - | 147 | 4.60E-260 | 100 | 147 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 101114 | 101380 | + | 3 | 35542718 | 35542983 | - | 254 | 1.20E-138 | 99 | 266 |
| 113741 | 114007 | - | 3 | 35542718 | 35542983 | - | 254 | 4.60E-260 | 99 | 266 |
| 90993 | 91097 | + | 3 | 35543119 | 35543222 | - | 100 | 9.80E-47 | 99 | 104 |
| 124024 | 124128 | - | 3 | 35543119 | 35543222 | - | 100 | 4.60E-260 | 99 | 104 |
| 109886 | 110015 | + | 3 | 35543309 | 35543437 | - | 129 | 4.20E-61 | 100 | 129 |
| 107146 | 107286 | - | 3 | 35543434 | 35543573 | - | 136 | 7.10E-142 | 99 | 140 |
| 68037 | 68139 | - | 3 | 35543664 | 35543765 | - | 90 | 8.90E-41 | 97 | 102 |
| 49513 | 49574 | + | 3 | 35544066 | 35544127 | - | 62 | 2.90E-92 | 100 | 62 |
| 17145 | 17331 | - | 3 | 35544469 | 35544655 | - | 183 | 2.90E-124 | 99 | 187 |
| 17383 | 17456 | - | 3 | 35544715 | 35544788 | - | 74 | 2.90E-124 | 100 | 74 |
| 45666 | 45739 | + | 3 | 35544788 | 35544861 | - | 70 | 2.90E-92 | 99 | 74 |
| 11643 | 11737 | - | 3 | 35544861 | 35544955 | - | 87 | 8.60E-83 | 98 | 95 |
| 15414 | 15491 | - | 3 | 35545315 | 35545392 | - | 78 | 8.60E-83 | 100 | 78 |
| 15500 | 15535 | - | 3 | 35545401 | 35545436 | - | 36 | 8.60E-83 | 100 | 36 |
| 36092 | 36181 | + | 3 | 35545536 | 35545625 | - | 82 | 2.90E-92 | 98 | 90 |
| 104222 | 104238 | + | 3 | 35594616 | 35594631 | - | 16 | 4.20E-61 | 100 | 16 |
| 112063 | 112081 | - | 3 | 35601399 | 35601416 | - | 18 | 7.10E-142 | 100 | 18 |
| 134277 | 134292 | - | 3 | 35890776 | 35890790 | + | 15 | 0 | 100 | 15 |
| 133481 | 133496 | - | 3 | 35925945 | 35925959 | + | 15 | 0 | 100 | 15 |
| 132703 | 132719 | - | 3 | 35933029 | 35933044 | + | 16 | 0 | 100 | 16 |
| 84081 | 84408 | + | 3 | 35938380 | 35938706 | + | 311 | 0 | 99 | 327 |
| 130713 | 131040 | - | 3 | 35938380 | 35938706 | + | 311 | 0 | 99 | 327 |
| 84416 | 85636 | + | 3 | 35938715 | 35939929 | + | 1149 | 0 | 99 | 1221 |
| 129485 | 130705 | - | 3 | 35938715 | 35939929 | + | 1149 | 0 | 99 | 1221 |
| 107369 | 107384 | - | 3 | 35944257 | 35944271 | + | 15 | 0 | 100 | 15 |
| 103763 | 103781 | - | 3 | 35949121 | 35949138 | + | 18 | 0 | 100 | 18 |
| 107539 | 107554 | - | 3 | 35953523 | 35953537 | + | 15 | 0 | 100 | 15 |
| 116654 | 116669 | - | 3 | 35956259 | 35956273 | + | 15 | 0 | 100 | 15 |
| 116391 | 116406 | - | 3 | 35972986 | 35973000 | + | 15 | 0 | 100 | 15 |
| 124429 | 124445 | - | 3 | 35979647 | 35979662 | + | 16 | 0 | 100 | 16 |
| 101385 | 101400 | - | 3 | 35985040 | 35985054 | + | 15 | 0 | 100 | 15 |
| 108285 | 108301 | - | 3 | 36001392 | 36001407 | + | 16 | 0 | 100 | 16 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 128393 | 128408 | - | 3 | 36002354 | 36002368 | + | 15 | 0 | 100 | 15 |
| 73850 | 74003 | - | 3 | 36276536 | 36276689 | + | 87 | 2.60E-98 | 89 | 155 |
| 71560 | 71691 | - | 3 | 36277018 | 36277147 | + | 119 | 2.60E-98 | 98 | 131 |
| 56276 | 56361 | + | 3 | 36277185 | 36277269 | + | 81 | 2.00E-35 | 99 | 85 |
| 11245 | 11282 | - | 3 | 36279585 | 36279622 | + | 30 | 0.0064 | 95 | 38 |
| 29864 | 30015 | - | 3 | 36279683 | 36279834 | + | 132 | 2.60E-61 | 97 | 152 |
| 42926 | 43020 | + | 3 | 36279835 | 36279930 | + | 76 | 4.40E-31 | 95 | 96 |
| 90539 | 90633 | - | 4 | 251249 | 251341 | + | 90 | 1.30E-97 | 99 | 94 |
| 80912 | 81014 | - | 4 | 251376 | 251477 | + | 102 | 1.30E-97 | 100 | 102 |
| 128728 | 128744 | + | 4 | 444890 | 444905 | + | 16 | 1.70E-104 | 100 | 16 |
| 84426 | 84802 | - | 4 | 457867 | 458240 | + | 180 | 2.10E-94 | 87 | 380 |
| 130319 | 130695 | + | 4 | 457867 | 458240 | + | 180 | 1.70E-104 | 87 | 380 |
| 130722 | 130818 | + | 4 | 458258 | 458348 | + | 40 | 1.70E-104 | 85 | 96 |
| 18688 | 18831 | + | 4 | 635874 | 636018 | + | 129 | 5.90E-60 | 97 | 145 |
| 18953 | 19065 | - | 4 | 636029 | 636141 | + | 97 | 6.80E-42 | 96 | 113 |
| 56662 | 56740 | - | 4 | 899622 | 899699 | + | 58 | 1.00E-21 | 94 | 78 |
| 17433 | 17493 | - | 4 | 1085897 | 1085957 | + | 32 | 2.60E-05 | 88 | 64 |
| 72022 | 72089 | + | 4 | 2073149 | 2073215 | + | 67 | 4.50E-27 | 100 | 67 |
| 6349 | 6502 | - | 4 | 2073534 | 2073687 | + | 154 | 2.30E-73 | 100 | 154 |
| 5541 | 5718 | + | 4 | 4295052 | 4295229 | + | 143 | 1.30E-91 | 95 | 179 |
| 5728 | 5772 | + | 4 | 4295231 | 4295275 | + | 45 | 1.60E-85 | 100 | 45 |
| 5759 | 5831 | + | 4 | 4295350 | 4295422 | + | 53 | 1.30E-91 | 93 | 73 |
| 18768 | 18912 | + | 4 | 4428133 | 4428270 | + | 90 | 5.70E-37 | 90 | 146 |
| 25672 | 25705 | + | 4 | 4974377 | 4974410 | + | 30 | 0.0014 | 97 | 34 |
| 34974 | 35175 | + | 4 | 5026829 | 5027029 | + | 114 | 6.00E-85 | 89 | 202 |
| 35152 | 35286 | + | 4 | 5027033 | 5027167 | + | 71 | 6.00E-85 | 88 | 135 |
| 11505 | 11593 | - | 4 | 5027466 | 5027554 | + | 73 | 8.00E-56 | 96 | 89 |
| 11320 | 11428 | - | 4 | 5027632 | 5027743 | + | 60 | 8.00E-56 | 88 | 112 |
| 68334 | 68446 | - | 4 | 5097334 | 5097441 | + | 61 | 1.70E-23 | 89 | 113 |
| 74911 | 75141 | + | 4 | 5189557 | 5189786 | + | 146 | 3.80E-74 | 91 | 230 |
| 96652 | 96710 | + | 4 | 5807333 | 5807390 | + | 50 | 6.10E-17 | 97 | 58 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|-------|-----|-----------------|---------|---------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 4979 | 5051 | - | 4 | 6813748 | 6813820 | + | 49 | 8.00E-14 | 92 | 73 |
| 81292 | 81667 | + | 4 | 7559673 | 7560045 | + | 185 | 2.20E-97 | 87 | 377 |
| 4813 | 4853 | + | 4 | 8902503 | 8902543 | + | 41 | 0 | 100 | 41 |
| 43009 | 43044 | + | 4 | 8904852 | 8904887 | + | 32 | 0 | 97 | 36 |
| 4353 | 4863 | - | 4 | 8918205 | 8918715 | + | 503 | 0 | 100 | 511 |
| 3553 | 4318 | - | 4 | 8918750 | 8919515 | + | 758 | 0 | 100 | 766 |
| 2941 | 3535 | - | 4 | 8919533 | 8920127 | + | 595 | 0 | 100 | 595 |
| 314 | 2932 | - | 4 | 8920136 | 8922754 | + | 2603 | 0 | 100 | 2619 |
| 41322 | 41364 | + | 4 | 8922866 | 8922908 | + | 43 | 0 | 100 | 43 |
| 41374 | 41491 | + | 4 | 8922918 | 8923035 | + | 118 | 0 | 100 | 118 |
| 41535 | 42468 | + | 4 | 8923079 | 8924012 | + | 920 | 0 | 100 | 936 |
| 42477 | 43683 | + | 4 | 8924021 | 8925219 | + | 1157 | 0 | 99 | 1209 |
| 43700 | 43898 | + | 4 | 8925236 | 8925434 | + | 199 | 0 | 100 | 199 |
| 43909 | 44411 | + | 4 | 8925445 | 8925945 | + | 495 | 0 | 100 | 503 |
| 44420 | 44883 | + | 4 | 8925954 | 8926417 | + | 457 | 0 | 100 | 465 |
| 7829 | 7857 | - | 4 | 8926030 | 8926058 | + | 29 | 1.30E-82 | 100 | 29 |
| 44892 | 45574 | + | 4 | 8926426 | 8927108 | + | 683 | 0 | 100 | 683 |
| 45613 | 45946 | + | 4 | 8927147 | 8927480 | + | 330 | 0 | 100 | 334 |
| 45968 | 46164 | + | 4 | 8927502 | 8927693 | + | 177 | 0 | 97 | 197 |
| 46193 | 46276 | + | 4 | 8927720 | 8927803 | + | 84 | 0 | 100 | 84 |
| 46286 | 46495 | + | 4 | 8927813 | 8928022 | + | 210 | 0 | 100 | 210 |
| 46504 | 47252 | + | 4 | 8928031 | 8928782 | + | 732 | 0 | 99 | 752 |
| 43009 | 43044 | + | 4 | 8932937 | 8932972 | + | 32 | 0 | 97 | 36 |
| 314 | 474 | - | 4 | 8933845 | 8934005 | + | 157 | 0 | 99 | 161 |
| 32100 | 32640 | + | 4 | 8934146 | 8934686 | + | 541 | 0 | 100 | 541 |
| 32674 | 33364 | + | 4 | 8934720 | 8935409 | + | 683 | 0 | 100 | 691 |
| 33399 | 33577 | + | 4 | 8935444 | 8935622 | + | 175 | 0 | 99 | 179 |
| 33618 | 34184 | + | 4 | 8935663 | 8936230 | + | 556 | 0 | 99 | 568 |
| 34194 | 35936 | + | 4 | 8936240 | 8937982 | + | 1739 | 0 | 100 | 1743 |
| 35972 | 36531 | + | 4 | 8938018 | 8938577 | + | 560 | 0 | 100 | 560 |
| 36541 | 36607 | + | 4 | 8938587 | 8938653 | + | 67 | 0 | 100 | 67 |
| 36616 | 41364 | + | 4 | 8938662 | 8943411 | + | 4692 | 0 | 100 | 4752 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|---------|---------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 41374 | 41491 | + | 4 | 8943421 | 8943538 | + | 118 | 0 | 100 | 118 |
| 41535 | 42468 | + | 4 | 8943582 | 8944509 | + | 846 | 0 | 98 | 938 |
| 42477 | 43683 | + | 4 | 8944518 | 8945716 | + | 1149 | 0 | 99 | 1209 |
| 43700 | 43898 | + | 4 | 8945733 | 8945931 | + | 199 | 0 | 100 | 199 |
| 43909 | 44411 | + | 4 | 8945941 | 8946441 | + | 495 | 0 | 100 | 503 |
| 44420 | 44883 | + | 4 | 8946450 | 8946914 | + | 454 | 0 | 99 | 466 |
| 7829 | 7857 | - | 4 | 8946526 | 8946554 | + | 29 | 0 | 100 | 29 |
| 44892 | 45574 | + | 4 | 8946923 | 8947605 | + | 683 | 0 | 100 | 683 |
| 45613 | 45946 | + | 4 | 8947644 | 8947977 | + | 330 | 0 | 100 | 334 |
| 44892 | 45117 | - | 4 | 8948057 | 8948282 | + | 226 | 0 | 100 | 226 |
| 44646 | 44883 | - | 4 | 8948291 | 8948524 | + | 215 | 0 | 97 | 239 |
| 5 | 1248 | - | 4 | 8948727 | 8949970 | + | 1232 | 0 | 100 | 1244 |
| 1 | 37 | + | 4 | 8949945 | 8949980 | + | 33 | 0.00026 | 97 | 37 |
| 43009 | 43044 | - | 4 | 8958154 | 8958189 | + | 32 | 4.90E-241 | 97 | 36 |
| 43009 | 43044 | + | 4 | 8981254 | 8981289 | + | 32 | 1.50E-05 | 97 | 36 |
| 121333 | 121349 | + | 4 | 8983029 | 8983044 | + | 16 | 3.00E-05 | 100 | 16 |
| 5287 | 6075 | + | 4 | 8985465 | 8986253 | + | 789 | 0 | 100 | 789 |
| 6106 | 6337 | + | 4 | 8986284 | 8986514 | + | 224 | 0 | 99 | 232 |
| 6346 | 7480 | + | 4 | 8986523 | 8987657 | + | 1127 | 0 | 100 | 1135 |
| 7513 | 7582 | + | 4 | 8987690 | 8987759 | + | 70 | 0 | 100 | 70 |
| 7592 | 8037 | + | 4 | 8987769 | 8988214 | + | 446 | 0 | 100 | 446 |
| 44496 | 44524 | - | 4 | 8988006 | 8988034 | + | 29 | 0 | 100 | 29 |
| 8093 | 8203 | + | 4 | 8988270 | 8988380 | + | 111 | 0 | 100 | 111 |
| 8212 | 8513 | + | 4 | 8988389 | 8988690 | + | 302 | 0 | 100 | 302 |
| 8623 | 10105 | + | 4 | 8988731 | 8990213 | + | 1468 | 0 | 100 | 1484 |
| 43009 | 43044 | + | 4 | 8999682 | 8999717 | + | 32 | 0 | 97 | 36 |
| 10330 | 11432 | + | 4 | 9017592 | 9018694 | + | 1103 | 0 | 100 | 1103 |
| 11487 | 13987 | + | 4 | 9018749 | 9021252 | + | 2432 | 0 | 99 | 2508 |
| 36195 | 36238 | + | 4 | 9020051 | 9020094 | + | 36 | 0 | 95 | 44 |
| 13997 | 15200 | + | 4 | 9021262 | 9022462 | + | 1188 | 0 | 100 | 1204 |
| 15261 | 15491 | + | 4 | 9022523 | 9022753 | + | 231 | 0 | 100 | 231 |
| 15500 | 15902 | + | 4 | 9022762 | 9023164 | + | 399 | 0 | 100 | 403 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|---------|---------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 15980 | 16670 | + | 4 | 9023242 | 9023936 | + | 679 | 0 | 99 | 695 |
| 16679 | 17091 | + | 4 | 9023945 | 9024357 | + | 413 | 0 | 100 | 413 |
| 16880 | 16927 | - | 4 | 9024146 | 9024193 | + | 40 | 0 | 96 | 48 |
| 17118 | 17331 | + | 4 | 9024384 | 9024597 | + | 210 | 0 | 100 | 214 |
| 17384 | 17811 | + | 4 | 9024639 | 9025066 | + | 420 | 0 | 100 | 428 |
| 17779 | 18625 | + | 4 | 9025066 | 9025912 | + | 839 | 0 | 100 | 847 |
| 18642 | 20614 | + | 4 | 9025928 | 9027900 | + | 1969 | 0 | 100 | 1973 |
| 20624 | 27108 | + | 4 | 9027910 | 9034394 | + | 6461 | 0 | 100 | 6485 |
| 27117 | 27248 | + | 4 | 9034403 | 9034534 | + | 132 | 0 | 100 | 132 |
| 27257 | 27341 | + | 4 | 9034543 | 9034627 | + | 85 | 0 | 100 | 85 |
| 27387 | 29137 | + | 4 | 9034673 | 9036423 | + | 1724 | 0 | 100 | 1752 |
| 29149 | 29503 | + | 4 | 9036435 | 9036789 | + | 355 | 0 | 100 | 355 |
| 29541 | 30253 | + | 4 | 9036827 | 9037539 | + | 713 | 0 | 100 | 713 |
| 31514 | 31555 | - | 4 | 9037578 | 9037619 | + | 42 | 0 | 100 | 42 |
| 43009 | 43044 | + | 4 | 9040282 | 9040317 | + | 32 | 0 | 97 | 36 |
| 1145 | 2000 | - | 4 | 9052053 | 9052909 | + | 846 | 0 | 100 | 857 |
| 87034 | 87815 | + | 4 | 9069761 | 9070536 | + | 754 | 0 | 99 | 782 |
| 127306 | 128087 | - | 4 | 9069761 | 9070536 | + | 754 | 0 | 99 | 782 |
| 87851 | 89655 | + | 4 | 9070573 | 9072375 | + | 1784 | 0 | 100 | 1804 |
| 125466 | 127270 | - | 4 | 9070573 | 9072375 | + | 1784 | 0 | 100 | 1804 |
| 89702 | 92998 | + | 4 | 9072422 | 9075719 | + | 3263 | 0 | 100 | 3299 |
| 122123 | 125419 | - | 4 | 9072422 | 9075719 | + | 3263 | 0 | 100 | 3299 |
| 93007 | 93374 | + | 4 | 9075729 | 9076095 | + | 355 | 0 | 99 | 367 |
| 121747 | 122114 | - | 4 | 9075729 | 9076095 | + | 355 | 0 | 99 | 367 |
| 122028 | 122047 | + | 4 | 9075796 | 9075814 | + | 19 | 3.00E-05 | 100 | 19 |
| 115839 | 115857 | + | 4 | 9075830 | 9075847 | + | 18 | 6.60E-06 | 100 | 18 |
| 93382 | 98367 | + | 4 | 9076104 | 9081091 | + | 4954 | 0 | 100 | 4990 |
| 116754 | 121739 | - | 4 | 9076104 | 9081091 | + | 4954 | 0 | 100 | 4990 |
| 98383 | 100002 | + | 4 | 9081108 | 9082729 | + | 1606 | 0 | 100 | 1622 |
| 114302 | 116738 | - | 4 | 9081108 | 9083547 | + | 2420 | 0 | 100 | 2440 |
| 121995 | 122013 | + | 4 | 9081992 | 9082009 | + | 18 | 6.60E-06 | 100 | 18 |
| 100002 | 101106 | + | 4 | 9082730 | 9083835 | + | 1098 | 0 | 100 | 1106 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|---------|---------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 100618 | 100670 | - | 4 | 9083347 | 9083398 | + | 44 | 0 | 96 | 52 |
| 114451 | 114503 | + | 4 | 9083347 | 9083398 | + | 44 | 5.10E-18 | 96 | 52 |
| 114015 | 114240 | - | 4 | 9083610 | 9083835 | + | 222 | 0 | 100 | 226 |
| 113502 | 114007 | - | 4 | 9083844 | 9084348 | + | 505 | 0 | 100 | 505 |
| 101114 | 101393 | + | 4 | 9083844 | 9084122 | + | 279 | 0 | 100 | 279 |
| 112457 | 113486 | - | 4 | 9084365 | 9085393 | + | 1017 | 0 | 100 | 1029 |
| 128048 | 128072 | - | 4 | 9089963 | 9089985 | + | 20 | 0 | 96 | 24 |
| 111129 | 111147 | + | 4 | 9090039 | 9090056 | + | 18 | 0 | 100 | 18 |
| 111208 | 111226 | + | 4 | 9091729 | 9091746 | + | 18 | 0 | 100 | 18 |
| 85160 | 87815 | + | 4 | 9095973 | 9098621 | + | 2613 | 0 | 100 | 2657 |
| 127306 | 129961 | - | 4 | 9095973 | 9098621 | + | 2613 | 0 | 100 | 2657 |
| 129822 | 129873 | + | 4 | 9096060 | 9096110 | + | 19 | 0 | 84 | 55 |
| 128784 | 128814 | + | 4 | 9097119 | 9097148 | + | 30 | 0 | 100 | 30 |
| 87851 | 89655 | + | 4 | 9098658 | 9100460 | + | 1780 | 0 | 100 | 1804 |
| 125466 | 127270 | - | 4 | 9098658 | 9100460 | + | 1780 | 0 | 100 | 1804 |
| 89702 | 90204 | + | 4 | 9100508 | 9101010 | + | 499 | 0 | 100 | 503 |
| 124917 | 125419 | - | 4 | 9100508 | 9101010 | + | 499 | 0 | 100 | 503 |
| 112463 | 112480 | + | 4 | 9101018 | 9101034 | + | 17 | 0 | 100 | 17 |
| 112821 | 112851 | + | 4 | 9101292 | 9101321 | + | 26 | 0 | 97 | 30 |
| 80615 | 80904 | + | 4 | 9117183 | 9117471 | + | 289 | 0 | 100 | 289 |
| 134217 | 134506 | - | 4 | 9117183 | 9117471 | + | 289 | 0 | 100 | 289 |
| 80912 | 83743 | + | 4 | 9117480 | 9120302 | + | 2772 | 0 | 99 | 2832 |
| 131378 | 134209 | - | 4 | 9117480 | 9120302 | + | 2772 | 0 | 99 | 2832 |
| 55866 | 55957 | - | 4 | 9119244 | 9119334 | + | 87 | 2.80E-56 | 99 | 91 |
| 55807 | 55866 | - | 4 | 9119470 | 9119529 | + | 48 | 2.80E-56 | 95 | 60 |
| 83654 | 84408 | + | 4 | 9120221 | 9120965 | + | 691 | 0 | 98 | 755 |
| 130713 | 131467 | - | 4 | 9120221 | 9120965 | + | 691 | 0 | 98 | 755 |
| 84416 | 86225 | + | 4 | 9120974 | 9122782 | + | 1802 | 0 | 100 | 1810 |
| 128896 | 130705 | - | 4 | 9120974 | 9122782 | + | 1802 | 0 | 100 | 1810 |
| 129822 | 129873 | + | 4 | 9121806 | 9121856 | + | 19 | 0 | 84 | 55 |
| 89669 | 91898 | - | 4 | 9122797 | 9125025 | + | 2176 | 0 | 99 | 2232 |
| 123223 | 125418 | + | 4 | 9122797 | 9124991 | + | 2142 | 0 | 99 | 2198 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|---------|---------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 87852 | 89659 | - | 4 | 9125036 | 9126842 | + | 1777 | 0 | 100 | 1808 |
| 125462 | 127269 | + | 4 | 9125036 | 9126842 | + | 1777 | 0 | 100 | 1808 |
| 84416 | 87815 | - | 4 | 9126880 | 9130273 | + | 3350 | 0 | 100 | 3402 |
| 127306 | 130705 | + | 4 | 9126880 | 9130273 | + | 3350 | 0 | 100 | 3402 |
| 128784 | 128814 | - | 4 | 9128353 | 9128382 | + | 30 | 0 | 100 | 30 |
| 129822 | 129873 | - | 4 | 9129391 | 9129441 | + | 19 | 0 | 84 | 55 |
| 80912 | 84408 | - | 4 | 9130282 | 9133777 | + | 3492 | 0 | 100 | 3496 |
| 130713 | 134209 | + | 4 | 9130282 | 9133777 | + | 3492 | 0 | 100 | 3496 |
| 55807 | 55866 | + | 4 | 9131728 | 9131787 | + | 48 | 0 | 95 | 60 |
| 55866 | 55957 | + | 4 | 9131923 | 9132013 | + | 87 | 0 | 99 | 91 |
| 80615 | 80904 | - | 4 | 9133786 | 9134074 | + | 289 | 0 | 100 | 289 |
| 134217 | 134506 | + | 4 | 9133786 | 9134074 | + | 289 | 0 | 100 | 289 |
| 80178 | 80600 | - | 4 | 9134092 | 9134513 | + | 422 | 0 | 100 | 422 |
| 80089 | 80170 | - | 4 | 9134522 | 9134602 | + | 77 | 0 | 99 | 81 |
| 79177 | 80047 | - | 4 | 9134644 | 9135513 | + | 866 | 0 | 100 | 870 |
| 78977 | 79140 | - | 4 | 9135551 | 9135713 | + | 163 | 0 | 100 | 163 |
| 78449 | 78968 | - | 4 | 9135723 | 9136242 | + | 512 | 0 | 100 | 520 |
| 77725 | 78413 | - | 4 | 9136277 | 9136963 | + | 677 | 0 | 100 | 689 |
| 76663 | 77697 | - | 4 | 9137033 | 9138067 | + | 1031 | 0 | 100 | 1035 |
| 129478 | 129495 | + | 4 | 9137787 | 9137803 | + | 17 | 0 | 100 | 17 |
| 76238 | 76528 | - | 4 | 9138196 | 9138485 | + | 290 | 0 | 100 | 290 |
| 75987 | 76222 | - | 4 | 9138501 | 9138735 | + | 235 | 0 | 100 | 235 |
| 75888 | 75970 | - | 4 | 9138752 | 9138833 | + | 82 | 0 | 100 | 82 |
| 74585 | 75875 | - | 4 | 9138846 | 9140135 | + | 1290 | 0 | 100 | 1290 |
| 74282 | 74549 | - | 4 | 9140172 | 9140438 | + | 267 | 0 | 100 | 267 |
| 71786 | 74265 | - | 4 | 9140456 | 9142938 | + | 2442 | 0 | 100 | 2486 |
| 71469 | 71750 | - | 4 | 9142975 | 9143255 | + | 277 | 0 | 100 | 281 |
| 70495 | 71371 | - | 4 | 9143353 | 9144228 | + | 876 | 0 | 100 | 876 |
| 108230 | 108305 | + | 4 | 9144287 | 9144361 | + | 71 | 4.10E-35 | 99 | 75 |
| 85282 | 87815 | + | 4 | 9144411 | 9146938 | + | 2491 | 0 | 100 | 2535 |
| 127306 | 129839 | - | 4 | 9144411 | 9146938 | + | 2491 | 0 | 100 | 2535 |
| 128784 | 128814 | + | 4 | 9145436 | 9145465 | + | 30 | 0 | 100 | 30 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 87851 | 89655 | + | 4 | 9146975 | 9148777 | + | 1788 | 0 | 100 | 1804 |
| 125466 | 127270 | - | 4 | 9146975 | 9148777 | + | 1788 | 0 | 100 | 1804 |
| 89702 | 92998 | + | 4 | 9148825 | 9152122 | + | 3271 | 0 | 100 | 3299 |
| 122123 | 125419 | - | 4 | 9148825 | 9152122 | + | 3271 | 0 | 100 | 3299 |
| 93007 | 93374 | + | 4 | 9152132 | 9152498 | + | 355 | 0 | 99 | 367 |
| 121747 | 122114 | - | 4 | 9152132 | 9152498 | + | 355 | 0 | 99 | 367 |
| 122028 | 122047 | + | 4 | 9152199 | 9152217 | + | 19 | 3.10E-27 | 100 | 19 |
| 115839 | 115857 | + | 4 | 9152233 | 9152250 | + | 18 | 6.10E-29 | 100 | 18 |
| 93382 | 93451 | + | 4 | 9152507 | 9152575 | + | 69 | 0 | 100 | 69 |
| 121670 | 121739 | - | 4 | 9152507 | 9152575 | + | 69 | 0 | 100 | 69 |
| 126422 | 126438 | - | 4 | 9161623 | 9161638 | + | 16 | 0 | 100 | 16 |
| 86712 | 87815 | + | 4 | 9177717 | 9178814 | + | 1076 | 0 | 99 | 1104 |
| 127306 | 128409 | - | 4 | 9177717 | 9178814 | + | 1076 | 0 | 99 | 1104 |
| 87851 | 89655 | + | 4 | 9178851 | 9180653 | + | 1788 | 0 | 100 | 1804 |
| 125466 | 127270 | - | 4 | 9178851 | 9180653 | + | 1788 | 0 | 100 | 1804 |
| 89702 | 92998 | + | 4 | 9180700 | 9183997 | + | 3263 | 0 | 100 | 3299 |
| 122123 | 125419 | - | 4 | 9180700 | 9183997 | + | 3263 | 0 | 100 | 3299 |
| 93007 | 93374 | + | 4 | 9184009 | 9184375 | + | 355 | 0 | 99 | 367 |
| 121747 | 122114 | - | 4 | 9184009 | 9184375 | + | 355 | 0 | 99 | 367 |
| 122028 | 122047 | + | 4 | 9184076 | 9184094 | + | 19 | 6.10E-29 | 100 | 19 |
| 115839 | 115857 | + | 4 | 9184110 | 9184127 | + | 18 | 2.50E-26 | 100 | 18 |
| 93382 | 98367 | + | 4 | 9184384 | 9189365 | + | 4907 | 0 | 100 | 4991 |
| 116754 | 121739 | - | 4 | 9184384 | 9189365 | + | 4907 | 0 | 100 | 4991 |
| 98383 | 99271 | + | 4 | 9189382 | 9190272 | + | 879 | 0 | 100 | 891 |
| 115850 | 116738 | - | 4 | 9189382 | 9190272 | + | 879 | 0 | 100 | 891 |
| 49511 | 49801 | - | 4 | 9526664 | 9526956 | + | 273 | 3.10E-264 | 98 | 293 |
| 49286 | 49502 | - | 4 | 9526969 | 9527185 | + | 217 | 3.10E-264 | 100 | 217 |
| 87267 | 87572 | - | 4 | 9672447 | 9672745 | + | 273 | 8.10E-150 | 97 | 305 |
| 127549 | 127611 | + | 4 | 9672447 | 9672508 | + | 62 | 1.10E-149 | 100 | 62 |
| 127613 | 127854 | + | 4 | 9672505 | 9672745 | + | 233 | 1.10E-149 | 99 | 241 |
| 25573 | 25604 | - | 4 | 10033016 | 10033047 | + | 32 | 0.0042 | 100 | 32 |
| 17684 | 18506 | - | 4 | 10881099 | 10881924 | + | 755 | 0 | 98 | 827 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 15263 | 15326 | - | 4 | 10881928 | 10881991 | + | 64 | 0 | 100 | 64 |
| 14996 | 15219 | - | 4 | 10882035 | 10882257 | + | 212 | 0 | 99 | 224 |
| 21186 | 21385 | - | 4 | 11117281 | 11117482 | + | 139 | 2.70E-125 | 92 | 203 |
| 20988 | 21160 | - | 4 | 11117487 | 11117662 | + | 120 | 2.70E-125 | 92 | 176 |
| 80297 | 80402 | - | 4 | 11634187 | 11634291 | + | 89 | 3.50E-40 | 96 | 105 |
| 113199 | 113486 | + | 4 | 11913663 | 11913948 | + | 247 | 2.00E-145 | 97 | 287 |
| 113502 | 113547 | + | 4 | 11913966 | 11914010 | + | 41 | 2.00E-145 | 98 | 45 |
| 3316 | 3352 | + | 4 | 13217813 | 13217849 | + | 33 | 2.50E-05 | 97 | 37 |
| 48153 | 48485 | + | 4 | 13435539 | 13435872 | + | 286 | 2.80E-155 | 96 | 334 |
| 18650 | 18731 | + | 4 | 13661548 | 13661629 | + | 70 | 4.90E-37 | 96 | 82 |
| 18730 | 18769 | + | 4 | 13661621 | 13661660 | + | 32 | 4.90E-37 | 95 | 40 |
| 91892 | 91982 | + | 4 | 13807852 | 13807941 | + | 70 | 7.30E-29 | 94 | 90 |
| 49286 | 49502 | - | 4 | 13825531 | 13825747 | - | 209 | 1.60E-263 | 99 | 217 |
| 49511 | 49801 | - | 4 | 13825757 | 13826049 | - | 281 | 1.60E-263 | 99 | 293 |
| 87267 | 87572 | + | 4 | 13970505 | 13970803 | + | 273 | 8.00E-150 | 97 | 305 |
| 127613 | 127854 | - | 4 | 13970505 | 13970745 | + | 233 | 1.90E-151 | 99 | 241 |
| 127549 | 127611 | - | 4 | 13970742 | 13970803 | + | 62 | 1.90E-151 | 100 | 62 |
| 81825 | 82135 | + | 4 | 14189769 | 14190078 | + | 209 | 1.10E-111 | 92 | 313 |
| 132986 | 133296 | - | 4 | 14189769 | 14190078 | + | 209 | 2.30E-109 | 92 | 313 |
| 65719 | 65797 | + | 4 | 14698778 | 14698860 | + | 59 | 2.60E-22 | 93 | 83 |
| 24100 | 24235 | - | 4 | 15081254 | 15081386 | + | 87 | 8.70E-34 | 91 | 139 |
| 23937 | 24171 | - | 4 | 15081317 | 15081543 | + | 136 | 5.00E-62 | 89 | 236 |
| 18586 | 18621 | - | 4 | 16219625 | 16219660 | + | 32 | 0.00024 | 97 | 36 |
| 94222 | 94330 | - | 4 | 16825233 | 16825341 | + | 85 | 8.50E-38 | 95 | 109 |
| 57887 | 58025 | + | 4 | 17520818 | 17520955 | + | 90 | 7.70E-83 | 91 | 138 |
| 58048 | 58166 | + | 4 | 17520955 | 17521070 | + | 90 | 7.70E-83 | 94 | 118 |
| 29907 | 29935 | - | 4 | 17824189 | 17824217 | + | 29 | 0.0031 | 100 | 29 |
| 71970 | 72288 | + | 4 | 18018159 | 18018476 | + | 278 | 8.40E-153 | 97 | 318 |
| 35275 | 35369 | + | 4 | 18076370 | 18076463 | + | 37 | 1.70E-06 | 85 | 97 |
| 43009 | 43044 | + | 4 | 18755740 | 18755775 | + | 32 | 0.00012 | 97 | 36 |
| 26472 | 26757 | - | 4 | 18814630 | 18814916 | + | 232 | 3.60E-177 | 95 | 288 |
| 26315 | 26453 | - | 4 | 18814916 | 18815054 | + | 115 | 3.60E-177 | 96 | 139 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 85472 | 87815 | + | 4 | 18910557 | 18912891 | + | 2229 | 0 | 99 | 2345 |
| 127306 | 129649 | - | 4 | 18910557 | 18912891 | + | 2229 | 0 | 99 | 2345 |
| 128784 | 128814 | + | 4 | 18911390 | 18911419 | + | 30 | 0.0043 | 100 | 30 |
| 87851 | 89655 | + | 4 | 18912928 | 18914730 | + | 1724 | 0 | 99 | 1804 |
| 125466 | 127270 | - | 4 | 18912928 | 18914730 | + | 1724 | 0 | 99 | 1804 |
| 89702 | 90619 | + | 4 | 18914775 | 18915693 | + | 872 | 0 | 99 | 920 |
| 124502 | 125419 | - | 4 | 18914775 | 18915693 | + | 872 | 0 | 99 | 920 |
| 101953 | 101968 | - | 4 | 18914957 | 18914971 | + | 15 | 0 | 100 | 15 |
| 103447 | 103462 | - | 4 | 18921408 | 18921422 | + | 15 | 0 | 100 | 15 |
| 103547 | 103563 | - | 4 | 18946561 | 18946576 | + | 16 | 0 | 100 | 16 |
| 100322 | 100337 | - | 4 | 18950663 | 18950677 | + | 15 | 0 | 100 | 15 |
| 126718 | 126736 | - | 4 | 18964479 | 18964496 | + | 18 | 0 | 100 | 18 |
| 14863 | 15128 | + | 4 | 19132621 | 19132886 | + | 88 | 4.50E-36 | 83 | 272 |
| 8093 | 8200 | + | 4 | 19139819 | 19139927 | + | 38 | 6.00E-17 | 84 | 110 |
| 34519 | 34752 | + | 4 | 19523456 | 19523691 | + | 128 | 3.70E-74 | 88 | 240 |
| 34784 | 34873 | + | 4 | 19523697 | 19523790 | + | 42 | 3.70E-74 | 86 | 94 |
| 72963 | 73042 | - | 4 | 19765443 | 19765523 | + | 53 | 7.40E-105 | 91 | 81 |
| 72724 | 72945 | - | 4 | 19765525 | 19765746 | + | 164 | 7.40E-105 | 93 | 224 |
| 13247 | 13326 | - | 4 | 20050725 | 20050802 | + | 45 | 3.40E-11 | 89 | 81 |
| 20887 | 20986 | + | 4 | 20349431 | 20349530 | + | 72 | 1.10E-29 | 93 | 100 |
| 47455 | 47839 | + | 4 | 20628579 | 20628965 | + | 355 | 1.30E-193 | 98 | 387 |
| 5674 | 5857 | - | 4 | 21379405 | 21379587 | + | 124 | 1.50E-57 | 92 | 184 |
| 84680 | 84821 | + | 4 | 22077590 | 22077731 | + | 62 | 4.30E-24 | 86 | 142 |
| 21173 | 21356 | + | 4 | 22169158 | 22169341 | + | 111 | 2.30E-48 | 90 | 187 |
| 54178 | 54312 | - | 4 | 22326395 | 22326528 | + | 82 | 5.20E-36 | 90 | 134 |
| 19381 | 19442 | + | 4 | 22447039 | 22447100 | + | 50 | 1.10E-15 | 95 | 62 |
| 19380 | 19672 | + | 4 | 22447109 | 22447401 | + | 233 | 6.40E-124 | 95 | 293 |
| 82538 | 82657 | + | 4 | 22630188 | 22630306 | + | 87 | 5.40E-39 | 93 | 119 |
| 38382 | 38427 | + | 4 | 22792889 | 22792934 | + | 42 | 3.50E-12 | 98 | 46 |
| 6808 | 6890 | + | 4 | 23264714 | 23264796 | + | 83 | 0 | 100 | 83 |
| 20624 | 21036 | - | 4 | 23268704 | 23269116 | + | 397 | 0 | 99 | 413 |
| 20301 | 20614 | - | 4 | 23269126 | 23269439 | + | 306 | 0 | 99 | 314 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 3148 | 3535 | + | 4 | 23269440 | 23269827 | + | 380 | 0 | 99 | 388 |
| 3553 | 4316 | + | 4 | 23269845 | 23270607 | + | 756 | 0 | 100 | 764 |
| 4353 | 4725 | + | 4 | 23270644 | 23271016 | + | 369 | 0 | 100 | 373 |
| 4788 | 5422 | + | 4 | 23271029 | 23271665 | + | 609 | 0 | 99 | 637 |
| 16 | 490 | - | 4 | 23277921 | 23278395 | + | 455 | 0 | 99 | 475 |
| 8623 | 9521 | - | 4 | 23282583 | 23283480 | + | 868 | 0 | 99 | 900 |
| 26207 | 26634 | - | 4 | 23283483 | 23283910 | + | 424 | 7.10E-232 | 100 | 428 |
| 49365 | 49502 | + | 4 | 23283908 | 23284045 | + | 130 | 0 | 99 | 138 |
| 49511 | 50000 | + | 4 | 23284054 | 23284544 | + | 467 | 0 | 99 | 491 |
| 102944 | 102960 | - | 4 | 23404438 | 23404453 | + | 16 | 0 | 100 | 16 |
| 112323 | 113486 | + | 4 | 23417586 | 23418745 | + | 1112 | 0 | 99 | 1164 |
| 113502 | 113961 | + | 4 | 23418762 | 23419220 | + | 447 | 0 | 99 | 459 |
| 101114 | 101393 | - | 4 | 23418988 | 23419266 | + | 271 | 0 | 99 | 279 |
| 100002 | 101106 | - | 4 | 23419275 | 23420380 | + | 1074 | 0 | 99 | 1106 |
| 114016 | 116057 | + | 4 | 23419276 | 23421318 | + | 1983 | 0 | 99 | 2043 |
| 114451 | 114503 | - | 4 | 23419712 | 23419763 | + | 44 | 9.70E-184 | 96 | 52 |
| 100618 | 100670 | + | 4 | 23419712 | 23419763 | + | 44 | 0 | 96 | 52 |
| 99064 | 100002 | - | 4 | 23420381 | 23421318 | + | 910 | 0 | 99 | 938 |
| 121995 | 122013 | - | 4 | 23421101 | 23421118 | + | 18 | 1.10E-167 | 100 | 18 |
| 91822 | 92555 | - | 4 | 23424571 | 23425303 | + | 701 | 0 | 99 | 733 |
| 122566 | 123299 | + | 4 | 23424571 | 23425303 | + | 701 | 0 | 99 | 733 |
| 84018 | 84408 | + | 4 | 23428306 | 23428695 | + | 382 | 0 | 99 | 390 |
| 130713 | 131103 | - | 4 | 23428306 | 23428695 | + | 382 | 0 | 99 | 390 |
| 84416 | 84590 | + | 4 | 23428703 | 23428876 | + | 162 | 0 | 98 | 174 |
| 130531 | 130705 | - | 4 | 23428703 | 23428876 | + | 162 | 0 | 98 | 174 |
| 84894 | 87235 | + | 4 | 23428876 | 23431215 | + | 2247 | 0 | 99 | 2343 |
| 127886 | 130227 | - | 4 | 23428876 | 23431215 | + | 2247 | 0 | 99 | 2343 |
| 129822 | 129873 | + | 4 | 23429230 | 23429280 | + | 19 | 0 | 84 | 55 |
| 128784 | 128814 | + | 4 | 23430289 | 23430318 | + | 26 | 0 | 97 | 30 |
| 87230 | 87396 | + | 4 | 23434362 | 23434527 | + | 166 | 0 | 100 | 166 |
| 127725 | 127891 | - | 4 | 23434362 | 23434527 | + | 166 | 0 | 100 | 166 |
| 80615 | 80903 | + | 4 | 23435022 | 23435309 | + | 284 | 0 | 100 | 288 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 134218 | 134506 | - | 4 | 23435022 | 23435309 | + | 284 | 0 | 100 | 288 |
| 80912 | 83865 | + | 4 | 23435319 | 23438270 | + | 2857 | 0 | 99 | 2953 |
| 131256 | 134209 | - | 4 | 23435319 | 23438270 | + | 2857 | 0 | 99 | 2953 |
| 55866 | 55957 | - | 4 | 23437082 | 23437172 | + | 83 | 0 | 98 | 91 |
| 55807 | 55866 | - | 4 | 23437308 | 23437367 | + | 48 | 0 | 95 | 60 |
| 97037 | 97554 | - | 4 | 23438276 | 23438794 | + | 492 | 0 | 99 | 520 |
| 117567 | 118084 | + | 4 | 23438276 | 23438794 | + | 492 | 0 | 99 | 520 |
| 109030 | 109355 | - | 4 | 23438792 | 23439116 | + | 309 | 0 | 99 | 325 |
| 108480 | 108500 | - | 4 | 23439127 | 23439146 | + | 20 | 0 | 100 | 20 |
| 50002 | 50308 | + | 4 | 23441149 | 23441454 | + | 282 | 3.50E-155 | 98 | 306 |
| 133017 | 133034 | + | 4 | 23441462 | 23441478 | + | 17 | 0 | 100 | 17 |
| 115534 | 115551 | + | 4 | 23486430 | 23486446 | + | 17 | 0 | 100 | 17 |
| 105843 | 105859 | - | 4 | 23490127 | 23490142 | + | 16 | 0 | 100 | 16 |
| 2976 | 3387 | + | 4 | 23767741 | 23768152 | + | 217 | 1.90E-116 | 88 | 417 |
| 34799 | 34846 | + | 4 | 23955485 | 23955532 | + | 36 | 1.40E-07 | 94 | 48 |
| 22709 | 22818 | + | 4 | 24933513 | 24933622 | + | 94 | 7.20E-41 | 96 | 110 |
| 95665 | 95772 | - | 4 | 24977082 | 24977188 | + | 83 | 1.30E-36 | 94 | 107 |
| 30981 | 31182 | - | 4 | 25228436 | 25228639 | + | 129 | 3.40E-60 | 91 | 205 |
| 87397 | 87481 | + | 4 | 25448083 | 25448166 | + | 68 | 7.40E-90 | 95 | 84 |
| 87476 | 87559 | + | 4 | 25448168 | 25448249 | + | 71 | 7.40E-90 | 96 | 83 |
| 96770 | 96868 | + | 4 | 25469247 | 25469345 | + | 71 | 7.40E-90 | 93 | 99 |
| 3145 | 3225 | + | 4 | 25727295 | 25727374 | + | 33 | 0.0011 | 85 | 81 |
| 64575 | 64698 | - | 4 | 25816945 | 25817067 | + | 69 | 1.20E-74 | 89 | 125 |
| 64396 | 64540 | - | 4 | 25817100 | 25817247 | + | 97 | 1.20E-74 | 91 | 149 |
| 86761 | 86818 | - | 4 | 25874144 | 25874199 | + | 53 | 1.00E-18 | 98 | 57 |
| 48211 | 48325 | + | 4 | 25973650 | 25973766 | + | 57 | 8.60E-45 | 87 | 117 |
| 48345 | 48461 | + | 4 | 25973765 | 25973884 | + | 65 | 8.60E-45 | 88 | 121 |
| 23945 | 24332 | + | 4 | 27133310 | 27133697 | + | 388 | 2.80E-213 | 100 | 388 |
| 57195 | 57470 | - | 4 | 27212156 | 27212428 | + | 136 | 3.50E-68 | 87 | 280 |
| 99566 | 99621 | + | 4 | 30094839 | 30094893 | + | 55 | 6.40E-20 | 100 | 55 |
| 32069 | 32202 | - | 4 | 32431757 | 32431890 | + | 122 | 4.60E-57 | 98 | 134 |
| 116163 | 116181 | + | 4 | 32660453 | 32660470 | + | 18 | 1.50E-98 | 100 | 18 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 122359 | 122392 | + | 4 | 32679766 | 32679798 | + | 29 | 1.50E-98 | 97 | 33 |
| 122462 | 122536 | + | 4 | 32679915 | 32679987 | + | 32 | 1.50E-98 | 86 | 76 |
| 122632 | 122701 | + | 4 | 32680083 | 32680151 | + | 25 | 1.50E-98 | 84 | 69 |
| 122754 | 122817 | + | 4 | 32680276 | 32680338 | + | 20 | 1.50E-98 | 83 | 64 |
| 100865 | 100881 | + | 4 | 32706344 | 32706359 | + | 16 | 5.70E-71 | 100 | 16 |
| 92127 | 92231 | - | 4 | 32708170 | 32708273 | + | 69 | 8.20E-50 | 91 | 105 |
| 122890 | 122994 | + | 4 | 32708170 | 32708273 | + | 69 | 1.50E-98 | 91 | 105 |
| 123337 | 123383 | + | 4 | 32708614 | 32708659 | + | 30 | 1.50E-98 | 91 | 46 |
| 91571 | 91657 | - | 4 | 32708743 | 32708828 | + | 55 | 8.20E-50 | 91 | 87 |
| 123464 | 123550 | + | 4 | 32708743 | 32708828 | + | 55 | 1.50E-98 | 91 | 87 |
| 123712 | 123737 | + | 4 | 32708959 | 32708983 | + | 21 | 1.50E-98 | 96 | 25 |
| 123752 | 123812 | + | 4 | 32709121 | 32709180 | + | 32 | 1.50E-98 | 88 | 60 |
| 130887 | 130911 | + | 4 | 32709663 | 32709686 | + | 20 | 1.50E-98 | 96 | 24 |
| 83363 | 83447 | - | 4 | 33423539 | 33423624 | + | 50 | 6.10E-17 | 90 | 86 |
| 26727 | 26921 | - | 4 | 33865742 | 33865935 | + | 179 | 1.70E-89 | 98 | 195 |
| 26640 | 26720 | - | 4 | 33865742 | 33865821 | + | 37 | 1.40E-07 | 86 | 81 |
| 26704 | 26814 | - | 4 | 33865806 | 33865916 | + | 47 | 8.30E-15 | 86 | 111 |
| 90626 | 90707 | + | 4 | 34658405 | 34658487 | + | 63 | 1.10E-24 | 94 | 83 |
| 37874 | 41364 | + | 5 | 373694 | 377184 | + | 3445 | 0 | 100 | 3493 |
| 41374 | 41491 | + | 5 | 377194 | 377311 | + | 118 | 0 | 100 | 118 |
| 126 | 244 | + | 5 | 399718 | 399835 | + | 60 | 5.20E-22 | 88 | 120 |
| 25374 | 25507 | + | 5 | 690791 | 690925 | + | 99 | 1.90E-42 | 93 | 135 |
| 90010 | 92601 | - | 5 | 893209 | 895798 | + | 2522 | 0 | 99 | 2594 |
| 122520 | 125111 | + | 5 | 893209 | 895798 | + | 2522 | 0 | 99 | 2594 |
| 126860 | 126880 | + | 5 | 945689 | 945707 | + | 16 | 0 | 95 | 20 |
| 128059 | 128075 | + | 5 | 966014 | 966029 | + | 16 | 0 | 100 | 16 |
| 87913 | 88072 | - | 5 | 1226367 | 1226521 | + | 72 | 4.80E-30 | 86 | 160 |
| 43189 | 43322 | + | 5 | 2026985 | 2027119 | + | 65 | 7.90E-24 | 87 | 137 |
| 22955 | 22995 | - | 5 | 2311547 | 2311586 | + | 29 | 5.00E-05 | 93 | 41 |
| 81472 | 81599 | + | 5 | 2418512 | 2418638 | + | 83 | 1.40E-51 | 91 | 127 |
| 3575 | 3631 | - | 5 | 2501013 | 2501069 | + | 53 | 2.40E-16 | 98 | 57 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|-------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 83505 | 83796 | + | 5 | 2902492 | 2902783 | + | 171 | 4.80E-89 | 89 | 295 |
| 77363 | 77564 | - | 5 | 3074369 | 3074569 | + | 201 | 6.50E-107 | 100 | 201 |
| 77268 | 77548 | + | 5 | 3147467 | 3147743 | + | 148 | 2.40E-101 | 88 | 280 |
| 77557 | 77652 | + | 5 | 3147742 | 3147839 | + | 63 | 2.40E-101 | 91 | 99 |
| 88980 | 89045 | + | 5 | 3204084 | 3204148 | + | 49 | 2.40E-16 | 94 | 65 |
| 97612 | 97799 | + | 5 | 3647445 | 3647632 | + | 117 | 7.30E-57 | 90 | 189 |
| 46739 | 46825 | - | 5 | 4775308 | 4775394 | + | 55 | 6.50E-19 | 91 | 87 |
| 82341 | 82438 | + | 5 | 4826279 | 4826375 | + | 81 | 2.00E-35 | 96 | 97 |
| 29363 | 29495 | + | 5 | 5004167 | 5004298 | + | 102 | 1.80E-49 | 94 | 134 |
| 13369 | 13426 | + | 5 | 5632970 | 5633029 | + | 41 | 8.60E-10 | 92 | 61 |
| 13369 | 13426 | + | 5 | 5649492 | 5649551 | + | 41 | 8.60E-10 | 92 | 61 |
| 87926 | 87994 | - | 5 | 6649504 | 6649571 | + | 68 | 1.10E-27 | 100 | 68 |
| 24295 | 24347 | + | 5 | 7973921 | 7973973 | + | 37 | 3.30E-07 | 92 | 53 |
| 24320 | 24402 | + | 5 | 7973976 | 7974058 | + | 44 | 9.80E-11 | 88 | 84 |
| 89475 | 89653 | + | 5 | 8014205 | 8014385 | + | 149 | 6.20E-76 | 96 | 181 |
| 8345 | 8513 | + | 5 | 8658835 | 8659002 | + | 75 | 5.40E-33 | 86 | 171 |
| 17707 | 17739 | - | 5 | 9043006 | 9043038 | + | 33 | 4.40E-07 | 100 | 33 |
| 85048 | 85119 | + | 5 | 9141950 | 9142020 | + | 71 | 1.90E-29 | 100 | 71 |
| 57800 | 57861 | - | 5 | 10706588 | 10706648 | + | 49 | 2.40E-16 | 95 | 61 |
| 23871 | 23924 | + | 5 | 10718137 | 10718190 | + | 42 | 9.60E-196 | 94 | 54 |
| 23937 | 24425 | + | 5 | 10727034 | 10727520 | + | 327 | 9.60E-196 | 92 | 495 |
| 29611 | 29686 | + | 5 | 11532509 | 11532584 | + | 48 | 1.70E-24 | 91 | 76 |
| 29739 | 29780 | + | 5 | 11532607 | 11532648 | + | 34 | 1.70E-24 | 95 | 42 |
| 37425 | 37543 | - | 5 | 12714692 | 12714810 | + | 119 | 2.00E-54 | 100 | 119 |
| 28148 | 29137 | + | 5 | 12777716 | 12778704 | + | 962 | 0 | 99 | 990 |
| 29149 | 29503 | + | 5 | 12778715 | 12779069 | + | 347 | 0 | 99 | 355 |
| 29541 | 29593 | + | 5 | 12779107 | 12779159 | + | 53 | 0 | 100 | 53 |
| 18973 | 20614 | + | 5 | 12779157 | 12780798 | + | 1606 | 0 | 99 | 1642 |
| 9562 | 11432 | + | 5 | 12799391 | 12801262 | + | 1828 | 0 | 99 | 1872 |
| 11487 | 12066 | + | 5 | 12801317 | 12801896 | + | 576 | 0 | 100 | 580 |
| 21083 | 23944 | + | 5 | 12801914 | 12804779 | + | 2806 | 0 | 99 | 2866 |
| 74628 | 75875 | + | 5 | 12808945 | 12810191 | + | 1239 | 0 | 100 | 1247 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 75987 | 76222 | + | 5 | 12810304 | 12810538 | + | 235 | 0 | 100 | 235 |
| 76238 | 76511 | + | 5 | 12810555 | 12810827 | + | 273 | 0 | 100 | 273 |
| 76597 | 77696 | + | 5 | 12810914 | 12812013 | + | 1096 | 0 | 100 | 1100 |
| 77724 | 78413 | + | 5 | 12812042 | 12812729 | + | 678 | 0 | 100 | 690 |
| 78449 | 78968 | + | 5 | 12812761 | 12813280 | + | 516 | 0 | 100 | 520 |
| 78977 | 79140 | + | 5 | 12813290 | 12813452 | + | 163 | 0 | 100 | 163 |
| 79177 | 79509 | + | 5 | 12813490 | 12813821 | + | 328 | 0 | 100 | 332 |
| 79567 | 79856 | + | 5 | 12813880 | 12814168 | + | 289 | 0 | 100 | 289 |
| 120949 | 120965 | + | 5 | 12864309 | 12864324 | + | 16 | 0 | 100 | 16 |
| 95611 | 96398 | - | 5 | 12880327 | 12881115 | + | 741 | 0 | 98 | 789 |
| 118723 | 119510 | + | 5 | 12880327 | 12881115 | + | 741 | 0 | 98 | 789 |
| 93382 | 95620 | - | 5 | 12881359 | 12883595 | + | 2174 | 0 | 99 | 2238 |
| 119501 | 121739 | + | 5 | 12881359 | 12883595 | + | 2174 | 0 | 99 | 2238 |
| 93007 | 93374 | - | 5 | 12883608 | 12883974 | + | 351 | 0 | 99 | 367 |
| 121747 | 122114 | + | 5 | 12883608 | 12883974 | + | 351 | 0 | 99 | 367 |
| 91409 | 92998 | - | 5 | 12883983 | 12885571 | + | 1553 | 0 | 99 | 1589 |
| 122123 | 123712 | + | 5 | 12883983 | 12885571 | + | 1553 | 0 | 99 | 1589 |
| 89669 | 91414 | - | 5 | 12896978 | 12898724 | + | 1693 | 0 | 99 | 1749 |
| 123707 | 125418 | + | 5 | 12896978 | 12898690 | + | 1659 | 0 | 99 | 1715 |
| 89511 | 89659 | - | 5 | 12898734 | 12898881 | + | 148 | 0 | 100 | 148 |
| 125462 | 125610 | + | 5 | 12898734 | 12898881 | + | 148 | 0 | 100 | 148 |
| 84416 | 87719 | - | 5 | 12904274 | 12907570 | + | 3222 | 0 | 99 | 3306 |
| 127402 | 130705 | + | 5 | 12904274 | 12907570 | + | 3222 | 0 | 99 | 3306 |
| 84256 | 84408 | - | 5 | 12907579 | 12907730 | + | 148 | 0 | 99 | 152 |
| 130713 | 130865 | + | 5 | 12907579 | 12907730 | + | 148 | 0 | 99 | 152 |
| 83874 | 84256 | - | 5 | 12907731 | 12908112 | + | 374 | 5.30E-210 | 99 | 382 |
| 130865 | 131247 | + | 5 | 12907731 | 12908112 | + | 374 | 3.70E-210 | 99 | 382 |
| 16294 | 16360 | - | 5 | 13770137 | 13770203 | + | 67 | 2.00E-22 | 100 | 67 |
| 4783 | 4967 | + | 5 | 14267510 | 14267699 | + | 88 | 6.30E-39 | 86 | 192 |
| 93094 | 93326 | - | 5 | 14419739 | 14419969 | + | 196 | 6.90E-182 | 96 | 232 |
| 121795 | 122027 | + | 5 | 14419739 | 14419969 | + | 196 | 1.30E-179 | 96 | 232 |
| 93007 | 93073 | - | 5 | 14419977 | 14420042 | + | 58 | 6.90E-182 | 97 | 66 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 122048 | 122114 | + | 5 | 14419977 | 14420042 | + | 58 | 1.30E-179 | 97 | 66 |
| 92879 | 92998 | - | 5 | 14420056 | 14420174 | + | 111 | 6.90E-182 | 98 | 119 |
| 122123 | 122242 | + | 5 | 14420056 | 14420174 | + | 111 | 1.30E-179 | 98 | 119 |
| 9114 | 9181 | - | 5 | 14910514 | 14910581 | + | 45 | 4.00E-11 | 91 | 69 |
| 47116 | 47170 | + | 5 | 15612100 | 15612154 | + | 31 | 3.00E-05 | 89 | 55 |
| 47116 | 47170 | - | 5 | 15658726 | 15658780 | + | 31 | 4.30E-06 | 89 | 55 |
| 99935 | 100000 | + | 5 | 16251783 | 16251847 | + | 54 | 2.50E-19 | 95 | 66 |
| 20271 | 20328 | - | 5 | 16325842 | 16325899 | + | 30 | 0.0013 | 88 | 58 |
| 40895 | 40930 | + | 5 | 16681606 | 16681641 | + | 32 | 7.40E-05 | 97 | 36 |
| 103221 | 103423 | - | 5 | 17357581 | 17357784 | + | 164 | 3.10E-109 | 95 | 204 |
| 103090 | 103186 | - | 5 | 17357803 | 17357900 | + | 63 | 3.10E-109 | 91 | 99 |
| 21159 | 21263 | - | 5 | 18340918 | 18341022 | + | 101 | 1.50E-42 | 99 | 105 |
| 26919 | 26963 | + | 5 | 18927895 | 18927939 | + | 41 | 5.10E-09 | 98 | 45 |
| 16618 | 16670 | + | 5 | 19217404 | 19217456 | + | 53 | 1.40E-26 | 100 | 53 |
| 16679 | 16712 | + | 5 | 19217465 | 19217498 | + | 34 | 1.40E-26 | 100 | 34 |
| 58138 | 58215 | - | 5 | 19322694 | 19322770 | + | 77 | 5.00E-33 | 100 | 77 |
| 68043 | 68134 | + | 5 | 19323136 | 19323226 | + | 83 | 9.30E-66 | 98 | 91 |
| 91589 | 91661 | + | 5 | 19323227 | 19323298 | + | 68 | 9.30E-66 | 99 | 72 |
| 79177 | 79559 | - | 5 | 19604575 | 19604955 | + | 350 | 0 | 98 | 382 |
| 78977 | 79140 | - | 5 | 19604990 | 19605152 | + | 159 | 0 | 99 | 163 |
| 78449 | 78968 | - | 5 | 19605160 | 19605679 | + | 485 | 0 | 98 | 521 |
| 77725 | 78413 | - | 5 | 19605707 | 19606393 | + | 638 | 0 | 98 | 690 |
| 76685 | 77697 | - | 5 | 19606423 | 19607435 | + | 943 | 0 | 98 | 1015 |
| 76632 | 76684 | - | 5 | 19607416 | 19607467 | + | 52 | 0 | 100 | 52 |
| 76238 | 76528 | - | 5 | 19607570 | 19607859 | + | 274 | 0 | 99 | 290 |
| 76134 | 76220 | - | 5 | 19607877 | 19607962 | + | 86 | 0 | 100 | 86 |
| 66890 | 66951 | + | 5 | 19811678 | 19811738 | + | 57 | 4.10E-21 | 98 | 61 |
| 32457 | 32521 | - | 5 | 20186279 | 20186342 | + | 41 | 1.30E-13 | 91 | 65 |
| 65700 | 65771 | - | 5 | 20291370 | 20291440 | + | 55 | 6.40E-20 | 94 | 71 |
| 51954 | 53330 | + | 5 | 20888563 | 20889937 | + | 1340 | 0 | 99 | 1376 |
| 53424 | 53871 | + | 5 | 20890032 | 20890478 | + | 405 | 0 | 98 | 449 |
| 53859 | 53919 | + | 5 | 20890481 | 20890539 | + | 56 | 0 | 98 | 60 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 53918 | 53993 | + | 5 | 20890521 | 20890594 | + | 67 | 0 | 97 | 75 |
| 54010 | 55047 | + | 5 | 20890613 | 20891646 | + | 989 | 0 | 99 | 1037 |
| 101412 | 101442 | + | 5 | 20891646 | 20891675 | + | 22 | 8.90E-121 | 93 | 30 |
| 101494 | 101690 | + | 5 | 20891728 | 20891923 | + | 180 | 8.90E-121 | 98 | 196 |
| 101702 | 101770 | + | 5 | 20891935 | 20892003 | + | 65 | 8.90E-121 | 99 | 69 |
| 111750 | 111770 | + | 5 | 20894370 | 20894388 | + | 16 | 8.90E-121 | 95 | 20 |
| 37070 | 37147 | + | 5 | 23127261 | 23127336 | + | 44 | 7.40E-21 | 89 | 80 |
| 37211 | 37292 | + | 5 | 23127532 | 23127612 | + | 31 | 7.40E-21 | 84 | 83 |
| 4357 | 4402 | - | 5 | 24271033 | 24271078 | + | 46 | 2.70E-19 | 100 | 46 |
| 4291 | 4318 | - | 5 | 24271119 | 24271146 | + | 28 | 2.70E-19 | 100 | 28 |
| 46888 | 47167 | - | 5 | 24302925 | 24303200 | + | 105 | 4.40E-45 | 84 | 285 |
| 86559 | 86634 | + | 5 | 25302499 | 25302573 | + | 56 | 1.60E-20 | 93 | 76 |
| 23792 | 23835 | + | 5 | 25375096 | 25375139 | + | 40 | 8.20E-09 | 98 | 44 |
| 20732 | 20812 | + | 5 | 29188744 | 29188824 | + | 73 | 4.10E-27 | 98 | 81 |
| 74282 | 74547 | - | 5 | 29363534 | 29363798 | + | 253 | 4.00E-141 | 99 | 265 |
| 76597 | 76688 | + | 5 | 29435279 | 29435368 | + | 79 | 3.20E-34 | 97 | 91 |
| 48055 | 49273 | - | 6 | 12745719 | 12746936 | + | 1155 | 0 | 99 | 1219 |
| 49511 | 50000 | - | 6 | 12744988 | 12745480 | + | 469 | 0 | 99 | 493 |
| 8623 | 8820 | + | 6 | 449621 | 449819 | + | 187 | 2.10E-94 | 98 | 199 |
| 51009 | 52540 | + | 6 | 1094075 | 1095606 | + | 1473 | 0 | 99 | 1533 |
| 52534 | 52692 | + | 6 | 1106818 | 1106975 | + | 146 | 0 | 98 | 158 |
| 52683 | 52749 | + | 6 | 1107048 | 1107112 | + | 58 | 0 | 97 | 66 |
| 14442 | 14486 | - | 6 | 1556081 | 1556125 | + | 29 | 0.0053 | 91 | 45 |
| 10669 | 10763 | + | 6 | 2099314 | 2099405 | - | 51 | 7.70E-22 | 88 | 95 |
| 7989 | 8058 | - | 6 | 2544487 | 2544551 | + | 42 | 1.00E-09 | 90 | 70 |
| 91275 | 91373 | - | 6 | 2577794 | 2577891 | + | 50 | 6.10E-17 | 88 | 98 |
| 36756 | 36808 | + | 6 | 3782402 | 3782454 | + | 53 | 1.20E-14 | 100 | 53 |
| 7592 | 7780 | - | 6 | 4004983 | 4005171 | + | 177 | 6.60E-298 | 98 | 189 |
| 7531 | 7582 | - | 6 | 4005180 | 4005231 | + | 44 | 6.60E-298 | 96 | 52 |
| 7513 | 7541 | - | 6 | 4005231 | 4005259 | + | 29 | 5.10E-289 | 100 | 29 |
| 7126 | 7481 | - | 6 | 4005291 | 4005644 | + | 332 | 6.60E-298 | 98 | 356 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 34304 | 34378 | - | 6 | 4693313 | 4693387 | + | 55 | 5.90E-18 | 93 | 75 |
| 32344 | 32557 | - | 6 | 5858043 | 5858261 | + | 103 | 1.50E-65 | 87 | 223 |
| 32255 | 32347 | - | 6 | 5858265 | 5858354 | + | 53 | 1.50E-65 | 89 | 93 |
| 44546 | 44587 | - | 6 | 5985042 | 5985083 | + | 34 | 7.30E-06 | 95 | 42 |
| 81967 | 82058 | + | 6 | 6626166 | 6626256 | + | 83 | 1.30E-36 | 98 | 91 |
| 7306 | 7482 | - | 6 | 6686912 | 6687088 | + | 157 | 2.20E-79 | 97 | 177 |
| 84697 | 84845 | + | 6 | 7000748 | 7000898 | + | 128 | 2.00E-63 | 96 | 152 |
| 130276 | 130424 | - | 6 | 7000748 | 7000898 | + | 128 | 1.80E-60 | 96 | 152 |
| 84843 | 85153 | + | 6 | 7000843 | 7001157 | + | 275 | 5.20E-151 | 97 | 315 |
| 129968 | 130278 | - | 6 | 7000843 | 7001157 | + | 275 | 2.40E-147 | 97 | 315 |
| 116092 | 116108 | - | 6 | 7027358 | 7027373 | + | 16 | 2.40E-147 | 100 | 16 |
| 19419 | 19680 | + | 6 | 7433476 | 7433736 | + | 176 | 1.40E-93 | 92 | 264 |
| 9033 | 9145 | - | 6 | 8287312 | 8287424 | + | 58 | 4.70E-20 | 88 | 114 |
| 59879 | 60031 | + | 6 | 8884496 | 8884647 | + | 140 | 5.50E-80 | 98 | 152 |
| 48748 | 48868 | - | 6 | 9347185 | 9347305 | + | 101 | 1.10E-118 | 96 | 121 |
| 23841 | 23932 | - | 6 | 9347936 | 9348027 | + | 88 | 1.10E-118 | 99 | 92 |
| 88270 | 88360 | - | 6 | 9349785 | 9349874 | + | 86 | 2.20E-38 | 99 | 90 |
| 19955 | 20059 | + | 6 | 9349872 | 9349976 | + | 101 | 2.40E-54 | 99 | 105 |
| 20624 | 20692 | - | 6 | 9351068 | 9351136 | + | 69 | 1.10E-118 | 100 | 69 |
| 251 | 388 | + | 6 | 9351164 | 9351301 | + | 134 | 7.10E-75 | 99 | 138 |
| 32064 | 32136 | + | 6 | 9374779 | 9374850 | + | 37 | 7.10E-75 | 88 | 73 |
| 32981 | 33364 | + | 6 | 9744242 | 9744626 | + | 353 | 3.20E-211 | 98 | 385 |
| 33399 | 33452 | + | 6 | 9744661 | 9744714 | + | 50 | 3.20E-211 | 98 | 54 |
| 49190 | 49224 | - | 6 | 9932376 | 9932410 | + | 31 | 6.80E-05 | 97 | 35 |
| 29065 | 29130 | + | 6 | 10415113 | 10415178 | + | 58 | 3.80E-18 | 97 | 66 |
| 45987 | 46089 | + | 6 | 11346632 | 11346734 | + | 99 | 6.00E-43 | 99 | 103 |
| 47455 | 47839 | - | 6 | 11779681 | 11780065 | + | 340 | 1.00E-184 | 97 | 388 |
| 50474 | 51272 | - | 6 | 12743717 | 12744512 | + | 744 | 0 | 98 | 800 |
| 50002 | 50466 | - | 6 | 12744521 | 12744987 | + | 419 | 0 | 97 | 467 |
| 49286 | 49502 | - | 6 | 12745493 | 12745710 | + | 214 | 0 | 100 | 218 |
| 43305 | 43342 | - | 6 | 13364417 | 13364454 | + | 38 | 8.90E-40 | 100 | 38 |
| 43199 | 43295 | - | 6 | 13364454 | 13364550 | + | 73 | 8.90E-40 | 94 | 97 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 94004 | 94195 | - | 6 | 13409448 | 13409637 | + | 147 | 9.70E-75 | 94 | 191 |
| 23757 | 24190 | - | 6 | 13473367 | 13473800 | + | 291 | 2.80E-156 | 92 | 435 |
| 3091 | 3148 | - | 6 | 13651869 | 13651926 | + | 42 | 3.50E-11 | 93 | 58 |
| 3406 | 3455 | + | 6 | 13912720 | 13912769 | + | 46 | 1.40E-11 | 98 | 50 |
| 52676 | 52730 | + | 6 | 14005159 | 14005212 | + | 50 | 6.10E-17 | 98 | 54 |
| 119703 | 119719 | - | 6 | 14502692 | 14502707 | + | 16 | 2.00E-63 | 100 | 16 |
| 103800 | 103821 | - | 6 | 14508741 | 14508760 | + | 17 | 6.60E-12 | 95 | 21 |
| 129764 | 129780 | - | 6 | 14527368 | 14527383 | + | 16 | 2.00E-63 | 100 | 16 |
| 109430 | 109446 | - | 6 | 14543230 | 14543245 | + | 16 | 2.00E-63 | 100 | 16 |
| 23445 | 23512 | + | 6 | 14544412 | 14544478 | + | 60 | 1.70E-21 | 97 | 68 |
| 89222 | 89298 | - | 6 | 14544505 | 14544580 | + | 64 | 1.10E-87 | 96 | 76 |
| 125823 | 125899 | + | 6 | 14544505 | 14544580 | + | 64 | 8.90E-91 | 96 | 76 |
| 69112 | 69206 | - | 6 | 14544580 | 14544673 | + | 82 | 8.90E-63 | 97 | 94 |
| 84641 | 84758 | + | 6 | 14544816 | 14544932 | + | 98 | 1.50E-45 | 96 | 118 |
| 130363 | 130480 | - | 6 | 14544816 | 14544932 | + | 98 | 5.60E-112 | 96 | 118 |
| 107502 | 107633 | - | 6 | 14544930 | 14545060 | + | 107 | 5.60E-112 | 95 | 131 |
| 101728 | 101781 | - | 6 | 14547704 | 14547759 | + | 44 | 5.60E-112 | 95 | 56 |
| 3163 | 3233 | + | 6 | 14547935 | 14548005 | + | 59 | 7.40E-73 | 96 | 71 |
| 3223 | 3357 | + | 6 | 14548001 | 14548136 | + | 104 | 7.40E-73 | 94 | 136 |
| 112125 | 112221 | - | 6 | 14548135 | 14548230 | + | 92 | 2.10E-87 | 99 | 96 |
| 87440 | 87584 | - | 6 | 14548233 | 14548376 | + | 124 | 1.10E-87 | 97 | 144 |
| 127537 | 127681 | + | 6 | 14548233 | 14548376 | + | 124 | 8.90E-91 | 97 | 144 |
| 127674 | 127703 | + | 6 | 14548379 | 14548407 | + | 25 | 8.90E-91 | 97 | 29 |
| 114974 | 115179 | + | 6 | 15795565 | 15795770 | + | 198 | 1.50E-99 | 99 | 206 |
| 100002 | 100147 | - | 6 | 15795565 | 15795710 | + | 138 | 3.20E-67 | 99 | 146 |
| 99942 | 100002 | - | 6 | 15795711 | 15795770 | + | 60 | 6.70E-23 | 100 | 60 |
| 43980 | 44066 | + | 6 | 15866884 | 15866968 | + | 32 | 1.00E-05 | 84 | 88 |
| 76406 | 76511 | + | 6 | 16374233 | 16374337 | + | 105 | 1.00E-49 | 100 | 105 |
| 8123 | 8187 | - | 6 | 16966360 | 16966425 | + | 39 | 7.70E-07 | 90 | 67 |
| 39620 | 39661 | - | 6 | 17148991 | 17149032 | + | 42 | 1.20E-09 | 100 | 42 |
| 94016 | 94132 | + | 6 | 17970176 | 17970291 | + | 100 | 9.80E-47 | 97 | 116 |
| 105755 | 105772 | + | 6 | 18804007 | 18804023 | + | 17 | 0 | 100 | 17 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 104578 | 104596 | + | 6 | 18817200 | 18817217 | + | 18 | 0 | 100 | 18 |
| 114348 | 114363 | + | 6 | 18830224 | 18830238 | + | 15 | 0 | 100 | 15 |
| 105516 | 105532 | + | 6 | 18862690 | 18862705 | + | 16 | 0 | 100 | 16 |
| 108812 | 108827 | + | 6 | 18887544 | 18887558 | + | 15 | 0 | 100 | 15 |
| 109979 | 109994 | + | 6 | 18892339 | 18892353 | + | 15 | 0 | 100 | 15 |
| 108812 | 108827 | + | 6 | 18896521 | 18896535 | + | 15 | 0 | 100 | 15 |
| 122073 | 122088 | + | 6 | 18902803 | 18902817 | + | 15 | 1.80E-303 | 100 | 15 |
| 112970 | 112985 | + | 6 | 18931083 | 18931097 | + | 15 | 0 | 100 | 15 |
| 93382 | 93530 | - | 6 | 18948589 | 18948736 | + | 132 | 0 | 97 | 148 |
| 121591 | 121739 | + | 6 | 18948589 | 18948736 | + | 132 | 0 | 97 | 148 |
| 120494 | 120510 | + | 6 | 18948589 | 18948604 | + | 16 | 0 | 100 | 16 |
| 93007 | 93374 | - | 6 | 18948749 | 18949113 | + | 327 | 0 | 97 | 367 |
| 121747 | 122114 | + | 6 | 18948749 | 18949113 | + | 327 | 0 | 97 | 367 |
| 92410 | 92998 | - | 6 | 18949134 | 18949721 | + | 544 | 0 | 98 | 588 |
| 122123 | 122711 | + | 6 | 18949134 | 18949721 | + | 544 | 0 | 98 | 588 |
| 70466 | 70549 | - | 6 | 19860654 | 19860736 | + | 67 | 5.30E-115 | 95 | 83 |
| 70262 | 70467 | - | 6 | 19862541 | 19862745 | + | 167 | 5.30E-115 | 95 | 207 |
| 44980 | 45024 | - | 6 | 20401682 | 20401727 | + | 30 | 4.40E-06 | 91 | 46 |
| 83335 | 83426 | - | 6 | 20505976 | 20506066 | + | 71 | 1.90E-29 | 95 | 91 |
| 98615 | 98768 | - | 6 | 20890028 | 20890180 | + | 103 | 1.60E-48 | 92 | 155 |
| 4062 | 4316 | + | 6 | 21245255 | 21245510 | + | 221 | 7.10E-153 | 97 | 257 |
| 4353 | 4435 | + | 6 | 21245547 | 21245629 | + | 83 | 7.10E-153 | 100 | 83 |
| 86352 | 86412 | + | 6 | 21306320 | 21306379 | + | 52 | 3.90E-18 | 97 | 60 |
| 126671 | 126732 | + | 6 | 21595592 | 21595652 | + | 41 | 2.60E-102 | 92 | 61 |
| 126716 | 126772 | + | 6 | 21596073 | 21596125 | + | 36 | 3.20E-98 | 91 | 56 |
| 88095 | 88352 | - | 6 | 21596408 | 21596663 | + | 173 | 5.20E-103 | 92 | 257 |
| 126769 | 127026 | + | 6 | 21596408 | 21596663 | + | 173 | 2.60E-102 | 92 | 257 |
| 127126 | 127142 | + | 6 | 21596678 | 21596693 | + | 16 | 2.20E-99 | 100 | 16 |
| 127123 | 127142 | + | 6 | 21596756 | 21596774 | + | 19 | 2.60E-102 | 100 | 19 |
| 8220 | 8415 | - | 6 | 22087267 | 22087463 | + | 181 | 5.00E-91 | 98 | 197 |
| 19363 | 19419 | - | 6 | 22893287 | 22893344 | + | 35 | 2.50E-06 | 90 | 59 |
| 38560 | 38611 | - | 6 | 23197497 | 23197548 | + | 40 | 4.90E-12 | 94 | 52 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|-------|-----|-----------------|----------|----------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 49919 | 50000 | - | 6 | 23547959 | 23548040 | + | 82 | 1.90E-34 | 100 | 82 |
| 79177 | 79404 | - | 6 | 23562362 | 23562588 | + | 227 | 0 | 100 | 227 |
| 78977 | 79140 | - | 6 | 23562623 | 23562785 | + | 159 | 0 | 99 | 163 |
| 78449 | 78968 | - | 6 | 23562793 | 23563312 | + | 500 | 0 | 99 | 520 |
| 77725 | 78413 | - | 6 | 23563340 | 23564020 | + | 649 | 0 | 99 | 689 |
| 76632 | 77697 | - | 6 | 23564049 | 23565114 | + | 1038 | 0 | 99 | 1066 |
| 76238 | 76528 | - | 6 | 23565215 | 23565504 | + | 278 | 0 | 99 | 290 |
| 75987 | 76222 | - | 6 | 23565520 | 23565754 | + | 231 | 0 | 100 | 235 |
| 75888 | 75970 | - | 6 | 23565771 | 23565852 | + | 82 | 0 | 100 | 82 |
| 74585 | 75875 | - | 6 | 23565866 | 23567155 | + | 1246 | 0 | 99 | 1290 |
| 74282 | 74549 | - | 6 | 23567192 | 23567458 | + | 263 | 0 | 100 | 267 |
| 72078 | 74265 | - | 6 | 23567476 | 23569663 | + | 2131 | 0 | 99 | 2191 |
| 71786 | 72099 | - | 6 | 23569664 | 23569978 | + | 292 | 0 | 98 | 316 |
| 71469 | 71750 | - | 6 | 23570015 | 23570295 | + | 281 | 0 | 100 | 281 |
| 69541 | 71371 | - | 6 | 23570394 | 23572223 | + | 1757 | 0 | 99 | 1833 |
| 65618 | 69533 | - | 6 | 23572232 | 23576146 | + | 3806 | 0 | 99 | 3918 |
| 63780 | 65608 | - | 6 | 23576156 | 23577983 | + | 1794 | 0 | 100 | 1830 |
| 63515 | 63772 | - | 6 | 23577992 | 23578249 | + | 250 | 0 | 99 | 258 |
| 63380 | 63507 | - | 6 | 23578257 | 23578383 | + | 127 | 0 | 100 | 127 |
| 63066 | 63371 | - | 6 | 23578384 | 23578688 | + | 301 | 0 | 100 | 305 |
| 61083 | 63058 | - | 6 | 23578697 | 23580671 | + | 1960 | 0 | 100 | 1976 |
| 60680 | 61075 | - | 6 | 23580680 | 23581079 | + | 372 | 0 | 98 | 400 |
| 60039 | 60651 | - | 6 | 23581109 | 23581720 | + | 596 | 0 | 99 | 612 |
| 59161 | 60031 | - | 6 | 23581729 | 23582598 | + | 844 | 0 | 99 | 872 |
| 58693 | 59130 | - | 6 | 23582631 | 23583067 | + | 425 | 0 | 99 | 437 |
| 57883 | 58674 | - | 6 | 23583086 | 23583878 | + | 769 | 0 | 99 | 793 |
| 57062 | 57875 | - | 6 | 23583887 | 23584698 | + | 789 | 0 | 99 | 813 |
| 55612 | 57010 | - | 6 | 23584733 | 23586132 | + | 1364 | 0 | 99 | 1400 |
| 82676 | 82767 | + | 6 | 23585788 | 23585878 | + | 83 | 2.80E-63 | 98 | 91 |
| 82902 | 82962 | + | 6 | 23585879 | 23585937 | + | 48 | 2.80E-63 | 95 | 60 |
| 54010 | 55539 | - | 6 | 23586206 | 23587733 | + | 1513 | 0 | 100 | 1529 |
| 53859 | 53993 | - | 6 | 23587751 | 23587884 | + | 134 | 0 | 100 | 134 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 53431 | 53871 | - | 6 | 23587887 | 23588326 | + | 410 | 0 | 98 | 442 |
| 50474 | 53330 | - | 6 | 23588428 | 23591285 | + | 2786 | 0 | 99 | 2858 |
| 50002 | 50466 | - | 6 | 23591293 | 23591756 | + | 444 | 0 | 99 | 464 |
| 90542 | 90658 | - | 6 | 23687273 | 23687389 | + | 98 | 8.10E-125 | 96 | 118 |
| 124463 | 124579 | + | 6 | 23687273 | 23687389 | + | 98 | 1.10E-158 | 96 | 118 |
| 112776 | 112792 | + | 6 | 23691214 | 23691229 | + | 16 | 3.60E-109 | 100 | 16 |
| 104661 | 104677 | - | 6 | 23699787 | 23699802 | + | 16 | 4.90E-20 | 100 | 16 |
| 101114 | 101184 | - | 6 | 23709799 | 23709868 | + | 58 | 4.90E-20 | 96 | 70 |
| 101090 | 101106 | - | 6 | 23709877 | 23709892 | + | 16 | 4.90E-20 | 100 | 16 |
| 133937 | 134043 | + | 6 | 23713682 | 23713786 | + | 74 | 1.10E-158 | 92 | 106 |
| 80923 | 81072 | - | 6 | 23713780 | 23713930 | + | 107 | 8.10E-125 | 93 | 151 |
| 134049 | 134198 | + | 6 | 23713780 | 23713930 | + | 107 | 1.10E-158 | 93 | 151 |
| 80797 | 80898 | - | 6 | 23713949 | 23714052 | + | 64 | 8.10E-125 | 90 | 104 |
| 134223 | 134324 | + | 6 | 23713949 | 23714052 | + | 64 | 1.10E-158 | 90 | 104 |
| 51620 | 51950 | - | 6 | 24553703 | 24554031 | + | 306 | 1.80E-169 | 98 | 330 |
| 17656 | 17693 | - | 6 | 24793608 | 24793645 | + | 34 | 2.00E-06 | 97 | 38 |
| 38946 | 38995 | - | 6 | 25263254 | 25263303 | + | 38 | 4.20E-08 | 94 | 50 |
| 43757 | 43795 | - | 6 | 25432551 | 25432589 | + | 35 | 1.50E-05 | 97 | 39 |
| 96324 | 96389 | - | 6 | 25682252 | 25682316 | + | 65 | 7.10E-26 | 100 | 65 |
| 48068 | 48207 | - | 6 | 25964004 | 25964147 | + | 97 | 1.20E-133 | 92 | 145 |
| 8160 | 8203 | + | 6 | 25967528 | 25967571 | + | 44 | 3.90E-56 | 100 | 44 |
| 8212 | 8308 | + | 6 | 25967579 | 25967676 | + | 94 | 3.90E-56 | 99 | 98 |
| 21689 | 21872 | - | 6 | 25967673 | 25967854 | + | 172 | 1.20E-133 | 98 | 184 |
| 88609 | 88680 | + | 6 | 26425091 | 26425161 | + | 63 | 1.10E-24 | 97 | 71 |
| 49870 | 49912 | - | 6 | 26925963 | 26926005 | + | 43 | 1.60E-11 | 100 | 43 |
| 84466 | 84550 | - | 6 | 26969846 | 26969929 | + | 80 | 8.10E-35 | 99 | 84 |
| 55397 | 55464 | + | 6 | 27093981 | 27094047 | + | 63 | 1.10E-24 | 99 | 67 |
| 55397 | 55464 | + | 6 | 27094089 | 27094155 | + | 63 | 1.10E-24 | 99 | 67 |
| 90685 | 90779 | + | 6 | 27107101 | 27107191 | + | 54 | 2.50E-19 | 89 | 94 |
| 104272 | 104288 | + | 6 | 28050413 | 28050428 | + | 16 | 0 | 100 | 16 |
| 100865 | 100880 | + | 6 | 28050413 | 28050427 | + | 15 | 0 | 100 | 15 |
| 106858 | 106873 | - | 6 | 28053354 | 28053368 | + | 15 | 6.80E-05 | 100 | 15 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 116391 | 116406 | - | 6 | 28069127 | 28069141 | + | 15 | 1.60E-05 | 100 | 15 |
| 121391 | 121406 | - | 6 | 28075598 | 28075612 | + | 15 | 1.60E-05 | 100 | 15 |
| 111105 | 111120 | - | 6 | 28079405 | 28079419 | + | 15 | 1.60E-05 | 100 | 15 |
| 103748 | 103763 | + | 6 | 28093559 | 28093573 | + | 15 | 0 | 100 | 15 |
| 100865 | 100881 | + | 6 | 28111236 | 28111251 | + | 16 | 0 | 100 | 16 |
| 104272 | 104287 | + | 6 | 28111236 | 28111250 | + | 15 | 0 | 100 | 15 |
| 116391 | 116406 | - | 6 | 28115718 | 28115732 | + | 15 | 1.60E-05 | 100 | 15 |
| 110588 | 110607 | - | 6 | 28149895 | 28149913 | + | 19 | 1.60E-05 | 100 | 19 |
| 104893 | 104908 | + | 6 | 28153401 | 28153415 | + | 15 | 0 | 100 | 15 |
| 122676 | 122691 | - | 6 | 28156078 | 28156092 | + | 15 | 0.0012 | 100 | 15 |
| 116391 | 116406 | - | 6 | 28166928 | 28166942 | + | 15 | 0.0012 | 100 | 15 |
| 116391 | 116406 | - | 6 | 28172125 | 28172139 | + | 15 | 0.0012 | 100 | 15 |
| 104817 | 106389 | + | 6 | 28179111 | 28180682 | + | 1554 | 0 | 100 | 1574 |
| 109988 | 110003 | - | 6 | 28179214 | 28179228 | + | 15 | 1.60E-05 | 100 | 15 |
| 105762 | 105794 | - | 6 | 28180056 | 28180087 | + | 32 | 1.60E-05 | 100 | 32 |
| 106397 | 107431 | + | 6 | 28180691 | 28181724 | + | 1026 | 0 | 100 | 1034 |
| 107439 | 107488 | + | 6 | 28181733 | 28181781 | + | 49 | 0 | 100 | 49 |
| 107496 | 109024 | + | 6 | 28181790 | 28183317 | + | 1520 | 0 | 100 | 1528 |
| 115247 | 115262 | + | 6 | 28191866 | 28191880 | + | 15 | 0 | 100 | 15 |
| 12530 | 12722 | + | 6 | 28216633 | 28216821 | + | 161 | 9.70E-79 | 96 | 193 |
| 24863 | 24981 | - | 6 | 28216824 | 28216942 | + | 111 | 3.30E-81 | 98 | 119 |
| 15911 | 15940 | - | 6 | 28217223 | 28217252 | + | 30 | 3.30E-81 | 100 | 30 |
| 15847 | 15902 | - | 6 | 28217261 | 28217316 | + | 48 | 3.30E-81 | 96 | 56 |
| 86024 | 86135 | + | 6 | 28260321 | 28260431 | + | 107 | 6.60E-51 | 99 | 111 |
| 54688 | 54829 | - | 6 | 28261114 | 28261254 | + | 129 | 5.20E-64 | 98 | 141 |
| 81719 | 81967 | - | 6 | 28330773 | 28331017 | + | 133 | 2.10E-66 | 88 | 249 |
| 70104 | 70225 | - | 6 | 29453426 | 29453545 | + | 71 | 1.90E-29 | 89 | 123 |
| 89774 | 89840 | + | 7 | 1123050 | 1123115 | + | 54 | 2.50E-19 | 95 | 66 |
| 94977 | 95138 | + | 7 | 1761774 | 1761934 | + | 73 | 1.20E-30 | 86 | 161 |
| 20349 | 20423 | + | 7 | 1901688 | 1901762 | + | 51 | 2.00E-12 | 92 | 75 |
| 20400 | 20562 | + | 7 | 1901765 | 1901927 | + | 139 | 8.40E-63 | 96 | 163 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 12865 | 12938 | + | 7 | 3116844 | 3116917 | + | 74 | 3.50E-28 | 100 | 74 |
| 112735 | 112985 | + | 7 | 4009150 | 4009398 | + | 234 | 2.50E-122 | 98 | 250 |
| 55066 | 55167 | + | 7 | 4049235 | 4049333 | + | 54 | 2.50E-19 | 88 | 102 |
| 82017 | 82126 | + | 7 | 4475047 | 4475153 | + | 85 | 8.50E-38 | 95 | 109 |
| 77252 | 77417 | - | 7 | 4475152 | 4475313 | + | 110 | 1.10E-52 | 92 | 166 |
| 64418 | 64523 | + | 7 | 4579506 | 4579609 | + | 101 | 2.50E-47 | 99 | 105 |
| 43503 | 43534 | - | 7 | 4725677 | 4725708 | + | 32 | 1.60E-07 | 100 | 32 |
| 10074 | 10114 | + | 7 | 4797246 | 4797286 | + | 33 | 8.30E-06 | 95 | 41 |
| 85542 | 85686 | - | 7 | 4797286 | 4797429 | + | 108 | 1.70E-51 | 94 | 144 |
| 38939 | 39201 | + | 7 | 5509295 | 5509559 | + | 90 | 4.00E-36 | 83 | 266 |
| 46674 | 46740 | - | 7 | 6223089 | 6223156 | + | 48 | 8.50E-16 | 93 | 68 |
| 51102 | 51187 | + | 7 | 6697306 | 6697388 | + | 73 | 1.20E-30 | 96 | 85 |
| 94996 | 95099 | + | 7 | 6902933 | 6903035 | + | 60 | 6.70E-23 | 89 | 104 |
| 20900 | 20939 | + | 7 | 7274543 | 7274582 | + | 36 | 6.80E-09 | 98 | 40 |
| 65510 | 65608 | + | 7 | 7503081 | 7503178 | + | 90 | 0 | 98 | 98 |
| 65618 | 65733 | + | 7 | 7503187 | 7503301 | + | 79 | 1.70E-281 | 92 | 115 |
| 65675 | 65752 | + | 7 | 7503223 | 7503299 | + | 49 | 1.10E-263 | 91 | 77 |
| 65705 | 65962 | + | 7 | 7503232 | 7503485 | + | 202 | 0 | 95 | 258 |
| 65994 | 66462 | + | 7 | 7503487 | 7503956 | + | 364 | 0 | 94 | 472 |
| 60828 | 60947 | - | 7 | 8933513 | 8933631 | + | 115 | 1.10E-55 | 99 | 119 |
| 3825 | 3918 | - | 7 | 9086833 | 9086925 | + | 86 | 2.80E-34 | 98 | 94 |
| 18111 | 18284 | - | 7 | 9086922 | 9087096 | + | 152 | 4.10E-74 | 97 | 176 |
| 80251 | 80320 | - | 7 | 10125966 | 10126034 | + | 61 | 1.70E-23 | 97 | 69 |
| 127085 | 127100 | - | 7 | 12604761 | 12604775 | + | 15 | 0 | 100 | 15 |
| 109604 | 109619 | - | 7 | 12635705 | 12635719 | + | 15 | 0 | 100 | 15 |
| 131464 | 131479 | - | 7 | 12638933 | 12638947 | + | 15 | 0 | 100 | 15 |
| 131464 | 131480 | - | 7 | 12640666 | 12640681 | + | 16 | 0 | 100 | 16 |
| 114570 | 114589 | - | 7 | 12655457 | 12655476 | + | 16 | 0 | 95 | 20 |
| 109612 | 109912 | - | 7 | 12657295 | 12657594 | + | 300 | 0 | 100 | 300 |
| 107502 | 109606 | - | 7 | 12657589 | 12659692 | + | 2080 | 0 | 100 | 2104 |
| 107439 | 107488 | - | 7 | 12659707 | 12659755 | + | 49 | 0 | 100 | 49 |
| 106397 | 107431 | - | 7 | 12659767 | 12660800 | + | 1015 | 0 | 100 | 1035 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 105820 | 106389 | - | 7 | 12660810 | 12661378 | + | 557 | 0 | 99 | 569 |
| 101031 | 101046 | - | 7 | 12675650 | 12675664 | + | 15 | 0 | 100 | 15 |
| 65390 | 65450 | - | 7 | 12819016 | 12819074 | + | 48 | 9.50E-16 | 95 | 60 |
| 105516 | 105532 | + | 7 | 14209702 | 14209717 | + | 16 | 0 | 100 | 16 |
| 108285 | 108301 | + | 7 | 14212663 | 14212678 | + | 16 | 0 | 100 | 16 |
| 108285 | 108301 | + | 7 | 14217309 | 14217324 | + | 16 | 0 | 100 | 16 |
| 131463 | 131480 | - | 7 | 14220448 | 14220464 | + | 17 | 0.00011 | 100 | 17 |
| 93382 | 94985 | - | 7 | 14228664 | 14230265 | + | 1599 | 0 | 100 | 1603 |
| 120136 | 121739 | + | 7 | 14228664 | 14230265 | + | 1599 | 0 | 100 | 1603 |
| 93007 | 93374 | - | 7 | 14230274 | 14230640 | + | 367 | 0 | 100 | 367 |
| 121747 | 122114 | + | 7 | 14230274 | 14230640 | + | 367 | 0 | 100 | 367 |
| 89669 | 92998 | - | 7 | 14230653 | 14233983 | + | 3300 | 0 | 100 | 3332 |
| 122123 | 125418 | + | 7 | 14230653 | 14233949 | + | 3266 | 0 | 100 | 3298 |
| 87852 | 89659 | - | 7 | 14233994 | 14235799 | + | 1791 | 0 | 100 | 1807 |
| 125462 | 127269 | + | 7 | 14233994 | 14235799 | + | 1791 | 0 | 100 | 1807 |
| 43009 | 43044 | - | 7 | 14234299 | 14234334 | + | 32 | 1.60E-06 | 97 | 36 |
| 84416 | 87815 | - | 7 | 14235837 | 14239230 | + | 3354 | 0 | 100 | 3402 |
| 127306 | 130705 | + | 7 | 14235837 | 14239230 | + | 3354 | 0 | 100 | 3402 |
| 128784 | 128814 | - | 7 | 14237310 | 14237339 | + | 30 | 0.00011 | 100 | 30 |
| 80912 | 84408 | - | 7 | 14239239 | 14242734 | + | 3492 | 0 | 100 | 3496 |
| 130713 | 134209 | + | 7 | 14239239 | 14242734 | + | 3492 | 0 | 100 | 3496 |
| 55807 | 55866 | + | 7 | 14240685 | 14240744 | + | 48 | 3.00E-56 | 95 | 60 |
| 55866 | 55957 | + | 7 | 14240880 | 14240970 | + | 87 | 3.00E-56 | 99 | 91 |
| 80615 | 80904 | - | 7 | 14242743 | 14243031 | + | 289 | 0 | 100 | 289 |
| 134217 | 134506 | + | 7 | 14242743 | 14243031 | + | 289 | 0 | 100 | 289 |
| 113283 | 113299 | - | 7 | 14260414 | 14260429 | + | 16 | 0.0003 | 100 | 16 |
| 113283 | 113299 | - | 7 | 14316256 | 14316271 | + | 16 | 0.00011 | 100 | 16 |
| 26315 | 26640 | + | 7 | 14367107 | 14367433 | + | 272 | 2.70E-143 | 96 | 328 |
| 4487 | 4541 | - | 7 | 14758392 | 14758446 | + | 43 | 1.10E-47 | 95 | 55 |
| 4161 | 4274 | - | 7 | 14765766 | 14765878 | + | 77 | 1.10E-47 | 91 | 117 |
| 76377 | 76528 | - | 7 | 15560519 | 15560669 | + | 151 | 4.00E-77 | 100 | 151 |
| 6614 | 6709 | + | 7 | 15560668 | 15560763 | + | 96 | 5.30E-129 | 100 | 96 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 16213 | 16311 | + | 7 | 15560762 | 15560860 | + | 95 | 5.30E-129 | 99 | 99 |
| 28178 | 28236 | + | 7 | 15583878 | 15583936 | + | 59 | 5.30E-129 | 100 | 59 |
| 28272 | 28330 | + | 7 | 15583932 | 15583990 | + | 47 | 5.30E-129 | 95 | 59 |
| 9014 | 9127 | + | 7 | 15583991 | 15584104 | + | 106 | 5.80E-93 | 98 | 114 |
| 102672 | 102688 | + | 7 | 16595756 | 16595771 | + | 16 | 3.00E-287 | 100 | 16 |
| 108550 | 108566 | + | 7 | 16654088 | 16654103 | + | 16 | 3.00E-287 | 100 | 16 |
| 109815 | 109831 | + | 7 | 16664400 | 16664415 | + | 16 | 3.00E-287 | 100 | 16 |
| 85504 | 86020 | - | 7 | 16668129 | 16668644 | + | 516 | 1.30E-294 | 100 | 516 |
| 129101 | 129617 | + | 7 | 16668129 | 16668644 | + | 516 | 3.00E-287 | 100 | 516 |
| 131464 | 131480 | + | 7 | 16682819 | 16682834 | + | 16 | 3.00E-287 | 100 | 16 |
| 131464 | 131480 | + | 7 | 16692184 | 16692199 | + | 16 | 3.00E-287 | 100 | 16 |
| 48892 | 48977 | - | 7 | 16779084 | 16779168 | + | 54 | 2.50E-37 | 91 | 86 |
| 48838 | 48896 | - | 7 | 16794305 | 16794363 | + | 39 | 2.50E-37 | 92 | 59 |
| 30468 | 30732 | + | 7 | 17637127 | 17637391 | + | 193 | 1.80E-99 | 93 | 265 |
| 26315 | 26640 | - | 7 | 17777692 | 17778017 | + | 271 | 1.80E-143 | 96 | 327 |
| 40034 | 40089 | + | 7 | 17788193 | 17788248 | + | 40 | 2.60E-09 | 93 | 56 |
| 89046 | 89246 | - | 7 | 18890629 | 18890832 | + | 126 | 3.20E-62 | 90 | 206 |
| 3562 | 3709 | - | 7 | 19204360 | 19204507 | + | 128 | 6.40E-59 | 97 | 148 |
| 62265 | 62484 | + | 7 | 19204499 | 19204717 | + | 187 | 7.00E-234 | 96 | 219 |
| 96154 | 96355 | + | 7 | 19204715 | 19204915 | + | 181 | 7.00E-234 | 98 | 201 |
| 118766 | 118967 | - | 7 | 19204715 | 19204915 | + | 181 | 8.00E-131 | 98 | 201 |
| 132150 | 132166 | - | 7 | 19205823 | 19205838 | + | 16 | 1.60E-33 | 100 | 16 |
| 124655 | 124671 | - | 7 | 19232921 | 19232936 | + | 16 | 1.60E-33 | 100 | 16 |
| 105894 | 105910 | - | 7 | 19245350 | 19245365 | + | 16 | 4.00E-89 | 100 | 16 |
| 98892 | 98984 | + | 7 | 19280572 | 19280664 | + | 85 | 7.00E-234 | 98 | 93 |
| 116137 | 116229 | - | 7 | 19280572 | 19280664 | + | 85 | 8.00E-131 | 98 | 93 |
| 13601 | 13797 | - | 7 | 19594700 | 19594892 | + | 102 | 7.30E-44 | 88 | 202 |
| 35396 | 35517 | + | 7 | 20759746 | 20759867 | + | 106 | 4.20E-47 | 97 | 122 |
| 12164 | 12252 | - | 7 | 21757878 | 21757966 | + | 89 | 1.50E-38 | 100 | 89 |
| 20290 | 20514 | - | 7 | 21839513 | 21839737 | + | 217 | 1.80E-109 | 99 | 225 |
| 91353 | 91687 | + | 7 | 21874508 | 21874841 | + | 294 | 2.50E-162 | 97 | 334 |
| 123434 | 123768 | - | 7 | 21874508 | 21874841 | + | 294 | 6.20E-164 | 97 | 334 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 123412 | 123440 | - | 7 | 21874844 | 21874871 | + | 28 | 6.20E-164 | 100 | 28 |
| 63515 | 63761 | - | 7 | 22396433 | 22396679 | + | 239 | 0 | 99 | 247 |
| 63066 | 63507 | - | 7 | 22396688 | 22397130 | + | 411 | 0 | 98 | 443 |
| 61826 | 63058 | - | 7 | 22397139 | 22398368 | + | 1145 | 0 | 98 | 1233 |
| 91333 | 91416 | - | 7 | 22419465 | 22419547 | + | 83 | 1.30E-36 | 100 | 83 |
| 122491 | 122633 | - | 7 | 22936188 | 22936329 | + | 86 | 1.50E-120 | 90 | 142 |
| 122364 | 122480 | - | 7 | 22936331 | 22936446 | + | 53 | 1.50E-120 | 86 | 117 |
| 122329 | 122363 | - | 7 | 22936685 | 22936718 | + | 26 | 1.50E-120 | 94 | 34 |
| 92821 | 92986 | + | 7 | 22936737 | 22936907 | + | 91 | 2.30E-41 | 88 | 171 |
| 122135 | 122300 | - | 7 | 22936737 | 22936907 | + | 91 | 1.50E-120 | 88 | 171 |
| 122054 | 122110 | - | 7 | 22936940 | 22936994 | + | 36 | 1.50E-120 | 91 | 56 |
| 121967 | 121992 | - | 7 | 22937042 | 22937066 | + | 21 | 1.50E-120 | 96 | 25 |
| 10534 | 10661 | - | 7 | 22973765 | 22973890 | + | 57 | 3.80E-19 | 86 | 129 |
| 24551 | 24967 | - | 7 | 22995857 | 22996271 | + | 377 | 5.50E-254 | 98 | 417 |
| 24447 | 24545 | - | 7 | 22996271 | 22996369 | + | 95 | 5.50E-254 | 99 | 99 |
| 14599 | 14699 | + | 7 | 23007102 | 23007200 | + | 58 | 2.30E-17 | 89 | 102 |
| 13278 | 13569 | - | 7 | 23560810 | 23561103 | + | 136 | 5.70E-64 | 86 | 300 |
| 18494 | 18533 | - | 7 | 23641058 | 23641097 | + | 32 | 7.40E-06 | 95 | 40 |
| 22006 | 22104 | - | 7 | 24074751 | 24074851 | + | 45 | 3.20E-11 | 86 | 101 |
| 11317 | 11372 | - | 7 | 24162250 | 24162308 | + | 39 | 1.00E-08 | 92 | 59 |
| 7063 | 7120 | - | 7 | 24626169 | 24626226 | + | 34 | 1.90E-13 | 90 | 58 |
| 112759 | 112909 | + | 7 | 24746169 | 24746317 | + | 142 | 6.70E-272 | 99 | 150 |
| 112916 | 113303 | + | 7 | 24746312 | 24746698 | + | 359 | 6.70E-272 | 98 | 387 |
| 128775 | 128792 | + | 7 | 24772248 | 24772264 | + | 17 | 2.40E-271 | 100 | 17 |
| 35383 | 35469 | + | 7 | 24917149 | 24917235 | + | 83 | 1.50E-34 | 99 | 87 |
| 10367 | 10457 | - | 7 | 27924267 | 27924360 | + | 42 | 3.70E-10 | 86 | 94 |
| 76163 | 76222 | + | 7 | 27973545 | 27973603 | + | 59 | 0 | 100 | 59 |
| 76238 | 76511 | + | 7 | 27973619 | 27973891 | + | 261 | 0 | 99 | 273 |
| 76597 | 77696 | + | 7 | 27973976 | 27975075 | + | 1080 | 0 | 100 | 1100 |
| 77724 | 78413 | + | 7 | 27975104 | 27975791 | + | 666 | 0 | 99 | 690 |
| 78449 | 78968 | + | 7 | 27975819 | 27976338 | + | 508 | 0 | 99 | 520 |
| 78977 | 79140 | + | 7 | 27976347 | 27976509 | + | 163 | 0 | 100 | 163 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 79177 | 79509 | + | 7 | 27976546 | 27976877 | + | 324 | 0 | 99 | 332 |
| 79567 | 80050 | + | 7 | 27976936 | 27977419 | + | 476 | 0 | 100 | 484 |
| 80088 | 80170 | + | 7 | 27977457 | 27977538 | + | 82 | 0 | 100 | 82 |
| 80178 | 80600 | + | 7 | 27977547 | 27977968 | + | 418 | 0 | 100 | 422 |
| 80615 | 80809 | + | 7 | 27977983 | 27978176 | + | 186 | 0 | 99 | 194 |
| 85207 | 85305 | - | 7 | 28021411 | 28021509 | + | 79 | 3.20E-34 | 95 | 99 |
| 47580 | 47635 | + | 7 | 28938574 | 28938629 | + | 44 | 2.30E-12 | 95 | 56 |
| 33864 | 34028 | - | 7 | 29006233 | 29006398 | + | 91 | 9.50E-37 | 89 | 167 |
| 1 | 2932 | - | 8 | 22189961 | 22192892 | + | 2932 | 0 | 100 | 2932 |
| 74282 | 74422 | + | 8 | 71013 | 71152 | + | 128 | 1.30E-132 | 98 | 140 |
| 74414 | 74547 | + | 8 | 71153 | 71284 | + | 113 | 1.30E-132 | 96 | 133 |
| 1748 | 1783 | - | 8 | 865249 | 865283 | + | 28 | 0.00052 | 94 | 36 |
| 94713 | 94876 | + | 8 | 899815 | 899974 | + | 127 | 8.00E-63 | 94 | 163 |
| 29376 | 29476 | - | 8 | 2686094 | 2686196 | + | 67 | 8.50E-27 | 91 | 103 |
| 28867 | 28921 | + | 8 | 2909472 | 2909526 | + | 43 | 6.00E-63 | 95 | 55 |
| 28939 | 29120 | + | 8 | 2909531 | 2909709 | + | 112 | 6.00E-63 | 90 | 184 |
| 32517 | 32567 | - | 8 | 3319390 | 3319440 | + | 43 | 3.00E-10 | 96 | 51 |
| 96706 | 96852 | - | 8 | 3579732 | 3579876 | + | 103 | 2.90E-130 | 93 | 147 |
| 118269 | 118415 | + | 8 | 3579732 | 3579876 | + | 103 | 1.10E-129 | 93 | 147 |
| 118668 | 118715 | + | 8 | 3580239 | 3580285 | + | 39 | 1.10E-129 | 96 | 47 |
| 96287 | 96341 | - | 8 | 3580284 | 3580337 | + | 50 | 2.90E-130 | 98 | 54 |
| 118780 | 118834 | + | 8 | 3580284 | 3580337 | + | 50 | 1.10E-129 | 98 | 54 |
| 96082 | 96257 | - | 8 | 3580384 | 3580557 | + | 104 | 2.90E-130 | 90 | 176 |
| 118864 | 119039 | + | 8 | 3580384 | 3580557 | + | 104 | 1.10E-129 | 90 | 176 |
| 45239 | 45298 | + | 8 | 3587502 | 3587561 | + | 31 | 4.30E-06 | 87 | 63 |
| 70732 | 70938 | - | 8 | 3777982 | 3778187 | + | 182 | 1.40E-95 | 97 | 206 |
| 70347 | 70732 | - | 8 | 3778188 | 3778570 | + | 357 | 7.20E-200 | 98 | 385 |
| 51633 | 51703 | + | 8 | 3971206 | 3971275 | + | 58 | 2.40E-95 | 96 | 70 |
| 91945 | 92235 | + | 8 | 3971294 | 3971587 | + | 143 | 2.40E-95 | 87 | 295 |
| 72596 | 72656 | + | 8 | 5811858 | 5811917 | + | 56 | 1.60E-20 | 98 | 60 |
| 22365 | 22805 | - | 8 | 5838689 | 5839136 | + | 352 | 1.70E-190 | 95 | 448 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|---------|---------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 61453 | 61636 | + | 8 | 6188421 | 6188601 | + | 155 | 1.70E-79 | 96 | 183 |
| 84483 | 84635 | - | 8 | 7753956 | 7754104 | + | 128 | 2.00E-63 | 96 | 152 |
| 21412 | 21492 | + | 8 | 7813271 | 7813351 | + | 65 | 2.80E-24 | 95 | 81 |
| 93385 | 93486 | + | 8 | 9054748 | 9054848 | + | 101 | 2.50E-47 | 100 | 101 |
| 101511 | 101527 | - | 8 | 9223565 | 9223580 | + | 16 | 0 | 100 | 16 |
| 114093 | 114756 | + | 8 | 9236593 | 9237256 | + | 656 | 0 | 100 | 664 |
| 100365 | 101028 | - | 8 | 9236593 | 9237256 | + | 656 | 0 | 100 | 664 |
| 114451 | 114503 | - | 8 | 9236952 | 9237003 | + | 44 | 7.10E-52 | 96 | 52 |
| 100618 | 100670 | + | 8 | 9236952 | 9237003 | + | 44 | 0 | 96 | 52 |
| 115032 | 116738 | + | 8 | 9237253 | 9238961 | + | 1689 | 0 | 100 | 1709 |
| 100002 | 100089 | - | 8 | 9237253 | 9237339 | + | 83 | 0 | 99 | 87 |
| 98383 | 100002 | - | 8 | 9237340 | 9238961 | + | 1606 | 0 | 100 | 1622 |
| 94132 | 98367 | - | 8 | 9238978 | 9243215 | + | 4180 | 0 | 100 | 4240 |
| 116754 | 120989 | + | 8 | 9238978 | 9243215 | + | 4180 | 0 | 100 | 4240 |
| 121590 | 121607 | + | 8 | 9242721 | 9242737 | + | 17 | 0 | 100 | 17 |
| 93382 | 93845 | - | 8 | 9243211 | 9243673 | + | 463 | 0 | 100 | 463 |
| 121276 | 121739 | + | 8 | 9243211 | 9243673 | + | 463 | 0 | 100 | 463 |
| 120493 | 120510 | + | 8 | 9243525 | 9243541 | + | 17 | 0 | 100 | 17 |
| 93007 | 93374 | - | 8 | 9243682 | 9244048 | + | 351 | 0 | 99 | 367 |
| 121747 | 122114 | + | 8 | 9243682 | 9244048 | + | 351 | 0 | 99 | 367 |
| 89669 | 92998 | - | 8 | 9244066 | 9247396 | + | 3296 | 0 | 100 | 3332 |
| 122123 | 125418 | + | 8 | 9244066 | 9247362 | + | 3262 | 0 | 100 | 3298 |
| 87852 | 89659 | - | 8 | 9247408 | 9249213 | + | 1775 | 0 | 100 | 1807 |
| 125462 | 127269 | + | 8 | 9247408 | 9249213 | + | 1775 | 0 | 100 | 1807 |
| 43009 | 43044 | - | 8 | 9247713 | 9247748 | + | 32 | 5.00E-07 | 97 | 36 |
| 84416 | 87815 | - | 8 | 9249251 | 9252644 | + | 3350 | 0 | 100 | 3402 |
| 127306 | 130705 | + | 8 | 9249251 | 9252644 | + | 3350 | 0 | 100 | 3402 |
| 80912 | 84408 | - | 8 | 9252653 | 9256148 | + | 3484 | 0 | 100 | 3496 |
| 130713 | 134209 | + | 8 | 9252653 | 9256148 | + | 3484 | 0 | 100 | 3496 |
| 55866 | 55957 | + | 8 | 9254294 | 9254384 | + | 87 | 5.10E-48 | 99 | 91 |
| 80615 | 80904 | - | 8 | 9256157 | 9256445 | + | 289 | 0 | 100 | 289 |
| 134217 | 134506 | + | 8 | 9256157 | 9256445 | + | 289 | 0 | 100 | 289 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|---------|---------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 80178 | 80600 | - | 8 | 9256461 | 9256882 | + | 422 | 0 | 100 | 422 |
| 80089 | 80170 | - | 8 | 9256891 | 9256971 | + | 81 | 0 | 100 | 81 |
| 79177 | 80047 | - | 8 | 9257013 | 9257882 | + | 862 | 0 | 100 | 870 |
| 78977 | 79140 | - | 8 | 9257919 | 9258081 | + | 163 | 0 | 100 | 163 |
| 78449 | 78968 | - | 8 | 9258090 | 9258609 | + | 516 | 0 | 100 | 520 |
| 77725 | 78413 | - | 8 | 9258638 | 9259324 | + | 673 | 0 | 99 | 689 |
| 76632 | 77697 | - | 8 | 9259354 | 9260419 | + | 1058 | 0 | 100 | 1066 |
| 129478 | 129495 | + | 8 | 9260108 | 9260124 | + | 17 | 0 | 100 | 17 |
| 76238 | 76528 | - | 8 | 9260522 | 9260811 | + | 286 | 0 | 100 | 290 |
| 75987 | 76222 | - | 8 | 9260827 | 9261060 | + | 231 | 0 | 100 | 235 |
| 75888 | 75970 | - | 8 | 9261078 | 9261159 | + | 82 | 0 | 100 | 82 |
| 74585 | 75875 | - | 8 | 9261173 | 9262461 | + | 1282 | 0 | 100 | 1290 |
| 74282 | 74549 | - | 8 | 9262498 | 9262764 | + | 267 | 0 | 100 | 267 |
| 71786 | 74265 | - | 8 | 9262782 | 9265263 | + | 2430 | 0 | 99 | 2486 |
| 71469 | 71750 | - | 8 | 9265300 | 9265580 | + | 281 | 0 | 100 | 281 |
| 69541 | 71371 | - | 8 | 9265679 | 9267508 | + | 1781 | 0 | 99 | 1833 |
| 102899 | 102915 | - | 8 | 9267119 | 9267134 | + | 16 | 1.80E-12 | 100 | 16 |
| 69009 | 69533 | - | 8 | 9267517 | 9268040 | + | 516 | 0 | 100 | 524 |
| 65618 | 69019 | - | 8 | 9268038 | 9271438 | + | 3328 | 0 | 99 | 3404 |
| 112084 | 112100 | + | 8 | 9268649 | 9268664 | + | 16 | 4.40E-28 | 100 | 16 |
| 63780 | 65609 | - | 8 | 9271446 | 9273274 | + | 1799 | 0 | 100 | 1831 |
| 63515 | 63772 | - | 8 | 9273283 | 9273539 | + | 257 | 0 | 100 | 257 |
| 63066 | 63507 | - | 8 | 9273549 | 9273989 | + | 441 | 0 | 100 | 441 |
| 115928 | 115944 | + | 8 | 9273783 | 9273798 | + | 16 | 0 | 100 | 16 |
| 62530 | 63058 | - | 8 | 9273998 | 9274525 | + | 524 | 0 | 100 | 528 |
| 126366 | 126412 | + | 8 | 9274027 | 9274072 | + | 46 | 0 | 100 | 46 |
| 61083 | 62522 | - | 8 | 9274534 | 9275972 | + | 1424 | 0 | 100 | 1440 |
| 60680 | 61075 | - | 8 | 9275980 | 9276379 | + | 372 | 0 | 98 | 400 |
| 60039 | 60651 | - | 8 | 9276409 | 9277020 | + | 612 | 0 | 100 | 612 |
| 59161 | 60031 | - | 8 | 9277029 | 9277896 | + | 858 | 0 | 100 | 870 |
| 58807 | 59130 | - | 8 | 9277928 | 9278250 | + | 319 | 0 | 100 | 323 |
| 103242 | 103258 | + | 8 | 9310484 | 9310499 | + | 16 | 7.10E-11 | 100 | 16 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 112551 | 112567 | - | 8 | 9325771 | 9325786 | + | 16 | 1.80E-11 | 100 | 16 |
| 20060 | 20359 | + | 8 | 9632198 | 9632494 | + | 204 | 1.20E-104 | 92 | 300 |
| 32674 | 32734 | + | 8 | 10366382 | 10366441 | + | 53 | 4.70E-15 | 97 | 61 |
| 77337 | 77518 | - | 8 | 10791044 | 10791225 | + | 154 | 6.50E-79 | 96 | 182 |
| 68751 | 69303 | - | 8 | 11015945 | 11016496 | + | 457 | 1.90E-259 | 96 | 553 |
| 4570 | 4609 | + | 8 | 11443579 | 11443618 | + | 36 | 5.50E-07 | 98 | 40 |
| 109601 | 109618 | - | 8 | 11553451 | 11553467 | + | 17 | 1.40E-99 | 100 | 17 |
| 107802 | 108017 | - | 8 | 11580915 | 11581130 | + | 196 | 1.40E-99 | 98 | 216 |
| 45167 | 45202 | - | 8 | 11959618 | 11959653 | + | 32 | 2.40E-09 | 97 | 36 |
| 21639 | 21839 | - | 8 | 12037958 | 12038158 | + | 193 | 3.00E-98 | 99 | 201 |
| 132956 | 132976 | - | 8 | 12191005 | 12191025 | + | 17 | 1.10E-221 | 95 | 21 |
| 132956 | 132976 | - | 8 | 12196827 | 12196847 | + | 17 | 1.10E-221 | 95 | 21 |
| 111036 | 111492 | - | 8 | 12265553 | 12266003 | + | 402 | 1.10E-221 | 97 | 458 |
| 100862 | 100878 | - | 8 | 12293051 | 12293066 | + | 16 | 1.10E-221 | 100 | 16 |
| 106225 | 106241 | - | 8 | 12297165 | 12297180 | + | 16 | 1.10E-221 | 100 | 16 |
| 45800 | 45860 | - | 8 | 12371846 | 12371906 | + | 41 | 8.90E-10 | 92 | 61 |
| 21369 | 21539 | + | 8 | 14031037 | 14031207 | + | 99 | 2.50E-44 | 89 | 171 |
| 46676 | 46718 | + | 8 | 14603467 | 14603509 | + | 35 | 5.20E-08 | 95 | 43 |
| 50177 | 50385 | - | 8 | 14668420 | 14668627 | + | 164 | 7.20E-85 | 95 | 208 |
| 23609 | 23822 | - | 8 | 14983304 | 14983520 | + | 187 | 8.70E-91 | 96 | 219 |
| 17600 | 17654 | - | 8 | 15638620 | 15638674 | + | 31 | 1.50E-13 | 89 | 55 |
| 17600 | 17654 | - | 8 | 15640611 | 15640665 | + | 31 | 1.50E-13 | 89 | 55 |
| 51800 | 52056 | - | 8 | 16395631 | 16395888 | + | 218 | 2.20E-281 | 96 | 258 |
| 51709 | 51791 | - | 8 | 16395891 | 16395972 | + | 66 | 2.20E-281 | 95 | 82 |
| 51395 | 51707 | - | 8 | 16395985 | 16396295 | + | 249 | 2.20E-281 | 95 | 313 |
| 25848 | 25896 | - | 8 | 16422134 | 16422181 | + | 29 | 0.00018 | 90 | 49 |
| 77252 | 77417 | + | 8 | 17080617 | 17080780 | + | 121 | 3.00E-59 | 93 | 165 |
| 81980 | 82126 | - | 8 | 17080779 | 17080919 | + | 90 | 8.90E-41 | 90 | 146 |
| 53438 | 53520 | + | 8 | 17477777 | 17477855 | + | 55 | 6.40E-20 | 92 | 83 |
| 6642 | 6719 | - | 8 | 17700971 | 17701048 | + | 70 | 2.50E-24 | 97 | 78 |
| 38830 | 38884 | - | 8 | 19062401 | 19062455 | + | 31 | 9.90E-49 | 89 | 55 |
| 38696 | 38783 | - | 8 | 19062466 | 19062553 | + | 61 | 9.90E-49 | 92 | 89 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 38619 | 38672 | - | 8 | 19062553 | 19062606 | + | 42 | 9.90E-49 | 94 | 54 |
| 88566 | 88623 | + | 8 | 19343708 | 19343764 | + | 49 | 2.40E-16 | 96 | 57 |
| 9331 | 9457 | + | 8 | 19759824 | 19759950 | + | 44 | 4.40E-18 | 84 | 128 |
| 9465 | 9505 | + | 8 | 19759948 | 19759988 | + | 29 | 4.40E-18 | 93 | 41 |
| 81808 | 82008 | + | 8 | 19935466 | 19935665 | + | 128 | 2.00E-63 | 91 | 200 |
| 74969 | 75036 | - | 8 | 20745459 | 20745525 | + | 67 | 4.50E-27 | 100 | 67 |
| 7513 | 7582 | + | 8 | 20882941 | 20883010 | + | 70 | 2.00E-83 | 100 | 70 |
| 7592 | 7700 | + | 8 | 20883019 | 20883127 | + | 109 | 2.00E-83 | 100 | 109 |
| 28667 | 28790 | - | 8 | 20899258 | 20899377 | + | 73 | 1.50E-28 | 90 | 125 |
| 6517 | 6615 | - | 8 | 21137054 | 21137157 | + | 80 | 3.40E-33 | 94 | 104 |
| 80700 | 80795 | - | 8 | 21374112 | 21374212 | + | 61 | 1.70E-23 | 90 | 101 |
| 40729 | 40830 | + | 8 | 22039277 | 22039378 | + | 78 | 4.50E-29 | 94 | 102 |
| 2941 | 3179 | - | 8 | 22189714 | 22189952 | + | 239 | 0 | 100 | 239 |
| 1 | 37 | + | 8 | 22192863 | 22192899 | + | 29 | 0.00022 | 95 | 37 |
| 80615 | 80904 | + | 8 | 22192910 | 22193198 | + | 289 | 0 | 100 | 289 |
| 134217 | 134506 | - | 8 | 22192910 | 22193198 | + | 289 | 0 | 100 | 289 |
| 80912 | 82640 | + | 8 | 22193207 | 22194934 | + | 1720 | 0 | 100 | 1728 |
| 132481 | 134209 | - | 8 | 22193207 | 22194934 | + | 1720 | 0 | 100 | 1728 |
| 114317 | 114332 | - | 8 | 22198681 | 22198695 | + | 15 | 0 | 100 | 15 |
| 33788 | 33959 | + | 8 | 22427414 | 22427586 | + | 77 | 6.40E-31 | 86 | 177 |
| 2941 | 2997 | + | 8 | 23466306 | 23466362 | + | 38 | 1.30E-13 | 91 | 58 |
| 23476 | 24034 | - | 8 | 23509473 | 23510031 | + | 559 | 7.6e-316 | 100 | 559 |
| 52762 | 52921 | - | 8 | 25291975 | 25292132 | + | 123 | 1.90E-60 | 94 | 159 |
| 59647 | 59706 | + | 8 | 25292291 | 25292349 | + | 59 | 2.60E-22 | 100 | 59 |
| 37236 | 37438 | + | 8 | 25292351 | 25292553 | + | 179 | 7.00E-87 | 97 | 203 |
| 7692 | 7731 | - | 8 | 26337286 | 26337325 | + | 36 | 2.90E-07 | 98 | 40 |
| 80966 | 81043 | - | 9 | 445561 | 445636 | + | 53 | 4.60E-29 | 92 | 77 |
| 84416 | 84558 | - | 9 | 670165 | 670306 | + | 107 | 6.60E-51 | 94 | 143 |
| 126629 | 126645 | - | 9 | 941596 | 941611 | + | 16 | 1.80E-27 | 100 | 16 |
| 105320 | 105434 | - | 9 | 965459 | 965572 | + | 75 | 1.50E-28 | 91 | 115 |
| 88210 | 88535 | - | 9 | 965583 | 965907 | + | 246 | 9.90E-134 | 94 | 326 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|---------|---------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 126586 | 126911 | + | 9 | 965583 | 965907 | + | 246 | 3.00E-129 | 94 | 326 |
| 87851 | 87968 | + | 9 | 965946 | 966062 | + | 97 | 6.00E-45 | 96 | 117 |
| 127153 | 127270 | - | 9 | 965946 | 966062 | + | 97 | 9.00E-42 | 96 | 117 |
| 118625 | 118650 | - | 9 | 982138 | 982163 | + | 18 | 3.40E-41 | 92 | 26 |
| 124998 | 125017 | - | 9 | 989733 | 989751 | + | 19 | 9.00E-42 | 100 | 19 |
| 125323 | 125339 | - | 9 | 1018442 | 1018457 | + | 16 | 4.70E-40 | 100 | 16 |
| 68704 | 69533 | + | 9 | 2493742 | 2494570 | + | 813 | 0 | 100 | 829 |
| 69541 | 71207 | + | 9 | 2494579 | 2496244 | + | 1609 | 0 | 99 | 1669 |
| 38801 | 38890 | + | 9 | 3742335 | 3742424 | + | 66 | 7.60E-23 | 93 | 90 |
| 5673 | 5857 | + | 9 | 3775667 | 3775850 | + | 137 | 1.00E-76 | 94 | 185 |
| 5876 | 5916 | + | 9 | 3775852 | 3775892 | + | 37 | 1.00E-76 | 98 | 41 |
| 74471 | 74547 | + | 9 | 4036291 | 4036366 | + | 64 | 0 | 96 | 76 |
| 74585 | 74807 | + | 9 | 4036405 | 4036624 | + | 214 | 0 | 99 | 222 |
| 74765 | 75851 | + | 9 | 4036619 | 4037704 | + | 1000 | 0 | 98 | 1088 |
| 33259 | 33304 | + | 9 | 4364162 | 4364208 | + | 43 | 0 | 98 | 47 |
| 33399 | 33577 | + | 9 | 4364288 | 4364466 | + | 155 | 0 | 97 | 179 |
| 33618 | 34184 | + | 9 | 4364508 | 4365075 | + | 480 | 0 | 96 | 568 |
| 34194 | 34665 | + | 9 | 4365083 | 4365554 | + | 404 | 0 | 96 | 472 |
| 34673 | 35155 | + | 9 | 4365552 | 4366032 | + | 350 | 0 | 93 | 486 |
| 56657 | 56710 | + | 9 | 4397778 | 4397830 | + | 53 | 9.90E-19 | 100 | 53 |
| 35764 | 35937 | - | 9 | 4638695 | 4638867 | + | 170 | 0 | 99 | 174 |
| 34972 | 35761 | - | 9 | 4638861 | 4639650 | + | 691 | 0 | 97 | 791 |
| 34853 | 34936 | - | 9 | 4639674 | 4639757 | + | 84 | 0 | 100 | 84 |
| 27607 | 27658 | - | 9 | 4639752 | 4639803 | + | 44 | 0 | 96 | 52 |
| 35056 | 35121 | + | 9 | 4675961 | 4676026 | + | 34 | 1.30E-13 | 88 | 66 |
| 35180 | 35237 | + | 9 | 4676085 | 4676142 | + | 30 | 1.30E-13 | 88 | 58 |
| 26005 | 26044 | - | 9 | 4677744 | 4677783 | + | 32 | 0 | 95 | 40 |
| 25856 | 25931 | - | 9 | 4677845 | 4677921 | + | 34 | 0 | 86 | 78 |
| 25677 | 25843 | - | 9 | 4677923 | 4678091 | + | 87 | 0 | 88 | 171 |
| 19380 | 19446 | + | 9 | 5060018 | 5060084 | + | 59 | 2.10E-100 | 97 | 67 |
| 19463 | 19597 | + | 9 | 5060088 | 5060222 | + | 107 | 2.10E-100 | 95 | 135 |
| 19599 | 19680 | + | 9 | 5060442 | 5060523 | + | 70 | 2.10E-100 | 96 | 82 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 22381 | 22487 | - | 9 | 5501008 | 5501115 | + | 68 | 3.00E-24 | 91 | 108 |
| 6152 | 6307 | + | 9 | 5599623 | 5599779 | + | 109 | 2.00E-47 | 92 | 157 |
| 20346 | 20464 | - | 9 | 6351772 | 6351890 | + | 67 | 2.80E-25 | 89 | 119 |
| 84594 | 84966 | + | 9 | 6599376 | 6599747 | + | 306 | 1.70E-169 | 95 | 374 |
| 130155 | 130527 | - | 9 | 6599376 | 6599747 | + | 306 | 3.90E-166 | 95 | 374 |
| 101567 | 101584 | - | 9 | 6623953 | 6623969 | + | 17 | 3.90E-166 | 100 | 17 |
| 107830 | 107846 | - | 9 | 6678742 | 6678757 | + | 16 | 1.20E-162 | 100 | 16 |
| 115358 | 115377 | - | 9 | 6695133 | 6695152 | + | 16 | 6.10E-164 | 95 | 20 |
| 19380 | 19527 | + | 9 | 6793370 | 6793517 | + | 112 | 1.90E-103 | 94 | 148 |
| 19528 | 19680 | + | 9 | 6793524 | 6793677 | + | 110 | 1.90E-103 | 93 | 154 |
| 18812 | 18842 | - | 9 | 6846544 | 6846574 | + | 31 | 9.20E-05 | 100 | 31 |
| 9879 | 10007 | + | 9 | 6877447 | 6877575 | + | 60 | 1.80E-19 | 86 | 132 |
| 19380 | 19680 | + | 9 | 7337715 | 7338018 | + | 224 | 2.60E-116 | 93 | 304 |
| 28273 | 28474 | + | 9 | 7732293 | 7732498 | + | 151 | 1.50E-71 | 93 | 207 |
| 60682 | 60765 | + | 9 | 7829738 | 7829820 | + | 83 | 1.30E-36 | 100 | 83 |
| 51772 | 51821 | - | 9 | 8067664 | 8067712 | + | 49 | 2.40E-16 | 100 | 49 |
| 84504 | 84842 | + | 9 | 9917818 | 9918155 | + | 319 | 3.10E-177 | 99 | 339 |
| 130279 | 130617 | - | 9 | 9917818 | 9918155 | + | 319 | 9.40E-172 | 99 | 339 |
| 130229 | 130278 | - | 9 | 9918107 | 9918155 | + | 45 | 3.80E-11 | 98 | 49 |
| 100287 | 100303 | - | 9 | 9982321 | 9982336 | + | 16 | 9.40E-172 | 100 | 16 |
| 87342 | 87550 | + | 9 | 10798934 | 10799140 | + | 180 | 2.10E-94 | 97 | 208 |
| 57470 | 57697 | + | 9 | 10902656 | 10902881 | + | 170 | 1.90E-88 | 93 | 230 |
| 19380 | 19661 | - | 9 | 11531119 | 11531401 | + | 200 | 3.20E-101 | 93 | 284 |
| 60114 | 60536 | + | 9 | 11610554 | 11610975 | + | 422 | 1.30E-238 | 100 | 422 |
| 115617 | 115632 | + | 9 | 11944692 | 11944706 | + | 15 | 0 | 100 | 15 |
| 80912 | 81952 | - | 9 | 11944700 | 11945738 | + | 974 | 0 | 98 | 1042 |
| 133169 | 134209 | + | 9 | 11944700 | 11945738 | + | 974 | 0 | 98 | 1042 |
| 80615 | 80903 | - | 9 | 11945748 | 11946035 | + | 284 | 0 | 100 | 288 |
| 134218 | 134506 | + | 9 | 11945748 | 11946035 | + | 284 | 0 | 100 | 288 |
| 80178 | 80600 | - | 9 | 11946050 | 11946468 | + | 394 | 0 | 98 | 422 |
| 80089 | 80170 | - | 9 | 11946478 | 11946558 | + | 81 | 0 | 100 | 81 |
| 79177 | 80047 | - | 9 | 11946599 | 11947468 | + | 824 | 0 | 99 | 872 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 78981 | 79140 | - | 9 | 11947503 | 11947661 | + | 151 | 0 | 99 | 159 |
| 78542 | 78968 | - | 9 | 11947675 | 11948101 | + | 399 | 0 | 98 | 427 |
| 78449 | 78532 | - | 9 | 11948099 | 11948181 | + | 83 | 0 | 100 | 83 |
| 77725 | 78413 | - | 9 | 11948209 | 11948895 | + | 661 | 0 | 99 | 689 |
| 76632 | 77697 | - | 9 | 11948925 | 11949990 | + | 1022 | 0 | 99 | 1066 |
| 19052 | 19144 | + | 9 | 12024164 | 12024251 | + | 49 | 1.90E-13 | 88 | 93 |
| 19380 | 19442 | + | 9 | 12296588 | 12296650 | + | 47 | 7.30E-14 | 94 | 63 |
| 19380 | 19672 | + | 9 | 12296659 | 12296951 | + | 233 | 4.50E-123 | 95 | 293 |
| 19380 | 19442 | + | 9 | 12651335 | 12651397 | + | 47 | 3.80E-11 | 94 | 63 |
| 19380 | 19672 | + | 9 | 12651406 | 12651698 | + | 233 | 5.50E-120 | 95 | 293 |
| 98406 | 98566 | - | 9 | 12735437 | 12735596 | + | 109 | 4.30E-52 | 92 | 161 |
| 19380 | 19442 | + | 9 | 12894850 | 12894912 | + | 47 | 1.30E-12 | 94 | 63 |
| 19380 | 19672 | + | 9 | 12894921 | 12895213 | + | 233 | 4.80E-120 | 95 | 293 |
| 108527 | 108544 | + | 9 | 14424094 | 14424110 | + | 17 | 0 | 100 | 17 |
| 111624 | 111639 | + | 9 | 14429221 | 14429235 | + | 15 | 0 | 100 | 15 |
| 126287 | 126303 | + | 9 | 14446053 | 14446068 | + | 16 | 0 | 100 | 16 |
| 120973 | 120988 | + | 9 | 14448490 | 14448504 | + | 15 | 0 | 100 | 15 |
| 100819 | 100834 | + | 9 | 14453527 | 14453541 | + | 15 | 0 | 100 | 15 |
| 93197 | 93338 | - | 9 | 14457730 | 14457871 | + | 94 | 0 | 92 | 142 |
| 121783 | 121924 | + | 9 | 14457730 | 14457871 | + | 94 | 0 | 92 | 142 |
| 106101 | 106116 | + | 9 | 14463602 | 14463616 | + | 15 | 0 | 100 | 15 |
| 110617 | 110632 | + | 9 | 14490710 | 14490724 | + | 15 | 0 | 100 | 15 |
| 133039 | 133054 | + | 9 | 14497025 | 14497039 | + | 15 | 9.60E-199 | 100 | 15 |
| 130535 | 130550 | + | 9 | 14497702 | 14497716 | + | 15 | 0 | 100 | 15 |
| 133039 | 133054 | + | 9 | 14500283 | 14500297 | + | 15 | 7.60E-198 | 100 | 15 |
| 130535 | 130550 | + | 9 | 14500930 | 14500944 | + | 15 | 0 | 100 | 15 |
| 80912 | 83055 | - | 9 | 14504285 | 14506427 | + | 2143 | 0 | 100 | 2143 |
| 132066 | 134209 | + | 9 | 14504285 | 14506427 | + | 2143 | 0 | 100 | 2143 |
| 55807 | 55866 | + | 9 | 14504378 | 14504437 | + | 48 | 2.90E-56 | 95 | 60 |
| 55866 | 55957 | + | 9 | 14504573 | 14504663 | + | 87 | 2.90E-56 | 99 | 91 |
| 80615 | 80904 | - | 9 | 14506436 | 14506724 | + | 289 | 0 | 100 | 289 |
| 134217 | 134506 | + | 9 | 14506436 | 14506724 | + | 289 | 0 | 100 | 289 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 80178 | 80600 | - | 9 | 14506740 | 14507161 | + | 418 | 0 | 100 | 422 |
| 80089 | 80170 | - | 9 | 14507170 | 14507250 | + | 81 | 0 | 100 | 81 |
| 79177 | 80047 | - | 9 | 14507291 | 14508160 | + | 862 | 0 | 100 | 870 |
| 78977 | 79140 | - | 9 | 14508198 | 14508360 | + | 163 | 0 | 100 | 163 |
| 78449 | 78968 | - | 9 | 14508370 | 14508889 | + | 516 | 0 | 100 | 520 |
| 77725 | 78413 | - | 9 | 14508920 | 14509606 | + | 673 | 0 | 99 | 689 |
| 77613 | 77697 | - | 9 | 14509635 | 14509718 | + | 84 | 0 | 100 | 84 |
| 90770 | 90851 | - | 9 | 15150752 | 15150832 | + | 61 | 1.70E-23 | 94 | 81 |
| 39590 | 39677 | - | 9 | 15832652 | 15832739 | + | 77 | 1.60E-29 | 97 | 89 |
| 7858 | 8027 | + | 9 | 16300294 | 16300463 | + | 158 | 8.20E-77 | 98 | 170 |
| 53431 | 53514 | - | 9 | 16351991 | 16352073 | + | 71 | 2.40E-76 | 96 | 83 |
| 53203 | 53317 | - | 9 | 16352174 | 16352287 | + | 98 | 2.40E-76 | 96 | 114 |
| 46564 | 46831 | + | 9 | 16672790 | 16673049 | + | 83 | 2.10E-34 | 83 | 271 |
| 83855 | 83915 | + | 9 | 16967358 | 16967417 | + | 52 | 3.90E-18 | 97 | 60 |
| 40243 | 40628 | - | 9 | 17163326 | 17163711 | + | 374 | 2.00E-203 | 99 | 386 |
| 68975 | 69084 | + | 9 | 17855155 | 17855263 | + | 62 | 4.30E-24 | 89 | 110 |
| 46632 | 46834 | + | 9 | 18336123 | 18336321 | + | 135 | 1.50E-62 | 92 | 203 |
| 18190 | 18240 | - | 9 | 18364877 | 18364929 | + | 37 | 6.30E-11 | 92 | 53 |
| 43192 | 43266 | - | 9 | 18454399 | 18454473 | + | 67 | 3.30E-23 | 97 | 75 |
| 26907 | 26985 | + | 9 | 18566194 | 18566277 | - | 28 | 4.70E-06 | 83 | 84 |
| 22896 | 22952 | - | 9 | 18577552 | 18577608 | - | 53 | 4.40E-16 | 98 | 57 |
| 35427 | 35468 | + | 9 | 18577608 | 18577649 | - | 34 | 3.10E-09 | 95 | 42 |
| 120435 | 120451 | + | 9 | 18691858 | 18691873 | - | 16 | 3.30E-176 | 100 | 16 |
| 107931 | 108328 | + | 9 | 18718839 | 18719236 | - | 323 | 3.30E-176 | 95 | 399 |
| 104847 | 104863 | + | 9 | 18734858 | 18734873 | - | 16 | 3.30E-176 | 100 | 16 |
| 889 | 966 | - | 9 | 19974831 | 19974908 | + | 43 | 2.20E-14 | 89 | 79 |
| 76851 | 76952 | - | 9 | 20197584 | 20197684 | + | 101 | 2.50E-47 | 100 | 101 |
| 74784 | 75002 | - | 9 | 20293506 | 20293721 | + | 162 | 1.10E-83 | 94 | 218 |
| 7180 | 7233 | - | 9 | 20994539 | 20994591 | + | 34 | 4.70E-15 | 91 | 54 |
| 7115 | 7176 | - | 9 | 20994608 | 20994669 | + | 34 | 4.70E-15 | 89 | 62 |
| 77252 | 77417 | + | 9 | 21163545 | 21163708 | + | 125 | 1.20E-61 | 94 | 165 |
| 8099 | 8137 | - | 9 | 21178607 | 21178645 | + | 31 | 1.90E-14 | 95 | 39 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 7921 | 8034 | - | 9 | 21178657 | 21178774 | + | 35 | 1.90E-14 | 82 | 119 |
| 61559 | 62160 | + | 9 | 21929739 | 21930339 | + | 601 | 0 | 100 | 601 |
| 59271 | 59404 | + | 10 | 852783 | 852911 | + | 73 | 1.20E-30 | 89 | 133 |
| 39895 | 39934 | - | 10 | 1214425 | 1214464 | + | 36 | 1.70E-07 | 98 | 40 |
| 40120 | 40228 | + | 10 | 1214463 | 1214570 | + | 77 | 2.40E-29 | 93 | 109 |
| 109596 | 109612 | - | 10 | 4309372 | 4309387 | - | 16 | 3.40E-182 | 100 | 16 |
| 1743 | 1779 | - | 10 | 4316083 | 4316119 | + | 37 | 1.80E-11 | 100 | 37 |
| 110589 | 110607 | - | 10 | 4342269 | 4342286 | - | 18 | 3.40E-182 | 100 | 18 |
| 112421 | 112438 | - | 10 | 4369534 | 4369550 | - | 17 | 3.40E-182 | 100 | 17 |
| 117520 | 117562 | - | 10 | 4381555 | 4381596 | - | 42 | 3.40E-182 | 100 | 42 |
| 123337 | 123366 | - | 10 | 4382082 | 4382110 | - | 25 | 3.40E-182 | 97 | 29 |
| 88997 | 89402 | + | 10 | 4382214 | 4382617 | - | 300 | 3.50E-179 | 93 | 408 |
| 125719 | 126124 | - | 10 | 4382214 | 4382617 | - | 300 | 3.40E-182 | 93 | 408 |
| 127511 | 127527 | - | 10 | 4406001 | 4406016 | - | 16 | 3.40E-182 | 100 | 16 |
| 15386 | 15447 | + | 10 | 4483251 | 4483313 | + | 39 | 2.60E-09 | 90 | 63 |
| 4215 | 4315 | - | 10 | 4980283 | 4980384 | + | 56 | 5.30E-44 | 88 | 104 |
| 4113 | 4195 | - | 10 | 4980384 | 4980472 | + | 61 | 5.30E-44 | 92 | 89 |
| 19264 | 19304 | - | 10 | 5189589 | 5189629 | + | 29 | 2.60E-05 | 93 | 41 |
| 83162 | 83242 | - | 10 | 5483046 | 5483125 | + | 64 | 2.80E-25 | 95 | 80 |
| 92023 | 92131 | + | 10 | 5483125 | 5483232 | + | 80 | 8.10E-35 | 94 | 108 |
| 2277 | 2316 | + | 10 | 5841411 | 5841450 | - | 36 | 1.50E-07 | 98 | 40 |
| 1832 | 2423 | - | 10 | 5841525 | 5842117 | - | 534 | 0 | 97 | 594 |
| 2430 | 2714 | - | 10 | 5842118 | 5842402 | - | 265 | 0 | 98 | 285 |
| 2568 | 2601 | - | 10 | 5842449 | 5842482 | - | 34 | 5.2e-311 | 100 | 34 |
| 87021 | 87192 | + | 10 | 7191234 | 7191404 | + | 155 | 1.60E-79 | 98 | 171 |
| 10102 | 10190 | - | 10 | 7658329 | 7658417 | + | 85 | 1.20E-35 | 99 | 89 |
| 46570 | 46710 | + | 10 | 7658928 | 7659067 | + | 125 | 4.90E-58 | 97 | 141 |
| 45530 | 45572 | - | 10 | 7660160 | 7660202 | + | 43 | 1.90E-11 | 100 | 43 |
| 117341 | 117357 | + | 10 | 7764537 | 7764552 | + | 16 | 1.50E-51 | 100 | 16 |
| 115509 | 115525 | - | 10 | 7783464 | 7783479 | + | 16 | 1.60E-142 | 100 | 16 |
| 110013 | 110288 | - | 10 | 7798563 | 7798837 | + | 267 | 7.70E-144 | 99 | 275 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 110232 | 110249 | + | 10 | 7810786 | 7810802 | + | 17 | 1.20E-53 | 100 | 17 |
| 82366 | 82580 | + | 10 | 7814271 | 7814484 | + | 214 | 1.20E-114 | 100 | 214 |
| 132541 | 132755 | - | 10 | 7814271 | 7814484 | + | 214 | 9.50E-110 | 100 | 214 |
| 82265 | 82378 | - | 10 | 7814893 | 7815005 | + | 113 | 1.80E-54 | 100 | 113 |
| 132743 | 132856 | + | 10 | 7814893 | 7815005 | + | 113 | 1.20E-53 | 100 | 113 |
| 130299 | 130315 | - | 10 | 7825790 | 7825805 | + | 16 | 9.50E-110 | 100 | 16 |
| 39086 | 39141 | - | 10 | 8523287 | 8523340 | - | 36 | 4.60E-08 | 91 | 56 |
| 81712 | 81804 | + | 10 | 8545428 | 8545519 | - | 80 | 8.10E-35 | 97 | 92 |
| 73069 | 73241 | + | 10 | 9619916 | 9620091 | + | 121 | 3.00E-59 | 92 | 177 |
| 114243 | 114259 | + | 10 | 9988884 | 9988899 | + | 16 | 1.70E-132 | 100 | 16 |
| 90134 | 90372 | - | 10 | 10078931 | 10079169 | + | 187 | 2.60E-136 | 95 | 239 |
| 124749 | 124987 | + | 10 | 10078931 | 10079169 | + | 187 | 3.90E-133 | 95 | 239 |
| 90012 | 90122 | - | 10 | 10079171 | 10079281 | + | 83 | 2.60E-136 | 94 | 111 |
| 124999 | 125109 | + | 10 | 10079171 | 10079281 | + | 83 | 3.90E-133 | 94 | 111 |
| 63546 | 63744 | + | 10 | 10175106 | 10175301 | - | 143 | 2.30E-72 | 93 | 199 |
| 43009 | 43044 | - | 10 | 10289191 | 10289226 | + | 32 | 4.30E-12 | 97 | 36 |
| 1 | 37 | - | 10 | 10297935 | 10297971 | + | 29 | 4.30E-12 | 95 | 37 |
| 1 | 2932 | + | 10 | 10297942 | 10300873 | + | 2892 | 0 | 100 | 2932 |
| 2941 | 3535 | + | 10 | 10300882 | 10301476 | + | 591 | 0 | 100 | 595 |
| 3553 | 4316 | + | 10 | 10301494 | 10302257 | + | 748 | 0 | 99 | 764 |
| 4353 | 6075 | + | 10 | 10302294 | 10304017 | + | 1700 | 0 | 100 | 1724 |
| 6107 | 6337 | + | 10 | 10304049 | 10304278 | + | 223 | 0 | 99 | 231 |
| 6346 | 7480 | + | 10 | 10304287 | 10305421 | + | 1115 | 0 | 100 | 1135 |
| 7513 | 7582 | + | 10 | 10305454 | 10305523 | + | 70 | 0 | 100 | 70 |
| 7592 | 8037 | + | 10 | 10305532 | 10305977 | + | 442 | 0 | 100 | 446 |
| 44496 | 44524 | - | 10 | 10305769 | 10305797 | + | 29 | 6.00E-05 | 100 | 29 |
| 8093 | 8203 | + | 10 | 10306033 | 10306143 | + | 111 | 0 | 100 | 111 |
| 8212 | 8513 | + | 10 | 10306152 | 10306453 | + | 302 | 0 | 100 | 302 |
| 8623 | 11432 | + | 10 | 10306494 | 10309303 | + | 2771 | 0 | 100 | 2811 |
| 11487 | 13987 | + | 10 | 10309358 | 10311856 | + | 2439 | 0 | 99 | 2503 |
| 36195 | 36238 | + | 10 | 10310655 | 10310698 | + | 36 | 0 | 95 | 44 |
| 13997 | 14863 | + | 10 | 10311866 | 10312730 | + | 839 | 0 | 99 | 867 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|-------|-----|-----------------|----------|----------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 14864 | 15200 | + | 10 | 10312731 | 10313066 | + | 325 | 0 | 99 | 337 |
| 15261 | 15491 | + | 10 | 10313127 | 10313356 | + | 223 | 0 | 99 | 231 |
| 15500 | 15902 | + | 10 | 10313365 | 10313767 | + | 403 | 0 | 100 | 403 |
| 15980 | 16670 | + | 10 | 10313845 | 10314539 | + | 675 | 0 | 99 | 695 |
| 16679 | 17091 | + | 10 | 10314548 | 10314962 | + | 407 | 0 | 100 | 415 |
| 16880 | 16927 | - | 10 | 10314749 | 10314798 | + | 34 | 1.60E-15 | 92 | 50 |
| 17118 | 17331 | + | 10 | 10314989 | 10315202 | + | 210 | 0 | 100 | 214 |
| 17373 | 17811 | + | 10 | 10315236 | 10315676 | + | 425 | 0 | 99 | 441 |
| 17779 | 18625 | + | 10 | 10315676 | 10316522 | + | 835 | 0 | 100 | 847 |
| 18642 | 19675 | + | 10 | 10316538 | 10317571 | + | 1026 | 0 | 100 | 1034 |
| 19706 | 20614 | + | 10 | 10317568 | 10318476 | + | 893 | 0 | 100 | 909 |
| 20624 | 27108 | + | 10 | 10318486 | 10324971 | + | 6426 | 0 | 100 | 6486 |
| 27117 | 27248 | + | 10 | 10324980 | 10325111 | + | 132 | 0 | 100 | 132 |
| 27257 | 27341 | + | 10 | 10325120 | 10325204 | + | 85 | 0 | 100 | 85 |
| 27387 | 29137 | + | 10 | 10325250 | 10327000 | + | 1724 | 0 | 100 | 1752 |
| 29149 | 29503 | + | 10 | 10327010 | 10327364 | + | 351 | 0 | 100 | 355 |
| 29541 | 31267 | + | 10 | 10327402 | 10329128 | + | 1711 | 0 | 100 | 1727 |
| 31276 | 31505 | + | 10 | 10329137 | 10329366 | + | 230 | 0 | 100 | 230 |
| 31514 | 31881 | + | 10 | 10329375 | 10329742 | + | 364 | 0 | 100 | 368 |
| 31891 | 32013 | + | 10 | 10329742 | 10329864 | + | 123 | 0 | 100 | 123 |
| 32022 | 32168 | + | 10 | 10329873 | 10330019 | + | 147 | 0 | 100 | 147 |
| 32122 | 32640 | + | 10 | 10330018 | 10330536 | + | 519 | 0 | 100 | 519 |
| 32674 | 33364 | + | 10 | 10330570 | 10331259 | + | 683 | 0 | 100 | 691 |
| 33399 | 33577 | + | 10 | 10331294 | 10331472 | + | 171 | 0 | 99 | 179 |
| 33618 | 34184 | + | 10 | 10331513 | 10332080 | + | 552 | 0 | 99 | 568 |
| 34194 | 35935 | + | 10 | 10332090 | 10333831 | + | 1710 | 0 | 100 | 1742 |
| 35972 | 36531 | + | 10 | 10333868 | 10334427 | + | 556 | 0 | 100 | 560 |
| 36541 | 36607 | + | 10 | 10334437 | 10334503 | + | 67 | 0 | 100 | 67 |
| 36616 | 41364 | + | 10 | 10334512 | 10339260 | + | 4679 | 0 | 100 | 4751 |
| 41374 | 41491 | + | 10 | 10339270 | 10339387 | + | 118 | 0 | 100 | 118 |
| 41535 | 42468 | + | 10 | 10339431 | 10340364 | + | 920 | 0 | 100 | 936 |
| 42477 | 43683 | + | 10 | 10340373 | 10341571 | + | 1157 | 0 | 99 | 1209 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 43700 | 43898 | + | 10 | 10341588 | 10341786 | + | 199 | 0 | 100 | 199 |
| 43909 | 44411 | + | 10 | 10341797 | 10342297 | + | 491 | 0 | 99 | 503 |
| 44420 | 44883 | + | 10 | 10342306 | 10342769 | + | 457 | 0 | 100 | 465 |
| 7829 | 7857 | - | 10 | 10342382 | 10342410 | + | 29 | 1.60E-15 | 100 | 29 |
| 44892 | 45244 | + | 10 | 10342778 | 10343130 | + | 349 | 0 | 100 | 353 |
| 45279 | 45574 | + | 10 | 10343128 | 10343423 | + | 296 | 0 | 100 | 296 |
| 45613 | 45946 | + | 10 | 10343462 | 10343795 | + | 330 | 0 | 100 | 334 |
| 45968 | 46164 | + | 10 | 10343817 | 10344008 | + | 177 | 0 | 97 | 197 |
| 46193 | 46276 | + | 10 | 10344035 | 10344118 | + | 84 | 0 | 100 | 84 |
| 46286 | 46495 | + | 10 | 10344128 | 10344337 | + | 210 | 0 | 100 | 210 |
| 46504 | 49273 | + | 10 | 10344346 | 10347118 | + | 2737 | 0 | 100 | 2773 |
| 49286 | 49502 | + | 10 | 10347129 | 10347345 | + | 217 | 0 | 100 | 217 |
| 49511 | 50000 | + | 10 | 10347353 | 10347843 | + | 483 | 0 | 100 | 491 |
| 43009 | 43044 | + | 10 | 10387156 | 10387191 | + | 32 | 0 | 97 | 36 |
| 114340 | 114356 | + | 10 | 10409911 | 10409926 | + | 16 | 0 | 100 | 16 |
| 97405 | 97618 | - | 10 | 10458684 | 10458901 | + | 194 | 0 | 97 | 218 |
| 117503 | 117716 | + | 10 | 10458684 | 10458901 | + | 194 | 0 | 97 | 218 |
| 93837 | 97527 | - | 10 | 10458897 | 10462588 | + | 3634 | 0 | 100 | 3694 |
| 117594 | 121284 | + | 10 | 10458897 | 10462588 | + | 3634 | 0 | 100 | 3694 |
| 121590 | 121607 | + | 10 | 10461799 | 10461815 | + | 17 | 2.60E-99 | 100 | 17 |
| 93382 | 93837 | - | 10 | 10462589 | 10463043 | + | 447 | 0 | 100 | 455 |
| 121284 | 121739 | + | 10 | 10462589 | 10463043 | + | 447 | 0 | 100 | 455 |
| 120493 | 120510 | + | 10 | 10462895 | 10462911 | + | 17 | 0 | 100 | 17 |
| 93007 | 93374 | - | 10 | 10463052 | 10463418 | + | 347 | 0 | 99 | 367 |
| 121747 | 122114 | + | 10 | 10463052 | 10463418 | + | 347 | 0 | 99 | 367 |
| 92195 | 92998 | - | 10 | 10463434 | 10464236 | + | 795 | 0 | 100 | 803 |
| 122123 | 122926 | + | 10 | 10463434 | 10464236 | + | 795 | 0 | 100 | 803 |
| 89669 | 92184 | - | 10 | 10464234 | 10466750 | + | 2482 | 0 | 100 | 2518 |
| 122937 | 125418 | + | 10 | 10464234 | 10466716 | + | 2448 | 0 | 100 | 2484 |
| 87852 | 89658 | - | 10 | 10466761 | 10468565 | + | 1774 | 0 | 100 | 1806 |
| 125463 | 127269 | + | 10 | 10466761 | 10468565 | + | 1774 | 0 | 100 | 1806 |
| 84416 | 87815 | - | 10 | 10468603 | 10471994 | + | 3314 | 0 | 99 | 3402 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 127306 | 130705 | + | 10 | 10468603 | 10471994 | + | 3314 | 0 | 99 | 3402 |
| 128784 | 128814 | - | 10 | 10470076 | 10470105 | + | 30 | 2.00E-05 | 100 | 30 |
| 80912 | 84408 | - | 10 | 10472003 | 10475498 | + | 3460 | 0 | 100 | 3496 |
| 130713 | 134209 | + | 10 | 10472003 | 10475498 | + | 3460 | 0 | 100 | 3496 |
| 55866 | 55957 | + | 10 | 10473644 | 10473734 | + | 87 | 0 | 99 | 91 |
| 80615 | 80904 | - | 10 | 10475507 | 10475795 | + | 289 | 0 | 100 | 289 |
| 134217 | 134506 | + | 10 | 10475507 | 10475795 | + | 289 | 0 | 100 | 289 |
| 104212 | 104228 | + | 10 | 10481904 | 10481919 | + | 16 | 2.40E-52 | 100 | 16 |
| 126422 | 126438 | - | 10 | 10490066 | 10490081 | + | 16 | 2.00E-05 | 100 | 16 |
| 111208 | 111226 | + | 10 | 10518768 | 10518785 | + | 18 | 2.40E-52 | 100 | 18 |
| 120912 | 120931 | - | 10 | 10523150 | 10523168 | + | 19 | 2.00E-05 | 100 | 19 |
| 50002 | 50466 | + | 10 | 10525718 | 10526181 | + | 456 | 0 | 100 | 464 |
| 50474 | 53330 | + | 10 | 10526189 | 10529046 | + | 2814 | 0 | 100 | 2858 |
| 53424 | 53871 | + | 10 | 10529140 | 10529586 | + | 417 | 0 | 98 | 449 |
| 53859 | 53993 | + | 10 | 10529589 | 10529722 | + | 134 | 0 | 100 | 134 |
| 54010 | 55538 | + | 10 | 10529740 | 10531267 | + | 1512 | 0 | 100 | 1528 |
| 55599 | 55666 | + | 10 | 10531329 | 10531395 | + | 63 | 0 | 99 | 67 |
| 55672 | 57010 | + | 10 | 10531402 | 10532741 | + | 1312 | 0 | 99 | 1340 |
| 82902 | 82962 | - | 10 | 10531537 | 10531595 | + | 48 | 0 | 95 | 60 |
| 132159 | 132219 | + | 10 | 10531537 | 10531595 | + | 48 | 0 | 95 | 60 |
| 82676 | 82767 | - | 10 | 10531596 | 10531686 | + | 83 | 0 | 98 | 91 |
| 132354 | 132445 | + | 10 | 10531596 | 10531686 | + | 83 | 0 | 98 | 91 |
| 57099 | 57875 | + | 10 | 10532818 | 10533597 | + | 737 | 0 | 99 | 781 |
| 57883 | 58265 | + | 10 | 10533606 | 10533987 | + | 366 | 0 | 99 | 382 |
| 58314 | 58674 | + | 10 | 10534037 | 10534398 | + | 354 | 0 | 99 | 362 |
| 58689 | 59130 | + | 10 | 10534415 | 10534855 | + | 433 | 0 | 100 | 441 |
| 59161 | 59410 | + | 10 | 10534887 | 10535135 | + | 249 | 0 | 100 | 249 |
| 59468 | 60031 | + | 10 | 10535193 | 10535754 | + | 559 | 0 | 100 | 563 |
| 60039 | 60639 | + | 10 | 10535763 | 10536362 | + | 592 | 0 | 100 | 600 |
| 60680 | 61075 | + | 10 | 10536404 | 10536803 | + | 376 | 0 | 99 | 400 |
| 61162 | 61794 | + | 10 | 10536891 | 10537521 | + | 624 | 0 | 100 | 632 |
| 61794 | 63058 | + | 10 | 10537522 | 10538785 | + | 1256 | 0 | 100 | 1264 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 126366 | 126412 | - | 10 | 10538711 | 10538756 | + | 46 | 0 | 100 | 46 |
| 63066 | 63507 | + | 10 | 10538794 | 10539234 | + | 437 | 0 | 100 | 441 |
| 115928 | 115944 | - | 10 | 10538985 | 10539000 | + | 16 | 0 | 100 | 16 |
| 63515 | 63772 | + | 10 | 10539243 | 10539499 | + | 257 | 0 | 100 | 257 |
| 63780 | 65609 | + | 10 | 10539508 | 10541336 | + | 1815 | 0 | 100 | 1831 |
| 65618 | 69533 | + | 10 | 10541346 | 10545260 | + | 3818 | 0 | 99 | 3918 |
| 112084 | 112100 | - | 10 | 10544120 | 10544135 | + | 16 | 0 | 100 | 16 |
| 69541 | 71371 | + | 10 | 10545269 | 10547098 | + | 1777 | 0 | 99 | 1833 |
| 102899 | 102915 | + | 10 | 10545643 | 10545658 | + | 16 | 1.10E-59 | 100 | 16 |
| 71468 | 71749 | + | 10 | 10547196 | 10547475 | + | 277 | 0 | 100 | 281 |
| 71784 | 74265 | + | 10 | 10547511 | 10549995 | + | 2432 | 0 | 99 | 2488 |
| 74282 | 74547 | + | 10 | 10550013 | 10550277 | + | 265 | 0 | 100 | 265 |
| 74585 | 75875 | + | 10 | 10550316 | 10551605 | + | 1282 | 0 | 100 | 1290 |
| 75987 | 76222 | + | 10 | 10551716 | 10551950 | + | 231 | 0 | 100 | 235 |
| 76238 | 76511 | + | 10 | 10551966 | 10552238 | + | 269 | 0 | 100 | 273 |
| 76597 | 76663 | + | 10 | 10552323 | 10552388 | + | 66 | 0 | 100 | 66 |
| 76663 | 77696 | + | 10 | 10552383 | 10553416 | + | 1026 | 0 | 100 | 1034 |
| 129478 | 129495 | - | 10 | 10552647 | 10552663 | + | 17 | 0 | 100 | 17 |
| 77724 | 78413 | + | 10 | 10553446 | 10554133 | + | 678 | 0 | 100 | 690 |
| 78449 | 78968 | + | 10 | 10554163 | 10554682 | + | 512 | 0 | 100 | 520 |
| 78977 | 79140 | + | 10 | 10554691 | 10554853 | + | 155 | 0 | 99 | 163 |
| 79177 | 79509 | + | 10 | 10554890 | 10555221 | + | 324 | 0 | 99 | 332 |
| 79567 | 80050 | + | 10 | 10555280 | 10555762 | + | 483 | 0 | 100 | 483 |
| 80088 | 80170 | + | 10 | 10555801 | 10555882 | + | 82 | 0 | 100 | 82 |
| 80178 | 80600 | + | 10 | 10555891 | 10556313 | + | 419 | 0 | 100 | 423 |
| 80615 | 80904 | + | 10 | 10556330 | 10556618 | + | 289 | 0 | 100 | 289 |
| 134217 | 134506 | - | 10 | 10556330 | 10556618 | + | 289 | 0 | 100 | 289 |
| 80912 | 84408 | + | 10 | 10556627 | 10560121 | + | 3432 | 0 | 100 | 3496 |
| 130713 | 134209 | - | 10 | 10556627 | 10560121 | + | 3432 | 0 | 100 | 3496 |
| 55866 | 55957 | - | 10 | 10558391 | 10558481 | + | 87 | 7.30E-66 | 99 | 91 |
| 55807 | 55866 | - | 10 | 10558617 | 10558676 | + | 48 | 7.30E-66 | 95 | 60 |
| 84416 | 87815 | + | 10 | 10560130 | 10563527 | + | 3319 | 0 | 99 | 3407 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 127306 | 130705 | - | 10 | 10560130 | 10563527 | + | 3319 | 0 | 99 | 3407 |
| 87851 | 89655 | + | 10 | 10563564 | 10565366 | + | 1784 | 0 | 100 | 1804 |
| 125466 | 127270 | - | 10 | 10563564 | 10565366 | + | 1784 | 0 | 100 | 1804 |
| 89702 | 92558 | + | 10 | 10565412 | 10568268 | + | 2803 | 0 | 100 | 2859 |
| 122563 | 125419 | - | 10 | 10565412 | 10568268 | + | 2803 | 0 | 100 | 2859 |
| 92572 | 92998 | + | 10 | 10568265 | 10568690 | + | 414 | 0 | 99 | 426 |
| 122123 | 122549 | - | 10 | 10568265 | 10568690 | + | 414 | 0 | 99 | 426 |
| 93007 | 93374 | + | 10 | 10568702 | 10569068 | + | 351 | 0 | 99 | 367 |
| 121747 | 122114 | - | 10 | 10568702 | 10569068 | + | 351 | 0 | 99 | 367 |
| 93382 | 98367 | + | 10 | 10569081 | 10574068 | + | 4898 | 0 | 100 | 4990 |
| 116754 | 121739 | - | 10 | 10569081 | 10574068 | + | 4898 | 0 | 100 | 4990 |
| 98383 | 100002 | + | 10 | 10574085 | 10575706 | + | 1606 | 0 | 100 | 1622 |
| 114302 | 116738 | - | 10 | 10574085 | 10576524 | + | 2420 | 0 | 100 | 2440 |
| 100002 | 101106 | + | 10 | 10575707 | 10576811 | + | 1093 | 0 | 100 | 1105 |
| 100618 | 100670 | - | 10 | 10576324 | 10576375 | + | 44 | 0 | 96 | 52 |
| 114451 | 114503 | + | 10 | 10576324 | 10576375 | + | 44 | 1.50E-11 | 96 | 52 |
| 114015 | 114240 | - | 10 | 10576587 | 10576811 | + | 217 | 0 | 99 | 225 |
| 113502 | 114007 | - | 10 | 10576820 | 10577324 | + | 505 | 0 | 100 | 505 |
| 101114 | 101393 | + | 10 | 10576820 | 10577098 | + | 279 | 0 | 100 | 279 |
| 111573 | 113486 | - | 10 | 10577341 | 10579254 | + | 1890 | 0 | 100 | 1914 |
| 107502 | 111564 | - | 10 | 10579264 | 10583331 | + | 4012 | 0 | 100 | 4068 |
| 107439 | 107486 | - | 10 | 10583348 | 10583394 | + | 47 | 0 | 100 | 47 |
| 106397 | 107431 | - | 10 | 10583407 | 10584440 | + | 1030 | 0 | 100 | 1034 |
| 104191 | 106389 | - | 10 | 10584449 | 10586650 | + | 2136 | 0 | 99 | 2204 |
| 105762 | 105794 | + | 10 | 10585044 | 10585075 | + | 32 | 0 | 100 | 32 |
| 100865 | 100881 | - | 10 | 10586554 | 10586569 | + | 16 | 0 | 100 | 16 |
| 114240 | 114256 | + | 10 | 10586554 | 10586569 | + | 16 | 0 | 100 | 16 |
| 103904 | 104131 | - | 10 | 10586712 | 10586938 | + | 227 | 0 | 100 | 227 |
| 103196 | 103896 | - | 10 | 10586948 | 10587648 | + | 689 | 0 | 100 | 701 |
| 103055 | 103188 | - | 10 | 10587657 | 10587789 | + | 133 | 0 | 100 | 133 |
| 102137 | 103047 | - | 10 | 10587798 | 10588707 | + | 902 | 0 | 100 | 910 |
| 101699 | 102129 | - | 10 | 10588716 | 10589145 | + | 419 | 0 | 99 | 431 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 101849 | 101869 | + | 10 | 10588976 | 10588995 | + | 20 | 0 | 100 | 20 |
| 101500 | 101690 | - | 10 | 10589155 | 10589344 | + | 186 | 0 | 99 | 190 |
| 101279 | 101439 | - | 10 | 10589406 | 10589565 | + | 160 | 0 | 100 | 160 |
| 113728 | 113842 | + | 10 | 10589452 | 10589565 | + | 114 | 0 | 100 | 114 |
| 110566 | 110583 | - | 10 | 10603436 | 10603452 | + | 17 | 0 | 100 | 17 |
| 51247 | 51526 | + | 10 | 11458019 | 11458295 | + | 227 | 2.10E-122 | 95 | 279 |
| 28486 | 28603 | - | 10 | 11563244 | 11563361 | + | 102 | 1.30E-74 | 97 | 118 |
| 28418 | 28485 | - | 10 | 11563709 | 11563776 | + | 60 | 1.30E-74 | 97 | 68 |
| 93085 | 93247 | + | 10 | 11643416 | 11643577 | + | 138 | 2.20E-69 | 96 | 162 |
| 121874 | 122036 | - | 10 | 11643416 | 11643577 | + | 138 | 4.50E-116 | 96 | 162 |
| 109367 | 109384 | - | 10 | 11682861 | 11682877 | + | 17 | 1.70E-65 | 100 | 17 |
| 110816 | 111004 | - | 10 | 11682951 | 11683140 | + | 81 | 4.50E-116 | 85 | 197 |
| 110745 | 110787 | - | 10 | 11683167 | 11683208 | + | 38 | 4.50E-116 | 98 | 42 |
| 103667 | 103683 | - | 10 | 11712171 | 11712186 | + | 16 | 4.50E-116 | 100 | 16 |
| 109827 | 109843 | - | 10 | 11724863 | 11724878 | + | 16 | 3.50E-115 | 100 | 16 |
| 90057 | 90138 | + | 10 | 12599497 | 12599578 | - | 51 | 1.50E-17 | 90 | 83 |
| 24126 | 24251 | + | 10 | 13460493 | 13460617 | + | 110 | 3.30E-58 | 97 | 126 |
| 40989 | 41024 | + | 10 | 13521758 | 13521793 | + | 36 | 3.30E-58 | 100 | 36 |
| 85606 | 85674 | + | 10 | 13698148 | 13698215 | + | 68 | 1.10E-27 | 100 | 68 |
| 24126 | 24251 | + | 10 | 13703588 | 13703712 | + | 102 | 2.50E-71 | 95 | 126 |
| 42085 | 42148 | + | 10 | 13832090 | 13832153 | + | 36 | 2.50E-71 | 89 | 64 |
| 42169 | 42198 | + | 10 | 13832246 | 13832275 | + | 30 | 6.70E-64 | 100 | 30 |
| 42169 | 42242 | + | 10 | 13832552 | 13832626 | + | 43 | 2.50E-71 | 89 | 75 |
| 3347 | 3445 | - | 10 | 14029109 | 14029207 | + | 99 | 7.50E-43 | 100 | 99 |
| 50597 | 50692 | + | 10 | 14204181 | 14204277 | + | 73 | 2.80E-43 | 94 | 97 |
| 66644 | 66745 | - | 10 | 14204441 | 14204541 | + | 93 | 1.50E-42 | 98 | 101 |
| 77415 | 77569 | - | 10 | 14206196 | 14206350 | + | 87 | 5.50E-39 | 89 | 159 |
| 24126 | 24251 | - | 10 | 14691690 | 14691814 | + | 102 | 3.90E-45 | 95 | 126 |
| 76341 | 76527 | - | 10 | 14876875 | 14877060 | + | 170 | 1.90E-88 | 98 | 186 |
| 88790 | 88862 | + | 10 | 15555018 | 15555089 | + | 68 | 1.10E-27 | 99 | 72 |
| 17864 | 18378 | + | 10 | 15775898 | 15776412 | + | 483 | 2.30E-268 | 98 | 515 |
| 21308 | 21383 | - | 10 | 15786560 | 15786634 | + | 48 | 2.40E-14 | 91 | 76 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 71879 | 72218 | - | 10 | 15963166 | 15963510 | + | 192 | 1.50E-101 | 89 | 348 |
| 1739 | 1784 | - | 10 | 15973520 | 15973565 | + | 46 | 1.50E-12 | 100 | 46 |
| 70422 | 70490 | + | 10 | 16150197 | 16150264 | + | 68 | 1.10E-27 | 100 | 68 |
| 33263 | 33335 | - | 10 | 16624196 | 16624268 | - | 54 | 8.20E-16 | 93 | 74 |
| 121163 | 121179 | + | 10 | 16928798 | 16928813 | + | 16 | 8.10E-105 | 100 | 16 |
| 100159 | 100175 | + | 10 | 16957343 | 16957358 | + | 16 | 2.90E-106 | 100 | 16 |
| 92749 | 92963 | - | 10 | 16988801 | 16989014 | + | 206 | 6.80E-110 | 99 | 214 |
| 122158 | 122372 | + | 10 | 16988801 | 16989014 | + | 206 | 2.90E-106 | 99 | 214 |
| 56292 | 56410 | + | 10 | 17020993 | 17021108 | + | 78 | 1.30E-33 | 92 | 118 |
| 44040 | 44093 | - | 10 | 18127919 | 18127972 | - | 46 | 1.80E-24 | 96 | 54 |
| 44099 | 44141 | - | 10 | 18128220 | 18128261 | - | 39 | 1.80E-24 | 98 | 43 |
| 54660 | 54799 | + | 10 | 18586124 | 18586260 | - | 111 | 2.70E-53 | 95 | 139 |
| 10505 | 10777 | - | 10 | 18686983 | 18687253 | + | 202 | 6.00E-105 | 93 | 274 |
| 49511 | 50000 | + | 10 | 19955884 | 19956374 | - | 487 | 0 | 100 | 491 |
| 49286 | 49502 | + | 10 | 19956383 | 19956599 | - | 217 | 0 | 100 | 217 |
| 46504 | 49273 | + | 10 | 19956611 | 19959382 | - | 2752 | 0 | 100 | 2772 |
| 46286 | 46495 | + | 10 | 19959391 | 19959600 | - | 206 | 0 | 100 | 210 |
| 46193 | 46276 | + | 10 | 19959610 | 19959693 | - | 84 | 0 | 100 | 84 |
| 45968 | 46164 | + | 10 | 19959722 | 19959918 | - | 197 | 0 | 100 | 197 |
| 45613 | 45946 | + | 10 | 19959940 | 19960273 | - | 330 | 0 | 100 | 334 |
| 44892 | 45574 | + | 10 | 19960312 | 19960994 | - | 683 | 0 | 100 | 683 |
| 44420 | 44883 | + | 10 | 19961003 | 19961466 | - | 453 | 0 | 99 | 465 |
| 43909 | 44411 | + | 10 | 19961475 | 19961975 | - | 495 | 0 | 100 | 503 |
| 43700 | 43898 | + | 10 | 19961986 | 19962184 | - | 199 | 0 | 100 | 199 |
| 42477 | 43683 | + | 10 | 19962201 | 19963399 | - | 1157 | 0 | 99 | 1209 |
| 41535 | 42468 | + | 10 | 19963407 | 19964340 | - | 920 | 0 | 100 | 936 |
| 41374 | 41491 | + | 10 | 19964384 | 19964501 | - | 118 | 0 | 100 | 118 |
| 36616 | 41364 | + | 10 | 19964511 | 19969259 | - | 4687 | 0 | 100 | 4751 |
| 36541 | 36607 | + | 10 | 19969268 | 19969334 | - | 67 | 0 | 100 | 67 |
| 35972 | 36531 | + | 10 | 19969344 | 19969903 | - | 556 | 0 | 100 | 560 |
| 34194 | 35936 | + | 10 | 19969939 | 19971681 | - | 1735 | 0 | 100 | 1743 |
| 33618 | 34184 | + | 10 | 19971691 | 19972258 | - | 556 | 0 | 99 | 568 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 33399 | 33577 | + | 10 | 19972299 | 19972477 | - | 175 | 0 | 99 | 179 |
| 32674 | 33364 | + | 10 | 19972512 | 19973201 | - | 683 | 0 | 100 | 691 |
| 32512 | 32640 | + | 10 | 19973235 | 19973363 | - | 129 | 0 | 100 | 129 |
| 32022 | 32511 | + | 10 | 19973364 | 19973853 | - | 490 | 0 | 100 | 490 |
| 31514 | 32013 | + | 10 | 19973862 | 19974361 | - | 500 | 0 | 100 | 500 |
| 31276 | 31505 | + | 10 | 19974370 | 19974599 | - | 230 | 0 | 100 | 230 |
| 29541 | 31267 | + | 10 | 19974608 | 19976334 | - | 1723 | 0 | 100 | 1727 |
| 29149 | 29503 | + | 10 | 19976372 | 19976726 | - | 355 | 0 | 100 | 355 |
| 29085 | 29137 | + | 10 | 19976738 | 19976790 | - | 53 | 0 | 100 | 53 |
| 125462 | 125497 | + | 10 | 20122031 | 20122065 | - | 35 | 0 | 100 | 35 |
| 89669 | 92998 | - | 10 | 20122076 | 20125406 | - | 3304 | 0 | 100 | 3332 |
| 122123 | 125418 | + | 10 | 20122110 | 20125406 | - | 3270 | 0 | 100 | 3298 |
| 93007 | 93374 | - | 10 | 20125416 | 20125782 | - | 363 | 0 | 100 | 367 |
| 121747 | 122114 | + | 10 | 20125416 | 20125782 | - | 363 | 0 | 100 | 367 |
| 93382 | 98367 | - | 10 | 20125791 | 20130781 | - | 4941 | 0 | 100 | 4993 |
| 116754 | 121739 | + | 10 | 20125791 | 20130781 | - | 4941 | 0 | 100 | 4993 |
| 98383 | 100002 | - | 10 | 20130798 | 20132418 | - | 1606 | 0 | 100 | 1622 |
| 114544 | 116738 | + | 10 | 20130798 | 20132993 | - | 2174 | 0 | 100 | 2198 |
| 100002 | 100577 | - | 10 | 20132419 | 20132993 | - | 568 | 0 | 100 | 576 |
| 50474 | 51107 | + | 10 | 20132992 | 20133626 | - | 619 | 0 | 99 | 635 |
| 50002 | 50466 | + | 10 | 20133634 | 20134097 | - | 464 | 0 | 100 | 464 |
| 120912 | 120931 | - | 10 | 20136649 | 20136667 | - | 19 | 0 | 100 | 19 |
| 111208 | 111226 | + | 10 | 20141075 | 20141092 | - | 18 | 0 | 100 | 18 |
| 12536 | 12687 | - | 10 | 20253460 | 20253609 | + | 94 | 9.70E-40 | 90 | 154 |
| 214 | 1129 | - | 10 | 20826753 | 20827669 | + | 861 | 0 | 98 | 917 |
| 63 | 204 | - | 10 | 20827669 | 20827810 | + | 138 | 0 | 99 | 142 |
| 18 | 54 | - | 10 | 20827810 | 20827846 | + | 33 | 0 | 97 | 37 |
| 80615 | 80904 | + | 10 | 21006103 | 21006391 | + | 277 | 0 | 99 | 289 |
| 134217 | 134506 | - | 10 | 21006103 | 21006391 | + | 277 | 0 | 99 | 289 |
| 80914 | 82194 | + | 10 | 21006402 | 21007680 | + | 1192 | 0 | 98 | 1280 |
| 132927 | 134207 | - | 10 | 21006402 | 21007680 | + | 1192 | 0 | 98 | 1280 |
| 113356 | 113372 | - | 10 | 21010368 | 21010383 | + | 16 | 0 | 100 | 16 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 123437 | 123452 | - | 10 | 21051943 | 21051957 | + | 15 | 0 | 100 | 15 |
| 100259 | 100274 | - | 10 | 21059170 | 21059184 | + | 15 | 0 | 100 | 15 |
| 116391 | 116406 | - | 10 | 21072716 | 21072730 | + | 15 | 0 | 100 | 15 |
| 109603 | 109618 | - | 10 | 21078591 | 21078605 | + | 15 | 0 | 100 | 15 |
| 108990 | 109005 | - | 10 | 21079189 | 21079203 | + | 15 | 0 | 100 | 15 |
| 107362 | 107377 | - | 10 | 21083939 | 21083953 | + | 15 | 0 | 100 | 15 |
| 101708 | 101723 | - | 10 | 21084751 | 21084765 | + | 15 | 0 | 100 | 15 |
| 101511 | 101526 | - | 10 | 21096887 | 21096901 | + | 15 | 0 | 100 | 15 |
| 97020 | 97251 | - | 10 | 21394431 | 21394662 | - | 216 | 7.50E-116 | 98 | 232 |
| 117870 | 118101 | + | 10 | 21394431 | 21394662 | - | 216 | 1.10E-111 | 98 | 232 |
| 5857 | 5916 | - | 10 | 21555674 | 21555734 | - | 49 | 1.00E-14 | 95 | 61 |
| 8623 | 11168 | + | 10 | 21937037 | 21939581 | - | 2491 | 0 | 99 | 2547 |
| 8561 | 8607 | + | 10 | 21939597 | 21939643 | - | 43 | 0 | 98 | 47 |
| 8212 | 8513 | + | 10 | 21939691 | 21939992 | - | 302 | 0 | 100 | 302 |
| 8093 | 8203 | + | 10 | 21940000 | 21940110 | - | 111 | 0 | 100 | 111 |
| 7592 | 8037 | + | 10 | 21940166 | 21940611 | - | 446 | 0 | 100 | 446 |
| 44496 | 44524 | - | 10 | 21940346 | 21940374 | - | 29 | 2.80E-07 | 100 | 29 |
| 7513 | 7582 | + | 10 | 21940620 | 21940689 | - | 70 | 0 | 100 | 70 |
| 6854 | 7480 | + | 10 | 21940722 | 21941349 | - | 608 | 0 | 99 | 628 |
| 6529 | 6807 | + | 10 | 22149286 | 22149563 | + | 251 | 1.70E-133 | 97 | 279 |
| 22410 | 23309 | - | 10 | 22264916 | 22265816 | + | 865 | 0 | 99 | 901 |
| 40601 | 40668 | + | 10 | 22345713 | 22345780 | + | 45 | 7.80E-13 | 91 | 69 |
| 81560 | 83666 | + | 10 | 22441033 | 22443138 | + | 2054 | 0 | 99 | 2106 |
| 131455 | 133561 | - | 10 | 22441033 | 22443138 | + | 2054 | 0 | 99 | 2106 |
| 55866 | 55957 | - | 10 | 22442149 | 22442239 | + | 87 | 3.30E-56 | 99 | 91 |
| 55807 | 55866 | - | 10 | 22442375 | 22442434 | + | 48 | 3.30E-56 | 95 | 60 |
| 102051 | 102066 | - | 10 | 22452663 | 22452677 | + | 15 | 0 | 100 | 15 |
| 103680 | 103696 | - | 10 | 22470017 | 22470032 | + | 16 | 0 | 100 | 16 |
| 113983 | 113998 | - | 10 | 22472206 | 22472220 | + | 15 | 0 | 100 | 15 |
| 114565 | 114585 | - | 10 | 22487957 | 22487976 | + | 20 | 0 | 100 | 20 |
| 104676 | 104691 | - | 10 | 22504319 | 22504333 | + | 15 | 0 | 100 | 15 |
| 116391 | 116406 | - | 10 | 22519963 | 22519977 | + | 15 | 0 | 100 | 15 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 104716 | 104731 | - | 10 | 22524144 | 22524158 | + | 15 | 0 | 100 | 15 |
| 101781 | 101802 | - | 10 | 22530803 | 22530823 | + | 17 | 0 | 95 | 21 |
| 21472 | 21538 | - | 11 | 618773 | 618839 | - | 63 | 3.10E-21 | 99 | 67 |
| 9083 | 9146 | + | 11 | 1566392 | 1566455 | + | 48 | 3.90E-15 | 94 | 64 |
| 37311 | 37544 | + | 11 | 2061106 | 2061339 | + | 226 | 8.10E-116 | 99 | 234 |
| 30655 | 30772 | - | 11 | 2368623 | 2368741 | + | 44 | 1.80E-17 | 84 | 120 |
| 30549 | 30589 | - | 11 | 2368789 | 2368829 | + | 29 | 1.80E-17 | 93 | 41 |
| 87346 | 87436 | - | 11 | 2404328 | 2404415 | + | 58 | 1.00E-21 | 91 | 90 |
| 81026 | 81131 | + | 11 | 3496168 | 3496272 | + | 97 | 6.00E-45 | 98 | 105 |
| 22265 | 22495 | - | 11 | 4336140 | 4336370 | + | 199 | 4.50E-100 | 97 | 231 |
| 59400 | 59657 | - | 11 | 4449811 | 4450065 | + | 213 | 8.30E-174 | 96 | 257 |
| 59227 | 59401 | - | 11 | 4453810 | 4453983 | + | 120 | 8.30E-174 | 92 | 176 |
| 36376 | 36526 | + | 11 | 4620613 | 4620763 | - | 111 | 1.50E-48 | 93 | 151 |
| 36153 | 36526 | + | 11 | 4621887 | 4622263 | - | 260 | 5.60E-136 | 92 | 380 |
| 66893 | 67039 | + | 11 | 4760633 | 4760772 | - | 102 | 6.30E-48 | 92 | 146 |
| 23847 | 23993 | - | 11 | 4837106 | 4837253 | - | 132 | 1.90E-61 | 97 | 148 |
| 98472 | 98528 | + | 11 | 4843751 | 4843806 | - | 48 | 9.40E-16 | 96 | 56 |
| 84868 | 84976 | - | 11 | 4843806 | 4843913 | - | 104 | 4.10E-49 | 99 | 108 |
| 41127 | 41256 | - | 11 | 5741814 | 5741943 | + | 99 | 3.10E-42 | 94 | 131 |
| 25591 | 25671 | - | 11 | 5944519 | 5944598 | + | 34 | 2.50E-18 | 85 | 82 |
| 25527 | 25567 | - | 11 | 5944599 | 5944639 | + | 37 | 2.50E-18 | 98 | 41 |
| 64218 | 64368 | + | 11 | 6109623 | 6109773 | + | 95 | 9.30E-44 | 91 | 151 |
| 85040 | 85206 | - | 11 | 6586435 | 6586600 | - | 166 | 4.60E-86 | 100 | 166 |
| 21434 | 21533 | + | 11 | 7071878 | 7071976 | + | 48 | 5.50E-12 | 87 | 100 |
| 37555 | 37711 | - | 11 | 7133805 | 7133960 | - | 105 | 1.00E-49 | 92 | 157 |
| 37975 | 38016 | + | 11 | 7882439 | 7882480 | - | 30 | 0.0015 | 93 | 42 |
| 4353 | 4658 | - | 11 | 8515253 | 8515557 | + | 274 | 9.60E-157 | 97 | 306 |
| 4279 | 4318 | - | 11 | 8515592 | 8515631 | + | 36 | 9.60E-157 | 98 | 40 |
| 17163 | 17202 | - | 11 | 8819776 | 8819815 | + | 36 | 8.00E-09 | 98 | 40 |
| 45217 | 45296 | + | 11 | 9138468 | 9138549 | + | 54 | 1.10E-40 | 91 | 82 |
| 45332 | 45431 | + | 11 | 9138562 | 9138660 | + | 57 | 1.10E-40 | 89 | 101 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|-------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 77758 | 78179 | - | 11 | 9284848 | 9285268 | - | 334 | 3.60E-186 | 95 | 422 |
| 7063 | 7236 | - | 11 | 9446167 | 9446340 | + | 158 | 1.70E-77 | 98 | 174 |
| 75283 | 75640 | + | 11 | 9476321 | 9476677 | + | 321 | 1.80E-187 | 97 | 357 |
| 48545 | 48789 | + | 11 | 10199044 | 10199288 | + | 221 | 7.70E-119 | 98 | 245 |
| 53525 | 53598 | + | 11 | 10214319 | 10214392 | + | 58 | 2.00E-31 | 95 | 74 |
| 51182 | 51299 | - | 11 | 10835550 | 10835666 | - | 113 | 1.80E-54 | 99 | 117 |
| 28728 | 28797 | + | 11 | 10836176 | 10836245 | + | 43 | 7.70E-10 | 90 | 71 |
| 21069 | 21227 | + | 11 | 10836405 | 10836563 | + | 151 | 2.30E-71 | 99 | 159 |
| 71981 | 72032 | - | 11 | 11874153 | 11874203 | - | 51 | 2.40E-98 | 100 | 51 |
| 20910 | 20963 | - | 11 | 11876007 | 11876060 | - | 54 | 4.10E-17 | 100 | 54 |
| 53188 | 53247 | - | 11 | 11876302 | 11876360 | - | 51 | 1.50E-113 | 97 | 59 |
| 95546 | 95755 | - | 11 | 11971370 | 11971579 | - | 155 | 1.50E-113 | 93 | 211 |
| 61650 | 61868 | - | 11 | 12031866 | 12032084 | + | 104 | 4.10E-49 | 87 | 220 |
| 17685 | 17872 | + | 11 | 12437600 | 12437786 | - | 176 | 6.50E-88 | 98 | 188 |
| 35693 | 35819 | - | 11 | 12437894 | 12438020 | - | 107 | 1.30E-48 | 96 | 127 |
| 5643 | 5769 | + | 11 | 13455428 | 13455553 | + | 48 | 3.90E-38 | 84 | 128 |
| 5863 | 5917 | + | 11 | 13455638 | 13455693 | + | 40 | 3.90E-38 | 93 | 56 |
| 5929 | 5966 | + | 11 | 13455701 | 13455738 | + | 34 | 3.90E-38 | 97 | 38 |
| 73673 | 74039 | + | 11 | 13588678 | 13589042 | + | 326 | 2.10E-181 | 97 | 366 |
| 70527 | 71017 | + | 11 | 14048766 | 14049251 | + | 466 | 8.00E-265 | 99 | 490 |
| 16133 | 16450 | - | 11 | 14052725 | 14053042 | + | 314 | 3.00E-169 | 100 | 318 |
| 4412 | 4477 | + | 11 | 14258152 | 14258214 | - | 38 | 5.20E-17 | 89 | 66 |
| 4360 | 4400 | + | 11 | 14258248 | 14258288 | - | 33 | 5.20E-17 | 95 | 41 |
| 38697 | 38815 | + | 11 | 14334185 | 14334302 | - | 56 | 1.60E-20 | 87 | 120 |
| 36030 | 36116 | - | 11 | 15289994 | 15290080 | + | 83 | 6.90E-33 | 99 | 87 |
| 90484 | 90602 | + | 11 | 15786026 | 15786142 | + | 77 | 5.00E-33 | 91 | 121 |
| 19419 | 19680 | - | 11 | 16034382 | 16034639 | + | 147 | 4.10E-71 | 89 | 267 |
| 29149 | 29218 | - | 11 | 16698544 | 16698614 | + | 36 | 1.50E-07 | 88 | 72 |
| 47824 | 47901 | - | 11 | 17144115 | 17144192 | + | 43 | 2.90E-11 | 89 | 79 |
| 44958 | 45056 | - | 11 | 17403354 | 17403449 | + | 51 | 2.90E-15 | 88 | 99 |
| 2049 | 2284 | + | 11 | 18044435 | 18044670 | + | 196 | 6.10E-104 | 96 | 236 |
| 8212 | 8256 | - | 11 | 18181909 | 18181953 | + | 41 | 3.50E-59 | 98 | 45 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|-------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 8083 | 8200 | - | 11 | 18181965 | 18182082 | + | 102 | 3.50E-59 | 97 | 118 |
| 70640 | 70732 | + | 11 | 18187236 | 18187327 | + | 88 | 1.40E-39 | 99 | 92 |
| 70735 | 70840 | + | 11 | 18187331 | 18187434 | + | 82 | 5.20E-36 | 94 | 106 |
| 55674 | 55739 | - | 11 | 18856882 | 18856946 | + | 57 | 0 | 97 | 65 |
| 54508 | 55537 | - | 11 | 18857084 | 18858119 | + | 812 | 0 | 95 | 1036 |
| 52998 | 53070 | + | 11 | 18892179 | 18892250 | + | 56 | 0 | 94 | 72 |
| 53147 | 53330 | + | 11 | 18893556 | 18893738 | + | 128 | 0 | 92 | 184 |
| 53424 | 53919 | + | 11 | 18893832 | 18894326 | + | 386 | 0 | 94 | 498 |
| 53918 | 53993 | + | 11 | 18894308 | 18894382 | + | 67 | 0 | 97 | 75 |
| 54021 | 54612 | + | 11 | 18894404 | 18894994 | + | 460 | 0 | 94 | 592 |
| 54607 | 55278 | + | 11 | 18900123 | 18900790 | + | 517 | 0 | 94 | 673 |
| 55285 | 55537 | + | 11 | 18900791 | 18901042 | + | 236 | 0 | 98 | 252 |
| 55600 | 55667 | + | 11 | 18901105 | 18901171 | + | 51 | 0 | 94 | 67 |
| 55674 | 56187 | + | 11 | 18901179 | 18901694 | + | 399 | 0 | 94 | 519 |
| 82902 | 82962 | - | 11 | 18901314 | 18901372 | + | 48 | 9.50E-16 | 95 | 60 |
| 65808 | 65907 | - | 11 | 18936710 | 18936807 | + | 51 | 1.60E-17 | 88 | 99 |
| 25243 | 25288 | + | 11 | 19412959 | 19413004 | + | 38 | 2.20E-06 | 96 | 46 |
| 16879 | 16921 | + | 11 | 19854142 | 19854184 | + | 35 | 1.20E-07 | 95 | 43 |
| 91555 | 91608 | - | 11 | 19860220 | 19860272 | + | 53 | 1.00E-18 | 100 | 53 |
| 32507 | 32628 | - | 11 | 21314809 | 21314929 | + | 50 | 1.30E-12 | 85 | 122 |
| 32446 | 32628 | - | 11 | 21324949 | 21325136 | + | 62 | 1.10E-20 | 83 | 190 |
| 6919 | 7313 | - | 11 | 21974970 | 21975364 | + | 391 | 2.00E-213 | 100 | 395 |
| 56353 | 56568 | + | 11 | 22610837 | 22611052 | - | 176 | 5.10E-92 | 95 | 216 |
| 7810 | 8037 | + | 11 | 23128111 | 23128339 | + | 201 | 7.60E-106 | 97 | 229 |
| 26285 | 26425 | - | 11 | 24394136 | 24394276 | - | 74 | 1.70E-43 | 88 | 142 |
| 26443 | 26540 | - | 11 | 24394286 | 24394384 | - | 43 | 1.70E-43 | 86 | 99 |
| 44892 | 45002 | + | 11 | 24724460 | 24724569 | + | 60 | 6.10E-21 | 88 | 112 |
| 66742 | 66887 | - | 11 | 24847179 | 24847322 | + | 122 | 7.70E-60 | 96 | 146 |
| 67011 | 67120 | + | 11 | 25256106 | 25256214 | + | 101 | 2.50E-47 | 98 | 109 |
| 86906 | 87000 | + | 11 | 27261092 | 27261185 | - | 94 | 3.70E-43 | 100 | 94 |
| 21472 | 21538 | + | 12 | 656803 | 656869 | + | 55 | 6.30E-20 | 96 | 67 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|---------|---------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 21124 | 21170 | + | 12 | 893103 | 893149 | + | 47 | 2.40E-13 | 100 | 47 |
| 29290 | 29413 | - | 12 | 2838948 | 2839071 | - | 90 | 3.60E-55 | 93 | 126 |
| 29426 | 29487 | - | 12 | 2839076 | 2839135 | - | 46 | 3.60E-55 | 94 | 62 |
| 21624 | 21696 | - | 12 | 3001980 | 3002049 | - | 37 | 1.10E-08 | 88 | 73 |
| 87298 | 87438 | + | 12 | 3091210 | 3091350 | - | 94 | 1.10E-68 | 92 | 142 |
| 74339 | 74393 | + | 12 | 3115432 | 3115485 | - | 50 | 1.40E-61 | 98 | 54 |
| 74285 | 74351 | + | 12 | 3115484 | 3115549 | - | 62 | 1.10E-68 | 98 | 66 |
| 22732 | 22807 | + | 12 | 3115696 | 3115771 | - | 76 | 9.20E-29 | 100 | 76 |
| 63517 | 63690 | + | 12 | 4509038 | 4509212 | - | 117 | 1.10E-74 | 92 | 177 |
| 63442 | 63507 | + | 12 | 4509221 | 4509285 | - | 49 | 1.10E-74 | 94 | 65 |
| 61175 | 61331 | - | 12 | 4511718 | 4511876 | - | 91 | 5.90E-186 | 89 | 163 |
| 61334 | 61513 | - | 12 | 4511867 | 4512045 | - | 131 | 5.90E-186 | 93 | 179 |
| 72059 | 72221 | - | 12 | 4566706 | 4566867 | - | 150 | 5.90E-186 | 98 | 162 |
| 33409 | 33458 | - | 12 | 4676447 | 4676496 | - | 50 | 7.50E-42 | 100 | 50 |
| 24250 | 24427 | + | 12 | 4678416 | 4678593 | - | 166 | 5.10E-84 | 98 | 178 |
| 34310 | 34372 | - | 12 | 4679140 | 4679202 | - | 63 | 7.50E-42 | 100 | 63 |
| 84516 | 84670 | - | 12 | 4750563 | 4750717 | - | 80 | 9.00E-50 | 88 | 156 |
| 15420 | 15491 | - | 12 | 4815555 | 4815626 | - | 72 | 4.40E-101 | 100 | 72 |
| 15500 | 15647 | - | 12 | 4815635 | 4815782 | - | 136 | 4.40E-101 | 98 | 148 |
| 56015 | 56351 | + | 12 | 5123417 | 5123753 | + | 301 | 1.70E-166 | 97 | 337 |
| 48881 | 49273 | - | 12 | 5607904 | 5608296 | - | 381 | 0 | 99 | 393 |
| 49286 | 49502 | - | 12 | 5608306 | 5608522 | - | 217 | 0 | 100 | 217 |
| 49511 | 50000 | - | 12 | 5608530 | 5609021 | - | 472 | 0 | 99 | 492 |
| 50002 | 50466 | - | 12 | 5609016 | 5609479 | - | 464 | 0 | 100 | 464 |
| 50474 | 53330 | - | 12 | 5609487 | 5612344 | - | 2774 | 0 | 99 | 2858 |
| 53431 | 53871 | - | 12 | 5612446 | 5612885 | - | 402 | 0 | 98 | 442 |
| 53859 | 53993 | - | 12 | 5612888 | 5613021 | - | 134 | 0 | 100 | 134 |
| 54010 | 55539 | - | 12 | 5613040 | 5614568 | - | 1493 | 0 | 99 | 1529 |
| 55672 | 55841 | - | 12 | 5614702 | 5614870 | - | 161 | 0 | 99 | 169 |
| 132159 | 132191 | - | 12 | 5614837 | 5614868 | - | 32 | 5.60E-05 | 100 | 32 |
| 98924 | 100002 | - | 12 | 5614872 | 5615950 | - | 1039 | 0 | 99 | 1079 |
| 114016 | 116197 | + | 12 | 5614872 | 5617054 | - | 2107 | 0 | 99 | 2183 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|---------|---------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 100002 | 101106 | - | 12 | 5615951 | 5617055 | - | 1069 | 0 | 99 | 1105 |
| 100618 | 100670 | + | 12 | 5616568 | 5616619 | - | 44 | 6.80E-12 | 96 | 52 |
| 114451 | 114503 | - | 12 | 5616568 | 5616619 | - | 44 | 0 | 96 | 52 |
| 101114 | 101135 | - | 12 | 5617064 | 5617084 | - | 21 | 0 | 100 | 21 |
| 101135 | 101439 | - | 12 | 5617074 | 5617378 | - | 297 | 0 | 99 | 305 |
| 113731 | 113961 | + | 12 | 5617099 | 5617328 | - | 226 | 0 | 100 | 230 |
| 101500 | 101690 | - | 12 | 5617439 | 5617628 | - | 186 | 0 | 99 | 190 |
| 101699 | 102129 | - | 12 | 5617638 | 5618069 | - | 405 | 0 | 98 | 433 |
| 101849 | 101869 | + | 12 | 5617789 | 5617808 | - | 20 | 0 | 100 | 20 |
| 102137 | 103047 | - | 12 | 5618078 | 5618987 | - | 874 | 0 | 99 | 910 |
| 103055 | 103188 | - | 12 | 5618996 | 5619128 | - | 129 | 0 | 99 | 133 |
| 103196 | 103896 | - | 12 | 5619137 | 5619836 | - | 680 | 0 | 99 | 700 |
| 103904 | 103997 | - | 12 | 5619845 | 5619937 | - | 93 | 0 | 100 | 93 |
| 104018 | 104131 | - | 12 | 5619934 | 5620046 | - | 113 | 0 | 100 | 113 |
| 104191 | 106389 | - | 12 | 5620107 | 5622308 | - | 2112 | 0 | 99 | 2204 |
| 105762 | 105794 | + | 12 | 5621682 | 5621713 | - | 32 | 0 | 100 | 32 |
| 106397 | 107431 | - | 12 | 5622317 | 5623351 | - | 1007 | 0 | 99 | 1035 |
| 107439 | 107488 | - | 12 | 5623363 | 5623411 | - | 49 | 0 | 100 | 49 |
| 107502 | 108552 | - | 12 | 5623427 | 5624475 | - | 1018 | 0 | 99 | 1050 |
| 108556 | 111564 | - | 12 | 5624466 | 5627480 | - | 2911 | 0 | 99 | 3015 |
| 111573 | 113486 | - | 12 | 5627489 | 5629403 | - | 1859 | 0 | 99 | 1915 |
| 113502 | 114007 | - | 12 | 5629419 | 5629923 | - | 477 | 0 | 99 | 505 |
| 101114 | 101393 | + | 12 | 5629645 | 5629923 | - | 267 | 0 | 99 | 279 |
| 100002 | 101106 | + | 12 | 5629932 | 5631031 | - | 1046 | 0 | 99 | 1106 |
| 114015 | 114240 | - | 12 | 5629932 | 5630152 | - | 205 | 0 | 98 | 225 |
| 114302 | 116738 | - | 12 | 5630215 | 5632650 | - | 2325 | 0 | 99 | 2441 |
| 114451 | 114503 | + | 12 | 5630362 | 5630413 | - | 44 | 6.90E-11 | 96 | 52 |
| 100618 | 100670 | - | 12 | 5630362 | 5630413 | - | 44 | 0 | 96 | 52 |
| 98383 | 100000 | + | 12 | 5631034 | 5632650 | - | 1544 | 0 | 99 | 1620 |
| 97208 | 98367 | + | 12 | 5632667 | 5633827 | - | 1106 | 0 | 99 | 1162 |
| 116754 | 117913 | - | 12 | 5632667 | 5633827 | - | 1106 | 0 | 99 | 1162 |
| 96484 | 97195 | + | 12 | 5633819 | 5634531 | - | 665 | 0 | 98 | 713 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|---------|---------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 117926 | 118637 | - | 12 | 5633819 | 5634531 | - | 665 | 0 | 98 | 713 |
| 58233 | 58674 | - | 12 | 5634529 | 5634971 | - | 431 | 0 | 99 | 443 |
| 58693 | 59130 | - | 12 | 5634993 | 5635429 | - | 429 | 0 | 100 | 437 |
| 59161 | 60031 | - | 12 | 5635461 | 5636328 | - | 834 | 0 | 99 | 870 |
| 60039 | 60651 | - | 12 | 5636337 | 5636948 | - | 592 | 0 | 99 | 612 |
| 60680 | 60784 | - | 12 | 5636978 | 5637081 | - | 104 | 0 | 100 | 104 |
| 60824 | 61044 | - | 12 | 5637079 | 5637298 | - | 212 | 0 | 99 | 220 |
| 61083 | 63058 | - | 12 | 5637329 | 5639302 | - | 1935 | 0 | 99 | 1975 |
| 126366 | 126412 | + | 12 | 5639228 | 5639273 | - | 46 | 3.40E-12 | 100 | 46 |
| 63066 | 63507 | - | 12 | 5639311 | 5639751 | - | 430 | 0 | 99 | 442 |
| 115928 | 115944 | + | 12 | 5639501 | 5639516 | - | 16 | 3.40E-12 | 100 | 16 |
| 63515 | 63772 | - | 12 | 5639760 | 5640016 | - | 257 | 0 | 100 | 257 |
| 63780 | 65609 | - | 12 | 5640025 | 5641854 | - | 1764 | 0 | 99 | 1832 |
| 65618 | 69533 | - | 12 | 5641863 | 5645779 | - | 3738 | 0 | 99 | 3922 |
| 112084 | 112100 | + | 12 | 5644637 | 5644652 | - | 16 | 0 | 100 | 16 |
| 69541 | 71371 | - | 12 | 5645788 | 5647617 | - | 1741 | 0 | 99 | 1833 |
| 102899 | 102915 | - | 12 | 5646162 | 5646177 | - | 16 | 0 | 100 | 16 |
| 71469 | 71626 | - | 12 | 5647715 | 5647871 | - | 157 | 0 | 100 | 157 |
| 71621 | 71750 | - | 12 | 5651002 | 5651130 | - | 129 | 0 | 100 | 129 |
| 71786 | 73482 | - | 12 | 5651167 | 5652867 | - | 1639 | 0 | 99 | 1703 |
| 73482 | 74265 | + | 12 | 5652868 | 5653649 | + | 755 | 0 | 99 | 783 |
| 74282 | 74547 | + | 12 | 5653667 | 5653931 | + | 245 | 0 | 98 | 265 |
| 74585 | 75875 | + | 12 | 5653970 | 5655263 | + | 1223 | 0 | 99 | 1295 |
| 75987 | 76111 | + | 12 | 5655375 | 5655498 | + | 120 | 0 | 99 | 124 |
| 76045 | 76222 | + | 12 | 5655494 | 5655669 | + | 169 | 0 | 99 | 177 |
| 76238 | 76511 | + | 12 | 5655685 | 5655957 | + | 261 | 0 | 99 | 273 |
| 76598 | 77696 | + | 12 | 5656042 | 5657140 | + | 1087 | 0 | 100 | 1099 |
| 77724 | 77875 | + | 12 | 5657170 | 5657320 | + | 136 | 0 | 97 | 152 |
| 88806 | 89010 | + | 12 | 6471409 | 6471614 | + | 148 | 2.40E-75 | 93 | 208 |
| 70233 | 70507 | + | 12 | 6487565 | 6487837 | + | 176 | 5.10E-92 | 91 | 276 |
| 91978 | 92075 | - | 12 | 6639897 | 6639992 | + | 93 | 1.50E-42 | 99 | 97 |
| 41540 | 41586 | + | 12 | 7167881 | 7167927 | + | 43 | 9.50E-10 | 98 | 47 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 18129 | 18186 | + | 12 | 7624831 | 7624889 | + | 35 | 6.10E-07 | 90 | 59 |
| 94798 | 94860 | + | 12 | 8038759 | 8038820 | - | 62 | 4.30E-24 | 100 | 62 |
| 51367 | 51879 | - | 12 | 8527031 | 8527541 | + | 472 | 0 | 98 | 512 |
| 50861 | 51355 | - | 12 | 8527545 | 8528031 | + | 411 | 0 | 96 | 495 |
| 50596 | 50854 | - | 12 | 8528027 | 8528280 | + | 165 | 0 | 91 | 261 |
| 82635 | 82763 | + | 12 | 8554381 | 8554509 | + | 101 | 2.50E-47 | 95 | 129 |
| 55870 | 55955 | - | 12 | 8554424 | 8554509 | + | 66 | 1.80E-26 | 94 | 86 |
| 70874 | 71074 | - | 12 | 9250829 | 9251030 | - | 138 | 2.30E-165 | 92 | 202 |
| 90496 | 90700 | - | 12 | 9363305 | 9363508 | - | 181 | 2.30E-165 | 97 | 205 |
| 43013 | 43044 | - | 12 | 10478235 | 10478266 | + | 32 | 2.20E-55 | 100 | 32 |
| 42853 | 42936 | - | 12 | 10478609 | 10478692 | + | 60 | 2.20E-55 | 93 | 84 |
| 42775 | 42815 | - | 12 | 10478709 | 10478749 | + | 37 | 2.20E-55 | 98 | 41 |
| 42720 | 42764 | - | 12 | 10478749 | 10478793 | + | 41 | 2.20E-55 | 98 | 45 |
| 115281 | 115298 | + | 12 | 10991795 | 10991811 | - | 17 | 0 | 100 | 17 |
| 111524 | 111539 | + | 12 | 10996862 | 10996876 | - | 15 | 0 | 100 | 15 |
| 126802 | 126818 | + | 12 | 11040090 | 11040105 | - | 16 | 0 | 100 | 16 |
| 57099 | 57540 | + | 12 | 11084561 | 11085000 | - | 433 | 0 | 100 | 441 |
| 56426 | 57010 | + | 12 | 11085079 | 11085663 | - | 573 | 0 | 99 | 585 |
| 109010 | 110805 | + | 12 | 11085721 | 11087521 | - | 1765 | 0 | 100 | 1801 |
| 87852 | 87991 | - | 12 | 11138210 | 11138347 | - | 108 | 1.70E-51 | 94 | 140 |
| 95956 | 96012 | - | 12 | 11220654 | 11220709 | - | 48 | 9.50E-16 | 96 | 56 |
| 45647 | 45946 | - | 12 | 11281482 | 11281781 | - | 288 | 0 | 99 | 300 |
| 45968 | 46165 | - | 12 | 11281803 | 11281995 | - | 178 | 0 | 97 | 198 |
| 46201 | 46276 | - | 12 | 11282029 | 11282104 | - | 76 | 0 | 100 | 76 |
| 46286 | 46495 | - | 12 | 11282114 | 11282323 | - | 202 | 0 | 99 | 210 |
| 46504 | 49273 | - | 12 | 11282332 | 11285103 | - | 2705 | 0 | 99 | 2773 |
| 50002 | 50466 | - | 12 | 11284474 | 11284937 | - | 460 | 0 | 100 | 464 |
| 50474 | 52120 | - | 12 | 11284945 | 11286592 | - | 1600 | 0 | 99 | 1648 |
| 49286 | 49502 | - | 12 | 11285112 | 11285328 | - | 217 | 0 | 100 | 217 |
| 49511 | 50000 | - | 12 | 11285337 | 11285827 | - | 475 | 0 | 99 | 491 |
| 73101 | 73502 | + | 12 | 11286592 | 11286992 | - | 393 | 2.50E-221 | 100 | 401 |
| 3553 | 4059 | + | 12 | 11407743 | 11408247 | - | 479 | 0 | 99 | 507 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 2941 | 3535 | + | 12 | 11408265 | 11408859 | - | 567 | 0 | 99 | 595 |
| 16 | 2932 | + | 12 | 11408869 | 11411785 | - | 2750 | 0 | 99 | 2918 |
| 80615 | 80903 | - | 12 | 11410447 | 11410734 | - | 268 | 0 | 98 | 288 |
| 134218 | 134506 | + | 12 | 11410447 | 11410734 | - | 268 | 0 | 98 | 288 |
| 80912 | 81955 | - | 12 | 11410744 | 11411788 | - | 969 | 0 | 98 | 1045 |
| 133166 | 134209 | + | 12 | 11410744 | 11411788 | - | 969 | 0 | 98 | 1045 |
| 81970 | 82051 | - | 12 | 11411783 | 11411862 | - | 69 | 0 | 96 | 81 |
| 133070 | 133151 | + | 12 | 11411783 | 11411862 | - | 69 | 0 | 96 | 81 |
| 128454 | 128469 | + | 12 | 11412495 | 11412509 | - | 15 | 0 | 100 | 15 |
| 108584 | 108604 | + | 12 | 11424829 | 11424847 | - | 16 | 0 | 95 | 20 |
| 115030 | 115045 | + | 12 | 11431259 | 11431273 | - | 15 | 0 | 100 | 15 |
| 112863 | 112878 | + | 12 | 11455351 | 11455365 | - | 15 | 0 | 100 | 15 |
| 105516 | 105532 | + | 12 | 11465731 | 11465746 | - | 16 | 0 | 100 | 16 |
| 105516 | 105532 | + | 12 | 11486588 | 11486603 | - | 16 | 0 | 100 | 16 |
| 126865 | 126880 | + | 12 | 11491465 | 11491479 | - | 15 | 0 | 100 | 15 |
| 114241 | 114256 | + | 12 | 11507876 | 11507890 | - | 15 | 0 | 100 | 15 |
| 104272 | 104288 | + | 12 | 11527192 | 11527207 | - | 16 | 0 | 100 | 16 |
| 100865 | 100880 | + | 12 | 11527193 | 11527207 | - | 15 | 0 | 100 | 15 |
| 123450 | 123465 | + | 12 | 11530921 | 11530935 | - | 15 | 0 | 100 | 15 |
| 34039 | 34183 | - | 12 | 11726216 | 11726359 | - | 91 | 1.00E-49 | 90 | 147 |
| 34194 | 34226 | - | 12 | 11726368 | 11726400 | - | 29 | 1.00E-49 | 97 | 33 |
| 10696 | 10748 | + | 12 | 12075683 | 12075734 | - | 45 | 2.30E-11 | 96 | 53 |
| 86705 | 86811 | + | 12 | 12771073 | 12771178 | + | 98 | 2.80E-56 | 98 | 106 |
| 127499 | 127517 | + | 12 | 13305058 | 13305075 | - | 18 | 4.20E-06 | 100 | 18 |
| 100864 | 100881 | - | 12 | 13328829 | 13328845 | - | 17 | 9.30E-245 | 100 | 17 |
| 21881 | 22039 | + | 12 | 13341442 | 13341600 | - | 159 | 6.60E-200 | 100 | 159 |
| 122462 | 122492 | + | 12 | 13343057 | 13343086 | - | 26 | 0.0079 | 97 | 30 |
| 102990 | 103047 | - | 12 | 13343832 | 13343888 | - | 57 | 9.30E-245 | 100 | 57 |
| 103055 | 103134 | - | 12 | 13343897 | 13343975 | - | 75 | 9.30E-245 | 99 | 79 |
| 49097 | 49224 | + | 12 | 13344955 | 13345076 | - | 77 | 0 | 90 | 129 |
| 21431 | 21660 | + | 12 | 13346025 | 13346254 | - | 222 | 6.60E-200 | 99 | 230 |
| 14604 | 14643 | - | 12 | 13346389 | 13346428 | - | 40 | 7.70E-12 | 100 | 40 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 47078 | 47837 | + | 12 | 13348640 | 13349400 | - | 715 | 0 | 98 | 763 |
| 117204 | 117275 | - | 12 | 13350473 | 13350543 | - | 35 | 5.10E-121 | 87 | 71 |
| 117305 | 117324 | - | 12 | 13350574 | 13350592 | - | 19 | 5.10E-121 | 100 | 19 |
| 117353 | 117452 | - | 12 | 13350622 | 13350720 | - | 30 | 5.10E-121 | 82 | 102 |
| 54876 | 55053 | - | 12 | 13350937 | 13351113 | - | 169 | 3.00E-122 | 99 | 177 |
| 123337 | 123383 | + | 12 | 13351521 | 13351566 | - | 26 | 4.20E-06 | 89 | 46 |
| 103666 | 103896 | - | 12 | 13353424 | 13353653 | - | 226 | 9.30E-245 | 100 | 230 |
| 103904 | 103957 | - | 12 | 13353662 | 13353714 | - | 53 | 9.30E-245 | 100 | 53 |
| 96714 | 96817 | + | 12 | 13370104 | 13370206 | - | 95 | 1.60E-79 | 98 | 103 |
| 118304 | 118407 | - | 12 | 13370104 | 13370206 | - | 95 | 9.30E-245 | 98 | 103 |
| 122484 | 122536 | + | 12 | 13376001 | 13376051 | - | 21 | 4.20E-06 | 85 | 53 |
| 64218 | 64299 | - | 12 | 13377314 | 13377394 | - | 77 | 3.00E-122 | 99 | 81 |
| 55408 | 55464 | - | 12 | 13377395 | 13377450 | - | 56 | 8.80E-110 | 100 | 56 |
| 66945 | 67028 | + | 12 | 13378556 | 13378638 | - | 79 | 1.60E-79 | 99 | 83 |
| 48658 | 48811 | + | 12 | 13384969 | 13385122 | - | 130 | 2.60E-97 | 96 | 154 |
| 48571 | 48847 | + | 12 | 13386768 | 13387044 | - | 225 | 2.60E-263 | 95 | 277 |
| 70960 | 71151 | + | 12 | 13389175 | 13389365 | - | 184 | 8.70E-97 | 99 | 192 |
| 54740 | 55212 | - | 12 | 13389650 | 13390120 | - | 448 | 0 | 99 | 472 |
| 22387 | 22522 | + | 12 | 13391510 | 13391645 | - | 132 | 2.60E-263 | 99 | 136 |
| 81702 | 81829 | - | 12 | 13392730 | 13392856 | - | 123 | 0 | 99 | 127 |
| 133292 | 133419 | + | 12 | 13392730 | 13392856 | - | 123 | 1.30E-114 | 99 | 127 |
| 102394 | 102410 | + | 12 | 13393108 | 13393123 | - | 16 | 2.50E-57 | 100 | 16 |
| 47936 | 48059 | + | 12 | 13393699 | 13393822 | - | 112 | 1.70E-251 | 98 | 124 |
| 73813 | 73997 | - | 12 | 13396830 | 13397013 | - | 180 | 0 | 99 | 184 |
| 9938 | 10011 | + | 12 | 13397406 | 13397479 | - | 66 | 1.50E-215 | 97 | 74 |
| 50596 | 50854 | - | 12 | 13397445 | 13397698 | - | 165 | 6.00E-187 | 91 | 261 |
| 81664 | 81759 | - | 12 | 13398980 | 13399074 | - | 95 | 0 | 100 | 95 |
| 133362 | 133457 | + | 12 | 13398980 | 13399074 | - | 95 | 2.90E-98 | 100 | 95 |
| 20265 | 20386 | - | 12 | 13399410 | 13399531 | - | 122 | 2.70E-115 | 100 | 122 |
| 85235 | 85326 | - | 12 | 13399630 | 13399720 | - | 91 | 0 | 100 | 91 |
| 129795 | 129886 | + | 12 | 13399630 | 13399720 | - | 91 | 1.30E-114 | 100 | 91 |
| 129822 | 129873 | - | 12 | 13399643 | 13399693 | - | 19 | 7.40E-81 | 84 | 55 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 119770 | 119786 | + | 12 | 13401203 | 13401218 | - | 16 | 5.20E-100 | 100 | 16 |
| 122941 | 122994 | + | 12 | 13403192 | 13403244 | - | 41 | 1.30E-114 | 94 | 53 |
| 117664 | 117710 | - | 12 | 13404538 | 13404585 | - | 40 | 2.60E-93 | 96 | 48 |
| 114284 | 114300 | + | 12 | 13405700 | 13405715 | - | 16 | 1.30E-114 | 100 | 16 |
| 100821 | 100837 | - | 12 | 13405700 | 13405715 | - | 16 | 6.00E-78 | 100 | 16 |
| 55612 | 55666 | - | 12 | 13407443 | 13407496 | - | 50 | 1.80E-294 | 98 | 54 |
| 104270 | 104286 | - | 12 | 13409215 | 13409230 | - | 16 | 6.00E-78 | 100 | 16 |
| 11487 | 11638 | + | 12 | 13410040 | 13410191 | - | 148 | 2.60E-263 | 99 | 152 |
| 18096 | 18156 | - | 12 | 13410894 | 13410951 | - | 41 | 5.30E-69 | 92 | 61 |
| 81590 | 81651 | - | 12 | 13410912 | 13410972 | - | 57 | 0 | 98 | 61 |
| 133470 | 133531 | + | 12 | 13410912 | 13410972 | - | 57 | 1.10E-18 | 98 | 61 |
| 81829 | 81990 | + | 12 | 13410973 | 13411133 | - | 157 | 5.30E-93 | 99 | 161 |
| 133131 | 133292 | - | 12 | 13410973 | 13411133 | - | 157 | 2.60E-93 | 99 | 161 |
| 30604 | 30738 | - | 12 | 13413758 | 13413892 | - | 115 | 2.70E-115 | 96 | 135 |
| 48024 | 48212 | + | 12 | 13417952 | 13418144 | - | 161 | 2.30E-202 | 96 | 193 |
| 119690 | 119706 | - | 12 | 13424653 | 13424668 | - | 16 | 4.10E-10 | 100 | 16 |
| 127500 | 127517 | + | 12 | 13434075 | 13434091 | - | 17 | 5.20E-100 | 100 | 17 |
| 114159 | 114175 | + | 12 | 13478051 | 13478066 | - | 16 | 1.30E-114 | 100 | 16 |
| 35225 | 35263 | - | 12 | 13823457 | 13823495 | + | 31 | 1.30E-05 | 95 | 39 |
| 21691 | 21730 | - | 12 | 13984167 | 13984207 | + | 33 | 3.50E-06 | 95 | 41 |
| 104925 | 104941 | - | 12 | 16564745 | 16564760 | - | 16 | 0 | 100 | 16 |
| 81430 | 82040 | + | 12 | 16609595 | 16610204 | - | 578 | 0 | 99 | 610 |
| 133081 | 133691 | - | 12 | 16609595 | 16610204 | - | 578 | 0 | 99 | 610 |
| 81430 | 82040 | + | 12 | 16630225 | 16630834 | - | 578 | 0 | 99 | 610 |
| 133081 | 133691 | - | 12 | 16630225 | 16630834 | - | 578 | 0 | 99 | 610 |
| 87260 | 87390 | + | 12 | 16855787 | 16855915 | + | 122 | 7.60E-60 | 98 | 130 |
| 2941 | 2999 | + | 12 | 16890725 | 16890786 | + | 38 | 8.90E-11 | 90 | 62 |
| 3056 | 3103 | - | 12 | 16969073 | 16969120 | - | 29 | 3.70E-07 | 90 | 49 |
| 64811 | 64918 | - | 12 | 17957634 | 17957737 | - | 79 | 2.70E-75 | 93 | 107 |
| 64965 | 65093 | - | 12 | 17957740 | 17957867 | - | 88 | 2.70E-75 | 92 | 128 |
| 45003 | 45053 | - | 12 | 18085161 | 18085212 | + | 36 | 1.80E-06 | 92 | 52 |
| 80178 | 80600 | + | 12 | 18258615 | 18259036 | - | 341 | 1.70E-197 | 95 | 425 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 36616 | 36665 | - | 12 | 18579750 | 18579801 | + | 40 | 1.20E-29 | 94 | 52 |
| 36542 | 36607 | - | 12 | 18579809 | 18579876 | + | 40 | 1.20E-29 | 90 | 68 |
| 36498 | 36530 | - | 12 | 18579886 | 18579918 | + | 29 | 1.20E-29 | 97 | 33 |
| 15786 | 15875 | + | 12 | 18580029 | 18580118 | + | 78 | 2.00E-28 | 97 | 90 |
| 72195 | 72306 | + | 12 | 18584245 | 18584355 | + | 75 | 7.70E-32 | 92 | 111 |
| 2457 | 2609 | + | 12 | 18754641 | 18754792 | - | 60 | 6.80E-21 | 85 | 156 |
| 13504 | 13589 | + | 12 | 18885044 | 18885129 | + | 50 | 9.70E-15 | 90 | 86 |
| 35248 | 35491 | - | 12 | 19160285 | 19160529 | + | 217 | 7.30E-112 | 97 | 245 |
| 91687 | 92036 | + | 12 | 19164907 | 19165255 | + | 333 | 1.40E-185 | 99 | 349 |
| 123085 | 123434 | - | 12 | 19164907 | 19165255 | + | 333 | 4.60E-183 | 99 | 349 |
| 13997 | 14139 | - | 12 | 19257551 | 19257692 | + | 100 | 0 | 92 | 144 |
| 13883 | 13987 | - | 12 | 19257700 | 19257799 | + | 73 | 0 | 92 | 105 |
| 13503 | 13896 | - | 12 | 19258025 | 19258420 | + | 329 | 0 | 96 | 397 |
| 12196 | 13482 | - | 12 | 19258424 | 19259715 | + | 1100 | 0 | 96 | 1296 |
| 36195 | 36238 | - | 12 | 19259079 | 19259122 | + | 36 | 2.90E-144 | 95 | 44 |
| 11831 | 12129 | - | 12 | 19259710 | 19260005 | + | 251 | 0 | 96 | 299 |
| 15040 | 15080 | - | 12 | 19260011 | 19260050 | + | 29 | 9.50E-14 | 93 | 41 |
| 47665 | 47823 | - | 12 | 19710641 | 19710797 | + | 93 | 1.30E-38 | 89 | 161 |
| 76074 | 76222 | + | 12 | 20423644 | 20423791 | - | 144 | 3.00E-82 | 99 | 148 |
| 77042 | 77462 | - | 12 | 20444678 | 20445097 | - | 420 | 2.10E-237 | 100 | 420 |
| 76342 | 76511 | + | 12 | 20445114 | 20445282 | - | 169 | 7.50E-88 | 100 | 169 |
| 18730 | 18775 | + | 12 | 20481121 | 20481166 | - | 38 | 5.50E-125 | 96 | 46 |
| 18642 | 18731 | + | 12 | 20481158 | 20481248 | - | 75 | 5.50E-125 | 96 | 91 |
| 18464 | 18624 | + | 12 | 20481264 | 20481424 | - | 157 | 5.50E-125 | 99 | 161 |
| 18985 | 19352 | + | 12 | 20498744 | 20499111 | - | 364 | 6.70E-202 | 100 | 368 |
| 99204 | 99290 | + | 12 | 20499851 | 20499936 | - | 86 | 2.10E-38 | 100 | 86 |
| 51221 | 51293 | - | 12 | 20511224 | 20511295 | - | 56 | 1.60E-20 | 94 | 72 |
| 123253 | 123270 | + | 12 | 20581266 | 20581282 | + | 17 | 2.00E-44 | 100 | 17 |
| 105157 | 105175 | + | 12 | 20601905 | 20601922 | + | 18 | 1.20E-121 | 100 | 18 |
| 122359 | 122392 | + | 12 | 20605388 | 20605420 | + | 29 | 1.20E-121 | 97 | 33 |
| 122462 | 122536 | + | 12 | 20605537 | 20605609 | + | 39 | 1.20E-121 | 88 | 75 |
| 122632 | 122701 | + | 12 | 20605705 | 20605773 | + | 29 | 1.20E-121 | 86 | 69 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 122754 | 122829 | + | 12 | 20605898 | 20605972 | + | 32 | 1.20E-121 | 86 | 76 |
| 92127 | 92246 | - | 12 | 20606018 | 20606136 | + | 80 | 1.40E-57 | 92 | 120 |
| 122875 | 122994 | + | 12 | 20606018 | 20606136 | + | 80 | 1.20E-121 | 92 | 120 |
| 123298 | 123383 | + | 12 | 20606435 | 20606519 | + | 33 | 1.20E-121 | 85 | 85 |
| 91571 | 91655 | - | 12 | 20606605 | 20606688 | + | 57 | 1.40E-57 | 92 | 85 |
| 123466 | 123550 | + | 12 | 20606605 | 20606688 | + | 57 | 1.20E-121 | 92 | 85 |
| 123712 | 123737 | + | 12 | 20606819 | 20606843 | + | 21 | 1.20E-121 | 96 | 25 |
| 123752 | 123812 | + | 12 | 20606981 | 20607040 | + | 32 | 1.20E-121 | 88 | 60 |
| 33852 | 33904 | + | 12 | 20607208 | 20607260 | + | 53 | 1.10E-15 | 100 | 53 |
| 130887 | 130911 | + | 12 | 20607523 | 20607546 | + | 20 | 1.20E-121 | 96 | 24 |
| 32069 | 32533 | + | 12 | 20617031 | 20617494 | + | 373 | 1.10E-205 | 95 | 465 |
| 128806 | 128822 | + | 12 | 20620556 | 20620571 | + | 16 | 2.40E-119 | 100 | 16 |
| 120538 | 120554 | + | 12 | 20891603 | 20891618 | + | 16 | 4.10E-31 | 100 | 16 |
| 104191 | 104517 | - | 12 | 20891726 | 20892051 | + | 322 | 0 | 100 | 326 |
| 105755 | 105772 | - | 12 | 20891952 | 20891968 | + | 17 | 0 | 100 | 17 |
| 114240 | 114256 | + | 12 | 20891955 | 20891970 | + | 16 | 4.10E-31 | 100 | 16 |
| 103904 | 104131 | - | 12 | 20892113 | 20892339 | + | 227 | 0 | 100 | 227 |
| 103196 | 103896 | - | 12 | 20892347 | 20893046 | + | 700 | 0 | 100 | 700 |
| 103055 | 103188 | - | 12 | 20893055 | 20893187 | + | 133 | 0 | 100 | 133 |
| 102137 | 103047 | - | 12 | 20893196 | 20894105 | + | 890 | 0 | 99 | 910 |
| 101699 | 102129 | - | 12 | 20894114 | 20894543 | + | 419 | 0 | 99 | 431 |
| 125222 | 125237 | - | 12 | 20894275 | 20894289 | + | 15 | 0 | 100 | 15 |
| 101849 | 101869 | + | 12 | 20894374 | 20894393 | + | 20 | 0 | 100 | 20 |
| 101500 | 101690 | - | 12 | 20894553 | 20894742 | + | 190 | 0 | 100 | 190 |
| 101114 | 101439 | - | 12 | 20894804 | 20895128 | + | 325 | 0 | 100 | 325 |
| 113728 | 113961 | + | 12 | 20894850 | 20895082 | + | 233 | 0 | 100 | 233 |
| 127783 | 127798 | - | 12 | 20895117 | 20895131 | + | 15 | 0 | 100 | 15 |
| 100071 | 101106 | - | 12 | 20895137 | 20896172 | + | 1028 | 0 | 100 | 1036 |
| 114016 | 115050 | + | 12 | 20895138 | 20896172 | + | 1027 | 0 | 100 | 1035 |
| 114451 | 114503 | - | 12 | 20895573 | 20895624 | + | 44 | 1.40E-10 | 96 | 52 |
| 100618 | 100670 | + | 12 | 20895573 | 20895624 | + | 44 | 1.30E-47 | 96 | 52 |
| 104001 | 104016 | - | 12 | 20902895 | 20902909 | + | 15 | 2.80E-174 | 100 | 15 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 55877 | 55976 | + | 12 | 20909009 | 20909108 | + | 92 | 5.70E-42 | 98 | 100 |
| 82676 | 82756 | - | 12 | 20909009 | 20909088 | + | 76 | 7.30E-51 | 99 | 80 |
| 132365 | 132445 | + | 12 | 20909009 | 20909088 | + | 76 | 0 | 99 | 80 |
| 132418 | 132433 | + | 12 | 20909851 | 20909865 | + | 15 | 0 | 100 | 15 |
| 124026 | 124041 | + | 12 | 20910135 | 20910149 | + | 15 | 0 | 100 | 15 |
| 103738 | 103754 | + | 12 | 20914889 | 20914904 | + | 16 | 2.90E-11 | 100 | 16 |
| 104001 | 104016 | - | 12 | 20917192 | 20917206 | + | 15 | 2.80E-174 | 100 | 15 |
| 104578 | 104594 | - | 12 | 20922096 | 20922111 | + | 16 | 1.40E-10 | 100 | 16 |
| 116391 | 116406 | + | 12 | 20946249 | 20946263 | + | 15 | 0 | 100 | 15 |
| 126629 | 126644 | + | 12 | 20967930 | 20967944 | + | 15 | 0 | 100 | 15 |
| 106061 | 106076 | - | 12 | 20968679 | 20968693 | + | 15 | 5.00E-10 | 100 | 15 |
| 104716 | 104731 | + | 12 | 20978395 | 20978409 | + | 15 | 2.90E-11 | 100 | 15 |
| 116391 | 116406 | + | 12 | 20978471 | 20978485 | + | 15 | 0 | 100 | 15 |
| 101513 | 101528 | - | 12 | 20990561 | 20990575 | + | 15 | 0 | 100 | 15 |
| 109979 | 109996 | + | 12 | 20999364 | 20999380 | + | 17 | 2.90E-11 | 100 | 17 |
| 112006 | 112021 | + | 12 | 21009479 | 21009493 | + | 15 | 2.90E-11 | 100 | 15 |
| 50866 | 50924 | - | 12 | 21013216 | 21013273 | + | 50 | 7.30E-51 | 97 | 58 |
| 23407 | 23921 | - | 12 | 21311221 | 21311734 | + | 445 | 1.00E-272 | 97 | 517 |
| 23332 | 23409 | - | 12 | 21330248 | 21330325 | + | 62 | 1.00E-272 | 95 | 78 |
| 33852 | 33904 | + | 12 | 21567874 | 21567926 | - | 53 | 1.40E-16 | 100 | 53 |
| 45494 | 45574 | + | 12 | 22455533 | 22455610 | + | 62 | 1.90E-144 | 94 | 82 |
| 45613 | 45845 | + | 12 | 22455649 | 22455881 | + | 225 | 1.90E-144 | 99 | 233 |
| 45494 | 45574 | + | 12 | 22456036 | 22456114 | + | 65 | 3.10E-146 | 95 | 81 |
| 45613 | 45845 | + | 12 | 22456153 | 22456385 | + | 217 | 1.70E-141 | 98 | 233 |
| 45494 | 45574 | + | 12 | 22456540 | 22456618 | + | 69 | 1.30E-148 | 96 | 81 |
| 45613 | 45845 | + | 12 | 22456657 | 22456889 | + | 225 | 1.30E-148 | 99 | 233 |
| 36938 | 37032 | - | 12 | 22663622 | 22663716 | + | 95 | 2.50E-43 | 100 | 95 |
| 20018 | 20193 | - | 12 | 23395284 | 23395459 | - | 113 | 3.10E-50 | 91 | 177 |
| 48971 | 49084 | - | 12 | 23531238 | 23531356 | - | 64 | 6.20E-43 | 88 | 120 |
| 49097 | 49233 | - | 12 | 23531363 | 23531491 | - | 53 | 6.20E-43 | 85 | 137 |
| 18730 | 18775 | + | 12 | 23832613 | 23832658 | - | 30 | 1.10E-66 | 91 | 46 |
| 18642 | 18728 | + | 12 | 23832653 | 23832739 | - | 53 | 1.10E-66 | 90 | 89 |

| Chloroplast | | | Rice Chromosome | | | | Stats | | | |
|-------------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 18530 | 18624 | + | 12 | 23832754 | 23832847 | - | 75 | 1.10E-66 | 95 | 95 |
| 18471 | 18512 | + | 12 | 23832858 | 23832899 | - | 34 | 1.10E-66 | 95 | 42 |
| 36366 | 36419 | - | 12 | 23991513 | 23991566 | - | 50 | 5.50E-15 | 98 | 54 |
| 95220 | 95354 | + | 12 | 23996189 | 23996322 | - | 114 | 4.40E-55 | 96 | 134 |
| 39293 | 39638 | - | 12 | 24562307 | 24562655 | + | 243 | 2.30E-127 | 92 | 351 |
| 97995 | 98079 | - | 12 | 24647869 | 24647951 | + | 73 | 2.10E-133 | 96 | 85 |
| 117042 | 117126 | + | 12 | 24647869 | 24647951 | + | 73 | 7.90E-132 | 96 | 85 |
| 97761 | 97985 | - | 12 | 24647951 | 24648174 | + | 192 | 2.10E-133 | 96 | 224 |
| 117136 | 117360 | + | 12 | 24647951 | 24648174 | + | 192 | 7.90E-132 | 96 | 224 |
| 81126 | 81193 | + | 12 | 24649504 | 24649570 | + | 59 | 2.60E-22 | 97 | 67 |
| 133928 | 133995 | - | 12 | 24649504 | 24649570 | + | 59 | 2.70E-19 | 97 | 67 |
| 66206 | 66308 | + | 12 | 24650273 | 24650374 | + | 90 | 8.90E-41 | 97 | 102 |
| 103735 | 103751 | - | 12 | 24765385 | 24765400 | + | 16 | 2.70E-19 | 100 | 16 |
| 35300 | 35441 | + | 12 | 25441456 | 25441598 | + | 55 | 2.10E-16 | 84 | 147 |
| 23384 | 23451 | - | 12 | 25986696 | 25986763 | - | 40 | 1.70E-08 | 90 | 68 |
| 19121 | 19165 | - | 12 | 26193975 | 26194019 | + | 37 | 1.50E-06 | 96 | 45 |
| 82674 | 82765 | - | 12 | 26378866 | 26378955 | - | 68 | 1.10E-27 | 93 | 92 |
| 55697 | 55957 | + | 12 | 26378868 | 26379125 | - | 177 | 1.30E-92 | 92 | 261 |
| 15395 | 15454 | + | 12 | 26617030 | 26617089 | + | 44 | 2.30E-13 | 93 | 60 |
| 107849 | 108229 | - | 12 | 27395095 | 27395476 | + | 207 | 1.20E-110 | 89 | 383 |

Table A-2 Mitochondrial DNA homologies in the rice nuclear genome

| Mitochondria | | | Rice Chromosome | | | | Stats | | | |
|--------------|-------|-----|-----------------|---------|---------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 20741 | 20840 | + | 1 | 1986919 | 1987155 | + | 100 | 3.50E-154 | 100 | 100 |
| 28810 | 28906 | - | 1 | 1987177 | 1987418 | + | 50 | 7.80E-169 | 87 | 102 |
| 27723 | 27844 | + | 1 | 2521305 | 2521690 | + | 118 | 0 | 99 | 122 |
| 30532 | 30660 | + | 1 | 2521305 | 2521690 | + | 113 | 0 | 97 | 129 |
| 27220 | 27357 | - | 1 | 2521704 | 2521901 | + | 138 | 3.90E-93 | 100 | 138 |
| 22319 | 22457 | + | 1 | 2521704 | 2521901 | + | 135 | 3.50E-154 | 99 | 139 |
| 27700 | 27844 | - | 1 | 2800795 | 2801057 | + | 137 | 5.10E-66 | 99 | 145 |
| 30570 | 30716 | - | 1 | 3073702 | 3073840 | + | 120 | 2.60E-69 | 95 | 148 |
| 35155 | 35304 | - | 1 | 3379496 | 3379651 | + | 102 | 8.00E-78 | 92 | 150 |
| 27905 | 28055 | + | 1 | 3391533 | 3391688 | + | 139 | 0 | 98 | 151 |
| 27905 | 28055 | + | 1 | 3698513 | 3698817 | + | 135 | 0 | 97 | 151 |
| 28718 | 28884 | + | 1 | 4092658 | 4092947 | + | 148 | 0 | 97 | 168 |
| 9625 | 9816 | + | 1 | 4092658 | 4092947 | + | 168 | 3.90E-102 | 97 | 192 |
| 26977 | 27174 | - | 1 | 4093050 | 4093269 | + | 198 | 5.30E-129 | 100 | 198 |
| 40266 | 40470 | + | 1 | 5545437 | 5545812 | + | 205 | 0 | 100 | 205 |
| 404 | 609 | - | 1 | 6867176 | 6867383 | + | 202 | 1.30E-107 | 100 | 206 |
| 16637 | 16844 | - | 1 | 6867176 | 6867383 | + | 172 | 9.90E-90 | 96 | 208 |
| 11076 | 11293 | + | 1 | 6867383 | 6867743 | + | 206 | 5.50E-110 | 99 | 218 |
| 28924 | 29143 | - | 1 | 6867383 | 6867743 | + | 115 | 7.80E-169 | 88 | 223 |
| 27609 | 27844 | + | 1 | 7225663 | 7225978 | + | 196 | 0 | 96 | 236 |
| 26086 | 26324 | + | 1 | 7225663 | 7225978 | + | 221 | 0 | 98 | 241 |
| 158 | 399 | + | 1 | 7225977 | 7226086 | + | 238 | 1.50E-125 | 100 | 242 |
| 40215 | 40470 | - | 1 | 7226433 | 7226562 | + | 252 | 3.30E-134 | 100 | 256 |
| 29370 | 29668 | + | 1 | 7226433 | 7226562 | + | 295 | 0 | 100 | 299 |
| 4248 | 4578 | - | 1 | 7301156 | 7301260 | + | 327 | 0 | 100 | 331 |
| 8899 | 9230 | - | 1 | 7301260 | 7301600 | + | 332 | 0 | 100 | 332 |
| 29205 | 29541 | - | 1 | 7914155 | 7914630 | + | 174 | 7.80E-169 | 88 | 338 |
| 27196 | 27546 | - | 1 | 7914155 | 7914630 | + | 339 | 3.50E-184 | 99 | 351 |
| 31166 | 31567 | - | 1 | 8158729 | 8158898 | + | 306 | 4.70E-190 | 94 | 402 |
| 28153 | 28583 | + | 1 | 8158963 | 8159199 | + | 343 | 0 | 95 | 435 |
| 28153 | 28583 | + | 1 | 8876134 | 8876317 | + | 327 | 0 | 94 | 435 |
| 9872 | 10363 | + | 1 | 9878240 | 9878380 | + | 465 | 0 | 99 | 493 |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 1557 | 2170 | + | 1 | 9878240 | 9878380 | + | 445 | 1.90E-247 | 93 | 617 | |
| 28718 | 29383 | + | 1 | 11192007 | 11192210 | + | 611 | 0 | 98 | 667 | |
| 29454 | 30249 | - | 1 | 12566250 | 12566382 | + | 763 | 0 | 99 | 799 | |
| 26588 | 27611 | + | 1 | 12929099 | 12929494 | + | 870 | 0 | 96 | 1030 | |
| 26328 | 27595 | + | 1 | 12929099 | 12929494 | + | 1186 | 0 | 98 | 1274 | |
| 115268 | 115368 | + | 1 | 14119914 | 14120940 | + | 100 | 1.70E-110 | 100 | 100 | |
| 93327 | 93449 | + | 1 | 14119914 | 14120209 | + | 114 | 6.50E-53 | 98 | 122 | |
| 116846 | 116985 | + | 1 | 14120210 | 14120940 | + | 135 | 1.70E-110 | 99 | 139 | |
| 104152 | 104344 | + | 1 | 14120945 | 14121180 | + | 168 | 3.90E-102 | 97 | 192 | |
| 94931 | 95137 | - | 1 | 14120945 | 14121180 | + | 202 | 5.30E-105 | 100 | 206 | |
| 111164 | 111372 | - | 1 | 14121454 | 14121604 | + | 172 | 1.00E-89 | 96 | 208 | |
| 105603 | 105821 | + | 1 | 14121454 | 14121604 | + | 206 | 5.50E-110 | 99 | 218 | |
| 120613 | 120852 | + | 1 | 14121713 | 14122142 | + | 221 | 0 | 98 | 241 | |
| 94685 | 94927 | + | 1 | 14121713 | 14122142 | + | 238 | 3.70E-135 | 100 | 242 | |
| 121115 | 121411 | + | 1 | 14122304 | 14122471 | + | 256 | 4.30E-135 | 97 | 296 | |
| 98775 | 99106 | - | 1 | 14122304 | 14122471 | + | 327 | 0 | 100 | 331 | |
| 103426 | 103758 | - | 1 | 15109868 | 15110154 | + | 332 | 0 | 100 | 332 | |
| 104399 | 104891 | + | 1 | 15792004 | 15792134 | + | 465 | 7.10E-261 | 99 | 493 | |
| 120855 | 121411 | + | 1 | 17381772 | 17381917 | + | 536 | 0 | 99 | 556 | |
| 96084 | 96698 | + | 1 | 17381772 | 17381917 | + | 445 | 1.30E-247 | 93 | 617 | |
| 43216 | 43316 | + | 1 | 18563883 | 18563995 | + | 100 | 3.20E-45 | 100 | 100 | |
| 73168 | 73269 | - | 1 | 18604594 | 18604697 | + | 101 | 7.70E-77 | 100 | 101 | |
| 73158 | 73272 | + | 1 | 18662633 | 18662874 | + | 82 | 1.50E-32 | 93 | 114 | |
| 68319 | 68436 | + | 1 | 18662633 | 18662874 | + | 113 | 5.60E-62 | 99 | 117 | |
| 57803 | 57936 | - | 1 | 18662873 | 18663002 | + | 129 | 2.90E-61 | 99 | 133 | |
| 64258 | 64414 | + | 1 | 18663007 | 18663226 | + | 136 | 1.10E-64 | 97 | 156 | |
| 68275 | 68449 | + | 1 | 18663007 | 18663226 | + | 174 | 3.40E-98 | 100 | 174 | |
| 54330 | 54507 | - | 1 | 18663226 | 18663592 | + | 154 | 2.00E-96 | 97 | 178 | |
| 71172 | 71360 | + | 1 | 18663226 | 18663592 | + | 140 | 3.30E-67 | 94 | 188 | |
| 78009 | 78228 | - | 1 | 18663667 | 18664044 | + | 215 | 0 | 100 | 219 | |
| 71241 | 71484 | - | 1 | 18664084 | 18664560 | + | 195 | 2.90E-98 | 95 | 243 | |
| 71240 | 71484 | - | 1 | 18664561 | 18664829 | + | 216 | 1.40E-110 | 97 | 244 | |
| 65585 | 65871 | - | 1 | 18664561 | 18664829 | + | 278 | 2.00E-188 | 99 | 286 | |
| 74761 | 75072 | - | 1 | 18664830 | 18664971 | + | 311 | 0 | 100 | 311 | |
| 79249 | 79570 | + | 1 | 18665076 | 18665600 | + | 273 | 3.20E-144 | 96 | 321 | |
| 79249 | 79570 | + | 1 | 18665596 | 18666416 | + | 259 | 7.40E-135 | 95 | 327 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 43430 | 43796 | - | 1 | 18666415 | 18666577 | + | 327 | 9.40E-178 | 97 | 367 | |
| 446952 | 450449 | - | 1 | 18666578 | 18666773 | + | 3489 | 0 | 100 | 3497 | |
| 465054 | 467566 | - | 1 | 18666775 | 18666945 | + | 2509 | 0 | 100 | 2513 | |
| 460275 | 462146 | + | 1 | 18666946 | 18667096 | + | 1859 | 0 | 100 | 1871 | |
| 482345 | 483474 | + | 1 | 18667093 | 18667224 | + | 1129 | 0 | 100 | 1129 | |
| 464072 | 465033 | - | 1 | 18667226 | 18667500 | + | 953 | 0 | 100 | 961 | |
| 461284 | 462129 | + | 1 | 18667245 | 18667500 | + | 838 | 0 | 100 | 846 | |
| 445461 | 446216 | - | 1 | 18667880 | 18668169 | + | 755 | 0 | 100 | 755 | |
| 462867 | 463437 | + | 1 | 18668256 | 18668386 | + | 558 | 3.8e-310 | 99 | 570 | |
| 455403 | 455879 | - | 1 | 18668386 | 18668596 | + | 445 | 1.20E-247 | 98 | 477 | |
| 486488 | 486910 | - | 1 | 18668597 | 18668730 | + | 414 | 9.50E-233 | 100 | 422 | |
| 446376 | 446788 | - | 1 | 18668597 | 18668730 | + | 412 | 0 | 100 | 412 | |
| 486392 | 486804 | - | 1 | 18668732 | 18668864 | + | 404 | 0 | 100 | 412 | |
| 485430 | 485811 | + | 1 | 18668732 | 18668864 | + | 345 | 6.20E-190 | 98 | 381 | |
| 451997 | 452366 | + | 1 | 18668865 | 18669150 | + | 361 | 9.00E-261 | 99 | 369 | |
| 455059 | 455426 | + | 1 | 18669238 | 18669452 | + | 359 | 0 | 99 | 367 | |
| 463725 | 464064 | - | 1 | 18669452 | 18669615 | + | 335 | 0 | 100 | 339 | |
| 466883 | 467217 | - | 1 | 18806417 | 18806634 | + | 327 | 6.90E-274 | 99 | 335 | |
| 462214 | 462530 | - | 1 | 18806417 | 18806634 | + | 280 | 3.10E-149 | 97 | 316 | |
| 463292 | 463561 | + | 1 | 18977321 | 18977470 | + | 265 | 0 | 100 | 269 | |
| 448363 | 448626 | - | 1 | 18977321 | 18977470 | + | 131 | 1.10E-63 | 87 | 263 | |
| 445174 | 445430 | + | 1 | 19442390 | 19442496 | + | 256 | 0 | 100 | 256 | |
| 485463 | 485709 | + | 1 | 19443196 | 19443309 | + | 198 | 7.50E-131 | 95 | 246 | |
| 465954 | 466174 | - | 1 | 21690718 | 21690905 | + | 208 | 3.40E-107 | 99 | 220 | |
| 485446 | 485660 | - | 1 | 22563818 | 22564141 | + | 206 | 5.10E-215 | 99 | 214 | |
| 481549 | 481752 | - | 1 | 22564150 | 22564395 | + | 199 | 0 | 100 | 203 | |
| 451555 | 451731 | - | 1 | 22564150 | 22564395 | + | 164 | 2.90E-79 | 98 | 176 | |
| 451555 | 451731 | - | 1 | 22564397 | 22564506 | + | 164 | 3.30E-80 | 98 | 176 | |
| 464209 | 464356 | + | 1 | 22564397 | 22564506 | + | 50 | 0 | 83 | 154 | |
| 486669 | 486815 | + | 1 | 22564537 | 22564780 | + | 114 | 5.40E-70 | 95 | 146 | |
| 446796 | 446941 | - | 1 | 22566555 | 22566875 | + | 145 | 0 | 100 | 145 | |
| 446224 | 446367 | - | 1 | 22566873 | 22567252 | + | 143 | 0 | 100 | 143 | |
| 445615 | 445756 | + | 1 | 22566873 | 22567252 | + | 133 | 1.20E-64 | 99 | 141 | |
| 478680 | 478813 | + | 1 | 22567283 | 22567525 | + | 129 | 0 | 99 | 133 | |
| 482232 | 482362 | + | 1 | 22794152 | 22794342 | + | 114 | 8.10E-53 | 97 | 130 | |
| 487428 | 487554 | + | 1 | 22794152 | 22794342 | + | 102 | 2.10E-45 | 95 | 126 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 482971 | 483091 | + | 1 | 23132130 | 23132496 | + | 120 | 9.00E-261 | 100 | 120 | |
| 478216 | 478334 | - | 1 | 23132130 | 23132496 | + | 118 | 3.60E-63 | 100 | 118 | |
| 485703 | 485811 | + | 1 | 24230026 | 24230245 | + | 66 | 7.50E-131 | 90 | 110 | |
| 465504 | 465611 | + | 1 | 24230264 | 24230364 | + | 103 | 6.60E-57 | 99 | 107 | |
| 472432 | 472537 | - | 1 | 24636227 | 24636515 | + | 101 | 4.20E-69 | 99 | 105 | |
| 484882 | 484986 | - | 1 | 24636636 | 24636927 | + | 104 | 6.90E-274 | 100 | 104 | |
| 406833 | 406939 | + | 1 | 24730249 | 24730480 | + | 104 | 2.30E-170 | 99 | 106 | |
| 409281 | 409388 | + | 1 | 26590723 | 26590847 | + | 95 | 2.40E-62 | 97 | 107 | |
| 440892 | 441018 | - | 1 | 27827129 | 27827742 | + | 106 | 0 | 96 | 126 | |
| 435252 | 435381 | - | 1 | 27827129 | 27827742 | + | 129 | 5.70E-60 | 100 | 129 | |
| 410301 | 410430 | + | 1 | 28097561 | 28097714 | + | 129 | 0 | 100 | 129 | |
| 442305 | 442427 | - | 1 | 28361408 | 28361977 | + | 81 | 0 | 91 | 129 | |
| 440107 | 440237 | - | 1 | 28361408 | 28361977 | + | 94 | 0 | 93 | 130 | |
| 406722 | 406854 | + | 1 | 28394549 | 28394696 | + | 132 | 0 | 100 | 132 | |
| 431595 | 431729 | + | 1 | 28394549 | 28394696 | + | 130 | 1.80E-106 | 99 | 134 | |
| 417301 | 417438 | - | 1 | 29712512 | 29712716 | + | 137 | 2.40E-111 | 100 | 137 | |
| 415867 | 416026 | + | 1 | 29712512 | 29712716 | + | 155 | 5.90E-204 | 99 | 159 | |
| 416318 | 416494 | - | 1 | 30061173 | 30061509 | + | 176 | 3.30E-171 | 100 | 176 | |
| 411337 | 411515 | + | 1 | 30061173 | 30061509 | + | 178 | 5.90E-204 | 100 | 178 | |
| 406427 | 406610 | - | 1 | 30061797 | 30062015 | + | 159 | 3.30E-171 | 97 | 183 | |
| 442617 | 442816 | + | 1 | 30061797 | 30062015 | + | 183 | 8.60E-293 | 98 | 199 | |
| 423919 | 424124 | + | 1 | 30062029 | 30062130 | + | 166 | 7.30E-84 | 95 | 206 | |
| 438442 | 438644 | + | 1 | 30062029 | 30062130 | + | 109 | 2.60E-71 | 88 | 209 | |
| 436928 | 437170 | - | 1 | 31910316 | 31910420 | + | 238 | 1.70E-124 | 100 | 242 | |
| 435392 | 435636 | - | 1 | 31910316 | 31910420 | + | 236 | 2.10E-132 | 99 | 244 | |
| 440518 | 440774 | - | 1 | 31910316 | 31910420 | + | 206 | 0 | 95 | 258 | |
| 433625 | 433915 | + | 1 | 31910593 | 31910710 | + | 290 | 1.40E-153 | 100 | 290 | |
| 422565 | 422922 | - | 1 | 31910593 | 31910710 | + | 293 | 4.40E-159 | 95 | 361 | |
| 442217 | 442603 | + | 1 | 31910604 | 31910710 | + | 354 | 8.60E-293 | 98 | 386 | |
| 410848 | 411235 | + | 1 | 33478131 | 33478839 | + | 380 | 0 | 99 | 388 | |
| 412862 | 413359 | - | 1 | 33483563 | 33483752 | + | 489 | 0 | 100 | 497 | |
| 439174 | 439863 | + | 1 | 33485848 | 33486692 | + | 689 | 0 | 100 | 689 | |
| 440028 | 440879 | + | 1 | 33485848 | 33486692 | + | 851 | 0 | 100 | 851 | |
| 441345 | 442306 | - | 1 | 33492335 | 33493376 | + | 841 | 0 | 97 | 961 | |
| 441028 | 442265 | - | 1 | 33493385 | 33495052 | + | 1058 | 0 | 96 | 1238 | |
| 440888 | 442603 | + | 1 | 33495037 | 33495899 | + | 1707 | 0 | 100 | 1715 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 442617 | 445171 | + | 1 | 33495898 | 33496586 | + | 2554 | 0 | 100 | 2554 | |
| 384417 | 384524 | + | 1 | 33495898 | 33496586 | + | 103 | 1.30E-48 | 99 | 107 | |
| 364231 | 364343 | + | 1 | 33496673 | 33497602 | + | 112 | 0 | 100 | 112 | |
| 395696 | 395811 | + | 1 | 33496752 | 33497602 | + | 63 | 1.30E-63 | 89 | 115 | |
| 399276 | 399395 | - | 1 | 33497612 | 33499326 | + | 119 | 4.40E-70 | 100 | 119 | |
| 400202 | 400333 | + | 1 | 33497612 | 33499326 | + | 119 | 0 | 98 | 131 | |
| 364528 | 364669 | + | 1 | 33499341 | 33501894 | + | 133 | 4.40E-63 | 99 | 141 | |
| 365137 | 365280 | - | 1 | 33499341 | 33502041 | + | 143 | 0 | 100 | 143 | |
| 365709 | 365854 | - | 1 | 33501898 | 33502153 | + | 145 | 0 | 100 | 145 | |
| 383122 | 383269 | + | 1 | 33502042 | 33502153 | + | 50 | 0 | 83 | 154 | |
| 391513 | 391668 | + | 1 | 33509411 | 33509615 | + | 155 | 8.10E-283 | 100 | 155 | |
| 396643 | 396806 | + | 1 | 33509411 | 33509615 | + | 159 | 0 | 99 | 163 | |
| 370468 | 370644 | - | 1 | 33513535 | 33514333 | + | 164 | 1.80E-82 | 98 | 176 | |
| 370468 | 370644 | - | 1 | 33513535 | 33514333 | + | 164 | 9.90E-81 | 98 | 176 | |
| 384867 | 385087 | - | 1 | 33514330 | 33517826 | + | 208 | 9.40E-107 | 99 | 220 | |
| 367276 | 367539 | - | 1 | 33514330 | 33517826 | + | 131 | 6.00E-63 | 87 | 263 | |
| 382205 | 382474 | + | 1 | 33517836 | 33517980 | + | 265 | 0 | 100 | 269 | |
| 381127 | 381443 | - | 1 | 33517836 | 33517980 | + | 280 | 2.20E-149 | 97 | 316 | |
| 385796 | 386131 | - | 1 | 33517989 | 33518400 | + | 331 | 1.60E-223 | 100 | 335 | |
| 382638 | 382977 | - | 1 | 33517989 | 33518400 | + | 335 | 0 | 100 | 339 | |
| 373972 | 374339 | + | 1 | 33518410 | 33518552 | + | 359 | 0 | 99 | 367 | |
| 370910 | 371279 | + | 1 | 33518410 | 33518552 | + | 361 | 8.10E-283 | 99 | 369 | |
| 365289 | 365701 | - | 1 | 33518561 | 33519315 | + | 412 | 0 | 100 | 412 | |
| 374316 | 374792 | - | 1 | 33518561 | 33519315 | + | 445 | 4.70E-249 | 98 | 477 | |
| 381780 | 382350 | + | 1 | 33519316 | 33519555 | + | 558 | 2.1e-310 | 99 | 570 | |
| 395692 | 396401 | + | 1 | 33519316 | 33519555 | + | 673 | 0 | 99 | 709 | |
| 364374 | 365129 | - | 1 | 33519568 | 33520839 | + | 755 | 0 | 100 | 755 | |
| 380197 | 381042 | + | 1 | 33519568 | 33520123 | + | 838 | 0 | 100 | 846 | |
| 382985 | 383946 | - | 1 | 33520124 | 33520839 | + | 953 | 0 | 100 | 961 | |
| 379188 | 381059 | + | 1 | 33523471 | 33525341 | + | 1859 | 0 | 100 | 1871 | |
| 365865 | 369362 | - | 1 | 33523471 | 33525341 | + | 3489 | 0 | 100 | 3497 | |
| 383967 | 387767 | - | 1 | 33525361 | 33526489 | + | 3800 | 0 | 100 | 3800 | |
| 336986 | 337097 | - | 1 | 33525361 | 33526489 | + | 99 | 3.40E-41 | 97 | 111 | |
| 359805 | 359931 | - | 1 | 33528876 | 33528984 | + | 106 | 0 | 96 | 126 | |
| 354165 | 354294 | - | 1 | 33529021 | 33530615 | + | 129 | 1.20E-58 | 100 | 129 | |
| 361218 | 361340 | - | 1 | 33530630 | 33531296 | + | 81 | 0 | 91 | 129 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 359020 | 359150 | - | 1 | 33531316 | 33532559 | + | 94 | 0 | 93 | 130 | |
| 349773 | 349904 | + | 1 | 33532063 | 33532559 | + | 103 | 3.10E-45 | 95 | 131 | |
| 350508 | 350642 | + | 1 | 33532063 | 33532559 | + | 130 | 1.30E-214 | 99 | 134 | |
| 330051 | 330187 | + | 1 | 33532891 | 33533041 | + | 136 | 1.50E-120 | 100 | 136 | |
| 330045 | 330187 | + | 1 | 33532891 | 33533041 | + | 142 | 3.30E-108 | 100 | 142 | |
| 330027 | 330187 | + | 1 | 33533149 | 33533578 | + | 156 | 3.20E-108 | 99 | 160 | |
| 328604 | 328775 | - | 1 | 33533149 | 33533578 | + | 156 | 3.70E-205 | 98 | 172 | |
| 329900 | 330091 | - | 1 | 33533740 | 33534406 | + | 92 | 1.10E-71 | 87 | 196 | |
| 324516 | 324714 | - | 1 | 33533740 | 33534406 | + | 194 | 1.50E-123 | 99 | 198 | |
| 361530 | 361729 | + | 1 | 33534632 | 33534741 | + | 183 | 6.20E-293 | 98 | 199 | |
| 342832 | 343037 | + | 1 | 33535874 | 33536047 | + | 166 | 9.20E-83 | 95 | 206 | |
| 357355 | 357557 | + | 1 | 33539813 | 33539940 | + | 109 | 1.30E-67 | 88 | 209 | |
| 355841 | 356083 | - | 1 | 33539813 | 33539940 | + | 238 | 1.10E-125 | 100 | 242 | |
| 354305 | 354549 | - | 1 | 33539946 | 33540901 | + | 236 | 3.70E-205 | 99 | 244 | |
| 359431 | 359687 | - | 1 | 33539946 | 33540901 | + | 206 | 0 | 95 | 258 | |
| 352538 | 352828 | + | 1 | 33539982 | 33541213 | + | 290 | 1.40E-153 | 100 | 290 | |
| 332891 | 333181 | + | 1 | 33539982 | 33541213 | + | 274 | 1.30E-214 | 99 | 290 | |
| 341478 | 341835 | - | 1 | 33541214 | 33541339 | + | 293 | 4.40E-159 | 95 | 361 | |
| 361130 | 361516 | + | 1 | 33541214 | 33541339 | + | 354 | 6.20E-293 | 98 | 386 | |
| 358087 | 358776 | + | 1 | 33541402 | 33541658 | + | 689 | 0 | 100 | 689 | |
| 358862 | 359792 | + | 1 | 33541402 | 33541658 | + | 930 | 0 | 100 | 930 | |
| 360258 | 361219 | - | 1 | 33541869 | 33541998 | + | 841 | 0 | 97 | 961 | |
| 359941 | 361178 | - | 1 | 33541869 | 33541998 | + | 1058 | 0 | 96 | 1238 | |
| 359801 | 361516 | + | 1 | 33546186 | 33546307 | + | 1707 | 0 | 100 | 1715 | |
| 361530 | 364231 | + | 1 | 33546186 | 33546307 | + | 2697 | 0 | 100 | 2701 | |
| 288949 | 290617 | - | 1 | 33552764 | 33552892 | + | 1640 | 0 | 100 | 1668 | |
| 290625 | 291667 | - | 1 | 33552764 | 33552892 | + | 1026 | 0 | 100 | 1042 | |
| 288120 | 288990 | - | 1 | 33562091 | 33565890 | + | 806 | 0 | 98 | 870 | |
| 303325 | 304155 | - | 1 | 33563378 | 33565890 | + | 794 | 0 | 99 | 830 | |
| 300809 | 301630 | + | 1 | 33565912 | 33566872 | + | 817 | 0 | 100 | 821 | |
| 300743 | 301323 | - | 1 | 33565912 | 33566872 | + | 573 | 0 | 100 | 581 | |
| 303577 | 304155 | - | 1 | 33566881 | 33567219 | + | 558 | 0 | 99 | 578 | |
| 288390 | 288867 | + | 1 | 33566881 | 33567219 | + | 477 | 0 | 100 | 477 | |
| 316628 | 317091 | + | 1 | 33567524 | 33567670 | + | 400 | 2.10E-237 | 97 | 464 | |
| 313788 | 314175 | + | 1 | 33567524 | 33567670 | + | 364 | 8.20E-283 | 98 | 388 | |
| 300835 | 301145 | - | 1 | 33691198 | 33691342 | + | 298 | 1.20E-169 | 99 | 310 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 290807 | 291094 | - | 1 | 33691198 | 33691342 | + | 271 | 6.60E-141 | 99 | 287 | |
| 292128 | 292381 | - | 1 | 34349474 | 34349614 | + | 249 | 1.10E-140 | 100 | 253 | |
| 303325 | 303577 | - | 1 | 34349615 | 34349714 | + | 236 | 2.50E-135 | 98 | 252 | |
| 290267 | 290504 | + | 1 | 34349615 | 34349714 | + | 142 | 4.80E-67 | 90 | 238 | |
| 310452 | 310684 | - | 1 | 34349828 | 34350033 | + | 224 | 0 | 99 | 232 | |
| 310452 | 310684 | - | 1 | 34349828 | 34350033 | + | 224 | 0 | 99 | 232 | |
| 286277 | 286493 | - | 1 | 34350033 | 34350170 | + | 189 | 2.50E-97 | 96 | 221 | |
| 285397 | 285596 | - | 1 | 34350033 | 34350170 | + | 199 | 4.60E-112 | 100 | 199 | |
| 284946 | 285105 | + | 1 | 34350732 | 34350856 | + | 155 | 8.20E-283 | 99 | 159 | |
| 286412 | 286569 | + | 1 | 34350960 | 34351097 | + | 137 | 7.30E-66 | 97 | 157 | |
| 319490 | 319644 | + | 1 | 34350960 | 34351097 | + | 150 | 4.90E-73 | 99 | 154 | |
| 297516 | 297655 | + | 1 | 34351287 | 34351387 | + | 119 | 4.00E-70 | 96 | 139 | |
| 287277 | 287414 | + | 1 | 34351854 | 34351951 | + | 129 | 2.00E-143 | 99 | 137 | |
| 244747 | 245230 | + | 1 | 34351854 | 34351951 | + | 396 | 4.60E-218 | 95 | 484 | |
| 246083 | 246260 | - | 1 | 34352084 | 34352190 | + | 94 | 0 | 88 | 178 | |
| 246245 | 246450 | + | 1 | 34352084 | 34352190 | + | 177 | 1.00E-92 | 97 | 205 | |
| 247260 | 247370 | - | 1 | 34352704 | 34352809 | + | 47 | 0 | 86 | 111 | |
| 248679 | 248946 | + | 1 | 34353490 | 34353607 | + | 223 | 1.80E-117 | 96 | 267 | |
| 249612 | 249730 | + | 1 | 34353490 | 34353607 | + | 114 | 6.80E-52 | 99 | 118 | |
| 250142 | 250243 | - | 1 | 34353663 | 34353793 | + | 49 | 6.80E-52 | 87 | 101 | |
| 250261 | 250481 | - | 1 | 34354612 | 34354718 | + | 80 | 6.80E-52 | 84 | 224 | |
| 251585 | 251709 | + | 1 | 34354612 | 34354718 | + | 120 | 1.2e-312 | 99 | 124 | |
| 257795 | 257932 | - | 1 | 34354891 | 34355132 | + | 133 | 1.70E-202 | 99 | 137 | |
| 258002 | 258144 | - | 1 | 34354891 | 34355132 | + | 138 | 2.40E-139 | 99 | 142 | |
| 261774 | 262081 | + | 1 | 34355396 | 34355587 | + | 194 | 2.70E-100 | 91 | 310 | |
| 263182 | 263303 | - | 1 | 38361430 | 38361758 | + | 121 | 1.70E-202 | 100 | 121 | |
| 263183 | 263299 | - | 1 | 39015432 | 39015609 | + | 112 | 2.30E-128 | 99 | 116 | |
| 266342 | 266452 | - | 1 | 39090013 | 39090116 | + | 94 | 3.20E-42 | 96 | 110 | |
| 266342 | 266452 | - | 1 | 39090017 | 39090116 | + | 94 | 7.10E-39 | 96 | 110 | |
| 267688 | 267801 | - | 1 | 39090118 | 39090230 | + | 113 | 1.70E-202 | 100 | 113 | |
| 269116 | 269641 | + | 1 | 39090294 | 39090429 | + | 501 | 2.50E-282 | 99 | 525 | |
| 271562 | 271851 | + | 1 | 39090467 | 39090587 | + | 257 | 7.90E-159 | 97 | 289 | |
| 274117 | 274351 | + | 1 | 39090588 | 39090922 | + | 234 | 5.90E-225 | 100 | 234 | |
| 274247 | 274348 | - | 1 | 39090588 | 39090922 | + | 81 | 8.00E-114 | 95 | 101 | |
| 277790 | 277897 | - | 1 | 39090946 | 39091123 | + | 107 | 1.40E-50 | 100 | 107 | |
| 278355 | 278473 | + | 1 | 39090946 | 39091123 | + | 106 | 2.70E-48 | 97 | 118 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 279386 | 279515 | + | 1 | 39090946 | 39091123 | + | 129 | 5.50E-286 | 100 | 129 | |
| 279933 | 280320 | + | 1 | 39091124 | 39091249 | + | 380 | 1.2e-312 | 99 | 388 | |
| 280422 | 280600 | + | 1 | 39091251 | 39091582 | + | 178 | 6.70E-133 | 100 | 178 | |
| 281947 | 282444 | - | 1 | 39091251 | 39091582 | + | 489 | 0 | 100 | 497 | |
| 202495 | 202823 | - | 1 | 39091870 | 39092067 | + | 148 | 4.90E-73 | 95 | 184 | |
| 202985 | 203885 | - | 1 | 39092067 | 39092203 | + | 262 | 4.90E-160 | 100 | 266 | |
| 203425 | 204789 | + | 1 | 39092207 | 39092405 | + | 245 | 4.10E-138 | 96 | 293 | |
| 205600 | 209065 | - | 1 | 39092230 | 39092405 | + | 208 | 2.50E-187 | 99 | 216 | |
| 205814 | 209512 | + | 1 | 39092407 | 39092756 | + | 227 | 0 | 99 | 235 | |
| 206294 | 210342 | + | 1 | 39092927 | 39093366 | + | 101 | 2.50E-96 | 99 | 105 | |
| 209664 | 217147 | + | 1 | 39093365 | 39093483 | + | 111 | 3.30E-111 | 91 | 171 | |
| 209812 | 217512 | + | 1 | 39093615 | 39093867 | + | 122 | 3.30E-111 | 88 | 242 | |
| 211015 | 219809 | + | 1 | 39093867 | 39094358 | + | 126 | 1.00E-297 | 99 | 130 | |
| 211908 | 221801 | + | 1 | 39093867 | 39094358 | + | 304 | 0 | 98 | 336 | |
| 212192 | 222457 | + | 1 | 39094362 | 39094503 | + | 404 | 0 | 99 | 424 | |
| 214062 | 225874 | + | 1 | 39094545 | 39094660 | + | 101 | 0 | 100 | 101 | |
| 214985 | 227853 | + | 1 | 39094667 | 39094976 | + | 234 | 0 | 100 | 234 | |
| 215115 | 227980 | - | 1 | 39095610 | 39095769 | + | 81 | 3.50E-89 | 95 | 101 | |
| 218658 | 235072 | - | 1 | 39095837 | 39095995 | + | 107 | 1.20E-85 | 100 | 107 | |
| 219223 | 236213 | + | 1 | 39095837 | 39095995 | + | 106 | 2.50E-96 | 97 | 118 | |
| 220254 | 238286 | + | 1 | 39096091 | 39096191 | + | 129 | 0 | 100 | 129 | |
| 220801 | 239638 | + | 1 | 39096192 | 39096772 | + | 380 | 0 | 99 | 388 | |
| 221290 | 240407 | + | 1 | 39096775 | 39097197 | + | 178 | 1.40E-133 | 100 | 178 | |
| 222815 | 244523 | - | 1 | 39097197 | 39097379 | + | 1228 | 0 | 100 | 1244 | |
| 224078 | 246472 | - | 1 | 39097377 | 39097590 | + | 667 | 0 | 100 | 667 | |
| 224759 | 248762 | - | 1 | 39097377 | 39097590 | + | 1595 | 0 | 100 | 1595 | |
| 227447 | 252694 | - | 1 | 39097590 | 39097721 | + | 151 | 2.50E-187 | 100 | 151 | |
| 228777 | 255310 | + | 1 | 39097816 | 39098227 | + | 87 | 5.50E-35 | 95 | 107 | |
| 229776 | 257866 | - | 1 | 39097816 | 39098227 | + | 653 | 0 | 100 | 665 | |
| 235431 | 268748 | - | 1 | 39098232 | 39098562 | + | 233 | 0 | 100 | 237 | |
| 239652 | 277065 | + | 1 | 39098232 | 39098562 | + | 100 | 3.70E-170 | 97 | 112 | |
| 239776 | 277473 | + | 1 | 39098563 | 39098760 | + | 232 | 3.70E-170 | 96 | 272 | |
| 239933 | 277624 | - | 1 | 39098563 | 39098760 | + | 105 | 0 | 99 | 109 | |
| 241431 | 280889 | + | 1 | 39098900 | 39099036 | + | 370 | 1.00E-297 | 99 | 378 | |
| 198859 | 198963 | - | 1 | 39099178 | 39099421 | + | 92 | 2.50E-193 | 97 | 104 | |
| 171018 | 171123 | - | 1 | 39099178 | 39099421 | + | 85 | 2.40E-238 | 95 | 105 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 195131 | 195241 | - | 1 | 39099411 | 39099580 | + | 94 | 2.40E-238 | 96 | 110 | |
| 162602 | 162710 | + | 1 | 39099580 | 39099967 | + | 66 | 3.30E-128 | 90 | 110 | |
| 191362 | 191477 | - | 1 | 39099967 | 39100201 | + | 115 | 0 | 100 | 115 | |
| 185227 | 185352 | - | 1 | 39100375 | 39100689 | + | 125 | 3.10E-169 | 100 | 125 | |
| 175947 | 176072 | + | 1 | 39100773 | 39100946 | + | 121 | 2.40E-59 | 99 | 125 | |
| 192700 | 192826 | + | 1 | 39100947 | 39101315 | + | 122 | 3.00E-98 | 99 | 126 | |
| 164327 | 164453 | + | 1 | 39100947 | 39101315 | + | 102 | 1.90E-46 | 95 | 126 | |
| 182686 | 182817 | - | 1 | 39101580 | 39101878 | + | 131 | 3.10E-169 | 100 | 131 | |
| 174790 | 174922 | - | 1 | 39101580 | 39101878 | + | 128 | 2.50E-193 | 99 | 132 | |
| 172685 | 172824 | + | 1 | 39101913 | 39102248 | + | 132 | 3.10E-118 | 99 | 140 | |
| 184331 | 184472 | + | 1 | 39102250 | 39102378 | + | 141 | 3.00E-181 | 100 | 141 | |
| 163568 | 163714 | + | 1 | 39102250 | 39102378 | + | 114 | 6.00E-72 | 95 | 146 | |
| 170777 | 170941 | + | 1 | 39102250 | 39102378 | + | 156 | 1.50E-73 | 99 | 164 | |
| 183672 | 183843 | - | 1 | 39102508 | 39102773 | + | 167 | 2.50E-193 | 99 | 171 | |
| 195954 | 196146 | + | 1 | 39102774 | 39102890 | + | 172 | 3.00E-181 | 97 | 192 | |
| 180946 | 181142 | + | 1 | 39102891 | 39102990 | + | 192 | 1.80E-136 | 99 | 196 | |
| 195079 | 195291 | - | 1 | 39102891 | 39102990 | + | 192 | 2.80E-141 | 98 | 212 | |
| 162345 | 162559 | - | 1 | 39103046 | 39103264 | + | 206 | 6.10E-117 | 99 | 214 | |
| 188672 | 188909 | - | 1 | 39103376 | 39103530 | + | 165 | 4.20E-177 | 92 | 237 | |
| 188383 | 188625 | - | 1 | 39103531 | 39103832 | + | 151 | 4.20E-177 | 91 | 243 | |
| 162362 | 162608 | + | 1 | 39103832 | 39103971 | + | 198 | 3.30E-128 | 95 | 246 | |
| 184463 | 184765 | - | 1 | 39104059 | 39104369 | + | 302 | 0 | 100 | 302 | |
| 168950 | 169265 | - | 1 | 39104370 | 39104606 | + | 315 | 0 | 100 | 315 | |
| 179577 | 179906 | - | 1 | 39105278 | 39105401 | + | 297 | 3.10E-159 | 98 | 329 | |
| 170664 | 171004 | - | 1 | 39105400 | 39105604 | + | 283 | 2.40E-238 | 96 | 343 | |
| 188616 | 188966 | + | 1 | 39105400 | 39105673 | + | 342 | 6.40E-228 | 99 | 350 | |
| 162329 | 162710 | + | 1 | 39105671 | 39105807 | + | 345 | 6.50E-188 | 98 | 381 | |
| 188219 | 188594 | - | 1 | 39105851 | 39106053 | + | 169 | 3.30E-84 | 86 | 385 | |
| 163291 | 163703 | - | 1 | 39105851 | 39106053 | + | 404 | 1.20E-234 | 100 | 412 | |
| 163387 | 163809 | - | 1 | 39106053 | 39106440 | + | 414 | 0 | 100 | 422 | |
| 179116 | 179556 | + | 1 | 39106053 | 39106440 | + | 436 | 5.90E-306 | 100 | 440 | |
| 176315 | 177156 | - | 1 | 39106053 | 39106440 | + | 841 | 0 | 100 | 841 | |
| 161781 | 161880 | - | 1 | 39106435 | 39106549 | + | 100 | 1.20E-169 | 100 | 100 | |
| 137743 | 137842 | + | 1 | 39106653 | 39107073 | + | 100 | 9.30E-270 | 100 | 100 | |
| 123337 | 123433 | - | 1 | 39106653 | 39107073 | + | 50 | 6.00E-170 | 87 | 102 | |
| 149331 | 149435 | - | 1 | 39107139 | 39107803 | + | 101 | 1.30E-43 | 99 | 105 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 155115 | 155232 | - | 1 | 39107804 | 39108037 | + | 118 | 8.40E-56 | 100 | 118 | |
| 159870 | 159989 | + | 1 | 39107804 | 39108037 | + | 120 | 0 | 100 | 120 | |
| 122250 | 122371 | + | 1 | 39108039 | 39108158 | + | 118 | 0 | 99 | 122 | |
| 125059 | 125187 | + | 1 | 39108039 | 39108158 | + | 113 | 0 | 97 | 129 | |
| 159131 | 159260 | + | 1 | 39108159 | 39108280 | + | 114 | 6.40E-53 | 97 | 130 | |
| 155579 | 155711 | + | 1 | 39108279 | 39108396 | + | 129 | 6.60E-59 | 99 | 133 | |
| 121747 | 121884 | - | 1 | 39177728 | 39177839 | + | 138 | 1.80E-69 | 100 | 138 | |
| 122227 | 122371 | - | 1 | 39177853 | 39178123 | + | 137 | 4.00E-67 | 99 | 145 | |
| 125097 | 125243 | - | 1 | 39331077 | 39331559 | + | 120 | 3.20E-70 | 95 | 148 | |
| 129682 | 129831 | - | 1 | 39565015 | 39565143 | + | 102 | 3.80E-80 | 92 | 150 | |
| 122432 | 122582 | + | 1 | 39565015 | 39565143 | + | 139 | 0 | 98 | 151 | |
| 122432 | 122582 | + | 1 | 40333073 | 40333330 | + | 135 | 0 | 97 | 151 | |
| 123245 | 123411 | + | 1 | 40333073 | 40333330 | + | 148 | 0 | 97 | 168 | |
| 121504 | 121701 | - | 1 | 41274989 | 41275113 | + | 198 | 1.20E-169 | 100 | 198 | |
| 158448 | 158650 | - | 1 | 41274989 | 41275113 | + | 199 | 9.00E-154 | 100 | 203 | |
| 123451 | 123670 | - | 1 | 41434732 | 41434963 | + | 115 | 6.00E-170 | 88 | 223 | |
| 122136 | 122371 | + | 1 | 41434963 | 41435068 | + | 196 | 0 | 96 | 236 | |
| 134793 | 135066 | + | 1 | 41435069 | 41435244 | + | 274 | 0 | 100 | 274 | |
| 134742 | 135016 | - | 1 | 41435069 | 41435244 | + | 271 | 3.10E-145 | 100 | 275 | |
| 123897 | 124195 | + | 1 | 41435245 | 41435820 | + | 295 | 0 | 100 | 299 | |
| 123732 | 124068 | - | 1 | 41435821 | 41436072 | + | 174 | 6.00E-170 | 88 | 338 | |
| 121723 | 122073 | - | 1 | 41465705 | 41465936 | + | 339 | 5.80E-186 | 99 | 351 | |
| 137957 | 138323 | - | 1 | 41465936 | 41466041 | + | 331 | 5.80E-202 | 98 | 367 | |
| 125693 | 126094 | - | 1 | 41466042 | 41466217 | + | 306 | 4.90E-188 | 94 | 402 | |
| 122680 | 123110 | + | 1 | 41466042 | 41466217 | + | 343 | 0 | 95 | 435 | |
| 122680 | 123110 | + | 1 | 41466218 | 41467045 | + | 327 | 0 | 94 | 435 | |
| 123245 | 123910 | + | 1 | 41474474 | 41474936 | + | 611 | 0 | 98 | 667 | |
| 121411 | 122122 | + | 1 | 41487041 | 41487151 | + | 650 | 0 | 98 | 718 | |
| 121411 | 122138 | + | 1 | 41701503 | 41701853 | + | 614 | 0 | 96 | 734 | |
| 123981 | 124776 | - | 1 | 41701503 | 41701853 | + | 763 | 0 | 99 | 799 | |
| 159244 | 160372 | + | 1 | 42092125 | 42092965 | + | 1129 | 0 | 100 | 1129 | |
| 26328 | 26577 | - | 2 | 808124 | 808242 | + | 194 | 2.20E-119 | 94 | 250 | |
| 23988 | 24252 | + | 2 | 808124 | 808242 | + | 265 | 1.50E-140 | 100 | 265 | |
| 32536 | 32814 | - | 2 | 814498 | 814605 | + | 255 | 3.50E-135 | 98 | 279 | |
| 106004 | 106116 | + | 2 | 815241 | 815386 | + | 104 | 1.70E-47 | 98 | 112 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 115659 | 115788 | - | 2 | 2392407 | 2393045 | + | 102 | 5.10E-48 | 95 | 130 | |
| 120855 | 121105 | - | 2 | 4905050 | 4905258 | + | 194 | 6.00E-119 | 94 | 250 | |
| 80978 | 81231 | - | 2 | 5483028 | 5483145 | + | 245 | 3.50E-131 | 99 | 253 | |
| 118515 | 118780 | + | 2 | 6171547 | 6171684 | + | 265 | 1.60E-140 | 100 | 265 | |
| 42787 | 42889 | + | 2 | 6171547 | 6171684 | + | 87 | 3.60E-37 | 96 | 103 | |
| 53454 | 53588 | - | 2 | 6172085 | 6172299 | + | 73 | 1.90E-46 | 88 | 137 | |
| 79710 | 79869 | - | 2 | 6697262 | 6697439 | + | 155 | 1.10E-124 | 99 | 159 | |
| 41909 | 42076 | + | 2 | 6697262 | 6697439 | + | 81 | 2.80E-37 | 87 | 173 | |
| 62020 | 62388 | - | 2 | 6997522 | 6997685 | + | 364 | 2.60E-201 | 100 | 368 | |
| 453008 | 453308 | + | 2 | 11195546 | 11196225 | + | 209 | 4.90E-108 | 92 | 301 | |
| 462941 | 463138 | - | 2 | 12183565 | 12183687 | + | 182 | 1.40E-88 | 98 | 198 | |
| 458280 | 458455 | + | 2 | 12183565 | 12183687 | + | 65 | 2.20E-70 | 84 | 185 | |
| 463083 | 463261 | + | 2 | 12183687 | 12183874 | + | 150 | 9.40E-75 | 96 | 178 | |
| 456384 | 456545 | - | 2 | 12183950 | 12184195 | + | 114 | 1.20E-51 | 93 | 162 | |
| 456384 | 456545 | - | 2 | 12184312 | 12184424 | + | 101 | 7.20E-42 | 91 | 161 | |
| 464210 | 464356 | + | 2 | 12184312 | 12184424 | + | 37 | 9.40E-37 | 81 | 153 | |
| 487458 | 487596 | + | 2 | 12184622 | 12184729 | + | 122 | 1.80E-57 | 97 | 138 | |
| 486298 | 486414 | - | 2 | 12184721 | 12184823 | + | 104 | 4.70E-44 | 97 | 116 | |
| 457957 | 458068 | + | 2 | 12184721 | 12184823 | + | 60 | 2.20E-70 | 88 | 112 | |
| 463485 | 463594 | + | 2 | 13403353 | 13403456 | + | 44 | 9.40E-37 | 85 | 112 | |
| 446258 | 446367 | - | 2 | 14191648 | 14191766 | + | 109 | 8.10E-50 | 100 | 109 | |
| 478876 | 478976 | + | 2 | 14191648 | 14191766 | + | 96 | 3.60E-42 | 99 | 100 | |
| 428681 | 428794 | + | 2 | 14202863 | 14203706 | + | 113 | 1.60E-52 | 100 | 113 | |
| 406320 | 406428 | + | 2 | 14202863 | 14203706 | + | 71 | 3.10E-203 | 90 | 115 | |
| 434577 | 434695 | - | 2 | 14210381 | 14210659 | + | 90 | 8.50E-75 | 94 | 118 | |
| 414344 | 414463 | - | 2 | 14210659 | 14211484 | + | 76 | 3.70E-141 | 91 | 120 | |
| 414344 | 414463 | + | 2 | 14211494 | 14211764 | + | 68 | 2.50E-72 | 89 | 120 | |
| 412377 | 412499 | + | 2 | 14211826 | 14212161 | + | 118 | 2.30E-55 | 99 | 122 | |
| 440670 | 440793 | + | 2 | 14214325 | 14214498 | + | 115 | 9.20E-56 | 98 | 123 | |
| 440655 | 440774 | - | 2 | 14215629 | 14215738 | + | 59 | 2.20E-70 | 87 | 123 | |
| 432504 | 432634 | + | 2 | 14216292 | 14217002 | + | 130 | 5.40E-63 | 100 | 130 | |
| 441028 | 441163 | - | 2 | 14216987 | 14218654 | + | 53 | 2.20E-70 | 85 | 137 | |
| 434662 | 434860 | + | 2 | 14218663 | 14220715 | + | 174 | 6.40E-91 | 97 | 198 | |
| 409563 | 409817 | - | 2 | 14220777 | 14221047 | + | 206 | 1.60E-107 | 95 | 254 | |
| 406434 | 406795 | + | 2 | 14221057 | 14222686 | + | 263 | 3.10E-203 | 93 | 363 | |
| 441301 | 442149 | + | 2 | 14222319 | 14222686 | + | 732 | 0 | 97 | 848 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 396526 | 396632 | + | 2 | 14223048 | 14223206 | + | 102 | 1.40E-46 | 99 | 106 | |
| 387663 | 387771 | - | 2 | 14223514 | 14223818 | + | 108 | 1.40E-51 | 100 | 108 | |
| 365171 | 365280 | - | 2 | 14690179 | 14690297 | + | 109 | 3.50E-52 | 100 | 109 | |
| 376870 | 376981 | + | 2 | 14690389 | 14690737 | + | 60 | 9.10E-71 | 88 | 112 | |
| 375297 | 375458 | - | 2 | 14690389 | 14690737 | + | 101 | 5.60E-43 | 91 | 161 | |
| 375297 | 375458 | - | 2 | 14889955 | 14890203 | + | 114 | 8.80E-52 | 93 | 162 | |
| 381996 | 382174 | + | 2 | 14889955 | 14890203 | + | 150 | 2.90E-74 | 96 | 178 | |
| 377193 | 377368 | + | 2 | 15425167 | 15425466 | + | 65 | 9.10E-71 | 84 | 185 | |
| 381854 | 382051 | - | 2 | 15425167 | 15425466 | + | 182 | 6.60E-90 | 98 | 198 | |
| 387660 | 387907 | + | 2 | 16001851 | 16001980 | + | 239 | 3.10E-128 | 99 | 247 | |
| 371921 | 372221 | + | 2 | 16001851 | 16001980 | + | 209 | 3.00E-108 | 92 | 301 | |
| 390599 | 390901 | - | 2 | 16001979 | 16002154 | + | 241 | 5.20E-130 | 95 | 305 | |
| 403054 | 403767 | + | 2 | 17521788 | 17521909 | + | 685 | 0 | 99 | 713 | |
| 347594 | 347707 | + | 2 | 17521788 | 17521909 | + | 113 | 3.80E-51 | 100 | 113 | |
| 356683 | 356797 | + | 2 | 17521788 | 17521909 | + | 110 | 1.70E-50 | 99 | 114 | |
| 359583 | 359706 | + | 2 | 17532060 | 17532168 | + | 115 | 1.00E-53 | 98 | 123 | |
| 359568 | 359687 | - | 2 | 17532060 | 17532168 | + | 59 | 2.20E-70 | 87 | 123 | |
| 351417 | 351547 | + | 2 | 17532362 | 17532543 | + | 130 | 2.10E-62 | 100 | 130 | |
| 359941 | 360076 | - | 2 | 17532362 | 17532543 | + | 53 | 2.20E-70 | 85 | 137 | |
| 328034 | 328210 | + | 2 | 17638993 | 17639123 | + | 156 | 8.20E-78 | 97 | 176 | |
| 353575 | 353773 | + | 2 | 17996550 | 17996678 | + | 174 | 6.40E-91 | 97 | 198 | |
| 360214 | 361062 | + | 2 | 18019756 | 18019855 | + | 732 | 0 | 97 | 848 | |
| 290625 | 292679 | + | 2 | 18019756 | 18019855 | + | 1994 | 0 | 99 | 2054 | |
| 288949 | 290617 | + | 2 | 18019979 | 18020090 | + | 1644 | 0 | 100 | 1668 | |
| 292957 | 294587 | + | 2 | 18561742 | 18561854 | + | 1586 | 0 | 99 | 1630 | |
| 292957 | 293783 | - | 2 | 18695390 | 18695562 | + | 814 | 0 | 100 | 826 | |
| 288272 | 288990 | + | 2 | 18695390 | 18695562 | + | 662 | 0 | 98 | 718 | |
| 299906 | 300554 | + | 2 | 19360550 | 19360746 | + | 480 | 4.90E-278 | 94 | 648 | |
| 292343 | 292679 | - | 2 | 19360550 | 19360746 | + | 328 | 0 | 99 | 336 | |
| 290867 | 291146 | - | 2 | 19360747 | 19360862 | + | 259 | 2.80E-138 | 98 | 279 | |
| 292677 | 292948 | - | 2 | 19360747 | 19360862 | + | 267 | 0 | 100 | 271 | |
| 292677 | 292948 | + | 2 | 19360923 | 19361079 | + | 263 | 0 | 99 | 271 | |
| 308245 | 308410 | + | 2 | 19360923 | 19361079 | + | 114 | 1.50E-52 | 92 | 166 | |
| 283423 | 283542 | - | 2 | 19361316 | 19361568 | + | 76 | 4.50E-83 | 91 | 120 | |
| 283423 | 283542 | + | 2 | 19361568 | 19361673 | + | 68 | 1.30E-61 | 89 | 120 | |
| 246083 | 246260 | + | 2 | 19552733 | 19552979 | + | 90 | 1.30E-84 | 88 | 178 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 247260 | 247370 | + | 2 | 20055594 | 20055714 | + | 47 | 1.30E-84 | 86 | 111 | |
| 256132 | 256263 | - | 2 | 20801010 | 20801263 | + | 123 | 7.10E-56 | 98 | 131 | |
| 256718 | 256929 | - | 2 | 20801010 | 20801263 | + | 199 | 6.10E-102 | 99 | 211 | |
| 261096 | 261341 | + | 2 | 20801010 | 20801263 | + | 226 | 1.30E-148 | 98 | 246 | |
| 266488 | 267170 | + | 2 | 20982992 | 20983123 | + | 535 | 9.80E-304 | 95 | 683 | |
| 274242 | 274595 | - | 2 | 21793103 | 21793217 | + | 269 | 8.60E-145 | 94 | 353 | |
| 276093 | 276250 | - | 2 | 21793237 | 21793597 | + | 149 | 1.80E-73 | 99 | 157 | |
| 278648 | 278902 | - | 2 | 22083891 | 22084087 | + | 206 | 5.50E-110 | 95 | 254 | |
| 280767 | 280882 | - | 2 | 22083891 | 22084087 | + | 115 | 1.50E-53 | 100 | 115 | |
| 281462 | 281584 | + | 2 | 22267960 | 22268170 | + | 118 | 1.50E-57 | 99 | 122 | |
| 204944 | 207679 | - | 2 | 22268497 | 22269209 | + | 100 | 5.50E-44 | 92 | 148 | |
| 210568 | 218908 | - | 2 | 23376854 | 23377014 | + | 107 | 2.30E-45 | 97 | 123 | |
| 210656 | 219065 | - | 2 | 23376854 | 23377014 | + | 84 | 6.90E-34 | 95 | 104 | |
| 215110 | 228222 | - | 2 | 23395972 | 23396132 | + | 269 | 6.70E-144 | 94 | 353 | |
| 216961 | 231728 | - | 2 | 23395972 | 23396132 | + | 149 | 1.40E-76 | 99 | 157 | |
| 219516 | 236935 | - | 2 | 24838531 | 24838646 | + | 203 | 9.60E-106 | 95 | 255 | |
| 221635 | 241034 | - | 2 | 24838648 | 24838757 | + | 115 | 3.90E-54 | 100 | 115 | |
| 222330 | 242431 | + | 2 | 25578311 | 25578433 | + | 118 | 4.90E-55 | 99 | 122 | |
| 225835 | 249543 | - | 2 | 26390036 | 26390143 | + | 194 | 7.70E-101 | 96 | 226 | |
| 229649 | 257167 | - | 2 | 27618357 | 27618634 | + | 180 | 1.30E-90 | 95 | 220 | |
| 241098 | 280033 | + | 2 | 27618357 | 27618634 | + | 153 | 2.10E-77 | 95 | 189 | |
| 200622 | 200729 | + | 2 | 28116937 | 28117084 | + | 96 | 7.70E-41 | 97 | 108 | |
| 200809 | 200919 | - | 2 | 29605666 | 29605890 | + | 102 | 1.00E-64 | 98 | 110 | |
| 163197 | 163313 | - | 2 | 31969066 | 31969194 | + | 104 | 2.40E-49 | 97 | 116 | |
| 197418 | 197537 | + | 2 | 32109099 | 32109207 | + | 103 | 2.50E-45 | 97 | 119 | |
| 199433 | 199553 | + | 2 | 32109099 | 32109207 | + | 80 | 2.80E-31 | 92 | 120 | |
| 191397 | 191526 | + | 2 | 33180076 | 33180188 | + | 109 | 3.60E-48 | 96 | 129 | |
| 164357 | 164495 | + | 2 | 33776806 | 33776920 | + | 122 | 6.20E-60 | 97 | 138 | |
| 177993 | 178201 | + | 2 | 33776806 | 33776920 | + | 186 | 2.80E-96 | 97 | 210 | |
| 155775 | 155874 | + | 2 | 35404082 | 35404346 | + | 96 | 2.60E-42 | 99 | 100 | |
| 137314 | 137415 | + | 2 | 35404082 | 35404346 | + | 87 | 6.80E-55 | 96 | 103 | |
| 126209 | 126320 | - | 2 | 35784625 | 35784759 | + | 109 | 6.40E-50 | 99 | 113 | |
| 125713 | 125837 | - | 2 | 35784625 | 35784759 | + | 77 | 2.20E-32 | 90 | 125 | |
| 136436 | 136602 | + | 2 | 35784945 | 35785065 | + | 81 | 8.20E-37 | 87 | 173 | |
| 127063 | 127341 | - | 2 | 35784945 | 35785065 | + | 255 | 3.70E-137 | 98 | 279 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 2869 | 2974 | + | 3 | 1739035 | 1739139 | - | 98 | 1.60E-42 | 98 | 106 | |
| 28155 | 28309 | + | 3 | 2286721 | 2286963 | - | 139 | 0 | 97 | 155 | |
| 32257 | 32416 | - | 3 | 2286721 | 2286963 | - | 109 | 6.10E-62 | 92 | 161 | |
| 29734 | 29898 | - | 3 | 3636687 | 3636800 | - | 98 | 4.20E-64 | 90 | 166 | |
| 35109 | 35276 | + | 3 | 3789741 | 3789849 | + | 160 | 6.00E-82 | 99 | 168 | |
| 21060 | 21232 | + | 3 | 4991113 | 4991351 | + | 165 | 1.50E-83 | 99 | 173 | |
| 34157 | 34331 | - | 3 | 4991444 | 4991693 | + | 171 | 2.70E-85 | 99 | 175 | |
| 9468 | 9645 | - | 3 | 4991902 | 4992149 | + | 154 | 1.90E-75 | 97 | 178 | |
| 30796 | 30971 | - | 3 | 4991902 | 4992149 | + | 91 | 3.80E-84 | 88 | 179 | |
| 5849 | 6030 | + | 3 | 4993639 | 4993921 | + | 159 | 3.30E-182 | 97 | 183 | |
| 30571 | 30770 | - | 3 | 4993639 | 4993921 | + | 95 | 3.80E-84 | 87 | 203 | |
| 32190 | 32393 | - | 3 | 4993928 | 4994031 | + | 200 | 2.40E-102 | 100 | 204 | |
| 14427 | 14643 | + | 3 | 4993928 | 4994031 | + | 205 | 5.50E-108 | 99 | 217 | |
| 5623 | 5851 | + | 3 | 5169428 | 5169544 | - | 193 | 3.30E-182 | 96 | 229 | |
| 27609 | 27844 | - | 3 | 5340992 | 5341165 | + | 216 | 0 | 98 | 236 | |
| 25585 | 25838 | - | 3 | 5341168 | 5341272 | + | 185 | 0 | 93 | 261 | |
| 29637 | 29918 | - | 3 | 5341273 | 5341377 | + | 255 | 4.00E-147 | 98 | 283 | |
| 31136 | 31524 | - | 3 | 5341378 | 5342360 | + | 373 | 6.20E-206 | 99 | 389 | |
| 5357 | 5753 | + | 3 | 5341378 | 5342360 | + | 381 | 2.10E-304 | 99 | 397 | |
| 16693 | 17167 | + | 3 | 6657135 | 6657289 | + | 471 | 0 | 100 | 475 | |
| 25834 | 26324 | - | 3 | 6953428 | 6953749 | + | 443 | 0 | 97 | 495 | |
| 26328 | 27611 | - | 3 | 7561828 | 7562216 | + | 1206 | 0 | 98 | 1290 | |
| 108318 | 108421 | - | 3 | 7561828 | 7562216 | + | 95 | 9.70E-42 | 98 | 103 | |
| 97396 | 97502 | + | 3 | 10119489 | 10119651 | + | 98 | 5.30E-42 | 98 | 106 | |
| 93349 | 93463 | + | 3 | 10119489 | 10119651 | + | 70 | 1.40E-36 | 90 | 114 | |
| 82804 | 82944 | - | 3 | 10119720 | 10119830 | + | 140 | 2.60E-138 | 100 | 140 | |
| 88891 | 89052 | + | 3 | 10119980 | 10120102 | + | 125 | 1.80E-59 | 94 | 161 | |
| 115587 | 115760 | + | 3 | 10885002 | 10885153 | - | 165 | 1.00E-84 | 99 | 173 | |
| 103995 | 104173 | - | 3 | 10885148 | 10885250 | - | 154 | 1.90E-75 | 97 | 178 | |
| 100376 | 100558 | + | 3 | 10885251 | 10885744 | - | 159 | 3.00E-183 | 97 | 183 | |
| 108954 | 109171 | + | 3 | 10885745 | 10886036 | - | 205 | 3.30E-106 | 99 | 217 | |
| 100150 | 100379 | + | 3 | 10886038 | 10886204 | - | 193 | 3.00E-183 | 96 | 229 | |
| 120112 | 120366 | - | 3 | 10886263 | 10888445 | - | 185 | 0 | 93 | 261 | |
| 83749 | 84041 | - | 3 | 10887527 | 10887976 | - | 284 | 1.90E-152 | 99 | 292 | |
| 88264 | 88583 | - | 3 | 11653139 | 11653285 | + | 319 | 0 | 100 | 319 | |
| 99884 | 100281 | + | 3 | 13628482 | 13628610 | + | 381 | 2.50E-209 | 99 | 397 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 111220 | 111695 | + | 3 | 13628482 | 13628610 | + | 471 | 1.10E-262 | 100 | 475 | |
| 120361 | 120852 | - | 3 | 13628611 | 13629049 | + | 443 | 0 | 97 | 495 | |
| 120855 | 121411 | - | 3 | 13628611 | 13629049 | + | 536 | 0 | 99 | 556 | |
| 55379 | 55484 | + | 3 | 13629046 | 13629348 | + | 105 | 2.30E-185 | 100 | 105 | |
| 60973 | 61078 | + | 3 | 13629046 | 13629348 | + | 101 | 2.30E-185 | 99 | 105 | |
| 77566 | 77673 | + | 3 | 13629445 | 13629588 | + | 64 | 3.70E-140 | 90 | 108 | |
| 52224 | 52334 | + | 3 | 13629589 | 13629756 | + | 110 | 0 | 100 | 110 | |
| 52375 | 52497 | + | 3 | 13629589 | 13629756 | + | 122 | 0 | 100 | 122 | |
| 63740 | 63872 | - | 3 | 13629754 | 13630082 | + | 99 | 8.30E-43 | 93 | 135 | |
| 69084 | 69241 | + | 3 | 13630236 | 13630513 | + | 157 | 2.20E-78 | 100 | 157 | |
| 55379 | 55546 | + | 3 | 13630514 | 13630988 | + | 163 | 2.10E-101 | 99 | 167 | |
| 55214 | 55388 | + | 3 | 13630514 | 13630988 | + | 170 | 2.30E-185 | 99 | 174 | |
| 73711 | 73891 | - | 3 | 13631083 | 13631213 | + | 118 | 2.60E-53 | 91 | 182 | |
| 70951 | 71143 | - | 3 | 13631213 | 13631609 | + | 153 | 1.00E-76 | 95 | 193 | |
| 62304 | 62502 | + | 3 | 13631213 | 13631609 | + | 167 | 3.00E-93 | 96 | 199 | |
| 66596 | 66812 | - | 3 | 13631607 | 13631921 | + | 127 | 1.90E-62 | 90 | 219 | |
| 70660 | 70938 | + | 3 | 13632241 | 13632751 | + | 258 | 5.70E-141 | 98 | 278 | |
| 48148 | 48477 | - | 3 | 13632241 | 13632751 | + | 309 | 1.40E-166 | 98 | 329 | |
| 62439 | 62842 | + | 3 | 13632850 | 13633180 | + | 399 | 0 | 100 | 403 | |
| 77152 | 77556 | + | 3 | 13632850 | 13633180 | + | 211 | 3.70E-140 | 88 | 407 | |
| 53540 | 53985 | + | 3 | 13633256 | 13633459 | + | 445 | 0 | 100 | 445 | |
| 61473 | 63656 | + | 3 | 13633256 | 13633459 | + | 2091 | 0 | 99 | 2183 | |
| 459451 | 459959 | + | 3 | 13633457 | 13633648 | + | 487 | 7.40E-274 | 99 | 511 | |
| 448354 | 448793 | - | 3 | 13633457 | 13633648 | + | 427 | 6.10E-246 | 99 | 439 | |
| 447883 | 448313 | + | 3 | 13633747 | 13634068 | + | 354 | 0 | 96 | 430 | |
| 448330 | 448759 | + | 3 | 13634789 | 13634943 | + | 306 | 0 | 93 | 430 | |
| 454938 | 455267 | - | 3 | 13634789 | 13634943 | + | 241 | 3.20E-126 | 93 | 333 | |
| 475159 | 475429 | + | 3 | 13634947 | 13635073 | + | 102 | 5.80E-58 | 84 | 282 | |
| 464481 | 464736 | + | 3 | 13635282 | 13635387 | + | 140 | 3.70E-68 | 89 | 256 | |
| 455085 | 455333 | + | 3 | 13635282 | 13635387 | + | 244 | 1.40E-132 | 100 | 248 | |
| 447140 | 447359 | - | 3 | 13635442 | 13635597 | + | 140 | 1.70E-69 | 91 | 220 | |
| 472392 | 472604 | - | 3 | 13635878 | 13636085 | + | 208 | 1.10E-107 | 100 | 212 | |
| 471287 | 471478 | + | 3 | 13636577 | 13636751 | + | 191 | 3.70E-98 | 100 | 191 | |
| 462763 | 462926 | - | 3 | 13636577 | 13636751 | + | 159 | 2.10E-79 | 99 | 163 | |
| 463749 | 463906 | - | 3 | 13636750 | 13636889 | + | 53 | 3.70E-89 | 83 | 161 | |
| 464209 | 464356 | - | 3 | 13636984 | 13637185 | + | 50 | 3.70E-89 | 83 | 154 | |

| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 464209 | 464356 | - | 3 | 13637208 | 13637333 | + | 50 | 3.70E-89 | 83 | 154 | |
| 465868 | 466011 | + | 3 | 13637442 | 13637640 | + | 115 | 1.70E-53 | 95 | 143 | |
| 486201 | 486318 | + | 3 | 13698334 | 13698457 | + | 97 | 9.30E-39 | 96 | 117 | |
| 463485 | 463594 | - | 3 | 14857596 | 14857722 | + | 48 | 3.70E-89 | 86 | 112 | |
| 475363 | 475473 | + | 3 | 15310314 | 15310651 | - | 67 | 1.10E-24 | 90 | 111 | |
| 475363 | 475473 | - | 3 | 16388086 | 16388268 | + | 59 | 2.90E-25 | 88 | 111 | |
| 458953 | 459061 | + | 3 | 16388742 | 16388936 | + | 104 | 3.70E-49 | 99 | 108 | |
| 461439 | 461543 | - | 3 | 16389372 | 16389597 | + | 96 | 1.10E-42 | 98 | 104 | |
| 421524 | 421629 | + | 3 | 17488193 | 17488352 | + | 89 | 3.90E-39 | 96 | 105 | |
| 407609 | 407717 | + | 3 | 17488193 | 17488352 | + | 94 | 6.60E-72 | 96 | 110 | |
| 438724 | 438833 | + | 3 | 17598579 | 17598744 | - | 90 | 1.20E-66 | 95 | 110 | |
| 407161 | 407276 | + | 3 | 17598579 | 17598744 | - | 115 | 1.20E-54 | 100 | 115 | |
| 412749 | 412864 | + | 3 | 17776872 | 17777200 | - | 111 | 0 | 99 | 115 | |
| 440892 | 441015 | + | 3 | 17776872 | 17777200 | - | 77 | 6.50E-105 | 90 | 125 | |
| 425955 | 426085 | - | 3 | 18108764 | 18108912 | - | 126 | 8.40E-256 | 99 | 130 | |
| 414647 | 414792 | + | 3 | 18108906 | 18109067 | - | 133 | 0 | 98 | 145 | |
| 440594 | 440774 | + | 3 | 18359419 | 18359716 | + | 139 | 6.50E-105 | 94 | 183 | |
| 417756 | 417941 | + | 3 | 18565302 | 18565423 | - | 185 | 1.30E-95 | 100 | 185 | |
| 433937 | 434129 | - | 3 | 18565302 | 18565423 | - | 176 | 7.70E-88 | 98 | 192 | |
| 407127 | 407330 | + | 3 | 18565485 | 18565666 | - | 180 | 0 | 97 | 204 | |
| 404814 | 405022 | + | 3 | 18565485 | 18565666 | - | 194 | 2.50E-100 | 98 | 208 | |
| 412865 | 413099 | + | 3 | 21177471 | 21177571 | - | 183 | 0 | 94 | 235 | |
| 404939 | 405174 | - | 3 | 21389688 | 21389884 | + | 197 | 7.30E-101 | 95 | 239 | |
| 434057 | 434300 | + | 3 | 22049746 | 22049863 | - | 243 | 1.90E-129 | 100 | 243 | |
| 411073 | 411324 | + | 3 | 22430701 | 22430860 | - | 224 | 0 | 97 | 252 | |
| 415236 | 415539 | - | 3 | 23617557 | 23617902 | - | 291 | 8.40E-256 | 99 | 303 | |
| 409616 | 409919 | - | 3 | 23617557 | 23617902 | - | 291 | 1.20E-156 | 99 | 303 | |
| 407297 | 407617 | + | 3 | 23617917 | 23618061 | - | 182 | 3.00E-91 | 89 | 326 | |
| 431676 | 432007 | + | 3 | 23617917 | 23618061 | - | 327 | 6.00E-255 | 100 | 331 | |
| 414802 | 415149 | + | 3 | 23618061 | 23619133 | - | 307 | 0 | 97 | 347 | |
| 441735 | 442138 | + | 3 | 23618061 | 23618607 | - | 240 | 1.00E-127 | 90 | 404 | |
| 413101 | 413672 | + | 3 | 23618611 | 23619133 | - | 507 | 0 | 97 | 571 | |
| 406405 | 407134 | + | 3 | 23619131 | 23619701 | - | 625 | 0 | 96 | 731 | |
| 413687 | 414762 | + | 3 | 23619131 | 23619701 | - | 951 | 0 | 97 | 1075 | |
| 411337 | 412738 | + | 3 | 23619444 | 23619701 | - | 1301 | 0 | 98 | 1401 | |
| 377866 | 377974 | + | 3 | 23619712 | 23619945 | - | 104 | 3.30E-49 | 99 | 108 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 382398 | 382507 | - | 3 | 23619712 | 23619945 | - | 48 | 1.00E-89 | 86 | 112 | |
| 400794 | 400912 | - | 3 | 23619712 | 23619945 | - | 102 | 7.10E-46 | 97 | 118 | |
| 384781 | 384924 | + | 3 | 23619956 | 23620070 | - | 115 | 1.40E-53 | 95 | 143 | |
| 404224 | 404368 | + | 3 | 23619956 | 23620070 | - | 140 | 2.60E-68 | 99 | 144 | |
| 383122 | 383269 | - | 3 | 23619956 | 23620070 | - | 50 | 1.00E-89 | 83 | 154 | |
| 383122 | 383269 | - | 3 | 23620101 | 23621497 | - | 50 | 1.00E-89 | 83 | 154 | |
| 382662 | 382819 | - | 3 | 23620101 | 23621497 | - | 53 | 1.00E-89 | 83 | 161 | |
| 381676 | 381839 | - | 3 | 23620101 | 23621497 | - | 159 | 2.70E-80 | 99 | 163 | |
| 401114 | 401320 | - | 3 | 23620128 | 23620305 | - | 202 | 2.50E-102 | 100 | 206 | |
| 366053 | 366272 | - | 3 | 23620128 | 23620305 | - | 140 | 1.90E-65 | 91 | 220 | |
| 373998 | 374246 | + | 3 | 23620219 | 23620355 | - | 244 | 5.00E-130 | 100 | 248 | |
| 383394 | 383649 | + | 3 | 23621511 | 23621762 | - | 140 | 2.90E-68 | 89 | 256 | |
| 373851 | 374180 | - | 3 | 23621511 | 23621762 | - | 241 | 3.30E-127 | 93 | 333 | |
| 366796 | 367226 | + | 3 | 23621511 | 23621762 | - | 354 | 0 | 96 | 430 | |
| 367243 | 367672 | + | 3 | 23687923 | 23688031 | - | 306 | 0 | 93 | 430 | |
| 367267 | 367706 | - | 3 | 24150698 | 24150847 | - | 427 | 7.00E-245 | 99 | 439 | |
| 378364 | 378872 | + | 3 | 24487446 | 24487841 | - | 487 | 2.00E-277 | 99 | 511 | |
| 340437 | 340542 | + | 3 | 24487446 | 24487841 | - | 89 | 3.50E-163 | 96 | 105 | |
| 357637 | 357746 | + | 3 | 24709820 | 24710003 | + | 90 | 1.20E-67 | 95 | 110 | |
| 359805 | 359928 | + | 3 | 25689520 | 25689662 | - | 77 | 6.40E-105 | 90 | 125 | |
| 331726 | 331853 | - | 3 | 25689520 | 25689662 | - | 119 | 1.90E-155 | 98 | 127 | |
| 344868 | 344998 | - | 3 | 25691867 | 25692078 | - | 126 | 1.90E-155 | 99 | 130 | |
| 359020 | 359150 | + | 3 | 25691867 | 25692078 | - | 82 | 8.20E-41 | 91 | 130 | |
| 332113 | 332260 | + | 3 | 25691867 | 25692078 | - | 139 | 1.10E-67 | 99 | 147 | |
| 339718 | 339874 | - | 3 | 25692084 | 25692386 | - | 120 | 2.30E-54 | 94 | 156 | |
| 331834 | 332015 | - | 3 | 25692084 | 25692386 | - | 173 | 1.30E-86 | 99 | 181 | |
| 359507 | 359687 | + | 3 | 25692084 | 25692386 | - | 139 | 6.40E-105 | 94 | 183 | |
| 329900 | 330085 | - | 3 | 25758184 | 25758365 | - | 86 | 9.60E-51 | 86 | 190 | |
| 352850 | 353042 | - | 3 | 26475857 | 26476285 | + | 176 | 2.20E-149 | 98 | 192 | |
| 352970 | 353213 | + | 3 | 26475857 | 26476285 | + | 243 | 1.90E-129 | 100 | 243 | |
| 335244 | 335496 | + | 3 | 26476292 | 26476720 | + | 232 | 3.50E-163 | 98 | 252 | |
| 350589 | 350920 | + | 3 | 26476292 | 26476720 | + | 327 | 2.30E-254 | 100 | 331 | |
| 324601 | 324969 | + | 3 | 26560795 | 26561158 | - | 285 | 2.10E-154 | 94 | 369 | |
| 360648 | 361051 | + | 3 | 26698098 | 26698310 | + | 240 | 7.70E-126 | 90 | 404 | |
| 283294 | 283841 | + | 3 | 26698098 | 26698310 | + | 483 | 0 | 97 | 547 | |
| 314254 | 314748 | + | 3 | 26848848 | 26849019 | + | 478 | 3.40E-269 | 99 | 494 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 294215 | 294665 | - | 3 | 26848848 | 26849019 | + | 434 | 7.50E-241 | 99 | 450 | |
| 283881 | 284228 | + | 3 | 27041648 | 27041864 | - | 307 | 0 | 97 | 347 | |
| 284315 | 284618 | - | 3 | 27041648 | 27041864 | - | 291 | 6.10E-158 | 99 | 303 | |
| 311960 | 312191 | - | 3 | 27257790 | 27257981 | - | 171 | 3.90E-89 | 94 | 231 | |
| 293137 | 293336 | - | 3 | 27565835 | 27566563 | + | 195 | 6.40E-101 | 100 | 199 | |
| 286852 | 287038 | + | 3 | 27566566 | 27566766 | + | 186 | 1.30E-95 | 100 | 186 | |
| 299985 | 300155 | + | 3 | 27802706 | 27802846 | - | 108 | 3.90E-57 | 91 | 172 | |
| 291953 | 292115 | - | 3 | 28350811 | 28351012 | - | 154 | 1.90E-75 | 99 | 162 | |
| 322785 | 322937 | - | 3 | 28350811 | 28351012 | - | 144 | 2.50E-71 | 99 | 152 | |
| 316460 | 316609 | + | 3 | 28351034 | 28351211 | - | 141 | 6.70E-69 | 99 | 149 | |
| 283726 | 283871 | + | 3 | 28351034 | 28351211 | - | 133 | 1.40E-236 | 98 | 145 | |
| 247616 | 247931 | + | 3 | 28575795 | 28575960 | - | 303 | 0 | 99 | 315 | |
| 248007 | 248331 | + | 3 | 28575961 | 28576221 | - | 222 | 3.00E-176 | 92 | 326 | |
| 248341 | 248484 | + | 3 | 28575961 | 28576221 | - | 117 | 3.00E-176 | 95 | 145 | |
| 250142 | 250480 | - | 3 | 28656415 | 28656571 | - | 159 | 7.80E-79 | 87 | 343 | |
| 258080 | 258402 | + | 3 | 28656765 | 28656874 | - | 318 | 0 | 100 | 322 | |
| 258703 | 258905 | + | 3 | 28657092 | 28657199 | + | 186 | 0 | 98 | 202 | |
| 269019 | 269156 | + | 3 | 28667221 | 28667623 | + | 133 | 0 | 99 | 137 | |
| 271116 | 271437 | - | 3 | 28667623 | 28667729 | + | 297 | 2.00E-159 | 98 | 321 | |
| 273498 | 273654 | - | 3 | 28667735 | 28667950 | + | 140 | 1.90E-86 | 97 | 156 | |
| 274947 | 275209 | - | 3 | 28668137 | 28668267 | + | 242 | 3.10E-129 | 98 | 262 | |
| 276499 | 276628 | - | 3 | 28668268 | 28668473 | + | 121 | 1.20E-55 | 98 | 129 | |
| 277183 | 278162 | - | 3 | 28827464 | 28827578 | - | 913 | 0 | 98 | 985 | |
| 277427 | 277569 | - | 3 | 28828403 | 28828544 | - | 138 | 2.40E-65 | 99 | 142 | |
| 278701 | 279004 | - | 3 | 28828403 | 28828544 | - | 291 | 4.50E-156 | 99 | 303 | |
| 280158 | 280409 | + | 3 | 29589480 | 29589645 | - | 224 | 0 | 97 | 252 | |
| 280422 | 281823 | + | 3 | 30600192 | 30600512 | - | 1301 | 0 | 98 | 1401 | |
| 281834 | 281949 | + | 3 | 31097649 | 31097924 | - | 111 | 0 | 99 | 115 | |
| 281950 | 282184 | + | 3 | 31097649 | 31097924 | - | 183 | 0 | 94 | 235 | |
| 282186 | 282757 | + | 3 | 31137359 | 31137468 | - | 507 | 0 | 97 | 571 | |
| 282772 | 283297 | + | 3 | 31137359 | 31137468 | - | 469 | 0 | 97 | 525 | |
| 205569 | 208913 | - | 3 | 31141479 | 31141587 | - | 122 | 7.00E-98 | 99 | 126 | |
| 206227 | 210315 | + | 3 | 31141479 | 31141587 | - | 208 | 4.20E-108 | 100 | 212 | |
| 207353 | 212531 | - | 3 | 31293106 | 31293222 | - | 176 | 4.10E-92 | 100 | 176 | |
| 208298 | 214411 | + | 3 | 31293106 | 31293222 | - | 158 | 4.30E-77 | 99 | 166 | |
| 208611 | 214995 | - | 3 | 31293289 | 31293392 | - | 108 | 2.90E-48 | 97 | 124 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 209603 | 217093 | + | 3 | 31746266 | 31746410 | - | 238 | 1.80E-126 | 100 | 238 | |
| 209856 | 217492 | + | 3 | 31746411 | 31746731 | - | 127 | 4.20E-104 | 99 | 131 | |
| 215815 | 229541 | - | 3 | 31750559 | 31751753 | - | 242 | 1.10E-124 | 98 | 262 | |
| 217367 | 232512 | - | 3 | 31751754 | 31751991 | - | 121 | 1.50E-56 | 98 | 129 | |
| 218051 | 234730 | - | 3 | 31752249 | 31752651 | - | 913 | 0 | 98 | 985 | |
| 218295 | 234381 | - | 3 | 31754650 | 31754757 | - | 138 | 1.10E-67 | 99 | 142 | |
| 219569 | 237090 | - | 3 | 31754650 | 31754757 | - | 287 | 2.30E-166 | 99 | 303 | |
| 221026 | 239952 | + | 3 | 31754916 | 31755072 | - | 224 | 0 | 97 | 252 | |
| 221134 | 240017 | + | 3 | 31754916 | 31755072 | - | 81 | 4.80E-33 | 95 | 101 | |
| 221290 | 241630 | + | 3 | 31755392 | 31755538 | - | 1301 | 0 | 98 | 1401 | |
| 222702 | 243168 | + | 3 | 31755392 | 31755538 | - | 111 | 0 | 99 | 115 | |
| 222818 | 243519 | + | 3 | 31756524 | 31756670 | - | 183 | 0 | 94 | 235 | |
| 223054 | 244015 | + | 3 | 31756524 | 31756670 | - | 222 | 0 | 97 | 258 | |
| 229054 | 255907 | + | 3 | 31758821 | 31758942 | - | 150 | 1.70E-73 | 100 | 150 | |
| 230079 | 257938 | + | 3 | 31758984 | 31759093 | - | 131 | 1.20E-60 | 100 | 131 | |
| 171303 | 171407 | + | 3 | 31759101 | 31759419 | - | 65 | 4.70E-24 | 90 | 105 | |
| 163202 | 163311 | + | 3 | 31759414 | 31759858 | - | 59 | 4.00E-21 | 88 | 111 | |
| 173472 | 173580 | + | 3 | 31760100 | 31760359 | - | 48 | 5.60E-21 | 86 | 112 | |
| 163100 | 163217 | + | 3 | 31760100 | 31760359 | - | 97 | 3.80E-44 | 96 | 117 | |
| 194252 | 194375 | + | 3 | 31760367 | 31760860 | - | 111 | 3.30E-51 | 98 | 123 | |
| 194089 | 194255 | - | 3 | 31760367 | 31760860 | - | 150 | 1.70E-72 | 98 | 166 | |
| 170744 | 170927 | - | 3 | 31760873 | 31762160 | - | 175 | 4.40E-89 | 99 | 183 | |
| 179586 | 179781 | + | 3 | 31760873 | 31761428 | - | 145 | 4.40E-76 | 93 | 197 | |
| 171047 | 171345 | - | 3 | 31761429 | 31762160 | - | 103 | 1.90E-46 | 84 | 303 | |
| 189815 | 191010 | + | 3 | 31762165 | 31762400 | - | 1191 | 0 | 100 | 1195 | |
| 130662 | 130769 | + | 3 | 31762165 | 31762400 | - | 104 | 5.30E-47 | 99 | 108 | |
| 123492 | 123602 | + | 3 | 31762455 | 31762645 | - | 107 | 7.60E-49 | 99 | 111 | |
| 152262 | 152371 | + | 3 | 31762455 | 31762630 | - | 67 | 2.30E-24 | 90 | 111 | |
| 152262 | 152371 | - | 3 | 31762455 | 31762645 | - | 59 | 1.70E-25 | 88 | 111 | |
| 125960 | 126076 | + | 3 | 31762699 | 31762883 | - | 82 | 2.10E-32 | 92 | 118 | |
| 125730 | 125875 | - | 3 | 31762884 | 31763069 | - | 83 | 2.60E-35 | 89 | 147 | |
| 122682 | 122836 | + | 3 | 32590379 | 32590513 | + | 139 | 1.70E-89 | 97 | 155 | |
| 126784 | 126943 | - | 3 | 32984963 | 32985217 | - | 109 | 2.40E-61 | 92 | 161 | |
| 124261 | 124425 | - | 3 | 32984963 | 32985217 | - | 98 | 2.40E-63 | 90 | 166 | |
| 129636 | 129803 | + | 3 | 33189242 | 33189421 | - | 160 | 3.60E-81 | 99 | 168 | |
| 128684 | 128858 | - | 3 | 33481226 | 33481335 | - | 171 | 2.00E-91 | 99 | 175 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 125323 | 125498 | - | 3 | 33481226 | 33481335 | - | 91 | 4.30E-86 | 88 | 179 | |
| 148186 | 148376 | + | 3 | 33745000 | 33745107 | + | 191 | 6.00E-98 | 100 | 191 | |
| 125098 | 125297 | - | 3 | 33745000 | 33745107 | + | 95 | 4.30E-86 | 87 | 203 | |
| 126717 | 126920 | - | 3 | 34439100 | 34439263 | + | 200 | 1.20E-108 | 100 | 204 | |
| 149291 | 149502 | - | 3 | 35364834 | 35365062 | + | 208 | 6.60E-108 | 100 | 212 | |
| 122136 | 122371 | - | 3 | 35364834 | 35365062 | + | 216 | 0 | 98 | 236 | |
| 152058 | 152327 | + | 3 | 35365222 | 35365404 | + | 102 | 1.30E-57 | 84 | 282 | |
| 124164 | 124445 | - | 3 | 35365222 | 35365404 | + | 255 | 5.20E-152 | 98 | 283 | |
| 125663 | 126051 | - | 3 | 35544123 | 35544251 | - | 373 | 6.80E-209 | 99 | 389 | |
| 121411 | 122138 | - | 3 | 35544123 | 35544251 | - | 670 | 0 | 98 | 734 | |
| 32315 | 32416 | + | 4 | 251412 | 251513 | + | 102 | 4.90E-55 | 100 | 102 | |
| 15228 | 15340 | + | 4 | 251412 | 251513 | + | 93 | 7.30E-39 | 96 | 113 | |
| 1901 | 2031 | - | 4 | 257593 | 257693 | + | 127 | 1.20E-59 | 99 | 131 | |
| 26846 | 26979 | - | 4 | 1818101 | 1818392 | + | 45 | 1.10E-70 | 83 | 137 | |
| 32426 | 32594 | - | 4 | 1818101 | 1818392 | + | 153 | 0 | 98 | 169 | |
| 32425 | 32594 | - | 4 | 1818422 | 1818556 | + | 158 | 0 | 98 | 170 | |
| 32425 | 32594 | + | 4 | 1847053 | 1847243 | + | 158 | 0 | 98 | 170 | |
| 32425 | 32594 | - | 4 | 2072348 | 2072505 | + | 158 | 0 | 98 | 170 | |
| 9468 | 9645 | - | 4 | 2072348 | 2072505 | + | 174 | 3.90E-87 | 99 | 178 | |
| 30570 | 30772 | + | 4 | 2072576 | 2072706 | + | 191 | 0 | 99 | 203 | |
| 30570 | 30772 | - | 4 | 2072576 | 2072706 | + | 191 | 0 | 99 | 203 | |
| 30570 | 30772 | - | 4 | 2072896 | 2073032 | + | 191 | 0 | 99 | 203 | |
| 30570 | 30772 | - | 4 | 2072896 | 2073032 | + | 175 | 0 | 97 | 203 | |
| 19979 | 20184 | - | 4 | 2073214 | 2073430 | + | 142 | 3.60E-71 | 92 | 206 | |
| 27005 | 27295 | - | 4 | 2283513 | 2284008 | + | 117 | 1.10E-70 | 85 | 297 | |
| 31194 | 31503 | - | 4 | 4840948 | 4841139 | + | 209 | 2.50E-107 | 92 | 313 | |
| 31662 | 32036 | - | 4 | 5026829 | 5027029 | + | 189 | 1.10E-97 | 88 | 377 | |
| 30772 | 32416 | - | 4 | 5027043 | 5027167 | + | 1633 | 0 | 100 | 1645 | |
| 30772 | 32416 | + | 4 | 5106278 | 5106395 | + | 1633 | 0 | 100 | 1645 | |
| 30772 | 32416 | - | 4 | 5515488 | 5515752 | + | 1629 | 0 | 100 | 1645 | |
| 30772 | 32416 | - | 4 | 5526057 | 5526318 | + | 1577 | 0 | 99 | 1645 | |
| 109755 | 109868 | + | 4 | 7395049 | 7395421 | + | 93 | 1.00E-37 | 96 | 113 | |
| 96428 | 96559 | - | 4 | 7395049 | 7395421 | + | 127 | 3.90E-175 | 99 | 131 | |
| 88496 | 88656 | + | 4 | 8153153 | 8153258 | + | 109 | 7.00E-50 | 92 | 161 | |
| 103995 | 104173 | - | 4 | 8153153 | 8153258 | + | 174 | 9.00E-95 | 99 | 178 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|---------|---------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 114506 | 114712 | - | 4 | 8153634 | 8153775 | + | 142 | 3.70E-71 | 92 | 206 | |
| 92308 | 92525 | - | 4 | 8153634 | 8153775 | + | 213 | 3.90E-175 | 100 | 217 | |
| 87610 | 88090 | - | 4 | 8153780 | 8153894 | + | 468 | 5.40E-262 | 99 | 480 | |
| 49295 | 49408 | + | 4 | 8153780 | 8153894 | + | 113 | 1.00E-76 | 100 | 113 | |
| 49295 | 49408 | + | 4 | 8907662 | 8907780 | + | 113 | 3.20E-77 | 100 | 113 | |
| 79710 | 79869 | + | 4 | 8907662 | 8907780 | + | 155 | 4.60E-162 | 99 | 159 | |
| 56357 | 56590 | + | 4 | 8912464 | 8912571 | + | 217 | 1.10E-110 | 98 | 233 | |
| 54751 | 55013 | - | 4 | 8912464 | 8912571 | + | 198 | 2.50E-101 | 94 | 262 | |
| 54751 | 55016 | - | 4 | 8912730 | 8912886 | + | 213 | 4.50E-108 | 95 | 265 | |
| 79884 | 80181 | + | 4 | 8912730 | 8912886 | + | 206 | 2.50E-110 | 92 | 302 | |
| 62020 | 62388 | + | 4 | 8913206 | 8913352 | + | 364 | 2.60E-247 | 100 | 368 | |
| 50801 | 51298 | + | 4 | 8913206 | 8913352 | + | 437 | 3.10E-243 | 97 | 497 | |
| 78009 | 78526 | + | 4 | 8925515 | 8925719 | + | 347 | 1.70E-221 | 92 | 519 | |
| 485157 | 487596 | - | 4 | 8925515 | 8925719 | + | 2352 | 0 | 99 | 2440 | |
| 483465 | 485048 | - | 4 | 8925872 | 8926072 | + | 1535 | 0 | 99 | 1583 | |
| 452880 | 453414 | - | 4 | 8925872 | 8926072 | + | 534 | 2.20E-299 | 100 | 534 | |
| 484341 | 484636 | + | 4 | 8926417 | 8926958 | + | 295 | 7.30E-163 | 100 | 295 | |
| 480069 | 480305 | - | 4 | 8926417 | 8926958 | + | 228 | 1.50E-117 | 99 | 236 | |
| 463749 | 463906 | + | 4 | 8928569 | 8928698 | + | 53 | 3.20E-90 | 83 | 161 | |
| 463749 | 463906 | + | 4 | 8928569 | 8928698 | + | 53 | 1.20E-89 | 83 | 161 | |
| 463749 | 463906 | + | 4 | 8934146 | 8934366 | + | 53 | 5.00E-91 | 83 | 161 | |
| 464209 | 464356 | + | 4 | 8934381 | 8934579 | + | 50 | 5.00E-91 | 83 | 154 | |
| 464209 | 464356 | + | 4 | 8937018 | 8937807 | + | 50 | 3.20E-90 | 83 | 154 | |
| 464209 | 464356 | + | 4 | 8937810 | 8938009 | + | 46 | 1.20E-89 | 82 | 154 | |
| 458725 | 458872 | + | 4 | 8946011 | 8946215 | + | 139 | 2.80E-68 | 99 | 147 | |
| 453006 | 453148 | - | 4 | 8946011 | 8946215 | + | 56 | 1.80E-72 | 85 | 144 | |
| 457813 | 457949 | - | 4 | 8946368 | 8946568 | + | 132 | 1.00E-60 | 99 | 136 | |
| 452882 | 452997 | - | 4 | 8946368 | 8946568 | + | 67 | 1.80E-72 | 90 | 115 | |
| 463485 | 463594 | + | 4 | 8946914 | 8947455 | + | 48 | 1.20E-89 | 86 | 112 | |
| 463485 | 463594 | + | 4 | 8946914 | 8947455 | + | 48 | 5.00E-91 | 86 | 112 | |
| 463485 | 463594 | + | 4 | 8948057 | 8948291 | + | 48 | 3.20E-90 | 86 | 112 | |
| 452963 | 453068 | + | 4 | 8948057 | 8948291 | + | 55 | 1.80E-46 | 88 | 107 | |
| 447646 | 447747 | + | 4 | 8950115 | 8950284 | + | 70 | 8.30E-43 | 92 | 102 | |
| 427188 | 427301 | - | 4 | 8950115 | 8950284 | + | 109 | 5.10E-95 | 99 | 113 | |
| 427188 | 427302 | - | 4 | 8950293 | 8951937 | + | 102 | 1.40E-100 | 97 | 118 | |
| 414344 | 414463 | - | 4 | 8950293 | 8951937 | + | 80 | 4.40E-122 | 92 | 120 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|---------|---------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 414344 | 414463 | - | 4 | 8951945 | 8952147 | + | 80 | 1.10E-196 | 92 | 120 | |
| 414344 | 414463 | - | 4 | 8951945 | 8952147 | + | 80 | 6.00E-126 | 92 | 120 | |
| 414344 | 414463 | - | 4 | 8964736 | 8964938 | + | 80 | 6.10E-115 | 92 | 120 | |
| 440892 | 441015 | + | 4 | 8964736 | 8964938 | + | 89 | 7.80E-109 | 93 | 125 | |
| 406534 | 406659 | + | 4 | 8964946 | 8966590 | + | 77 | 5.10E-84 | 90 | 125 | |
| 440107 | 440237 | + | 4 | 8964946 | 8966590 | + | 94 | 0 | 93 | 130 | |
| 424410 | 424542 | - | 4 | 8966599 | 8966768 | + | 116 | 8.60E-64 | 97 | 132 | |
| 439730 | 439863 | + | 4 | 8966599 | 8966768 | + | 129 | 8.80E-62 | 99 | 133 | |
| 414613 | 414750 | - | 4 | 8969974 | 8970163 | + | 133 | 9.10E-121 | 99 | 137 | |
| 412725 | 412864 | + | 4 | 8974880 | 8975588 | + | 127 | 0 | 98 | 139 | |
| 412481 | 412624 | + | 4 | 8984065 | 8984183 | + | 131 | 0 | 98 | 143 | |
| 408190 | 408341 | - | 4 | 8984065 | 8984183 | + | 147 | 6.30E-189 | 99 | 151 | |
| 436304 | 436471 | - | 4 | 8991104 | 8991273 | + | 96 | 1.10E-196 | 89 | 168 | |
| 434481 | 434652 | + | 4 | 8991104 | 8991273 | + | 171 | 1.20E-83 | 100 | 171 | |
| 434481 | 434652 | + | 4 | 8991282 | 8992926 | + | 163 | 6.10E-82 | 99 | 171 | |
| 440594 | 440774 | + | 4 | 8991282 | 8992926 | + | 134 | 7.80E-109 | 93 | 182 | |
| 421589 | 421787 | + | 4 | 8992934 | 8993136 | + | 190 | 1.30E-98 | 99 | 198 | |
| 438838 | 439040 | + | 4 | 8992934 | 8993136 | + | 142 | 0 | 93 | 202 | |
| 438838 | 439040 | + | 4 | 9002493 | 9002611 | + | 142 | 0 | 93 | 202 | |
| 406346 | 406548 | + | 4 | 9002493 | 9002611 | + | 106 | 5.10E-84 | 88 | 202 | |
| 407127 | 407330 | + | 4 | 9007297 | 9007404 | + | 187 | 0 | 98 | 203 | |
| 438442 | 438644 | + | 4 | 9007297 | 9007404 | + | 109 | 0 | 88 | 209 | |
| 438442 | 438644 | + | 4 | 9007563 | 9007719 | + | 109 | 0 | 88 | 209 | |
| 411513 | 411736 | + | 4 | 9007563 | 9007719 | + | 159 | 6.00E-101 | 93 | 223 | |
| 407952 | 408182 | - | 4 | 9008039 | 9008185 | + | 218 | 6.30E-189 | 99 | 230 | |
| 439318 | 439556 | - | 4 | 9008039 | 9008185 | + | 129 | 5.40E-70 | 88 | 241 | |
| 441362 | 441695 | + | 4 | 9025139 | 9025443 | + | 286 | 7.50E-155 | 96 | 334 | |
| 411337 | 411693 | + | 4 | 9025751 | 9025909 | + | 348 | 0 | 99 | 356 | |
| 414359 | 414792 | + | 4 | 9026271 | 9026638 | + | 429 | 0 | 100 | 433 | |
| 439318 | 439863 | + | 4 | 9026271 | 9027900 | + | 293 | 0 | 88 | 549 | |
| 439318 | 439863 | + | 4 | 9027910 | 9028180 | + | 293 | 0 | 88 | 549 | |
| 406344 | 407134 | + | 4 | 9028242 | 9030294 | + | 709 | 0 | 97 | 791 | |
| 410371 | 411324 | + | 4 | 9030303 | 9031970 | + | 929 | 0 | 99 | 953 | |
| 411687 | 412738 | + | 4 | 9031955 | 9032854 | + | 1003 | 0 | 99 | 1051 | |
| 412862 | 414287 | + | 4 | 9032859 | 9033019 | + | 1369 | 0 | 99 | 1425 | |
| 414800 | 417091 | + | 4 | 9032964 | 9033129 | + | 2209 | 0 | 99 | 2291 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 366559 | 366660 | + | 4 | 9032964 | 9033129 | + | 70 | 1.70E-43 | 92 | 102 | |
| 371876 | 371981 | + | 4 | 9035943 | 9036116 | + | 55 | 3.60E-47 | 88 | 107 | |
| 382398 | 382507 | + | 4 | 9037248 | 9037357 | + | 48 | 4.60E-92 | 86 | 112 | |
| 382398 | 382507 | + | 4 | 9043093 | 9043211 | + | 48 | 1.20E-91 | 86 | 112 | |
| 382398 | 382507 | + | 4 | 9043093 | 9043211 | + | 48 | 4.80E-226 | 86 | 112 | |
| 371795 | 371910 | - | 4 | 9047897 | 9048004 | + | 67 | 7.10E-74 | 90 | 115 | |
| 376726 | 376862 | - | 4 | 9047897 | 9048004 | + | 132 | 6.80E-66 | 99 | 136 | |
| 371919 | 372061 | - | 4 | 9048163 | 9048319 | + | 56 | 7.10E-74 | 85 | 144 | |
| 377638 | 377785 | + | 4 | 9048163 | 9048319 | + | 139 | 4.60E-70 | 99 | 147 | |
| 383122 | 383269 | + | 4 | 9048639 | 9048785 | + | 50 | 4.60E-92 | 83 | 154 | |
| 383122 | 383269 | + | 4 | 9048639 | 9048785 | + | 50 | 1.20E-91 | 83 | 154 | |
| 383122 | 383269 | + | 4 | 9527976 | 9528088 | + | 46 | 4.80E-226 | 82 | 154 | |
| 382662 | 382819 | + | 4 | 9528138 | 9528308 | + | 53 | 1.20E-91 | 83 | 161 | |
| 382662 | 382819 | + | 4 | 9528138 | 9528308 | + | 53 | 4.60E-92 | 83 | 161 | |
| 382662 | 382819 | + | 4 | 9528472 | 9528584 | + | 53 | 4.80E-226 | 83 | 161 | |
| 388757 | 388961 | - | 4 | 9528472 | 9528584 | + | 200 | 7.20E-102 | 100 | 204 | |
| 390599 | 390901 | + | 4 | 9690679 | 9690810 | + | 245 | 4.80E-226 | 95 | 305 | |
| 390599 | 390901 | - | 4 | 9690679 | 9690810 | + | 213 | 9.00E-112 | 92 | 309 | |
| 395715 | 396033 | + | 4 | 9690844 | 9691040 | + | 278 | 2.30E-149 | 97 | 318 | |
| 371793 | 372327 | - | 4 | 10784387 | 10784902 | + | 534 | 2.00E-301 | 100 | 534 | |
| 395692 | 396401 | - | 4 | 10784978 | 10785251 | + | 673 | 0 | 99 | 709 | |
| 351546 | 351652 | - | 4 | 10881448 | 10881756 | + | 106 | 2.10E-46 | 100 | 106 | |
| 346101 | 346214 | - | 4 | 10968758 | 10968896 | + | 109 | 5.10E-95 | 99 | 113 | |
| 335321 | 335437 | - | 4 | 11007866 | 11007969 | + | 112 | 9.50E-52 | 99 | 116 | |
| 360333 | 360448 | + | 4 | 11117281 | 11117482 | + | 53 | 5.10E-42 | 86 | 117 | |
| 346101 | 346215 | - | 4 | 11117487 | 11117662 | + | 102 | 1.40E-100 | 97 | 118 | |
| 360467 | 360584 | + | 4 | 11472173 | 11472278 | + | 61 | 5.10E-42 | 88 | 121 | |
| 359805 | 359928 | + | 4 | 12376082 | 12376615 | + | 89 | 7.70E-109 | 93 | 125 | |
| 359020 | 359150 | + | 4 | 12376082 | 12376615 | + | 94 | 0 | 93 | 130 | |
| 343323 | 343455 | - | 4 | 13435539 | 13435872 | + | 116 | 4.80E-62 | 97 | 132 | |
| 358643 | 358776 | + | 4 | 13435539 | 13435872 | + | 129 | 7.00E-62 | 99 | 133 | |
| 355217 | 355384 | - | 4 | 13661538 | 13661832 | + | 96 | 6.10E-73 | 89 | 168 | |
| 353394 | 353565 | + | 4 | 13824125 | 13824242 | - | 171 | 5.50E-85 | 100 | 171 | |
| 353394 | 353565 | + | 4 | 13824125 | 13824242 | - | 163 | 6.00E-82 | 99 | 171 | |
| 359507 | 359687 | + | 4 | 13824406 | 13824576 | - | 134 | 7.70E-109 | 93 | 182 | |
| 329900 | 330091 | + | 4 | 13824406 | 13824576 | - | 92 | 5.90E-49 | 87 | 196 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 324211 | 324408 | + | 4 | 13824626 | 13824738 | - | 185 | 1.70E-94 | 98 | 197 | |
| 340502 | 340700 | + | 4 | 14044424 | 14044733 | + | 190 | 1.20E-98 | 99 | 198 | |
| 357751 | 357953 | + | 4 | 14044424 | 14044733 | + | 142 | 0 | 93 | 202 | |
| 357751 | 357953 | + | 4 | 14207065 | 14207359 | + | 142 | 0 | 93 | 202 | |
| 357355 | 357557 | + | 4 | 14207065 | 14207359 | + | 109 | 0 | 88 | 209 | |
| 357355 | 357557 | + | 4 | 15081254 | 15081386 | + | 109 | 0 | 88 | 209 | |
| 336101 | 336326 | - | 4 | 15081317 | 15081543 | + | 193 | 6.70E-100 | 96 | 225 | |
| 358231 | 358469 | - | 4 | 15678501 | 15678976 | + | 129 | 1.00E-60 | 88 | 241 | |
| 360275 | 360608 | + | 4 | 15946318 | 15946761 | + | 286 | 7.40E-155 | 96 | 334 | |
| 358231 | 358776 | + | 4 | 16148981 | 16149186 | + | 293 | 0 | 88 | 549 | |
| 358231 | 358776 | + | 4 | 16148981 | 16149186 | + | 293 | 0 | 88 | 549 | |
| 290625 | 292679 | - | 4 | 16149197 | 16149297 | + | 1999 | 0 | 99 | 2055 | |
| 283879 | 285573 | + | 4 | 16149197 | 16149297 | + | 1650 | 0 | 99 | 1694 | |
| 288949 | 290617 | - | 4 | 16149460 | 16149572 | + | 1644 | 0 | 100 | 1668 | |
| 292957 | 294587 | - | 4 | 16149460 | 16149572 | + | 1606 | 0 | 100 | 1630 | |
| 307848 | 309345 | + | 4 | 16149567 | 16149726 | + | 1362 | 0 | 98 | 1498 | |
| 310420 | 311585 | + | 4 | 17833229 | 17833361 | + | 1134 | 0 | 99 | 1166 | |
| 288083 | 288990 | - | 4 | 17833229 | 17833361 | + | 843 | 0 | 98 | 907 | |
| 311613 | 312465 | + | 4 | 17859505 | 17859822 | + | 828 | 0 | 99 | 852 | |
| 309354 | 310081 | + | 4 | 18370703 | 18370875 | + | 614 | 0 | 96 | 730 | |
| 283438 | 283871 | + | 4 | 18388608 | 18388732 | + | 429 | 0 | 100 | 433 | |
| 289301 | 289689 | - | 4 | 18637619 | 18637827 | + | 376 | 1.60E-208 | 99 | 388 | |
| 292957 | 293271 | + | 4 | 18708289 | 18708389 | + | 310 | 0 | 100 | 314 | |
| 307533 | 307839 | + | 4 | 19565504 | 19565726 | + | 302 | 0 | 100 | 306 | |
| 293899 | 294192 | - | 4 | 19565504 | 19565726 | + | 229 | 1.10E-123 | 95 | 293 | |
| 296665 | 296937 | + | 4 | 19565504 | 19565726 | + | 178 | 6.50E-89 | 91 | 274 | |
| 292677 | 292948 | - | 4 | 20107620 | 20107723 | + | 267 | 0 | 100 | 271 | |
| 292677 | 292948 | + | 4 | 20200106 | 20200241 | + | 255 | 0 | 99 | 271 | |
| 289462 | 289697 | + | 4 | 20200106 | 20200241 | + | 133 | 1.70E-66 | 89 | 237 | |
| 292249 | 292449 | + | 4 | 20628579 | 20628759 | + | 143 | 1.00E-124 | 93 | 203 | |
| 292474 | 292647 | + | 4 | 20628579 | 20628759 | + | 116 | 1.00E-124 | 91 | 176 | |
| 307350 | 307525 | + | 4 | 20628822 | 20628946 | + | 163 | 0 | 98 | 175 | |
| 321781 | 321953 | + | 4 | 20628822 | 20628946 | + | 123 | 8.20E-93 | 93 | 175 | |
| 287933 | 288094 | - | 4 | 21426583 | 21426704 | + | 161 | 0 | 100 | 161 | |
| 289398 | 289534 | + | 4 | 21798958 | 21799154 | + | 87 | 4.40E-39 | 91 | 139 | |
| 283692 | 283829 | - | 4 | 21798958 | 21799154 | + | 133 | 3.20E-64 | 99 | 137 | |

| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 310091 | 310222 | + | 4 | 22447109 | 22447401 | + | 119 | 0 | 98 | 131 | |
| 283423 | 283542 | - | 4 | 22782269 | 22782376 | + | 80 | 0 | 92 | 120 | |
| 283423 | 283542 | - | 4 | 22825217 | 22825332 | + | 80 | 1.10E-87 | 92 | 120 | |
| 283423 | 283542 | - | 4 | 23268276 | 23268391 | + | 80 | 4.00E-85 | 92 | 120 | |
| 283423 | 283542 | - | 4 | 23268846 | 23269116 | + | 80 | 1.10E-85 | 92 | 120 | |
| 283423 | 283539 | + | 4 | 23269126 | 23269439 | + | 70 | 0 | 90 | 118 | |
| 246083 | 246260 | + | 4 | 23278537 | 23278705 | + | 86 | 7.40E-87 | 87 | 178 | |
| 247260 | 247370 | + | 4 | 23278537 | 23278705 | + | 47 | 7.40E-87 | 86 | 111 | |
| 254890 | 255101 | + | 4 | 23278715 | 23280358 | + | 148 | 1.50E-77 | 92 | 216 | |
| 257830 | 257981 | - | 4 | 23278715 | 23280358 | + | 143 | 0 | 99 | 151 | |
| 258080 | 258887 | - | 4 | 23280366 | 23280568 | + | 783 | 0 | 99 | 807 | |
| 258901 | 260492 | - | 4 | 23280366 | 23280568 | + | 1555 | 0 | 99 | 1591 | |
| 260492 | 261446 | - | 4 | 24293682 | 24293828 | + | 902 | 0 | 99 | 954 | |
| 261464 | 262608 | - | 4 | 24293682 | 24293828 | + | 1100 | 0 | 99 | 1144 | |
| 265281 | 265471 | - | 4 | 24586395 | 24586598 | + | 164 | 6.00E-80 | 96 | 192 | |
| 265287 | 265413 | + | 4 | 25973650 | 25973766 | + | 118 | 3.70E-54 | 98 | 126 | |
| 267343 | 267535 | - | 4 | 25973765 | 25973884 | + | 108 | 2.50E-49 | 89 | 196 | |
| 268296 | 268494 | - | 4 | 27097254 | 27097486 | + | 143 | 2.00E-198 | 93 | 199 | |
| 268508 | 268729 | - | 4 | 27133310 | 27133697 | + | 193 | 2.00E-198 | 97 | 221 | |
| 268626 | 270116 | + | 4 | 27248014 | 27248164 | + | 1434 | 0 | 99 | 1490 | |
| 269019 | 269162 | + | 4 | 27248175 | 27248404 | + | 139 | 0 | 99 | 143 | |
| 269191 | 269397 | - | 4 | 30017409 | 30017888 | + | 145 | 9.60E-72 | 92 | 209 | |
| 270124 | 271851 | + | 4 | 30706767 | 30707002 | + | 1671 | 0 | 99 | 1727 | |
| 271912 | 273654 | + | 4 | 30706767 | 30707002 | + | 1666 | 0 | 99 | 1742 | |
| 274921 | 275025 | + | 4 | 32431757 | 32433242 | + | 37 | 5.20E-07 | 84 | 105 | |
| 276453 | 276611 | - | 4 | 32432150 | 32432292 | + | 154 | 5.30E-79 | 99 | 158 | |
| 279456 | 280409 | + | 4 | 32432150 | 32432292 | + | 925 | 0 | 99 | 953 | |
| 280422 | 280778 | + | 4 | 32432150 | 32432292 | + | 348 | 0 | 99 | 356 | |
| 280598 | 280821 | + | 4 | 32433243 | 32434969 | + | 159 | 2.30E-100 | 93 | 223 | |
| 280772 | 281823 | + | 4 | 32435029 | 32436764 | + | 1003 | 0 | 99 | 1051 | |
| 281566 | 281709 | + | 4 | 32437696 | 32438839 | + | 131 | 0 | 98 | 143 | |
| 281810 | 281949 | + | 4 | 32438839 | 32439792 | + | 127 | 0 | 98 | 139 | |
| 281947 | 283297 | + | 4 | 32439804 | 32441392 | + | 1298 | 0 | 99 | 1350 | |
| 282917 | 283035 | + | 4 | 32441384 | 32442190 | + | 90 | 9.90E-39 | 94 | 118 | |
| 212337 | 222766 | - | 4 | 32442303 | 32442453 | + | 387 | 8.40E-214 | 97 | 447 | |
| 217321 | 232449 | - | 4 | 32442454 | 32442627 | + | 154 | 1.90E-94 | 99 | 158 | |

| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 220324 | 239250 | + | 4 | 32442636 | 32442941 | + | 929 | 0 | 99 | 953 | |
| 221290 | 240585 | + | 4 | 32442950 | 32444444 | + | 348 | 0 | 99 | 356 | |
| 221466 | 240804 | + | 4 | 32444457 | 32445179 | + | 159 | 9.00E-100 | 93 | 223 | |
| 221640 | 241980 | + | 4 | 32445190 | 32445319 | + | 1003 | 0 | 99 | 1051 | |
| 222434 | 242660 | + | 4 | 32445316 | 32446480 | + | 131 | 0 | 98 | 143 | |
| 222678 | 243144 | + | 4 | 32446473 | 32447324 | + | 127 | 0 | 98 | 139 | |
| 222815 | 243776 | + | 4 | 32447570 | 32450005 | + | 485 | 0 | 99 | 497 | |
| 229792 | 257355 | - | 4 | 32447570 | 32450005 | + | 110 | 7.90E-48 | 98 | 122 | |
| 238535 | 275194 | + | 4 | 32450001 | 32451582 | + | 226 | 5.60E-118 | 87 | 482 | |
| 168039 | 168140 | + | 4 | 32450067 | 32451582 | + | 65 | 1.60E-47 | 91 | 101 | |
| 196824 | 196928 | + | 4 | 32451573 | 32452524 | + | 104 | 1.20E-45 | 100 | 104 | |
| 177056 | 177162 | - | 4 | 32451573 | 32452524 | + | 78 | 1.60E-89 | 93 | 106 | |
| 165686 | 165800 | + | 4 | 32451573 | 32452524 | + | 54 | 9.90E-29 | 87 | 114 | |
| 177207 | 177346 | - | 4 | 32452539 | 32452894 | + | 115 | 1.60E-89 | 96 | 139 | |
| 179166 | 179325 | - | 4 | 32452539 | 32452894 | + | 143 | 4.00E-67 | 97 | 159 | |
| 162056 | 164495 | - | 4 | 32452539 | 32452894 | + | 2352 | 0 | 99 | 2440 | |
| 126842 | 126943 | + | 4 | 32455870 | 32456918 | + | 102 | 1.90E-54 | 100 | 102 | |
| 126953 | 127121 | - | 4 | 32455870 | 32456918 | + | 153 | 0 | 98 | 169 | |
| 126952 | 127121 | - | 4 | 32455870 | 32456918 | + | 158 | 0 | 98 | 170 | |
| 126952 | 127121 | - | 4 | 32456664 | 32456806 | + | 158 | 0 | 98 | 170 | |
| 126952 | 127121 | + | 4 | 32456714 | 32456891 | + | 158 | 0 | 98 | 170 | |
| 125097 | 125299 | - | 4 | 32456714 | 32456891 | + | 191 | 0 | 99 | 203 | |
| 125097 | 125299 | - | 4 | 32456916 | 32457054 | + | 191 | 0 | 99 | 203 | |
| 125097 | 125299 | + | 4 | 32456916 | 32457054 | + | 191 | 0 | 99 | 203 | |
| 125097 | 125299 | - | 4 | 32456916 | 32457054 | + | 175 | 0 | 97 | 203 | |
| 156968 | 157203 | - | 4 | 32457062 | 32458486 | + | 232 | 6.90E-122 | 100 | 236 | |
| 161240 | 161534 | + | 4 | 32457062 | 32458411 | + | 295 | 4.50E-165 | 100 | 295 | |
| 121532 | 121822 | - | 4 | 32457062 | 32457558 | + | 117 | 1.00E-61 | 85 | 297 | |
| 125721 | 126030 | - | 4 | 32486318 | 32486750 | + | 209 | 5.00E-107 | 92 | 313 | |
| 126189 | 126563 | - | 4 | 32486318 | 32486750 | + | 189 | 1.10E-97 | 88 | 377 | |
| 160364 | 161880 | - | 4 | 32486762 | 32489051 | + | 1473 | 0 | 99 | 1517 | |
| 125299 | 126943 | - | 4 | 32486762 | 32488455 | + | 1633 | 0 | 100 | 1645 | |
| 125299 | 126943 | + | 4 | 32972163 | 32972378 | + | 1633 | 0 | 100 | 1645 | |
| 125299 | 126943 | - | 4 | 33308965 | 33309123 | + | 1629 | 0 | 100 | 1645 | |
| 125299 | 126943 | - | 4 | 33309121 | 33309345 | + | 1577 | 0 | 99 | 1645 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 28579 | 28707 | + | 5 | 690791 | 690925 | + | 101 | 0 | 95 | 129 | |
| 27905 | 28055 | + | 5 | 691054 | 691274 | + | 127 | 0 | 96 | 151 | |
| 6932 | 7094 | + | 5 | 691275 | 691419 | + | 147 | 7.80E-75 | 98 | 163 | |
| 6174 | 6360 | + | 5 | 884190 | 884308 | + | 120 | 2.00E-89 | 91 | 192 | |
| 27609 | 27844 | + | 5 | 884190 | 884308 | + | 208 | 0 | 97 | 236 | |
| 28153 | 28583 | + | 5 | 2409125 | 2409251 | + | 331 | 0 | 94 | 435 | |
| 26915 | 27611 | + | 5 | 3303501 | 3303634 | + | 643 | 0 | 98 | 703 | |
| 28718 | 29762 | + | 5 | 3537643 | 3537814 | + | 934 | 0 | 97 | 1046 | |
| 97562 | 97690 | - | 5 | 3845779 | 3845953 | + | 82 | 3.20E-37 | 91 | 130 | |
| 108041 | 108191 | - | 5 | 3845779 | 3845953 | + | 116 | 2.80E-55 | 94 | 152 | |
| 101459 | 101622 | + | 5 | 3845958 | 3846072 | + | 147 | 1.30E-73 | 98 | 163 | |
| 100701 | 100888 | + | 5 | 3845958 | 3846072 | + | 120 | 2.10E-89 | 91 | 192 | |
| 49219 | 49341 | + | 5 | 3862527 | 3862624 | + | 118 | 9.70E-57 | 99 | 122 | |
| 44911 | 45146 | - | 5 | 3862527 | 3862624 | + | 183 | 1.10E-93 | 94 | 235 | |
| 62020 | 62388 | + | 5 | 3862754 | 3862886 | + | 356 | 5.70E-198 | 99 | 368 | |
| 453006 | 453181 | - | 5 | 3862754 | 3862886 | + | 86 | 4.60E-96 | 87 | 178 | |
| 457975 | 458106 | - | 5 | 4629994 | 4630353 | + | 89 | 2.70E-67 | 92 | 133 | |
| 452882 | 452997 | - | 5 | 5004323 | 5004460 | + | 67 | 4.60E-96 | 90 | 115 | |
| 489122 | 489231 | + | 5 | 6384203 | 6384374 | + | 98 | 1.10E-58 | 97 | 110 | |
| 458255 | 458357 | - | 5 | 8827010 | 8827201 | + | 50 | 2.70E-67 | 87 | 102 | |
| 414344 | 414463 | + | 5 | 8827010 | 8827201 | + | 80 | 4.20E-118 | 92 | 120 | |
| 414344 | 414463 | + | 5 | 9249960 | 9250081 | + | 80 | 3.60E-95 | 92 | 120 | |
| 434601 | 434804 | + | 5 | 10727034 | 10727520 | + | 136 | 1.00E-67 | 92 | 204 | |
| 440182 | 440434 | - | 5 | 12504619 | 12504760 | + | 248 | 2.10E-131 | 100 | 252 | |
| 440182 | 440434 | + | 5 | 12712201 | 12712390 | + | 244 | 5.50E-128 | 99 | 252 | |
| 377168 | 377270 | - | 5 | 12778225 | 12778398 | + | 50 | 2.10E-66 | 87 | 102 | |
| 371795 | 371910 | - | 5 | 12779169 | 12779536 | + | 67 | 2.90E-96 | 90 | 115 | |
| 376888 | 377019 | - | 5 | 12779169 | 12780798 | + | 89 | 2.10E-66 | 92 | 133 | |
| 402836 | 402977 | + | 5 | 12785239 | 12785357 | + | 122 | 3.10E-64 | 96 | 142 | |
| 371919 | 372094 | - | 5 | 12785239 | 12785357 | + | 86 | 2.90E-96 | 87 | 178 | |
| 329900 | 330091 | - | 5 | 12801914 | 12803842 | + | 92 | 8.70E-76 | 87 | 196 | |
| 329900 | 330091 | + | 5 | 12803851 | 12804776 | + | 84 | 1.20E-66 | 86 | 196 | |
| 353514 | 353717 | + | 5 | 13552619 | 13552923 | + | 136 | 1.30E-63 | 92 | 204 | |
| 359095 | 359347 | - | 5 | 13552926 | 13553155 | + | 248 | 6.90E-133 | 100 | 252 | |
| 359095 | 359347 | + | 5 | 15612100 | 15612351 | + | 244 | 4.20E-131 | 99 | 252 | |
| 290625 | 292552 | - | 5 | 15612100 | 15612351 | + | 1846 | 0 | 99 | 1930 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 292957 | 294587 | - | 5 | 15658529 | 15658780 | + | 1578 | 0 | 99 | 1630 | |
| 289692 | 290617 | - | 5 | 15658529 | 15658780 | + | 906 | 0 | 99 | 926 | |
| 289208 | 289697 | - | 5 | 16540142 | 16540289 | + | 320 | 1.20E-187 | 91 | 496 | |
| 316249 | 316555 | - | 5 | 17749735 | 17749977 | + | 274 | 3.20E-145 | 97 | 306 | |
| 319857 | 320099 | + | 5 | 17750104 | 17750213 | + | 203 | 2.50E-103 | 96 | 243 | |
| 306786 | 306977 | + | 5 | 17750104 | 17750213 | + | 187 | 1.70E-95 | 99 | 191 | |
| 295354 | 295499 | - | 5 | 17791990 | 17792295 | + | 121 | 3.80E-57 | 96 | 145 | |
| 288144 | 288278 | - | 5 | 18495277 | 18495480 | + | 103 | 1.70E-46 | 94 | 135 | |
| 283423 | 283542 | + | 5 | 19001793 | 19001944 | + | 80 | 7.50E-91 | 92 | 120 | |
| 283423 | 283542 | + | 5 | 19217213 | 19217403 | + | 80 | 3.30E-87 | 92 | 120 | |
| 246083 | 246260 | + | 5 | 19217777 | 19217941 | + | 90 | 2.60E-73 | 88 | 178 | |
| 264465 | 264630 | - | 5 | 19501357 | 19501546 | + | 157 | 1.80E-104 | 99 | 165 | |
| 265045 | 265178 | - | 5 | 20783405 | 20784105 | + | 90 | 1.30E-37 | 91 | 138 | |
| 266037 | 266210 | - | 5 | 20783405 | 20784105 | + | 141 | 7.30E-69 | 95 | 173 | |
| 212024 | 221846 | - | 5 | 20784110 | 20784345 | + | 121 | 1.70E-65 | 95 | 149 | |
| 212571 | 223150 | + | 5 | 20784110 | 20784345 | + | 293 | 1.30E-157 | 95 | 361 | |
| 229657 | 257185 | + | 5 | 20784616 | 20784765 | + | 194 | 1.20E-99 | 97 | 222 | |
| 166021 | 166130 | + | 5 | 20784616 | 20784765 | + | 98 | 8.00E-59 | 97 | 110 | |
| 188317 | 188452 | - | 5 | 20784874 | 20785303 | + | 89 | 3.10E-35 | 91 | 137 | |
| 187812 | 187984 | - | 5 | 20784874 | 20785303 | + | 164 | 5.80E-79 | 99 | 172 | |
| 176932 | 177137 | + | 5 | 20785310 | 20785436 | + | 113 | 6.80E-53 | 89 | 209 | |
| 189307 | 189538 | - | 5 | 20785310 | 20785436 | + | 164 | 3.20E-200 | 93 | 232 | |
| 189511 | 189813 | - | 5 | 20785446 | 20786488 | + | 217 | 3.20E-200 | 93 | 305 | |
| 170772 | 171104 | + | 5 | 20785446 | 20786488 | + | 328 | 1.90E-175 | 100 | 332 | |
| 126257 | 126383 | - | 5 | 23804044 | 23804375 | + | 83 | 1.60E-45 | 91 | 127 | |
| 123106 | 123234 | + | 5 | 23959439 | 23959669 | + | 101 | 0 | 95 | 129 | |
| 122432 | 122582 | + | 5 | 23959439 | 23959673 | + | 127 | 0 | 96 | 151 | |
| 139437 | 139672 | - | 5 | 25022954 | 25023156 | + | 216 | 1.80E-111 | 98 | 236 | |
| 122136 | 122371 | + | 5 | 25022954 | 25023156 | + | 208 | 0 | 97 | 236 | |
| 122680 | 123110 | + | 5 | 25675573 | 25675735 | + | 331 | 0 | 94 | 435 | |
| 121442 | 122138 | + | 5 | 25675573 | 25675735 | + | 643 | 0 | 98 | 703 | |
| 123245 | 124289 | + | 5 | 29213895 | 29214023 | + | 934 | 0 | 97 | 1046 | |
| 32431 | 32531 | + | 6 | 1094075 | 1094422 | + | 68 | 3.00E-108 | 91 | 104 | |
| 32145 | 32250 | + | 6 | 1094075 | 1094422 | + | 70 | 3.00E-108 | 92 | 106 | |
| 27490 | 27611 | + | 6 | 1094435 | 1095606 | + | 110 | 0 | 98 | 122 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|---------|---------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 29404 | 29544 | - | 6 | 1094435 | 1094990 | + | 125 | 1.40E-56 | 97 | 141 | |
| 30519 | 30660 | - | 6 | 1094991 | 1095606 | + | 118 | 0 | 96 | 142 | |
| 35155 | 35304 | + | 6 | 1106818 | 1106938 | + | 110 | 1.10E-86 | 93 | 150 | |
| 27905 | 28055 | - | 6 | 1106818 | 1106938 | + | 139 | 0 | 98 | 151 | |
| 32257 | 32405 | + | 6 | 4068518 | 4069121 | + | 107 | 3.00E-108 | 93 | 151 | |
| 12013 | 12183 | - | 6 | 4069506 | 4069660 | + | 163 | 1.50E-79 | 99 | 171 | |
| 32873 | 33074 | + | 6 | 4070139 | 4070289 | + | 198 | 2.50E-99 | 100 | 202 | |
| 1297 | 1529 | + | 6 | 4070356 | 4070500 | + | 225 | 2.60E-121 | 99 | 233 | |
| 27609 | 27844 | - | 6 | 4070573 | 4070699 | + | 216 | 0 | 98 | 236 | |
| 31362 | 31609 | + | 6 | 4070952 | 4071203 | + | 133 | 9.20E-65 | 88 | 249 | |
| 25585 | 25838 | - | 6 | 4071228 | 4071372 | + | 185 | 0 | 93 | 261 | |
| 25585 | 25838 | - | 6 | 4674801 | 4674915 | + | 173 | 1.60E-281 | 92 | 261 | |
| 26581 | 26912 | - | 6 | 5512242 | 5512396 | + | 312 | 2.30E-170 | 98 | 332 | |
| 25982 | 26324 | + | 6 | 5858067 | 5858261 | + | 289 | 0 | 96 | 349 | |
| 25834 | 26240 | - | 6 | 5893195 | 5893365 | + | 347 | 1.60E-281 | 96 | 411 | |
| 28159 | 28583 | - | 6 | 5893195 | 5893365 | + | 337 | 0 | 95 | 429 | |
| 25834 | 26324 | - | 6 | 7433476 | 7433736 | + | 443 | 0 | 97 | 495 | |
| 26328 | 27495 | + | 6 | 8414179 | 8414285 | + | 1062 | 0 | 98 | 1174 | |
| 26328 | 27611 | - | 6 | 9347182 | 9347305 | + | 1184 | 0 | 98 | 1292 | |
| 28727 | 30249 | - | 6 | 9347182 | 9347305 | + | 1419 | 0 | 98 | 1527 | |
| 100154 | 100257 | + | 6 | 9347305 | 9347460 | + | 99 | 1.80E-42 | 99 | 103 | |
| 107940 | 108056 | - | 6 | 9347305 | 9347460 | + | 88 | 7.90E-38 | 94 | 116 | |
| 106540 | 106711 | - | 6 | 9347460 | 9347635 | + | 163 | 1.40E-78 | 99 | 171 | |
| 95824 | 96057 | + | 6 | 9347718 | 9347847 | + | 225 | 1.10E-118 | 99 | 233 | |
| 120112 | 120366 | - | 6 | 9348026 | 9348134 | + | 185 | 0 | 93 | 261 | |
| 120112 | 120366 | - | 6 | 9348026 | 9348134 | + | 173 | 1.60E-281 | 92 | 261 | |
| 121108 | 121411 | - | 6 | 9348245 | 9348454 | + | 287 | 3.00E-158 | 99 | 303 | |
| 120509 | 120852 | + | 6 | 9348245 | 9348454 | + | 289 | 0 | 96 | 349 | |
| 120361 | 120768 | - | 6 | 9348245 | 9348454 | + | 347 | 1.60E-281 | 96 | 411 | |
| 120361 | 120852 | - | 6 | 9348683 | 9348815 | + | 443 | 0 | 97 | 495 | |
| 120855 | 121411 | - | 6 | 9349099 | 9349300 | + | 532 | 0 | 99 | 556 | |
| 120855 | 121411 | + | 6 | 9349099 | 9349300 | + | 524 | 0 | 99 | 556 | |
| 47183 | 47287 | + | 6 | 9349371 | 9349482 | + | 104 | 0 | 100 | 104 | |
| 75005 | 75112 | - | 6 | 9349371 | 9349482 | + | 87 | 4.20E-36 | 95 | 107 | |
| 62524 | 63236 | - | 6 | 9349872 | 9349976 | + | 692 | 0 | 99 | 712 | |
| 44620 | 47168 | + | 6 | 9350085 | 9350220 | + | 2327 | 0 | 98 | 2554 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 41292 | 44668 | + | 6 | 9350085 | 9350220 | + | 3196 | 0 | 99 | 3384 | |
| 47295 | 51269 | + | 6 | 9350597 | 9350705 | + | 3709 | 0 | 98 | 3977 | |
| 449818 | 450104 | - | 6 | 9350597 | 9350705 | + | 282 | 5.20E-184 | 100 | 286 | |
| 472321 | 472557 | - | 6 | 9350895 | 9351070 | + | 212 | 1.80E-117 | 97 | 236 | |
| 464207 | 464399 | - | 6 | 11159600 | 11159933 | + | 188 | 2.10E-94 | 99 | 192 | |
| 482717 | 482889 | - | 6 | 11159600 | 11159933 | + | 137 | 3.10E-65 | 95 | 173 | |
| 455761 | 455898 | - | 6 | 11293040 | 11293282 | + | 121 | 1.00E-55 | 97 | 137 | |
| 463944 | 464056 | + | 6 | 11346732 | 11346880 | + | 112 | 7.10E-90 | 100 | 112 | |
| 431705 | 431814 | - | 6 | 11779700 | 11779821 | + | 109 | 8.00E-260 | 100 | 109 | |
| 433257 | 433366 | - | 6 | 11779700 | 11779821 | + | 109 | 3.00E-152 | 100 | 109 | |
| 441957 | 442081 | - | 6 | 11779884 | 11780065 | + | 124 | 8.00E-260 | 100 | 124 | |
| 440892 | 441015 | - | 6 | 11779884 | 11780065 | + | 77 | 1.30E-98 | 90 | 125 | |
| 416274 | 416402 | + | 6 | 12201203 | 12201505 | + | 128 | 2.60E-59 | 100 | 128 | |
| 442305 | 442427 | - | 6 | 12504799 | 12508175 | + | 77 | 0 | 90 | 129 | |
| 431500 | 431636 | - | 6 | 12504799 | 12508175 | + | 136 | 1.00E-64 | 100 | 136 | |
| 428254 | 428390 | + | 6 | 12508180 | 12510721 | + | 132 | 6.30E-183 | 99 | 136 | |
| 441273 | 441417 | - | 6 | 12508180 | 12510187 | + | 120 | 8.90E-55 | 96 | 144 | |
| 425629 | 425785 | + | 6 | 12510737 | 12510840 | + | 144 | 6.30E-183 | 98 | 156 | |
| 411966 | 412134 | + | 6 | 12510846 | 12514816 | + | 140 | 1.20E-88 | 96 | 168 | |
| 440594 | 440774 | - | 6 | 12514816 | 12515527 | + | 131 | 1.30E-98 | 93 | 183 | |
| 410695 | 410905 | - | 6 | 12515628 | 12516892 | + | 210 | 8.00E-260 | 100 | 210 | |
| 431979 | 432198 | - | 6 | 12515965 | 12516108 | + | 207 | 5.00E-114 | 99 | 219 | |
| 413799 | 414133 | - | 6 | 12522736 | 12526127 | + | 232 | 4.60E-122 | 92 | 336 | |
| 441345 | 442306 | - | 6 | 12526359 | 12526883 | + | 801 | 0 | 96 | 961 | |
| 441260 | 442265 | - | 6 | 12526959 | 12528735 | + | 841 | 0 | 96 | 1005 | |
| 382857 | 382969 | + | 6 | 12528744 | 12529587 | + | 112 | 3.00E-92 | 100 | 112 | |
| 397977 | 398110 | - | 6 | 12529601 | 12529731 | + | 133 | 2.50E-158 | 100 | 133 | |
| 374674 | 374811 | - | 6 | 12529842 | 12530382 | + | 121 | 3.70E-54 | 97 | 137 | |
| 395692 | 395844 | - | 6 | 12530377 | 12531923 | + | 140 | 0 | 98 | 152 | |
| 383120 | 383312 | - | 6 | 12531929 | 12532267 | + | 188 | 3.40E-95 | 99 | 192 | |
| 368731 | 369017 | - | 6 | 12532276 | 12532392 | + | 282 | 9.40E-185 | 100 | 286 | |
| 395823 | 396401 | - | 6 | 12532397 | 12533033 | + | 534 | 0 | 98 | 578 | |
| 350618 | 350727 | - | 6 | 12533043 | 12534389 | + | 109 | 5.10E-127 | 100 | 109 | |
| 352170 | 352279 | - | 6 | 12534470 | 12535838 | + | 109 | 5.20E-153 | 100 | 109 | |
| 360870 | 360994 | - | 6 | 12535898 | 12536133 | + | 124 | 5.20E-153 | 100 | 124 | |
| 359805 | 359928 | - | 6 | 12535898 | 12536133 | + | 77 | 1.30E-98 | 90 | 125 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 361218 | 361340 | - | 6 | 12535898 | 12536133 | + | 77 | 0 | 90 | 129 | |
| 350413 | 350549 | - | 6 | 12743717 | 12744123 | + | 136 | 3.80E-65 | 100 | 136 | |
| 347167 | 347303 | + | 6 | 12743717 | 12744123 | + | 132 | 4.10E-184 | 99 | 136 | |
| 360186 | 360330 | - | 6 | 12744131 | 12744390 | + | 120 | 7.80E-83 | 96 | 144 | |
| 344542 | 344698 | + | 6 | 12744131 | 12744390 | + | 144 | 4.10E-184 | 98 | 156 | |
| 359507 | 359687 | - | 6 | 12745768 | 12745895 | + | 131 | 1.30E-98 | 93 | 183 | |
| 329900 | 330091 | + | 6 | 12745768 | 12745895 | + | 92 | 4.90E-68 | 87 | 196 | |
| 350892 | 351111 | - | 6 | 12745901 | 12746855 | + | 207 | 4.20E-106 | 99 | 219 | |
| 360258 | 361219 | - | 6 | 12745901 | 12746855 | + | 801 | 0 | 96 | 961 | |
| 360173 | 361178 | - | 6 | 12745937 | 12746936 | + | 841 | 0 | 96 | 1005 | |
| 299906 | 300510 | + | 6 | 12745937 | 12746936 | + | 341 | 0 | 89 | 605 | |
| 289443 | 289877 | + | 6 | 13473367 | 13473800 | + | 295 | 6.60E-159 | 92 | 435 | |
| 299967 | 300306 | + | 6 | 13712813 | 13713151 | + | 254 | 3.40E-266 | 94 | 342 | |
| 293891 | 294153 | - | 6 | 13713158 | 13713293 | + | 172 | 2.60E-88 | 91 | 264 | |
| 302344 | 302596 | + | 6 | 13732852 | 13733001 | + | 147 | 0 | 89 | 255 | |
| 291762 | 291946 | + | 6 | 13798623 | 13798789 | + | 168 | 8.70E-80 | 98 | 184 | |
| 307204 | 307384 | - | 6 | 13798623 | 13798789 | + | 164 | 1.80E-80 | 98 | 180 | |
| 295160 | 295324 | - | 6 | 13798623 | 13798789 | + | 164 | 1.10E-80 | 100 | 164 | |
| 312288 | 312450 | - | 6 | 14188371 | 14188603 | + | 155 | 1.90E-75 | 99 | 163 | |
| 300919 | 301075 | + | 6 | 14188371 | 14188603 | + | 96 | 0 | 90 | 156 | |
| 317411 | 317566 | - | 6 | 14188729 | 14188947 | + | 143 | 5.00E-70 | 98 | 155 | |
| 301603 | 301753 | + | 6 | 14188729 | 14188947 | + | 57 | 0 | 84 | 153 | |
| 301695 | 301845 | - | 6 | 14544679 | 14544815 | + | 126 | 3.90E-59 | 96 | 150 | |
| 302616 | 302764 | + | 6 | 14544679 | 14544815 | + | 65 | 0 | 86 | 149 | |
| 301804 | 301949 | + | 6 | 14547762 | 14547933 | + | 97 | 0 | 92 | 145 | |
| 300322 | 300458 | + | 6 | 14547762 | 14547933 | + | 74 | 3.40E-266 | 88 | 138 | |
| 303434 | 303564 | + | 6 | 16054456 | 16054583 | + | 126 | 2.60E-58 | 99 | 130 | |
| 285353 | 285481 | + | 6 | 16055174 | 16055459 | + | 128 | 1.90E-59 | 100 | 128 | |
| 302017 | 302144 | + | 6 | 16055174 | 16055459 | + | 67 | 0 | 88 | 127 | |
| 288673 | 288792 | + | 6 | 16055457 | 16055597 | + | 107 | 1.30E-102 | 97 | 119 | |
| 302534 | 302643 | + | 6 | 16055550 | 16055943 | + | 109 | 1.30E-102 | 100 | 109 | |
| 293512 | 293617 | - | 6 | 16055952 | 16056057 | + | 101 | 3.30E-45 | 99 | 105 | |
| 244887 | 245002 | - | 6 | 16740593 | 16740784 | + | 91 | 8.90E-40 | 95 | 115 | |
| 248247 | 248545 | - | 6 | 16740593 | 16740784 | + | 208 | 5.40E-107 | 92 | 308 | |
| 267541 | 267680 | + | 6 | 16821074 | 16821237 | + | 107 | 5.10E-52 | 94 | 139 | |
| 268296 | 268485 | + | 6 | 17148886 | 17148988 | + | 90 | 4.00E-51 | 86 | 198 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 270011 | 270187 | + | 6 | 17149033 | 17149212 | + | 176 | 2.20E-106 | 100 | 176 | |
| 271336 | 271512 | - | 6 | 17970077 | 17970177 | + | 156 | 2.70E-143 | 97 | 176 | |
| 279780 | 279990 | - | 6 | 22859089 | 22859200 | - | 210 | 9.10E-172 | 100 | 210 | |
| 281051 | 281219 | + | 6 | 23206405 | 23206540 | + | 140 | 2.40E-90 | 96 | 168 | |
| 282884 | 283218 | - | 6 | 23206405 | 23206540 | + | 232 | 4.60E-122 | 92 | 336 | |
| 202615 | 203515 | + | 6 | 23520379 | 23520568 | + | 593 | 0 | 98 | 637 | |
| 203260 | 205514 | + | 6 | 23525288 | 23525865 | + | 1283 | 0 | 99 | 1347 | |
| 204680 | 208378 | + | 6 | 23525866 | 23526017 | + | 1285 | 0 | 98 | 1369 | |
| 206274 | 210433 | + | 6 | 23533598 | 23533747 | + | 212 | 0 | 97 | 236 | |
| 220648 | 239155 | - | 6 | 23533598 | 23533747 | + | 210 | 7.00E-140 | 100 | 210 | |
| 221919 | 241655 | + | 6 | 23541990 | 23542131 | + | 140 | 3.60E-88 | 96 | 168 | |
| 225220 | 248321 | + | 6 | 23541990 | 23542131 | + | 98 | 8.10E-50 | 85 | 238 | |
| 225475 | 248691 | + | 6 | 23542410 | 23543935 | + | 28 | 8.10E-50 | 82 | 100 | |
| 232467 | 262689 | - | 6 | 23542410 | 23543935 | + | 102 | 5.20E-47 | 99 | 106 | |
| 233859 | 265516 | - | 6 | 23544106 | 23544529 | + | 145 | 3.70E-86 | 99 | 149 | |
| 237383 | 272543 | + | 6 | 23544106 | 23544535 | + | 128 | 6.10E-60 | 100 | 128 | |
| 237931 | 273691 | - | 6 | 23544644 | 23544794 | + | 93 | 1.90E-40 | 87 | 189 | |
| 190067 | 190168 | + | 6 | 23544644 | 23544794 | + | 85 | 7.50E-36 | 96 | 101 | |
| 201885 | 201993 | + | 6 | 23545065 | 23545300 | + | 88 | 1.10E-267 | 95 | 108 | |
| 200845 | 200959 | - | 6 | 23545065 | 23545300 | + | 66 | 4.10E-40 | 89 | 114 | |
| 201885 | 202003 | + | 6 | 23545305 | 23546592 | + | 94 | 0 | 95 | 118 | |
| 199192 | 199323 | + | 6 | 23545305 | 23546036 | + | 119 | 0 | 98 | 131 | |
| 201402 | 201538 | + | 6 | 23546037 | 23546592 | + | 105 | 1.10E-267 | 94 | 141 | |
| 182567 | 182710 | + | 6 | 23546605 | 23547098 | + | 92 | 0 | 91 | 144 | |
| 168246 | 168488 | - | 6 | 23546605 | 23547098 | + | 97 | 3.90E-49 | 85 | 249 | |
| 201537 | 201877 | + | 6 | 23547106 | 23547365 | + | 286 | 0 | 96 | 342 | |
| 201490 | 201877 | + | 6 | 23547106 | 23547365 | + | 319 | 1.10E-267 | 95 | 395 | |
| 196006 | 196532 | + | 6 | 23669884 | 23669988 | + | 494 | 0 | 98 | 526 | |
| 199434 | 199975 | + | 6 | 23669884 | 23669988 | + | 501 | 0 | 98 | 541 | |
| 198340 | 199184 | + | 6 | 23669982 | 23670132 | + | 784 | 0 | 98 | 844 | |
| 191362 | 192627 | + | 6 | 23669982 | 23670132 | + | 1182 | 0 | 98 | 1266 | |
| 199997 | 201538 | + | 6 | 23670151 | 23670254 | + | 1407 | 0 | 98 | 1547 | |
| 196555 | 198332 | + | 6 | 23670151 | 23670254 | + | 1713 | 0 | 99 | 1777 | |
| 192621 | 196014 | + | 6 | 24509903 | 24510233 | + | 3233 | 0 | 99 | 3393 | |
| 126958 | 127058 | + | 6 | 24509932 | 24510233 | + | 68 | 2.10E-109 | 91 | 104 | |
| 126672 | 126777 | + | 6 | 25747398 | 25747525 | + | 70 | 2.10E-109 | 92 | 106 | |

| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 122017 | 122138 | + | 6 | 25747398 | 25747525 | + | 110 | 0 | 98 | 122 | |
| 123931 | 124071 | - | 6 | 25964004 | 25964147 | + | 125 | 2.00E-59 | 97 | 141 | |
| 125046 | 125187 | - | 6 | 25964004 | 25964147 | + | 118 | 0 | 96 | 142 | |
| 129682 | 129831 | + | 6 | 25967673 | 25967854 | + | 110 | 3.10E-85 | 93 | 150 | |
| 122432 | 122582 | - | 6 | 26050547 | 26050685 | + | 139 | 0 | 98 | 151 | |
| 126784 | 126932 | + | 6 | 26051444 | 26051556 | + | 107 | 2.10E-109 | 93 | 151 | |
| 159616 | 159787 | - | 6 | 27759749 | 27759934 | + | 137 | 1.60E-66 | 95 | 173 | |
| 127400 | 127601 | + | 6 | 28216361 | 28216523 | + | 198 | 1.10E-102 | 100 | 202 | |
| 122136 | 122371 | - | 6 | 28216824 | 28216942 | + | 216 | 0 | 98 | 236 | |
| 149220 | 149455 | - | 6 | 28216944 | 28217052 | + | 212 | 1.10E-117 | 97 | 236 | |
| 125889 | 126136 | + | 6 | 28217053 | 28217158 | + | 133 | 1.40E-63 | 88 | 249 | |
| 122680 | 123110 | - | 6 | 28217316 | 28217456 | + | 343 | 0 | 95 | 435 | |
| 121411 | 122022 | + | 6 | 28217316 | 28217456 | + | 538 | 0 | 97 | 618 | |
| 121411 | 122138 | - | 6 | 28286975 | 28287219 | + | 652 | 0 | 97 | 736 | |
| 123254 | 124776 | - | 6 | 28286975 | 28287219 | + | 1419 | 0 | 98 | 1527 | |
| 139153 | 141160 | + | 6 | 30216931 | 30217159 | + | 1928 | 0 | 99 | 2008 | |
| 135819 | 139200 | + | 6 | 30217174 | 30217273 | + | 3242 | 0 | 99 | 3382 | |
| 37207 | 37355 | - | 7 | 1640139 | 1640409 | + | 137 | 2.60E-65 | 98 | 149 | |
| 32425 | 32594 | + | 7 | 1901765 | 1901927 | + | 158 | 0 | 98 | 170 | |
| 30570 | 30772 | + | 7 | 2110665 | 2110767 | + | 191 | 0 | 99 | 203 | |
| 16166 | 16388 | + | 7 | 4475047 | 4475153 | + | 204 | 3.40E-105 | 98 | 224 | |
| 30772 | 32416 | + | 7 | 5043941 | 5044081 | + | 1633 | 0 | 100 | 1645 | |
| 98994 | 99107 | + | 7 | 5423818 | 5423949 | + | 113 | 6.90E-52 | 100 | 113 | |
| 113744 | 113858 | - | 7 | 5817380 | 5817548 | + | 84 | 4.80E-35 | 93 | 116 | |
| 95163 | 95352 | - | 7 | 6784394 | 6784640 | + | 113 | 2.60E-49 | 90 | 189 | |
| 110693 | 110916 | + | 7 | 7970350 | 7970615 | + | 204 | 5.80E-107 | 98 | 224 | |
| 61186 | 61302 | + | 7 | 8369184 | 8369518 | + | 116 | 6.50E-52 | 100 | 116 | |
| 69644 | 69776 | - | 7 | 8369184 | 8369518 | + | 120 | 7.30E-55 | 98 | 132 | |
| 78923 | 79064 | + | 7 | 8369184 | 8369518 | + | 133 | 3.10E-63 | 99 | 141 | |
| 49530 | 49711 | + | 7 | 9784990 | 9785138 | + | 86 | 2.00E-35 | 87 | 182 | |
| 75658 | 75841 | - | 7 | 11520954 | 11521080 | + | 169 | 5.30E-86 | 98 | 185 | |
| 56735 | 57006 | - | 7 | 12439725 | 12439997 | + | 255 | 6.10E-135 | 99 | 271 | |
| 447669 | 447866 | + | 7 | 12760406 | 12760521 | + | 177 | 2.80E-88 | 97 | 197 | |
| 444392 | 444504 | + | 7 | 13500978 | 13501226 | + | 104 | 1.40E-47 | 98 | 112 | |
| 414344 | 414463 | + | 7 | 13500978 | 13501226 | + | 80 | 3.20E-118 | 92 | 120 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 406768 | 406890 | + | 7 | 14231405 | 14231523 | + | 122 | 5.20E-56 | 100 | 122 | |
| 413759 | 413943 | - | 7 | 14231405 | 14231523 | + | 136 | 1.10E-64 | 93 | 188 | |
| 414813 | 415062 | + | 7 | 14240880 | 14241082 | + | 202 | 1.10E-105 | 95 | 250 | |
| 409442 | 409777 | - | 7 | 14240880 | 14241082 | + | 303 | 3.40E-163 | 98 | 335 | |
| 366582 | 366779 | + | 7 | 14241090 | 14242734 | + | 177 | 2.00E-88 | 97 | 197 | |
| 359631 | 359733 | + | 7 | 14241090 | 14242734 | + | 98 | 1.90E-42 | 99 | 102 | |
| 363305 | 363417 | + | 7 | 14242743 | 14242912 | + | 104 | 1.40E-47 | 98 | 112 | |
| 330836 | 331028 | - | 7 | 14242743 | 14242912 | + | 176 | 1.00E-87 | 98 | 192 | |
| 329900 | 330091 | - | 7 | 14574536 | 14574651 | + | 92 | 1.50E-56 | 87 | 196 | |
| 288688 | 288990 | + | 7 | 15130519 | 15130710 | + | 246 | 1.90E-243 | 95 | 302 | |
| 296535 | 296803 | - | 7 | 16447676 | 16447824 | + | 166 | 1.50E-82 | 90 | 274 | |
| 300199 | 300470 | + | 7 | 16447676 | 16447824 | + | 179 | 4.60E-92 | 92 | 271 | |
| 283892 | 284141 | + | 7 | 16447825 | 16448087 | + | 202 | 3.00E-104 | 95 | 250 | |
| 293057 | 293282 | + | 7 | 17536741 | 17536971 | + | 217 | 1.50E-116 | 99 | 225 | |
| 321473 | 321676 | - | 7 | 17637771 | 17637955 | + | 85 | 6.20E-50 | 85 | 209 | |
| 321473 | 321677 | - | 7 | 19608208 | 19608395 | + | 111 | 1.50E-62 | 88 | 207 | |
| 293009 | 293172 | - | 7 | 20759746 | 20759867 | + | 139 | 2.70E-66 | 96 | 163 | |
| 288950 | 289083 | + | 7 | 20759868 | 20760064 | + | 129 | 1.90E-243 | 99 | 133 | |
| 283423 | 283542 | + | 7 | 20759868 | 20760064 | + | 80 | 1.60E-87 | 92 | 120 | |
| 252704 | 252935 | - | 7 | 21839513 | 21839737 | + | 207 | 3.20E-103 | 97 | 231 | |
| 271274 | 271402 | - | 7 | 22133904 | 22134091 | + | 104 | 3.30E-49 | 95 | 128 | |
| 273410 | 273654 | + | 7 | 22133904 | 22134091 | + | 140 | 1.20E-98 | 89 | 248 | |
| 278527 | 278862 | - | 7 | 22173202 | 22173313 | + | 303 | 5.20E-162 | 98 | 335 | |
| 282844 | 283028 | - | 7 | 22173202 | 22173313 | + | 136 | 6.50E-66 | 93 | 188 | |
| 205617 | 209092 | - | 7 | 22173414 | 22173624 | + | 171 | 1.90E-83 | 95 | 211 | |
| 211021 | 219999 | - | 7 | 22995858 | 22996153 | + | 230 | 7.80E-126 | 93 | 314 | |
| 219395 | 236774 | - | 7 | 22996139 | 22996271 | + | 299 | 1.00E-162 | 97 | 335 | |
| 225185 | 248168 | - | 7 | 23275678 | 23275901 | + | 149 | 7.90E-72 | 100 | 149 | |
| 227987 | 253792 | - | 7 | 23275678 | 23275901 | + | 153 | 2.10E-118 | 98 | 169 | |
| 173271 | 173373 | - | 7 | 23859032 | 23859144 | + | 99 | 9.60E-45 | 99 | 103 | |
| 192803 | 193066 | - | 7 | 25283901 | 25284214 | + | 251 | 5.50E-134 | 99 | 263 | |
| 125730 | 125838 | - | 7 | 26362902 | 26363106 | + | 85 | 4.70E-37 | 95 | 109 | |
| 131734 | 131882 | - | 7 | 26372154 | 26372359 | + | 137 | 1.00E-64 | 98 | 149 | |
| 126952 | 127121 | + | 7 | 27974759 | 27974948 | + | 158 | 0 | 98 | 170 | |
| 125097 | 125299 | + | 7 | 28804632 | 28804810 | + | 191 | 0 | 99 | 203 | |
| 125299 | 126943 | + | 7 | 28938574 | 28938675 | + | 1633 | 0 | 100 | 1645 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|---------|---------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 13904 | 14011 | - | 8 | 6782 | 7246 | + | 81 | 9.20E-61 | 94 | 109 | |
| 13904 | 14031 | - | 8 | 7267 | 7415 | + | 88 | 1.10E-70 | 92 | 128 | |
| 31203 | 31348 | + | 8 | 9822 | 9943 | + | 90 | 1.20E-96 | 90 | 146 | |
| 35155 | 35304 | + | 8 | 467375 | 467617 | + | 118 | 0 | 95 | 150 | |
| 16052 | 16221 | + | 8 | 593433 | 593540 | + | 162 | 2.60E-81 | 99 | 170 | |
| 32425 | 32594 | - | 8 | 593433 | 593540 | + | 158 | 0 | 98 | 170 | |
| 32425 | 32594 | + | 8 | 620340 | 620466 | + | 158 | 0 | 98 | 170 | |
| 31321 | 31520 | - | 8 | 620340 | 620466 | + | 128 | 1.60E-63 | 91 | 200 | |
| 30570 | 30772 | + | 8 | 1946096 | 1946456 | + | 191 | 0 | 99 | 203 | |
| 12445 | 12665 | + | 8 | 1946469 | 1946681 | + | 119 | 1.20E-96 | 88 | 223 | |
| 26761 | 27016 | - | 8 | 5797578 | 5797768 | + | 194 | 2.10E-260 | 94 | 258 | |
| 26360 | 26667 | - | 8 | 5797578 | 5797768 | + | 245 | 2.10E-260 | 95 | 309 | |
| 30772 | 32416 | + | 8 | 5811858 | 5812135 | + | 1629 | 0 | 100 | 1645 | |
| 30772 | 32416 | - | 8 | 5812135 | 5812279 | + | 1625 | 0 | 100 | 1645 | |
| 108431 | 108539 | - | 8 | 5838689 | 5839136 | + | 81 | 9.40E-61 | 94 | 109 | |
| 121288 | 121408 | - | 8 | 7742743 | 7742906 | + | 100 | 4.60E-205 | 96 | 120 | |
| 108431 | 108559 | - | 8 | 8768893 | 8769060 | + | 88 | 7.20E-70 | 92 | 128 | |
| 91166 | 91330 | + | 8 | 9239530 | 9239676 | + | 152 | 9.10E-74 | 98 | 164 | |
| 110579 | 110749 | + | 8 | 9239530 | 9239676 | + | 162 | 9.10E-84 | 99 | 170 | |
| 91793 | 92009 | - | 8 | 9239996 | 9240152 | + | 164 | 2.50E-233 | 94 | 216 | |
| 106972 | 107193 | + | 8 | 9239996 | 9240152 | + | 119 | 6.10E-57 | 88 | 223 | |
| 120887 | 121195 | - | 8 | 9240311 | 9240418 | + | 245 | 4.60E-205 | 95 | 309 | |
| 92008 | 92362 | - | 8 | 9240311 | 9240418 | + | 269 | 2.50E-233 | 94 | 361 | |
| 73458 | 73629 | - | 8 | 9244818 | 9244936 | + | 119 | 3.10E-58 | 92 | 171 | |
| 59941 | 60303 | - | 8 | 9244818 | 9244936 | + | 330 | 1.60E-179 | 98 | 362 | |
| 463749 | 463906 | - | 8 | 9254294 | 9254496 | + | 53 | 7.20E-88 | 83 | 161 | |
| 464209 | 464356 | - | 8 | 9254294 | 9254496 | + | 50 | 7.20E-88 | 83 | 154 | |
| 450940 | 451058 | + | 8 | 9254504 | 9256148 | + | 110 | 1.50E-47 | 98 | 118 | |
| 463485 | 463594 | - | 8 | 9254504 | 9256148 | + | 48 | 7.20E-88 | 86 | 112 | |
| 414344 | 414463 | + | 8 | 9256157 | 9256326 | + | 80 | 9.30E-118 | 92 | 120 | |
| 405096 | 405218 | - | 8 | 9256157 | 9256326 | + | 114 | 3.60E-55 | 98 | 122 | |
| 413931 | 414096 | + | 8 | 9259482 | 9259671 | + | 149 | 1.20E-73 | 98 | 165 | |
| 444149 | 444332 | - | 8 | 9264393 | 9265100 | + | 80 | 2.40E-61 | 85 | 192 | |
| 407569 | 407769 | - | 8 | 9272687 | 9272836 | + | 200 | 1.20E-102 | 100 | 200 | |
| 411434 | 411717 | + | 8 | 9272687 | 9272836 | + | 267 | 1.90E-141 | 99 | 283 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 382398 | 382507 | - | 8 | 9632198 | 9632494 | + | 48 | 2.80E-88 | 86 | 112 | |
| 369853 | 369971 | + | 8 | 11408568 | 11408943 | + | 110 | 6.40E-49 | 98 | 118 | |
| 383122 | 383269 | - | 8 | 11514218 | 11514387 | + | 50 | 2.80E-88 | 83 | 154 | |
| 382662 | 382819 | - | 8 | 11514218 | 11514387 | + | 53 | 2.80E-88 | 83 | 161 | |
| 396341 | 396619 | + | 8 | 12037958 | 12038158 | + | 278 | 3.10E-147 | 100 | 278 | |
| 395284 | 395602 | + | 8 | 12792635 | 12793080 | + | 281 | 5.10E-147 | 97 | 321 | |
| 395692 | 396401 | - | 8 | 12793080 | 12793362 | + | 665 | 0 | 98 | 709 | |
| 353515 | 353651 | + | 8 | 12793080 | 12793362 | + | 100 | 9.50E-44 | 93 | 136 | |
| 327014 | 327194 | + | 8 | 12793080 | 12793362 | + | 132 | 9.80E-63 | 93 | 180 | |
| 363062 | 363245 | - | 8 | 13231108 | 13231469 | + | 80 | 2.40E-61 | 85 | 192 | |
| 329900 | 330091 | + | 8 | 14983304 | 14983520 | + | 92 | 1.10E-74 | 87 | 196 | |
| 337923 | 338139 | + | 8 | 15136742 | 15136929 | + | 141 | 6.70E-164 | 91 | 217 | |
| 338119 | 338361 | + | 8 | 16395635 | 16395892 | + | 179 | 6.70E-164 | 93 | 243 | |
| 289599 | 290158 | + | 8 | 16395635 | 16395769 | + | 551 | 3.30E-308 | 100 | 559 | |
| 290828 | 291269 | + | 8 | 16395773 | 16395892 | + | 352 | 4.60E-190 | 95 | 448 | |
| 293212 | 293512 | - | 8 | 16395989 | 16396295 | + | 200 | 2.60E-104 | 92 | 300 | |
| 298326 | 298614 | + | 8 | 16395989 | 16396295 | + | 240 | 3.70E-126 | 96 | 288 | |
| 289811 | 290025 | + | 8 | 17047231 | 17047377 | + | 187 | 8.40E-95 | 96 | 219 | |
| 291795 | 291996 | + | 8 | 17056175 | 17056395 | + | 197 | 4.30E-105 | 100 | 201 | |
| 286936 | 287100 | + | 8 | 17056175 | 17056395 | + | 126 | 6.60E-60 | 94 | 166 | |
| 308853 | 308998 | - | 8 | 17080783 | 17080923 | + | 141 | 6.50E-69 | 99 | 145 | |
| 283423 | 283542 | + | 8 | 17080783 | 17080923 | + | 80 | 3.10E-88 | 92 | 120 | |
| 245691 | 245978 | + | 8 | 17346755 | 17347040 | + | 251 | 8.90E-135 | 97 | 287 | |
| 263369 | 263611 | - | 8 | 17477317 | 17477446 | + | 181 | 6.60E-88 | 93 | 245 | |
| 270139 | 270283 | - | 8 | 17552702 | 17552917 | + | 84 | 5.50E-59 | 89 | 148 | |
| 271014 | 271396 | - | 8 | 17552919 | 17553160 | + | 240 | 1.90E-141 | 91 | 384 | |
| 280519 | 280802 | + | 8 | 18948868 | 18949067 | + | 267 | 2.50E-140 | 99 | 283 | |
| 283016 | 283181 | + | 8 | 18949069 | 18949233 | + | 149 | 1.80E-75 | 98 | 165 | |
| 221387 | 240706 | + | 8 | 18949069 | 18949233 | + | 267 | 4.90E-142 | 99 | 283 | |
| 224277 | 246667 | + | 8 | 19063841 | 19064128 | + | 425 | 0.00E+00 | 98 | 465 | |
| 224759 | 247315 | + | 8 | 19935470 | 19935669 | + | 141 | 0.00E+00 | 99 | 149 | |
| 239863 | 277821 | - | 8 | 19935470 | 19935669 | + | 434 | 4.80E-244 | 99 | 446 | |
| 241050 | 279937 | + | 8 | 20225884 | 20226001 | + | 115 | 9.20E-56 | 90 | 191 | |
| 199757 | 199859 | + | 8 | 20225884 | 20226001 | + | 52 | 1.70E-27 | 88 | 104 | |
| 185600 | 185759 | - | 8 | 22193033 | 22193202 | + | 131 | 7.30E-63 | 96 | 159 | |
| 122378 | 122499 | + | 8 | 22193033 | 22193202 | + | 42 | 3.50E-45 | 83 | 130 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 122239 | 122371 | - | 8 | 22193211 | 22194855 | + | 101 | 4.60E-44 | 94 | 133 | |
| 121411 | 121543 | - | 8 | 22193211 | 22194855 | + | 95 | 3.60E-40 | 93 | 135 | |
| 125730 | 125875 | + | 8 | 23509473 | 23510031 | + | 90 | 5.00E-37 | 90 | 146 | |
| 129682 | 129831 | + | 8 | 24166365 | 24166500 | + | 118 | 0 | 95 | 150 | |
| 126952 | 127121 | + | 8 | 24607222 | 24607323 | + | 158 | 0 | 98 | 170 | |
| 126952 | 127121 | - | 8 | 25214641 | 25214959 | + | 158 | 0 | 98 | 170 | |
| 125848 | 126047 | - | 8 | 25280180 | 25280336 | + | 128 | 1.50E-60 | 91 | 200 | |
| 125097 | 125299 | + | 8 | 25292005 | 25292136 | + | 191 | 0 | 99 | 203 | |
| 125299 | 126943 | + | 8 | 25292131 | 25292295 | + | 1629 | 0 | 100 | 1645 | |
| 125299 | 126943 | - | 8 | 25292803 | 25292982 | + | 1625 | 0 | 100 | 1645 | |
| 40369 | 40469 | - | 9 | 548620 | 548801 | + | 93 | 1.00E-88 | 98 | 101 | |
| 27943 | 28055 | - | 9 | 1274630 | 1274975 | + | 105 | 1.40E-88 | 98 | 113 | |
| 32426 | 32594 | + | 9 | 1274630 | 1275077 | + | 153 | 0 | 98 | 169 | |
| 32425 | 32594 | + | 9 | 1274977 | 1275077 | + | 158 | 0 | 98 | 170 | |
| 16464 | 16638 | - | 9 | 1362226 | 1362334 | + | 135 | 1.20E-64 | 94 | 175 | |
| 9468 | 9645 | + | 9 | 1476452 | 1476661 | + | 174 | 7.30E-86 | 99 | 178 | |
| 30570 | 30772 | + | 9 | 1476661 | 1476978 | + | 191 | 0 | 99 | 203 | |
| 31377 | 32416 | + | 9 | 1476977 | 1478907 | + | 966 | 0 | 98 | 1042 | |
| 30772 | 32416 | + | 9 | 2208018 | 2208148 | + | 1633 | 0 | 100 | 1645 | |
| 90776 | 90893 | - | 9 | 2208018 | 2208148 | + | 113 | 9.00E-58 | 99 | 117 | |
| 110991 | 111166 | - | 9 | 4365823 | 4366030 | + | 135 | 3.00E-65 | 94 | 175 | |
| 103995 | 104173 | + | 9 | 4620402 | 4620550 | + | 174 | 7.40E-86 | 99 | 178 | |
| 70663 | 70796 | - | 9 | 4620570 | 4621813 | + | 133 | 6.00E-90 | 100 | 133 | |
| 75518 | 75728 | - | 9 | 4621318 | 4621813 | + | 210 | 0 | 100 | 210 | |
| 46758 | 47051 | - | 9 | 4621318 | 4621813 | + | 253 | 5.40E-138 | 97 | 293 | |
| 56595 | 56890 | + | 9 | 4621821 | 4623347 | + | 295 | 3.40E-158 | 100 | 295 | |
| 40471 | 40817 | - | 9 | 4621821 | 4623347 | + | 334 | 4.60E-184 | 99 | 346 | |
| 70687 | 71563 | + | 9 | 4621821 | 4623347 | + | 660 | 0 | 94 | 880 | |
| 54692 | 56623 | - | 9 | 4621976 | 4622153 | + | 1895 | 0 | 100 | 1931 | |
| 485621 | 485810 | + | 9 | 4621976 | 4622153 | + | 149 | 1.90E-73 | 95 | 189 | |
| 474581 | 474740 | + | 9 | 4622061 | 4622203 | + | 147 | 5.00E-140 | 98 | 159 | |
| 487793 | 487948 | - | 9 | 4623361 | 4626493 | + | 103 | 2.00E-124 | 91 | 159 | |
| 484184 | 484333 | + | 9 | 4623361 | 4625403 | + | 137 | 5.00E-140 | 98 | 149 | |
| 460774 | 460905 | + | 9 | 4623361 | 4625403 | + | 123 | 7.50E-57 | 98 | 131 | |
| 472882 | 472995 | - | 9 | 4637890 | 4641293 | + | 90 | 1.10E-78 | 95 | 114 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|---------|---------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 460796 | 460905 | - | 9 | 4640305 | 4640421 | + | 93 | 8.50E-39 | 96 | 109 | |
| 473014 | 473120 | - | 9 | 4641294 | 4643476 | + | 86 | 1.10E-78 | 95 | 106 | |
| 427400 | 427561 | - | 9 | 4643474 | 4643799 | + | 157 | 4.60E-77 | 99 | 161 | |
| 406321 | 406526 | + | 9 | 4643747 | 4645122 | + | 109 | 2.90E-77 | 88 | 213 | |
| 427511 | 427970 | + | 9 | 4644913 | 4645051 | + | 439 | 4.70E-247 | 99 | 459 | |
| 412862 | 413358 | - | 9 | 4645131 | 4645847 | + | 488 | 0 | 100 | 496 | |
| 421500 | 422461 | + | 9 | 4645887 | 4646283 | + | 937 | 0 | 99 | 961 | |
| 429743 | 430763 | + | 9 | 4649459 | 4650836 | + | 992 | 0 | 99 | 1020 | |
| 430775 | 431807 | + | 9 | 4651014 | 4652038 | + | 1000 | 0 | 99 | 1032 | |
| 436480 | 437538 | + | 9 | 4651078 | 4652038 | + | 1042 | 0 | 100 | 1058 | |
| 428484 | 429743 | + | 9 | 4652047 | 4654152 | + | 1226 | 0 | 99 | 1262 | |
| 431820 | 433248 | + | 9 | 4652047 | 4654152 | + | 1412 | 0 | 100 | 1428 | |
| 411337 | 412864 | - | 9 | 4654162 | 4658081 | + | 1499 | 0 | 100 | 1527 | |
| 422461 | 424567 | + | 9 | 4654162 | 4658081 | + | 2054 | 0 | 99 | 2106 | |
| 408190 | 411324 | - | 9 | 4670141 | 4671399 | + | 3070 | 0 | 99 | 3134 | |
| 433257 | 436471 | + | 9 | 4670141 | 4671399 | + | 3143 | 0 | 99 | 3215 | |
| 404701 | 408106 | - | 9 | 4671409 | 4672428 | + | 3281 | 0 | 99 | 3405 | |
| 424575 | 428490 | + | 9 | 4671409 | 4672428 | + | 3853 | 0 | 100 | 3921 | |
| 379687 | 379818 | + | 9 | 4671416 | 4671570 | + | 123 | 5.30E-57 | 98 | 131 | |
| 394088 | 394349 | - | 9 | 4671416 | 4671570 | + | 205 | 2.20E-109 | 95 | 261 | |
| 391365 | 391673 | - | 9 | 4672408 | 4673438 | + | 284 | 1.10E-153 | 98 | 308 | |
| 402189 | 402515 | - | 9 | 4672408 | 4673438 | + | 322 | 0 | 100 | 326 | |
| 402518 | 404701 | - | 9 | 4673439 | 4674866 | + | 2155 | 0 | 100 | 2183 | |
| 328365 | 328466 | + | 9 | 4673439 | 4674866 | + | 101 | 2.60E-42 | 100 | 101 | |
| 346313 | 346474 | - | 9 | 4674876 | 4678090 | + | 157 | 1.20E-75 | 99 | 161 | |
| 329908 | 330091 | + | 9 | 4674876 | 4678090 | + | 80 | 4.30E-69 | 86 | 188 | |
| 338399 | 338796 | + | 9 | 4675491 | 4675609 | + | 385 | 0 | 99 | 397 | |
| 346424 | 346883 | + | 9 | 4678102 | 4679158 | + | 439 | 9.40E-245 | 99 | 459 | |
| 337644 | 338361 | + | 9 | 4678102 | 4679158 | + | 709 | 0 | 100 | 717 | |
| 348656 | 349676 | + | 9 | 4679177 | 4679345 | + | 992 | 0 | 99 | 1020 | |
| 340349 | 341374 | + | 9 | 5060088 | 5060222 | + | 1001 | 0 | 99 | 1025 | |
| 349688 | 350720 | + | 9 | 5960801 | 5960959 | + | 1000 | 0 | 99 | 1032 | |
| 355393 | 356451 | + | 9 | 6793370 | 6793517 | + | 1042 | 0 | 100 | 1058 | |
| 347397 | 348656 | + | 9 | 6793524 | 6793677 | + | 1226 | 0 | 99 | 1262 | |
| 336260 | 337636 | + | 9 | 7120468 | 7120992 | + | 1341 | 0 | 99 | 1377 | |
| 338793 | 340172 | + | 9 | 7124709 | 7125233 | + | 1355 | 0 | 100 | 1379 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 350733 | 352161 | + | 9 | 7125244 | 7125408 | + | 1412 | 0 | 100 | 1428 | |
| 341374 | 343480 | + | 9 | 7337715 | 7338018 | + | 2054 | 0 | 99 | 2106 | |
| 352170 | 355384 | + | 9 | 9031740 | 9031880 | + | 3143 | 0 | 99 | 3215 | |
| 343488 | 347403 | + | 9 | 9086696 | 9086813 | + | 3853 | 0 | 100 | 3921 | |
| 310298 | 310792 | - | 9 | 10957908 | 10958033 | + | 366 | 3.10E-258 | 94 | 494 | |
| 286235 | 286633 | + | 9 | 10958039 | 10958527 | + | 386 | 3.80E-214 | 99 | 398 | |
| 293891 | 294192 | - | 9 | 11531119 | 11531401 | + | 220 | 1.10E-112 | 93 | 304 | |
| 293899 | 294192 | - | 9 | 11892412 | 11893450 | + | 229 | 4.10E-119 | 95 | 293 | |
| 293899 | 294192 | - | 9 | 11892412 | 11893450 | + | 229 | 9.30E-121 | 95 | 293 | |
| 293899 | 294192 | - | 9 | 11893460 | 11893628 | + | 229 | 1.00E-121 | 95 | 293 | |
| 293910 | 294192 | + | 9 | 11893460 | 11893628 | + | 196 | 1.00E-100 | 92 | 284 | |
| 308836 | 309112 | + | 9 | 11896773 | 11896954 | + | 238 | 4.70E-129 | 96 | 278 | |
| 297335 | 297554 | + | 9 | 12296659 | 12296951 | + | 175 | 1.60E-91 | 95 | 219 | |
| 296101 | 296283 | + | 9 | 12582269 | 12582439 | + | 126 | 8.20E-99 | 92 | 182 | |
| 293891 | 294044 | - | 9 | 12582269 | 12582439 | + | 110 | 6.10E-101 | 93 | 154 | |
| 294044 | 294192 | - | 9 | 12582446 | 12582634 | + | 108 | 6.10E-101 | 93 | 148 | |
| 294583 | 294722 | + | 9 | 12582446 | 12582634 | + | 139 | 8.90E-68 | 100 | 139 | |
| 293974 | 294109 | - | 9 | 12651406 | 12651698 | + | 103 | 1.20E-98 | 94 | 135 | |
| 310788 | 310914 | - | 9 | 12676701 | 12676801 | + | 118 | 3.10E-258 | 98 | 126 | |
| 249743 | 249902 | + | 9 | 12894921 | 12895213 | + | 132 | 1.40E-63 | 96 | 160 | |
| 253546 | 253901 | - | 9 | 13861231 | 13861585 | + | 281 | 3.50E-148 | 95 | 357 | |
| 257162 | 257295 | - | 9 | 14452285 | 14452487 | + | 129 | 1.40E-60 | 99 | 133 | |
| 266019 | 266219 | + | 9 | 14452285 | 14452487 | + | 180 | 2.70E-89 | 98 | 200 | |
| 269019 | 269162 | - | 9 | 14452495 | 14454139 | + | 135 | 0 | 99 | 143 | |
| 278366 | 280409 | - | 9 | 14452495 | 14454139 | + | 1995 | 0 | 99 | 2043 | |
| 280422 | 281949 | - | 9 | 14454148 | 14454317 | + | 1499 | 0 | 100 | 1527 | |
| 281947 | 282443 | - | 9 | 14454148 | 14454317 | + | 488 | 0 | 100 | 496 | |
| 219234 | 238160 | - | 9 | 16299526 | 16299684 | + | 1995 | 0 | 99 | 2043 | |
| 221290 | 241756 | - | 9 | 16299526 | 16299684 | + | 1499 | 0 | 100 | 1527 | |
| 222815 | 244523 | - | 9 | 16299688 | 16299792 | + | 1220 | 0 | 100 | 1244 | |
| 224078 | 245954 | - | 9 | 16299887 | 16299999 | + | 145 | 0 | 99 | 149 | |
| 234240 | 266294 | - | 9 | 16299887 | 16299999 | + | 141 | 0 | 96 | 165 | |
| 234404 | 266979 | - | 9 | 16299999 | 16300293 | + | 381 | 0 | 93 | 525 | |
| 234920 | 268015 | - | 9 | 16300464 | 16300569 | + | 338 | 0 | 91 | 530 | |
| 235534 | 268847 | - | 9 | 16300464 | 16300569 | + | 130 | 5.70E-60 | 100 | 130 | |
| 178787 | 178905 | + | 9 | 16300603 | 16300714 | + | 102 | 8.70E-46 | 97 | 118 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 184733 | 184852 | - | 9 | 16300603 | 16300714 | + | 95 | 3.90E-52 | 95 | 119 | |
| 178787 | 178928 | + | 9 | 16300784 | 16301242 | + | 97 | 6.90E-43 | 92 | 141 | |
| 164692 | 164847 | - | 9 | 16300784 | 16301242 | + | 103 | 4.80E-113 | 91 | 159 | |
| 183013 | 183182 | + | 9 | 16301243 | 16301375 | + | 161 | 6.20E-82 | 99 | 169 | |
| 162520 | 162709 | + | 9 | 16301375 | 16301523 | + | 149 | 2.60E-70 | 95 | 189 | |
| 173157 | 173475 | - | 9 | 16301375 | 16301523 | + | 314 | 1.40E-171 | 100 | 318 | |
| 122680 | 122784 | - | 9 | 16301525 | 16301831 | + | 93 | 6.00E-91 | 97 | 105 | |
| 149913 | 150018 | - | 9 | 16301831 | 16301991 | + | 86 | 2.00E-77 | 95 | 106 | |
| 122470 | 122582 | - | 9 | 16301831 | 16301991 | + | 105 | 6.00E-91 | 98 | 113 | |
| 149781 | 149893 | - | 9 | 16301992 | 16302121 | + | 90 | 2.00E-77 | 95 | 114 | |
| 161083 | 161231 | + | 9 | 16483667 | 16484546 | + | 137 | 1.90E-141 | 98 | 149 | |
| 151480 | 151638 | + | 9 | 18579797 | 18579929 | - | 147 | 1.90E-141 | 98 | 159 | |
| 126953 | 127121 | + | 9 | 18579930 | 18580128 | - | 153 | 0 | 98 | 169 | |
| 126952 | 127121 | + | 9 | 18580129 | 18580405 | - | 158 | 0 | 98 | 170 | |
| 125097 | 125299 | + | 9 | 19940997 | 19941257 | + | 191 | 0 | 99 | 203 | |
| 134896 | 135343 | - | 9 | 19941259 | 19941551 | + | 424 | 9.60E-235 | 99 | 448 | |
| 125904 | 126943 | + | 9 | 19941910 | 19942128 | + | 966 | 0 | 98 | 1042 | |
| 125299 | 126943 | + | 9 | 22402627 | 22403023 | + | 1633 | 0 | 100 | 1645 | |
| 26216 | 26324 | + | 10 | 2103516 | 2103632 | + | 85 | 7.70E-98 | 95 | 109 | |
| 30951 | 31063 | + | 10 | 2103516 | 2103632 | + | 109 | 2.00E-95 | 99 | 113 | |
| 8876 | 9002 | - | 10 | 2734914 | 2736175 | + | 116 | 4.00E-54 | 98 | 128 | |
| 30524 | 30660 | + | 10 | 2734914 | 2736175 | + | 113 | 0 | 96 | 137 | |
| 29376 | 29514 | + | 10 | 2736175 | 2738436 | + | 119 | 6.90E-55 | 96 | 139 | |
| 35155 | 35304 | - | 10 | 2736175 | 2738436 | + | 118 | 0 | 95 | 150 | |
| 27905 | 28055 | + | 10 | 2995209 | 2995365 | + | 131 | 0 | 97 | 151 | |
| 26330 | 26486 | + | 10 | 4268060 | 4268256 | + | 125 | 7.70E-98 | 95 | 157 | |
| 32425 | 32594 | + | 10 | 5321122 | 5321227 | + | 158 | 0 | 98 | 170 | |
| 32425 | 32594 | - | 10 | 5368691 | 5368792 | + | 158 | 0 | 98 | 170 | |
| 32425 | 32594 | - | 10 | 7656851 | 7656973 | + | 146 | 0 | 96 | 170 | |
| 30772 | 30960 | - | 10 | 7656851 | 7656973 | + | 189 | 5.70E-111 | 100 | 189 | |
| 30570 | 30772 | + | 10 | 7656972 | 7657079 | + | 191 | 0 | 99 | 203 | |
| 30570 | 30772 | - | 10 | 7656972 | 7657079 | + | 191 | 0 | 99 | 203 | |
| 30570 | 30772 | - | 10 | 7657164 | 7657397 | + | 183 | 0 | 98 | 203 | |
| 27609 | 27844 | + | 10 | 7657530 | 7657702 | + | 216 | 0 | 98 | 236 | |
| 25834 | 26077 | + | 10 | 7657530 | 7657702 | + | 214 | 3.10E-211 | 97 | 246 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|---------|---------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 25585 | 25838 | + | 10 | 7657702 | 7657818 | + | 185 | 3.10E-211 | 93 | 261 | |
| 25585 | 25838 | + | 10 | 7657818 | 7657926 | + | 181 | 0 | 92 | 261 | |
| 5237 | 5519 | + | 10 | 7658013 | 7658140 | + | 271 | 1.00E-148 | 99 | 283 | |
| 28153 | 28583 | + | 10 | 7658013 | 7658140 | + | 343 | 0 | 95 | 435 | |
| 25834 | 26324 | + | 10 | 7658136 | 7658248 | + | 443 | 0 | 97 | 495 | |
| 30772 | 31768 | - | 10 | 7658136 | 7658248 | + | 965 | 0 | 99 | 997 | |
| 31135 | 32414 | - | 10 | 7658420 | 7658574 | + | 1185 | 0 | 98 | 1281 | |
| 26328 | 27611 | + | 10 | 7659165 | 7659264 | + | 1198 | 0 | 98 | 1290 | |
| 28718 | 30249 | + | 10 | 7659165 | 7659264 | + | 1428 | 0 | 98 | 1536 | |
| 30772 | 32416 | + | 10 | 7659165 | 7659264 | + | 1617 | 0 | 100 | 1645 | |
| 30772 | 32416 | - | 10 | 7659860 | 7659968 | + | 1593 | 0 | 99 | 1645 | |
| 114732 | 114832 | + | 10 | 7659860 | 7659968 | + | 100 | 4.10E-44 | 100 | 100 | |
| 89870 | 89973 | + | 10 | 7660202 | 7660336 | + | 91 | 2.40E-37 | 97 | 103 | |
| 120113 | 120217 | + | 10 | 7660202 | 7660336 | + | 104 | 5.30E-47 | 100 | 104 | |
| 85361 | 85468 | + | 10 | 7673800 | 7673961 | + | 95 | 2.40E-61 | 97 | 107 | |
| 120743 | 120852 | + | 10 | 7673960 | 7674197 | + | 85 | 3.90E-99 | 95 | 109 | |
| 103403 | 103530 | - | 10 | 7674260 | 7674363 | + | 116 | 4.00E-54 | 98 | 128 | |
| 120857 | 121014 | + | 10 | 7674260 | 7674363 | + | 125 | 3.90E-99 | 95 | 157 | |
| 120361 | 120605 | + | 10 | 7674362 | 7674550 | + | 214 | 2.60E-213 | 97 | 246 | |
| 120112 | 120366 | + | 10 | 7674362 | 7674550 | + | 185 | 2.60E-213 | 93 | 261 | |
| 120112 | 120366 | + | 10 | 7674574 | 7674680 | + | 181 | 0 | 92 | 261 | |
| 99764 | 100047 | + | 10 | 7674764 | 7674871 | + | 271 | 4.80E-144 | 99 | 283 | |
| 120361 | 120852 | + | 10 | 7674982 | 7675094 | + | 443 | 0 | 97 | 495 | |
| 120855 | 121411 | + | 10 | 7674982 | 7675094 | + | 528 | 0 | 99 | 556 | |
| 71529 | 71635 | + | 10 | 7675263 | 7675370 | + | 74 | 2.50E-31 | 92 | 106 | |
| 66972 | 67089 | + | 10 | 7675263 | 7675370 | + | 81 | 1.20E-62 | 92 | 117 | |
| 42400 | 42535 | - | 10 | 7675506 | 7675669 | + | 123 | 4.90E-56 | 98 | 135 | |
| 79710 | 79869 | + | 10 | 7675847 | 7675953 | + | 155 | 8.60E-126 | 99 | 159 | |
| 65192 | 65355 | - | 10 | 7676128 | 7676236 | + | 156 | 4.50E-76 | 99 | 164 | |
| 69832 | 70025 | - | 10 | 7676261 | 7676360 | + | 193 | 3.10E-102 | 100 | 193 | |
| 62020 | 62388 | + | 10 | 7676387 | 7676496 | + | 364 | 2.00E-244 | 100 | 368 | |
| 459974 | 462232 | - | 10 | 9675237 | 9675381 | + | 2094 | 0 | 98 | 2262 | |
| 462319 | 463583 | - | 10 | 9675237 | 9675381 | + | 1136 | 0 | 97 | 1264 | |
| 446376 | 446788 | + | 10 | 9675392 | 9675540 | + | 342 | 0 | 95 | 418 | |
| 446982 | 447186 | + | 10 | 9675392 | 9675540 | + | 160 | 0 | 95 | 204 | |
| 447307 | 447468 | - | 10 | 9675550 | 9675966 | + | 133 | 2.90E-65 | 96 | 161 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 463749 | 463906 | + | 10 | 9675550 | 9675966 | + | 57 | 3.20E-89 | 84 | 161 | |
| 463749 | 463906 | - | 10 | 9675974 | 9676117 | + | 53 | 1.00E-56 | 83 | 161 | |
| 463749 | 463906 | - | 10 | 9675974 | 9676117 | + | 53 | 1.90E-90 | 83 | 161 | |
| 464209 | 464356 | - | 10 | 9676173 | 9676376 | + | 50 | 1.90E-90 | 83 | 154 | |
| 464209 | 464356 | + | 10 | 9676173 | 9676376 | + | 52 | 3.20E-89 | 84 | 152 | |
| 446224 | 446367 | + | 10 | 9676366 | 9676526 | + | 109 | 0 | 93 | 149 | |
| 446071 | 446216 | + | 10 | 9676366 | 9676526 | + | 129 | 0 | 97 | 145 | |
| 446797 | 446941 | + | 10 | 10281200 | 10281356 | + | 132 | 0 | 98 | 144 | |
| 485470 | 485605 | + | 10 | 10281200 | 10281356 | + | 123 | 5.70E-56 | 98 | 135 | |
| 463485 | 463594 | + | 10 | 10281515 | 10281622 | + | 48 | 3.20E-89 | 86 | 112 | |
| 463485 | 463594 | - | 10 | 10281515 | 10281622 | + | 48 | 1.00E-56 | 86 | 112 | |
| 463485 | 463594 | - | 10 | 10295770 | 10295972 | + | 48 | 1.90E-90 | 86 | 112 | |
| 478139 | 478247 | + | 10 | 10295770 | 10295972 | + | 108 | 2.60E-96 | 100 | 108 | |
| 465791 | 465899 | + | 10 | 10295980 | 10297624 | + | 100 | 2.60E-96 | 98 | 108 | |
| 471447 | 471547 | - | 10 | 10295980 | 10297624 | + | 84 | 1.20E-68 | 96 | 100 | |
| 427101 | 427205 | + | 10 | 10297633 | 10297802 | + | 100 | 1.60E-115 | 99 | 104 | |
| 437622 | 437731 | + | 10 | 10297633 | 10297802 | + | 105 | 2.00E-118 | 99 | 109 | |
| 438104 | 438218 | + | 10 | 10315749 | 10316053 | + | 110 | 2.40E-121 | 99 | 114 | |
| 414344 | 414463 | + | 10 | 10316361 | 10316519 | + | 80 | 0 | 92 | 120 | |
| 423415 | 423538 | - | 10 | 10316881 | 10317248 | + | 115 | 4.10E-53 | 98 | 123 | |
| 440892 | 441018 | + | 10 | 10316881 | 10317571 | + | 106 | 0 | 96 | 126 | |
| 440892 | 441018 | + | 10 | 10317568 | 10318476 | + | 106 | 0 | 96 | 126 | |
| 442305 | 442427 | + | 10 | 10318486 | 10318756 | + | 81 | 0 | 91 | 129 | |
| 442305 | 442427 | + | 10 | 10318818 | 10320870 | + | 81 | 0 | 91 | 129 | |
| 440107 | 440237 | + | 10 | 10320879 | 10322546 | + | 94 | 0 | 93 | 130 | |
| 440107 | 440237 | + | 10 | 10322531 | 10323430 | + | 94 | 0 | 93 | 130 | |
| 414344 | 414482 | - | 10 | 10323435 | 10323595 | + | 83 | 8.80E-191 | 90 | 139 | |
| 436304 | 436471 | - | 10 | 10323540 | 10323705 | + | 92 | 8.80E-191 | 89 | 168 | |
| 443246 | 443419 | - | 10 | 10323540 | 10323705 | + | 161 | 7.10E-79 | 98 | 173 | |
| 438838 | 439040 | + | 10 | 10326520 | 10326693 | + | 142 | 0 | 93 | 202 | |
| 407127 | 407330 | + | 10 | 10327823 | 10327932 | + | 187 | 0 | 98 | 203 | |
| 407127 | 407330 | + | 10 | 10329920 | 10330019 | + | 183 | 0 | 98 | 203 | |
| 438838 | 439043 | + | 10 | 10330018 | 10330216 | + | 145 | 0 | 93 | 205 | |
| 438442 | 438644 | + | 10 | 10330231 | 10330429 | + | 109 | 0 | 88 | 209 | |
| 438442 | 438644 | + | 10 | 10332869 | 10333657 | + | 109 | 0 | 88 | 209 | |
| 440518 | 440774 | + | 10 | 10333660 | 10333859 | + | 206 | 0 | 95 | 258 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 440518 | 440774 | + | 10 | 10341867 | 10342071 | + | 206 | 0 | 95 | 258 | |
| 439318 | 439682 | + | 10 | 10341867 | 10342071 | + | 224 | 0 | 90 | 368 | |
| 439318 | 439863 | + | 10 | 10342224 | 10342424 | + | 293 | 0 | 88 | 549 | |
| 406345 | 407134 | + | 10 | 10342224 | 10342424 | + | 696 | 0 | 97 | 790 | |
| 406344 | 407134 | + | 10 | 10342769 | 10343129 | + | 697 | 0 | 97 | 791 | |
| 441345 | 442306 | + | 10 | 10342769 | 10343129 | + | 841 | 0 | 97 | 961 | |
| 441345 | 442306 | + | 10 | 10344884 | 10345013 | + | 833 | 0 | 97 | 961 | |
| 441028 | 442265 | + | 10 | 10344884 | 10345013 | + | 1058 | 0 | 96 | 1238 | |
| 441028 | 442265 | + | 10 | 10345224 | 10345480 | + | 1050 | 0 | 96 | 1238 | |
| 384704 | 384812 | + | 10 | 10345224 | 10345480 | + | 100 | 1.20E-44 | 98 | 108 | |
| 382398 | 382507 | - | 10 | 10345543 | 10345668 | + | 48 | 1.30E-56 | 86 | 112 | |
| 382398 | 382507 | - | 10 | 10345543 | 10345668 | + | 48 | 4.40E-92 | 86 | 112 | |
| 382398 | 382507 | + | 10 | 10345669 | 10346900 | + | 48 | 9.80E-91 | 86 | 112 | |
| 386453 | 386587 | + | 10 | 10345669 | 10346900 | + | 134 | 2.10E-62 | 100 | 134 | |
| 365710 | 365854 | + | 10 | 10345981 | 10346936 | + | 132 | 0 | 98 | 144 | |
| 364984 | 365129 | + | 10 | 10345981 | 10346936 | + | 129 | 0 | 97 | 145 | |
| 365137 | 365280 | + | 10 | 10346942 | 10347069 | + | 109 | 0 | 93 | 149 | |
| 383122 | 383269 | + | 10 | 10346942 | 10347069 | + | 52 | 9.80E-91 | 84 | 152 | |
| 383122 | 383269 | - | 10 | 10348437 | 10348696 | + | 50 | 4.40E-92 | 83 | 154 | |
| 366220 | 366381 | - | 10 | 10348437 | 10348696 | + | 133 | 1.90E-62 | 96 | 161 | |
| 382662 | 382819 | + | 10 | 10348704 | 10349197 | + | 57 | 9.80E-91 | 84 | 161 | |
| 382662 | 382819 | - | 10 | 10348704 | 10349197 | + | 53 | 1.30E-56 | 83 | 161 | |
| 382662 | 382819 | - | 10 | 10349210 | 10350497 | + | 53 | 4.40E-92 | 83 | 161 | |
| 365895 | 366099 | + | 10 | 10349210 | 10349765 | + | 160 | 0 | 95 | 204 | |
| 395695 | 395957 | - | 10 | 10349766 | 10350497 | + | 154 | 4.20E-76 | 89 | 266 | |
| 390611 | 390901 | + | 10 | 10350502 | 10350737 | + | 209 | 5.60E-106 | 93 | 293 | |
| 390599 | 390901 | + | 10 | 10350502 | 10350737 | + | 241 | 0 | 95 | 305 | |
| 365289 | 365701 | + | 10 | 10351008 | 10351158 | + | 342 | 0 | 95 | 418 | |
| 395692 | 396401 | + | 10 | 10351008 | 10351158 | + | 673 | 0 | 99 | 709 | |
| 381232 | 382496 | - | 10 | 10351266 | 10351695 | + | 1136 | 0 | 97 | 1264 | |
| 378887 | 381145 | - | 10 | 10351266 | 10351695 | + | 2094 | 0 | 98 | 2262 | |
| 346014 | 346118 | + | 10 | 10351857 | 10353392 | + | 100 | 3.40E-167 | 99 | 104 | |
| 356535 | 356644 | + | 10 | 10351857 | 10353392 | + | 105 | 1.60E-85 | 99 | 109 | |
| 357017 | 357131 | + | 10 | 10353647 | 10353812 | + | 110 | 1.80E-88 | 99 | 114 | |
| 342328 | 342451 | - | 10 | 10353676 | 10353812 | + | 115 | 6.00E-52 | 98 | 123 | |
| 359805 | 359931 | + | 10 | 10362072 | 10362221 | + | 106 | 0 | 96 | 126 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 359805 | 359931 | + | 10 | 10362072 | 10362221 | + | 106 | 0 | 96 | 126 | |
| 361218 | 361340 | + | 10 | 10369802 | 10370510 | + | 81 | 0 | 91 | 129 | |
| 361218 | 361340 | + | 10 | 10375226 | 10375415 | + | 81 | 0 | 91 | 129 | |
| 359020 | 359150 | + | 10 | 10378575 | 10378744 | + | 94 | 0 | 93 | 130 | |
| 359020 | 359150 | + | 10 | 10378575 | 10378744 | + | 94 | 0 | 93 | 130 | |
| 338793 | 338955 | + | 10 | 10378753 | 10380397 | + | 158 | 3.40E-167 | 99 | 162 | |
| 355217 | 355384 | - | 10 | 10378753 | 10380397 | + | 92 | 4.00E-144 | 89 | 168 | |
| 362159 | 362332 | - | 10 | 10380405 | 10380607 | + | 161 | 2.30E-81 | 98 | 173 | |
| 329900 | 330091 | - | 10 | 10380405 | 10380607 | + | 92 | 4.00E-144 | 87 | 196 | |
| 339159 | 339357 | - | 10 | 10389945 | 10390082 | + | 150 | 2.10E-75 | 94 | 198 | |
| 357751 | 357953 | + | 10 | 10389945 | 10390082 | + | 142 | 0 | 93 | 202 | |
| 357751 | 357956 | + | 10 | 10394754 | 10394861 | + | 145 | 0 | 93 | 205 | |
| 357355 | 357557 | + | 10 | 10394754 | 10394861 | + | 109 | 0 | 88 | 209 | |
| 357355 | 357557 | + | 10 | 10395020 | 10395176 | + | 109 | 0 | 88 | 209 | |
| 359431 | 359687 | + | 10 | 10395020 | 10395176 | + | 206 | 0 | 95 | 258 | |
| 359431 | 359687 | + | 10 | 10395496 | 10395642 | + | 206 | 0 | 95 | 258 | |
| 358231 | 358595 | + | 10 | 10395496 | 10395642 | + | 224 | 0 | 90 | 368 | |
| 325463 | 325848 | - | 10 | 11280146 | 11280253 | + | 329 | 2.80E-183 | 96 | 385 | |
| 358231 | 358776 | + | 10 | 11280146 | 11280253 | + | 293 | 0 | 88 | 549 | |
| 329444 | 330064 | + | 10 | 11280267 | 11280422 | + | 608 | 0 | 100 | 620 | |
| 360258 | 361219 | + | 10 | 11280267 | 11280422 | + | 841 | 0 | 97 | 961 | |
| 360258 | 361219 | + | 10 | 12379949 | 12380231 | - | 833 | 0 | 97 | 961 | |
| 359941 | 361178 | + | 10 | 12379949 | 12380231 | - | 1058 | 0 | 96 | 1238 | |
| 359941 | 361178 | + | 10 | 14027516 | 14027649 | + | 1050 | 0 | 96 | 1238 | |
| 290625 | 292679 | - | 10 | 14027648 | 14027751 | + | 1994 | 0 | 99 | 2054 | |
| 288949 | 290617 | - | 10 | 14027751 | 14027907 | + | 1636 | 0 | 100 | 1668 | |
| 292957 | 293866 | - | 10 | 14028154 | 14028385 | + | 885 | 0 | 99 | 909 | |
| 288083 | 288990 | - | 10 | 14028384 | 14028499 | + | 839 | 0 | 98 | 907 | |
| 293896 | 294587 | - | 10 | 14028700 | 14028906 | + | 671 | 0 | 99 | 691 | |
| 290625 | 291224 | + | 10 | 14028907 | 14029107 | + | 560 | 0 | 98 | 600 | |
| 290324 | 290617 | + | 10 | 14029207 | 14029826 | + | 282 | 0 | 99 | 294 | |
| 292677 | 292948 | - | 10 | 14029870 | 14029969 | + | 267 | 0 | 100 | 271 | |
| 318206 | 318413 | - | 10 | 14029970 | 14030072 | + | 207 | 4.90E-108 | 100 | 207 | |
| 297010 | 297204 | - | 10 | 15775898 | 15776190 | + | 154 | 2.90E-96 | 94 | 198 | |
| 317357 | 317546 | - | 10 | 15786639 | 15786902 | + | 146 | 2.90E-69 | 94 | 190 | |
| 287933 | 288094 | - | 10 | 15973565 | 15973664 | + | 161 | 0 | 100 | 161 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 298570 | 298728 | - | 10 | 16659735 | 16659932 | - | 150 | 3.50E-71 | 99 | 158 | |
| 283423 | 283561 | - | 10 | 18089538 | 18089679 | + | 83 | 0 | 90 | 139 | |
| 283423 | 283542 | + | 10 | 18089686 | 18089901 | + | 80 | 1.80E-86 | 92 | 120 | |
| 243164 | 243266 | + | 10 | 18409802 | 18409938 | - | 86 | 1.80E-38 | 96 | 102 | |
| 246083 | 246260 | + | 10 | 18409802 | 18409938 | - | 94 | 1.50E-98 | 88 | 178 | |
| 247260 | 247370 | + | 10 | 18841699 | 18841833 | + | 47 | 1.50E-31 | 86 | 111 | |
| 247260 | 247370 | + | 10 | 18841699 | 18841833 | + | 47 | 1.50E-98 | 86 | 111 | |
| 250729 | 250961 | + | 10 | 19212895 | 19213087 | + | 221 | 7.00E-116 | 99 | 233 | |
| 268296 | 268494 | - | 10 | 19563117 | 19563497 | + | 143 | 1.00E-163 | 93 | 199 | |
| 268318 | 268494 | - | 10 | 19946322 | 19946440 | - | 129 | 7.70E-181 | 93 | 177 | |
| 268508 | 268707 | - | 10 | 19946322 | 19946440 | - | 171 | 1.00E-163 | 96 | 199 | |
| 268508 | 268760 | - | 10 | 19951124 | 19951231 | - | 220 | 7.70E-181 | 97 | 252 | |
| 268660 | 268760 | - | 10 | 19951124 | 19951231 | - | 96 | 8.10E-120 | 99 | 100 | |
| 281022 | 281139 | + | 10 | 19951390 | 19951546 | - | 106 | 9.60E-49 | 97 | 118 | |
| 203140 | 204040 | + | 10 | 19951390 | 19951546 | - | 75 | 5.00E-40 | 92 | 111 | |
| 205672 | 209102 | + | 10 | 19951869 | 19952015 | - | 105 | 1.30E-100 | 99 | 109 | |
| 207284 | 212317 | + | 10 | 19951869 | 19952015 | - | 84 | 8.40E-117 | 96 | 100 | |
| 221890 | 241546 | + | 10 | 19954778 | 19955023 | - | 106 | 2.60E-48 | 97 | 118 | |
| 226989 | 251737 | + | 10 | 19954778 | 19955023 | - | 110 | 2.20E-105 | 100 | 110 | |
| 228233 | 254222 | + | 10 | 19955031 | 19955290 | - | 107 | 8.40E-117 | 100 | 107 | |
| 230973 | 259749 | + | 10 | 19955031 | 19955290 | - | 78 | 7.20E-33 | 87 | 158 | |
| 235091 | 267959 | - | 10 | 19956660 | 19956787 | - | 84 | 3.10E-35 | 91 | 128 | |
| 236636 | 271122 | + | 10 | 19956660 | 19956787 | - | 193 | 6.40E-101 | 99 | 201 | |
| 238228 | 274321 | - | 10 | 19956793 | 19957748 | - | 139 | 1.40E-120 | 91 | 219 | |
| 238456 | 274701 | - | 10 | 19956793 | 19957748 | - | 106 | 1.40E-120 | 94 | 142 | |
| 240452 | 278661 | - | 10 | 19956829 | 19958060 | - | 100 | 2.10E-58 | 98 | 108 | |
| 180234 | 180334 | + | 10 | 19956829 | 19958060 | - | 100 | 5.50E-42 | 100 | 100 | |
| 201587 | 201686 | + | 10 | 19958061 | 19958186 | - | 85 | 1.60E-266 | 96 | 101 | |
| 192289 | 192398 | + | 10 | 19958061 | 19958186 | - | 101 | 3.30E-190 | 98 | 109 | |
| 190681 | 190797 | - | 10 | 19958249 | 19958505 | - | 112 | 5.60E-50 | 99 | 116 | |
| 162369 | 162504 | + | 10 | 19958249 | 19958505 | - | 123 | 5.20E-57 | 98 | 135 | |
| 177781 | 177936 | - | 10 | 19958715 | 19958844 | - | 128 | 1.30E-58 | 96 | 156 | |
| 171974 | 172208 | + | 10 | 19958715 | 19958844 | - | 198 | 1.60E-266 | 96 | 234 | |
| 183015 | 183253 | + | 10 | 19960462 | 19961003 | - | 230 | 1.60E-266 | 99 | 238 | |
| 148346 | 148445 | - | 10 | 19960462 | 19961003 | - | 84 | 1.10E-214 | 96 | 100 | |
| 155038 | 155145 | + | 10 | 19961345 | 19961548 | - | 108 | 4.30E-105 | 100 | 108 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 125478 | 125590 | + | 10 | 19961345 | 19961548 | - | 109 | 4.30E-105 | 99 | 113 | |
| 136927 | 137061 | - | 10 | 19961701 | 19961905 | - | 123 | 1.10E-214 | 98 | 135 | |
| 123903 | 124041 | + | 10 | 19961701 | 19961905 | - | 119 | 3.80E-58 | 96 | 139 | |
| 129682 | 129831 | - | 10 | 19969912 | 19970111 | - | 118 | 0 | 95 | 150 | |
| 122432 | 122582 | + | 10 | 19970114 | 19970903 | - | 131 | 0 | 97 | 151 | |
| 125022 | 125187 | + | 10 | 19973364 | 19973540 | - | 142 | 0 | 96 | 166 | |
| 126952 | 127121 | + | 10 | 19973555 | 19973806 | - | 158 | 0 | 98 | 170 | |
| 126952 | 127121 | - | 10 | 19975804 | 19975913 | - | 158 | 0 | 98 | 170 | |
| 126952 | 127121 | - | 10 | 20827996 | 20828165 | + | 146 | 0 | 96 | 170 | |
| 125299 | 125487 | - | 10 | 20827996 | 20828165 | + | 189 | 1.10E-214 | 100 | 189 | |
| 125097 | 125299 | - | 10 | 20828176 | 20829454 | + | 191 | 0 | 99 | 203 | |
| 125097 | 125299 | + | 10 | 20828176 | 20829454 | + | 191 | 0 | 99 | 203 | |
| 125097 | 125299 | - | 10 | 21698186 | 21698312 | + | 183 | 0 | 98 | 203 | |
| 122136 | 122371 | + | 10 | 22223582 | 22223770 | + | 216 | 0 | 98 | 236 | |
| 122680 | 123110 | + | 10 | 22223773 | 22223883 | + | 343 | 0 | 95 | 435 | |
| 121411 | 122138 | + | 10 | 22262811 | 22263807 | + | 670 | 0 | 98 | 734 | |
| 125299 | 126295 | - | 10 | 22262811 | 22263807 | + | 965 | 0 | 99 | 997 | |
| 125662 | 126941 | - | 10 | 22263815 | 22264017 | + | 1185 | 0 | 98 | 1281 | |
| 123245 | 124776 | + | 10 | 22263815 | 22264017 | + | 1428 | 0 | 98 | 1536 | |
| 125299 | 126943 | + | 10 | 22264916 | 22265209 | + | 1617 | 0 | 100 | 1645 | |
| 125299 | 126943 | - | 10 | 22265218 | 22265816 | + | 1593 | 0 | 99 | 1645 | |
| 26151 | 26267 | + | 11 | 19667 | 19831 | + | 113 | 2.00E-111 | 99 | 117 | |
| 36722 | 36850 | + | 11 | 19667 | 19831 | + | 117 | 2.00E-111 | 98 | 129 | |
| 29224 | 29353 | - | 11 | 3489368 | 3489471 | + | 90 | 0 | 92 | 130 | |
| 11541 | 11677 | - | 11 | 3673563 | 3673810 | + | 137 | 1.50E-154 | 100 | 137 | |
| 30524 | 30660 | + | 11 | 3816083 | 3816295 | + | 102 | 0 | 93 | 138 | |
| 8406 | 8545 | - | 11 | 4336140 | 4336370 | + | 136 | 1.50E-154 | 99 | 140 | |
| 27905 | 28055 | + | 11 | 4837106 | 4837253 | - | 107 | 0 | 93 | 151 | |
| 9977 | 10133 | + | 11 | 5944354 | 5944514 | + | 141 | 7.30E-69 | 97 | 157 | |
| 34099 | 34261 | - | 11 | 5944354 | 5944514 | + | 128 | 3.40E-60 | 95 | 164 | |
| 13795 | 13979 | + | 11 | 6102691 | 6103052 | + | 181 | 9.30E-93 | 99 | 185 | |
| 29999 | 30252 | + | 11 | 6102691 | 6103052 | + | 231 | 0 | 98 | 255 | |
| 35066 | 35426 | - | 11 | 6114149 | 6114269 | + | 310 | 5.80E-172 | 96 | 362 | |
| 28153 | 28707 | + | 11 | 7133062 | 7133262 | - | 369 | 0 | 91 | 561 | |
| 29367 | 29951 | - | 11 | 8268200 | 8268353 | + | 453 | 0 | 94 | 593 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 28738 | 29327 | + | 11 | 8404343 | 8404558 | + | 449 | 0 | 94 | 593 | |
| 29323 | 29991 | + | 11 | 8404567 | 8404757 | + | 490 | 0 | 93 | 674 | |
| 29582 | 30253 | - | 11 | 8404759 | 8404961 | + | 521 | 0 | 94 | 681 | |
| 120678 | 120795 | + | 11 | 8405090 | 8405245 | + | 113 | 2.90E-51 | 99 | 117 | |
| 92018 | 92140 | - | 11 | 9138546 | 9138653 | + | 110 | 3.30E-50 | 98 | 122 | |
| 100738 | 100871 | - | 11 | 9138546 | 9138653 | + | 105 | 1.30E-47 | 95 | 133 | |
| 90915 | 91048 | + | 11 | 9446009 | 9446126 | + | 94 | 2.00E-40 | 93 | 134 | |
| 106068 | 106205 | - | 11 | 10198893 | 10199043 | + | 137 | 1.60E-154 | 100 | 137 | |
| 102933 | 103073 | - | 11 | 10199056 | 10199284 | + | 136 | 1.60E-154 | 99 | 140 | |
| 90605 | 90756 | - | 11 | 10199056 | 10199284 | + | 147 | 1.40E-70 | 99 | 151 | |
| 104504 | 104661 | + | 11 | 10835676 | 10835839 | + | 141 | 6.60E-66 | 97 | 157 | |
| 115183 | 115342 | + | 11 | 10835839 | 10835955 | + | 83 | 3.00E-34 | 88 | 159 | |
| 108322 | 108507 | + | 11 | 10835839 | 10835955 | + | 181 | 9.40E-93 | 99 | 185 | |
| 90186 | 90387 | - | 11 | 10836048 | 10836156 | + | 110 | 1.30E-90 | 89 | 202 | |
| 46463 | 46581 | - | 11 | 10836405 | 10836563 | + | 82 | 5.00E-34 | 92 | 118 | |
| 48896 | 49025 | + | 11 | 10836563 | 10836691 | + | 97 | 2.00E-41 | 94 | 129 | |
| 49681 | 49835 | + | 11 | 10836563 | 10836691 | + | 150 | 2.30E-71 | 99 | 154 | |
| 460565 | 460765 | + | 11 | 10836689 | 10836838 | + | 94 | 2.20E-38 | 86 | 206 | |
| 487425 | 487590 | + | 11 | 10836840 | 10836946 | + | 145 | 3.70E-71 | 97 | 165 | |
| 447295 | 447457 | + | 11 | 11462762 | 11462863 | - | 99 | 2.80E-46 | 90 | 163 | |
| 480993 | 481120 | + | 11 | 11463698 | 11463820 | - | 123 | 2.80E-58 | 99 | 127 | |
| 459284 | 459395 | + | 11 | 11874119 | 11874221 | - | 95 | 1.40E-39 | 96 | 111 | |
| 486469 | 486578 | + | 11 | 11874403 | 11874504 | - | 101 | 2.30E-47 | 98 | 109 | |
| 458802 | 458910 | - | 11 | 11876315 | 11876454 | - | 96 | 7.20E-148 | 97 | 108 | |
| 456154 | 456260 | + | 11 | 11876315 | 11876454 | - | 102 | 1.40E-61 | 99 | 106 | |
| 464292 | 464398 | - | 11 | 11876577 | 11876682 | - | 102 | 2.90E-44 | 99 | 106 | |
| 450231 | 450336 | - | 11 | 11876577 | 11876682 | - | 98 | 5.60E-43 | 98 | 106 | |
| 410895 | 410999 | - | 11 | 11876877 | 11876980 | - | 96 | 8.90E-142 | 98 | 104 | |
| 439754 | 439863 | + | 11 | 11876877 | 11876980 | - | 85 | 3.80E-65 | 95 | 109 | |
| 433761 | 433873 | - | 11 | 11876877 | 11876980 | - | 104 | 8.90E-142 | 98 | 112 | |
| 433435 | 433581 | + | 11 | 11878147 | 11878295 | - | 138 | 4.30E-67 | 99 | 146 | |
| 427991 | 428140 | + | 11 | 11878147 | 11878295 | - | 149 | 3.60E-150 | 100 | 149 | |
| 408458 | 408608 | + | 11 | 11878292 | 11878394 | - | 142 | 6.50E-69 | 99 | 150 | |
| 439277 | 439439 | + | 11 | 11879095 | 11879231 | - | 150 | 3.90E-73 | 98 | 162 | |
| 441766 | 441995 | + | 11 | 11879095 | 11879231 | - | 173 | 2.20E-88 | 94 | 229 | |
| 439390 | 439653 | - | 11 | 11879516 | 11879627 | - | 126 | 9.60E-57 | 87 | 266 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 396856 | 396958 | - | 11 | 11879516 | 11879627 | - | 102 | 1.40E-122 | 100 | 102 | |
| 375067 | 375173 | + | 11 | 11879624 | 11879750 | - | 102 | 1.30E-100 | 99 | 106 | |
| 383205 | 383311 | - | 11 | 11879752 | 11879860 | - | 102 | 6.90E-46 | 99 | 106 | |
| 369144 | 369249 | - | 11 | 11879752 | 11879860 | - | 98 | 1.00E-43 | 98 | 106 | |
| 377715 | 377823 | - | 11 | 11879860 | 11879967 | - | 96 | 3.20E-148 | 97 | 108 | |
| 366208 | 366370 | + | 11 | 11879860 | 11879967 | - | 99 | 3.80E-46 | 90 | 163 | |
| 386980 | 387174 | + | 11 | 12437397 | 12437502 | - | 186 | 1.80E-93 | 99 | 194 | |
| 358667 | 358776 | + | 11 | 12437397 | 12437502 | - | 85 | 1.70E-64 | 95 | 109 | |
| 352674 | 352786 | - | 11 | 12543281 | 12543437 | - | 104 | 1.30E-100 | 98 | 112 | |
| 329401 | 329513 | - | 11 | 12543281 | 12543437 | - | 100 | 2.00E-45 | 97 | 112 | |
| 335847 | 335984 | + | 11 | 12857760 | 12857892 | + | 129 | 8.10E-62 | 99 | 137 | |
| 352348 | 352494 | + | 11 | 13074155 | 13074260 | + | 138 | 4.30E-67 | 99 | 146 | |
| 346904 | 347053 | + | 11 | 13074155 | 13074260 | + | 149 | 3.60E-150 | 100 | 149 | |
| 338961 | 339120 | - | 11 | 14057236 | 14057455 | + | 103 | 6.60E-45 | 91 | 159 | |
| 358190 | 358352 | + | 11 | 14057456 | 14057649 | + | 150 | 3.90E-73 | 98 | 162 | |
| 350736 | 350924 | + | 11 | 14057692 | 14057799 | + | 105 | 1.10E-46 | 89 | 193 | |
| 360679 | 360908 | + | 11 | 14057795 | 14057905 | + | 173 | 2.20E-88 | 94 | 229 | |
| 358303 | 358566 | - | 11 | 14258021 | 14258134 | - | 126 | 2.50E-57 | 87 | 266 | |
| 293891 | 294153 | + | 11 | 14813980 | 14814090 | - | 143 | 1.90E-72 | 88 | 267 | |
| 291138 | 291369 | + | 11 | 16034382 | 16034639 | + | 199 | 3.90E-103 | 97 | 231 | |
| 322716 | 322898 | - | 11 | 16428280 | 16428624 | + | 170 | 1.60E-88 | 98 | 182 | |
| 292407 | 292566 | - | 11 | 17130263 | 17130389 | + | 155 | 1.20E-74 | 99 | 159 | |
| 289640 | 289787 | + | 11 | 17130263 | 17130389 | + | 136 | 4.70E-65 | 98 | 148 | |
| 308414 | 308541 | - | 11 | 17130484 | 17130668 | + | 127 | 1.70E-103 | 100 | 127 | |
| 312925 | 313043 | + | 11 | 17130484 | 17130668 | + | 118 | 3.00E-55 | 100 | 118 | |
| 312170 | 312278 | - | 11 | 17403197 | 17403452 | + | 88 | 6.50E-73 | 95 | 108 | |
| 242827 | 242936 | - | 11 | 17403197 | 17403452 | + | 109 | 6.40E-49 | 100 | 109 | |
| 244869 | 245033 | + | 11 | 17792914 | 17793070 | + | 156 | 1.30E-166 | 99 | 164 | |
| 249068 | 249175 | + | 11 | 17916842 | 17916997 | + | 107 | 1.30E-166 | 100 | 107 | |
| 249371 | 249474 | + | 11 | 18852064 | 18852744 | + | 103 | 1.30E-46 | 100 | 103 | |
| 262001 | 262346 | + | 11 | 18852064 | 18852744 | + | 329 | 1.70E-180 | 99 | 345 | |
| 279980 | 280084 | - | 11 | 18852368 | 18852960 | + | 96 | 1.80E-71 | 98 | 104 | |
| 282445 | 282597 | + | 11 | 18852368 | 18852960 | + | 101 | 7.30E-45 | 91 | 157 | |
| 212096 | 221950 | - | 11 | 18852974 | 18853103 | + | 77 | 1.70E-59 | 93 | 109 | |
| 220848 | 239449 | - | 11 | 18852974 | 18853103 | + | 96 | 1.10E-107 | 98 | 104 | |
| 223137 | 244023 | - | 11 | 18888559 | 18888708 | + | 38 | 9.10E-44 | 84 | 102 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 223228 | 244228 | - | 11 | 18888559 | 18888708 | + | 67 | 9.10E-44 | 89 | 123 | |
| 231948 | 261688 | + | 11 | 18888816 | 18889366 | + | 88 | 8.40E-44 | 90 | 144 | |
| 232365 | 262599 | - | 11 | 18888816 | 18889366 | + | 212 | 1.10E-109 | 99 | 220 | |
| 234684 | 267263 | - | 11 | 18889388 | 18889978 | + | 184 | 3.20E-183 | 94 | 248 | |
| 235071 | 268008 | + | 11 | 18889388 | 18889978 | + | 132 | 6.80E-66 | 90 | 220 | |
| 239943 | 277643 | + | 11 | 18895107 | 18895774 | + | 96 | 4.40E-43 | 97 | 108 | |
| 163368 | 163477 | + | 11 | 18895107 | 18895774 | + | 101 | 1.10E-99 | 98 | 109 | |
| 172710 | 172831 | - | 11 | 18895775 | 18896029 | + | 98 | 6.40E-42 | 95 | 122 | |
| 164324 | 164489 | + | 11 | 18895775 | 18896028 | + | 145 | 7.50E-72 | 97 | 165 | |
| 198472 | 198642 | - | 11 | 18896282 | 18896448 | + | 146 | 3.10E-74 | 96 | 170 | |
| 195909 | 196122 | + | 11 | 18896311 | 18896448 | + | 201 | 5.70E-102 | 99 | 213 | |
| 126726 | 126829 | - | 11 | 19046307 | 19046488 | + | 96 | 6.30E-43 | 98 | 104 | |
| 157892 | 158018 | + | 11 | 19222782 | 19222949 | + | 123 | 1.60E-60 | 99 | 127 | |
| 158687 | 158812 | + | 11 | 19851498 | 19851606 | + | 67 | 2.40E-25 | 88 | 127 | |
| 131249 | 131377 | + | 11 | 19851606 | 19851726 | + | 117 | 8.10E-52 | 98 | 129 | |
| 123751 | 123880 | - | 11 | 21710175 | 21710314 | + | 90 | 0 | 92 | 130 | |
| 122432 | 122582 | + | 11 | 22835381 | 22835542 | + | 107 | 0 | 93 | 151 | |
| 128626 | 128788 | - | 11 | 22835381 | 22835542 | + | 128 | 1.50E-59 | 95 | 164 | |
| 125022 | 125187 | + | 11 | 22835543 | 22835678 | + | 131 | 0 | 95 | 167 | |
| 124526 | 124778 | + | 11 | 22928569 | 22928701 | + | 230 | 0 | 98 | 254 | |
| 129593 | 129953 | - | 11 | 23088709 | 23088854 | + | 310 | 3.50E-166 | 96 | 362 | |
| 122680 | 123234 | + | 11 | 23088709 | 23088854 | + | 369 | 0 | 91 | 561 | |
| 123894 | 124478 | - | 11 | 24724410 | 24724571 | + | 453 | 0 | 94 | 593 | |
| 123265 | 123854 | + | 11 | 24724410 | 24724571 | + | 449 | 0 | 94 | 593 | |
| 123850 | 124518 | + | 11 | 26294483 | 26294611 | - | 490 | 0 | 93 | 674 | |
| 124109 | 124780 | - | 11 | 27218219 | 27218340 | - | 521 | 0 | 94 | 681 | |
| 33397 | 33497 | - | 12 | 18074 | 18238 | + | 101 | 0 | 100 | 101 | |
| 5608 | 5709 | - | 12 | 18074 | 18238 | + | 98 | 0 | 99 | 102 | |
| 549 | 651 | - | 12 | 163262 | 163483 | + | 103 | 1.30E-48 | 100 | 103 | |
| 1274 | 1382 | - | 12 | 163701 | 163807 | + | 105 | 0 | 99 | 109 | |
| 24860 | 24969 | + | 12 | 192584 | 192688 | - | 106 | 0 | 99 | 110 | |
| 13301 | 13411 | + | 12 | 2800596 | 2800718 | - | 103 | 0 | 98 | 111 | |
| 35224 | 35335 | + | 12 | 4566461 | 4566587 | - | 108 | 2.30E-227 | 99 | 112 | |
| 2459 | 2574 | - | 12 | 4566461 | 4566587 | - | 112 | 0 | 99 | 116 | |
| 6938 | 7054 | + | 12 | 4566588 | 4566711 | - | 117 | 0 | 100 | 117 | |



| Mitochondria | | | | | | | | Stats | | |
|--------------|-------|-----|------|---------|---------|-----|-------|-----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 18923 | 19038 | + | 12 | 4566712 | 4566873 | - | 97 | 6.70E-82 | 96 | 117 |
| 18923 | 19038 | - | 12 | 4566873 | 4566993 | - | 97 | 6.10E-51 | 96 | 117 |
| 18923 | 19038 | - | 12 | 4676025 | 4676135 | - | 97 | 0 | 96 | 117 |
| 20667 | 20784 | - | 12 | 4676197 | 4676353 | - | 114 | 0 | 99 | 118 |
| 31500 | 31626 | + | 12 | 4676552 | 4676755 | - | 123 | 0 | 99 | 127 |
| 12416 | 12542 | + | 12 | 4676552 | 4676755 | - | 119 | 1.60E-55 | 98 | 127 |
| 30574 | 30701 | - | 12 | 4676756 | 4676876 | - | 105 | 4.40E-45 | 95 | 129 |
| 13009 | 13138 | - | 12 | 4676877 | 4676996 | - | 126 | 0 | 99 | 130 |
| 7413 | 7543 | - | 12 | 4677063 | 4677169 | - | 127 | 0 | 99 | 131 |
| 5862 | 5996 | + | 12 | 4677360 | 4677501 | - | 135 | 3.50E-226 | 100 | 135 |
| 34526 | 34664 | + | 12 | 4677360 | 4677497 | - | 135 | 9.10E-280 | 99 | 139 |
| 30524 | 30662 | + | 12 | 4677544 | 4677698 | - | 103 | 1.80E-59 | 94 | 139 |
| 33424 | 33563 | - | 12 | 4677544 | 4677698 | - | 136 | 2.60E-149 | 99 | 140 |
| 1118 | 1259 | + | 12 | 4677852 | 4678109 | - | 142 | 7.60E-146 | 100 | 142 |
| 5229 | 5371 | + | 12 | 4678178 | 4678415 | - | 140 | 6.00E-281 | 99 | 144 |
| 12542 | 12688 | - | 12 | 4678178 | 4678415 | - | 143 | 0 | 99 | 147 |
| 35155 | 35304 | + | 12 | 4678416 | 4678593 | - | 118 | 1.70E-86 | 95 | 150 |
| 5698 | 5848 | - | 12 | 4678711 | 4678855 | - | 151 | 0 | 100 | 151 |
| 27905 | 28055 | - | 12 | 4678854 | 4678962 | - | 139 | 0 | 98 | 151 |
| 921 | 1075 | + | 12 | 4679200 | 4679301 | - | 151 | 7.60E-146 | 99 | 155 |
| 13577 | 13732 | + | 12 | 4679301 | 4679436 | - | 156 | 9.00E-279 | 100 | 156 |
| 468 | 625 | - | 12 | 4751402 | 4751537 | - | 158 | 0 | 100 | 158 |
| 31339 | 31499 | - | 12 | 5607904 | 5608114 | - | 157 | 0 | 99 | 161 |
| 10091 | 10258 | + | 12 | 5607904 | 5608114 | - | 168 | 0 | 100 | 168 |
| 32426 | 32594 | + | 12 | 5608120 | 5608247 | - | 145 | 0 | 96 | 169 |
| 29592 | 29768 | - | 12 | 5608120 | 5608247 | - | 173 | 0 | 99 | 177 |
| 9468 | 9645 | - | 12 | 5609615 | 5609874 | - | 170 | 0 | 99 | 178 |
| 142 | 331 | + | 12 | 5609615 | 5609874 | - | 186 | 0 | 99 | 190 |
| 5783 | 5979 | - | 12 | 5609882 | 5610375 | - | 197 | 0 | 100 | 197 |
| 7334 | 7541 | + | 12 | 5609882 | 5610375 | - | 208 | 6.00E-281 | 100 | 208 |
| 6582 | 6790 | + | 12 | 5610388 | 5611675 | - | 205 | 0 | 100 | 209 |
| 6079 | 6287 | + | 12 | 5610388 | 5610943 | - | 165 | 4.80E-80 | 95 | 209 |
| 16913 | 17131 | + | 12 | 5610944 | 5611675 | - | 211 | 9.10E-280 | 99 | 219 |
| 1560 | 1784 | + | 12 | 5611680 | 5611915 | - | 166 | 0 | 93 | 226 |
| 7840 | 8073 | + | 12 | 5611680 | 5611915 | - | 230 | 0 | 100 | 234 |
| 27609 | 27844 | - | 12 | 5612186 | 5612336 | - | 208 | 0 | 97 | 236 |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|---------|---------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 34222 | 34459 | + | 12 | 5612186 | 5612336 | - | 230 | 2.30E-227 | 99 | 238 | |
| 8718 | 8960 | - | 12 | 5612445 | 5612874 | - | 235 | 0 | 99 | 243 | |
| 2154 | 2413 | + | 12 | 5612451 | 5612874 | - | 201 | 0 | 94 | 261 | |
| 25585 | 25838 | - | 12 | 5613046 | 5614572 | - | 185 | 0 | 93 | 261 | |
| 25585 | 25838 | - | 12 | 5613046 | 5614572 | - | 181 | 0 | 92 | 261 | |
| 2356 | 2617 | - | 12 | 5633225 | 5633370 | - | 258 | 0 | 100 | 262 | |
| 39928 | 40203 | - | 12 | 5633225 | 5633370 | - | 272 | 0 | 100 | 276 | |
| 2757 | 3052 | + | 12 | 5633988 | 5634091 | - | 292 | 0 | 100 | 296 | |
| 10284 | 10603 | - | 12 | 5633988 | 5634091 | - | 320 | 0 | 100 | 320 | |
| 18053 | 18382 | + | 12 | 5640469 | 5640618 | - | 326 | 0 | 100 | 330 | |
| 20448 | 20793 | + | 12 | 5640469 | 5640618 | - | 330 | 0 | 99 | 346 | |
| 1797 | 2146 | + | 12 | 5651340 | 5652048 | + | 247 | 0 | 93 | 351 | |
| 40090 | 40470 | - | 12 | 5656834 | 5657023 | + | 381 | 0 | 100 | 381 | |
| 25447 | 25852 | - | 12 | 5865190 | 5865298 | + | 394 | 0 | 99 | 406 | |
| 28159 | 28583 | - | 12 | 6209831 | 6209956 | - | 329 | 0 | 94 | 429 | |
| 29456 | 29926 | - | 12 | 6209831 | 6209956 | - | 463 | 0 | 100 | 471 | |
| 25834 | 26324 | - | 12 | 7595063 | 7595232 | + | 431 | 0 | 97 | 495 | |
| 25834 | 26324 | - | 12 | 7595063 | 7595232 | + | 423 | 0 | 96 | 495 | |
| 31289 | 31898 | - | 12 | 7595232 | 7595376 | + | 578 | 0 | 99 | 610 | |
| 31289 | 31898 | - | 12 | 8525680 | 8526008 | + | 578 | 0 | 99 | 610 | |
| 35847 | 36461 | - | 12 | 8525680 | 8526008 | + | 579 | 0 | 99 | 615 | |
| 6111 | 6733 | - | 12 | 8526021 | 8526979 | + | 619 | 0 | 100 | 623 | |
| 6728 | 7395 | - | 12 | 8526021 | 8526978 | + | 660 | 0 | 100 | 668 | |
| 26328 | 27080 | - | 12 | 8527115 | 8528408 | + | 701 | 0 | 98 | 753 | |
| 18391 | 19208 | + | 12 | 8527115 | 8528408 | + | 775 | 0 | 99 | 819 | |
| 31374 | 32416 | + | 12 | 8528524 | 8533263 | + | 961 | 0 | 98 | 1045 | |
| 19217 | 20438 | + | 12 | 8528524 | 8533263 | + | 1166 | 0 | 99 | 1222 | |
| 20448 | 21671 | + | 12 | 8536303 | 8536576 | + | 1148 | 0 | 98 | 1224 | |
| 6111 | 7395 | - | 12 | 8536577 | 8536762 | + | 1285 | 0 | 100 | 1285 | |
| 26328 | 27611 | - | 12 | 8536771 | 8538186 | + | 1179 | 0 | 98 | 1291 | |
| 28727 | 30249 | - | 12 | 8538189 | 8538536 | + | 1399 | 0 | 98 | 1527 | |
| 21686 | 23237 | + | 12 | 8538538 | 8538799 | + | 1477 | 0 | 99 | 1553 | |
| 22103 | 26839 | - | 12 | 8538964 | 8539204 | + | 4469 | 0 | 99 | 4745 | |
| 100135 | 100237 | - | 12 | 8539230 | 8539559 | + | 98 | 0 | 99 | 102 | |
| 95076 | 95179 | - | 12 | 8539230 | 8539559 | + | 103 | 2.40E-178 | 100 | 103 | |
| 93302 | 93405 | + | 12 | 8539568 | 8540385 | + | 99 | 1.20E-262 | 99 | 103 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 91079 | 91184 | - | 12 | 8539568 | 8540385 | + | 93 | 0 | 97 | 105 | |
| 95801 | 95910 | - | 12 | 8540099 | 8540215 | + | 105 | 0 | 99 | 109 | |
| 81090 | 81199 | - | 12 | 8540402 | 8541622 | + | 105 | 0 | 99 | 109 | |
| 119387 | 119497 | + | 12 | 8540402 | 8541622 | + | 106 | 0 | 99 | 110 | |
| 107828 | 107939 | + | 12 | 8541635 | 8542857 | + | 103 | 0 | 98 | 111 | |
| 91036 | 91148 | + | 12 | 8541635 | 8542857 | + | 112 | 1.0e-314 | 100 | 112 | |
| 92467 | 92579 | - | 12 | 8542873 | 8544422 | + | 108 | 0 | 99 | 112 | |
| 96986 | 97102 | - | 12 | 8542873 | 8544422 | + | 112 | 0 | 99 | 116 | |
| 101465 | 101582 | + | 12 | 8544452 | 8544663 | + | 117 | 1.0e-313 | 100 | 117 | |
| 113450 | 113566 | + | 12 | 8544659 | 8546207 | + | 97 | 0 | 96 | 117 | |
| 113450 | 113566 | - | 12 | 8546270 | 8547026 | + | 97 | 4.30E-50 | 96 | 117 | |
| 113450 | 113566 | - | 12 | 8547036 | 8547252 | + | 97 | 2.10E-146 | 96 | 117 | |
| 115194 | 115312 | - | 12 | 8547798 | 8547941 | + | 114 | 0 | 99 | 118 | |
| 81411 | 81532 | - | 12 | 8547798 | 8547941 | + | 117 | 0 | 99 | 121 | |
| 106943 | 107070 | + | 12 | 8553845 | 8555601 | + | 119 | 2.40E-54 | 98 | 127 | |
| 107536 | 107666 | - | 12 | 8553845 | 8555847 | + | 126 | 2.40E-205 | 99 | 130 | |
| 93649 | 93779 | - | 12 | 8555294 | 8555511 | + | 126 | 0 | 99 | 130 | |
| 111908 | 112038 | + | 12 | 8555874 | 8556002 | + | 114 | 6.30E-53 | 97 | 130 | |
| 101940 | 102071 | - | 12 | 8555874 | 8556002 | + | 127 | 0 | 99 | 131 | |
| 100389 | 100524 | + | 12 | 8556008 | 8557884 | + | 135 | 1.10E-225 | 100 | 135 | |
| 95649 | 95787 | + | 12 | 8557143 | 8557884 | + | 138 | 6.90E-143 | 100 | 138 | |
| 89177 | 89317 | - | 12 | 8557143 | 8557884 | + | 132 | 0 | 99 | 140 | |
| 94261 | 94404 | - | 12 | 8557893 | 8558444 | + | 143 | 0 | 100 | 143 | |
| 90508 | 90651 | + | 12 | 8557893 | 8558444 | + | 123 | 4.40E-55 | 97 | 143 | |
| 99756 | 99899 | + | 12 | 8557893 | 8558444 | + | 140 | 1.0e-314 | 99 | 144 | |
| 107069 | 107216 | - | 12 | 8558487 | 8559333 | + | 143 | 0 | 99 | 147 | |
| 91504 | 91654 | - | 12 | 8559333 | 8559913 | + | 142 | 0 | 99 | 150 | |
| 100225 | 100376 | - | 12 | 8560014 | 8560486 | + | 151 | 0 | 100 | 151 | |
| 95448 | 95603 | + | 12 | 8690546 | 8690687 | - | 151 | 6.90E-143 | 99 | 155 | |
| 108104 | 108260 | + | 12 | 8690546 | 8690687 | - | 156 | 9.60E-250 | 100 | 156 | |
| 94995 | 95153 | - | 12 | 8738516 | 8738809 | - | 158 | 0 | 100 | 158 | |
| 104618 | 104786 | + | 12 | 9361394 | 9361502 | - | 168 | 0 | 100 | 168 | |
| 87258 | 87429 | - | 12 | 11282869 | 11282998 | - | 151 | 0 | 97 | 171 | |
| 103995 | 104173 | - | 12 | 11282869 | 11282998 | - | 170 | 2.10E-146 | 99 | 178 | |
| 94669 | 94859 | + | 12 | 11283209 | 11283465 | - | 186 | 1.0e-313 | 99 | 190 | |
| 81800 | 81991 | + | 12 | 11283209 | 11283465 | - | 171 | 1.10E-128 | 97 | 191 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 100310 | 100507 | - | 12 | 11283528 | 11283653 | - | 197 | 0 | 100 | 197 | |
| 101861 | 102069 | + | 12 | 11283528 | 11283653 | - | 208 | 1.0e-314 | 100 | 208 | |
| 101109 | 101318 | + | 12 | 11283654 | 11284885 | - | 205 | 0 | 100 | 209 | |
| 100606 | 100815 | + | 12 | 11283654 | 11284885 | - | 165 | 4.90E-80 | 95 | 209 | |
| 111440 | 111659 | + | 12 | 11283966 | 11284921 | - | 211 | 1.40E-243 | 99 | 219 | |
| 96087 | 96312 | + | 12 | 11283966 | 11284921 | - | 166 | 0 | 93 | 226 | |
| 102367 | 102601 | + | 12 | 11284927 | 11285054 | - | 230 | 1.0e-313 | 100 | 234 | |
| 103245 | 103488 | - | 12 | 11284927 | 11285054 | - | 235 | 0 | 99 | 243 | |
| 86009 | 86265 | + | 12 | 11286421 | 11286680 | - | 240 | 9.00E-173 | 98 | 256 | |
| 96681 | 96941 | + | 12 | 11286421 | 11286680 | - | 201 | 0 | 94 | 261 | |
| 120112 | 120366 | - | 12 | 11286688 | 11287181 | - | 185 | 0 | 93 | 261 | |
| 120112 | 120366 | - | 12 | 11286688 | 11287181 | - | 181 | 0 | 92 | 261 | |
| 96883 | 97145 | - | 12 | 11287194 | 11287946 | - | 258 | 0 | 100 | 262 | |
| 97284 | 97580 | + | 12 | 11287194 | 11287749 | - | 292 | 0 | 100 | 296 | |
| 84582 | 84881 | - | 12 | 11287750 | 11287946 | - | 291 | 0 | 99 | 299 | |
| 89392 | 89709 | - | 12 | 11411920 | 11412088 | - | 305 | 0 | 99 | 317 | |
| 104811 | 105131 | - | 12 | 11411920 | 11412088 | - | 320 | 0 | 100 | 320 | |
| 112580 | 112910 | + | 12 | 11412098 | 11413142 | - | 326 | 0 | 100 | 330 | |
| 114975 | 115321 | + | 12 | 11412098 | 11413142 | - | 330 | 0 | 99 | 346 | |
| 96324 | 96674 | + | 12 | 12373622 | 12373829 | + | 247 | 0 | 93 | 351 | |
| 119974 | 120380 | - | 12 | 13049922 | 13050133 | + | 394 | 0 | 99 | 406 | |
| 120361 | 120852 | - | 12 | 13050174 | 13050278 | + | 431 | 0 | 97 | 495 | |
| 120361 | 120852 | - | 12 | 13050279 | 13050447 | + | 423 | 0 | 96 | 495 | |
| 120855 | 121411 | - | 12 | 13050279 | 13050447 | + | 532 | 0 | 99 | 556 | |
| 120855 | 121411 | - | 12 | 13050856 | 13050986 | + | 524 | 0 | 99 | 556 | |
| 100638 | 101261 | - | 12 | 13050856 | 13051843 | + | 619 | 0 | 100 | 623 | |
| 101255 | 101923 | - | 12 | 13050856 | 13051843 | + | 660 | 0 | 100 | 668 | |
| 91504 | 92238 | + | 12 | 13051993 | 13052118 | + | 734 | 0 | 100 | 734 | |
| 112918 | 113736 | + | 12 | 13051993 | 13052118 | + | 775 | 0 | 99 | 819 | |
| 113744 | 114966 | + | 12 | 13321149 | 13321385 | - | 1166 | 0 | 99 | 1222 | |
| 114975 | 116199 | + | 12 | 13340686 | 13340907 | - | 1148 | 0 | 98 | 1224 | |
| 100638 | 101923 | - | 12 | 13340907 | 13341237 | - | 1285 | 0 | 100 | 1285 | |
| 90139 | 91490 | + | 12 | 13341239 | 13341372 | - | 1351 | 0 | 100 | 1351 | |
| 116213 | 117765 | + | 12 | 13341442 | 13341599 | - | 1477 | 0 | 99 | 1553 | |
| 80941 | 84070 | + | 12 | 13341599 | 13341713 | - | 3125 | 0 | 100 | 3129 | |
| 116630 | 121367 | - | 12 | 13341715 | 13341832 | - | 4469 | 0 | 99 | 4745 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|-------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 84080 | 90129 | + | 12 | 13342161 | 13342297 | - | 6029 | 0 | 100 | 6049 | |
| 78937 | 79038 | - | 12 | 13342161 | 13342297 | - | 101 | 1.50E-77 | 100 | 101 | |
| 47348 | 47450 | + | 12 | 13342548 | 13342680 | - | 102 | 2.10E-75 | 100 | 102 | |
| 47183 | 47287 | + | 12 | 13342681 | 13342785 | - | 104 | 0 | 100 | 104 | |
| 61570 | 61675 | + | 12 | 13342786 | 13342901 | - | 105 | 3.60E-74 | 100 | 105 | |
| 51359 | 51464 | + | 12 | 13342786 | 13342901 | - | 101 | 9.00E-69 | 99 | 105 | |
| 44485 | 44590 | - | 12 | 13342786 | 13342901 | - | 101 | 8.70E-175 | 99 | 105 | |
| 61026 | 61132 | + | 12 | 13343235 | 13343360 | - | 94 | 2.40E-81 | 97 | 106 | |
| 53377 | 53483 | + | 12 | 13343359 | 13343461 | - | 90 | 0 | 96 | 106 | |
| 53377 | 53483 | - | 12 | 13343359 | 13343461 | - | 90 | 1.20E-106 | 96 | 106 | |
| 53377 | 53483 | - | 12 | 13343460 | 13343709 | - | 86 | 3.10E-74 | 95 | 106 | |
| 53377 | 53483 | + | 12 | 13343995 | 13344174 | - | 86 | 0 | 95 | 106 | |
| 59939 | 60050 | + | 12 | 13344174 | 13344303 | - | 103 | 1.80E-201 | 98 | 111 | |
| 40907 | 41022 | - | 12 | 13344303 | 13344423 | - | 111 | 4.50E-306 | 99 | 115 | |
| 59192 | 59310 | - | 12 | 13344303 | 13344423 | - | 118 | 4.50E-306 | 100 | 118 | |
| 47357 | 47475 | - | 12 | 13344424 | 13344528 | - | 83 | 1.30E-34 | 92 | 119 | |
| 50022 | 50143 | - | 12 | 13344424 | 13344528 | - | 109 | 3.50E-52 | 98 | 121 | |
| 52696 | 52817 | + | 12 | 13344619 | 13344744 | - | 105 | 3.30E-48 | 97 | 121 | |
| 47393 | 47529 | + | 12 | 13344619 | 13344744 | - | 120 | 4.50E-86 | 97 | 136 | |
| 57911 | 58048 | + | 12 | 13344743 | 13344870 | - | 101 | 1.60E-84 | 93 | 137 | |
| 52751 | 52896 | - | 12 | 13344743 | 13344870 | - | 141 | 1.70E-163 | 99 | 145 | |
| 72609 | 72756 | - | 12 | 13344871 | 13345090 | - | 143 | 4.50E-306 | 99 | 147 | |
| 51448 | 51599 | - | 12 | 13344871 | 13345090 | - | 139 | 1.60E-66 | 98 | 151 | |
| 60051 | 60203 | - | 12 | 13345230 | 13345345 | - | 144 | 4.50E-306 | 99 | 152 | |
| 65732 | 65884 | - | 12 | 13345345 | 13345725 | - | 140 | 1.70E-163 | 98 | 152 | |
| 46869 | 47026 | + | 12 | 13345345 | 13345725 | - | 87 | 1.60E-37 | 88 | 163 | |
| 65584 | 65765 | + | 12 | 13345724 | 13345839 | - | 177 | 0 | 99 | 181 | |
| 72790 | 72975 | - | 12 | 13345724 | 13345839 | - | 175 | 8.70E-146 | 98 | 187 | |
| 72892 | 73102 | + | 12 | 13345840 | 13345943 | - | 196 | 0 | 98 | 212 | |
| 75427 | 75645 | + | 12 | 13345840 | 13345943 | - | 198 | 0 | 98 | 218 | |
| 72493 | 72735 | + | 12 | 13346025 | 13346254 | - | 238 | 0 | 100 | 242 | |
| 74728 | 74970 | - | 12 | 13346255 | 13346393 | - | 238 | 6.10E-155 | 100 | 242 | |
| 48136 | 48419 | + | 12 | 13346488 | 13346729 | - | 283 | 0 | 100 | 283 | |
| 66515 | 66801 | + | 12 | 13346731 | 13346872 | - | 258 | 7.30E-308 | 98 | 286 | |
| 76806 | 77144 | - | 12 | 13346971 | 13347161 | - | 284 | 2.90E-154 | 96 | 340 | |
| 65176 | 65576 | + | 12 | 13347162 | 13347300 | - | 396 | 0 | 100 | 400 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 51835 | 52334 | + | 12 | 13347162 | 13347300 | - | 495 | 0 | 100 | 499 | |
| 58256 | 58778 | + | 12 | 13347388 | 13347538 | - | 522 | 0 | 100 | 522 | |
| 58786 | 59310 | + | 12 | 13347576 | 13347684 | - | 512 | 0 | 99 | 524 | |
| 64582 | 65168 | + | 12 | 13347576 | 13347684 | - | 582 | 0 | 100 | 586 | |
| 72079 | 72768 | + | 12 | 13347685 | 13347823 | - | 689 | 0 | 100 | 689 | |
| 69069 | 69816 | + | 12 | 13347685 | 13347823 | - | 747 | 0 | 100 | 747 | |
| 74685 | 75442 | + | 12 | 13347824 | 13348435 | - | 729 | 0 | 99 | 757 | |
| 79884 | 80664 | + | 12 | 13347824 | 13348435 | - | 619 | 0 | 95 | 783 | |
| 69824 | 70647 | + | 12 | 13348433 | 13348639 | - | 823 | 0 | 100 | 823 | |
| 52375 | 53321 | + | 12 | 13348433 | 13348639 | - | 946 | 0 | 100 | 946 | |
| 79884 | 80941 | + | 12 | 13348654 | 13348779 | - | 1057 | 0 | 100 | 1057 | |
| 70660 | 72071 | + | 12 | 13348654 | 13348779 | - | 1407 | 0 | 100 | 1411 | |
| 73149 | 74698 | + | 12 | 13348842 | 13349098 | - | 1465 | 0 | 99 | 1549 | |
| 59318 | 61132 | + | 12 | 13348842 | 13349098 | - | 1747 | 0 | 99 | 1815 | |
| 78009 | 79869 | + | 12 | 13349496 | 13349637 | - | 1856 | 0 | 100 | 1860 | |
| 44743 | 47168 | + | 12 | 13349496 | 13349637 | - | 2287 | 0 | 99 | 2430 | |
| 65770 | 69056 | + | 12 | 13349638 | 13349737 | - | 3282 | 0 | 100 | 3286 | |
| 61140 | 64574 | + | 12 | 13349638 | 13349737 | - | 3406 | 0 | 100 | 3434 | |
| 40471 | 44743 | - | 12 | 13349738 | 13350085 | - | 4216 | 0 | 100 | 4280 | |
| 47295 | 51836 | + | 12 | 13350083 | 13350186 | - | 4514 | 0 | 100 | 4542 | |
| 53329 | 58248 | + | 12 | 13350267 | 13350376 | - | 4915 | 0 | 100 | 4919 | |
| 72786 | 78000 | + | 12 | 13350647 | 13350843 | - | 5182 | 0 | 100 | 5218 | |
| 488912 | 490521 | + | 12 | 13350842 | 13351052 | - | 1597 | 0 | 100 | 1609 | |
| 488912 | 490521 | + | 12 | 13350842 | 13351052 | - | 1593 | 0 | 100 | 1609 | |
| 465116 | 466411 | + | 12 | 13350842 | 13351052 | - | 1247 | 0 | 99 | 1295 | |
| 464073 | 465033 | + | 12 | 13351057 | 13351246 | - | 892 | 0 | 98 | 960 | |
| 471300 | 472042 | - | 12 | 13351415 | 13351599 | - | 742 | 0 | 100 | 742 | |
| 471300 | 472042 | + | 12 | 13351598 | 13351710 | - | 714 | 0 | 99 | 742 | |
| 488257 | 488904 | + | 12 | 13351598 | 13351710 | - | 600 | 0 | 98 | 652 | |
| 488257 | 488904 | + | 12 | 13351713 | 13352004 | - | 600 | 0 | 98 | 652 | |
| 472051 | 472604 | - | 12 | 13351713 | 13352004 | - | 549 | 0 | 100 | 553 | |
| 472051 | 472604 | + | 12 | 13352194 | 13352370 | - | 493 | 0 | 97 | 553 | |
| 459702 | 460105 | - | 12 | 13352194 | 13352370 | - | 331 | 3.20E-182 | 96 | 403 | |
| 454723 | 455118 | - | 12 | 13352432 | 13352691 | - | 375 | 1.20E-203 | 99 | 395 | |
| 485510 | 485891 | - | 12 | 13352687 | 13352823 | - | 369 | 0 | 99 | 381 | |
| 488150 | 488511 | - | 12 | 13352687 | 13352823 | - | 341 | 5.70E-239 | 99 | 361 | |

| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 446952 | 447312 | - | 12 | 13352928 | 13353183 | - | 348 | 0 | 99 | 360 | |
| 463735 | 464064 | + | 12 | 13353182 | 13353285 | - | 297 | 0 | 98 | 329 | |
| 480504 | 480813 | - | 12 | 13353284 | 13353397 | - | 301 | 0 | 99 | 309 | |
| 464182 | 464474 | + | 12 | 13353284 | 13353397 | - | 264 | 0 | 98 | 292 | |
| 483870 | 484079 | - | 12 | 13353398 | 13353540 | - | 205 | 0 | 100 | 209 | |
| 474629 | 474836 | - | 12 | 13353749 | 13353851 | - | 199 | 0 | 99 | 207 | |
| 459126 | 459328 | + | 12 | 13353851 | 13354088 | - | 188 | 2.50E-167 | 98 | 204 | |
| 488912 | 489115 | + | 12 | 13354088 | 13354227 | - | 191 | 4.90E-185 | 99 | 203 | |
| 484930 | 485129 | - | 12 | 13354227 | 13354359 | - | 199 | 0 | 100 | 199 | |
| 459270 | 459461 | + | 12 | 13354227 | 13354359 | - | 191 | 0 | 100 | 191 | |
| 466374 | 466556 | - | 12 | 13354235 | 13354359 | - | 182 | 0 | 100 | 182 | |
| 453965 | 454146 | + | 12 | 13354419 | 13354679 | - | 181 | 0 | 100 | 181 | |
| 472903 | 473073 | - | 12 | 13354419 | 13354679 | - | 162 | 6.10E-82 | 99 | 170 | |
| 460599 | 460768 | + | 12 | 13354967 | 13355096 | - | 169 | 4.90E-185 | 100 | 169 | |
| 448697 | 448866 | + | 12 | 13355145 | 13355286 | - | 165 | 1.70E-85 | 99 | 169 | |
| 463556 | 463725 | + | 12 | 13355145 | 13355286 | - | 165 | 1.20E-146 | 99 | 169 | |
| 487425 | 487590 | + | 12 | 13355287 | 13355418 | - | 145 | 1.40E-73 | 97 | 165 | |
| 485794 | 485956 | - | 12 | 13355416 | 13355545 | - | 154 | 0 | 99 | 162 | |
| 474015 | 474174 | - | 12 | 13355416 | 13355545 | - | 144 | 0 | 98 | 160 | |
| 464210 | 464356 | + | 12 | 13355591 | 13355696 | - | 45 | 5.50E-54 | 82 | 153 | |
| 449146 | 449290 | + | 12 | 13355698 | 13355847 | - | 89 | 1.20E-68 | 90 | 149 | |
| 451204 | 451351 | + | 12 | 13355698 | 13355847 | - | 139 | 1.40E-90 | 99 | 147 | |
| 453857 | 454002 | + | 12 | 13355848 | 13355982 | - | 141 | 2.50E-167 | 99 | 145 | |
| 450529 | 450672 | - | 12 | 13355848 | 13355982 | - | 136 | 0 | 99 | 144 | |
| 450188 | 450331 | + | 12 | 13355983 | 13356404 | - | 103 | 1.00E-50 | 93 | 143 | |
| 490163 | 490305 | - | 12 | 13356407 | 13356695 | - | 138 | 0 | 99 | 142 | |
| 459736 | 459877 | - | 12 | 13356826 | 13356939 | - | 133 | 0 | 99 | 141 | |
| 466183 | 466320 | - | 12 | 13357110 | 13357219 | - | 137 | 0 | 100 | 137 | |
| 472664 | 472797 | + | 12 | 13357110 | 13357219 | - | 133 | 5.50E-291 | 100 | 133 | |
| 462723 | 462851 | + | 12 | 13369525 | 13369626 | - | 100 | 1.40E-44 | 95 | 128 | |
| 461341 | 461466 | + | 12 | 13369628 | 13369893 | - | 103 | 1.90E-42 | 95 | 127 | |
| 486492 | 486618 | + | 12 | 13369894 | 13370177 | - | 126 | 1.20E-146 | 100 | 126 | |
| 477493 | 477617 | - | 12 | 13370176 | 13370521 | - | 120 | 0 | 99 | 124 | |
| 488652 | 488776 | + | 12 | 13370176 | 13370521 | - | 120 | 1.00E-139 | 99 | 124 | |
| 485922 | 486043 | - | 12 | 13370615 | 13370752 | - | 121 | 0 | 100 | 121 | |
| 486641 | 486754 | - | 12 | 13370842 | 13370962 | - | 105 | 0 | 98 | 113 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 446830 | 446941 | - | 12 | 13371089 | 13371285 | - | 103 | 0 | 98 | 111 | |
| 486197 | 486307 | - | 12 | 13371089 | 13371285 | - | 106 | 0 | 99 | 110 | |
| 459772 | 459881 | - | 12 | 13371501 | 13371691 | - | 109 | 0 | 100 | 109 | |
| 449021 | 449129 | + | 12 | 13371501 | 13371691 | - | 69 | 1.20E-68 | 91 | 109 | |
| 463485 | 463590 | + | 12 | 13371907 | 13372115 | - | 44 | 5.50E-54 | 85 | 108 | |
| 479797 | 479904 | + | 12 | 13371907 | 13372115 | - | 103 | 1.00E-139 | 99 | 107 | |
| 458494 | 458599 | - | 12 | 13372253 | 13372433 | - | 94 | 7.60E-120 | 97 | 106 | |
| 473563 | 473668 | - | 12 | 13372253 | 13372433 | - | 105 | 0 | 100 | 105 | |
| 451516 | 451619 | + | 12 | 13372504 | 13372864 | - | 103 | 4.10E-45 | 100 | 103 | |
| 416243 | 416343 | - | 12 | 13373052 | 13373295 | - | 92 | 7.10E-247 | 98 | 100 | |
| 434960 | 435064 | - | 12 | 13373298 | 13373505 | - | 104 | 0 | 100 | 104 | |
| 410566 | 410670 | - | 12 | 13373298 | 13373505 | - | 96 | 3.90E-247 | 98 | 104 | |
| 408611 | 408716 | + | 12 | 13373504 | 13373627 | - | 101 | 0 | 99 | 105 | |
| 408677 | 408783 | - | 12 | 13373688 | 13373874 | - | 106 | 8.90E-114 | 100 | 106 | |
| 420769 | 420876 | - | 12 | 13373874 | 13373982 | - | 87 | 1.10E-145 | 95 | 107 | |
| 414406 | 414516 | + | 12 | 13374067 | 13374169 | - | 110 | 0 | 100 | 110 | |
| 412503 | 412614 | - | 12 | 13374170 | 13374308 | - | 111 | 0 | 100 | 111 | |
| 421064 | 421175 | + | 12 | 13374317 | 13374567 | - | 111 | 0 | 100 | 111 | |
| 437128 | 437242 | - | 12 | 13374664 | 13374838 | - | 106 | 0 | 98 | 114 | |
| 411412 | 411528 | + | 12 | 13374840 | 13375081 | - | 112 | 8.50E-256 | 99 | 116 | |
| 405573 | 405690 | + | 12 | 13375184 | 13375313 | - | 113 | 0 | 99 | 117 | |
| 433872 | 433991 | + | 12 | 13375309 | 13375423 | - | 99 | 1.80E-106 | 96 | 119 | |
| 433872 | 433991 | - | 12 | 13375309 | 13375423 | - | 99 | 6.20E-146 | 96 | 119 | |
| 433872 | 433991 | - | 12 | 13375512 | 13375635 | - | 95 | 3.10E-305 | 95 | 119 | |
| 413783 | 413904 | + | 12 | 13375512 | 13375635 | - | 113 | 0 | 98 | 121 | |
| 411707 | 411829 | - | 12 | 13375827 | 13376007 | - | 118 | 0 | 99 | 122 | |
| 441141 | 441265 | + | 12 | 13376092 | 13376235 | - | 120 | 0 | 99 | 124 | |
| 429536 | 429662 | - | 12 | 13376092 | 13376235 | - | 126 | 0 | 100 | 126 | |
| 440892 | 441018 | + | 12 | 13376240 | 13376353 | - | 102 | 0 | 95 | 126 | |
| 440892 | 441018 | - | 12 | 13376438 | 13376544 | - | 98 | 0 | 94 | 126 | |
| 442305 | 442427 | - | 12 | 13376438 | 13376544 | - | 81 | 1.80E-128 | 91 | 129 | |
| 442305 | 442427 | - | 12 | 13376623 | 13376918 | - | 77 | 0 | 90 | 129 | |
| 410568 | 410698 | + | 12 | 13376623 | 13376918 | - | 130 | 0 | 100 | 130 | |
| 440107 | 440237 | - | 12 | 13376919 | 13377064 | - | 90 | 0 | 92 | 130 | |
| 409281 | 409410 | - | 12 | 13377065 | 13377216 | - | 123 | 1.10E-55 | 98 | 131 | |
| 405313 | 405446 | + | 12 | 13377450 | 13377560 | - | 130 | 0 | 99 | 134 | |

| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 428872 | 429009 | - | 12 | 13377559 | 13377685 | - | 129 | 0 | 99 | 137 | |
| 414800 | 414937 | + | 12 | 13377783 | 13377940 | - | 125 | 0 | 98 | 137 | |
| 416782 | 416920 | + | 12 | 13378015 | 13378127 | - | 136 | 0 | 99 | 138 | |
| 424999 | 425138 | - | 12 | 13378131 | 13378239 | - | 139 | 1.10E-274 | 100 | 139 | |
| 428587 | 428729 | - | 12 | 13378131 | 13378239 | - | 138 | 5.90E-150 | 99 | 142 | |
| 423936 | 424079 | - | 12 | 13378239 | 13378381 | - | 139 | 8.20E-161 | 99 | 143 | |
| 412481 | 412624 | - | 12 | 13378239 | 13378381 | - | 139 | 6.20E-146 | 99 | 143 | |
| 412481 | 412624 | + | 12 | 13378540 | 13378651 | - | 135 | 0 | 99 | 143 | |
| 415339 | 415489 | + | 12 | 13378540 | 13378651 | - | 130 | 0 | 97 | 150 | |
| 412420 | 412571 | + | 12 | 13378708 | 13378838 | - | 151 | 0 | 100 | 151 | |
| 423657 | 423809 | + | 12 | 13378708 | 13378838 | - | 140 | 0 | 98 | 152 | |
| 422854 | 423007 | + | 12 | 13378836 | 13378994 | - | 153 | 0 | 100 | 153 | |
| 411613 | 411768 | + | 12 | 13378836 | 13378994 | - | 143 | 1.40E-69 | 98 | 155 | |
| 441867 | 442023 | + | 12 | 13379059 | 13379176 | - | 152 | 2.60E-197 | 99 | 156 | |
| 440888 | 441043 | - | 12 | 13379187 | 13379469 | - | 129 | 8.50E-62 | 96 | 157 | |
| 413286 | 413450 | - | 12 | 13379694 | 13379814 | - | 156 | 0 | 99 | 164 | |
| 418196 | 418372 | + | 12 | 13379694 | 13379814 | - | 164 | 0 | 98 | 176 | |
| 411850 | 412043 | - | 12 | 13379987 | 13380097 | - | 185 | 0 | 99 | 193 | |
| 441229 | 441422 | + | 12 | 13380097 | 13380201 | - | 185 | 2.00E-244 | 99 | 193 | |
| 423949 | 424144 | - | 12 | 13380202 | 13380521 | - | 187 | 0 | 99 | 195 | |
| 433563 | 433765 | + | 12 | 13380202 | 13380521 | - | 202 | 0 | 100 | 202 | |
| 423696 | 423900 | + | 12 | 13380521 | 13380796 | - | 204 | 1.70E-108 | 100 | 204 | |
| 412078 | 412289 | + | 12 | 13380521 | 13380796 | - | 203 | 0 | 99 | 211 | |
| 442090 | 442306 | - | 12 | 13380797 | 13380927 | - | 172 | 1.80E-128 | 95 | 216 | |
| 442291 | 442511 | + | 12 | 13380927 | 13381235 | - | 220 | 0 | 100 | 220 | |
| 416625 | 416847 | + | 12 | 13380927 | 13381235 | - | 220 | 0 | 100 | 222 | |
| 420872 | 421094 | - | 12 | 13381543 | 13381664 | - | 206 | 1.10E-145 | 98 | 222 | |
| 426086 | 426324 | - | 12 | 13381664 | 13381815 | - | 238 | 1.30E-128 | 100 | 238 | |
| 406620 | 406862 | - | 12 | 13381959 | 13382264 | - | 199 | 1.80E-101 | 95 | 243 | |
| 440518 | 440774 | - | 12 | 13382265 | 13382369 | - | 206 | 0 | 95 | 258 | |
| 440518 | 440774 | + | 12 | 13382265 | 13382369 | - | 202 | 0 | 95 | 258 | |
| 443085 | 443346 | - | 12 | 13382625 | 13382827 | - | 253 | 0 | 99 | 261 | |
| 413091 | 413359 | + | 12 | 13382905 | 13383072 | - | 252 | 0 | 99 | 268 | |
| 411429 | 411704 | + | 12 | 13382905 | 13383072 | - | 255 | 0 | 98 | 275 | |
| 423885 | 424161 | - | 12 | 13383072 | 13383223 | - | 272 | 2.90E-239 | 100 | 276 | |
| 441780 | 442060 | + | 12 | 13383072 | 13383223 | - | 276 | 0 | 100 | 280 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 419772 | 420064 | + | 12 | 13383222 | 13383341 | - | 252 | 2.40E-134 | 97 | 292 | |
| 422461 | 422877 | - | 12 | 13383605 | 13383751 | - | 374 | 0 | 97 | 422 | |
| 442180 | 442602 | - | 12 | 13383937 | 13384083 | - | 299 | 3.00E-161 | 93 | 423 | |
| 421500 | 422461 | - | 12 | 13383937 | 13384083 | - | 957 | 0 | 100 | 961 | |
| 441345 | 442306 | - | 12 | 13384084 | 13384203 | - | 837 | 0 | 97 | 961 | |
| 430120 | 431205 | + | 12 | 13384204 | 13384467 | - | 1081 | 0 | 100 | 1085 | |
| 441028 | 442265 | - | 12 | 13384467 | 13384704 | - | 1054 | 0 | 96 | 1238 | |
| 414800 | 416263 | + | 12 | 13384467 | 13384704 | - | 1451 | 0 | 100 | 1463 | |
| 411337 | 412864 | + | 12 | 13384848 | 13384963 | - | 1515 | 0 | 100 | 1527 | |
| 412862 | 414792 | + | 12 | 13384967 | 13385122 | - | 1922 | 0 | 100 | 1930 | |
| 409281 | 411324 | + | 12 | 13384967 | 13385122 | - | 2039 | 0 | 100 | 2043 | |
| 416262 | 421494 | + | 12 | 13385122 | 13385397 | - | 5214 | 0 | 100 | 5232 | |
| 403017 | 403118 | + | 12 | 13385122 | 13385397 | - | 97 | 0 | 99 | 101 | |
| 370429 | 370532 | + | 12 | 13385489 | 13385605 | - | 103 | 1.00E-45 | 100 | 103 | |
| 402594 | 402697 | - | 12 | 13385606 | 13385777 | - | 99 | 4.30E-216 | 99 | 103 | |
| 393996 | 394102 | + | 12 | 13385854 | 13385964 | - | 106 | 1.20E-281 | 100 | 106 | |
| 396382 | 396488 | + | 12 | 13385854 | 13385964 | - | 102 | 2.80E-246 | 99 | 106 | |
| 377407 | 377512 | - | 12 | 13385971 | 13386073 | - | 94 | 1.20E-107 | 97 | 106 | |
| 382398 | 382503 | + | 12 | 13385971 | 13386073 | - | 44 | 3.60E-56 | 85 | 108 | |
| 378685 | 378794 | - | 12 | 13386163 | 13386273 | - | 109 | 4.10E-121 | 100 | 109 | |
| 367934 | 368042 | + | 12 | 13386163 | 13386273 | - | 69 | 3.90E-70 | 91 | 109 | |
| 365743 | 365854 | - | 12 | 13386282 | 13386641 | - | 103 | 0 | 98 | 111 | |
| 399391 | 399517 | - | 12 | 13386282 | 13386641 | - | 122 | 4.00E-303 | 99 | 126 | |
| 380254 | 380379 | + | 12 | 13386639 | 13386764 | - | 103 | 2.70E-45 | 95 | 127 | |
| 381636 | 381764 | + | 12 | 13386765 | 13387044 | - | 100 | 1.10E-44 | 95 | 128 | |
| 392151 | 392283 | + | 12 | 13386765 | 13387044 | - | 128 | 1.10E-261 | 99 | 132 | |
| 385096 | 385233 | - | 12 | 13387044 | 13387373 | - | 137 | 4.00E-303 | 100 | 137 | |
| 389249 | 389389 | - | 12 | 13387370 | 13387538 | - | 128 | 2.80E-58 | 98 | 140 | |
| 378649 | 378790 | - | 12 | 13387370 | 13387538 | - | 133 | 9.00E-238 | 99 | 141 | |
| 369101 | 369244 | + | 12 | 13387539 | 13387696 | - | 103 | 6.50E-51 | 93 | 143 | |
| 369442 | 369585 | - | 12 | 13387539 | 13387696 | - | 136 | 4.10E-121 | 99 | 144 | |
| 372770 | 372915 | + | 12 | 13387695 | 13387856 | - | 141 | 0 | 99 | 145 | |
| 370117 | 370264 | + | 12 | 13387695 | 13387856 | - | 139 | 1.20E-137 | 99 | 147 | |
| 368059 | 368203 | + | 12 | 13387929 | 13388133 | - | 89 | 3.90E-70 | 90 | 149 | |
| 383123 | 383269 | + | 12 | 13388212 | 13388364 | - | 45 | 3.60E-56 | 82 | 153 | |
| 395804 | 395966 | - | 12 | 13388212 | 13388364 | - | 154 | 3.10E-77 | 99 | 162 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 379512 | 379681 | + | 12 | 13388364 | 13388464 | - | 169 | 0 | 100 | 169 | |
| 367610 | 367779 | + | 12 | 13388464 | 13388584 | - | 165 | 1.50E-85 | 99 | 169 | |
| 382469 | 382638 | + | 12 | 13388853 | 13388992 | - | 165 | 3.70E-81 | 99 | 169 | |
| 393777 | 393955 | + | 12 | 13388853 | 13388992 | - | 166 | 0 | 98 | 178 | |
| 372878 | 373059 | + | 12 | 13388993 | 13389140 | - | 181 | 0 | 100 | 181 | |
| 401321 | 401502 | + | 12 | 13389141 | 13389272 | - | 161 | 3.90E-159 | 97 | 181 | |
| 385287 | 385469 | - | 12 | 13389273 | 13389419 | - | 182 | 0 | 100 | 182 | |
| 392620 | 392807 | + | 12 | 13389273 | 13389419 | - | 179 | 0 | 99 | 187 | |
| 378183 | 378374 | + | 12 | 13389608 | 13389869 | - | 191 | 0 | 100 | 191 | |
| 402791 | 402995 | - | 12 | 13389608 | 13389869 | - | 200 | 0 | 100 | 204 | |
| 378039 | 378241 | + | 12 | 13389869 | 13390124 | - | 188 | 0 | 98 | 204 | |
| 400578 | 400797 | - | 12 | 13390130 | 13390433 | - | 215 | 9.40E-226 | 100 | 219 | |
| 400578 | 400797 | + | 12 | 13390620 | 13390909 | - | 211 | 2.90E-153 | 99 | 219 | |
| 401717 | 401955 | - | 12 | 13390907 | 13391377 | - | 234 | 4.00E-303 | 100 | 238 | |
| 393419 | 393663 | + | 12 | 13390907 | 13391377 | - | 240 | 2.60E-210 | 100 | 244 | |
| 399754 | 400015 | - | 12 | 13391377 | 13391511 | - | 90 | 3.90E-47 | 83 | 266 | |
| 400686 | 400973 | + | 12 | 13391510 | 13391645 | - | 287 | 0 | 100 | 287 | |
| 383095 | 383387 | + | 12 | 13391661 | 13391810 | - | 264 | 0 | 98 | 292 | |
| 382648 | 382977 | + | 12 | 13391812 | 13391912 | - | 297 | 0 | 98 | 329 | |
| 365865 | 366225 | - | 12 | 13392100 | 13392292 | - | 348 | 0 | 99 | 360 | |
| 373636 | 374031 | - | 12 | 13392100 | 13392292 | - | 375 | 2.70E-203 | 99 | 395 | |
| 378615 | 379018 | - | 12 | 13392100 | 13392292 | - | 331 | 2.00E-181 | 96 | 403 | |
| 395692 | 396401 | + | 12 | 13392293 | 13392500 | - | 657 | 0 | 98 | 709 | |
| 382986 | 383945 | + | 12 | 13392293 | 13392500 | - | 891 | 0 | 98 | 959 | |
| 384029 | 385324 | + | 12 | 13392670 | 13392772 | - | 1247 | 0 | 99 | 1295 | |
| 353873 | 353977 | - | 12 | 13392773 | 13392883 | - | 104 | 0 | 100 | 104 | |
| 323782 | 323892 | + | 12 | 13392885 | 13393098 | - | 102 | 0 | 98 | 110 | |
| 334897 | 335008 | + | 12 | 13393182 | 13393284 | - | 107 | 0 | 99 | 111 | |
| 356041 | 356155 | - | 12 | 13393385 | 13393528 | - | 106 | 0 | 98 | 114 | |
| 352785 | 352904 | - | 12 | 13393385 | 13393528 | - | 99 | 2.70E-42 | 96 | 119 | |
| 352785 | 352904 | - | 12 | 13393528 | 13393699 | - | 99 | 5.70E-68 | 96 | 119 | |
| 352785 | 352904 | + | 12 | 13393699 | 13393822 | - | 99 | 1.00E-71 | 96 | 119 | |
| 352785 | 352904 | - | 12 | 13393699 | 13393822 | - | 95 | 2.30E-184 | 95 | 119 | |
| 360054 | 360178 | + | 12 | 13393822 | 13393985 | - | 120 | 0 | 99 | 124 | |
| 362827 | 362950 | - | 12 | 13393822 | 13393985 | - | 112 | 2.80E-48 | 98 | 124 | |
| 348449 | 348575 | - | 12 | 13393987 | 13394113 | - | 126 | 0 | 100 | 126 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 359805 | 359931 | + | 12 | 13393987 | 13394113 | - | 102 | 0 | 95 | 126 | |
| 359805 | 359931 | - | 12 | 13394113 | 13394399 | - | 98 | 0 | 94 | 126 | |
| 339815 | 339942 | - | 12 | 13394289 | 13394399 | - | 123 | 2.60E-275 | 99 | 127 | |
| 361218 | 361340 | - | 12 | 13394289 | 13394399 | - | 81 | 6.30E-129 | 91 | 129 | |
| 361218 | 361340 | - | 12 | 13394550 | 13394671 | - | 77 | 0 | 90 | 129 | |
| 325857 | 325987 | + | 12 | 13394550 | 13394671 | - | 118 | 0 | 98 | 130 | |
| 359020 | 359150 | - | 12 | 13394550 | 13394671 | - | 90 | 0 | 92 | 130 | |
| 324119 | 324249 | + | 12 | 13394930 | 13395163 | - | 127 | 0 | 99 | 131 | |
| 338138 | 338272 | - | 12 | 13394930 | 13395163 | - | 130 | 0 | 99 | 134 | |
| 347785 | 347922 | - | 12 | 13395162 | 13395295 | - | 129 | 3.30E-279 | 99 | 137 | |
| 343912 | 344051 | - | 12 | 13395291 | 13395586 | - | 139 | 0 | 100 | 139 | |
| 347500 | 347642 | - | 12 | 13395586 | 13395698 | - | 138 | 1.90E-205 | 99 | 142 | |
| 342849 | 342992 | - | 12 | 13395699 | 13395810 | - | 139 | 1.40E-196 | 99 | 143 | |
| 342570 | 342722 | + | 12 | 13395811 | 13396023 | - | 140 | 0 | 98 | 152 | |
| 341767 | 341920 | + | 12 | 13396022 | 13396231 | - | 153 | 0 | 100 | 153 | |
| 360780 | 360936 | + | 12 | 13396031 | 13396173 | - | 152 | 2.60E-197 | 99 | 156 | |
| 359801 | 359956 | - | 12 | 13396031 | 13396173 | - | 129 | 2.50E-59 | 96 | 157 | |
| 363976 | 364141 | + | 12 | 13396031 | 13396173 | - | 161 | 2.90E-81 | 99 | 165 | |
| 331041 | 331231 | + | 12 | 13396420 | 13396533 | - | 186 | 0 | 99 | 190 | |
| 360142 | 360335 | + | 12 | 13396608 | 13396724 | - | 185 | 8.40E-248 | 99 | 193 | |
| 342862 | 343057 | - | 12 | 13396608 | 13396724 | - | 187 | 3.30E-279 | 99 | 195 | |
| 329900 | 330091 | - | 12 | 13396815 | 13397113 | - | 92 | 1.40E-70 | 87 | 196 | |
| 352476 | 352678 | + | 12 | 13398270 | 13398381 | - | 202 | 0 | 100 | 202 | |
| 342609 | 342813 | + | 12 | 13398384 | 13398501 | - | 204 | 5.90E-105 | 100 | 204 | |
| 330369 | 330583 | - | 12 | 13398384 | 13398501 | - | 210 | 3.30E-279 | 100 | 214 | |
| 361003 | 361219 | - | 12 | 13398564 | 13398969 | - | 172 | 6.30E-129 | 95 | 216 | |
| 331616 | 331835 | - | 12 | 13398564 | 13398969 | - | 199 | 1.90E-101 | 98 | 219 | |
| 361204 | 361424 | + | 12 | 13399046 | 13399318 | - | 220 | 0 | 100 | 220 | |
| 328375 | 328609 | + | 12 | 13399410 | 13399531 | - | 230 | 0 | 100 | 234 | |
| 344999 | 345237 | - | 12 | 13399532 | 13399640 | - | 238 | 4.70E-129 | 100 | 238 | |
| 359431 | 359687 | - | 12 | 13399734 | 13399877 | - | 206 | 0 | 95 | 258 | |
| 359431 | 359687 | + | 12 | 13399908 | 13400063 | - | 202 | 0 | 95 | 258 | |
| 361998 | 362259 | - | 12 | 13399908 | 13400063 | - | 253 | 0 | 99 | 261 | |
| 342798 | 343074 | - | 12 | 13400330 | 13400438 | - | 272 | 2.60E-275 | 100 | 276 | |
| 360693 | 360973 | + | 12 | 13400432 | 13400576 | - | 276 | 0 | 100 | 280 | |
| 327246 | 327660 | + | 12 | 13400432 | 13400576 | - | 410 | 0 | 100 | 414 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 341374 | 341790 | - | 12 | 13400576 | 13400699 | - | 374 | 0 | 97 | 422 | |
| 361093 | 361515 | - | 12 | 13400576 | 13400699 | - | 299 | 6.20E-163 | 93 | 423 | |
| 337644 | 338361 | - | 12 | 13400700 | 13400886 | - | 717 | 0 | 100 | 717 | |
| 360258 | 361219 | - | 12 | 13400976 | 13401262 | - | 837 | 0 | 97 | 961 | |
| 340349 | 341374 | - | 12 | 13401265 | 13401408 | - | 1021 | 0 | 100 | 1025 | |
| 349033 | 350118 | + | 12 | 13401408 | 13401585 | - | 1081 | 0 | 100 | 1085 | |
| 336511 | 337636 | - | 12 | 13401585 | 13401767 | - | 1105 | 0 | 100 | 1125 | |
| 359941 | 361178 | - | 12 | 13401767 | 13401905 | - | 1054 | 0 | 96 | 1238 | |
| 338399 | 340172 | - | 12 | 13401767 | 13401905 | - | 1769 | 0 | 100 | 1773 | |
| 313326 | 315416 | + | 12 | 13401915 | 13402016 | - | 2070 | 0 | 100 | 2090 | |
| 315425 | 317210 | + | 12 | 13402017 | 13402124 | - | 1766 | 0 | 100 | 1786 | |
| 283879 | 285342 | + | 12 | 13402126 | 13402269 | - | 1451 | 0 | 100 | 1463 | |
| 283291 | 283871 | + | 12 | 13402271 | 13402474 | - | 580 | 0 | 100 | 580 | |
| 289712 | 290227 | + | 12 | 13402271 | 13402474 | - | 445 | 2.80E-275 | 97 | 517 | |
| 294215 | 294665 | - | 12 | 13402563 | 13402707 | - | 446 | 7.50E-299 | 100 | 450 | |
| 317382 | 317745 | + | 12 | 13402706 | 13403123 | - | 363 | 0 | 100 | 363 | |
| 311938 | 312286 | + | 12 | 13403224 | 13403391 | - | 348 | 0 | 100 | 348 | |
| 299390 | 299720 | + | 12 | 13403395 | 13403567 | - | 303 | 0 | 98 | 331 | |
| 285632 | 285938 | - | 12 | 13403404 | 13403522 | - | 298 | 4.90E-280 | 99 | 306 | |
| 315127 | 315417 | - | 12 | 13403404 | 13403522 | - | 278 | 3.10E-273 | 99 | 290 | |
| 285341 | 285573 | + | 12 | 13403566 | 13403675 | - | 232 | 0 | 100 | 232 | |
| 291974 | 292204 | - | 12 | 13403826 | 13404398 | - | 230 | 0 | 100 | 230 | |
| 320548 | 320761 | - | 12 | 13404396 | 13404505 | - | 209 | 3.10E-273 | 100 | 213 | |
| 320491 | 320696 | - | 12 | 13404396 | 13404505 | - | 197 | 6.00E-114 | 99 | 205 | |
| 315992 | 316195 | + | 12 | 13404600 | 13404724 | - | 191 | 2.80E-99 | 99 | 203 | |
| 300659 | 300844 | + | 12 | 13404719 | 13404848 | - | 181 | 0 | 99 | 185 | |
| 289206 | 289384 | - | 12 | 13404719 | 13404848 | - | 170 | 1.20E-157 | 99 | 178 | |
| 317022 | 317194 | + | 12 | 13404719 | 13404848 | - | 156 | 9.70E-250 | 98 | 172 | |
| 317218 | 317388 | + | 12 | 13404851 | 13404951 | - | 170 | 0 | 100 | 170 | |
| 291594 | 291752 | - | 12 | 13404851 | 13404951 | - | 158 | 0 | 100 | 158 | |
| 302308 | 302465 | - | 12 | 13404950 | 13405060 | - | 149 | 6.50E-191 | 99 | 157 | |
| 284418 | 284568 | + | 12 | 13404950 | 13405060 | - | 130 | 0 | 97 | 150 | |
| 312435 | 312583 | + | 12 | 13404950 | 13405060 | - | 140 | 2.90E-240 | 99 | 148 | |
| 313754 | 313900 | - | 12 | 13404950 | 13405060 | - | 146 | 7.80E-199 | 100 | 146 | |
| 318229 | 318374 | - | 12 | 13405061 | 13405193 | - | 133 | 6.50E-191 | 98 | 145 | |
| 294583 | 294722 | - | 12 | 13405186 | 13405294 | - | 139 | 4.50E-90 | 100 | 139 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 294950 | 295089 | + | 12 | 13405577 | 13405795 | - | 131 | 5.30E-209 | 99 | 139 | |
| 283879 | 284016 | + | 12 | 13405577 | 13405795 | - | 125 | 0 | 98 | 137 | |
| 291111 | 291247 | - | 12 | 13406010 | 13406113 | - | 132 | 7.80E-199 | 99 | 136 | |
| 296857 | 296992 | - | 12 | 13406010 | 13406113 | - | 131 | 2.40E-194 | 99 | 135 | |
| 302810 | 302943 | + | 12 | 13406010 | 13406113 | - | 129 | 7.90E-215 | 99 | 133 | |
| 293185 | 293307 | + | 12 | 13406290 | 13406440 | - | 122 | 0 | 100 | 122 | |
| 301010 | 301131 | + | 12 | 13406290 | 13406440 | - | 121 | 2.50E-221 | 100 | 121 | |
| 300198 | 300315 | - | 12 | 13406290 | 13406440 | - | 113 | 0 | 99 | 117 | |
| 313324 | 313440 | - | 12 | 13406442 | 13406636 | - | 112 | 1.40E-205 | 99 | 116 | |
| 298148 | 298262 | - | 12 | 13406442 | 13406636 | - | 106 | 0 | 98 | 114 | |
| 306958 | 307070 | + | 12 | 13406637 | 13407050 | - | 112 | 9.70E-250 | 100 | 112 | |
| 283485 | 283595 | + | 12 | 13407050 | 13407324 | - | 110 | 0 | 100 | 110 | |
| 309054 | 309161 | + | 12 | 13407050 | 13407324 | - | 75 | 1.20E-67 | 93 | 107 | |
| 295616 | 295719 | + | 12 | 13407050 | 13407324 | - | 99 | 0 | 99 | 103 | |
| 285322 | 285422 | - | 12 | 13407325 | 13407558 | - | 92 | 4.90E-280 | 98 | 100 | |
| 242827 | 243081 | - | 12 | 13407559 | 13407740 | - | 242 | 1.20E-177 | 99 | 254 | |
| 242896 | 243000 | - | 12 | 13407559 | 13407740 | - | 104 | 0 | 100 | 104 | |
| 244648 | 244823 | + | 12 | 13407734 | 13407901 | - | 171 | 1.50E-272 | 99 | 175 | |
| 245413 | 245521 | - | 12 | 13408036 | 13408204 | - | 108 | 0 | 100 | 108 | |
| 247314 | 247618 | + | 12 | 13408204 | 13408315 | - | 284 | 5.40E-294 | 98 | 304 | |
| 247611 | 247867 | + | 12 | 13408481 | 13408656 | - | 256 | 5.40E-294 | 100 | 256 | |
| 248111 | 248375 | - | 12 | 13408787 | 13408931 | - | 256 | 3.30E-204 | 99 | 264 | |
| 249534 | 249654 | - | 12 | 13408787 | 13408931 | - | 120 | 1.00E-99 | 100 | 120 | |
| 249633 | 249753 | + | 12 | 13408930 | 13409108 | - | 120 | 0 | 100 | 120 | |
| 249633 | 249753 | + | 12 | 13409109 | 13409362 | - | 120 | 1.10E-64 | 100 | 120 | |
| 249633 | 249753 | - | 12 | 13409361 | 13409559 | - | 120 | 1.40E-98 | 100 | 120 | |
| 252205 | 252410 | - | 12 | 13409413 | 13409559 | - | 189 | 4.00E-96 | 98 | 205 | |
| 253165 | 253406 | - | 12 | 13409560 | 13409842 | - | 217 | 1.50E-116 | 98 | 241 | |
| 253423 | 253773 | + | 12 | 13409575 | 13409842 | - | 326 | 6.40E-180 | 98 | 350 | |
| 253649 | 253757 | + | 12 | 13409575 | 13409842 | - | 104 | 0 | 99 | 108 | |
| 253774 | 254036 | + | 12 | 13409842 | 13410038 | - | 242 | 5.50E-127 | 98 | 262 | |
| 254062 | 255483 | - | 12 | 13409842 | 13410038 | - | 1333 | 0 | 98 | 1421 | |
| 254627 | 255223 | - | 12 | 13410410 | 13410599 | - | 596 | 0 | 100 | 596 | |
| 254766 | 254946 | + | 12 | 13410410 | 13410599 | - | 176 | 1.50E-272 | 99 | 180 | |
| 255228 | 255483 | - | 12 | 13410740 | 13410897 | - | 255 | 0 | 100 | 255 | |
| 255491 | 255677 | - | 12 | 13411140 | 13411456 | - | 174 | 0 | 98 | 186 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 255491 | 256952 | - | 12 | 13411457 | 13411608 | - | 1445 | 0 | 100 | 1461 | |
| 255691 | 255965 | - | 12 | 13411607 | 13411808 | - | 258 | 0 | 99 | 274 | |
| 256952 | 257981 | - | 12 | 13411607 | 13411808 | - | 1025 | 0 | 100 | 1029 | |
| 257095 | 257389 | + | 12 | 13411898 | 13412011 | - | 247 | 3.80E-130 | 96 | 295 | |
| 258002 | 264139 | - | 12 | 13412230 | 13412390 | - | 6105 | 0 | 100 | 6137 | |
| 258477 | 258621 | + | 12 | 13412230 | 13412390 | - | 144 | 3.60E-233 | 100 | 144 | |
| 260911 | 261160 | + | 12 | 13412389 | 13412490 | - | 245 | 0 | 100 | 249 | |
| 261185 | 261582 | + | 12 | 13412389 | 13412490 | - | 365 | 0 | 98 | 397 | |
| 261434 | 261564 | + | 12 | 13412488 | 13412595 | - | 118 | 8.40E-237 | 98 | 130 | |
| 261438 | 261698 | - | 12 | 13412596 | 13412705 | - | 248 | 0 | 99 | 260 | |
| 262407 | 262980 | - | 12 | 13412596 | 13412705 | - | 537 | 0 | 98 | 573 | |
| 263028 | 263137 | - | 12 | 13412707 | 13412812 | - | 109 | 0 | 100 | 109 | |
| 264186 | 267680 | - | 12 | 13412811 | 13413013 | - | 3482 | 0 | 100 | 3494 | |
| 264524 | 264677 | - | 12 | 13412811 | 13413013 | - | 145 | 0 | 99 | 153 | |
| 265534 | 265648 | - | 12 | 13413171 | 13413339 | - | 114 | 1.20E-174 | 100 | 114 | |
| 267231 | 267345 | - | 12 | 13413171 | 13413339 | - | 106 | 0 | 98 | 114 | |
| 267688 | 268494 | - | 12 | 13413423 | 13413626 | - | 806 | 0 | 100 | 806 | |
| 267825 | 267946 | + | 12 | 13413627 | 13413761 | - | 117 | 1.10E-57 | 99 | 121 | |
| 268126 | 268244 | + | 12 | 13413627 | 13413761 | - | 118 | 1.30E-241 | 100 | 118 | |
| 268508 | 271851 | - | 12 | 13414167 | 13414272 | - | 3319 | 0 | 100 | 3343 | |
| 268961 | 269171 | + | 12 | 13417526 | 13417676 | - | 206 | 3.60E-233 | 100 | 210 | |
| 269019 | 269162 | + | 12 | 13417526 | 13417676 | - | 139 | 0 | 99 | 143 | |
| 269041 | 269152 | - | 12 | 13417676 | 13417917 | - | 111 | 0 | 100 | 111 | |
| 269694 | 269808 | - | 12 | 13417676 | 13417917 | - | 110 | 0 | 99 | 114 | |
| 270716 | 270825 | + | 12 | 13417952 | 13418144 | - | 109 | 1.20E-53 | 100 | 109 | |
| 271390 | 271627 | - | 12 | 13417952 | 13418144 | - | 229 | 0 | 99 | 237 | |
| 271562 | 271851 | - | 12 | 13418145 | 13418290 | - | 281 | 0 | 99 | 289 | |
| 271650 | 271769 | - | 12 | 13418291 | 13418395 | - | 104 | 2.70E-236 | 97 | 120 | |
| 271901 | 273654 | - | 12 | 14772191 | 14772330 | - | 1745 | 0 | 100 | 1753 | |
| 273283 | 273549 | - | 12 | 14981041 | 14981205 | - | 262 | 0 | 100 | 266 | |
| 273645 | 275407 | - | 12 | 16610892 | 16611501 | - | 1642 | 0 | 98 | 1762 | |
| 273645 | 277757 | + | 12 | 16610892 | 16611501 | - | 4084 | 0 | 100 | 4112 | |
| 273735 | 273845 | - | 12 | 16631522 | 16632131 | - | 107 | 1.10E-246 | 99 | 111 | |
| 274752 | 274902 | - | 12 | 16631522 | 16632131 | - | 150 | 1.00E-72 | 100 | 150 | |
| 274799 | 274944 | + | 12 | 17342067 | 17342327 | - | 137 | 4.80E-209 | 99 | 145 | |
| 274900 | 275028 | - | 12 | 17342067 | 17342327 | - | 120 | 0 | 98 | 128 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 275262 | 275407 | - | 12 | 17342327 | 17342676 | - | 133 | 0 | 98 | 145 | |
| 276966 | 277163 | - | 12 | 17342327 | 17342676 | - | 197 | 0 | 100 | 197 | |
| 277509 | 278495 | - | 12 | 17342677 | 17342902 | - | 948 | 0 | 99 | 988 | |
| 277758 | 280409 | + | 12 | 17342677 | 17342902 | - | 2639 | 0 | 100 | 2651 | |
| 279651 | 279755 | - | 12 | 17357534 | 17357660 | - | 92 | 0 | 97 | 104 | |
| 279653 | 279783 | + | 12 | 17357534 | 17357660 | - | 126 | 1.40E-202 | 99 | 130 | |
| 280422 | 281949 | + | 12 | 19160287 | 19160529 | + | 1515 | 0 | 100 | 1527 | |
| 280497 | 280613 | + | 12 | 19710616 | 19710772 | + | 112 | 1.50E-272 | 99 | 116 | |
| 280514 | 280789 | + | 12 | 19710616 | 19710772 | + | 255 | 0 | 98 | 275 | |
| 280698 | 280853 | + | 12 | 20419344 | 20419983 | - | 143 | 5.80E-98 | 98 | 155 | |
| 280792 | 280914 | - | 12 | 20419729 | 20419845 | - | 118 | 1.10E-246 | 99 | 122 | |
| 280935 | 281128 | - | 12 | 20419729 | 20419845 | - | 185 | 9.20E-263 | 99 | 193 | |
| 281163 | 281374 | + | 12 | 20419992 | 20420309 | - | 203 | 4.50E-251 | 99 | 211 | |
| 281505 | 281656 | + | 12 | 20420319 | 20421738 | - | 151 | 0 | 100 | 151 | |
| 281566 | 281709 | - | 12 | 20421747 | 20423045 | - | 139 | 0 | 99 | 143 | |
| 281566 | 281709 | + | 12 | 20423054 | 20423204 | - | 135 | 1.30E-307 | 99 | 143 | |
| 281588 | 281699 | - | 12 | 20423213 | 20426304 | - | 111 | 0 | 100 | 111 | |
| 281947 | 283297 | + | 12 | 20426421 | 20426857 | - | 1342 | 0 | 100 | 1350 | |
| 282176 | 282444 | + | 12 | 20426540 | 20426644 | - | 252 | 6.00E-230 | 99 | 268 | |
| 282371 | 282535 | - | 12 | 20426859 | 20427981 | - | 156 | 9.20E-263 | 99 | 164 | |
| 282868 | 282989 | + | 12 | 20427772 | 20427910 | - | 113 | 4.50E-251 | 98 | 121 | |
| 202351 | 203251 | + | 12 | 20427990 | 20428706 | - | 892 | 0 | 100 | 900 | |
| 202505 | 202946 | + | 12 | 20428744 | 20430515 | - | 283 | 0 | 100 | 287 | |
| 203012 | 203885 | - | 12 | 20430693 | 20431717 | - | 204 | 8.70E-105 | 99 | 212 | |
| 203140 | 204040 | + | 12 | 20430757 | 20431717 | - | 71 | 7.20E-47 | 91 | 111 | |
| 203260 | 205514 | + | 12 | 20431726 | 20432147 | - | 1345 | 0 | 100 | 1345 | |
| 204102 | 206214 | - | 12 | 20431726 | 20432147 | - | 353 | 0 | 99 | 361 | |
| 204127 | 206381 | - | 12 | 20436908 | 20437268 | - | 426 | 0 | 97 | 478 | |
| 204680 | 208378 | + | 12 | 20436908 | 20437268 | - | 1361 | 0 | 100 | 1369 | |
| 204734 | 207694 | - | 12 | 20437701 | 20438044 | - | 521 | 0 | 97 | 581 | |
| 205169 | 208103 | - | 12 | 20439143 | 20440227 | - | 104 | 1.50E-291 | 97 | 116 | |
| 205199 | 208894 | - | 12 | 20439143 | 20440227 | - | 748 | 0 | 97 | 848 | |
| 206042 | 209858 | - | 12 | 20440867 | 20441509 | - | 125 | 3.90E-289 | 100 | 125 | |
| 206227 | 210656 | + | 12 | 20441518 | 20441668 | - | 545 | 0 | 100 | 553 | |
| 206227 | 210656 | - | 12 | 20441677 | 20444768 | - | 489 | 0 | 97 | 553 | |
| 206789 | 213105 | - | 12 | 20444885 | 20448123 | - | 1762 | 0 | 98 | 1878 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 206789 | 212971 | + | 12 | 20445004 | 20445109 | - | 1720 | 0 | 100 | 1744 | |
| 212207 | 222209 | - | 12 | 20445603 | 20445745 | - | 138 | 0 | 99 | 146 | |
| 212838 | 223934 | + | 12 | 20447767 | 20447885 | - | 605 | 0 | 100 | 609 | |
| 213457 | 229731 | + | 12 | 20447767 | 20447885 | - | 5128 | 0 | 100 | 5168 | |
| 214267 | 228191 | - | 12 | 20448133 | 20449283 | - | 1880 | 0 | 98 | 2008 | |
| 214603 | 226965 | - | 12 | 20448487 | 20448606 | - | 107 | 0 | 99 | 111 | |
| 215620 | 229039 | - | 12 | 20449292 | 20453757 | - | 150 | 7.10E-71 | 100 | 150 | |
| 215667 | 229128 | + | 12 | 20453757 | 20454119 | - | 137 | 0 | 99 | 145 | |
| 215768 | 229313 | - | 12 | 20464840 | 20465009 | - | 120 | 3.50E-286 | 98 | 128 | |
| 216130 | 230054 | - | 12 | 20465018 | 20466803 | - | 133 | 0 | 98 | 145 | |
| 217834 | 233514 | - | 12 | 20466813 | 20468902 | - | 197 | 3.90E-289 | 100 | 197 | |
| 218377 | 235389 | - | 12 | 20468896 | 20469629 | - | 948 | 0 | 99 | 988 | |
| 218626 | 237552 | + | 12 | 20469644 | 20470994 | - | 2639 | 0 | 100 | 2651 | |
| 220519 | 238791 | - | 12 | 20470241 | 20470357 | - | 96 | 6.80E-188 | 98 | 104 | |
| 220521 | 238821 | + | 12 | 20471006 | 20477054 | - | 130 | 2.10E-292 | 100 | 130 | |
| 221290 | 241756 | + | 12 | 20477065 | 20480193 | - | 1515 | 0 | 100 | 1527 | |
| 221365 | 240495 | + | 12 | 20480194 | 20481250 | - | 112 | 0 | 99 | 116 | |
| 221382 | 240688 | + | 12 | 20481266 | 20483125 | - | 255 | 0 | 98 | 275 | |
| 221566 | 240936 | + | 12 | 20483135 | 20488352 | - | 143 | 4.90E-110 | 98 | 155 | |
| 221660 | 241091 | - | 12 | 20488371 | 20489059 | - | 118 | 0 | 99 | 122 | |
| 221803 | 241448 | - | 12 | 20489068 | 20490478 | - | 185 | 0 | 99 | 193 | |
| 222031 | 241922 | + | 12 | 20490492 | 20491314 | - | 203 | 0 | 99 | 211 | |
| 222373 | 242546 | + | 12 | 20491323 | 20492069 | - | 151 | 0 | 100 | 151 | |
| 222434 | 242660 | - | 12 | 20492083 | 20495368 | - | 139 | 3.80E-175 | 99 | 143 | |
| 222434 | 242660 | + | 12 | 20495365 | 20495545 | - | 135 | 0 | 99 | 143 | |
| 222456 | 242672 | - | 12 | 20495556 | 20495955 | - | 111 | 2.70E-302 | 100 | 111 | |
| 222815 | 243776 | + | 12 | 20495964 | 20496549 | - | 493 | 0 | 100 | 497 | |
| 223044 | 244020 | + | 12 | 20496558 | 20499991 | - | 267 | 0 | 99 | 283 | |
| 223277 | 244318 | - | 12 | 20498740 | 20499189 | - | 115 | 1.60E-206 | 100 | 115 | |
| 225662 | 249391 | - | 12 | 20500000 | 20501813 | - | 410 | 0 | 100 | 418 | |
| 226126 | 250062 | + | 12 | 20501822 | 20502345 | - | 145 | 1.20E-304 | 98 | 161 | |
| 236144 | 270233 | + | 12 | 20502354 | 20502875 | - | 292 | 0 | 100 | 296 | |
| 238948 | 275737 | - | 12 | 20502884 | 20507802 | - | 189 | 3.80E-175 | 99 | 193 | |
| 239006 | 275992 | + | 12 | 20507649 | 20507754 | - | 327 | 0 | 100 | 331 | |
| 239933 | 277624 | + | 12 | 20507811 | 20508756 | - | 81 | 1.10E-33 | 94 | 109 | |
| 241244 | 280258 | - | 12 | 20508798 | 20509296 | - | 67 | 3.20E-61 | 89 | 123 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 241905 | 281604 | - | 12 | 20510415 | 20514956 | - | 145 | 2.30E-71 | 100 | 145 | |
| 242435 | 282641 | - | 12 | 20514964 | 20515067 | - | 114 | 0 | 98 | 122 | |
| 242642 | 283112 | - | 12 | 20515083 | 20517500 | - | 175 | 0 | 99 | 179 | |
| 180935 | 181037 | + | 12 | 20515616 | 20517500 | - | 102 | 8.60E-296 | 100 | 102 | |
| 174956 | 175058 | - | 12 | 20517501 | 20521778 | + | 94 | 0 | 98 | 102 | |
| 173523 | 173627 | - | 12 | 20517501 | 20522159 | + | 96 | 0 | 98 | 104 | |
| 169819 | 169923 | - | 12 | 20521779 | 20522159 | + | 96 | 0 | 98 | 104 | |
| 181968 | 182074 | - | 12 | 20522171 | 20522838 | + | 98 | 0 | 98 | 106 | |
| 172587 | 172696 | - | 12 | 20522171 | 20522838 | + | 109 | 0 | 100 | 109 | |
| 187527 | 187636 | + | 12 | 20534155 | 20534777 | + | 105 | 0 | 99 | 109 | |
| 179576 | 179686 | - | 12 | 20534155 | 20534777 | + | 110 | 1.80E-246 | 100 | 110 | |
| 163096 | 163206 | - | 12 | 20534765 | 20535416 | + | 106 | 4.60E-137 | 99 | 110 | |
| 176842 | 176953 | + | 12 | 20534765 | 20535416 | + | 111 | 3.90E-51 | 100 | 111 | |
| 190081 | 190194 | + | 12 | 20535424 | 20537031 | + | 113 | 0 | 100 | 113 | |
| 176547 | 176660 | - | 12 | 20535424 | 20537466 | + | 113 | 0 | 100 | 113 | |
| 163540 | 163653 | - | 12 | 20537475 | 20538466 | + | 105 | 0 | 98 | 113 | |
| 175157 | 175275 | - | 12 | 20538486 | 20543240 | + | 94 | 7.00E-41 | 95 | 118 | |
| 175259 | 175379 | - | 12 | 20543250 | 20545025 | + | 112 | 0 | 98 | 120 | |
| 162821 | 162942 | - | 12 | 20544771 | 20544887 | + | 121 | 0 | 100 | 121 | |
| 185767 | 185891 | - | 12 | 20544771 | 20544887 | + | 124 | 0 | 100 | 124 | |
| 165551 | 165675 | + | 12 | 20545034 | 20545351 | + | 120 | 0 | 99 | 124 | |
| 163391 | 163517 | + | 12 | 20545361 | 20546780 | + | 126 | 6.40E-60 | 100 | 126 | |
| 179959 | 180085 | + | 12 | 20546789 | 20548087 | + | 122 | 5.30E-226 | 99 | 126 | |
| 186613 | 186739 | - | 12 | 20548096 | 20548246 | + | 122 | 0 | 99 | 126 | |
| 199192 | 199323 | + | 12 | 20548255 | 20551346 | + | 127 | 0 | 99 | 131 | |
| 183204 | 183336 | + | 12 | 20551460 | 20552829 | + | 132 | 4.50E-265 | 100 | 132 | |
| 177751 | 177884 | - | 12 | 20551582 | 20551687 | + | 113 | 0 | 96 | 133 | |
| 175747 | 175886 | + | 12 | 20552181 | 20552323 | + | 139 | 0 | 100 | 139 | |
| 170689 | 170831 | + | 12 | 20564908 | 20566784 | + | 138 | 2.60E-188 | 99 | 142 | |
| 167062 | 167204 | - | 12 | 20566428 | 20566546 | + | 138 | 0 | 99 | 142 | |
| 182974 | 183118 | - | 12 | 20566428 | 20566546 | + | 140 | 0 | 99 | 144 | |
| 187791 | 187935 | - | 12 | 20566797 | 20567947 | + | 136 | 0 | 99 | 144 | |
| 191699 | 191843 | + | 12 | 20567151 | 20567270 | + | 104 | 0 | 93 | 144 | |
| 191699 | 191843 | + | 12 | 20567956 | 20572964 | + | 104 | 0 | 93 | 144 | |
| 182567 | 182710 | + | 12 | 20573057 | 20578226 | + | 104 | 0 | 93 | 144 | |
| 191699 | 191843 | - | 12 | 20573394 | 20573537 | + | 104 | 0 | 93 | 144 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 161881 | 162028 | - | 12 | 20578250 | 20580026 | + | 147 | 5.90E-133 | 100 | 147 | |
| 178482 | 178633 | + | 12 | 20580035 | 20580878 | + | 151 | 0 | 100 | 151 | |
| 178482 | 178633 | + | 12 | 20580888 | 20581018 | + | 151 | 0 | 100 | 151 | |
| 178482 | 178633 | - | 12 | 20581133 | 20583243 | + | 151 | 0 | 100 | 151 | |
| 178482 | 178633 | - | 12 | 20583167 | 20583588 | + | 151 | 0 | 100 | 151 | |
| 181411 | 181563 | - | 12 | 20583597 | 20584065 | + | 152 | 0 | 100 | 152 | |
| 191112 | 191270 | - | 12 | 20584025 | 20584217 | + | 150 | 0 | 99 | 158 | |
| 162693 | 162855 | - | 12 | 20584066 | 20584965 | + | 154 | 0 | 99 | 162 | |
| 180544 | 180707 | - | 12 | 20584975 | 20586319 | + | 135 | 1.10E-63 | 96 | 163 | |
| 164324 | 164489 | + | 12 | 20586395 | 20587763 | + | 145 | 1.20E-73 | 97 | 165 | |
| 184828 | 184996 | + | 12 | 20587803 | 20588355 | + | 168 | 0 | 100 | 168 | |
| 185170 | 185338 | + | 12 | 20587803 | 20588355 | + | 161 | 0 | 99 | 169 | |
| 185497 | 185669 | - | 12 | 20587803 | 20588355 | + | 148 | 0 | 97 | 172 | |
| 184688 | 184861 | + | 12 | 20588364 | 20589105 | + | 165 | 0 | 99 | 173 | |
| 182002 | 182185 | - | 12 | 20588364 | 20590106 | + | 171 | 0 | 98 | 183 | |
| 168981 | 169178 | - | 12 | 20588364 | 20589105 | + | 189 | 0 | 99 | 197 | |
| 165811 | 166014 | + | 12 | 20590112 | 20590720 | + | 191 | 0 | 99 | 203 | |
| 185219 | 185427 | - | 12 | 20590731 | 20595897 | + | 204 | 6.80E-107 | 100 | 208 | |
| 169395 | 169645 | - | 12 | 20591787 | 20595897 | + | 238 | 0 | 99 | 250 | |
| 175487 | 175738 | + | 12 | 20591877 | 20592094 | + | 235 | 0 | 98 | 251 | |
| 182742 | 183002 | + | 12 | 20595890 | 20598540 | + | 248 | 2.20E-132 | 99 | 260 | |
| 184498 | 184771 | - | 12 | 20595890 | 20598540 | + | 265 | 0 | 99 | 273 | |
| 175420 | 175738 | + | 12 | 20596498 | 20598540 | + | 318 | 0 | 100 | 318 | |
| 175420 | 175738 | - | 12 | 20598554 | 20600080 | + | 318 | 0 | 100 | 318 | |
| 175420 | 175738 | + | 12 | 20598554 | 20600080 | + | 314 | 0 | 100 | 318 | |
| 187206 | 187550 | - | 12 | 20598554 | 20600080 | + | 312 | 0 | 98 | 344 | |
| 165049 | 165410 | - | 12 | 20599698 | 20599840 | + | 341 | 0 | 99 | 361 | |
| 162409 | 162790 | - | 12 | 20599748 | 20599925 | + | 369 | 0 | 99 | 381 | |
| 172914 | 173336 | + | 12 | 20599748 | 20599925 | + | 406 | 0 | 99 | 422 | |
| 201463 | 201877 | + | 12 | 20600088 | 20602017 | + | 352 | 0 | 96 | 424 | |
| 181849 | 182287 | - | 12 | 20600088 | 20601437 | + | 422 | 0 | 99 | 438 | |
| 201885 | 202351 | + | 12 | 20600088 | 20600584 | + | 434 | 0 | 98 | 470 | |
| 177831 | 178474 | - | 12 | 20601438 | 20602017 | + | 639 | 0 | 100 | 643 | |
| 174769 | 175412 | - | 12 | 20602026 | 20603488 | + | 631 | 0 | 100 | 643 | |
| 165156 | 165803 | + | 12 | 20602026 | 20603488 | + | 600 | 0 | 98 | 652 | |
| 165156 | 165803 | + | 12 | 20603472 | 20608703 | + | 600 | 0 | 98 | 652 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 198340 | 199184 | + | 12 | 20603472 | 20603703 | + | 844 | 0 | 100 | 844 | |
| 168874 | 169850 | + | 12 | 20612138 | 20613890 | + | 960 | 0 | 100 | 976 | |
| 167863 | 168855 | + | 12 | 20613941 | 20617282 | + | 992 | 0 | 100 | 992 | |
| 167863 | 168855 | + | 12 | 20616629 | 20616771 | + | 988 | 0 | 100 | 992 | |
| 185102 | 186253 | + | 12 | 20616629 | 20616771 | + | 1151 | 0 | 100 | 1151 | |
| 185102 | 186253 | - | 12 | 20616629 | 20616771 | + | 1151 | 0 | 100 | 1151 | |
| 185102 | 186253 | + | 12 | 20617297 | 20618102 | + | 1147 | 0 | 100 | 1151 | |
| 177175 | 178474 | + | 12 | 20618112 | 20621605 | + | 1299 | 0 | 100 | 1299 | |
| 177175 | 178474 | + | 12 | 20621653 | 20627789 | + | 1299 | 0 | 100 | 1299 | |
| 177175 | 178474 | - | 12 | 20627811 | 20628839 | + | 1299 | 0 | 100 | 1299 | |
| 181846 | 183216 | + | 12 | 20628840 | 20630300 | + | 1358 | 0 | 100 | 1370 | |
| 175795 | 177167 | + | 12 | 20630309 | 20630563 | + | 1368 | 0 | 100 | 1372 | |
| 175747 | 177167 | - | 12 | 20630560 | 20631155 | + | 1420 | 0 | 100 | 1420 | |
| 175747 | 177167 | + | 12 | 20631157 | 20632441 | + | 1420 | 0 | 100 | 1420 | |
| 173636 | 175412 | + | 12 | 20631157 | 20632441 | + | 1772 | 0 | 100 | 1776 | |
| 173636 | 175412 | + | 12 | 20632429 | 20633080 | + | 1768 | 0 | 100 | 1776 | |
| 196555 | 198332 | + | 12 | 20632429 | 20633080 | + | 1773 | 0 | 100 | 1777 | |
| 183211 | 185090 | + | 12 | 20633088 | 20634695 | + | 1867 | 0 | 100 | 1879 | |
| 165811 | 167855 | + | 12 | 20633088 | 20635130 | + | 2032 | 0 | 100 | 2044 | |
| 165811 | 167855 | + | 12 | 20635139 | 20636130 | + | 2028 | 0 | 100 | 2044 | |
| 199433 | 201538 | + | 12 | 20636150 | 20637125 | + | 2067 | 0 | 99 | 2111 | |
| 178641 | 181733 | - | 12 | 20637121 | 20640761 | + | 3088 | 0 | 100 | 3092 | |
| 178641 | 181733 | + | 12 | 20640771 | 20642546 | + | 3084 | 0 | 100 | 3092 | |
| 178641 | 181733 | - | 12 | 20642292 | 20642408 | + | 3084 | 0 | 100 | 3092 | |
| 178641 | 181733 | + | 12 | 20642292 | 20642408 | + | 3068 | 0 | 100 | 3092 | |
| 181849 | 185090 | - | 12 | 20642555 | 20642872 | + | 3221 | 0 | 100 | 3241 | |
| 181846 | 185090 | + | 12 | 20653666 | 20655037 | + | 3216 | 0 | 100 | 3244 | |
| 186261 | 189871 | + | 12 | 20655046 | 20656344 | + | 3598 | 0 | 100 | 3610 | |
| 169988 | 173627 | + | 12 | 20656353 | 20656503 | + | 3613 | 0 | 100 | 3641 | |
| 186261 | 190727 | - | 12 | 20656512 | 20659603 | + | 4446 | 0 | 100 | 4466 | |
| 168874 | 173627 | + | 12 | 20659717 | 20662958 | + | 4735 | 0 | 100 | 4755 | |
| 186261 | 191270 | + | 12 | 20659839 | 20659944 | + | 4993 | 0 | 100 | 5009 | |
| 191362 | 196532 | + | 12 | 20660438 | 20660580 | + | 5142 | 0 | 100 | 5170 | |
| 127924 | 128024 | - | 12 | 20662602 | 20662720 | + | 101 | 0 | 100 | 101 | |
| 150462 | 150566 | - | 12 | 20662969 | 20664119 | + | 105 | 0 | 100 | 105 | |
| 139018 | 139122 | - | 12 | 20663323 | 20663442 | + | 101 | 0 | 99 | 105 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-----------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 156696 | 156802 | + | 12 | 20664128 | 20667737 | + | 103 | 2.60E-226 | 99 | 107 | |
| 129751 | 129862 | + | 12 | 21311221 | 21311734 | + | 108 | 1.50E-270 | 99 | 112 | |
| 135434 | 135548 | - | 12 | 21430205 | 21430366 | - | 111 | 0 | 99 | 115 | |
| 154392 | 154515 | - | 12 | 21562122 | 21562515 | - | 120 | 0 | 99 | 124 | |
| 126027 | 126153 | + | 12 | 21562122 | 21562515 | - | 123 | 2.70E-61 | 99 | 127 | |
| 125101 | 125228 | - | 12 | 21562515 | 21562911 | - | 105 | 1.00E-56 | 95 | 129 | |
| 149563 | 149695 | + | 12 | 21562909 | 21563157 | - | 133 | 1.50E-270 | 100 | 133 | |
| 129053 | 129191 | + | 12 | 21567861 | 21568152 | - | 135 | 9.50E-116 | 99 | 139 | |
| 127951 | 128090 | - | 12 | 21568154 | 21568493 | - | 136 | 1.10E-148 | 99 | 140 | |
| 129682 | 129831 | + | 12 | 21922000 | 21922117 | + | 118 | 1.70E-86 | 95 | 150 | |
| 122432 | 122582 | - | 12 | 21922116 | 21922324 | + | 139 | 0 | 98 | 151 | |
| 150914 | 151072 | - | 12 | 21922116 | 21922324 | + | 144 | 0 | 98 | 160 | |
| 125866 | 126026 | - | 12 | 21922328 | 21922730 | + | 157 | 0 | 99 | 161 | |
| 125023 | 125189 | + | 12 | 21922328 | 21922730 | + | 131 | 1.30E-76 | 95 | 167 | |
| 126953 | 127121 | + | 12 | 22304641 | 22304790 | - | 145 | 0 | 96 | 169 | |
| 149802 | 149971 | - | 12 | 22304641 | 22304790 | - | 162 | 3.90E-82 | 99 | 170 | |
| 124119 | 124295 | - | 12 | 23531238 | 23531655 | - | 173 | 0 | 99 | 177 | |
| 121411 | 121607 | - | 12 | 23531238 | 23531655 | - | 177 | 4.00E-89 | 97 | 197 | |
| 151528 | 151734 | - | 12 | 23831962 | 23832741 | - | 199 | 0 | 99 | 207 | |
| 160769 | 160977 | - | 12 | 23991693 | 23991813 | - | 205 | 0 | 100 | 209 | |
| 122136 | 122371 | - | 12 | 24134387 | 24134643 | + | 208 | 0 | 97 | 236 | |
| 128749 | 128986 | + | 12 | 24562670 | 24562777 | + | 230 | 1.50E-270 | 99 | 238 | |
| 134455 | 134730 | - | 12 | 24562670 | 24562777 | + | 272 | 0 | 100 | 276 | |
| 157403 | 157711 | - | 12 | 24562776 | 24562922 | + | 301 | 0 | 99 | 309 | |
| 122680 | 123110 | - | 12 | 24562776 | 24562922 | + | 335 | 0 | 94 | 435 | |
| 123983 | 124453 | - | 12 | 24643620 | 24643749 | + | 463 | 0 | 100 | 471 | |
| 148950 | 149502 | - | 12 | 24643822 | 24644026 | + | 549 | 0 | 100 | 553 | |
| 148950 | 149502 | + | 12 | 24644027 | 24644167 | + | 493 | 0 | 97 | 553 | |
| 125816 | 126425 | - | 12 | 24644173 | 24644390 | + | 578 | 0 | 99 | 610 | |
| 125816 | 126425 | - | 12 | 24644734 | 24644884 | + | 578 | 0 | 99 | 610 | |
| 130374 | 130988 | - | 12 | 24644998 | 24645158 | + | 579 | 0 | 99 | 615 | |
| 121411 | 122138 | - | 12 | 24645393 | 24645497 | + | 647 | 0 | 97 | 735 | |
| 148199 | 148940 | - | 12 | 24645393 | 24645497 | + | 742 | 0 | 100 | 742 | |
| 148199 | 148940 | + | 12 | 24645497 | 24645651 | + | 714 | 0 | 99 | 742 | |
| 125901 | 126943 | + | 12 | 24645497 | 24645651 | + | 961 | 0 | 98 | 1045 | |
| 123254 | 124776 | - | 12 | 24645497 | 24645651 | + | 1399 | 0 | 98 | 1527 | |



| Mitochondria | | | | | | | | Stats | | | |
|--------------|--------|-----|------|----------|----------|-----|-------|-------|-----|--------|--|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length | |
| 139276 | 141160 | + | 12 | 26374197 | 26374333 | - | 1877 | 0 | 100 | 1885 | |
| 134617 | 139275 | - | 12 | 26374197 | 26374361 | - | 4643 | 0 | 100 | 4659 | |

Table A-3. Regions in the rice genome that align with the chloroplast and mitochondrial genomes

| Name | Chromosome | | Score | Stats | | |
|------|------------|----------|-------|-----------|-----|--------|
| | Start | End | | E-value | %ID | Length |
| 1 | 33866500 | 33866741 | 242 | 1.10E-133 | 100 | 242 |
| 1 | 14119934 | 14120962 | 942 | 0 | 98 | 1030 |
| 1 | 14120966 | 14121202 | 217 | 3.90E-121 | 98 | 237 |
| 1 | 14121475 | 14121627 | 137 | 1.80E-73 | 97 | 153 |
| 1 | 14122334 | 14122491 | 150 | 4.40E-78 | 99 | 158 |
| 1 | 19324506 | 19324656 | 131 | 6.80E-70 | 97 | 151 |
| 1 | 28741733 | 28741882 | 134 | 5.50E-70 | 97 | 150 |
| 1 | 28741733 | 28741879 | 131 | 3.70E-68 | 97 | 147 |
| 1 | 33825204 | 33826025 | 806 | 0 | 100 | 822 |
| 1 | 33860717 | 33861517 | 797 | 0 | 100 | 801 |
| 1 | 33866753 | 33868023 | 1267 | 0 | 100 | 1271 |
| 1 | 33880076 | 33880228 | 149 | 1.30E-80 | 99 | 153 |
| 1 | 33880934 | 33881590 | 657 | 0 | 100 | 657 |
| 1 | 33893370 | 33893493 | 124 | 9.60E-64 | 100 | 124 |
| 1 | 33899948 | 33900078 | 131 | 7.20E-68 | 100 | 131 |
| 1 | 34038380 | 34038526 | 143 | 3.50E-75 | 99 | 147 |
| 1 | 34698144 | 34698281 | 134 | 1.30E-68 | 99 | 138 |
| 1 | 39445747 | 39445944 | 194 | 2.10E-104 | 99 | 198 |
| 1 | 39448764 | 39449062 | 279 | 2.00E-154 | 98 | 299 |
| 1 | 42048687 | 42049037 | 351 | 4.90E-198 | 100 | 351 |
| 2 | 18610761 | 18610873 | 109 | 1.30E-53 | 99 | 113 |
| 2 | 14938974 | 14939221 | 197 | 3.40E-106 | 95 | 249 |
| 3 | 31759894 | 31760130 | 237 | 4.70E-133 | 100 | 237 |
| 3 | 4991086 | 4991368 | 259 | 1.00E-159 | 98 | 283 |
| 3 | 7557897 | 7558285 | 373 | 5.70E-214 | 99 | 389 |
| 3 | 10113399 | 10113509 | 103 | 4.60E-50 | 98 | 111 |
| 3 | 13624253 | 13624456 | 196 | 1.80E-105 | 99 | 204 |
| 3 | 13624253 | 13624456 | 196 | 1.80E-105 | 99 | 204 |



| Name | Start | End | Score | E-value | %ID | Length |
|------|----------|----------|-------|-----------|-----|--------|
| 3 | 31758096 | 31758590 | 491 | 2.10E-284 | 100 | 495 |
| 3 | 31758602 | 31759890 | 1289 | 0 | 100 | 1289 |
| 4 | 251376 | 251476 | 101 | 7.80E-49 | 100 | 101 |
| 4 | 9117300 | 9117470 | 171 | 1.00E-93 | 100 | 171 |
| 4 | 9117478 | 9119123 | 1646 | 0 | 100 | 1646 |
| 4 | 9119130 | 9119333 | 204 | 2.20E-113 | 100 | 204 |
| 4 | 9131921 | 9132124 | 204 | 2.20E-113 | 100 | 204 |
| 4 | 9131924 | 9132127 | 204 | 2.20E-113 | 100 | 204 |
| 4 | 9132131 | 9133776 | 1646 | 0 | 100 | 1646 |
| 4 | 9133784 | 9133954 | 171 | 1.00E-93 | 100 | 171 |
| 4 | 9142065 | 9142886 | 806 | 0 | 100 | 822 |
| 4 | 18018159 | 18018476 | 278 | 8.70E-155 | 97 | 318 |
| 4 | 23435139 | 23435309 | 167 | 2.40E-91 | 99 | 171 |
| 4 | 23435317 | 23436961 | 1590 | 0 | 99 | 1646 |
| 4 | 23436968 | 23437171 | 188 | 7.40E-104 | 98 | 204 |
| 5 | 20888563 | 20889265 | 699 | 0 | 100 | 703 |
| 5 | 20889269 | 20889505 | 229 | 2.70E-128 | 99 | 237 |
| 5 | 20889775 | 20889926 | 137 | 1.80E-73 | 97 | 153 |
| 5 | 20890614 | 20891646 | 988 | 0 | 99 | 1036 |
| 6 | 1094075 | 1094424 | 326 | 1.80E-191 | 98 | 350 |
| 6 | 1094436 | 1095606 | 1136 | 0 | 99 | 1172 |
| 6 | 1106818 | 1106940 | 115 | 0 | 98 | 123 |
| 6 | 12743717 | 12744122 | 382 | 1.10E-217 | 98 | 410 |
| 6 | 23569084 | 23569663 | 568 | 0 | 99 | 580 |
| 6 | 23569664 | 23569926 | 243 | 0 | 98 | 263 |
| 6 | 23577394 | 23577544 | 143 | 4.80E-77 | 99 | 151 |
| 6 | 23585786 | 23586071 | 274 | 4.20E-155 | 99 | 286 |
| 6 | 23586206 | 23587732 | 1512 | 0 | 100 | 1528 |
| 6 | 23588439 | 23588591 | 141 | 7.50E-76 | 98 | 153 |
| 6 | 23588861 | 23589097 | 237 | 4.70E-133 | 100 | 237 |
| 6 | 23589101 | 23590389 | 1265 | 0 | 100 | 1289 |
| 6 | 23590401 | 23590895 | 491 | 2.10E-284 | 100 | 495 |



| Name | Start | End | Score | E-value | %ID | Length |
|------|----------|----------|-------|-----------|-----|--------|
| 6 | 24553703 | 24554031 | 306 | 3.40E-171 | 98 | 330 |
| 6 | 28261114 | 28261254 | 129 | 1.50E-65 | 98 | 141 |
| 7 | 4475047 | 4475153 | 85 | 2.70E-39 | 95 | 109 |
| 7 | 14240881 | 14241084 | 204 | 2.20E-113 | 100 | 204 |
| 7 | 14241088 | 14242733 | 1646 | 0 | 100 | 1646 |
| 7 | 14242741 | 14242911 | 171 | 1.00E-93 | 100 | 171 |
| 8 | 9254292 | 9254495 | 204 | 2.20E-113 | 100 | 204 |
| 8 | 9254502 | 9256147 | 1642 | 0 | 100 | 1646 |
| 8 | 9256155 | 9256325 | 171 | 1.00E-93 | 100 | 171 |
| 8 | 9264391 | 9265211 | 798 | 0 | 99 | 822 |
| 8 | 9272685 | 9272835 | 151 | 8.20E-82 | 100 | 151 |
| 8 | 16395631 | 16395888 | 218 | 3.10E-293 | 96 | 258 |
| 8 | 16395985 | 16396295 | 249 | 3.10E-293 | 95 | 313 |
| 8 | 22193027 | 22193197 | 171 | 1.00E-93 | 100 | 171 |
| 8 | 22193205 | 22194850 | 1638 | 0 | 100 | 1646 |
| 8 | 25291999 | 25292132 | 107 | 1.50E-53 | 95 | 135 |
| 9 | 11944700 | 11945740 | 976 | 0 | 98 | 1044 |
| 9 | 11945748 | 11945918 | 167 | 2.40E-91 | 99 | 171 |
| 9 | 14504571 | 14504774 | 204 | 2.20E-113 | 100 | 204 |
| 9 | 14504781 | 14506426 | 1646 | 0 | 100 | 1646 |
| 9 | 14506434 | 14506604 | 171 | 1.00E-93 | 100 | 171 |
| 9 | 16352174 | 16352287 | 98 | 1.30E-48 | 96 | 114 |
| 10 | 7814271 | 7814463 | 193 | 1.20E-102 | 100 | 193 |
| 10 | 7814893 | 7815005 | 113 | 5.50E-56 | 100 | 113 |
| 10 | 10473642 | 10473845 | 204 | 2.20E-113 | 100 | 204 |
| 10 | 10473852 | 10475497 | 1630 | 0 | 100 | 1646 |
| 10 | 10475505 | 10475675 | 171 | 1.00E-93 | 100 | 171 |
| 10 | 10526579 | 10527073 | 491 | 2.10E-284 | 100 | 495 |
| 10 | 10527085 | 10528373 | 1277 | 0 | 100 | 1289 |
| 10 | 10528377 | 10528613 | 237 | 4.70E-133 | 100 | 237 |
| 10 | 10528883 | 10529035 | 141 | 7.50E-76 | 98 | 153 |



| Name | Start | End | Score | E-value | %ID | Length |
|------|----------|----------|-------|-----------|-----|--------|
| 10 | 10529741 | 10531268 | 1512 | 0 | 100 | 1528 |
| 10 | 10531403 | 10531688 | 278 | 1.70E-157 | 99 | 286 |
| 10 | 10539947 | 10540097 | 151 | 8.20E-82 | 100 | 151 |
| 10 | 10547565 | 10548386 | 810 | 0 | 100 | 822 |
| 10 | 10556447 | 10556617 | 171 | 1.00E-93 | 100 | 171 |
| 10 | 10556625 | 10558270 | 1606 | 0 | 99 | 1646 |
| 10 | 10558277 | 10558480 | 196 | 1.30E-108 | 99 | 204 |
| 10 | 10558280 | 10558483 | 196 | 1.30E-108 | 99 | 204 |
| 10 | 11458019 | 11458127 | 90 | 7.20E-43 | 95 | 110 |
| 10 | 11458140 | 11458295 | 129 | 1.20E-65 | 96 | 157 |
| 10 | 18586124 | 18586260 | 111 | 7.90E-55 | 95 | 139 |
| 10 | 20132992 | 20133236 | 241 | 4.30E-133 | 100 | 245 |
| 10 | 21006220 | 21006390 | 159 | 1.40E-86 | 98 | 171 |
| 10 | 21006402 | 21007680 | 1192 | 0 | 98 | 1280 |
| 10 | 22441033 | 22442031 | 971 | 0 | 99 | 999 |
| 10 | 22442035 | 22442238 | 204 | 2.20E-113 | 100 | 204 |
| 11 | 3496168 | 3496272 | 97 | 9.90E-46 | 98 | 105 |
| 11 | 10835550 | 10835666 | 113 | 1.30E-56 | 99 | 117 |
| 11 | 18857084 | 18858119 | 812 | 0 | 95 | 1036 |
| 11 | 18900791 | 18901042 | 236 | 0 | 98 | 252 |
| 11 | 18901179 | 18901466 | 232 | 2.30E-129 | 95 | 288 |
| 12 | 4566706 | 4566867 | 150 | 2.10E-78 | 98 | 162 |
| 12 | 5609877 | 5610371 | 479 | 3.00E-277 | 99 | 495 |
| 12 | 5610383 | 5611671 | 1261 | 0 | 99 | 1289 |
| 12 | 5611675 | 5611911 | 229 | 2.70E-128 | 99 | 237 |
| 12 | 5612181 | 5612333 | 149 | 1.30E-80 | 99 | 153 |
| 12 | 5613041 | 5614568 | 1492 | 0 | 99 | 1528 |
| 12 | 5614703 | 5614870 | 160 | 3.70E-85 | 99 | 168 |
| 12 | 5640464 | 5640614 | 151 | 8.20E-82 | 100 | 151 |
| 12 | 5651219 | 5652040 | 790 | 0 | 99 | 822 |
| 12 | 8527031 | 8527540 | 471 | 1.30E-269 | 98 | 511 |
| 12 | 8527545 | 8528030 | 410 | 1.00E-234 | 96 | 494 |
| 12 | 8554381 | 8554509 | 101 | 4.50E-50 | 95 | 129 |



| Chromosome | | Stats | | | | |
|------------|----------|----------|-------|-----------|-----|--------|
| Name | Start | End | Score | E-value | %ID | Length |
| 12 | 11285335 | 11285829 | 471 | 1.70E-272 | 99 | 495 |
| 12 | 11285841 | 11286592 | 740 | 0 | 100 | 752 |
| 12 | 11410564 | 11410734 | 159 | 1.40E-86 | 98 | 171 |
| 12 | 11410742 | 11411788 | 971 | 0 | 98 | 1047 |
| 12 | 13350937 | 13351113 | 169 | 6.70E-113 | 99 | 177 |
| 12 | 13389650 | 13390120 | 448 | 9.00E-256 | 99 | 472 |
| 12 | 13392730 | 13392856 | 123 | 6.00E-62 | 99 | 127 |
| 12 | 13410973 | 13411133 | 157 | 3.20E-82 | 99 | 161 |
| 12 | 16609595 | 16610204 | 578 | 0 | 99 | 610 |
| 12 | 16630225 | 16630834 | 578 | 0 | 99 | 610 |

Table B-1. Rice tungro bacilliform virus (RTBV) alignments in the rice genome

| RTBV | | Rice | | | Stats | | |
|-------|------|------|----------|----------|-----------|------------|--------|
| Start | End | Chr. | Start | End | E-value | % Identity | Length |
| 148 | 750 | 1 | 6201518 | 6202111 | 1.40E-10 | 57 | 641 |
| 239 | 713 | 1 | 22956721 | 22957201 | 1.90E-07 | 59 | 507 |
| 309 | 513 | 1 | 1984826 | 1985030 | 6.30E-06 | 59 | 217 |
| 328 | 637 | 1 | 758758 | 759064 | 2.30E-101 | 59 | 333 |
| 1089 | 2121 | 1 | 757732 | 758766 | 2.30E-101 | 61 | 1107 |
| 1254 | 1402 | 1 | 831282 | 831423 | 6.00E-70 | 60 | 153 |
| 1537 | 2295 | 1 | 5977827 | 5978578 | 2.70E-06 | 58 | 810 |
| 1810 | 2025 | 1 | 757371 | 757583 | 5.60E-72 | 62 | 234 |
| 1842 | 2567 | 1 | 2030981 | 2031701 | 6.90E-07 | 58 | 772 |
| 1868 | 2567 | 1 | 615944 | 616633 | 3.80E-07 | 59 | 743 |
| 1868 | 2603 | 1 | 33278771 | 33279494 | 1.70E-05 | 59 | 786 |
| 2335 | 2453 | 1 | 6222511 | 6222630 | 2.00E-09 | 63 | 127 |
| 2338 | 2449 | 1 | 757755 | 757859 | 8.10E-71 | 64 | 114 |
| 2354 | 3813 | 1 | 11561513 | 11562975 | 5.70E-77 | 56 | 1570 |
| 2734 | 4247 | 1 | 26530645 | 26532156 | 1.50E-06 | 57 | 1635 |
| 2943 | 3110 | 1 | 18311187 | 18311357 | 4.30E-06 | 61 | 179 |
| 3023 | 4265 | 1 | 13958472 | 13959711 | 7.00E-06 | 56 | 1336 |
| 3213 | 4020 | 1 | 6286912 | 6287711 | 1.40E-10 | 58 | 865 |
| 3243 | 4155 | 1 | 18337610 | 18338516 | 4.30E-06 | 58 | 976 |
| 3297 | 3539 | 1 | 30654233 | 30654473 | 1.80E-05 | 59 | 258 |
| 3383 | 4302 | 1 | 6286409 | 6287321 | 6.10E-06 | 57 | 989 |
| 3386 | 4268 | 1 | 13459451 | 13460325 | 5.70E-09 | 59 | 952 |
| 3462 | 4217 | 1 | 30663533 | 30664287 | 1.80E-05 | 58 | 814 |
| 3677 | 3945 | 1 | 33396727 | 33396992 | 6.00E-05 | 59 | 292 |
| 4354 | 5831 | 1 | 753717 | 755196 | 2.30E-101 | 62 | 1541 |
| 4354 | 5831 | 1 | 11533296 | 11534775 | 5.70E-77 | 62 | 1546 |
| 4492 | 5581 | 1 | 5191893 | 5192980 | 3.10E-53 | 62 | 1136 |
| 4988 | 5229 | 1 | 22957931 | 22958168 | 1.90E-07 | 61 | 258 |

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| 5124 | 5229 | 1 | 13957529 | 13957631 | 7.00E-06 | 71 | 112 |
| 5589 | 5829 | 1 | 5192963 | 5193206 | 3.10E-53 | 61 | 249 |
| 32 | 622 | 2 | 30945109 | 30945691 | 5.10E-06 | 59 | 621 |
| 33 | 611 | 2 | 28437321 | 28437902 | 3.70E-05 | 59 | 617 |
| 36 | 622 | 2 | 33317652 | 33318239 | 1.30E-06 | 59 | 631 |
| 146 | 445 | 2 | 29145374 | 29145677 | 1.10E-05 | 58 | 321 |
| 151 | 862 | 2 | 296658 | 297382 | 1.80E-05 | 58 | 767 |
| 211 | 611 | 2 | 29328648 | 29329044 | 5.70E-06 | 62 | 426 |
| 221 | 628 | 2 | 24378428 | 24378829 | 6.50E-05 | 61 | 435 |
| 228 | 611 | 2 | 31610940 | 31611313 | 3.70E-05 | 62 | 408 |
| 259 | 622 | 2 | 9784310 | 9784666 | 7.50E-09 | 62 | 392 |
| 309 | 448 | 2 | 25476658 | 25476799 | 2.20E-08 | 63 | 149 |
| 328 | 496 | 2 | 9089130 | 9089291 | 1.10E-84 | 62 | 177 |
| 1553 | 2160 | 2 | 9090658 | 9091259 | 1.10E-84 | 61 | 650 |
| 1805 | 1954 | 2 | 25476674 | 25476825 | 5.80E-07 | 60 | 159 |
| 1810 | 2025 | 2 | 9091373 | 9091585 | 5.00E-71 | 62 | 235 |
| 1835 | 2094 | 2 | 9804630 | 9804889 | 4.10E-06 | 58 | 279 |
| 1835 | 2226 | 2 | 9804970 | 9805353 | 3.90E-09 | 59 | 424 |
| 1843 | 2503 | 2 | 8787412 | 8788072 | 2.20E-78 | 57 | 721 |
| 1894 | 2046 | 2 | 247009 | 247164 | 1.80E-05 | 62 | 166 |
| 2164 | 2561 | 2 | 9761096 | 9761499 | 7.50E-09 | 58 | 426 |
| 2338 | 2449 | 2 | 9091097 | 9091201 | 2.80E-69 | 63 | 114 |
| 3067 | 4037 | 2 | 25732159 | 25733121 | 1.10E-05 | 57 | 1040 |
| 3093 | 4087 | 2 | 33410029 | 33411015 | 6.50E-09 | 57 | 1066 |
| 3099 | 3717 | 2 | 33333849 | 33334463 | 1.30E-06 | 57 | 664 |
| 3227 | 4020 | 2 | 9784246 | 9785032 | 3.90E-09 | 58 | 843 |
| 3381 | 3824 | 2 | 25473046 | 25473488 | 7.90E-06 | 60 | 472 |
| 3639 | 5892 | 2 | 8789064 | 8791322 | 2.20E-78 | 60 | 2375 |

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| 3695 | 4894 | 2 | 29125260 | 29126448 | 1.10E-05 | 57 | 1284 |
| 3696 | 3873 | 2 | 9103002 | 9103187 | 1.50E-08 | 61 | 197 |
| 3877 | 4139 | 2 | 9088774 | 9089037 | 7.50E-73 | 59 | 281 |
| 4354 | 5812 | 2 | 9094213 | 9095675 | 1.10E-84 | 63 | 1526 |
| 4564 | 4889 | 2 | 210471 | 210792 | 1.80E-05 | 59 | 351 |
| 4581 | 4816 | 2 | 30962151 | 30962389 | 5.10E-06 | 60 | 254 |
| 4618 | 4819 | 2 | 9760712 | 9760911 | 6.20E-07 | 59 | 214 |
| 5132 | 5243 | 2 | 9761348 | 9761462 | 5.00E-08 | 65 | 124 |
| 115 | 622 | 3 | 34597692 | 34598195 | 4.20E-08 | 59 | 538 |
| 155 | 246 | 3 | 11788408 | 11788504 | 5.50E-06 | 65 | 103 |
| 1843 | 2830 | 3 | 14547569 | 14548544 | 4.30E-05 | 57 | 1054 |
| 1877 | 2090 | 3 | 35663597 | 35663810 | 1.20E-06 | 62 | 229 |
| 1986 | 2566 | 3 | 13574386 | 13574964 | 4.40E-11 | 60 | 628 |
| 2102 | 2603 | 3 | 35697061 | 35697564 | 1.20E-06 | 58 | 546 |
| 3144 | 3950 | 3 | 11893773 | 11894575 | 5.50E-06 | 59 | 871 |
| 3518 | 4140 | 3 | 2625906 | 2626523 | 2.20E-05 | 59 | 667 |
| 3527 | 3916 | 3 | 34586722 | 34587122 | 4.20E-08 | 60 | 427 |
| 3669 | 4235 | 3 | 33515961 | 33516525 | 4.30E-06 | 60 | 611 |
| 3759 | 3908 | 3 | 23890397 | 23890546 | 3.00E-15 | 60 | 156 |
| 4395 | 4823 | 3 | 35698436 | 35698867 | 2.20E-06 | 58 | 457 |
| 4685 | 5520 | 3 | 23902815 | 23903648 | 3.00E-15 | 60 | 884 |
| 4962 | 5229 | 3 | 35698604 | 35698874 | 1.20E-06 | 61 | 289 |
| 5107 | 5426 | 3 | 13573997 | 13574316 | 4.40E-11 | 60 | 342 |
| 155 | 636 | 4 | 30151197 | 30151675 | 2.20E-05 | 61 | 520 |
| 219 | 430 | 4 | 3049602 | 3049805 | 2.10E-05 | 61 | 223 |
| 315 | 410 | 4 | 20110151 | 20110240 | 1.80E-05 | 70 | 101 |
| 315 | 627 | 4 | 28049374 | 28049691 | 3.10E-62 | 61 | 336 |

| RTBV | | Rice | | | Stats | | |
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| 544 | 991 | 4 | 18165592 | 18166039 | 2.40E-76 | 57 | 483 |
| 1089 | 2160 | 4 | 9551375 | 9552444 | 1.80E-108 | 61 | 1149 |
| 1096 | 2303 | 4 | 18165456 | 18166669 | 3.60E-104 | 59 | 1295 |
| 1137 | 1891 | 4 | 5696447 | 5697209 | 9.80E-09 | 57 | 831 |
| 1226 | 2160 | 4 | 20485795 | 20486718 | 1.40E-94 | 61 | 996 |
| 1810 | 2025 | 4 | 20486832 | 20487044 | 4.10E-68 | 61 | 235 |
| 1843 | 2503 | 4 | 18166632 | 18167292 | 2.40E-76 | 57 | 721 |
| 2338 | 2449 | 4 | 9551433 | 9551537 | 3.30E-77 | 63 | 114 |
| 2338 | 2449 | 4 | 20486557 | 20486660 | 2.20E-66 | 63 | 115 |
| 2342 | 2495 | 4 | 28557805 | 28557964 | 5.60E-06 | 61 | 168 |
| 2490 | 4260 | 4 | 28497921 | 28499689 | 5.60E-06 | 56 | 1912 |
| 2715 | 4100 | 4 | 16315671 | 16317056 | 1.10E-08 | 58 | 1493 |
| 2991 | 3241 | 4 | 20535833 | 20536088 | 7.00E-22 | 59 | 268 |
| 3051 | 3951 | 4 | 20130181 | 20131076 | 1.80E-05 | 58 | 969 |
| 3181 | 3334 | 4 | 5715241 | 5715397 | 8.20E-07 | 62 | 164 |
| 3408 | 3519 | 4 | 9468182 | 9468296 | 2.20E-24 | 61 | 119 |
| 3440 | 4062 | 4 | 472185 | 472807 | 1.50E-06 | 59 | 669 |
| 3639 | 4949 | 4 | 20488508 | 20489818 | 1.40E-94 | 59 | 1402 |
| 3639 | 5829 | 4 | 21529060 | 21531250 | 2.80E-72 | 60 | 2317 |
| 3639 | 5892 | 4 | 18168284 | 18170542 | 3.60E-104 | 60 | 2387 |
| 3641 | 5831 | 4 | 9547394 | 9549583 | 1.80E-108 | 61 | 2320 |
| 3788 | 3883 | 4 | 18173341 | 18173436 | 4.90E-21 | 66 | 101 |
| 3855 | 3976 | 4 | 20491519 | 20491638 | 3.60E-22 | 64 | 127 |
| 4027 | 4194 | 4 | 16333240 | 16333413 | 1.10E-08 | 60 | 181 |
| 4027 | 5829 | 4 | 28062269 | 28064060 | 3.10E-62 | 60 | 1907 |
| 4057 | 4195 | 4 | 18228452 | 18228591 | 4.90E-21 | 62 | 151 |
| 4650 | 5052 | 4 | 5692002 | 5692405 | 9.80E-09 | 63 | 431 |
| 4816 | 5354 | 4 | 3077892 | 3078446 | 2.10E-05 | 59 | 577 |
| 5001 | 5829 | 4 | 20489860 | 20490685 | 1.40E-94 | 63 | 862 |
| 5796 | 5937 | 4 | 21604058 | 21604205 | 2.80E-72 | 61 | 157 |

| RTBV | | Rice | | | Stats | | |
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| 157 | 623 | 5 | 18499119 | 18499579 | 1.10E-05 | 60 | 499 |
| 216 | 893 | 5 | 29259527 | 29260204 | 8.30E-06 | 59 | 734 |
| 259 | 713 | 5 | 21285350 | 21285798 | 4.30E-05 | 60 | 480 |
| 291 | 385 | 5 | 18102344 | 18102444 | 8.40E-100 | 66 | 106 |
| 294 | 613 | 5 | 18057240 | 18057562 | 1.50E-101 | 59 | 346 |
| 315 | 490 | 5 | 23533930 | 23534105 | 3.00E-06 | 61 | 190 |
| 328 | 496 | 5 | 18133836 | 18133997 | 2.20E-100 | 63 | 177 |
| 328 | 496 | 5 | 18922184 | 18922345 | 2.10E-92 | 63 | 178 |
| 328 | 546 | 5 | 18143566 | 18143786 | 3.00E-101 | 62 | 237 |
| 328 | 635 | 5 | 18145225 | 18145533 | 2.30E-100 | 58 | 331 |
| 397 | 533 | 5 | 19044547 | 19044675 | 2.30E-90 | 63 | 145 |
| 764 | 988 | 5 | 18145244 | 18145473 | 3.30E-99 | 59 | 241 |
| 1094 | 1239 | 5 | 18145201 | 18145349 | 7.70E-70 | 60 | 155 |
| 1096 | 2121 | 5 | 18134141 | 18135168 | 1.50E-101 | 60 | 1095 |
| 1096 | 2160 | 5 | 18920979 | 18922040 | 2.10E-92 | 60 | 1139 |
| 1096 | 2168 | 5 | 18142410 | 18143481 | 3.00E-101 | 61 | 1150 |
| 1810 | 2025 | 5 | 18135317 | 18135529 | 6.50E-74 | 61 | 233 |
| 1810 | 2025 | 5 | 18142094 | 18142306 | 3.70E-72 | 62 | 234 |
| 1810 | 2025 | 5 | 18920653 | 18920865 | 2.30E-65 | 62 | 235 |
| 1887 | 2008 | 5 | 6694847 | 6694975 | 9.20E-06 | 64 | 134 |
| 2035 | 2203 | 5 | 19927884 | 19928051 | 8.60E-05 | 61 | 181 |
| 2105 | 2594 | 5 | 29320886 | 29321369 | 8.50E-05 | 59 | 523 |
| 2131 | 2671 | 5 | 6690689 | 6691233 | 9.20E-06 | 59 | 589 |
| 2338 | 2531 | 5 | 18142398 | 18142582 | 2.00E-70 | 60 | 203 |
| 3071 | 4108 | 5 | 23512535 | 23513566 | 3.00E-06 | 57 | 1115 |
| 3257 | 3361 | 5 | 18996224 | 18996330 | 5.10E-61 | 63 | 113 |
| 3346 | 4258 | 5 | 14064381 | 14065288 | 2.90E-06 | 58 | 987 |
| 3348 | 3939 | 5 | 19922490 | 19923074 | 8.60E-05 | 58 | 631 |

| RTBV | | Rice | | | Stats | | |
|-------|------|------|----------|----------|-----------|------------|--------|
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| 3639 | 4836 | 5 | 18139433 | 18140630 | 4.60E-48 | 59 | 1293 |
| 3639 | 5829 | 5 | 18136993 | 18139183 | 1.50E-101 | 60 | 2319 |
| 3639 | 5829 | 5 | 18917006 | 18919189 | 2.10E-92 | 60 | 2325 |
| 3708 | 3904 | 5 | 6661678 | 6661868 | 9.20E-06 | 61 | 205 |
| 3708 | 4253 | 5 | 11705942 | 11706483 | 1.30E-06 | 60 | 583 |
| 3932 | 4139 | 5 | 18143879 | 18144085 | 2.00E-70 | 60 | 220 |
| 3960 | 4096 | 5 | 23670892 | 23671037 | 1.10E-33 | 64 | 149 |
| 3994 | 4139 | 5 | 18145626 | 18145761 | 1.70E-70 | 62 | 151 |
| 4354 | 5831 | 5 | 18128727 | 18130206 | 3.00E-101 | 62 | 1548 |
| 4395 | 4819 | 5 | 11688525 | 11688947 | 6.40E-05 | 57 | 453 |
| 4402 | 5127 | 5 | 23633498 | 23634212 | 1.10E-33 | 64 | 763 |
| 4581 | 5493 | 5 | 20143828 | 20144730 | 1.50E-16 | 59 | 967 |
| 4815 | 5038 | 5 | 18159993 | 18160209 | 2.30E-26 | 61 | 235 |
| 4850 | 5106 | 5 | 19896973 | 19897230 | 8.60E-05 | 60 | 280 |
| 4962 | 5229 | 5 | 11688511 | 11688779 | 4.80E-06 | 60 | 289 |
| 4982 | 5259 | 5 | 29260148 | 29260423 | 8.30E-06 | 59 | 296 |
| 5007 | 5243 | 5 | 11689172 | 11689407 | 1.30E-06 | 61 | 258 |
| 5288 | 5418 | 5 | 29307394 | 29307524 | 8.30E-06 | 64 | 138 |
| 32 | 608 | 6 | 14893396 | 14893967 | 2.90E-06 | 60 | 618 |
| 211 | 883 | 6 | 25569540 | 25570205 | 5.30E-05 | 59 | 729 |
| 219 | 448 | 6 | 5110950 | 5111183 | 7.10E-71 | 62 | 252 |
| 328 | 636 | 6 | 1712440 | 1712741 | 1.10E-26 | 59 | 330 |
| 358 | 615 | 6 | 12627761 | 12628018 | 3.70E-12 | 59 | 275 |
| 544 | 728 | 6 | 12622451 | 12622633 | 2.00E-78 | 61 | 195 |
| 544 | 728 | 6 | 10574512 | 10574694 | 6.10E-32 | 61 | 196 |
| 1091 | 1332 | 6 | 25525728 | 25525976 | 5.30E-05 | 60 | 259 |
| 1096 | 1959 | 6 | 12622315 | 12623172 | 1.80E-106 | 61 | 922 |
| 1096 | 1959 | 6 | 10574376 | 10575234 | 1.70E-58 | 61 | 922 |

| RTBV | | Rice | | | Stats | | |
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| 1625 | 1722 | 6 | 12635020 | 12635120 | 1.90E-12 | 64 | 106 |
| 1843 | 2503 | 6 | 10575564 | 10576224 | 1.70E-58 | 57 | 718 |
| 3452 | 4095 | 6 | 6877109 | 6877737 | 1.10E-05 | 59 | 682 |
| 3564 | 4145 | 6 | 10199335 | 10199925 | 4.60E-05 | 60 | 634 |
| 3639 | 5892 | 6 | 12625156 | 12627414 | 1.80E-106 | 60 | 2386 |
| 3699 | 4143 | 6 | 5052000 | 5052439 | 7.10E-71 | 56 | 474 |
| 3734 | 3838 | 6 | 5089438 | 5089546 | 1.40E-70 | 64 | 113 |
| 3925 | 4258 | 6 | 1640638 | 1640970 | 1.10E-26 | 59 | 363 |
| 4354 | 5831 | 6 | 4978177 | 4979656 | 7.10E-71 | 62 | 1541 |
| 4397 | 5018 | 6 | 10577988 | 10578604 | 1.70E-58 | 65 | 649 |
| 4421 | 5829 | 6 | 1713974 | 1715380 | 2.80E-73 | 63 | 1475 |
| 4476 | 5415 | 6 | 25569260 | 25570190 | 2.90E-06 | 57 | 1004 |
| 4685 | 5520 | 6 | 12718770 | 12719603 | 4.30E-40 | 60 | 887 |
| 5389 | 5829 | 6 | 4974998 | 4975438 | 1.60E-12 | 63 | 463 |
| 7189 | 7350 | 6 | 5009767 | 5009930 | 1.60E-12 | 61 | 175 |
| 156 | 370 | 7 | 23166889 | 23167095 | 1.20E-07 | 60 | 225 |
| 237 | 587 | 7 | 6671852 | 6672196 | 4.50E-26 | 59 | 374 |
| 328 | 496 | 7 | 2781355 | 2781516 | 1.10E-105 | 63 | 176 |
| 328 | 496 | 7 | 6646983 | 6647144 | 3.80E-24 | 63 | 178 |
| 368 | 728 | 7 | 17896119 | 17896480 | 7.70E-80 | 58 | 384 |
| 1096 | 1959 | 7 | 17895579 | 17896437 | 1.90E-105 | 61 | 916 |
| 1096 | 2160 | 7 | 2781660 | 2782722 | 1.10E-105 | 60 | 1136 |
| 1096 | 2168 | 7 | 6645767 | 6646839 | 3.80E-24 | 60 | 1146 |
| 1097 | 1338 | 7 | 23158290 | 23158533 | 2.00E-08 | 60 | 260 |
| 1131 | 1231 | 7 | 17908536 | 17908641 | 4.00E-80 | 68 | 108 |
| 1635 | 1754 | 7 | 24556947 | 24557065 | 1.00E-07 | 63 | 131 |
| 1810 | 2025 | 7 | 2782836 | 2783048 | 6.80E-77 | 61 | 235 |
| 1843 | 2503 | 7 | 17894589 | 17895249 | 1.90E-105 | 57 | 719 |

| RTBV | | Rice | | | Stats | | |
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| 2019 | 2321 | 7 | 6671770 | 6672072 | 3.40E-25 | 61 | 334 |
| 2338 | 2449 | 7 | 2782560 | 2782664 | 9.90E-76 | 63 | 114 |
| 2436 | 2564 | 7 | 17998630 | 17998755 | 2.00E-77 | 63 | 136 |
| 2438 | 2540 | 7 | 6501738 | 6501843 | 1.00E-22 | 64 | 112 |
| 3082 | 4082 | 7 | 25060531 | 25061532 | 9.80E-08 | 58 | 1086 |
| 3254 | 3572 | 7 | 6651736 | 6652043 | 4.50E-26 | 60 | 332 |
| 3315 | 4272 | 7 | 23198943 | 23199905 | 2.00E-08 | 58 | 1032 |
| 3315 | 4272 | 7 | 24560295 | 24561257 | 1.00E-07 | 58 | 1033 |
| 3476 | 3727 | 7 | 6504309 | 6504556 | 4.00E-22 | 57 | 265 |
| 3639 | 4844 | 7 | 6650275 | 6651472 | 4.50E-26 | 59 | 1286 |
| 3639 | 5892 | 7 | 17891339 | 17893597 | 1.90E-105 | 60 | 2380 |
| 3641 | 5831 | 7 | 2784514 | 2786702 | 1.10E-105 | 60 | 2314 |
| 3658 | 4248 | 7 | 17534172 | 17534762 | 8.40E-07 | 58 | 626 |
| 3692 | 4015 | 7 | 6521645 | 6521976 | 3.80E-24 | 60 | 356 |
| 4663 | 4870 | 7 | 2780861 | 2781073 | 4.40E-10 | 70 | 221 |
| 4842 | 5130 | 7 | 17606853 | 17607138 | 8.40E-07 | 61 | 314 |
| 4985 | 5229 | 7 | 23228684 | 23228929 | 2.00E-08 | 61 | 265 |
| 5143 | 5382 | 7 | 6543905 | 6544139 | 3.80E-22 | 59 | 258 |
| 187 | 493 | 8 | 1153826 | 1154123 | 1.50E-06 | 60 | 331 |
| 3519 | 4287 | 8 | 1154237 | 1154999 | 1.50E-06 | 58 | 822 |
| 3674 | 4139 | 8 | 1392447 | 1392905 | 1.80E-09 | 61 | 498 |
| 5035 | 5436 | 8 | 1393978 | 1394382 | 1.80E-09 | 59 | 425 |
| 2085 | 2568 | 8 | 4225542 | 4226025 | 6.30E-20 | 57 | 522 |
| 1096 | 2160 | 8 | 4245496 | 4246558 | 6.30E-20 | 60 | 1140 |
| 328 | 452 | 8 | 4246744 | 4246863 | 6.30E-20 | 65 | 131 |
| 4575 | 5831 | 8 | 4249016 | 4250264 | 9.10E-69 | 63 | 1296 |
| 4575 | 4909 | 8 | 4252558 | 4252889 | 1.20E-15 | 67 | 350 |
| 207 | 424 | 8 | 4274049 | 4274278 | 1.30E-66 | 60 | 243 |

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| 1097 | 1694 | 8 | 4295628 | 4296235 | 1.40E-65 | 57 | 654 |
| 3649 | 4061 | 8 | 4314871 | 4315284 | 2.10E-66 | 58 | 445 |
| 2459 | 2608 | 8 | 4314997 | 4315138 | 3.30E-61 | 61 | 157 |
| 3674 | 3804 | 8 | 11133524 | 11133645 | 3.60E-24 | 63 | 135 |
| 3639 | 5892 | 8 | 11152811 | 11155069 | 1.70E-106 | 60 | 2377 |
| 1843 | 2503 | 8 | 11156061 | 11156721 | 3.10E-79 | 57 | 717 |
| 1091 | 2386 | 8 | 11156619 | 11157907 | 1.70E-106 | 58 | 1372 |
| 2084 | 2685 | 8 | 11157386 | 11157984 | 8.80E-81 | 58 | 650 |
| 334 | 728 | 8 | 11157590 | 11157985 | 3.10E-79 | 58 | 426 |
| 1096 | 2160 | 8 | 11159035 | 11160097 | 5.10E-110 | 60 | 1136 |
| 2338 | 2529 | 8 | 11159935 | 11160125 | 4.90E-79 | 60 | 202 |
| 1810 | 2025 | 8 | 11160211 | 11160423 | 1.30E-79 | 61 | 235 |
| 3639 | 5831 | 8 | 11161887 | 11164077 | 5.10E-110 | 61 | 2322 |
| 1096 | 2160 | 8 | 11167145 | 11168207 | 2.20E-109 | 60 | 1136 |
| 2338 | 2529 | 8 | 11168045 | 11168235 | 2.20E-75 | 60 | 202 |
| 1810 | 2025 | 8 | 11168321 | 11168533 | 3.10E-74 | 61 | 235 |
| 3639 | 5831 | 8 | 11169997 | 11172187 | 2.20E-109 | 61 | 2319 |
| 313 | 615 | 8 | 11172552 | 11172856 | 6.40E-113 | 58 | 320 |
| 1096 | 3367 | 8 | 11174169 | 11176443 | 1.80E-111 | 57 | 2434 |
| 1096 | 3367 | 8 | 11181414 | 11183688 | 6.40E-113 | 58 | 2437 |
| 328 | 855 | 8 | 11188275 | 11188793 | 1.10E-109 | 58 | 572 |
| 1096 | 2160 | 8 | 11188580 | 11189642 | 1.10E-106 | 61 | 1137 |
| 2338 | 2449 | 8 | 11189480 | 11189584 | 2.40E-104 | 63 | 114 |
| 1810 | 2025 | 8 | 11189756 | 11189968 | 7.90E-77 | 61 | 235 |
| 3641 | 4824 | 8 | 11191433 | 11192609 | 1.10E-49 | 58 | 1271 |
| 3641 | 5831 | 8 | 11196272 | 11198460 | 5.70E-110 | 60 | 2318 |
| 1810 | 2025 | 8 | 11199926 | 11200138 | 8.10E-78 | 62 | 234 |
| 3639 | 5831 | 8 | 11201328 | 11203518 | 6.40E-113 | 60 | 2319 |
| 328 | 615 | 8 | 11203885 | 11204180 | 1.10E-109 | 60 | 314 |

| RTBV | | Rice | | | Stats | | |
|-------|------|------|----------|----------|-----------|------------|--------|
| Start | End | Chr. | Start | End | E-value | % Identity | Length |
| 1096 | 3367 | 8 | 11209154 | 11211428 | 7.90E-109 | 58 | 2438 |
| 1096 | 3367 | 8 | 11213335 | 11215609 | 5.40E-110 | 58 | 2436 |
| 1096 | 3367 | 8 | 11217516 | 11219790 | 7.90E-109 | 58 | 2436 |
| 1096 | 3367 | 8 | 11221697 | 11223971 | 2.10E-109 | 58 | 2436 |
| 1096 | 3367 | 8 | 11234234 | 11236507 | 5.70E-110 | 57 | 2443 |
| 4019 | 5831 | 8 | 11237480 | 11239291 | 5.40E-110 | 61 | 1911 |
| 2069 | 2255 | 8 | 11256622 | 11256807 | 6.20E-25 | 60 | 200 |
| 1096 | 1946 | 8 | 20043892 | 20044739 | 5.10E-23 | 61 | 909 |
| 1843 | 2503 | 8 | 20045088 | 20045748 | 1.80E-68 | 57 | 716 |
| 4447 | 5892 | 8 | 20047523 | 20048974 | 1.80E-68 | 62 | 1515 |
| 3167 | 3720 | 8 | 21073380 | 21073934 | 1.50E-24 | 57 | 597 |
| 5002 | 5178 | 8 | 21073830 | 21074017 | 6.00E-26 | 61 | 196 |
| 3847 | 4068 | 8 | 21102295 | 21102520 | 6.00E-26 | 60 | 238 |
| 3639 | 5829 | 8 | 21124354 | 21126543 | 6.30E-105 | 60 | 2332 |
| 92 | 432 | 8 | 21126363 | 21126699 | 2.30E-73 | 58 | 368 |
| 1810 | 2025 | 8 | 21128005 | 21128212 | 4.00E-76 | 62 | 229 |
| 1096 | 2121 | 8 | 21128366 | 21129393 | 6.30E-105 | 61 | 1097 |
| 322 | 624 | 8 | 21129407 | 21129709 | 6.30E-105 | 59 | 328 |
| 3378 | 3478 | 8 | 24738196 | 24738292 | 5.50E-23 | 65 | 105 |
| 3192 | 3324 | 8 | 24772188 | 24772318 | 5.50E-23 | 63 | 143 |
| 4354 | 5831 | 8 | 24785364 | 24786843 | 2.00E-101 | 63 | 1542 |
| 1810 | 2025 | 8 | 24789018 | 24789230 | 1.20E-72 | 62 | 234 |
| 1096 | 2160 | 8 | 24789344 | 24790406 | 2.00E-101 | 61 | 1140 |
| 1602 | 2449 | 8 | 24789402 | 24790245 | 3.50E-71 | 56 | 913 |
| 328 | 496 | 8 | 24790550 | 24790711 | 2.00E-101 | 63 | 178 |
| 3994 | 4139 | 8 | 24790804 | 24790939 | 4.70E-72 | 62 | 151 |
| 3902 | 5892 | 8 | 27066770 | 27068766 | 1.40E-78 | 61 | 2089 |
| 328 | 496 | 9 | 14502111 | 14502272 | 6.30E-21 | 62 | 177 |
| 328 | 496 | 9 | 16160807 | 16160968 | 1.10E-102 | 63 | 178 |

| RTBV | | Rice | | | Stats | | |
|-------|------|------|----------|----------|-----------|------------|--------|
| Start | End | Chr. | Start | End | E-value | % Identity | Length |
| 328 | 855 | 9 | 14494561 | 14495079 | 4.60E-22 | 58 | 574 |
| 1096 | 2041 | 9 | 14502416 | 14503369 | 4.60E-22 | 60 | 1015 |
| 1096 | 2121 | 9 | 14494866 | 14495893 | 6.30E-23 | 60 | 1096 |
| 1096 | 2160 | 9 | 16161112 | 16162174 | 1.10E-102 | 60 | 1137 |
| 1230 | 2386 | 9 | 1114430 | 1115586 | 1.10E-104 | 59 | 1229 |
| 1833 | 2025 | 9 | 16162280 | 16162479 | 2.70E-73 | 61 | 213 |
| 1843 | 2503 | 9 | 1113872 | 1114532 | 1.50E-79 | 57 | 719 |
| 2338 | 2529 | 9 | 16162012 | 16162202 | 2.00E-72 | 60 | 205 |
| 2646 | 4098 | 9 | 9821201 | 9822654 | 4.30E-05 | 57 | 1569 |
| 2776 | 2910 | 9 | 16148009 | 16148149 | 3.90E-72 | 63 | 148 |
| 2847 | 2997 | 9 | 16081701 | 16081847 | 5.30E-73 | 62 | 160 |
| 3639 | 5892 | 9 | 1110621 | 1112880 | 1.10E-104 | 60 | 2376 |
| 3900 | 5143 | 9 | 17970610 | 17971846 | 1.40E-05 | 57 | 1333 |
| 3994 | 4139 | 9 | 16160579 | 16160714 | 5.30E-73 | 63 | 153 |
| 3994 | 4139 | 9 | 14501883 | 14502018 | 6.30E-23 | 62 | 153 |
| 4019 | 5831 | 9 | 16164297 | 16166108 | 1.10E-102 | 61 | 1910 |
| 4397 | 5196 | 9 | 14491914 | 14492699 | 4.00E-33 | 63 | 836 |
| 4691 | 5153 | 9 | 5048518 | 5048984 | 4.30E-05 | 60 | 494 |
| 74 | 171 | 10 | 22506606 | 22506704 | 6.70E-19 | 64 | 105 |
| 211 | 593 | 10 | 1977831 | 1978206 | 7.70E-09 | 62 | 408 |
| 261 | 713 | 10 | 14535789 | 14536234 | 7.90E-06 | 60 | 485 |
| 291 | 400 | 10 | 9601961 | 9602075 | 8.10E-22 | 63 | 121 |
| 328 | 496 | 10 | 9157705 | 9157866 | 1.10E-94 | 63 | 177 |
| 328 | 496 | 10 | 9692802 | 9692964 | 5.70E-23 | 62 | 177 |
| 358 | 615 | 10 | 14044790 | 14045047 | 3.40E-23 | 59 | 273 |
| 544 | 728 | 10 | 21610241 | 21610423 | 9.50E-80 | 61 | 195 |
| 735 | 849 | 10 | 14084694 | 14084817 | 2.10E-68 | 62 | 128 |
| 834 | 996 | 10 | 22472347 | 22472514 | 6.70E-19 | 61 | 178 |
| 1096 | 2160 | 10 | 9693107 | 9694168 | 5.70E-23 | 60 | 1140 |

| RTBV | | Rice | | | Stats | | |
|-------|------|------|----------|----------|-----------|------------|--------|
| Start | End | Chr. | Start | End | E-value | % Identity | Length |
| 1106 | 1298 | 10 | 14121168 | 14121363 | 1.10E-68 | 62 | 211 |
| 1144 | 1256 | 10 | 1976967 | 1977091 | 7.70E-09 | 63 | 128 |
| 1230 | 1959 | 10 | 21609701 | 21610425 | 8.10E-107 | 62 | 768 |
| 1230 | 1959 | 10 | 14042108 | 14042832 | 3.40E-23 | 61 | 768 |
| 1230 | 2386 | 10 | 22388217 | 22389373 | 6.70E-19 | 59 | 1229 |
| 1351 | 2160 | 10 | 9155211 | 9156018 | 1.10E-94 | 61 | 866 |
| 1801 | 2603 | 10 | 5524121 | 5524919 | 1.70E-11 | 59 | 868 |
| 1810 | 2079 | 10 | 9154830 | 9155097 | 2.00E-71 | 61 | 292 |
| 1843 | 2503 | 10 | 21608711 | 21609371 | 8.10E-107 | 57 | 719 |
| 1843 | 2503 | 10 | 14041118 | 14041778 | 3.40E-23 | 57 | 719 |
| 1998 | 3515 | 10 | 19006380 | 19007899 | 4.20E-05 | 56 | 1628 |
| 2000 | 2572 | 10 | 1976140 | 1976713 | 7.70E-09 | 59 | 619 |
| 2038 | 2595 | 10 | 677303 | 677864 | 7.30E-06 | 59 | 602 |
| 3177 | 3336 | 10 | 14128039 | 14128202 | 1.10E-66 | 61 | 174 |
| 3246 | 3370 | 10 | 21536524 | 21536652 | 1.20E-22 | 62 | 137 |
| 3452 | 4099 | 10 | 5523972 | 5524615 | 8.40E-06 | 58 | 686 |
| 3639 | 5892 | 10 | 21605461 | 21607719 | 8.10E-107 | 60 | 2378 |
| 3644 | 3896 | 10 | 14504249 | 14504505 | 7.90E-06 | 63 | 273 |
| 3708 | 4140 | 10 | 1976259 | 1976693 | 2.60E-08 | 60 | 470 |
| 3744 | 4139 | 10 | 9157959 | 9158353 | 1.40E-72 | 59 | 429 |
| 3901 | 4036 | 10 | 14498476 | 14498612 | 7.90E-06 | 61 | 148 |
| 4019 | 5808 | 10 | 9151251 | 9153042 | 1.10E-94 | 61 | 1893 |
| 4394 | 5229 | 10 | 635883 | 636712 | 7.30E-06 | 56 | 898 |
| 4397 | 5892 | 10 | 14045394 | 14046886 | 1.10E-68 | 63 | 1560 |
| 4499 | 4932 | 10 | 14047012 | 14047434 | 1.30E-23 | 66 | 446 |
| 4598 | 5153 | 10 | 6236045 | 6236600 | 4.30E-05 | 58 | 592 |
| 5152 | 5303 | 10 | 5496770 | 5496911 | 1.70E-11 | 65 | 159 |
| 3 | 787 | 11 | 26839202 | 26839983 | 3.80E-07 | 58 | 844 |
| 14 | 636 | 11 | 4450337 | 4450960 | 8.20E-06 | 59 | 674 |

| RTBV | | Rice | | | Stats | | |
|-------|------|------|----------|----------|----------|------------|--------|
| Start | End | Chr. | Start | End | E-value | % Identity | Length |
| 149 | 640 | 11 | 1954440 | 1954939 | 5.00E-08 | 61 | 537 |
| 259 | 622 | 11 | 324000 | 324357 | 2.20E-05 | 62 | 387 |
| 267 | 477 | 11 | 9542918 | 9543127 | 8.30E-74 | 59 | 223 |
| 291 | 565 | 11 | 1082170 | 1082444 | 2.80E-05 | 63 | 293 |
| 307 | 646 | 11 | 25621398 | 25621742 | 1.50E-08 | 61 | 371 |
| 321 | 647 | 11 | 22293263 | 22293589 | 2.60E-05 | 60 | 350 |
| 332 | 480 | 11 | 1455334 | 1455480 | 5.70E-05 | 62 | 156 |
| 1096 | 2306 | 11 | 25644826 | 25646044 | 7.80E-26 | 59 | 1298 |
| 1122 | 1228 | 11 | 19332995 | 19333094 | 2.00E-05 | 65 | 114 |
| 1230 | 2386 | 11 | 9603055 | 9604211 | 1.70E-24 | 59 | 1230 |
| 1407 | 1581 | 11 | 5035110 | 5035275 | 1.70E-61 | 61 | 184 |
| 1625 | 2594 | 11 | 22288636 | 22289598 | 2.60E-05 | 57 | 1037 |
| 1810 | 2025 | 11 | 9592313 | 9592525 | 8.30E-74 | 62 | 235 |
| 1854 | 2295 | 11 | 25621298 | 25621743 | 5.10E-08 | 59 | 475 |
| 3124 | 4037 | 11 | 27889790 | 27890696 | 1.70E-05 | 58 | 979 |
| 3207 | 3717 | 11 | 25728814 | 25729327 | 7.80E-26 | 58 | 554 |
| 3246 | 4255 | 11 | 27771435 | 27772440 | 9.60E-05 | 57 | 1089 |
| 3392 | 4140 | 11 | 25623213 | 25623954 | 1.50E-08 | 58 | 797 |
| 3408 | 4037 | 11 | 1450285 | 1450900 | 5.70E-05 | 59 | 668 |
| 3641 | 5892 | 11 | 9593991 | 9596247 | 8.30E-74 | 60 | 2381 |
| 3666 | 4156 | 11 | 4452192 | 4452683 | 8.20E-06 | 58 | 529 |
| 3847 | 4100 | 11 | 1091192 | 1091440 | 2.80E-05 | 60 | 270 |
| 4327 | 4437 | 11 | 22185305 | 22185412 | 2.60E-05 | 64 | 114 |
| 4338 | 5829 | 11 | 11632973 | 11634468 | 3.40E-63 | 61 | 1563 |
| 4415 | 5828 | 11 | 5065846 | 5067254 | 1.70E-61 | 62 | 1478 |
| 4598 | 5154 | 11 | 14764845 | 14765401 | 9.80E-08 | 60 | 598 |
| 4749 | 5069 | 11 | 27727126 | 27727451 | 9.60E-05 | 59 | 352 |
| 4850 | 5493 | 11 | 19323016 | 19323657 | 2.00E-05 | 58 | 683 |
| 5034 | 5166 | 11 | 25626507 | 25626637 | 1.50E-08 | 61 | 136 |
| 5606 | 5758 | 11 | 27866157 | 27866302 | 1.70E-05 | 61 | 161 |

| RTBV | | Rice | | | Stats | | |
|-------|------|------|----------|----------|----------|------------|--------|
| Start | End | Chr. | Start | End | E-value | % Identity | Length |
| 7019 | 7116 | 11 | 11579301 | 11579397 | 3.40E-63 | 66 | 105 |
| 21 | 535 | 12 | 18995810 | 18996334 | 2.20E-05 | 59 | 549 |
| 34 | 601 | 12 | 5491369 | 5491934 | 1.50E-06 | 60 | 610 |
| 42 | 165 | 12 | 25754278 | 25754401 | 2.80E-99 | 65 | 135 |
| 94 | 777 | 12 | 1872204 | 1872878 | 6.20E-07 | 59 | 733 |
| 202 | 359 | 12 | 4576181 | 4576344 | 5.20E-77 | 60 | 169 |
| 328 | 452 | 12 | 22965076 | 22965195 | 1.30E-22 | 65 | 132 |
| 544 | 728 | 12 | 25812807 | 25812989 | 9.80E-74 | 61 | 195 |
| 544 | 728 | 12 | 17863728 | 17863910 | 3.70E-42 | 61 | 195 |
| 1096 | 2121 | 12 | 22963863 | 22964890 | 1.30E-22 | 61 | 1101 |
| 1230 | 1687 | 12 | 17863726 | 17864186 | 2.40E-59 | 62 | 478 |
| 1230 | 2388 | 12 | 25812805 | 25813964 | 2.80E-99 | 59 | 1236 |
| 1477 | 1584 | 12 | 19449318 | 19449425 | 4.10E-18 | 63 | 117 |
| 1814 | 2566 | 12 | 22216478 | 22217227 | 9.80E-05 | 58 | 809 |
| 1843 | 2503 | 12 | 25813860 | 25814520 | 9.80E-74 | 57 | 721 |
| 1868 | 2571 | 12 | 17560718 | 17561426 | 9.80E-08 | 59 | 768 |
| 1901 | 2054 | 12 | 17901476 | 17901629 | 3.30E-10 | 62 | 171 |
| 1911 | 2043 | 12 | 4571307 | 4571436 | 5.20E-77 | 61 | 138 |
| 1972 | 2347 | 12 | 17925099 | 17925471 | 1.30E-11 | 58 | 396 |
| 2533 | 2685 | 12 | 22902354 | 22902503 | 1.30E-22 | 61 | 162 |
| 3246 | 4184 | 12 | 518117 | 519062 | 1.50E-06 | 58 | 1018 |
| 3291 | 3481 | 12 | 4504668 | 4504854 | 1.80E-78 | 61 | 200 |
| 3440 | 4299 | 12 | 22277665 | 22278519 | 7.50E-07 | 58 | 930 |
| 3651 | 5892 | 12 | 4594578 | 4596829 | 1.80E-78 | 60 | 2367 |
| 3668 | 3796 | 12 | 22190743 | 22190868 | 9.80E-05 | 63 | 132 |
| 4021 | 5829 | 12 | 25117107 | 25118916 | 7.10E-74 | 61 | 1913 |
| 4397 | 4816 | 12 | 25811456 | 25811867 | 7.40E-11 | 64 | 440 |
| 4397 | 5829 | 12 | 26510705 | 26512129 | 5.40E-69 | 63 | 1492 |
| 4397 | 5892 | 12 | 25816386 | 25817878 | 2.80E-99 | 62 | 1557 |



| RTBV | | Rice | | | Stats | | |
|-------|------|------|----------|----------|----------|------------|--------|
| Start | End | Chr. | Start | End | E-value | % Identity | Length |
| 4581 | 5493 | 12 | 19479869 | 19480773 | 1.10E-18 | 59 | 970 |
| 4852 | 5892 | 12 | 17864171 | 17865217 | 2.40E-59 | 62 | 1086 |

Table B-2. RNA viral homologies in the rice nuclear genome

| Chr | Rice | | Length | Stats | | Viral homology |
|-----|----------|----------|--------|----------|------------|----------------------|
| | Start | End | | E-Value | % Identity | |
| 1 | 2469482 | 2469808 | 354 | 2.30E-05 | 62 | RGSV (NC_002328) |
| 1 | 11464345 | 11464669 | 343 | 6.00E-06 | 62 | RGSV (NC_002328) |
| 1 | 25700098 | 25700455 | 387 | 6.00E-06 | 62 | RGSV (NC_002328) |
| 1 | 26530760 | 26531130 | 395 | 9.00E-05 | 61 | RGSV (NC_002328) |
| 1 | 28679419 | 28679805 | 413 | 6.40E-05 | 61 | RBSDV (NC_003735) |
| 1 | 32150912 | 32151379 | 504 | 2.70E-06 | 60 | RBSDV (NC_003735) |
| 1 | 38531674 | 38531963 | 311 | 4.60E-05 | 62 | RGSV (NC_002328) |
| 2 | 12524933 | 12525247 | 325 | 3.00E-06 | 62 | RGSV (NC_002328) |
| 2 | 12525835 | 12526173 | 360 | 7.80E-07 | 62 | RGSV (NC_002328) |
| 2 | 18870105 | 18870616 | 550 | 7.60E-05 | 61 | OSE (NC_007647) |
| 2 | 21461054 | 21461542 | 521 | 8.40E-05 | 59 | OSE (NC_007647) |
| 3 | 18200914 | 18201437 | 554 | 1.30E-07 | 59 | RGSV (NC_002325) |
| 3 | 25929928 | 25930244 | 337 | 2.30E-05 | 62 | RGSV (NC_002328) |
| 3 | 28899384 | 28899595 | 234 | 2.40E-05 | 63 | RBSDV (NC_003735) |
| 3 | 28918522 | 28918803 | 295 | 2.40E-05 | 60 | RBSDV (NC_003735) |
| 4 | 16316068 | 16317049 | 1057 | 5.40E-05 | 58 | OSE (NC_007647) |
| 4 | 26234062 | 26234407 | 377 | 1.20E-05 | 62 | RGSV (NC_002328) |
| 5 | 5735049 | 5735249 | 215 | 4.90E-09 | 65 | RGSV (NC_002328) |
| 5 | 5751371 | 5751545 | 184 | 4.90E-09 | 65 | RGSV (NC_002328) |
| 5 | 11692147 | 11692544 | 420 | 9.00E-05 | 60 | RGSV (NC_002328) |
| 6 | 6644000 | 6645675 | 1800 | 1.20E-05 | 56 | RGSV (NC_002325) |
| 6 | 12923333 | 12923600 | 284 | 2.00E-05 | 63 | RSV (NC_003753) |
| 6 | 14893394 | 14893780 | 428 | 9.00E-05 | 61 | RGSV (NC_002328) |
| 6 | 15878801 | 15879103 | 318 | 3.00E-06 | 63 | RGSV (NC_002328) |
| 6 | 29536650 | 29537081 | 464 | 8.40E-07 | 59 | RBSDV (NC_003735) |
| 6 | 29591331 | 29591794 | 500 | 8.40E-07 | 60 | RBSDV (NC_003735) |
| 7 | 18304362 | 18304614 | 268 | 9.00E-05 | 63 | RGSV (NC_002328) |
| 8 | 209536 | 209876 | 368 | 9.00E-05 | 61 | RGSV (NC_002328) |
| 8 | 1154316 | 1154673 | 386 | 6.00E-06 | 62 | RGSV (NC_002328) |



| Chr | Rice | | Length | Stats | | Viral homology |
|-----|----------|----------|--------|----------|------------|------------------|
| | Start | End | | E-Value | % Identity | |
| 8 | 1390999 | 1391317 | 342 | 4.60E-05 | 62 | RGSV (NC_002328) |
| 8 | 1394984 | 1395358 | 399 | 4.00E-07 | 61 | RGSV (NC_002328) |
| 8 | 3548352 | 3548795 | 470 | 2.00E-07 | 60 | RGSV (NC_002328) |
| 8 | 8511475 | 8511561 | 92 | 1.70E-06 | 67 | ORE (NC_007649) |
| 8 | 8518853 | 8519786 | 1005 | 1.70E-06 | 58 | ORE (NC_007649) |
| 8 | 8602435 | 8602649 | 232 | 1.70E-06 | 63 | ORE (NC_007649) |
| 8 | 20497318 | 20497613 | 312 | 9.00E-05 | 63 | RGSV (NC_002328) |
| 8 | 23533493 | 23534077 | 626 | 5.60E-06 | 59 | OSE (NC_007647) |
| 8 | 23557095 | 23557877 | 837 | 5.60E-06 | 57 | OSE (NC_007647) |
| 9 | 9821130 | 9821963 | 904 | 1.20E-05 | 58 | OSE (NC_007647) |
| 9 | 10150703 | 10151069 | 393 | 6.00E-06 | 62 | RGSV (NC_002328) |
| 10 | 3468456 | 3468616 | 167 | 9.00E-05 | 69 | RGSV (NC_002328) |
| 10 | 10227825 | 10228578 | 808 | 1.10E-06 | 58 | OSE (NC_007647) |
| 10 | 15117266 | 15117621 | 379 | 9.00E-05 | 61 | RSGV (NC_002328) |
| 10 | 15516599 | 15516924 | 347 | 3.00E-06 | 62 | RSGV (NC_002328) |
| 11 | 322800 | 323380 | 623 | 2.40E-05 | 57 | OSE (NC_007647) |
| 11 | 323956 | 324388 | 465 | 2.40E-05 | 59 | OSE (NC_007647) |
| 11 | 20706041 | 20706329 | 297 | 7.70E-05 | 61 | RSV (NC_003753) |
| 11 | 24769846 | 24770400 | 588 | 9.00E-05 | 59 | RGSV (NC_002328) |
| 11 | 25902206 | 25902548 | 370 | 4.60E-05 | 62 | RGSV (NC_002328) |
| 11 | 27924348 | 27924813 | 498 | 3.80E-05 | 59 | OSE (NC_007647) |
| 12 | 4357548 | 4357776 | 237 | 2.00E-05 | 64 | RSV (NC_003753) |

OSE - Oryza sativa endornavirus; ORE - Oryza rufipogon endornavirus; RSV - Rice stripe virus; RBSDV - Rice black streaked dwarf virus; RGSV-Rice grassy stunt virus

Table C-1. *Bacillus cereus* homologies in the rice nuclear genome

| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|----------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 33591 | 33645 | - | 1 | 33566481 | 33566607 | + | 67 | 7.5E-47 | 88.19 | 127 |
| 13745 | 13871 | - | 1 | 33566481 | 33566607 | + | 67 | 7.5E-47 | 88.19 | 127 |
| 149705 | 149831 | - | 1 | 33566481 | 33566607 | + | 67 | 7.5E-47 | 88.19 | 127 |
| 283809 | 283935 | - | 1 | 33566481 | 33566607 | + | 67 | 2.9E-46 | 88.19 | 127 |
| 304861 | 304987 | - | 1 | 33566481 | 33566607 | + | 67 | 2.9E-46 | 88.19 | 127 |
| 318069 | 318195 | - | 1 | 33566481 | 33566607 | + | 67 | 2.9E-46 | 88.19 | 127 |
| 327170 | 327296 | - | 1 | 33566481 | 33566607 | + | 67 | 2.9E-46 | 88.19 | 127 |
| 334988 | 335186 | - | 1 | 33566481 | 33566607 | + | 67 | 2.9E-46 | 88.19 | 127 |
| 609141 | 609267 | - | 1 | 33566481 | 33566607 | + | 67 | 2.9E-46 | 88.19 | 127 |
| 822348 | 822474 | - | 1 | 33566481 | 33566607 | + | 67 | 2.9E-46 | 88.19 | 127 |
| 4651388 | 4651514 | + | 1 | 33566481 | 33566607 | + | 67 | 2.9E-46 | 88.19 | 127 |
| 33372 | 33486 | - | 1 | 33566640 | 33566753 | + | 44 | 7.5E-47 | 84.48 | 116 |
| 13598 | 13712 | - | 1 | 33566640 | 33566753 | + | 44 | 7.5E-47 | 84.48 | 116 |
| 149559 | 149672 | - | 1 | 33566640 | 33566753 | + | 44 | 7.5E-47 | 84.48 | 116 |
| 283663 | 283776 | - | 1 | 33566640 | 33566753 | + | 44 | 2.9E-46 | 84.48 | 116 |
| 304715 | 304828 | - | 1 | 33566640 | 33566753 | + | 44 | 2.9E-46 | 84.48 | 116 |
| 317923 | 318036 | - | 1 | 33566640 | 33566753 | + | 44 | 2.9E-46 | 84.48 | 116 |
| 327024 | 327137 | - | 1 | 33566640 | 33566753 | + | 44 | 2.9E-46 | 84.48 | 116 |
| 334842 | 335027 | - | 1 | 33566640 | 33566753 | + | 44 | 2.9E-46 | 84.48 | 116 |
| 608995 | 609108 | - | 1 | 33566640 | 33566753 | + | 44 | 2.9E-46 | 84.48 | 116 |
| 822202 | 822315 | - | 1 | 33566640 | 33566753 | + | 44 | 2.9E-46 | 84.48 | 116 |
| 4651547 | 4651660 | + | 1 | 33566640 | 33566753 | + | 44 | 2.9E-46 | 84.48 | 116 |
| 13576 | 13951 | + | 1 | 33567484 | 33567858 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 86467 | 86842 | + | 1 | 33567484 | 33567858 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 149537 | 149910 | + | 1 | 33567484 | 33567858 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 283641 | 284015 | + | 1 | 33567484 | 33567858 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 304693 | 305067 | + | 1 | 33567484 | 33567858 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 317901 | 318275 | + | 1 | 33567484 | 33567858 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 327002 | 327376 | + | 1 | 33567484 | 33567858 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 334820 | 335266 | + | 1 | 33567484 | 33567858 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 608973 | 609347 | + | 1 | 33567484 | 33567858 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 822180 | 822554 | + | 1 | 33567484 | 33567858 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 4651308 | 4651682 | - | 1 | 33567484 | 33567858 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 13617 | 13871 | + | 1 | 33567524 | 33567778 | + | 158 | 5E-84 | 90.31 | 258 |
| 33391 | 33645 | + | 1 | 33567524 | 33567778 | + | 158 | 5E-84 | 90.31 | 258 |
| 86507 | 86693 | + | 1 | 33567524 | 33567709 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 149577 | 149831 | + | 1 | 33567524 | 33567778 | + | 158 | 5E-84 | 90.31 | 258 |
| 304733 | 304918 | + | 1 | 33567524 | 33567709 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 317941 | 318126 | + | 1 | 33567524 | 33567709 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 327042 | 327227 | + | 1 | 33567524 | 33567709 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 334860 | 335045 | + | 1 | 33567524 | 33567709 | + | 101 | 3.5E-50 | 88.36 | 189 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|---------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 609013 | 609133 | + | 1 | 33567524 | 33567644 | + | 66 | 1.8E-29 | 88.52 | 122 |
| 822220 | 822405 | + | 1 | 33567524 | 33567709 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 4651457 | 4651642 | - | 1 | 33567524 | 33567709 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 10630 | 10728 | - | 2 | 807711 | 807809 | + | 64 | 1.4E-28 | 91 | 100 |
| 30404 | 30502 | - | 2 | 807711 | 807809 | + | 64 | 1.4E-28 | 91 | 100 |
| 83748 | 83846 | - | 2 | 807711 | 807809 | + | 64 | 1.4E-28 | 91 | 100 |
| 146816 | 146914 | - | 2 | 807711 | 807809 | + | 64 | 1.4E-28 | 91 | 100 |
| 280922 | 281019 | - | 2 | 807711 | 807809 | + | 64 | 1.4E-28 | 91 | 100 |
| 10197 | 10315 | - | 2 | 808124 | 808242 | + | 79 | 2.1E-37 | 91.6 | 119 |
| 29971 | 30089 | - | 2 | 808124 | 808242 | + | 79 | 2.1E-37 | 91.6 | 119 |
| 83315 | 83433 | - | 2 | 808124 | 808242 | + | 79 | 2.1E-37 | 91.6 | 119 |
| 146383 | 146501 | - | 2 | 808124 | 808242 | + | 79 | 2.1E-37 | 91.6 | 119 |
| 280488 | 280606 | - | 2 | 808124 | 808242 | + | 79 | 2.1E-37 | 91.6 | 119 |
| 301538 | 301656 | - | 2 | 808124 | 808242 | + | 79 | 2.1E-37 | 91.6 | 119 |
| 314749 | 314867 | - | 2 | 808124 | 808242 | + | 79 | 2.1E-37 | 91.6 | 119 |
| 323848 | 323966 | - | 2 | 808124 | 808242 | + | 79 | 2.1E-37 | 91.6 | 119 |
| 331666 | 331784 | - | 2 | 808124 | 808242 | + | 79 | 2.1E-37 | 91.6 | 119 |
| 819027 | 819145 | - | 2 | 808124 | 808242 | + | 79 | 2.1E-37 | 91.6 | 119 |
| 4654717 | 4654835 | + | 2 | 808124 | 808242 | + | 79 | 2.1E-37 | 91.6 | 119 |
| 12879 | 12990 | + | 2 | 814495 | 814605 | + | 57 | 3.7E-24 | 87.18 | 117 |
| 32654 | 32764 | + | 2 | 814495 | 814605 | + | 56 | 1.5E-23 | 87.07 | 116 |
| 85770 | 85881 | + | 2 | 814495 | 814605 | + | 56 | 1.5E-23 | 87.07 | 116 |
| 148839 | 148949 | + | 2 | 814495 | 814605 | + | 57 | 3.7E-24 | 87.18 | 117 |
| 148853 | 148950 | + | 2 | 814495 | 814605 | + | 57 | 3.7E-24 | 87.18 | 117 |
| 282944 | 283053 | + | 2 | 814495 | 814604 | + | 56 | 1.5E-23 | 87.07 | 116 |
| 303996 | 304105 | + | 2 | 814495 | 814604 | + | 56 | 1.5E-23 | 87.07 | 116 |
| 317204 | 317313 | + | 2 | 814495 | 814604 | + | 56 | 1.5E-23 | 87.07 | 116 |
| 326305 | 326414 | + | 2 | 814495 | 814604 | + | 56 | 1.5E-23 | 87.07 | 116 |
| 334123 | 334232 | + | 2 | 814495 | 814604 | + | 56 | 1.5E-23 | 87.07 | 116 |
| 608276 | 608386 | + | 2 | 814495 | 814605 | + | 57 | 3.7E-24 | 87.18 | 117 |
| 821483 | 821593 | + | 2 | 814495 | 814605 | + | 57 | 3.7E-24 | 87.18 | 117 |
| 4652269 | 4652379 | - | 2 | 814495 | 814605 | + | 57 | 3.7E-24 | 87.18 | 117 |
| 148966 | 149072 | + | 2 | 814624 | 814729 | + | 62 | 3.1E-27 | 89.62 | 106 |
| 32916 | 33025 | + | 2 | 814764 | 814872 | + | 85 | 1.7E-42 | 94.5 | 109 |
| 86033 | 86142 | + | 2 | 814764 | 814872 | + | 85 | 1.7E-42 | 94.5 | 109 |
| 86033 | 86142 | + | 2 | 814764 | 814872 | + | 85 | 6.3E-42 | 94.5 | 109 |
| 149103 | 149211 | + | 2 | 814764 | 814872 | + | 85 | 1.7E-42 | 94.5 | 109 |
| 149121 | 149229 | + | 2 | 814764 | 814872 | + | 85 | 1.7E-42 | 94.5 | 109 |
| 304259 | 304367 | + | 2 | 814764 | 814872 | + | 85 | 1.7E-42 | 94.5 | 109 |
| 317467 | 317575 | + | 2 | 814764 | 814872 | + | 85 | 1.7E-42 | 94.5 | 109 |
| 326368 | 326476 | + | 2 | 814764 | 814872 | + | 85 | 1.7E-42 | 94.5 | 109 |
| 334386 | 334494 | + | 2 | 814764 | 814872 | + | 85 | 1.7E-42 | 94.5 | 109 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|---------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 608403 | 608511 | + | 2 | 814764 | 814872 | + | 85 | 1.7E-42 | 94.5 | 109 |
| 608539 | 608647 | + | 2 | 814764 | 814872 | + | 85 | 1.7E-42 | 94.5 | 109 |
| 821746 | 821854 | + | 2 | 814764 | 814872 | + | 85 | 1.7E-42 | 94.5 | 109 |
| 4652008 | 4652116 | - | 2 | 814764 | 814872 | + | 85 | 1.7E-42 | 94.5 | 109 |
| 13576 | 13951 | + | 2 | 815200 | 815574 | + | 179 | 4.3E-96 | 86.68 | 383 |
| 86467 | 86842 | + | 2 | 815200 | 815574 | + | 179 | 4.3E-96 | 86.68 | 383 |
| 149537 | 149910 | + | 2 | 815200 | 815574 | + | 179 | 4.3E-96 | 86.68 | 383 |
| 283641 | 284015 | + | 2 | 815200 | 815574 | + | 179 | 4.3E-96 | 86.68 | 383 |
| 304693 | 305067 | + | 2 | 815200 | 815574 | + | 179 | 4.3E-96 | 86.68 | 383 |
| 317901 | 318275 | + | 2 | 815200 | 815574 | + | 179 | 4.3E-96 | 86.68 | 383 |
| 327002 | 327376 | + | 2 | 815200 | 815574 | + | 179 | 4.3E-96 | 86.68 | 383 |
| 334820 | 335266 | + | 2 | 815200 | 815574 | + | 179 | 4.3E-96 | 86.68 | 383 |
| 608973 | 609347 | + | 2 | 815200 | 815574 | + | 179 | 4.3E-96 | 86.68 | 383 |
| 822180 | 822554 | + | 2 | 815200 | 815574 | + | 179 | 4.3E-96 | 86.68 | 383 |
| 4651308 | 4651682 | - | 2 | 815200 | 815574 | + | 179 | 4.3E-96 | 86.68 | 383 |
| 13618 | 13871 | + | 2 | 815241 | 815494 | + | 133 | 5.2E-69 | 87.94 | 257 |
| 33392 | 33645 | + | 2 | 815241 | 815494 | + | 133 | 5.2E-69 | 87.94 | 257 |
| 86509 | 86663 | + | 2 | 815241 | 815395 | + | 76 | 3.9E-35 | 87.18 | 156 |
| 149578 | 149831 | + | 2 | 815241 | 815494 | + | 133 | 5.2E-69 | 87.94 | 257 |
| 304734 | 304888 | + | 2 | 815241 | 815395 | + | 76 | 3.9E-35 | 87.18 | 156 |
| 317942 | 318096 | + | 2 | 815241 | 815395 | + | 76 | 3.9E-35 | 87.18 | 156 |
| 327043 | 327197 | + | 2 | 815241 | 815395 | + | 76 | 3.9E-35 | 87.18 | 156 |
| 334861 | 335015 | + | 2 | 815241 | 815395 | + | 76 | 3.9E-35 | 87.18 | 156 |
| 609014 | 609133 | + | 2 | 815241 | 815360 | + | 53 | 1.3E-21 | 85.95 | 121 |
| 822221 | 822375 | + | 2 | 815241 | 815395 | + | 76 | 3.9E-35 | 87.18 | 156 |
| 4651487 | 4651641 | - | 2 | 815241 | 815395 | + | 76 | 3.9E-35 | 87.18 | 156 |
| 10197 | 10315 | + | 2 | 14191648 | 14191766 | + | 87 | 2.5E-42 | 93.28 | 119 |
| 10630 | 10728 | + | 2 | 14192081 | 14192179 | + | 68 | 4.9E-31 | 92 | 100 |
| 29971 | 30089 | + | 2 | 14191648 | 14191766 | + | 87 | 2.5E-42 | 93.28 | 119 |
| 30404 | 30502 | + | 2 | 14192081 | 14192179 | + | 68 | 4.9E-31 | 92 | 100 |
| 83315 | 83433 | + | 2 | 14191648 | 14191766 | + | 87 | 2.5E-42 | 93.28 | 119 |
| 83748 | 83846 | + | 2 | 14192081 | 14192179 | + | 68 | 4.9E-31 | 92 | 100 |
| 146383 | 146501 | + | 2 | 14191648 | 14191766 | + | 87 | 2.5E-42 | 93.28 | 119 |
| 146816 | 146914 | + | 2 | 14192081 | 14192179 | + | 68 | 4.9E-31 | 92 | 100 |
| 280488 | 280606 | + | 2 | 14191648 | 14191766 | + | 87 | 2.5E-42 | 93.28 | 119 |
| 280922 | 281019 | + | 2 | 14192081 | 14192179 | + | 68 | 4.9E-31 | 92 | 100 |
| 301538 | 301656 | + | 2 | 14191648 | 14191766 | + | 87 | 2.5E-42 | 93.28 | 119 |
| 314749 | 314867 | + | 2 | 14191648 | 14191766 | + | 87 | 2.5E-42 | 93.28 | 119 |
| 323848 | 323966 | + | 2 | 14191648 | 14191766 | + | 87 | 2.5E-42 | 93.28 | 119 |
| 331666 | 331784 | + | 2 | 14191648 | 14191766 | + | 87 | 2.5E-42 | 93.28 | 119 |
| 819027 | 819145 | + | 2 | 14191648 | 14191766 | + | 87 | 2.5E-42 | 93.28 | 119 |
| 4654717 | 4654835 | - | 2 | 14191648 | 14191766 | + | 87 | 2.5E-42 | 93.28 | 119 |
| 4347101 | 4347870 | - | 3 | 1817627 | 1818395 | + | 769 | 0 | 100 | 769 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|---------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 10192 | 10315 | - | 3 | 23618356 | 23618478 | - | 73 | 9.5E-34 | 89.6 | 125 |
| 29966 | 30089 | - | 3 | 23618356 | 23618478 | - | 73 | 9.5E-34 | 89.6 | 125 |
| 83310 | 83433 | - | 3 | 23618356 | 23618478 | - | 73 | 9.5E-34 | 89.6 | 125 |
| 146379 | 146501 | - | 3 | 23618356 | 23618478 | - | 73 | 9.5E-34 | 89.6 | 125 |
| 280484 | 280606 | - | 3 | 23618356 | 23618478 | - | 73 | 9.5E-34 | 89.6 | 125 |
| 301534 | 301656 | - | 3 | 23618356 | 23618478 | - | 73 | 9.5E-34 | 89.6 | 125 |
| 314745 | 314867 | - | 3 | 23618356 | 23618478 | - | 73 | 9.5E-34 | 89.6 | 125 |
| 323844 | 323966 | - | 3 | 23618356 | 23618478 | - | 73 | 9.5E-34 | 89.6 | 125 |
| 331662 | 331784 | - | 3 | 23618356 | 23618478 | - | 73 | 9.5E-34 | 89.6 | 125 |
| 819023 | 819145 | - | 3 | 23618356 | 23618478 | - | 73 | 9.5E-34 | 89.6 | 125 |
| 4654717 | 4654839 | + | 3 | 23618356 | 23618478 | - | 73 | 9.5E-34 | 89.6 | 125 |
| 148966 | 149072 | - | 3 | 27564940 | 27565045 | + | 66 | 1.1E-29 | 90.57 | 106 |
| 12880 | 12989 | - | 3 | 27565065 | 27565174 | + | 50 | 6.5E-20 | 85.96 | 114 |
| 32653 | 32763 | - | 3 | 27565065 | 27565174 | + | 51 | 1.6E-20 | 86.09 | 115 |
| 85770 | 85880 | - | 3 | 27565065 | 27565174 | + | 50 | 6.5E-20 | 85.96 | 114 |
| 148839 | 148948 | - | 3 | 27565065 | 27565174 | + | 51 | 1.6E-20 | 86.09 | 115 |
| 148853 | 148949 | - | 3 | 27565065 | 27565174 | + | 51 | 1.6E-20 | 86.09 | 115 |
| 282944 | 283053 | - | 3 | 27565065 | 27565174 | + | 51 | 1.6E-20 | 86.09 | 115 |
| 303996 | 304105 | - | 3 | 27565065 | 27565174 | + | 51 | 1.6E-20 | 86.09 | 115 |
| 317204 | 317313 | - | 3 | 27565065 | 27565174 | + | 51 | 1.6E-20 | 86.09 | 115 |
| 326305 | 326414 | - | 3 | 27565065 | 27565174 | + | 51 | 1.6E-20 | 86.09 | 115 |
| 334123 | 334232 | - | 3 | 27565065 | 27565174 | + | 51 | 1.6E-20 | 86.09 | 115 |
| 608276 | 608385 | - | 3 | 27565065 | 27565174 | + | 51 | 1.6E-20 | 86.09 | 115 |
| 821483 | 821592 | - | 3 | 27565065 | 27565174 | + | 51 | 1.6E-20 | 86.09 | 115 |
| 4652270 | 4652379 | + | 3 | 27565065 | 27565174 | + | 51 | 1.6E-20 | 86.09 | 115 |
| 12879 | 12990 | - | 3 | 31754647 | 31754757 | - | 53 | 1E-21 | 86.32 | 117 |
| 32653 | 32764 | - | 3 | 31754647 | 31754757 | - | 53 | 1E-21 | 86.32 | 117 |
| 85770 | 85881 | - | 3 | 31754647 | 31754757 | - | 52 | 4E-21 | 86.21 | 116 |
| 148839 | 148949 | - | 3 | 31754647 | 31754757 | - | 53 | 1E-21 | 86.32 | 117 |
| 148853 | 148950 | - | 3 | 31754647 | 31754757 | - | 53 | 1E-21 | 86.32 | 117 |
| 282944 | 283053 | - | 3 | 31754647 | 31754756 | - | 52 | 4E-21 | 86.21 | 116 |
| 303996 | 304105 | - | 3 | 31754647 | 31754756 | - | 52 | 4E-21 | 86.21 | 116 |
| 317204 | 317313 | - | 3 | 31754647 | 31754756 | - | 52 | 4E-21 | 86.21 | 116 |
| 326305 | 326414 | - | 3 | 31754647 | 31754756 | - | 52 | 4E-21 | 86.21 | 116 |
| 334123 | 334232 | - | 3 | 31754647 | 31754756 | - | 52 | 4E-21 | 86.21 | 116 |
| 608276 | 608386 | - | 3 | 31754647 | 31754757 | - | 53 | 1E-21 | 86.32 | 117 |
| 821483 | 821593 | - | 3 | 31754647 | 31754757 | - | 53 | 1E-21 | 86.32 | 117 |
| 4652269 | 4652379 | + | 3 | 31754647 | 31754757 | - | 53 | 1E-21 | 86.32 | 117 |
| 148966 | 149072 | - | 3 | 31754776 | 31754881 | - | 70 | 3.7E-32 | 91.51 | 106 |
| 32916 | 33025 | - | 3 | 31754916 | 31755024 | - | 93 | 1.4E-47 | 96.33 | 109 |
| 86033 | 86142 | - | 3 | 31754916 | 31755024 | - | 93 | 1.4E-47 | 96.33 | 109 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|----------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 149103 | 149211 | - | 3 | 31754916 | 31755024 | - | 93 | 1.4E-47 | 96.33 | 109 |
| 149121 | 149229 | - | 3 | 31754916 | 31755024 | - | 93 | 1.4E-47 | 96.33 | 109 |
| 304259 | 304367 | - | 3 | 31754916 | 31755024 | - | 93 | 1.4E-47 | 96.33 | 109 |
| 317467 | 317575 | - | 3 | 31754916 | 31755024 | - | 93 | 1.4E-47 | 96.33 | 109 |
| 326368 | 326476 | - | 3 | 31754916 | 31755024 | - | 93 | 1.4E-47 | 96.33 | 109 |
| 334386 | 334494 | - | 3 | 31754916 | 31755024 | - | 93 | 1.4E-47 | 96.33 | 109 |
| 608403 | 608511 | - | 3 | 31754916 | 31755024 | - | 93 | 1.4E-47 | 96.33 | 109 |
| 608539 | 608647 | - | 3 | 31754916 | 31755024 | - | 93 | 1.4E-47 | 96.33 | 109 |
| 821746 | 821854 | - | 3 | 31754916 | 31755024 | - | 93 | 1.4E-47 | 96.33 | 109 |
| 4652008 | 4652116 | + | 3 | 31754916 | 31755024 | - | 93 | 1.4E-47 | 96.33 | 109 |
| 13576 | 13951 | - | 3 | 31755352 | 31755726 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 86467 | 86842 | - | 3 | 31755352 | 31755726 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 149537 | 149910 | - | 3 | 31755352 | 31755726 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 283641 | 284015 | - | 3 | 31755352 | 31755726 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 304693 | 305067 | - | 3 | 31755352 | 31755726 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 317901 | 318275 | - | 3 | 31755352 | 31755726 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 327002 | 327376 | - | 3 | 31755352 | 31755726 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 334820 | 335266 | - | 3 | 31755352 | 31755726 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 608973 | 609347 | - | 3 | 31755352 | 31755726 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 822180 | 822554 | - | 3 | 31755352 | 31755726 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 4651308 | 4651682 | + | 3 | 31755352 | 31755726 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 13617 | 13871 | - | 3 | 31755392 | 31755646 | - | 158 | 5E-84 | 90.31 | 258 |
| 13617 | 13802 | - | 3 | 31755392 | 31755577 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 33391 | 33645 | - | 3 | 31755392 | 31755646 | - | 158 | 5E-84 | 90.31 | 258 |
| 33391 | 33576 | - | 3 | 31755392 | 31755577 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 86507 | 86693 | - | 3 | 31755392 | 31755577 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 149576 | 149761 | - | 3 | 31755392 | 31755577 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 149577 | 149831 | - | 3 | 31755392 | 31755646 | - | 158 | 5E-84 | 90.31 | 258 |
| 304733 | 304918 | - | 3 | 31755392 | 31755577 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 317941 | 318126 | - | 3 | 31755392 | 31755577 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 327042 | 327227 | - | 3 | 31755392 | 31755577 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 334860 | 335045 | - | 3 | 31755392 | 31755577 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 609013 | 609133 | - | 3 | 31755392 | 31755512 | - | 66 | 1.8E-29 | 88.52 | 122 |
| 822220 | 822405 | - | 3 | 31755392 | 31755577 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 4651457 | 4651642 | + | 3 | 31755392 | 31755577 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 13576 | 13951 | - | 3 | 31756484 | 31756858 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 13617 | 13871 | - | 3 | 31756524 | 31756778 | - | 158 | 5E-84 | 90.31 | 258 |
| 33391 | 33645 | - | 3 | 31756524 | 31756778 | - | 158 | 5E-84 | 90.31 | 258 |
| 86467 | 86842 | - | 3 | 31756484 | 31756858 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 149537 | 149910 | - | 3 | 31756484 | 31756858 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 149577 | 149831 | - | 3 | 31756524 | 31756778 | - | 158 | 5E-84 | 90.31 | 258 |
| 283641 | 284015 | - | 3 | 31756484 | 31756858 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 304693 | 305067 | - | 3 | 31756484 | 31756858 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 317901 | 318275 | - | 3 | 31756484 | 31756858 | - | 210 | 1.2E-114 | 88.74 | 382 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|----------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 327002 | 327376 | - | 3 | 31756484 | 31756858 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 334820 | 335266 | - | 3 | 31756484 | 31756858 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 608973 | 609347 | - | 3 | 31756484 | 31756858 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 822180 | 822554 | - | 3 | 31756484 | 31756858 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 4651308 | 4651682 | + | 3 | 31756484 | 31756858 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 10197 | 10315 | + | 4 | 8907662 | 8907780 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 29971 | 30089 | + | 4 | 8907662 | 8907780 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 83315 | 83433 | + | 4 | 8907662 | 8907780 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 146383 | 146501 | + | 4 | 8907662 | 8907780 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 280488 | 280606 | + | 4 | 8907662 | 8907780 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 301538 | 301656 | + | 4 | 8907662 | 8907780 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 314749 | 314867 | + | 4 | 8907662 | 8907780 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 323848 | 323966 | + | 4 | 8907662 | 8907780 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 331666 | 331784 | + | 4 | 8907662 | 8907780 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 819027 | 819145 | + | 4 | 8907662 | 8907780 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 4654717 | 4654835 | - | 4 | 8907662 | 8907780 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 10630 | 10728 | + | 4 | 8908095 | 8908193 | + | 68 | 4.9E-31 | 92 | 100 |
| 30404 | 30502 | + | 4 | 8908095 | 8908193 | + | 68 | 4.9E-31 | 92 | 100 |
| 83748 | 83846 | + | 4 | 8908095 | 8908193 | + | 68 | 4.9E-31 | 92 | 100 |
| 146816 | 146914 | + | 4 | 8908095 | 8908193 | + | 68 | 4.9E-31 | 92 | 100 |
| 280922 | 281019 | + | 4 | 8908095 | 8908193 | + | 68 | 4.9E-31 | 92 | 100 |
| 12879 | 12990 | + | 4 | 8912461 | 8912571 | + | 53 | 1E-21 | 86.32 | 117 |
| 32653 | 32764 | + | 4 | 8912461 | 8912571 | + | 53 | 1E-21 | 86.32 | 117 |
| 85770 | 85881 | + | 4 | 8912461 | 8912571 | + | 52 | 4E-21 | 86.21 | 116 |
| 148839 | 148949 | + | 4 | 8912461 | 8912571 | + | 53 | 1E-21 | 86.32 | 117 |
| 148853 | 148950 | + | 4 | 8912461 | 8912571 | + | 53 | 1E-21 | 86.32 | 117 |
| 282944 | 283053 | + | 4 | 8912461 | 8912570 | + | 52 | 4E-21 | 86.21 | 116 |
| 303996 | 304105 | + | 4 | 8912461 | 8912570 | + | 52 | 4E-21 | 86.21 | 116 |
| 317204 | 317313 | + | 4 | 8912461 | 8912570 | + | 52 | 4E-21 | 86.21 | 116 |
| 326305 | 326414 | + | 4 | 8912461 | 8912570 | + | 52 | 4E-21 | 86.21 | 116 |
| 334123 | 334232 | + | 4 | 8912461 | 8912570 | + | 52 | 4E-21 | 86.21 | 116 |
| 608276 | 608386 | + | 4 | 8912461 | 8912571 | + | 53 | 1E-21 | 86.32 | 117 |
| 821483 | 821593 | + | 4 | 8912461 | 8912571 | + | 53 | 1E-21 | 86.32 | 117 |
| 4652269 | 4652379 | - | 4 | 8912461 | 8912571 | + | 53 | 1E-21 | 86.32 | 117 |
| 32916 | 33025 | + | 4 | 8912730 | 8912838 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 86033 | 86142 | + | 4 | 8912730 | 8912838 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 86033 | 86142 | + | 4 | 8912730 | 8912838 | + | 93 | 5.3E-47 | 96.33 | 109 |
| 148966 | 149072 | + | 4 | 8912590 | 8912695 | + | 70 | 3.7E-32 | 91.51 | 106 |
| 149103 | 149211 | + | 4 | 8912730 | 8912838 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 149121 | 149229 | + | 4 | 8912730 | 8912838 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 304259 | 304367 | + | 4 | 8912730 | 8912838 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 317467 | 317575 | + | 4 | 8912730 | 8912838 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 326368 | 326476 | + | 4 | 8912730 | 8912838 | + | 93 | 1.5E-47 | 96.33 | 109 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|---------|---------|-----|-------|----------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 334386 | 334494 | + | 4 | 8912730 | 8912838 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 608403 | 608511 | + | 4 | 8912730 | 8912838 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 608539 | 608647 | + | 4 | 8912730 | 8912838 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 821746 | 821854 | + | 4 | 8912730 | 8912838 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 4652008 | 4652116 | - | 4 | 8912730 | 8912838 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 13576 | 13951 | + | 4 | 8913166 | 8913540 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 13617 | 13802 | + | 4 | 8913206 | 8913391 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 33391 | 33645 | + | 4 | 8913206 | 8913460 | + | 158 | 5E-84 | 90.31 | 258 |
| 86467 | 86842 | + | 4 | 8913166 | 8913540 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 149537 | 149910 | + | 4 | 8913166 | 8913540 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 283641 | 284015 | + | 4 | 8913166 | 8913540 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 304693 | 305067 | + | 4 | 8913166 | 8913540 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 317901 | 318275 | + | 4 | 8913166 | 8913540 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 327002 | 327376 | + | 4 | 8913166 | 8913540 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 334820 | 335266 | + | 4 | 8913166 | 8913540 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 608973 | 609347 | + | 4 | 8913166 | 8913540 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 822180 | 822554 | + | 4 | 8913166 | 8913540 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 4651308 | 4651682 | - | 4 | 8913166 | 8913540 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 10197 | 10315 | + | 4 | 8984065 | 8984183 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 29971 | 30089 | + | 4 | 8984065 | 8984183 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 83315 | 83433 | + | 4 | 8984065 | 8984183 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 146383 | 146501 | + | 4 | 8984065 | 8984183 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 280488 | 280606 | + | 4 | 8984065 | 8984183 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 301538 | 301656 | + | 4 | 8984065 | 8984183 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 314749 | 314867 | + | 4 | 8984065 | 8984183 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 323848 | 323966 | + | 4 | 8984065 | 8984183 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 331666 | 331784 | + | 4 | 8984065 | 8984183 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 819027 | 819145 | + | 4 | 8984065 | 8984183 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 4654717 | 4654835 | - | 4 | 8984065 | 8984183 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 10630 | 10728 | + | 4 | 8984498 | 8984596 | + | 68 | 4.9E-31 | 92 | 100 |
| 30404 | 30502 | + | 4 | 8984498 | 8984596 | + | 68 | 4.9E-31 | 92 | 100 |
| 83748 | 83846 | + | 4 | 8984498 | 8984596 | + | 68 | 4.9E-31 | 92 | 100 |
| 146816 | 146914 | + | 4 | 8984498 | 8984596 | + | 68 | 4.9E-31 | 92 | 100 |
| 280922 | 281019 | + | 4 | 8984498 | 8984596 | + | 68 | 4.9E-31 | 92 | 100 |
| 10197 | 10315 | + | 4 | 9002493 | 9002611 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 29971 | 30089 | + | 4 | 9002493 | 9002611 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 83315 | 83433 | + | 4 | 9002493 | 9002611 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 146383 | 146501 | + | 4 | 9002493 | 9002611 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 280488 | 280606 | + | 4 | 9002493 | 9002611 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 301538 | 301656 | + | 4 | 9002493 | 9002611 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 314749 | 314867 | + | 4 | 9002493 | 9002611 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 323848 | 323966 | + | 4 | 9002493 | 9002611 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 331666 | 331784 | + | 4 | 9002493 | 9002611 | + | 91 | 8.2E-45 | 94.12 | 119 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|---------|---------|-----|-------|----------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 819027 | 819145 | + | 4 | 9002493 | 9002611 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 4654717 | 4654835 | - | 4 | 9002493 | 9002611 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 10630 | 10728 | + | 4 | 9002926 | 9003024 | + | 64 | 1.4E-28 | 91 | 100 |
| 30404 | 30502 | + | 4 | 9002926 | 9003024 | + | 64 | 1.4E-28 | 91 | 100 |
| 83748 | 83846 | + | 4 | 9002926 | 9003024 | + | 64 | 1.4E-28 | 91 | 100 |
| 146816 | 146914 | + | 4 | 9002926 | 9003024 | + | 64 | 1.4E-28 | 91 | 100 |
| 280922 | 281019 | + | 4 | 9002926 | 9003024 | + | 64 | 1.4E-28 | 91 | 100 |
| 12879 | 12990 | + | 4 | 9007294 | 9007404 | + | 53 | 1E-21 | 86.32 | 117 |
| 32653 | 32764 | + | 4 | 9007294 | 9007404 | + | 53 | 1E-21 | 86.32 | 117 |
| 85770 | 85881 | + | 4 | 9007294 | 9007404 | + | 52 | 4E-21 | 86.21 | 116 |
| 148839 | 148949 | + | 4 | 9007294 | 9007404 | + | 53 | 1E-21 | 86.32 | 117 |
| 148853 | 148950 | + | 4 | 9007294 | 9007404 | + | 53 | 1E-21 | 86.32 | 117 |
| 282944 | 283053 | + | 4 | 9007294 | 9007403 | + | 52 | 4E-21 | 86.21 | 116 |
| 303996 | 304105 | + | 4 | 9007294 | 9007403 | + | 52 | 4E-21 | 86.21 | 116 |
| 317204 | 317313 | + | 4 | 9007294 | 9007403 | + | 52 | 4E-21 | 86.21 | 116 |
| 326305 | 326414 | + | 4 | 9007294 | 9007403 | + | 52 | 4E-21 | 86.21 | 116 |
| 334123 | 334232 | + | 4 | 9007294 | 9007403 | + | 52 | 4E-21 | 86.21 | 116 |
| 608276 | 608386 | + | 4 | 9007294 | 9007404 | + | 53 | 1E-21 | 86.32 | 117 |
| 821483 | 821593 | + | 4 | 9007294 | 9007404 | + | 53 | 1E-21 | 86.32 | 117 |
| 4652269 | 4652379 | - | 4 | 9007294 | 9007404 | + | 53 | 1E-21 | 86.32 | 117 |
| 148966 | 149072 | + | 4 | 9007423 | 9007528 | + | 70 | 3.7E-32 | 91.51 | 106 |
| 32916 | 33025 | + | 4 | 9007563 | 9007671 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 86033 | 86142 | + | 4 | 9007563 | 9007671 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 149103 | 149211 | + | 4 | 9007563 | 9007671 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 304259 | 304367 | + | 4 | 9007563 | 9007671 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 317467 | 317575 | + | 4 | 9007563 | 9007671 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 326368 | 326476 | + | 4 | 9007563 | 9007671 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 334386 | 334494 | + | 4 | 9007563 | 9007671 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 608403 | 608511 | + | 4 | 9007563 | 9007671 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 608539 | 608647 | + | 4 | 9007563 | 9007671 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 821746 | 821854 | + | 4 | 9007563 | 9007671 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 4652008 | 4652116 | - | 4 | 9007563 | 9007671 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 13576 | 13951 | + | 4 | 9007999 | 9008373 | + | 206 | 3.1E-112 | 88.48 | 382 |
| 86467 | 86842 | + | 4 | 9007999 | 9008373 | + | 206 | 3.1E-112 | 88.48 | 382 |
| 149537 | 149910 | + | 4 | 9007999 | 9008373 | + | 206 | 3.1E-112 | 88.48 | 382 |
| 283641 | 284015 | + | 4 | 9007999 | 9008373 | + | 206 | 3.1E-112 | 88.48 | 382 |
| 304693 | 305067 | + | 4 | 9007999 | 9008373 | + | 206 | 3.1E-112 | 88.48 | 382 |
| 317901 | 318275 | + | 4 | 9007999 | 9008373 | + | 206 | 3.1E-112 | 88.48 | 382 |
| 327002 | 327376 | + | 4 | 9007999 | 9008373 | + | 206 | 3.1E-112 | 88.48 | 382 |
| 334820 | 335266 | + | 4 | 9007999 | 9008373 | + | 206 | 3.1E-112 | 88.48 | 382 |
| 608973 | 609347 | + | 4 | 9007999 | 9008373 | + | 206 | 3.1E-112 | 88.48 | 382 |
| 822180 | 822554 | + | 4 | 9007999 | 9008373 | + | 206 | 3.1E-112 | 88.48 | 382 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|---------|---------|-----|-------|----------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 4651308 | 4651682 | - | 4 | 9007999 | 9008373 | + | 206 | 3.1E-112 | 88.48 | 382 |
| 13617 | 13871 | + | 4 | 9008039 | 9008293 | + | 154 | 1.3E-81 | 89.92 | 258 |
| 33391 | 33645 | + | 4 | 9008039 | 9008293 | + | 154 | 1.3E-81 | 89.92 | 258 |
| 86507 | 86693 | + | 4 | 9008039 | 9008224 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 149577 | 149831 | + | 4 | 9008039 | 9008293 | + | 154 | 1.3E-81 | 89.92 | 258 |
| 304733 | 304918 | + | 4 | 9008039 | 9008224 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 317941 | 318126 | + | 4 | 9008039 | 9008224 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 327042 | 327227 | + | 4 | 9008039 | 9008224 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 334860 | 335045 | + | 4 | 9008039 | 9008224 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 609013 | 609133 | + | 4 | 9008039 | 9008159 | + | 62 | 4.8E-27 | 87.7 | 122 |
| 822220 | 822405 | + | 4 | 9008039 | 9008224 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 4651457 | 4651642 | - | 4 | 9008039 | 9008224 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 10197 | 10315 | + | 4 | 9043093 | 9043211 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 29971 | 30089 | + | 4 | 9043093 | 9043211 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 83315 | 83433 | + | 4 | 9043093 | 9043211 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 146383 | 146501 | + | 4 | 9043093 | 9043211 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 280488 | 280606 | + | 4 | 9043093 | 9043211 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 301538 | 301656 | + | 4 | 9043093 | 9043211 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 314749 | 314867 | + | 4 | 9043093 | 9043211 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 323848 | 323966 | + | 4 | 9043093 | 9043211 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 331666 | 331784 | + | 4 | 9043093 | 9043211 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 819027 | 819145 | + | 4 | 9043093 | 9043211 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 4654717 | 4654835 | - | 4 | 9043093 | 9043211 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 10630 | 10728 | + | 4 | 9043526 | 9043624 | + | 68 | 4.9E-31 | 92 | 100 |
| 30404 | 30502 | + | 4 | 9043526 | 9043624 | + | 68 | 4.9E-31 | 92 | 100 |
| 83748 | 83846 | + | 4 | 9043526 | 9043624 | + | 68 | 4.9E-31 | 92 | 100 |
| 146816 | 146914 | + | 4 | 9043526 | 9043624 | + | 68 | 4.9E-31 | 92 | 100 |
| 280922 | 281019 | + | 4 | 9043526 | 9043624 | + | 68 | 4.9E-31 | 92 | 100 |
| 12879 | 12990 | + | 4 | 9047894 | 9048004 | + | 53 | 1E-21 | 86.32 | 117 |
| 32653 | 32764 | + | 4 | 9047894 | 9048004 | + | 53 | 1E-21 | 86.32 | 117 |
| 85770 | 85881 | + | 4 | 9047894 | 9048004 | + | 52 | 4E-21 | 86.21 | 116 |
| 148839 | 148949 | + | 4 | 9047894 | 9048004 | + | 53 | 1E-21 | 86.32 | 117 |
| 148853 | 148950 | + | 4 | 9047894 | 9048004 | + | 53 | 1E-21 | 86.32 | 117 |
| 282944 | 283053 | + | 4 | 9047894 | 9048003 | + | 52 | 4E-21 | 86.21 | 116 |
| 303996 | 304105 | + | 4 | 9047894 | 9048003 | + | 52 | 4E-21 | 86.21 | 116 |
| 317204 | 317313 | + | 4 | 9047894 | 9048003 | + | 52 | 4E-21 | 86.21 | 116 |
| 326305 | 326414 | + | 4 | 9047894 | 9048003 | + | 52 | 4E-21 | 86.21 | 116 |
| 334123 | 334232 | + | 4 | 9047894 | 9048003 | + | 52 | 4E-21 | 86.21 | 116 |
| 608276 | 608386 | + | 4 | 9047894 | 9048004 | + | 53 | 1E-21 | 86.32 | 117 |
| 821483 | 821593 | + | 4 | 9047894 | 9048004 | + | 53 | 1E-21 | 86.32 | 117 |
| 4652269 | 4652379 | - | 4 | 9047894 | 9048004 | + | 53 | 1E-21 | 86.32 | 117 |
| 32916 | 33025 | + | 4 | 9048163 | 9048271 | + | 93 | 1.5E-47 | 96.33 | 109 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|----------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 86033 | 86142 | + | 4 | 9048163 | 9048271 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 148966 | 149072 | + | 4 | 9048023 | 9048128 | + | 70 | 3.7E-32 | 91.51 | 106 |
| 149103 | 149211 | + | 4 | 9048163 | 9048271 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 149121 | 149229 | + | 4 | 9048163 | 9048271 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 304259 | 304367 | + | 4 | 9048163 | 9048271 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 317467 | 317575 | + | 4 | 9048163 | 9048271 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 326368 | 326476 | + | 4 | 9048163 | 9048271 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 334386 | 334494 | + | 4 | 9048163 | 9048271 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 608403 | 608511 | + | 4 | 9048163 | 9048271 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 608539 | 608647 | + | 4 | 9048163 | 9048271 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 821746 | 821854 | + | 4 | 9048163 | 9048271 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 4652008 | 4652116 | - | 4 | 9048163 | 9048271 | + | 93 | 1.5E-47 | 96.33 | 109 |
| 13576 | 13951 | + | 4 | 9048599 | 9048973 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 86467 | 86842 | + | 4 | 9048599 | 9048973 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 149537 | 149910 | + | 4 | 9048599 | 9048973 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 283641 | 284015 | + | 4 | 9048599 | 9048973 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 304693 | 305067 | + | 4 | 9048599 | 9048973 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 317901 | 318275 | + | 4 | 9048599 | 9048973 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 327002 | 327376 | + | 4 | 9048599 | 9048973 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 334820 | 335266 | + | 4 | 9048599 | 9048973 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 608973 | 609347 | + | 4 | 9048599 | 9048973 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 822180 | 822554 | + | 4 | 9048599 | 9048973 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 4651308 | 4651682 | - | 4 | 9048599 | 9048973 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 13617 | 13871 | + | 4 | 9048639 | 9048893 | + | 158 | 5E-84 | 90.31 | 258 |
| 33391 | 33645 | + | 4 | 9048639 | 9048893 | + | 158 | 5E-84 | 90.31 | 258 |
| 86507 | 86693 | + | 4 | 9048639 | 9048824 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 149577 | 149831 | + | 4 | 9048639 | 9048893 | + | 158 | 5E-84 | 90.31 | 258 |
| 304733 | 304918 | + | 4 | 9048639 | 9048824 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 317941 | 318126 | + | 4 | 9048639 | 9048824 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 327042 | 327227 | + | 4 | 9048639 | 9048824 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 334860 | 335045 | + | 4 | 9048639 | 9048824 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 609013 | 609133 | + | 4 | 9048639 | 9048759 | + | 66 | 1.8E-29 | 88.52 | 122 |
| 822220 | 822405 | + | 4 | 9048639 | 9048824 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 4651457 | 4651642 | - | 4 | 9048639 | 9048824 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 10200 | 10315 | - | 4 | 23268276 | 23268391 | + | 81 | 1.2E-38 | 92.31 | 117 |
| 29974 | 30089 | - | 4 | 23268276 | 23268391 | + | 81 | 1.2E-38 | 92.31 | 117 |
| 83318 | 83433 | - | 4 | 23268276 | 23268391 | + | 81 | 1.2E-38 | 92.31 | 117 |
| 146386 | 146501 | - | 4 | 23268276 | 23268391 | + | 81 | 1.2E-38 | 92.31 | 117 |
| 280491 | 280606 | - | 4 | 23268276 | 23268391 | + | 81 | 1.2E-38 | 92.31 | 117 |
| 301541 | 301656 | - | 4 | 23268276 | 23268391 | + | 81 | 1.2E-38 | 92.31 | 117 |
| 314752 | 314867 | - | 4 | 23268276 | 23268391 | + | 81 | 1.2E-38 | 92.31 | 117 |
| 323851 | 323966 | - | 4 | 23268276 | 23268391 | + | 81 | 1.2E-38 | 92.31 | 117 |
| 331669 | 331784 | - | 4 | 23268276 | 23268391 | + | 81 | 1.2E-38 | 92.31 | 117 |
| 819030 | 819145 | - | 4 | 23268276 | 23268391 | + | 81 | 1.2E-38 | 92.31 | 117 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|---------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 4654717 | 4654832 | + | 4 | 23268276 | 23268391 | + | 81 | 1.2E-38 | 92.31 | 117 |
| 32916 | 33025 | - | 4 | 23281924 | 23282032 | + | 93 | 1.3E-47 | 96.33 | 109 |
| 86033 | 86142 | - | 4 | 23281924 | 23282032 | + | 93 | 1.3E-47 | 96.33 | 109 |
| 149103 | 149211 | - | 4 | 23281924 | 23282032 | + | 93 | 1.3E-47 | 96.33 | 109 |
| 149121 | 149229 | - | 4 | 23281924 | 23282032 | + | 93 | 1.3E-47 | 96.33 | 109 |
| 304259 | 304367 | - | 4 | 23281924 | 23282032 | + | 93 | 1.3E-47 | 96.33 | 109 |
| 317467 | 317575 | - | 4 | 23281924 | 23282032 | + | 93 | 1.3E-47 | 96.33 | 109 |
| 326368 | 326476 | - | 4 | 23281924 | 23282032 | + | 93 | 1.3E-47 | 96.33 | 109 |
| 334386 | 334494 | - | 4 | 23281924 | 23282032 | + | 93 | 1.3E-47 | 96.33 | 109 |
| 608403 | 608511 | - | 4 | 23281924 | 23282032 | + | 93 | 1.3E-47 | 96.33 | 109 |
| 608539 | 608647 | - | 4 | 23281924 | 23282032 | + | 93 | 1.3E-47 | 96.33 | 109 |
| 821746 | 821854 | - | 4 | 23281924 | 23282032 | + | 93 | 1.3E-47 | 96.33 | 109 |
| 4652008 | 4652116 | + | 4 | 23281924 | 23282032 | + | 93 | 1.3E-47 | 96.33 | 109 |
| 148966 | 149072 | - | 4 | 23282067 | 23282172 | + | 66 | 1.1E-29 | 90.57 | 106 |
| 10192 | 10300 | - | 4 | 32486318 | 32486425 | + | 74 | 2.3E-34 | 91.82 | 110 |
| 29966 | 30074 | - | 4 | 32486318 | 32486425 | + | 74 | 2.3E-34 | 91.82 | 110 |
| 83310 | 83418 | - | 4 | 32486318 | 32486425 | + | 74 | 2.3E-34 | 91.82 | 110 |
| 146379 | 146486 | - | 4 | 32486318 | 32486425 | + | 74 | 2.3E-34 | 91.82 | 110 |
| 280484 | 280591 | - | 4 | 32486318 | 32486425 | + | 74 | 2.3E-34 | 91.82 | 110 |
| 301534 | 301641 | - | 4 | 32486318 | 32486425 | + | 74 | 2.3E-34 | 91.82 | 110 |
| 314745 | 314852 | - | 4 | 32486318 | 32486425 | + | 74 | 2.3E-34 | 91.82 | 110 |
| 323844 | 323956 | - | 4 | 32486318 | 32486425 | + | 74 | 2.3E-34 | 91.82 | 110 |
| 331662 | 331769 | - | 4 | 32486318 | 32486425 | + | 74 | 2.3E-34 | 91.82 | 110 |
| 819023 | 819130 | - | 4 | 32486318 | 32486425 | + | 74 | 2.3E-34 | 91.82 | 110 |
| 4654732 | 4654839 | + | 4 | 32486318 | 32486425 | + | 74 | 2.3E-34 | 91.82 | 110 |
| 10197 | 10315 | - | 5 | 884190 | 884308 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 29971 | 30089 | - | 5 | 884190 | 884308 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 83315 | 83433 | - | 5 | 884190 | 884308 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 146383 | 146501 | - | 5 | 884190 | 884308 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 280488 | 280606 | - | 5 | 884190 | 884308 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 301538 | 301656 | - | 5 | 884190 | 884308 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 314749 | 314867 | - | 5 | 884190 | 884308 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 323848 | 323966 | - | 5 | 884190 | 884308 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 331666 | 331784 | - | 5 | 884190 | 884308 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 819027 | 819145 | - | 5 | 884190 | 884308 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 4654717 | 4654835 | + | 5 | 884190 | 884308 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 10630 | 10728 | - | 5 | 12784826 | 12784924 | + | 68 | 4.9E-31 | 92 | 100 |
| 30404 | 30502 | - | 5 | 12784826 | 12784924 | + | 68 | 4.9E-31 | 92 | 100 |
| 83748 | 83846 | - | 5 | 12784826 | 12784924 | + | 68 | 4.9E-31 | 92 | 100 |
| 146816 | 146914 | - | 5 | 12784826 | 12784924 | + | 68 | 4.9E-31 | 92 | 100 |
| 280922 | 281019 | - | 5 | 12784826 | 12784924 | + | 68 | 4.9E-31 | 92 | 100 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|---------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 10197 | 10315 | - | 5 | 12785239 | 12785357 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 29971 | 30089 | - | 5 | 12785239 | 12785357 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 83315 | 83433 | - | 5 | 12785239 | 12785357 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 146383 | 146501 | - | 5 | 12785239 | 12785357 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 280488 | 280606 | - | 5 | 12785239 | 12785357 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 301538 | 301656 | - | 5 | 12785239 | 12785357 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 314749 | 314867 | - | 5 | 12785239 | 12785357 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 323848 | 323966 | - | 5 | 12785239 | 12785357 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 331666 | 331784 | - | 5 | 12785239 | 12785357 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 819027 | 819145 | - | 5 | 12785239 | 12785357 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 4654717 | 4654835 | + | 5 | 12785239 | 12785357 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 13617 | 13802 | - | 6 | 16740597 | 16740782 | + | 65 | 1.6E-28 | 83.6 | 189 |
| 33391 | 33576 | - | 6 | 16740597 | 16740782 | + | 65 | 1.6E-28 | 83.6 | 189 |
| 86507 | 86693 | - | 6 | 16740597 | 16740782 | + | 65 | 1.6E-28 | 83.6 | 189 |
| 149576 | 149761 | - | 6 | 16740597 | 16740782 | + | 65 | 1.6E-28 | 83.6 | 189 |
| 283681 | 283866 | - | 6 | 16740597 | 16740782 | + | 65 | 5.5E-28 | 83.6 | 189 |
| 304733 | 304918 | - | 6 | 16740597 | 16740782 | + | 65 | 1.6E-28 | 83.6 | 189 |
| 317941 | 318126 | - | 6 | 16740597 | 16740782 | + | 65 | 1.6E-28 | 83.6 | 189 |
| 327042 | 327227 | - | 6 | 16740597 | 16740782 | + | 65 | 1.6E-28 | 83.6 | 189 |
| 334860 | 335045 | - | 6 | 16740597 | 16740782 | + | 65 | 1.6E-28 | 83.6 | 189 |
| 609013 | 609198 | - | 6 | 16740597 | 16740782 | + | 65 | 5.5E-28 | 83.6 | 189 |
| 822220 | 822405 | - | 6 | 16740597 | 16740782 | + | 65 | 1.6E-28 | 83.6 | 189 |
| 4651457 | 4651642 | + | 6 | 16740597 | 16740782 | + | 65 | 1.6E-28 | 83.6 | 189 |
| 10630 | 10728 | - | 6 | 18949473 | 18949571 | + | 60 | 4.1E-26 | 90 | 100 |
| 30404 | 30502 | - | 6 | 18949473 | 18949571 | + | 60 | 4.1E-26 | 90 | 100 |
| 83748 | 83846 | - | 6 | 18949473 | 18949571 | + | 60 | 4.1E-26 | 90 | 100 |
| 146816 | 146914 | - | 6 | 18949473 | 18949571 | + | 60 | 4.1E-26 | 90 | 100 |
| 280922 | 281019 | - | 6 | 18949473 | 18949571 | + | 60 | 4.1E-26 | 90 | 100 |
| 10630 | 10728 | - | 7 | 14230992 | 14231090 | + | 68 | 4.9E-31 | 92 | 100 |
| 30404 | 30502 | - | 7 | 14230992 | 14231090 | + | 68 | 4.9E-31 | 92 | 100 |
| 83748 | 83846 | - | 7 | 14230992 | 14231090 | + | 68 | 4.9E-31 | 92 | 100 |
| 146816 | 146914 | - | 7 | 14230992 | 14231090 | + | 68 | 4.9E-31 | 92 | 100 |
| 280922 | 281019 | - | 7 | 14230992 | 14231090 | + | 68 | 4.9E-31 | 92 | 100 |
| 10197 | 10315 | - | 7 | 14231405 | 14231523 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 29971 | 30089 | - | 7 | 14231405 | 14231523 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 83315 | 83433 | - | 7 | 14231405 | 14231523 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 146383 | 146501 | - | 7 | 14231405 | 14231523 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 280488 | 280606 | - | 7 | 14231405 | 14231523 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 301538 | 301656 | - | 7 | 14231405 | 14231523 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 314749 | 314867 | - | 7 | 14231405 | 14231523 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 323848 | 323966 | - | 7 | 14231405 | 14231523 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 331666 | 331784 | - | 7 | 14231405 | 14231523 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 819027 | 819145 | - | 7 | 14231405 | 14231523 | + | 91 | 8.2E-45 | 94.12 | 119 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|----------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 4654717 | 4654835 | + | 7 | 14231405 | 14231523 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 13576 | 13951 | - | 8 | 9239342 | 9239716 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 86467 | 86842 | - | 8 | 9239342 | 9239716 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 149537 | 149910 | - | 8 | 9239342 | 9239716 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 283641 | 284015 | - | 8 | 9239342 | 9239716 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 304693 | 305067 | - | 8 | 9239342 | 9239716 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 317901 | 318275 | - | 8 | 9239342 | 9239716 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 327002 | 327376 | - | 8 | 9239342 | 9239716 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 334820 | 335266 | - | 8 | 9239342 | 9239716 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 608973 | 609347 | - | 8 | 9239342 | 9239716 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 822180 | 822554 | - | 8 | 9239342 | 9239716 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 4651308 | 4651682 | + | 8 | 9239342 | 9239716 | + | 210 | 1.2E-114 | 88.74 | 382 |
| 13617 | 13871 | - | 8 | 9239422 | 9239676 | + | 158 | 5E-84 | 90.31 | 258 |
| 33391 | 33645 | - | 8 | 9239422 | 9239676 | + | 158 | 5E-84 | 90.31 | 258 |
| 149577 | 149831 | - | 8 | 9239422 | 9239676 | + | 158 | 5E-84 | 90.31 | 258 |
| 13617 | 13802 | - | 8 | 9239491 | 9239676 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 33391 | 33576 | - | 8 | 9239491 | 9239676 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 86507 | 86693 | - | 8 | 9239491 | 9239676 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 149576 | 149761 | - | 8 | 9239491 | 9239676 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 304733 | 304918 | - | 8 | 9239491 | 9239676 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 317941 | 318126 | - | 8 | 9239491 | 9239676 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 327042 | 327227 | - | 8 | 9239491 | 9239676 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 334860 | 335045 | - | 8 | 9239491 | 9239676 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 822220 | 822405 | - | 8 | 9239491 | 9239676 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 4651457 | 4651642 | + | 8 | 9239491 | 9239676 | + | 101 | 3.5E-50 | 88.36 | 189 |
| 609013 | 609133 | - | 8 | 9239556 | 9239676 | + | 66 | 1.8E-29 | 88.52 | 122 |
| 32916 | 33025 | - | 8 | 9240044 | 9240152 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 86033 | 86142 | - | 8 | 9240044 | 9240152 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 149103 | 149211 | - | 8 | 9240044 | 9240152 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 149121 | 149229 | - | 8 | 9240044 | 9240152 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 304259 | 304367 | - | 8 | 9240044 | 9240152 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 317467 | 317575 | - | 8 | 9240044 | 9240152 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 326368 | 326476 | - | 8 | 9240044 | 9240152 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 334386 | 334494 | - | 8 | 9240044 | 9240152 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 608403 | 608511 | - | 8 | 9240044 | 9240152 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 608539 | 608647 | - | 8 | 9240044 | 9240152 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 821746 | 821854 | - | 8 | 9240044 | 9240152 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 4652008 | 4652116 | + | 8 | 9240044 | 9240152 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 148966 | 149072 | - | 8 | 9240187 | 9240292 | + | 70 | 3.7E-32 | 91.51 | 106 |
| 12879 | 12990 | - | 8 | 9240311 | 9240421 | + | 53 | 1E-21 | 86.32 | 117 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|---------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 32653 | 32764 | - | 8 | 9240311 | 9240421 | + | 53 | 1E-21 | 86.32 | 117 |
| 85770 | 85881 | - | 8 | 9240311 | 9240421 | + | 52 | 4E-21 | 86.21 | 116 |
| 148839 | 148949 | - | 8 | 9240311 | 9240421 | + | 53 | 1E-21 | 86.32 | 117 |
| 148853 | 148950 | - | 8 | 9240311 | 9240421 | + | 53 | 1E-21 | 86.32 | 117 |
| 282944 | 283053 | - | 8 | 9240312 | 9240421 | + | 52 | 4E-21 | 86.21 | 116 |
| 303996 | 304105 | - | 8 | 9240312 | 9240421 | + | 52 | 4E-21 | 86.21 | 116 |
| 317204 | 317313 | - | 8 | 9240312 | 9240421 | + | 52 | 4E-21 | 86.21 | 116 |
| 326305 | 326414 | - | 8 | 9240312 | 9240421 | + | 52 | 4E-21 | 86.21 | 116 |
| 334123 | 334232 | - | 8 | 9240312 | 9240421 | + | 52 | 4E-21 | 86.21 | 116 |
| 608276 | 608386 | - | 8 | 9240311 | 9240421 | + | 53 | 1E-21 | 86.32 | 117 |
| 821483 | 821593 | - | 8 | 9240311 | 9240421 | + | 53 | 1E-21 | 86.32 | 117 |
| 4652269 | 4652379 | + | 8 | 9240311 | 9240421 | + | 53 | 1E-21 | 86.32 | 117 |
| 10630 | 10728 | - | 8 | 9244405 | 9244503 | + | 68 | 4.9E-31 | 92 | 100 |
| 30404 | 30502 | - | 8 | 9244405 | 9244503 | + | 68 | 4.9E-31 | 92 | 100 |
| 83748 | 83846 | - | 8 | 9244405 | 9244503 | + | 68 | 4.9E-31 | 92 | 100 |
| 146816 | 146914 | - | 8 | 9244405 | 9244503 | + | 68 | 4.9E-31 | 92 | 100 |
| 280922 | 281019 | - | 8 | 9244405 | 9244503 | + | 68 | 4.9E-31 | 92 | 100 |
| 10197 | 10315 | - | 8 | 9244818 | 9244936 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 29971 | 30089 | - | 8 | 9244818 | 9244936 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 83315 | 83433 | - | 8 | 9244818 | 9244936 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 146383 | 146501 | - | 8 | 9244818 | 9244936 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 280488 | 280606 | - | 8 | 9244818 | 9244936 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 301538 | 301656 | - | 8 | 9244818 | 9244936 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 314749 | 314867 | - | 8 | 9244818 | 9244936 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 323848 | 323966 | - | 8 | 9244818 | 9244936 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 331666 | 331784 | - | 8 | 9244818 | 9244936 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 819027 | 819145 | - | 8 | 9244818 | 9244936 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 4654717 | 4654835 | + | 8 | 9244818 | 9244936 | + | 91 | 8.2E-45 | 94.12 | 119 |
| 32916 | 33025 | - | 10 | 10281248 | 10281356 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 86033 | 86142 | - | 10 | 10281248 | 10281356 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 149103 | 149211 | - | 10 | 10281248 | 10281356 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 149121 | 149229 | - | 10 | 10281248 | 10281356 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 304259 | 304367 | - | 10 | 10281248 | 10281356 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 317467 | 317575 | - | 10 | 10281248 | 10281356 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 326368 | 326476 | - | 10 | 10281248 | 10281356 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 334386 | 334494 | - | 10 | 10281248 | 10281356 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 608403 | 608511 | - | 10 | 10281248 | 10281356 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 608539 | 608647 | - | 10 | 10281248 | 10281356 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 821746 | 821854 | - | 10 | 10281248 | 10281356 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 4652008 | 4652116 | + | 10 | 10281248 | 10281356 | + | 93 | 1.4E-47 | 96.33 | 109 |
| 148966 | 149072 | - | 10 | 10281391 | 10281496 | + | 70 | 3.7E-32 | 91.51 | 106 |
| 12879 | 12990 | - | 10 | 10281515 | 10281625 | + | 53 | 1E-21 | 86.32 | 117 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|---------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 32653 | 32764 | - | 10 | 10281515 | 10281625 | + | 53 | 1E-21 | 86.32 | 117 |
| 85770 | 85881 | - | 10 | 10281515 | 10281625 | + | 52 | 4E-21 | 86.21 | 116 |
| 148839 | 148949 | - | 10 | 10281515 | 10281625 | + | 53 | 1E-21 | 86.32 | 117 |
| 148853 | 148950 | - | 10 | 10281515 | 10281625 | + | 53 | 1E-21 | 86.32 | 117 |
| 282944 | 283053 | - | 10 | 10281516 | 10281625 | + | 52 | 4E-21 | 86.21 | 116 |
| 303996 | 304105 | - | 10 | 10281516 | 10281625 | + | 52 | 4E-21 | 86.21 | 116 |
| 317204 | 317313 | - | 10 | 10281516 | 10281625 | + | 52 | 4E-21 | 86.21 | 116 |
| 326305 | 326414 | - | 10 | 10281516 | 10281625 | + | 52 | 4E-21 | 86.21 | 116 |
| 334123 | 334232 | - | 10 | 10281516 | 10281625 | + | 52 | 4E-21 | 86.21 | 116 |
| 608276 | 608386 | - | 10 | 10281515 | 10281625 | + | 53 | 1E-21 | 86.32 | 117 |
| 821483 | 821593 | - | 10 | 10281515 | 10281625 | + | 53 | 1E-21 | 86.32 | 117 |
| 4652269 | 4652379 | + | 10 | 10281515 | 10281625 | + | 53 | 1E-21 | 86.32 | 117 |
| 10630 | 10728 | - | 10 | 10285899 | 10285997 | + | 68 | 4.9E-31 | 92 | 100 |
| 30404 | 30502 | - | 10 | 10285899 | 10285997 | + | 68 | 4.9E-31 | 92 | 100 |
| 83748 | 83846 | - | 10 | 10285899 | 10285997 | + | 68 | 4.9E-31 | 92 | 100 |
| 146816 | 146914 | - | 10 | 10285899 | 10285997 | + | 68 | 4.9E-31 | 92 | 100 |
| 280922 | 281019 | - | 10 | 10285899 | 10285997 | + | 68 | 4.9E-31 | 92 | 100 |
| 10196 | 10315 | + | 10 | 10389963 | 10390082 | + | 92 | 2E-45 | 94.17 | 120 |
| 29970 | 30089 | + | 10 | 10389963 | 10390082 | + | 92 | 2E-45 | 94.17 | 120 |
| 83314 | 83433 | + | 10 | 10389963 | 10390082 | + | 92 | 2E-45 | 94.17 | 120 |
| 146382 | 146501 | + | 10 | 10389963 | 10390082 | + | 92 | 2E-45 | 94.17 | 120 |
| 280487 | 280606 | + | 10 | 10389963 | 10390082 | + | 92 | 2E-45 | 94.17 | 120 |
| 301537 | 301656 | + | 10 | 10389963 | 10390082 | + | 92 | 2E-45 | 94.17 | 120 |
| 314748 | 314867 | + | 10 | 10389963 | 10390082 | + | 92 | 2E-45 | 94.17 | 120 |
| 323847 | 323966 | + | 10 | 10389963 | 10390082 | + | 92 | 2E-45 | 94.17 | 120 |
| 331665 | 331784 | + | 10 | 10389963 | 10390082 | + | 92 | 2E-45 | 94.17 | 120 |
| 819026 | 819145 | + | 10 | 10389963 | 10390082 | + | 92 | 2E-45 | 94.17 | 120 |
| 4654717 | 4654836 | - | 10 | 10389963 | 10390082 | + | 92 | 2E-45 | 94.17 | 120 |
| 12879 | 12990 | + | 10 | 10394751 | 10394861 | + | 53 | 1E-21 | 86.32 | 117 |
| 32653 | 32764 | + | 10 | 10394751 | 10394861 | + | 53 | 1E-21 | 86.32 | 117 |
| 85770 | 85881 | + | 10 | 10394751 | 10394861 | + | 52 | 4E-21 | 86.21 | 116 |
| 148839 | 148949 | + | 10 | 10394751 | 10394861 | + | 53 | 1E-21 | 86.32 | 117 |
| 148853 | 148950 | + | 10 | 10394751 | 10394861 | + | 53 | 1E-21 | 86.32 | 117 |
| 282944 | 283053 | + | 10 | 10394751 | 10394860 | + | 52 | 4E-21 | 86.21 | 116 |
| 303996 | 304105 | + | 10 | 10394751 | 10394860 | + | 52 | 4E-21 | 86.21 | 116 |
| 317204 | 317313 | + | 10 | 10394751 | 10394860 | + | 52 | 4E-21 | 86.21 | 116 |
| 326305 | 326414 | + | 10 | 10394751 | 10394860 | + | 52 | 4E-21 | 86.21 | 116 |
| 334123 | 334232 | + | 10 | 10394751 | 10394860 | + | 52 | 4E-21 | 86.21 | 116 |
| 608276 | 608386 | + | 10 | 10394751 | 10394861 | + | 53 | 1E-21 | 86.32 | 117 |
| 821483 | 821593 | + | 10 | 10394751 | 10394861 | + | 53 | 1E-21 | 86.32 | 117 |
| 4652269 | 4652379 | - | 10 | 10394751 | 10394861 | + | 53 | 1E-21 | 86.32 | 117 |
| 32916 | 33025 | + | 10 | 10395020 | 10395128 | + | 89 | 4.4E-45 | 95.41 | 109 |
| 86033 | 86142 | + | 10 | 10395020 | 10395128 | + | 89 | 4.4E-45 | 95.41 | 109 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|----------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 148966 | 149072 | + | 10 | 10394880 | 10394985 | + | 70 | 3.7E-32 | 91.51 | 106 |
| 149103 | 149211 | + | 10 | 10395020 | 10395128 | + | 89 | 4.4E-45 | 95.41 | 109 |
| 149121 | 149229 | + | 10 | 10395020 | 10395128 | + | 89 | 4.4E-45 | 95.41 | 109 |
| 304259 | 304367 | + | 10 | 10395020 | 10395128 | + | 89 | 4.4E-45 | 95.41 | 109 |
| 317467 | 317575 | + | 10 | 10395020 | 10395128 | + | 89 | 4.4E-45 | 95.41 | 109 |
| 326368 | 326476 | + | 10 | 10395020 | 10395128 | + | 89 | 4.4E-45 | 95.41 | 109 |
| 334386 | 334494 | + | 10 | 10395020 | 10395128 | + | 89 | 4.4E-45 | 95.41 | 109 |
| 608403 | 608511 | + | 10 | 10395020 | 10395128 | + | 89 | 4.4E-45 | 95.41 | 109 |
| 608539 | 608647 | + | 10 | 10395020 | 10395128 | + | 89 | 4.4E-45 | 95.41 | 109 |
| 821746 | 821854 | + | 10 | 10395020 | 10395128 | + | 89 | 4.4E-45 | 95.41 | 109 |
| 4652008 | 4652116 | - | 10 | 10395020 | 10395128 | + | 89 | 4.4E-45 | 95.41 | 109 |
| 13576 | 13951 | + | 10 | 10395456 | 10395830 | + | 202 | 7.6E-110 | 88.22 | 382 |
| 86467 | 86842 | + | 10 | 10395456 | 10395830 | + | 202 | 7.6E-110 | 88.22 | 382 |
| 149537 | 149910 | + | 10 | 10395456 | 10395830 | + | 202 | 7.6E-110 | 88.22 | 382 |
| 283641 | 284015 | + | 10 | 10395456 | 10395830 | + | 202 | 7.6E-110 | 88.22 | 382 |
| 304693 | 305067 | + | 10 | 10395456 | 10395830 | + | 202 | 7.6E-110 | 88.22 | 382 |
| 317901 | 318275 | + | 10 | 10395456 | 10395830 | + | 202 | 7.6E-110 | 88.22 | 382 |
| 327002 | 327376 | + | 10 | 10395456 | 10395830 | + | 202 | 7.6E-110 | 88.22 | 382 |
| 334820 | 335266 | + | 10 | 10395456 | 10395830 | + | 202 | 7.6E-110 | 88.22 | 382 |
| 608973 | 609347 | + | 10 | 10395456 | 10395830 | + | 202 | 7.6E-110 | 88.22 | 382 |
| 822180 | 822554 | + | 10 | 10395456 | 10395830 | + | 202 | 7.6E-110 | 88.22 | 382 |
| 4651308 | 4651682 | - | 10 | 10395456 | 10395830 | + | 202 | 7.6E-110 | 88.22 | 382 |
| 13617 | 13871 | + | 10 | 10395496 | 10395750 | + | 150 | 3.2E-79 | 89.53 | 258 |
| 13617 | 13802 | + | 10 | 10395496 | 10395681 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 33391 | 33645 | + | 10 | 10395496 | 10395750 | + | 150 | 3.2E-79 | 89.53 | 258 |
| 33391 | 33576 | + | 10 | 10395496 | 10395681 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 86507 | 86693 | + | 10 | 10395496 | 10395681 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 149576 | 149761 | + | 10 | 10395496 | 10395681 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 149577 | 149831 | + | 10 | 10395496 | 10395750 | + | 150 | 3.2E-79 | 89.53 | 258 |
| 304733 | 304918 | + | 10 | 10395496 | 10395681 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 317941 | 318126 | + | 10 | 10395496 | 10395681 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 327042 | 327227 | + | 10 | 10395496 | 10395681 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 334860 | 335045 | + | 10 | 10395496 | 10395681 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 609013 | 609133 | + | 10 | 10395496 | 10395616 | + | 62 | 4.8E-27 | 87.7 | 122 |
| 822220 | 822405 | + | 10 | 10395496 | 10395681 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 4651457 | 4651642 | - | 10 | 10395496 | 10395681 | + | 97 | 9.1E-48 | 87.83 | 189 |
| 10197 | 10315 | - | 10 | 19946322 | 19946440 | - | 91 | 8.2E-45 | 94.12 | 119 |
| 29971 | 30089 | - | 10 | 19946322 | 19946440 | - | 91 | 8.2E-45 | 94.12 | 119 |
| 83315 | 83433 | - | 10 | 19946322 | 19946440 | - | 91 | 8.2E-45 | 94.12 | 119 |
| 146383 | 146501 | - | 10 | 19946322 | 19946440 | - | 91 | 8.2E-45 | 94.12 | 119 |
| 280488 | 280606 | - | 10 | 19946322 | 19946440 | - | 91 | 8.2E-45 | 94.12 | 119 |
| 301538 | 301656 | - | 10 | 19946322 | 19946440 | - | 91 | 8.2E-45 | 94.12 | 119 |
| 314749 | 314867 | - | 10 | 19946322 | 19946440 | - | 91 | 8.2E-45 | 94.12 | 119 |
| 323848 | 323966 | - | 10 | 19946322 | 19946440 | - | 91 | 8.2E-45 | 94.12 | 119 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|----------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 331666 | 331784 | - | 10 | 19946322 | 19946440 | - | 91 | 8.2E-45 | 94.12 | 119 |
| 819027 | 819145 | - | 10 | 19946322 | 19946440 | - | 91 | 8.2E-45 | 94.12 | 119 |
| 4654717 | 4654835 | + | 10 | 19946322 | 19946440 | - | 91 | 8.2E-45 | 94.12 | 119 |
| 10630 | 10728 | - | 10 | 19946755 | 19946853 | - | 68 | 4.9E-31 | 92 | 100 |
| 30404 | 30502 | - | 10 | 19946755 | 19946853 | - | 68 | 4.9E-31 | 92 | 100 |
| 83748 | 83846 | - | 10 | 19946755 | 19946853 | - | 68 | 4.9E-31 | 92 | 100 |
| 146816 | 146914 | - | 10 | 19946755 | 19946853 | - | 68 | 4.9E-31 | 92 | 100 |
| 280922 | 281019 | - | 10 | 19946755 | 19946853 | - | 68 | 4.9E-31 | 92 | 100 |
| 12879 | 12990 | - | 10 | 19951121 | 19951231 | - | 53 | 1E-21 | 86.32 | 117 |
| 32653 | 32764 | - | 10 | 19951121 | 19951231 | - | 53 | 1E-21 | 86.32 | 117 |
| 85770 | 85881 | - | 10 | 19951121 | 19951231 | - | 52 | 4E-21 | 86.21 | 116 |
| 148839 | 148949 | - | 10 | 19951121 | 19951231 | - | 53 | 1E-21 | 86.32 | 117 |
| 148840 | 148949 | - | 10 | 19951121 | 19951230 | - | 52 | 4E-21 | 86.21 | 116 |
| 282944 | 283053 | - | 10 | 19951121 | 19951230 | - | 52 | 4E-21 | 86.21 | 116 |
| 303996 | 304105 | - | 10 | 19951121 | 19951230 | - | 52 | 4E-21 | 86.21 | 116 |
| 317204 | 317313 | - | 10 | 19951121 | 19951230 | - | 52 | 4E-21 | 86.21 | 116 |
| 326305 | 326414 | - | 10 | 19951121 | 19951230 | - | 52 | 4E-21 | 86.21 | 116 |
| 334123 | 334232 | - | 10 | 19951121 | 19951230 | - | 52 | 4E-21 | 86.21 | 116 |
| 608276 | 608386 | - | 10 | 19951121 | 19951231 | - | 53 | 1E-21 | 86.32 | 117 |
| 821483 | 821593 | - | 10 | 19951121 | 19951231 | - | 53 | 1E-21 | 86.32 | 117 |
| 4652269 | 4652379 | + | 10 | 19951121 | 19951231 | - | 53 | 1E-21 | 86.32 | 117 |
| 32916 | 33025 | - | 10 | 19951390 | 19951498 | - | 93 | 1.2E-47 | 96.33 | 109 |
| 86033 | 86142 | - | 10 | 19951390 | 19951498 | - | 93 | 1.2E-47 | 96.33 | 109 |
| 148966 | 149072 | - | 10 | 19951250 | 19951355 | - | 70 | 3.7E-32 | 91.51 | 106 |
| 149103 | 149211 | - | 10 | 19951390 | 19951498 | - | 93 | 1.2E-47 | 96.33 | 109 |
| 149121 | 149229 | - | 10 | 19951390 | 19951498 | - | 93 | 1.2E-47 | 96.33 | 109 |
| 304259 | 304367 | - | 10 | 19951390 | 19951498 | - | 93 | 1.2E-47 | 96.33 | 109 |
| 317467 | 317575 | - | 10 | 19951390 | 19951498 | - | 93 | 1.2E-47 | 96.33 | 109 |
| 326368 | 326476 | - | 10 | 19951390 | 19951498 | - | 93 | 1.2E-47 | 96.33 | 109 |
| 334386 | 334494 | - | 10 | 19951390 | 19951498 | - | 93 | 1.2E-47 | 96.33 | 109 |
| 608403 | 608511 | - | 10 | 19951390 | 19951498 | - | 93 | 1.2E-47 | 96.33 | 109 |
| 608539 | 608647 | - | 10 | 19951390 | 19951498 | - | 93 | 1.2E-47 | 96.33 | 109 |
| 821746 | 821854 | - | 10 | 19951390 | 19951498 | - | 93 | 1.2E-47 | 96.33 | 109 |
| 4652008 | 4652116 | + | 10 | 19951390 | 19951498 | - | 93 | 1.2E-47 | 96.33 | 109 |
| 13576 | 13951 | - | 10 | 19951829 | 19952203 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 86467 | 86842 | - | 10 | 19951829 | 19952203 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 149537 | 149910 | - | 10 | 19951829 | 19952203 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 283641 | 284015 | - | 10 | 19951829 | 19952203 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 304693 | 305067 | - | 10 | 19951829 | 19952203 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 317901 | 318275 | - | 10 | 19951829 | 19952203 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 327002 | 327376 | - | 10 | 19951829 | 19952203 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 334820 | 335266 | - | 10 | 19951829 | 19952203 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 608973 | 609347 | - | 10 | 19951829 | 19952203 | - | 210 | 1.2E-114 | 88.74 | 382 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|----------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 822180 | 822554 | - | 10 | 19951829 | 19952203 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 4651308 | 4651682 | + | 10 | 19951829 | 19952203 | - | 210 | 1.2E-114 | 88.74 | 382 |
| 13617 | 13871 | - | 10 | 19951869 | 19952123 | - | 158 | 5E-84 | 90.31 | 258 |
| 33391 | 33645 | - | 10 | 19951869 | 19952123 | - | 158 | 5E-84 | 90.31 | 258 |
| 86507 | 86693 | - | 10 | 19951869 | 19952054 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 149577 | 149831 | - | 10 | 19951869 | 19952123 | - | 158 | 5E-84 | 90.31 | 258 |
| 304733 | 304918 | - | 10 | 19951869 | 19952054 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 317941 | 318126 | - | 10 | 19951869 | 19952054 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 327042 | 327227 | - | 10 | 19951869 | 19952054 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 334860 | 335045 | - | 10 | 19951869 | 19952054 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 609013 | 609133 | - | 10 | 19951869 | 19951989 | - | 66 | 1.8E-29 | 88.52 | 122 |
| 822220 | 822405 | - | 10 | 19951869 | 19952054 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 4651457 | 4651642 | + | 10 | 19951869 | 19952054 | - | 101 | 3.5E-50 | 88.36 | 189 |
| 13576 | 13951 | + | 12 | 5633037 | 5633411 | - | 203 | 1.9E-110 | 88.25 | 383 |
| 86467 | 86842 | + | 12 | 5633037 | 5633411 | - | 203 | 1.9E-110 | 88.25 | 383 |
| 149537 | 149910 | + | 12 | 5633037 | 5633411 | - | 203 | 1.9E-110 | 88.25 | 383 |
| 283641 | 284015 | + | 12 | 5633037 | 5633411 | - | 203 | 1.9E-110 | 88.25 | 383 |
| 304693 | 305067 | + | 12 | 5633037 | 5633411 | - | 203 | 1.9E-110 | 88.25 | 383 |
| 317901 | 318275 | + | 12 | 5633037 | 5633411 | - | 203 | 1.9E-110 | 88.25 | 383 |
| 327002 | 327376 | + | 12 | 5633037 | 5633411 | - | 203 | 1.9E-110 | 88.25 | 383 |
| 334820 | 335266 | + | 12 | 5633037 | 5633411 | - | 203 | 1.9E-110 | 88.25 | 383 |
| 608973 | 609347 | + | 12 | 5633037 | 5633411 | - | 203 | 1.9E-110 | 88.25 | 383 |
| 822180 | 822554 | + | 12 | 5633037 | 5633411 | - | 203 | 1.9E-110 | 88.25 | 383 |
| 4651308 | 4651682 | - | 12 | 5633037 | 5633411 | - | 203 | 1.9E-110 | 88.25 | 383 |
| 13618 | 13871 | + | 12 | 5633117 | 5633370 | - | 153 | 5.1E-81 | 89.88 | 257 |
| 33392 | 33645 | + | 12 | 5633117 | 5633370 | - | 153 | 5.1E-81 | 89.88 | 257 |
| 149578 | 149831 | + | 12 | 5633117 | 5633370 | - | 153 | 5.1E-81 | 89.88 | 257 |
| 13618 | 13802 | + | 12 | 5633186 | 5633370 | - | 96 | 3.7E-47 | 87.77 | 188 |
| 33392 | 33576 | + | 12 | 5633186 | 5633370 | - | 96 | 3.7E-47 | 87.77 | 188 |
| 86509 | 86693 | + | 12 | 5633186 | 5633370 | - | 96 | 3.7E-47 | 87.77 | 188 |
| 149577 | 149761 | + | 12 | 5633186 | 5633370 | - | 96 | 3.7E-47 | 87.77 | 188 |
| 304734 | 304918 | + | 12 | 5633186 | 5633370 | - | 96 | 3.7E-47 | 87.77 | 188 |
| 317942 | 318126 | + | 12 | 5633186 | 5633370 | - | 96 | 3.7E-47 | 87.77 | 188 |
| 327043 | 327227 | + | 12 | 5633186 | 5633370 | - | 96 | 3.7E-47 | 87.77 | 188 |
| 334861 | 335045 | + | 12 | 5633186 | 5633370 | - | 96 | 3.7E-47 | 87.77 | 188 |
| 609014 | 609133 | + | 12 | 5633251 | 5633370 | - | 61 | 1.9E-26 | 87.6 | 121 |
| 822221 | 822405 | + | 12 | 5633186 | 5633370 | - | 96 | 3.7E-47 | 87.77 | 188 |
| 4651457 | 4651641 | - | 12 | 5633186 | 5633370 | - | 96 | 3.7E-47 | 87.77 | 188 |
| 12879 | 12986 | + | 12 | 5633988 | 5634094 | - | 49 | 2.6E-19 | 85.84 | 113 |
| 32653 | 32760 | + | 12 | 5633988 | 5634094 | - | 49 | 2.6E-19 | 85.84 | 113 |
| 85770 | 85877 | + | 12 | 5633988 | 5634094 | - | 48 | 1.1E-18 | 85.71 | 112 |
| 148839 | 148954 | + | 12 | 5633988 | 5634094 | - | 49 | 2.6E-19 | 85.84 | 113 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|---------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 282944 | 283050 | + | 12 | 5633988 | 5634094 | - | 49 | 2.6E-19 | 85.84 | 113 |
| 303996 | 304102 | + | 12 | 5633988 | 5634094 | - | 49 | 2.6E-19 | 85.84 | 113 |
| 317204 | 317310 | + | 12 | 5633988 | 5634094 | - | 49 | 2.6E-19 | 85.84 | 113 |
| 326305 | 326411 | + | 12 | 5633988 | 5634094 | - | 49 | 2.6E-19 | 85.84 | 113 |
| 334123 | 334229 | + | 12 | 5633988 | 5634094 | - | 49 | 2.6E-19 | 85.84 | 113 |
| 608276 | 608382 | + | 12 | 5633988 | 5634094 | - | 49 | 2.6E-19 | 85.84 | 113 |
| 821483 | 821589 | + | 12 | 5633988 | 5634094 | - | 49 | 2.6E-19 | 85.84 | 113 |
| 4652273 | 4652379 | - | 12 | 5633988 | 5634094 | - | 49 | 2.6E-19 | 85.84 | 113 |
| 13598 | 13712 | + | 12 | 8526139 | 8526251 | + | 40 | 1E-39 | 83.62 | 116 |
| 33372 | 33486 | + | 12 | 8526139 | 8526251 | + | 40 | 1E-39 | 83.62 | 116 |
| 149559 | 149671 | + | 12 | 8526139 | 8526251 | + | 43 | 6.1E-41 | 84.35 | 115 |
| 283663 | 283776 | + | 12 | 8526139 | 8526251 | + | 40 | 3.6E-39 | 83.62 | 116 |
| 304715 | 304828 | + | 12 | 8526139 | 8526251 | + | 40 | 3.6E-39 | 83.62 | 116 |
| 317923 | 318036 | + | 12 | 8526139 | 8526251 | + | 40 | 3.6E-39 | 83.62 | 116 |
| 327024 | 327137 | + | 12 | 8526139 | 8526251 | + | 40 | 3.6E-39 | 83.62 | 116 |
| 334842 | 335027 | + | 12 | 8526139 | 8526251 | + | 40 | 3.6E-39 | 83.62 | 116 |
| 608995 | 609108 | + | 12 | 8526139 | 8526251 | + | 40 | 3.6E-39 | 83.62 | 116 |
| 822202 | 822315 | + | 12 | 8526139 | 8526251 | + | 40 | 3.6E-39 | 83.62 | 116 |
| 4651547 | 4651660 | - | 12 | 8526139 | 8526251 | + | 40 | 3.6E-39 | 83.62 | 116 |
| 13745 | 13871 | + | 12 | 8526284 | 8526410 | + | 59 | 1E-39 | 86.61 | 127 |
| 33518 | 33645 | + | 12 | 8526284 | 8526410 | + | 59 | 1E-39 | 86.61 | 127 |
| 149704 | 149830 | + | 12 | 8526284 | 8526410 | + | 59 | 6.1E-41 | 86.61 | 127 |
| 283809 | 283935 | + | 12 | 8526284 | 8526410 | + | 59 | 3.6E-39 | 86.61 | 127 |
| 304861 | 304987 | + | 12 | 8526284 | 8526410 | + | 59 | 3.6E-39 | 86.61 | 127 |
| 318069 | 318195 | + | 12 | 8526284 | 8526410 | + | 59 | 3.6E-39 | 86.61 | 127 |
| 327170 | 327296 | + | 12 | 8526284 | 8526410 | + | 59 | 3.6E-39 | 86.61 | 127 |
| 334988 | 335186 | + | 12 | 8526284 | 8526410 | + | 59 | 3.6E-39 | 86.61 | 127 |
| 609141 | 609867 | + | 12 | 8526284 | 8526410 | + | 59 | 3.6E-39 | 86.61 | 127 |
| 822348 | 822474 | + | 12 | 8526284 | 8526410 | + | 59 | 3.6E-39 | 86.61 | 127 |
| 4651388 | 4651514 | - | 12 | 8526284 | 8526410 | + | 59 | 3.6E-39 | 86.61 | 127 |
| 13745 | 13871 | + | 12 | 13351723 | 13351849 | - | 63 | 4.4E-27 | 87.4 | 127 |
| 33518 | 33645 | + | 12 | 13351723 | 13351849 | - | 63 | 4.4E-27 | 87.4 | 127 |
| 149704 | 149830 | + | 12 | 13351723 | 13351849 | - | 63 | 8.6E-27 | 87.4 | 127 |
| 283809 | 283935 | + | 12 | 13351723 | 13351849 | - | 63 | 8.6E-27 | 87.4 | 127 |
| 304861 | 304987 | + | 12 | 13351723 | 13351849 | - | 63 | 8.6E-27 | 87.4 | 127 |
| 318069 | 318195 | + | 12 | 13351723 | 13351849 | - | 63 | 8.6E-27 | 87.4 | 127 |
| 327170 | 327296 | + | 12 | 13351723 | 13351849 | - | 63 | 8.6E-27 | 87.4 | 127 |
| 334988 | 335186 | + | 12 | 13351723 | 13351849 | - | 63 | 8.6E-27 | 87.4 | 127 |
| 609141 | 609267 | + | 12 | 13351723 | 13351849 | - | 63 | 8.6E-27 | 87.4 | 127 |
| 822348 | 822474 | + | 12 | 13351723 | 13351849 | - | 63 | 8.6E-27 | 87.4 | 127 |
| 4651388 | 4651514 | - | 12 | 13351723 | 13351849 | - | 63 | 8.6E-27 | 87.4 | 127 |
| 10192 | 10315 | - | 12 | 20601570 | 20601692 | + | 85 | 4.3E-41 | 92 | 125 |
| 29966 | 30089 | - | 12 | 20601570 | 20601692 | + | 85 | 4.3E-41 | 92 | 125 |



| Bacillus Query | | | Rice Chromosome | | | | Stats | | | |
|----------------|---------|-----|-----------------|----------|----------|-----|-------|---------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 83310 | 83433 | - | 12 | 20601570 | 20601692 | + | 85 | 4.3E-41 | 92 | 125 |
| 146379 | 146501 | - | 12 | 20601570 | 20601692 | + | 85 | 4.3E-41 | 92 | 125 |
| 280484 | 280606 | - | 12 | 20601570 | 20601692 | + | 85 | 4.3E-41 | 92 | 125 |
| 301534 | 301656 | - | 12 | 20601570 | 20601692 | + | 85 | 4.3E-41 | 92 | 125 |
| 314745 | 314867 | - | 12 | 20601570 | 20601692 | + | 85 | 4.3E-41 | 92 | 125 |
| 323844 | 323966 | - | 12 | 20601570 | 20601692 | + | 85 | 4.3E-41 | 92 | 125 |
| 331662 | 331784 | - | 12 | 20601570 | 20601692 | + | 85 | 4.3E-41 | 92 | 125 |
| 819023 | 819145 | - | 12 | 20601570 | 20601692 | + | 85 | 4.3E-41 | 92 | 125 |
| 4654717 | 4654839 | + | 12 | 20601570 | 20601692 | + | 85 | 4.3E-41 | 92 | 125 |
| 13709 | 13932 | - | 12 | 24643330 | 24643553 | + | 105 | 7.1E-52 | 86.46 | 229 |
| 33490 | 33645 | - | 12 | 24643391 | 24643553 | + | 89 | 1.2E-42 | 88.48 | 165 |
| 86600 | 86832 | - | 12 | 24643330 | 24643553 | + | 105 | 7.1E-52 | 86.46 | 223 |
| 149668 | 149891 | - | 12 | 24643330 | 24643553 | + | 105 | 7.1E-52 | 86.46 | 229 |
| 283773 | 284015 | - | 12 | 24643330 | 24643553 | + | 105 | 7.1E-52 | 86.46 | 229 |
| 304825 | 305048 | - | 12 | 24643330 | 24643553 | + | 105 | 7.1E-52 | 86.46 | 229 |
| 318033 | 318256 | - | 12 | 24643330 | 24643553 | + | 105 | 7.1E-52 | 86.46 | 229 |
| 327134 | 327357 | - | 12 | 24643330 | 24643553 | + | 105 | 7.1E-52 | 86.46 | 229 |
| 334952 | 335247 | - | 12 | 24643330 | 24643553 | + | 105 | 7.1E-52 | 86.46 | 229 |
| 609105 | 6093288 | - | 12 | 24643330 | 24643553 | + | 105 | 7.1E-52 | 86.46 | 229 |
| 822312 | 822535 | - | 12 | 24643330 | 24643553 | + | 105 | 7.1E-52 | 86.46 | 229 |
| 4651327 | 4651550 | + | 12 | 24643330 | 24643553 | + | 105 | 7.1E-52 | 86.46 | 229 |

Table C-2. *Xanthomonas oryzae* alignments in the rice genome

| Xanthomonas Query | | | Rice Chromosome | | | | Stats | | | |
|-------------------|---------|-----|-----------------|----------|----------|-----|-------|----------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 3101765 | 3101906 | - | 1 | 21872692 | 21872833 | + | 73 | 1.40E-33 | 87.59 | 145 |
| 3817658 | 3817830 | + | 1 | 29540592 | 29540764 | + | 69 | 5.70E-31 | 84.75 | 177 |
| 309637 | 309746 | - | 1 | 33567086 | 33567195 | + | 62 | 1.10E-26 | 89.09 | 110 |
| 310122 | 310366 | - | 1 | 33566480 | 33566724 | + | 111 | 3.90E-56 | 86.06 | 251 |
| 536923 | 537032 | - | 1 | 33567086 | 33567195 | + | 62 | 1.10E-26 | 89.09 | 110 |
| 537408 | 537652 | - | 1 | 33566480 | 33566724 | + | 111 | 3.90E-56 | 86.06 | 251 |
| 306611 | 306716 | - | 2 | 808137 | 808242 | + | 78 | 4.10E-37 | 93.4 | 106 |
| 310157 | 310261 | + | 2 | 815286 | 815390 | + | 48 | 5.00E-41 | 86.11 | 108 |
| 533897 | 534002 | - | 2 | 808137 | 808242 | + | 78 | 4.10E-37 | 93.4 | 106 |
| 537443 | 537547 | + | 2 | 815286 | 815390 | + | 48 | 5.00E-41 | 86.11 | 108 |
| 306611 | 306716 | + | 2 | 14191648 | 14191753 | + | 86 | 3.10E-42 | 95.28 | 106 |
| 533897 | 534002 | + | 2 | 14191648 | 14191753 | + | 86 | 3.10E-42 | 95.28 | 106 |
| 3845432 | 3845575 | - | 2 | 23057548 | 23057691 | + | 71 | 2.30E-32 | 87.07 | 147 |
| 3862858 | 3863001 | - | 2 | 23057548 | 23057691 | + | 71 | 2.30E-32 | 87.07 | 147 |
| 306611 | 306716 | - | 3 | 23618360 | 23618465 | - | 75 | 3.10E-35 | 92.52 | 107 |
| 533897 | 534002 | - | 3 | 23618360 | 23618465 | - | 75 | 3.10E-35 | 92.52 | 107 |
| 310157 | 310365 | - | 3 | 31755438 | 31755646 | - | 97 | 1.40E-52 | 86.18 | 217 |
| 537443 | 537651 | - | 3 | 31755438 | 31755646 | - | 97 | 1.40E-52 | 86.18 | 217 |
| 310157 | 310365 | - | 3 | 31756570 | 31756778 | - | 97 | 1.40E-52 | 86.18 | 217 |
| 537443 | 537651 | - | 3 | 31756570 | 31756778 | - | 97 | 1.40E-52 | 86.18 | 217 |
| 306611 | 306716 | + | 4 | 8907662 | 8907767 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 310157 | 310365 | + | 4 | 8913252 | 8913460 | + | 97 | 1.60E-52 | 86.18 | 217 |
| 533897 | 534002 | + | 4 | 8907662 | 8907767 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 537443 | 537651 | + | 4 | 8913252 | 8913460 | + | 97 | 1.60E-52 | 86.18 | 217 |
| 306611 | 306716 | + | 4 | 8984065 | 8984170 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 533897 | 534002 | + | 4 | 8984065 | 8984170 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 306611 | 306716 | + | 4 | 9002493 | 9002598 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 533897 | 534002 | + | 4 | 9002493 | 9002598 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 310157 | 310365 | + | 4 | 9008085 | 9008293 | + | 97 | 1.60E-52 | 86.18 | 217 |
| 537443 | 537651 | + | 4 | 9008085 | 9008293 | + | 97 | 1.60E-52 | 86.18 | 217 |
| 306611 | 306716 | + | 4 | 9043093 | 9043198 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 533897 | 534002 | + | 4 | 9043093 | 9043198 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 310157 | 310365 | + | 4 | 9048685 | 9048893 | + | 97 | 1.60E-52 | 86.18 | 217 |

| Xanthomonas Query | | | Rice Chromosome | | | | Stats | | | |
|-------------------|---------|-----|-----------------|----------|----------|-----|-------|----------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 537443 | 537651 | + | 4 | 9048685 | 9048893 | + | 97 | 1.60E-52 | 86.18 | 217 |
| 306614 | 306716 | - | 4 | 23268289 | 23268391 | + | 79 | 9.70E-38 | 94.17 | 103 |
| 533900 | 534002 | - | 4 | 23268289 | 23268391 | + | 79 | 9.70E-38 | 94.17 | 103 |
| 306611 | 306714 | - | 4 | 32486318 | 32486421 | + | 77 | 1.70E-36 | 93.33 | 105 |
| 533897 | 534000 | - | 4 | 32486318 | 32486421 | + | 77 | 1.70E-36 | 93.33 | 105 |
| 306611 | 306716 | - | 5 | 884203 | 884308 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 533897 | 534002 | - | 5 | 884203 | 884308 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 306611 | 306716 | - | 5 | 12785252 | 12785357 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 533897 | 534002 | - | 5 | 12785252 | 12785357 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 2130495 | 2130652 | - | 5 | 17472623 | 17472780 | + | 54 | 6.40E-22 | 83.33 | 162 |
| 2130555 | 2130652 | - | 5 | 20846967 | 20847064 | + | 49 | 4.50E-23 | 87.13 | 101 |
| 310122 | 310365 | - | 6 | 16740598 | 16740771 | + | 81 | 1.10E-37 | 86.44 | 177 |
| 537408 | 537581 | - | 6 | 16740598 | 16740771 | + | 81 | 1.10E-37 | 86.44 | 177 |
| 3817655 | 3817780 | - | 6 | 24360517 | 24360642 | + | 48 | 1.30E-26 | 84.38 | 128 |
| 306611 | 306716 | - | 7 | 14231418 | 14231523 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 533897 | 534002 | - | 7 | 14231418 | 14231523 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 310157 | 310365 | - | 8 | 9239422 | 9239630 | + | 97 | 1.50E-52 | 86.18 | 217 |
| 537443 | 537651 | - | 8 | 9239422 | 9239630 | + | 97 | 1.50E-52 | 86.18 | 217 |
| 306611 | 306716 | - | 8 | 9244831 | 9244936 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 533897 | 534002 | - | 8 | 9244831 | 9244936 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 2130515 | 2130652 | - | 8 | 5640788 | 5640925 | + | 55 | 1.60E-22 | 84.62 | 143 |
| 306611 | 306716 | + | 10 | 10389964 | 10390069 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 533897 | 534002 | + | 10 | 10389964 | 10390069 | + | 90 | 5.40E-45 | 96.23 | 106 |
| 310157 | 310365 | + | 10 | 10395542 | 10395750 | + | 92 | 1.30E-49 | 85.65 | 216 |
| 537443 | 537651 | + | 10 | 10395542 | 10395750 | + | 92 | 1.30E-49 | 85.65 | 216 |
| 306611 | 306716 | - | 10 | 19946322 | 19946427 | - | 90 | 5.40E-45 | 96.23 | 106 |
| 533897 | 534002 | - | 10 | 19946322 | 19946427 | - | 90 | 5.40E-45 | 96.23 | 106 |
| 310157 | 310365 | - | 10 | 19951915 | 19952123 | - | 97 | 1.20E-52 | 86.18 | 217 |
| 537443 | 537651 | - | 10 | 19951915 | 19952123 | - | 97 | 1.20E-52 | 86.18 | 217 |
| 310157 | 310365 | + | 12 | 5633117 | 5633325 | - | 93 | 3.60E-50 | 85.71 | 217 |
| 537443 | 537651 | + | 12 | 5633117 | 5633325 | - | 93 | 3.60E-50 | 85.71 | 217 |
| 310136 | 310366 | + | 12 | 8526182 | 8526411 | + | 93 | 2.00E-45 | 84.81 | 237 |



| Xanthomonas Query | | | Rice Chromosome | | | | Stats | | | |
|-------------------|--------|-----|-----------------|----------|----------|-----|-------|----------|-------|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 537422 | 537652 | + | 12 | 8526182 | 8526411 | + | 93 | 2.00E-45 | 84.81 | 237 |
| 310133 | 310366 | + | 12 | 13351722 | 13351966 | - | 99 | 2.00E-48 | 84.86 | 251 |
| 537408 | 537652 | + | 12 | 13351722 | 13351966 | - | 99 | 2.00E-48 | 84.86 | 251 |
| 306611 | 306716 | - | 12 | 20601583 | 20601688 | + | 83 | 2.90E-40 | 94.39 | 107 |
| 533897 | 534002 | - | 12 | 20601583 | 20601688 | + | 83 | 2.90E-40 | 94.39 | 107 |

Table C-3. *Pseudomonas syringae* alignments in the rice genome

| Xanthomonas Query | | | Rice Chromosome | | | | Stats | | | |
|-------------------|---------|-----|-----------------|----------|----------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 1240999 | 1241175 | - | 1 | 29540592 | 29540767 | + | 61 | 3.80E-26 | 83 | 181 |
| 3847997 | 3848275 | + | 1 | 33566475 | 33566753 | + | 122 | 1.00E-62 | 86 | 286 |
| 5413584 | 5423862 | + | 1 | 33566475 | 33566753 | + | 118 | 2.50E-60 | 85 | 286 |
| 5948505 | 5948783 | + | 1 | 33566475 | 33566753 | + | 122 | 1.00E-62 | 86 | 286 |
| 3848073 | 3848246 | + | 1 | 33566551 | 33566724 | + | 82 | 8.40E-39 | 87 | 178 |
| 5423659 | 5423832 | + | 1 | 33566551 | 33566724 | + | 78 | 2.10E-36 | 86 | 178 |
| 5423659 | 5423760 | + | 1 | 33566551 | 33566652 | + | 52 | 3.30E-21 | 88 | 104 |
| 5948581 | 5948754 | + | 1 | 33566551 | 33566724 | + | 82 | 8.40E-39 | 87 | 178 |
| 3848622 | 3848731 | + | 1 | 33567086 | 33567195 | + | 63 | 2.80E-27 | 89 | 111 |
| 5424208 | 5424317 | + | 1 | 33567086 | 33567195 | + | 63 | 2.80E-27 | 89 | 111 |
| 5949130 | 5949239 | + | 1 | 33567086 | 33567195 | + | 63 | 2.80E-27 | 89 | 111 |
| 3847930 | 3848211 | - | 1 | 33567570 | 33567851 | + | 100 | 4.90E-49 | 84 | 292 |
| 3848107 | 3848211 | - | 1 | 33567570 | 33567674 | + | 53 | 2.30E-21 | 87 | 109 |
| 5423517 | 5423798 | - | 1 | 33567570 | 33567851 | + | 104 | 2.00E-51 | 84 | 292 |
| 5423659 | 5423797 | - | 1 | 33567570 | 33567708 | + | 56 | 3.60E-23 | 85 | 144 |
| 5948438 | 5948719 | - | 1 | 33567570 | 33567851 | + | 100 | 4.90E-49 | 84 | 292 |
| 3851688 | 3851806 | + | 2 | 808124 | 808242 | + | 71 | 1.40E-32 | 90 | 119 |
| 5427274 | 5427392 | + | 2 | 808124 | 808242 | + | 71 | 1.40E-32 | 90 | 119 |
| 5952196 | 5952314 | + | 2 | 808124 | 808242 | + | 71 | 1.40E-32 | 90 | 119 |
| 3848107 | 3848211 | - | 2 | 815286 | 815390 | + | 48 | 6.20E-40 | 86 | 108 |
| 3848107 | 3848211 | - | 2 | 815286 | 815390 | + | 48 | 2.30E-18 | 86 | 108 |
| 5423688 | 5423797 | - | 2 | 815286 | 815395 | + | 49 | 5.70E-19 | 86 | 113 |
| 5423689 | 5423798 | - | 2 | 815286 | 815395 | + | 49 | 1.60E-40 | 86 | 113 |
| 5948615 | 5948719 | - | 2 | 815286 | 815390 | + | 48 | 6.20E-40 | 86 | 108 |
| 3847930 | 3848080 | - | 2 | 815417 | 815567 | + | 52 | 6.20E-40 | 83 | 156 |
| 5423517 | 5423667 | - | 2 | 815417 | 815567 | + | 52 | 1.60E-40 | 83 | 156 |
| 5948438 | 5948588 | - | 2 | 815417 | 815567 | + | 52 | 6.20E-40 | 83 | 156 |
| 3851688 | 3851806 | - | 2 | 14191648 | 14191766 | + | 79 | 1.80E-37 | 92 | 119 |
| 5427274 | 5427392 | - | 2 | 14191648 | 14191766 | + | 79 | 1.80E-37 | 92 | 119 |
| 5952196 | 5952314 | - | 2 | 14191648 | 14191766 | + | 79 | 1.80E-37 | 92 | 119 |
| 4010715 | 4010842 | + | 3 | 1769236 | 1769363 | - | 63 | 1.20E-27 | 87 | 131 |
| 3847930 | 3848211 | + | 3 | 31755438 | 31755719 | - | 100 | 4.90E-49 | 84 | 292 |
| 5423517 | 5423798 | + | 3 | 31755438 | 31755719 | - | 104 | 2.00E-51 | 84 | 292 |
| 5948438 | 5948719 | + | 3 | 31755438 | 31755719 | - | 100 | 4.90E-49 | 84 | 292 |
| 5423659 | 5423760 | + | 3 | 31755475 | 31755576 | - | 35 | 6.50E-11 | 83 | 107 |



| Xanthomonas Query | | | Rice Chromosome | | | | Stats | | | |
|-------------------|---------|-----|-----------------|----------|----------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 3847930 | 3848211 | + | 3 | 31756570 | 31756851 | - | 100 | 4.90E-49 | 84 | 292 |
| 5423517 | 5423798 | + | 3 | 31756570 | 31756851 | - | 104 | 2.00E-51 | 84 | 292 |
| 5948438 | 5948719 | + | 3 | 31756570 | 31756851 | - | 100 | 4.90E-49 | 84 | 292 |
| 5423659 | 5423760 | + | 3 | 31756607 | 31756708 | - | 35 | 6.50E-11 | 83 | 107 |
| 3851688 | 3851806 | - | 4 | 8907662 | 8907780 | + | 83 | 6.40E-40 | 92 | 119 |
| 5427274 | 5427392 | - | 4 | 8907662 | 8907780 | + | 83 | 6.40E-40 | 92 | 119 |
| 5952196 | 5952314 | - | 4 | 8907662 | 8907780 | + | 83 | 6.40E-40 | 92 | 119 |
| 3847930 | 3848211 | - | 4 | 8913252 | 8913533 | + | 100 | 4.90E-49 | 84 | 292 |
| 3848107 | 3848211 | - | 4 | 8913252 | 8913356 | + | 53 | 2.30E-21 | 87 | 109 |
| 5423517 | 5423798 | - | 4 | 8913252 | 8913533 | + | 104 | 2.00E-51 | 84 | 292 |
| 5948438 | 5948719 | - | 4 | 8913252 | 8913533 | + | 100 | 4.90E-49 | 84 | 292 |
| 5423659 | 5423760 | - | 4 | 8913289 | 8913390 | + | 35 | 6.50E-11 | 83 | 107 |
| 3851688 | 3851806 | - | 4 | 8984065 | 8984183 | + | 83 | 6.40E-40 | 92 | 119 |
| 5427274 | 5427392 | - | 4 | 8984065 | 8984183 | + | 83 | 6.40E-40 | 92 | 119 |
| 5952196 | 5952314 | - | 4 | 8984065 | 8984183 | + | 83 | 6.40E-40 | 92 | 119 |
| 3851688 | 3851806 | - | 4 | 9002493 | 9002611 | + | 83 | 6.40E-40 | 92 | 119 |
| 5427274 | 5427392 | - | 4 | 9002493 | 9002611 | + | 83 | 6.40E-40 | 92 | 119 |
| 5952196 | 5952314 | - | 4 | 9002493 | 9002611 | + | 83 | 6.40E-40 | 92 | 119 |
| 3847930 | 3848211 | - | 4 | 9008085 | 9008366 | + | 100 | 4.90E-49 | 84 | 292 |
| 5423517 | 5423798 | - | 4 | 9008085 | 9008366 | + | 104 | 2.00E-51 | 84 | 292 |
| 5423659 | 5423797 | - | 4 | 9008085 | 9008223 | + | 56 | 3.60E-23 | 85 | 144 |
| 5948438 | 5948719 | - | 4 | 9008085 | 9008366 | + | 100 | 4.90E-49 | 84 | 292 |
| 3851688 | 3851806 | - | 4 | 9043093 | 9043211 | + | 83 | 6.40E-40 | 92 | 119 |
| 5427274 | 5427392 | - | 4 | 9043093 | 9043211 | + | 83 | 6.40E-40 | 92 | 119 |
| 5952196 | 5952314 | - | 4 | 9043093 | 9043211 | + | 83 | 6.40E-40 | 92 | 119 |
| 3847930 | 3848211 | - | 4 | 9048685 | 9048966 | + | 100 | 4.90E-49 | 84 | 292 |
| 3848107 | 3848211 | - | 4 | 9048685 | 9048789 | + | 53 | 2.30E-21 | 87 | 109 |
| 5423517 | 5423798 | - | 4 | 9048685 | 9048966 | + | 104 | 2.00E-51 | 84 | 292 |
| 5423659 | 5423797 | - | 4 | 9048685 | 9048823 | + | 56 | 3.60E-23 | 85 | 144 |
| 5948438 | 5948719 | - | 4 | 9048685 | 9048966 | + | 100 | 4.90E-49 | 84 | 292 |
| 5952196 | 5952314 | + | 4 | 23268276 | 23268391 | + | 73 | 8.50E-34 | 91 | 117 |
| 3851688 | 3851806 | + | 5 | 884190 | 884308 | + | 83 | 6.40E-40 | 92 | 119 |
| 5427274 | 5427392 | + | 5 | 884190 | 884308 | + | 83 | 6.40E-40 | 92 | 119 |
| 5952196 | 5952314 | + | 5 | 884190 | 884308 | + | 83 | 6.40E-40 | 92 | 119 |
| 3851688 | 3851806 | + | 5 | 12785239 | 12785357 | + | 83 | 6.40E-40 | 92 | 119 |



| Xanthomonas Query | | | Rice Chromosome | | | | Stats | | | |
|-------------------|---------|-----|-----------------|----------|----------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 5427274 | 5427392 | + | 5 | 12785239 | 12785357 | + | 83 | 6.40E-40 | 92 | 119 |
| 5952196 | 5952314 | + | 5 | 12785239 | 12785357 | + | 83 | 6.40E-40 | 92 | 119 |
| 3848073 | 3848246 | + | 6 | 16740598 | 16740771 | + | 85 | 1.30E-40 | 87 | 177 |
| 5423659 | 5423832 | + | 6 | 16740598 | 16740771 | + | 81 | 3.40E-38 | 86 | 177 |
| 5423660 | 5423833 | + | 6 | 16740598 | 16740771 | + | 81 | 1.10E-37 | 86 | 177 |
| 5948581 | 5948754 | + | 6 | 16740598 | 16740771 | + | 85 | 1.30E-40 | 87 | 177 |
| 1240999 | 1241179 | + | 6 | 24360464 | 24360643 | + | 69 | 5.90E-31 | 84 | 185 |
| 3851688 | 3851806 | + | 7 | 14231405 | 14231523 | + | 83 | 6.40E-40 | 92 | 119 |
| 5427274 | 5427392 | + | 7 | 14231405 | 14231523 | + | 83 | 6.40E-40 | 92 | 119 |
| 5952196 | 5952314 | + | 7 | 14231405 | 14231523 | + | 83 | 6.40E-40 | 92 | 119 |
| 3847930 | 3848211 | + | 8 | 9239349 | 9239630 | + | 100 | 4.90E-49 | 84 | 292 |
| 5423517 | 5423798 | + | 8 | 9239349 | 9239630 | + | 104 | 2.00E-51 | 84 | 292 |
| 5948438 | 5948719 | + | 8 | 9239349 | 9239630 | + | 100 | 4.90E-49 | 84 | 292 |
| 3851688 | 3851806 | + | 8 | 9244818 | 9244936 | + | 83 | 6.40E-40 | 92 | 119 |
| 5427274 | 5427392 | + | 8 | 9244818 | 9244936 | + | 83 | 6.40E-40 | 92 | 119 |
| 5952196 | 5952314 | + | 8 | 9244818 | 9244936 | + | 83 | 6.40E-40 | 92 | 119 |
| 3847930 | 3848211 | - | 10 | 10395542 | 10395823 | + | 95 | 4.80E-46 | 83 | 291 |
| 3851688 | 3851806 | - | 10 | 10389964 | 10390082 | + | 83 | 6.40E-40 | 92 | 119 |
| 5423517 | 5423798 | - | 10 | 10395542 | 10395823 | + | 99 | 2.00E-48 | 84 | 291 |
| 5427274 | 5427392 | - | 10 | 10389964 | 10390082 | + | 83 | 6.40E-40 | 92 | 119 |
| 5948438 | 5948719 | - | 10 | 10395542 | 10395823 | + | 95 | 4.80E-46 | 83 | 291 |
| 5952196 | 5952314 | - | 10 | 10389964 | 10390082 | + | 83 | 6.40E-40 | 92 | 119 |
| 3847930 | 3848211 | + | 10 | 19951915 | 19952196 | - | 100 | 4.90E-49 | 84 | 292 |
| 3851688 | 3851806 | + | 10 | 19946322 | 19946440 | - | 83 | 6.40E-40 | 92 | 119 |
| 5423517 | 5423798 | + | 10 | 19951915 | 19952196 | - | 104 | 2.00E-51 | 84 | 292 |
| 5427274 | 5427392 | + | 10 | 19946322 | 19946440 | - | 83 | 6.40E-40 | 92 | 119 |
| 5948438 | 5948719 | + | 10 | 19951915 | 19952196 | - | 100 | 4.90E-49 | 84 | 292 |
| 5952196 | 5952314 | + | 10 | 19946322 | 19946440 | - | 83 | 6.40E-40 | 92 | 119 |
| 3848073 | 3848174 | + | 11 | 13074159 | 13074260 | + | 52 | 9.00E-21 | 88 | 104 |
| 5423659 | 5423760 | + | 11 | 13074159 | 13074260 | + | 48 | 9.00E-19 | 87 | 104 |
| 5423660 | 5423761 | + | 11 | 13074159 | 13074260 | + | 48 | 5.90E-18 | 87 | 104 |
| 5948581 | 5948682 | + | 11 | 13074159 | 13074260 | + | 52 | 3.30E-21 | 88 | 104 |
| 3847930 | 3848211 | - | 12 | 5633044 | 5633325 | - | 96 | 1.20E-46 | 83 | 292 |
| 5423517 | 5423798 | - | 12 | 5633044 | 5633325 | - | 100 | 4.90E-49 | 84 | 292 |
| 5948438 | 5948719 | - | 12 | 5633044 | 5633325 | - | 96 | 1.20E-46 | 83 | 292 |
| 3847997 | 3848275 | - | 12 | 8526139 | 8526416 | + | 107 | 9.00E-54 | 84 | 287 |
| 5423584 | 5423862 | - | 12 | 8526139 | 8526416 | + | 103 | 2.20E-51 | 84 | 287 |
| 5948505 | 5948783 | - | 12 | 8526139 | 8526416 | + | 107 | 9.00E-54 | 84 | 287 |



| Xanthomonas Query | | | Rice Chromosome | | | | Stats | | | |
|-------------------|---------|-----|-----------------|----------|----------|-----|-------|----------|-----|--------|
| Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 5948581 | 5948740 | - | 12 | 8526182 | 8526340 | + | 68 | 2.20E-30 | 85 | 164 |
| 3847997 | 3848246 | - | 12 | 13351717 | 13351966 | - | 108 | 8.10E-54 | 86 | 256 |
| 5423584 | 5423833 | - | 12 | 13351717 | 13351966 | - | 104 | 2.00E-51 | 85 | 256 |
| 5948505 | 5948754 | - | 12 | 13351717 | 13351966 | - | 108 | 8.10E-54 | 86 | 256 |
| 3847950 | 3848070 | + | 12 | 24643338 | 24643458 | + | 40 | 5.90E-20 | 83 | 124 |
| 5423537 | 5423657 | + | 12 | 24643338 | 24643458 | + | 40 | 1.50E-20 | 83 | 124 |
| 5948458 | 5948578 | + | 12 | 24643338 | 24643458 | + | 40 | 5.90E-20 | 83 | 124 |

Table D-1. Magnaporthe grisea alignments in the rice genome

| Magnapotho Query | | | | Rice Chromosome | | | | Stats | | | |
|------------------|-------|-------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Contig | Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 1238 | 40793 | 40894 | + | 1 | 24262 | 24362 | + | 54 | 2.00E-22 | 88 | 102 |
| 103 | 5481 | 5615 | - | 1 | 10096525 | 10096658 | + | 86 | 3.90E-62 | 91 | 134 |
| 103 | 4715 | 4849 | - | 1 | 10097755 | 10097888 | + | 32 | 7.60E-09 | 81 | 136 |
| 103 | 4465 | 4599 | - | 1 | 10098717 | 10098850 | + | 59 | 5.00E-25 | 86 | 135 |
| 232 | 32593 | 32784 | + | 1 | 12628560 | 12628750 | + | 77 | 8.20E-35 | 85 | 193 |
| 1472 | 28409 | 29251 | + | 1 | 12628569 | 12628780 | + | 94 | 1.70E-45 | 86 | 218 |
| 232 | 32394 | 32586 | + | 1 | 12628589 | 12628780 | + | 65 | 1.20E-27 | 83 | 193 |
| 232 | 32167 | 32358 | + | 1 | 12628590 | 12628780 | + | 60 | 1.10E-24 | 83 | 192 |
| 1129 | 6724 | 6907 | - | 1 | 12628591 | 12628772 | + | 80 | 1.50E-37 | 86 | 184 |
| 1472 | 28429 | 29251 | - | 1 | 26094018 | 26094209 | + | 79 | 1.60E-36 | 85 | 195 |
| 232 | 32593 | 32784 | - | 1 | 26094048 | 26094238 | + | 65 | 6.40E-41 | 83 | 193 |
| 1129 | 6724 | 6907 | + | 1 | 26094108 | 26094207 | + | 41 | 3.90E-14 | 85 | 101 |
| 232 | 32149 | 32265 | - | 1 | 26094111 | 26094226 | + | 48 | 3.90E-19 | 85 | 116 |
| 232 | 32593 | 32747 | - | 1 | 26098507 | 26098660 | + | 51 | 2.60E-19 | 83 | 155 |
| 232 | 32154 | 32272 | - | 1 | 26098526 | 26098643 | + | 38 | 6.40E-41 | 83 | 118 |
| 1472 | 28409 | 29165 | - | 1 | 26098526 | 26098651 | + | 48 | 5.30E-18 | 84 | 128 |
| 887 | 20571 | 20739 | - | 1 | 28658039 | 28658206 | + | 65 | 1.30E-28 | 85 | 169 |
| 190 | 17742 | 17840 | - | 1 | 31730847 | 31730945 | + | 41 | 3.30E-14 | 85 | 101 |
| 103 | 4506 | 4599 | + | 1 | 34495993 | 34496085 | + | 61 | 3.20E-26 | 91 | 93 |
| 103 | 5481 | 5615 | + | 1 | 34498016 | 34498149 | + | 78 | 5.20E-52 | 90 | 134 |
| 1169 | 37522 | 37679 | + | 1 | 36167620 | 36167776 | + | 69 | 4.70E-31 | 86 | 161 |
| 1287 | 62858 | 62984 | + | 1 | 36366779 | 36366904 | + | 45 | 8.80E-17 | 84 | 129 |
| 789 | 9724 | 9836 | - | 1 | 36368256 | 36368367 | + | 29 | 6.50E-07 | 81 | 113 |
| 2242 | 2527 | 2649 | - | 1 | 36368314 | 36368435 | + | 44 | 6.10E-16 | 84 | 124 |
| 1287 | 63220 | 63344 | + | 1 | 36368323 | 36368446 | + | 64 | 1.90E-27 | 88 | 124 |
| 1287 | 64122 | 64268 | + | 1 | 36369164 | 36369309 | + | 62 | 1.60E-36 | 85 | 150 |
| 767 | 14380 | 14564 | - | 1 | 37838097 | 37838281 | + | 82 | 1.00E-44 | 86 | 186 |
| 767 | 14403 | 14630 | + | 1 | 42812394 | 42812620 | + | 47 | 3.80E-17 | 80 | 231 |
| 929 | 12303 | 12407 | + | 2 | 83463 | 83566 | + | 30 | 7.20E-08 | 82 | 106 |
| 1506 | 27065 | 27252 | + | 2 | 1116252 | 1116438 | + | 50 | 1.60E-19 | 82 | 190 |
| 828 | 29843 | 30045 | - | 2 | 2560454 | 2560655 | + | 75 | 1.80E-34 | 84 | 207 |
| 232 | 31897 | 32046 | + | 2 | 3340643 | 3340791 | + | 47 | 9.40E-138 | 83 | 151 |
| 232 | 32130 | 32787 | + | 2 | 3340648 | 3341304 | + | 241 | 1.20E-132 | 84 | 665 |
| 1472 | 28393 | 29192 | + | 2 | 3340648 | 3340816 | + | 76 | 1.20E-49 | 86 | 172 |
| 1129 | 6724 | 6907 | - | 2 | 3340686 | 3340867 | + | 87 | 9.20E-42 | 87 | 183 |
| 232 | 32089 | 32787 | + | 2 | 3340835 | 3341532 | + | 219 | 9.40E-138 | 83 | 707 |
| 1472 | 28393 | 29251 | + | 2 | 3340876 | 3341103 | + | 114 | 1.80E-57 | 87 | 234 |
| 1129 | 6724 | 6907 | - | 2 | 3340914 | 3341076 | + | 75 | 1.50E-34 | 87 | 163 |
| 1472 | 28393 | 29188 | + | 2 | 3341104 | 3341268 | + | 98 | 9.40E-63 | 90 | 166 |
| 232 | 31906 | 32187 | + | 2 | 3341108 | 3341388 | + | 81 | 1.50E-130 | 82 | 285 |
| 1129 | 6724 | 6907 | - | 2 | 3341142 | 3341323 | + | 87 | 9.20E-42 | 87 | 183 |

| Magnapotho Query | | | | Rice Chromosome | | | | Stats | | | |
|------------------|-------|--------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Contig | Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 232 | 32394 | 32787 | + | 2 | 3341368 | 3341760 | + | 142 | 4.20E-112 | 84 | 398 |
| 1472 | 28429 | 29191 | + | 2 | 3341368 | 3341499 | + | 94 | 2.30E-60 | 93 | 134 |
| 1129 | 6724 | 6907 | - | 2 | 3341370 | 3341544 | + | 73 | 2.40E-33 | 85 | 177 |
| 232 | 32203 | 32787 | + | 2 | 3341405 | 3341988 | + | 173 | 1.50E-130 | 82 | 593 |
| 1472 | 28394 | 29191 | + | 2 | 3341561 | 3341727 | + | 85 | 5.30E-55 | 88 | 169 |
| 232 | 31906 | 32187 | + | 2 | 3341564 | 3341844 | + | 75 | 1.30E-33 | 82 | 283 |
| 232 | 32200 | 32559 | + | 2 | 3341630 | 3341988 | + | 103 | 6.60E-89 | 82 | 363 |
| 232 | 31906 | 32130 | + | 2 | 3341792 | 3342015 | + | 54 | 4.30E-21 | 81 | 226 |
| 1472 | 28429 | 29191 | + | 2 | 3341824 | 3341955 | + | 70 | 5.50E-39 | 88 | 134 |
| 103 | 4465 | 4626 | + | 2 | 3620110 | 3620270 | + | 71 | 3.00E-32 | 86 | 163 |
| 103 | 5481 | 5615 | + | 2 | 3622270 | 3622403 | + | 74 | 1.50E-52 | 89 | 134 |
| 1169 | 37524 | 37679 | - | 2 | 27988474 | 27988628 | + | 67 | 7.40E-30 | 86 | 159 |
| 1491 | 14983 | 15083 | + | 2 | 28714599 | 28714698 | + | 88 | 2.80E-44 | 97 | 100 |
| 2169 | 4957 | 5201 | + | 2 | 28714599 | 28714842 | + | 185 | 1.50E-100 | 94 | 245 |
| 2169 | 5381 | 5510 | + | 2 | 28715028 | 28715156 | + | 93 | 2.30E-51 | 93 | 129 |
| 1280 | 19275 | 19418 | + | 2 | 28767311 | 28767453 | + | 49 | 4.20E-19 | 83 | 145 |
| 103 | 4468 | 4623 | + | 3 | 318636 | 318790 | + | 58 | 2.00E-24 | 84 | 158 |
| 103 | 4996 | 5106 | + | 3 | 319210 | 319319 | + | 50 | 6.50E-20 | 86 | 110 |
| 103 | 5481 | 5615 | + | 3 | 319654 | 319787 | + | 67 | 2.90E-50 | 87 | 135 |
| 1169 | 37522 | 37679 | + | 3 | 1059361 | 1059517 | + | 69 | 4.70E-31 | 86 | 161 |
| 714 | 20910 | 209135 | + | 3 | 4074435 | 4074559 | - | 66 | 1.80E-29 | 88 | 126 |
| 714 | 20190 | 20303 | + | 3 | 4075697 | 4075809 | - | 46 | 5.00E-17 | 85 | 114 |
| 714 | 20910 | 209135 | + | 3 | 4079982 | 4080106 | - | 66 | 1.80E-29 | 88 | 126 |
| 714 | 20190 | 20303 | + | 3 | 4081137 | 4081249 | - | 46 | 5.00E-17 | 85 | 114 |
| 714 | 20910 | 209135 | + | 3 | 4090650 | 4090774 | - | 70 | 6.70E-32 | 89 | 126 |
| 714 | 20190 | 20303 | + | 3 | 4091819 | 4091931 | - | 46 | 5.00E-17 | 85 | 114 |
| 714 | 20910 | 209135 | - | 3 | 4096846 | 4096970 | + | 58 | 1.20E-24 | 87 | 126 |
| 1472 | 28412 | 29146 | - | 3 | 7083432 | 7083535 | - | 54 | 1.90E-48 | 88 | 106 |
| 1472 | 28515 | 29251 | - | 3 | 7083626 | 7083731 | - | 60 | 1.90E-48 | 89 | 108 |
| 1472 | 28515 | 29251 | - | 3 | 8389102 | 8389207 | + | 47 | 5.40E-36 | 86 | 107 |
| 1287 | 62858 | 62984 | - | 3 | 9349412 | 9349537 | - | 41 | 2.30E-14 | 83 | 129 |
| 789 | 9725 | 9836 | + | 3 | 9350367 | 9350477 | - | 53 | 2.70E-21 | 87 | 113 |
| 1287 | 63188 | 63349 | - | 3 | 9350402 | 9350561 | - | 75 | 5.10E-34 | 87 | 163 |
| 2242 | 2525 | 2651 | + | 3 | 9350423 | 9350548 | - | 58 | 2.40E-24 | 87 | 126 |
| 1287 | 64094 | 64268 | - | 3 | 9351247 | 9351420 | - | 79 | 2.20E-45 | 86 | 179 |
| 2242 | 2525 | 2705 | - | 3 | 9358177 | 9358356 | - | 56 | 3.80E-23 | 83 | 180 |
| 789 | 9725 | 9836 | - | 3 | 9358248 | 9358358 | - | 41 | 4.20E-14 | 84 | 113 |
| 1287 | 63189 | 63344 | - | 3 | 9392316 | 9392470 | + | 61 | 8.00E-48 | 85 | 157 |
| 2242 | 2525 | 2663 | + | 3 | 9392325 | 9392462 | + | 54 | 6.10E-22 | 85 | 138 |
| 789 | 9725 | 9836 | + | 3 | 9392396 | 9392506 | + | 45 | 1.70E-16 | 85 | 113 |
| 1287 | 62858 | 62982 | - | 3 | 9394785 | 9394908 | + | 45 | 8.80E-17 | 84 | 125 |
| 1278 | 9586 | 9702 | + | 3 | 11502555 | 11502670 | + | 36 | 2.00E-11 | 83 | 116 |
| 103 | 4514 | 4626 | - | 3 | 25897273 | 25897384 | - | 57 | 8.00E-24 | 88 | 113 |
| 103 | 5481 | 5615 | - | 3 | 25900350 | 25900483 | - | 62 | 4.50E-43 | 87 | 134 |
| 767 | 14352 | 14565 | - | 3 | 29024871 | 29025083 | + | 102 | 1.80E-51 | 87 | 214 |

| Magnapotho Query | | | | Rice Chromosome | | | | Stats | | | |
|------------------|-------|-------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Contig | Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 1238 | 18714 | 18814 | - | 3 | 29479121 | 29479220 | + | 76 | 5.20E-36 | 94 | 100 |
| 103 | 4465 | 4626 | + | 3 | 32311011 | 32311171 | + | 75 | 1.20E-34 | 87 | 163 |
| 103 | 5481 | 5615 | + | 3 | 32313158 | 32313291 | + | 78 | 5.70E-36 | 90 | 134 |
| 837 | 44948 | 45056 | - | 3 | 33946435 | 33946542 | + | 45 | 6.70E-17 | 85 | 109 |
| 1287 | 62858 | 62984 | + | 3 | 34385481 | 34385606 | + | 60 | 7.80E-26 | 87 | 128 |
| 1287 | 63358 | 63533 | + | 3 | 34388048 | 34388222 | + | 71 | 5.70E-34 | 85 | 179 |
| 1287 | 64122 | 64228 | + | 3 | 34388745 | 34388850 | + | 36 | 9.10E-11 | 83 | 108 |
| 190 | 17757 | 17855 | - | 3 | 34534979 | 34535077 | - | 48 | 2.10E-18 | 87 | 100 |
| 1254 | 63711 | 63869 | + | 4 | 474956 | 475113 | + | 58 | 2.90E-56 | 84 | 162 |
| 1254 | 63978 | 64097 | + | 4 | 475223 | 475341 | + | 42 | 2.90E-56 | 84 | 122 |
| 256 | 143 | 254 | + | 4 | 23876766 | 23876875 | + | 51 | 2.10E-20 | 86 | 111 |
| 1902 | 25590 | 25695 | - | 4 | 23876766 | 23876870 | + | 38 | 1.10E-12 | 84 | 106 |
| 1902 | 25596 | 25695 | - | 4 | 23876766 | 23876864 | + | 36 | 1.70E-11 | 84 | 100 |
| 1169 | 37524 | 37679 | - | 4 | 29270088 | 29270242 | + | 67 | 7.40E-30 | 86 | 159 |
| 232 | 32431 | 32586 | - | 4 | 31744688 | 31744842 | + | 83 | 2.20E-38 | 88 | 155 |
| 1129 | 6724 | 6907 | + | 4 | 31744697 | 31744877 | + | 79 | 4.50E-38 | 86 | 183 |
| 232 | 32659 | 32787 | - | 4 | 31744715 | 31744842 | + | 41 | 4.10E-122 | 83 | 129 |
| 232 | 31906 | 32613 | - | 4 | 31744889 | 31745595 | + | 199 | 4.10E-122 | 82 | 715 |
| 1472 | 28406 | 29251 | - | 4 | 31744916 | 31745130 | + | 70 | 3.70E-31 | 83 | 218 |
| 1129 | 6724 | 6907 | + | 4 | 31744925 | 31745105 | + | 87 | 6.90E-43 | 87 | 183 |
| 232 | 31972 | 32787 | - | 4 | 31744943 | 31745757 | + | 234 | 1.80E-128 | 82 | 822 |
| 1129 | 6724 | 6907 | + | 4 | 31745156 | 31745333 | + | 92 | 6.70E-46 | 88 | 180 |
| 1472 | 28429 | 29191 | - | 4 | 31745204 | 31745335 | + | 66 | 9.20E-29 | 87 | 134 |
| 232 | 32130 | 32604 | - | 4 | 31745354 | 31745827 | + | 146 | 1.20E-90 | 83 | 478 |
| 1472 | 28466 | 29251 | - | 4 | 31745372 | 31745526 | + | 84 | 9.20E-44 | 88 | 156 |
| 1129 | 6724 | 6872 | + | 4 | 31745380 | 31745526 | + | 76 | 2.90E-36 | 88 | 148 |
| 1129 | 6724 | 6907 | + | 4 | 31745608 | 31745789 | + | 73 | 2.40E-33 | 85 | 185 |
| 232 | 32622 | 32787 | - | 4 | 31745627 | 31745791 | + | 63 | 1.80E-26 | 84 | 167 |
| 1472 | 28393 | 29191 | - | 4 | 31745660 | 31745827 | + | 73 | 6.00E-33 | 86 | 169 |
| 767 | 14403 | 14565 | + | 5 | 333703 | 333864 | + | 72 | 4.60E-32 | 86 | 164 |
| 232 | 32383 | 32586 | - | 5 | 3513431 | 3513633 | + | 61 | 2.90E-25 | 82 | 205 |
| 232 | 32167 | 32358 | - | 5 | 3513431 | 3513621 | + | 69 | 4.80E-30 | 84 | 193 |
| 1472 | 28409 | 29251 | - | 5 | 3513431 | 3513642 | + | 111 | 6.70E-64 | 88 | 215 |
| 1129 | 6724 | 6907 | + | 5 | 3513439 | 3513620 | + | 84 | 5.90E-40 | 86 | 184 |
| 232 | 32593 | 32784 | - | 5 | 3513461 | 3513651 | + | 81 | 3.40E-37 | 85 | 193 |
| 1285 | 22135 | 22267 | + | 5 | 5775966 | 5776097 | + | 65 | 8.20E-29 | 87 | 133 |
| 1441 | 6072 | 6180 | - | 5 | 6629639 | 6629746 | + | 46 | 1.70E-17 | 85 | 110 |
| 1129 | 6724 | 6878 | - | 5 | 8624329 | 8624467 | + | 60 | 1.20E-26 | 86 | 140 |
| 1472 | 28409 | 29160 | + | 5 | 8624506 | 8624626 | + | 55 | 3.50E-22 | 86 | 123 |
| 232 | 32176 | 32540 | + | 5 | 8624764 | 8625130 | + | 76 | 3.20E-34 | 80 | 372 |
| 1472 | 28439 | 29167 | + | 5 | 8624764 | 8624863 | + | 49 | 2.20E-22 | 87 | 101 |
| 1129 | 6724 | 6872 | - | 5 | 8624791 | 8624918 | + | 57 | 7.00E-25 | 86 | 129 |
| 232 | 31921 | 32046 | + | 5 | 8624968 | 8625092 | + | 42 | 6.10E-14 | 83 | 126 |
| 1472 | 28415 | 29191 | + | 5 | 8624971 | 8625116 | + | 60 | 3.60E-25 | 85 | 148 |

| Magnapotho Query | | | | Rice Chromosome | | | | Stats | | | |
|------------------|-------|-------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Contig | Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 1129 | 6724 | 6905 | - | 5 | 8624989 | 8625130 | + | 59 | 4.50E-26 | 85 | 143 |
| 103 | 4507 | 4626 | + | 5 | 20121761 | 20121879 | + | 56 | 3.20E-23 | 87 | 120 |
| 103 | 4698 | 4849 | + | 5 | 20122052 | 20122202 | + | 65 | 1.10E-28 | 86 | 153 |
| 103 | 4717 | 4858 | + | 5 | 20122072 | 20122212 | + | 59 | 7.00E-25 | 85 | 143 |
| 103 | 5481 | 5615 | + | 5 | 20123753 | 20123886 | + | 70 | 7.00E-48 | 88 | 134 |
| 508 | 41401 | 41526 | + | 5 | 20952159 | 20952283 | + | 39 | 6.30E-13 | 83 | 127 |
| 1287 | 64122 | 64315 | - | 5 | 22516956 | 22517148 | + | 70 | 1.20E-34 | 84 | 198 |
| 1287 | 62858 | 62984 | - | 5 | 22519029 | 22519154 | + | 43 | 1.40E-15 | 83 | 127 |
| 1169 | 37524 | 37679 | - | 5 | 22653687 | 22653841 | + | 67 | 7.40E-30 | 86 | 159 |
| 1169 | 37522 | 37679 | + | 5 | 22820168 | 22820324 | + | 69 | 4.70E-31 | 86 | 161 |
| 837 | 44948 | 45056 | + | 5 | 23976507 | 23976614 | + | 60 | 5.40E-26 | 89 | 108 |
| 232 | 32200 | 32586 | - | 5 | 24780203 | 24780588 | + | 124 | 3.70E-87 | 83 | 392 |
| 1129 | 6724 | 6864 | + | 5 | 24780215 | 24780349 | + | 69 | 2.00E-34 | 88 | 137 |
| 232 | 32668 | 32787 | - | 5 | 24780230 | 24780348 | + | 48 | 1.70E-80 | 85 | 120 |
| 232 | 32394 | 32643 | - | 5 | 24780374 | 24780622 | + | 79 | 1.70E-80 | 83 | 255 |
| 1129 | 6724 | 6864 | + | 5 | 24780453 | 24780577 | + | 51 | 1.10E-23 | 85 | 127 |
| 232 | 32394 | 32787 | - | 5 | 24780458 | 24780850 | + | 118 | 1.70E-60 | 82 | 398 |
| 1472 | 28415 | 29167 | - | 5 | 24780515 | 24780636 | + | 65 | 5.80E-39 | 88 | 125 |
| 232 | 31921 | 32130 | - | 5 | 24780659 | 24780867 | + | 56 | 3.70E-87 | 82 | 212 |
| 1472 | 28406 | 29251 | - | 5 | 24780659 | 24780873 | + | 90 | 4.10E-43 | 85 | 218 |
| 1129 | 6724 | 6907 | + | 5 | 24780667 | 24780848 | + | 83 | 2.40E-39 | 86 | 183 |
| 232 | 32308 | 32592 | - | 5 | 24780881 | 24781164 | + | 92 | 2.00E-63 | 83 | 288 |
| 1472 | 28429 | 29251 | - | 5 | 24780887 | 24781078 | + | 69 | 1.50E-30 | 84 | 197 |
| 232 | 32394 | 32751 | - | 5 | 24780950 | 24781306 | + | 110 | 1.70E-54 | 83 | 358 |
| 1129 | 6724 | 6907 | + | 5 | 24781123 | 24781304 | + | 71 | 3.80E-32 | 85 | 183 |
| 232 | 32668 | 32787 | - | 5 | 24781142 | 24781260 | + | 38 | 1.50E-11 | 83 | 122 |
| 1472 | 28409 | 29188 | - | 5 | 24781178 | 24781326 | + | 71 | 1.60E-42 | 87 | 151 |
| 190 | 17742 | 17855 | + | 5 | 28010943 | 28011056 | + | 53 | 2.00E-21 | 86 | 117 |
| 1189 | 16856 | 16959 | - | 6 | 1470529 | 1470631 | + | 43 | 9.80E-16 | 85 | 103 |
| 289 | 26103 | 26357 | - | 6 | 4668751 | 4669004 | + | 54 | 9.90E-22 | 80 | 258 |
| 1558 | 12945 | 13046 | + | 6 | 5884317 | 5884417 | + | 58 | 7.30E-25 | 89 | 102 |
| 1558 | 12945 | 13046 | + | 6 | 5894534 | 5894634 | + | 43 | 9.50E-16 | 85 | 103 |
| 1558 | 12945 | 13046 | + | 6 | 5917857 | 5917957 | + | 35 | 6.50E-11 | 84 | 103 |
| 1189 | 16856 | 16959 | + | 6 | 8230404 | 8230506 | + | 39 | 2.60E-13 | 84 | 103 |
| 103 | 5412 | 5585 | - | 6 | 27876984 | 27877156 | + | 86 | 1.20E-52 | 87 | 174 |
| 103 | 4465 | 4626 | - | 6 | 27878673 | 27878833 | + | 79 | 4.60E-37 | 87 | 163 |
| 1129 | 6724 | 6907 | - | 6 | 27957912 | 27958089 | + | 76 | 3.80E-35 | 86 | 180 |
| 232 | 32431 | 32640 | + | 6 | 27957947 | 27958155 | + | 49 | 8.50E-34 | 81 | 213 |
| 1472 | 28415 | 29182 | + | 6 | 27958124 | 27958260 | + | 47 | 2.10E-17 | 83 | 139 |
| 1129 | 6724 | 6907 | - | 6 | 27958140 | 27958317 | + | 82 | 9.40E-39 | 87 | 178 |
| 232 | 32659 | 32787 | + | 6 | 27958175 | 27958302 | + | 42 | 8.50E-34 | 83 | 130 |
| 232 | 32383 | 32586 | - | 6 | 28401587 | 28401789 | + | 69 | 2.40E-105 | 83 | 205 |
| 232 | 32167 | 32358 | - | 6 | 28401587 | 28401777 | + | 68 | 1.10E-55 | 84 | 192 |
| 1472 | 28409 | 29251 | - | 6 | 28401587 | 28401798 | + | 118 | 7.30E-60 | 89 | 214 |
| 1129 | 6724 | 6907 | + | 6 | 28401599 | 28401776 | + | 87 | 9.20E-42 | 87 | 179 |

| Magnapotho Query | | | | Rice Chromosome | | | | Stats | | | |
|------------------|-------|-------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Contig | Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 232 | 32394 | 32787 | - | 6 | 28401614 | 28402006 | + | 143 | 1.50E-141 | 84 | 395 |
| 232 | 32161 | 32361 | - | 6 | 28401812 | 28402011 | + | 98 | 2.40E-105 | 87 | 202 |
| 1472 | 28409 | 29251 | - | 6 | 28401815 | 28402026 | + | 119 | 1.80E-60 | 89 | 215 |
| 1129 | 6724 | 6907 | + | 6 | 28401823 | 28402004 | + | 85 | 1.50E-40 | 86 | 185 |
| 232 | 32383 | 32787 | - | 6 | 28401842 | 28402245 | + | 127 | 4.90E-132 | 83 | 407 |
| 232 | 32167 | 32361 | - | 6 | 28402040 | 28402233 | + | 84 | 6.00E-141 | 86 | 196 |
| 232 | 31917 | 32130 | - | 6 | 28402043 | 28402255 | + | 55 | 2.10E-102 | 81 | 215 |
| 1472 | 28409 | 29251 | - | 6 | 28402043 | 28402254 | + | 111 | 1.10E-55 | 88 | 215 |
| 1129 | 6724 | 6907 | + | 6 | 28402051 | 28402232 | + | 81 | 3.80E-38 | 86 | 185 |
| 232 | 32383 | 32787 | - | 6 | 28402070 | 28402473 | + | 127 | 4.90E-132 | 83 | 407 |
| 232 | 31975 | 32133 | - | 6 | 28402268 | 28402425 | + | 54 | 2.10E-137 | 84 | 158 |
| 232 | 32164 | 32358 | - | 6 | 28402271 | 28402464 | + | 79 | 5.50E-138 | 85 | 195 |
| 1472 | 28409 | 29251 | - | 6 | 28402271 | 28402482 | + | 108 | 7.00E-54 | 88 | 216 |
| 1129 | 6724 | 6907 | + | 6 | 28402279 | 28402460 | + | 103 | 2.10E-51 | 89 | 183 |
| 232 | 31975 | 32133 | - | 6 | 28402496 | 28402653 | + | 46 | 1.20E-132 | 82 | 158 |
| 232 | 32383 | 32586 | - | 6 | 28402499 | 28402701 | + | 88 | 1.50E-67 | 86 | 204 |
| 232 | 32167 | 32358 | - | 6 | 28402499 | 28402689 | + | 85 | 1.50E-141 | 86 | 193 |
| 1472 | 28409 | 29251 | - | 6 | 28402499 | 28402710 | + | 111 | 1.10E-55 | 88 | 215 |
| 1129 | 6724 | 6907 | + | 6 | 28402507 | 28402688 | + | 116 | 2.90E-59 | 91 | 184 |
| 232 | 32431 | 32787 | - | 6 | 28402526 | 28402881 | + | 122 | 1.20E-61 | 84 | 358 |
| 232 | 31936 | 32136 | - | 6 | 28402721 | 28402920 | + | 60 | 1.50E-141 | 83 | 200 |
| 232 | 32167 | 32364 | - | 6 | 28402721 | 28402917 | + | 87 | 2.90E-116 | 86 | 199 |
| 1472 | 28415 | 29251 | - | 6 | 28402727 | 28402932 | + | 103 | 6.90E-51 | 87 | 207 |
| 1129 | 6724 | 6878 | + | 6 | 28402735 | 28402887 | + | 82 | 1.20E-41 | 88 | 154 |
| 232 | 32358 | 32592 | - | 6 | 28402949 | 28403182 | + | 72 | 5.10E-35 | 83 | 236 |
| 1472 | 28394 | 29251 | - | 6 | 28402955 | 28403181 | + | 97 | 2.70E-47 | 86 | 229 |
| 1129 | 6724 | 6907 | + | 6 | 28402963 | 28403144 | + | 73 | 2.40E-33 | 85 | 185 |
| 232 | 32586 | 32787 | - | 6 | 28402982 | 28403182 | + | 74 | 5.00E-33 | 84 | 202 |
| 1121 | 33812 | 33964 | + | 7 | 10798 | 10949 | + | 83 | 1.30E-53 | 88 | 155 |
| 837 | 44952 | 45056 | - | 7 | 6808013 | 6808116 | + | 53 | 9.60E-22 | 88 | 105 |
| 837 | 44952 | 45056 | - | 7 | 6821385 | 6821488 | + | 45 | 6.70E-17 | 86 | 105 |
| 232 | 32593 | 32714 | + | 7 | 18133178 | 18133297 | + | 42 | 3.30E-30 | 84 | 122 |
| 1472 | 28409 | 29151 | + | 7 | 18133187 | 18133297 | + | 54 | 2.60E-51 | 87 | 114 |
| 1472 | 28514 | 29251 | + | 7 | 18133489 | 18133595 | + | 65 | 2.60E-51 | 90 | 109 |
| 1169 | 37524 | 37679 | + | 7 | 21825745 | 21825899 | + | 67 | 7.40E-30 | 86 | 159 |
| 232 | 32358 | 32586 | + | 8 | 5073183 | 5073410 | + | 84 | 7.80E-47 | 84 | 232 |
| 1472 | 28394 | 29251 | + | 8 | 5073184 | 5073410 | + | 83 | 6.30E-39 | 84 | 231 |
| 232 | 31906 | 32070 | + | 8 | 5073187 | 5073350 | + | 42 | 3.40E-21 | 81 | 166 |
| 1129 | 6724 | 6907 | - | 8 | 5073221 | 5073398 | + | 60 | 1.60E-25 | 83 | 180 |
| 1472 | 28497 | 29251 | + | 8 | 5088188 | 5088311 | + | 23 | 0.0046 | 80 | 127 |
| 508 | 41401 | 41526 | + | 8 | 5640822 | 5640946 | + | 43 | 2.50E-15 | 83 | 127 |
| 1954 | 14696 | 14871 | - | 8 | 22202223 | 22202397 | + | 63 | 5.90E-38 | 84 | 175 |
| 1254 | 63975 | 64136 | - | 8 | 24587485 | 24587645 | + | 52 | 6.50E-27 | 83 | 164 |
| 1254 | 63189 | 63314 | - | 8 | 24589134 | 24589258 | + | 46 | 2.20E-17 | 84 | 126 |

| Magnapotho Query | | | | Rice Chromosome | | | | Stats | | | |
|------------------|-------|-------|-----|-----------------|----------|----------|-----|-------|-----------|-----|--------|
| Contig | Start | End | Ori | Name | Start | End | Ori | Score | E-val | %ID | Length |
| 1491 | 14983 | 15083 | + | 9 | 3737 | 3836 | + | 88 | 2.80E-44 | 97 | 100 |
| 2169 | 4957 | 5201 | + | 9 | 3737 | 3980 | + | 185 | 1.50E-100 | 94 | 245 |
| 2169 | 5381 | 5510 | + | 9 | 4166 | 4294 | + | 93 | 1.80E-51 | 93 | 129 |
| 1491 | 14983 | 15083 | + | 9 | 11665 | 11764 | + | 88 | 2.80E-44 | 97 | 100 |
| 2169 | 4957 | 5201 | + | 9 | 11665 | 11908 | + | 185 | 1.50E-100 | 94 | 245 |
| 2169 | 5381 | 5510 | + | 9 | 12094 | 12222 | + | 93 | 1.80E-51 | 93 | 129 |
| 1491 | 14983 | 15083 | + | 9 | 19593 | 19692 | + | 88 | 2.80E-44 | 97 | 100 |
| 2169 | 4957 | 5201 | + | 9 | 19593 | 19836 | + | 185 | 1.50E-100 | 94 | 245 |
| 2169 | 5381 | 5510 | + | 9 | 20022 | 20150 | + | 93 | 1.80E-51 | 93 | 129 |
| 1491 | 14983 | 15083 | + | 9 | 27521 | 27620 | + | 88 | 2.80E-44 | 97 | 100 |
| 2169 | 4957 | 5201 | + | 9 | 27521 | 27764 | + | 185 | 1.50E-100 | 94 | 245 |
| 2169 | 5381 | 5510 | + | 9 | 27950 | 28078 | + | 93 | 1.80E-51 | 93 | 129 |
| 1491 | 14983 | 15083 | + | 9 | 35449 | 35548 | + | 88 | 2.80E-44 | 97 | 100 |
| 2169 | 4957 | 5201 | + | 9 | 35449 | 35692 | + | 185 | 1.50E-100 | 94 | 245 |
| 2169 | 5381 | 5510 | + | 9 | 35878 | 36006 | + | 93 | 1.80E-51 | 93 | 129 |
| 1169 | 37524 | 37679 | + | 9 | 15915210 | 15915364 | + | 67 | 7.40E-30 | 86 | 159 |
| 1472 | 28514 | 29251 | - | 9 | 16972783 | 16972889 | + | 57 | 2.20E-23 | 88 | 109 |
| 232 | 31915 | 32028 | - | 9 | 16973794 | 16973906 | + | 41 | 1.10E-26 | 84 | 113 |
| 1472 | 28515 | 29251 | - | 9 | 18663147 | 18663252 | + | 51 | 1.20E-40 | 87 | 107 |
| 232 | 32149 | 32256 | - | 9 | 18663867 | 18663973 | + | 47 | 1.80E-28 | 86 | 107 |
| 1472 | 28514 | 29251 | - | 9 | 18668398 | 18668504 | + | 56 | 1.30E-43 | 88 | 108 |
| 232 | 32580 | 32712 | - | 9 | 18669574 | 18669704 | + | 37 | 2.40E-24 | 82 | 133 |
| 232 | 32149 | 32256 | - | 9 | 18669574 | 18669680 | + | 35 | 2.10E-39 | 83 | 107 |
| 1169 | 37522 | 37679 | - | 9 | 21911806 | 21911962 | + | 69 | 4.70E-31 | 86 | 161 |
| 1472 | 28515 | 29251 | - | 9 | 22692292 | 22692397 | + | 60 | 1.30E-49 | 89 | 108 |
| 232 | 32584 | 32709 | - | 9 | 22692496 | 22692620 | + | 49 | 1.60E-31 | 85 | 125 |
| 1472 | 28412 | 29146 | - | 9 | 22692496 | 22692599 | + | 56 | 1.30E-49 | 88 | 104 |
| 232 | 32356 | 32478 | - | 9 | 22692499 | 22692620 | + | 34 | 1.10E-22 | 82 | 122 |
| 1121 | 33815 | 33964 | + | 10 | 65974 | 66122 | + | 53 | 1.70E-26 | 84 | 153 |
| 1169 | 37522 | 37679 | + | 10 | 20689841 | 20689997 | - | 69 | 4.60E-31 | 86 | 161 |
| 767 | 14385 | 14635 | - | 11 | 3075716 | 3075965 | + | 100 | 5.60E-58 | 85 | 252 |
| 2242 | 2525 | 2678 | + | 11 | 4463670 | 4463822 | + | 47 | 9.70E-18 | 83 | 155 |
| 1287 | 62858 | 62982 | + | 11 | 28246412 | 28246535 | + | 51 | 2.10E-20 | 85 | 127 |
| 1287 | 63130 | 63344 | + | 11 | 28248601 | 28248814 | + | 62 | 5.60E-54 | 82 | 214 |
| 789 | 9643 | 9795 | - | 11 | 28248665 | 28248816 | + | 48 | 2.70E-18 | 83 | 152 |
| 1287 | 63376 | 63492 | + | 11 | 28248853 | 28248968 | + | 62 | 5.60E-54 | 88 | 118 |
| 767 | 14463 | 14565 | + | 12 | 3232550 | 3232651 | + | 71 | 1.90E-44 | 92 | 103 |
| 767 | 14352 | 14565 | - | 12 | 27458631 | 27458843 | + | 113 | 1.70E-76 | 88 | 213 |
| 767 | 14088 | 14213 | - | 12 | 27458983 | 27459107 | + | 49 | 1.70E-76 | 85 | 125 |