

Online Resource 1:

Comparison and selection of reference sequences for species of the *Grosmannia aurea* complex:

For several species in the *Grosmannia clavigera*-complex there are ambiguous sequences obtained from the same isolates present in GenBank. These sequences were determined in different studies from ex-type isolates (¹) maintained in and sourced from different culture collections. For example, the ex-type isolate of *G. aurea* (Table A) was obtained from ATCC for the study of Lee et al. (2003). The same isolate, but obtained from CBS, was used by Hausner et al. (2005). This isolate is furthermore maintained in the CMW collection under three different numbers. One of these cultures (CMW667) was used by Zipfel et al. (2006), the second (CMW709) by Jacobs et al. (2004, 2005), and the third (CMW714) by Jacobs et al. (2001, 2005). Similar situations existed for *G. robusta*, *L. pyrinum*, and *L. terebrantis* (references to these are listed in the table). To show and clarify inconsistencies between some of these sequences, all sequences of the same isolate produced in different studies were included in our initial analyses (data not shown). The same isolates are thus presented in the table more than once, in some cases with different culture collection numbers, showing the accession numbers as used in the various publications. Accession numbers for sequences obtained in the present study are printed in bold type. The sequences that we recommend for use in future phylogenetic studies are highlighted in grey.

Species	Isolate no	GenBank Acc. no.									² Reference	
		ITS2-LSU	¹ HT	β -tubulin	HT	EF-1 α	HT	Actin	HT	Anonymous locus HT		
<i>G. aurea</i> : ex-type isolate	^T ATCC16936	AY544610	AI1	AY263187	AB1	AY544633	AE2	AY544592	AA2		AU2	Lee et al. 2003, 2005; Lim et al. 2004
	^T ATCC16936 (=CMW30732)	=JF798473	AI1	=JF798454	AB1	=JF798463	AE2	=JF798479	AA2	=JF798485	AU2	present study
	^T CBS438.69	#AY935606	-1									Hausner et al. 2005
	^T CBS438.69 (=CMW29869)	JF798473	AI1	JF798454	AB1	JF798463	AE2	JF798479	AA2	JF798485	AU2	present study
	^T CMW667	*DQ294389	AI1	DQ296109	AB1							Zipfel et al. 2006
	^T CMW709	AY553413	AI1	AY534961	AB1	AY536207	-2					Jacobs et al. 2004, 2005
	^T CMW714	DQ062071	AI1	DQ062005	AB1	DQ062038	AE2					Jacobs et al. 2005
	^T CMW714	AF343699	-2									Jacobs et al. 2001
^T CMW714	=JF798473	AI1	=JF798454	AB1	=JF798463	AE2	=JF798479	AA2	=JF798485	AU2	present study	
^T MUCL19069 (=CMW29989)	=JF798473	AI1	=JF798454	AB1	JF798464	AE4	=JF798479	AA2	=JF798485	AU2	present study	
<i>G. aurea</i> : other isolates	AU98Pr2-128	AY544611	AI1			AY544634	AE2	AY544593	AA1			Lim et al. 2004
	AU98Pr2-141			AY263186	AB1							Lee et al. 2003
	AU98Pr2-169	AY544612	AI1	AY263188	AB4	AY544635	AE2	AY544594	AA1			Lee et al. 2003; Lim et al. 2004; Roe et al. 2010
	UAMH10965	GU370267	AI1	GU370181	AB2	GU370224	AE2	GU370138	AA1	GU370310	AU1	Roe et al. 2010
	UAMH10966	GU370271	AI2	GU370185	AB1	GU370228	AE2	GU370142	AA1	GU370314	AU2	Roe et al. 2010
	UAMH10967	GU370265	AI1	GU370179	AB1	GU370222	AE1	GU370136	AA1	GU370308	AU2	Roe et al. 2010
	UAMH10968	GU370291	AI1	GU370205	AB2	GU370248	AE1	GU370162	AA1	GU370334	AU1	Roe et al. 2010
	UAMH10969	GU370293	AI1	GU370207	AB2	GU370250	AE3	GU370164	AA1	GU370336	AU1	Roe et al. 2010
UAMH10970	GU370260	AI1	GU370174	AB3	GU370217	AE3	GU370131	AA1	GU370303	AU1	Roe et al. 2010	

Species	Isolate no	GenBank Acc. no.									² Reference	
		ITS2-LSU	¹ HT	β -tubulin	HT	EF-1 α	HT	Actin	HT	Anonymous locus		HT
<i>G. clavigera</i> : ex-type isolate	^T ATCC18086 (=CBS438.69)	AY544613	CI1	AY263194	CB1	AY544636	CE3	AY544595	CA4			Lee et al. 2003; Lim et al. 2004
<i>G. clavigera</i> : other isolates	C843	AY544614	CI1	AY263196	CB2	AY544637	CE3	AY544596	CA4			Lee et al. 2003; Lim et al. 2004
	^G SL-Kw1407	AY544615	CI1	AY263195	CB1	AY544638	CE1	AY544597	CA1	ACYC01001508	CU1	Lee et al. 2003; Lim et al. 2004; Roe et al. 2010
	AU98Pr3-18	AY544616	CI3	AY544624	CB1	AY544639	CE1	AY544598	CA1			Lim et al. 2004
	MO5	#AY761158	CI1									Lim et al. 2005
	SL-St.J11	AY816691	CI1	AY263201	CB1			AY816684	CA1			Lee et al. 2005
	SL-Wg602	AY816692	CI1	AY263205	CB1			AY816685	CA1			Lee et al. 2005
	UAMH11139	GU370273	CI1	GU370187	CB1	GU370230	CE2	GU370144	CA1	GU370316	CU1	Roe et al. 2010
	UAMH11140	GU370288	CI1	GU370202	CB1	GU370245	CE2	GU370159	CA1	GU370331	CU1	Roe et al. 2010
	UAMH11141	GU370290	CI1	GU370204	CB1	GU370247	CE1	GU370161	CA2	GU370333	CU2	Roe et al. 2010
	UAMH11142	GU370289	CI1	GU370203	CB1	GU370246	CE1	GU370160	CA1	GU370332	CU1	Roe et al. 2010
	UAMH11143	GU370274	CI1	GU370188	CB1	GU370231	CE1	GU370145	CA1	GU370317	CU3	Roe et al. 2010
	UAMH11144	GU370278	CI1	GU370192	CB1	GU370235	CE1	GU370149	CA2	GU370321	CU1	Roe et al. 2010
	UAMH11145	GU370286	CI1	GU370200	CB1	GU370243	CE2	GU370157	CA2	GU370329	CU1	Roe et al. 2010
	UAMH11146	GU370287	CI1	GU370201	CB1	GU370244	CE1	GU370158	CA1	GU370330	CU1	Roe et al. 2010
	UAMH11147	GU370298	CI1	GU370212	CB1	GU370255	CE1	GU370169	CA1	GU370341	CU2	Roe et al. 2010
	UAMH11148	GU370301	CI1	GU370215	CB1	GU370258	CE1	GU370172	CA1	GU370344	CU1	Roe et al. 2010
	UAMH11149	GU370296	CI1	GU370210	CB1	GU370253	CE1	GU370167	CA2	GU370339	CU2	Roe et al. 2010
	UC30DL48	GU370259	CI1	GU370173	CB1	GU370216	CE1	GU370130	CA3	GU370302	CU3	Roe et al. 2010
	UC27G29	GU370261	CI1	GU370175	CB1	GU370218	CE1	GU370132	CA3	GU370304	CU1	Roe et al. 2010
	UM10G17	GU370280	CI2	GU370194	CB1	GU370237	CE2	GU370151	CA2	GU370323	CU1	Roe et al. 2010
UC14G18	GU370264	CI1	GU370178	CB1	GU370221	CE1	GU370135	CA2	GU370307	CU3	Roe et al. 2010	
UC14G23	GU370266	CI1	GU370180	CB1	GU370223	CE2	GU370137	CA3	GU370309	CU3	Roe et al. 2010	
<i>G. robusta</i> : c	^T CMW668	AY544619	-1	AY263190	-2	AY544642	RE1	AY544601	RA1			Lee et al. 2003; Lim et al. 2004; Roe et al. 2010
	^T CMW668	AY553397	RI1	AY534945	RB1	AY536191	RE1					Jacobs et al 2004
	^T CMW668			JF798458	RB1	JF798465	RE1			JF798491		present study
<i>G. robusta</i> : other isolate	CMW2805			JF798457	RB1	JF798466	RE1			JF798490		present study
	CMW2805	AF343705	Lg									Jacobs et al. 2001
	CMW2805	AY544620	-1	AY263189	-2	AY544643	RE1	AY544602	RA1			Lee et al. 2003; Lim et al. 2004
	CMW2805	AY553396	RI1	AY534944	RB1	AY536190	-2					Jacobs et al. 2004
	CMW2805	#DQ294398	-5	DQ296118	Gp							Zipfel et al. 2006
<i>L. longiclavatum</i> : ex-type isolate	^T CBS120207 (=CMW20607 =SL-Kw1436)	AY816686	LI1	AY288934	LB1	JF798467	LE2	AY816679	LA5	JF798492	LU1	Lee et al. 2005; present study
<i>L. longiclavatum</i> : other isolates	CMW20608 (=SL-Kp11)	AY816687	LI1	AY816712	LB1	JF798468	LE2	AY816680	LA1	JF798493	LU1	Lee et al. 2005; present study

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		ITS2-LSU	¹ HT	β -tubulin	HT	EF-1 α	HT	Actin	HT	Anonymous locus		HT
<i>L. longiclavatum</i> : other isolates	CBS120208 (=CMW20609 =SL-Pw5)	AY816689	LI1	AY288935	LB1	JF798469	LE2	AY816682	LA1	JF798494	LU1	Lee et al. 2005; Roe et al. 2010
	SL-W001	AY816688	LI1					AY816681	LA1			
	C187	AY816690	LI1					AY816683	LA4			
	UAMH 11013	GU370276	LI1	GU370190	LB1	GU370233	LE2	GU370147	LA1	GU370319	LU1	Roe et al. 2010
	UAMH 11014	GU370282	LI1	GU370196	LB1	GU370239	LE1	GU370153	LA1	GU370325	LU1	Roe et al. 2010
	UAMH 11015	GU370275	LI1	GU370189	LB1	GU370232	LE1	GU370146	LA1	GU370318	LU1	Roe et al. 2010
	UAMH 11016	GU370277	LI1	GU370191	LB1	GU370234	LE1	GU370148	LA1	GU370320	LU1	Roe et al. 2010
	UAMH 11017	GU370279	LI1	GU370193	LB1	GU370236	LE2	GU370150	LA1	GU370322	LU1	Roe et al. 2010
	UAMH 11018	GU370297	LI1	GU370211	LB1	GU370254	LE2	GU370168	LA1	GU370340	LU1	Roe et al. 2010
	UAMH 11019	GU370299	LI1	GU370213	LB1	GU370256	LE1	GU370170	LA1	GU370342	LU1	Roe et al. 2010
	UAMH 11020	GU370300	LI1	GU370214	LB1	GU370257	LE2	GU370171	LA2	GU370343	LU1	Roe et al. 2010
	UL02G23	GU370262	LI1	GU370176	LB1	GU370219	LE3	GU370133	LA3	GU370305	LU1	Roe et al. 2010
	UL04G17	GU370263	LI1	GU370177	LB1	GU370220	LE3	GU370134	LA1	GU370306	LU1	Roe et al. 2010
<i>L. pyrinum</i> : ex-type isolate	^T CMW169 (=ATCC34943 =CBS 119897)	AF343689	La									Jacobs et al. 2001
	^T CMW169 (=ATCC34943 =CBS119897)	DQ062072	PI1	DQ062006	PB1	DQ062039	PE1					Zhou et al. 2008
	^T CMW509 (=ATCC34943 =CBS120181)	AY553414	PI1	AY534962	PB1	AY536208	-3					Jacobs et al. 2004; Zhou et al. 2008
² <i>L. pyrinum</i> A	DLS879	AY544604	-2	AY263185	-7	AY544627	-7	AY544586				Lee et al. 2003; Lim et al. 2004
	CMW3889 (=DLS879)	AY544605	-2	AY544621	-7	AY544628	PE1	AY544587				Lim et al. 2004
<i>L. terebrantis</i> : ex-type isolate	^T CBS337.70 (=CMW29841)	JF798477	SI1	JF798459	SB1	JF798470	SE1	JF798483	SA1	JF798495	SU1	present study
	^T CMW9	AF343698	Lp									Jacobs et al. 2001
	^T CMW9	AY553384	Lp	AY534932	Lp	AY536178	Lp					Jacobs et al. 2004
	^T CMW9			EU652698	-2	EU652700	-10					Zhou et al. 2008
	^T CMW9a	EU652697	Lp	EU652699	-2	EU652701	-10					Zhou et al. 2008
	^T CMW663	EU785383	-2	EU785349	-7	EU785412	-18					Lu et al. 2009a
	^T CMW663	Contaminated										present study
	^T MUCL47242	EU296777	SI1	EU296784	SB1	EU296791	-2					Lu et al. 2008, 2009b
^T MUCL47242 (=CMW29991)	=JF798477	SI1	=JF798459	SB1	=JF798470	SE1	=JF798483	SA1	=JF798495	SU1	present study	

Species	Isolate no	GenBank Acc. no.										² Reference
		ITS2-LSU	¹ HT	β -tubulin	HT	EF-1 α	HT	Actin	HT	Anonymous locus	HT	
<i>L. terebrantis</i> : other isolates	ATCC58098 (=CMW30731)	JF798476	SI2	JF798460	SB1	JF798471	SE2	JF798484	SA1	JF798496	SU2	present study
	CMW2814 (=CBS115209)	EU785385	-1	EU785354	-6	EU785406	-17					Lu et al. 2009a
	CMW11 (=CBS298.85)	EU785386	-1	EU785348	-6	EU785403	-17					Lu et al. 2009a
<i>L. wingfieldii</i> : ex-type isolate	^T CMW2096	AF343684	La									Jacobs et al. 2001
	^T CMW2096	AY553398	WI1	AY534946	WB1	AY536192	WE1			JF798498	WU1	Jacobs et al. 2004; present study
	^T CMW2096	AY707205	WI1	AY707191	WB1			AY707178	WA1			Kim et al. 2005
<i>L. wingfieldii</i> : other isolates	CMW2095	AY553400	WI1	AY534948	WB1	AY536194	WE1			JF798497	WU1	Jacobs et al. 2004; present study
	CMW2095	AY707204	WI1	AY707190	WB1			AY707177	WA1			Kim et al. 2005
	CMW2019	AY553399	WI1	AY534947	WB1	AY536193	WE2					Jacobs et al. 2004
	CMW10224	AY553401	WI1	AY534949	WB1	AY536195	WE1					Jacobs et al. 2004
<i>Leptographium</i> sp. X (as <i>L. terebrantis</i> in previous publications)	AU156-12-13	AY544609	TI2	AY544623	TB5	AY544632	TE6	AY544591	TA7			Lim et al. 2004
	AU98Pr2-155	AY544608	TI2	AY544622	TB1	AY544631	TE1	AY544590	TA1			Lim et al. 2004; Lee et al. 2005;
	C418	AY544607	TI2	AY263191	TB1	AY544630	TE1	AY544589	TA2			Six et al. 2003; Lee et al. 2003, 2005; Lim et al. 2004; Kim et al. 2005; Roe et al. 2010
	LPWYLT-1			AY267826	TB1							Lee et al. 2003
	MY23AW3			AY672911	TB1							Kim et al. 2005
	SL-A57			DQ118421	TB1							Lee et al. unpubl.
	UAMH9722	AY544606	TI2	AY263192	TB1	AY544629	TE1	AY544588	TA1			Lee et al. 2003, 2005; Lim et al. 2004
	UAMH 11000	GU370272	TI1	GU370186	TB1	GU370229	TE1	GU370143	TA2	GU370315	TU1	Roe et al. 2010
	UAMH 11001	GU370292	TI1	GU370206	TB1	GU370249	TE3	GU370163	TA1	GU370335	TU2	Roe et al. 2010
	UAMH 11002	GU370283	TI2	GU370197	TB2	GU370240	TE4	GU370154	TA2	GU370326	TU1	Roe et al. 2010
	UAMH 11003	GU370284	TI1	GU370198	TB1	GU370241	TE5	GU370155	TA4	GU370327	TU1	Roe et al. 2010
	UAMH 11004	GU370281	TI2	GU370195	TB3	GU370238	TE1	GU370152	TA6	GU370324	TU1	Roe et al. 2010
	UAMH 11005	GU370285	TI1	GU370199	TB2	GU370242	TE1	GU370156	TA2	GU370328	TU2	Roe et al. 2010
	UAMH 11006	GU370294	TI1	GU370208	TB1	GU370251	TE3	GU370165	TA3	GU370337	TU1	Roe et al. 2010
UAMH 11007	GU370295	TI1	GU370209	TB1	GU370252	TE1	GU370166	TA5	GU370338	TU1	Roe et al. 2010	
UC03DL14	GU370268	TI1	GU370182	TB1	GU370225	TE1	GU370139	TA1	GU370311	TU1	Roe et al. 2010	
UC01G02	GU370269	TI2	GU370183	TB2	GU370226	TE1	GU370140	TA1	GU370312	TU2	Roe et al. 2010	
UC01DL03	GU370270	TI2	GU370184	TB2	GU370227	TE2	GU370141	TA1	GU370313	TU2	Roe et al. 2010	

¹ Each unique haplotype (HT) was assigned a number following the system of Roe et al. (2010). E.g. AI1 = *G. aurea* ITS haplotype 1, and LA3 = *L. longiclavatum* actin haplotype 3, etc. The number of bp differences in which ambiguous sequences differ from reliable sequences of the same isolate are indicated with a – sign. In some cases sequences in GenBank represent other species that are abbreviated as follows:

La=*Leptographium abietinum*; Lp=*L. procerum*; Lg=*L. guttulatum*; Gp=*Grosmannia piceaperda*

² References to studies in which these isolates were used in phylogenetic analyses.

³ The isolate DLS879 most probably represents a species distinct from the true *L. pyrinum*.

^T Ex type isolates.

^G Isolate used for whole genome sequencing (DiGuistini et al. 2009).
 # Only ITS2 sequences were available, excluding the LSU fragment.
 * Only LSU sequences were available, excluding the ITS fragment.

REFERENCES

(Unless cited below, references are cited in the main article)

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