

Table S2. Specimen information and GenBank accession numbers for mitogenomes used in this study.

Family	Species	Voucher Information	Genbank Accession Number	Mitogenome Length (bp)
Bionectriaceae	<i>Acremonium chrysogenum</i>		KF757229	27266
	<i>Acremonium fuci</i>	3a34	KR864757	24565
	<i>Acremonium implicatum</i>		KP164992	22376
	<i>Clonostachys rosea</i>	6792	KU668563	40921
Clavicipitaceae	<i>Akanthomyces lecanii</i>	RCEF 1005	MN904747	24643
	<i>Epichloe festucae</i>	AR5	KX066186	88744
	<i>Epichloe typhina</i>	E8	KX066185	84630
	<i>Metacordyceps chlamydosporia</i>	170	KF479445	25615
	<i>Metarhizium anisopliae</i>	ME1	AY884128	24673
	<i>Metarhizium robertsii</i>	ARSEF 2575	JELW01000367	24944
Cordycipitaceae	<i>Beauveria bassiana</i>	e17	KT201149	29944
	<i>Beauveria caledonica</i>	fhr1	KT201150	38316
	<i>Beauveria malawiensis</i>	k89	KT201147	44135
	<i>Beauveria pseudobassiana</i>	C1010	KF297618	28006
	<i>Cordyceps bassiana</i>		EU100742	32263
	<i>Cordyceps brongniartii</i>	IMBST95031	EU100743	33926
	<i>Cordyceps cicadae</i>	CCAD02	MH922223	56581
	<i>Cordyceps militaris</i>	F02	KP722505	31854
	<i>Cordyceps tenuipes</i>	YFCC 2017002	MK234910	31386
	<i>Lecanicillium muscarium</i>		AF487277	24499
	<i>Lecanicillium saksenae</i>		KT585676	25919
	<i>Paecilomyces hepiali</i>		KJ764671	24245
	<i>Parengyodontium album</i>	ATCC 56482	KX061492	28081
Hypocreaceae	<i>Hypomyces aurantius</i>		KU666552	71638
	<i>Paecilomyces penicillatus</i>	SAAS_ppe1	MK069583	27480
	<i>Trichoderma asperellum</i>	B05	KR952346	29999
	<i>Trichoderma gamsii</i>	KUC1747	KU687109	29303
	<i>Trichoderma hamatum</i>		MF287973	32763
	<i>Trichoderma reesei</i>		AF447590	42130
Lasiosphaeriaceae	<i>Podospora anserina</i>		X55026	100314
Nectriaceae	<i>Fusarium circinatum</i>		JX910419	67109
	<i>Fusarium commune</i>	JCM11502	LT906348	47526
	<i>Fusarium culmorum</i>	CBS 139512	KP827647	103844
	<i>Fusarium fujikuroi</i>		JX910420	46761
	<i>Fusarium gerlachii</i>	CBS 123666	KM486533	93428
	<i>Fusarium graminearum</i>		DQ364632	95676
	<i>Fusarium mangiferae</i>		KP742838	30629
	<i>Fusarium oxysporum</i>	mh2-2	MF155191	46026
	<i>Fusarium proliferatum</i>	ITEM2400	LT841261	46549
	<i>Fusarium solani</i>		JN041209	62978
	<i>Gibberella moniliformis</i>		JN041210	53753
	<i>Ilyonectria destructans</i>	2007/P/476	KU881725	42895
	<i>Nectria cinnabarina</i>	5175	KT731105	69895
Ophiocordycipitaceae	<i>Hirsutella minnesotensis</i>	3608	KR139916	52245
	<i>Hirsutella rhossiliensis</i>	USA-87-5	KU203675	62483
	<i>Hirsutella thompsonii</i>	ARSEF 1947	MH367296	65332
	<i>Hirsutella vermicola</i>	AS3.7877	KY465721	53793

	<i>Ophiocordyceps pingbianensis</i>	YFCC 8075	MW042690	80359
	<i>Ophiocordyceps sinensis</i>		KY622006	157539
	<i>Tolypocladium inflatum</i>	ARSEF 616	KY924883	24973
	<i>Tolypocladium ophioglossoides</i>	L2	KX455872	35159
	<i>Tolypocladium cylindrosporum</i>	ARSEF963	MN842262	34698
Sordariaceae	<i>Neurospora crassa</i>		KY498478	64848