

Supplementary Table S1 Voucher information and GenBank accession numbers of the samples used in the phylogenetic analyses of Tricholomataceae (Dataset I). New Species described in this study are indicated in bold.

Taxon	Voucher	Locality	GenBank Acc. No.				References
			ITS	nrLSU	nrSSU	RPB2	
<i>Albomagister albus</i>	KUN-HKAS 134955 (holotype)	China	PQ898702	PQ898727	PQ898716	PQ932625	this study
<i>Albomagister alesandrii</i>	JMM03	France	MF344953	MF344957	MK569403	MK577922	Corriol & Jargeat 2018
<i>Albomagister alesandrii</i>	LIP 0400320 (T)	France	NR_153535	KT315644	–	–	Moreau et al. 2015
<i>Albomagister atrosquamosus</i>	KUN-HKAS 124357 (holotype)	China	PQ898703	PQ898728	PQ898717	PQ932626	this study
<i>Albomagister griseosquamosus</i>	TENN-F-064609 (T)	USA	KJ417320	KJ417231	KJ417176	KJ424399	Sánchez-García et al. 2014
<i>Albomagister leucoloma</i>	ECV4202 (T)	USA	KJ417250	KJ417179	–	KJ424365	Sánchez-García et al. 2014
<i>Albomagister luteifolius</i>	MSG137	USA	KJ417247	KJ417178	–	KJ424363	Sánchez-García et al. 2014
<i>Albomagister luteifolius</i>	HRL2773 (T)	USA	MT197009	–	–	–	Matheny et al. 2024
<i>Albomagister parviniveus</i>	TENN-F-064359	USA	KJ417321	KJ417232	KJ417177	KJ424400	Sánchez-García et al. 2014
<i>Albomagister parviniveus</i>	TENN:MSG144 (T)	USA	KJ417322	KJ417233	–	KJ424402	Sánchez-García et al. 2014
<i>Albomagister subaustralis</i>	AHS10844 (T)	USA	KJ417262	–	–	–	Sánchez-García et al. 2014
<i>Albomagister subaustralis</i>	MGW676	USA	KJ417252	KJ417181	–	KJ424367	Sánchez-García et al. 2014
<i>Albomagister virgineus</i>	GC07110503 (T)	France	MF344954	MF344958			Corriol & Jargeat 2018
<i>Corneriella bambusarum</i>	DED5462	USA: Hawaii	KJ417264	KJ417185	–	KJ424370	Sánchez-García et al. 2014
<i>Corneriella humicola</i>	DED-7871 (SFSU)	Thailand	KF291051	KF291052	KF291053	–	Lodge et al. 2014
<i>Corneriella indica</i>	K(M):190587	India	KM886378	NG_060414	–	–	Raj et al. 2015
" <i>Corneriella</i> sp."	CFMR PR-4733	Puerto Rico	KF306336	KF306337	–	KF306338	Lodge et al. 2014
" <i>Corneriella</i> sp."	DUKE-PR3995	USA	EF421106	AF261395	–	EF421013	Moncalvo et al. 2002
" <i>Corneriella</i> sp."	K(M):188911	France: Martinique	KJ417324	KJ417234	–	–	Sánchez-García et al. 2014
<i>Dennisiomyces glabrescentipes</i>	K(M):188910	France: Martinique	KJ417326	KJ417235	–	–	Sánchez-García et al. 2014
<i>Dennisiomyces</i> sp.	CFMR BZ-4245	Belize	KF291063	KF291064	–	KF291066	Lodge et al. 2014
<i>Dennisiomyces</i> sp.	CFMR: PR-6613	Puerto Rico	KJ417268	KJ417190	KJ417157	–	Sánchez-García et al. 2014
<i>Dennisiomyces</i> sp.	NYBG: PR-4763	Puerto Rico	KJ417269	KJ417191	–	–	Sánchez-García et al. 2014
<i>Dennisiomyces</i> sp.	NYBG: PR-6334	Puerto Rico	KJ417271	KJ417192	KJ417158	–	Sánchez-García et al. 2014
<i>Dennisiomyces</i> sp.	TENN:067388	USA	KJ417266	KJ417188	–	KJ424373	Sánchez-García et al. 2014
<i>Dennisiomyces</i> sp.	TENN:067469	USA	–	KJ417187	–	KJ424372	Sánchez-García et al. 2014
<i>Dermoloma alexandri</i>	SAV F-4147	Estonia	MW193771	MW208870	–	MW080854	Sánchez-García et al. 2021
<i>Dermoloma alexandri</i>	SAV F-4303	Romania	MW193774	MW208871	–	MW080855	Sánchez-García et al. 2021
<i>Dermoloma atrocinerium</i>	SAV F-4138	Slovakia	MW193797	MW208872	–	MW080857	Sánchez-García et al. 2021
<i>Dermoloma atrocinerium</i>	SAV F-4417	United Kingdom: Wales	MW193799	MW208877	–	MW080859	Sánchez-García et al. 2021
<i>Dermoloma bellerianum</i>	SAV F-20227	Slovakia	MW193804	MW208906	–	MW080888	Sánchez-García et al. 2021
<i>Dermoloma bellerianum</i>	SAV F-4416	United Kingdom: Wales	MW193805	MW208879	–	MW080889	Sánchez-García et al. 2021

<i>Dermoloma cuneifolium</i>	SAV F-4435	United Kingdom: Wales	MW193834	MW208888	–	MW080863	Sánchez-García et al. 2021
<i>Dermoloma cuneifolium</i>	UPS-F-631065 (T)	Sweden	MW193843	–	–	–	Sánchez-García et al. 2021
<i>Neodermoloma campestre</i>	TENN-F-029387	USA	MW193796	–	–	–	Sánchez-García et al. 2021
<i>Dermoloma magicum</i>	SAV F-4142	Slovakia	MW193848	MW208895	–	MW080890	Sánchez-García et al. 2021
<i>Dermoloma pseudocuneifolium</i>	SAV F-4420	United Kingdom: Wales	MW193857	MW208900	–	MW080895	Sánchez-García et al. 2021
<i>Neodermoloma campestre</i>	TENN: 066899	USA	KU058493	KU058530	–	KU138993	Sánchez-García et al. 2021
<i>Leucopaxillus albissimus</i>	XAL: Landeros 7/8-A	Mexico	KJ417272	KJ417194	–	–	Sánchez-García et al. 2014
<i>Leucopaxillus albissimus</i> f. <i>olympianus</i>	TENN:076711	USA	ON478232	–	–	–	Direct submission
<i>Leucopaxillus alboalutaceus</i>	GB:0065210	Sweden	KJ417275	KJ417195	KJ417161	KJ424377	Sánchez-García et al. 2014
<i>Leucopaxillus amyloideus</i>	KUN-HKAS 134956 (holotype)	China	PQ898704	PQ898731	PQ898718	PQ932627	this study
<i>Leucopaxillus cerealis</i>	GB:0110964	Sweden	KJ417281	–	–	KJ424378	Sánchez-García et al. 2014
<i>Leucopaxillus cerealis</i>	GB:065211	Sweden	KJ417283	–	–	KJ424380	Sánchez-García et al. 2014
<i>Leucopaxillus cerealis</i>	TO AVL20112	Italy	JQ639148	JQ639149	–	–	Vizzini et al. 2012
<i>Leucopaxillus eucalyptorum</i>	NYBG:01115433	Australia	KJ417285	KJ417199	–	–	Sánchez-García et al. 2014
<i>Leucopaxillus eucalyptorum</i>	TENN:055040	Argentina	KJ417286	KJ417200	–	–	Sánchez-García et al. 2014
<i>Leucopaxillus laterarius</i>	KUN-HKAS 124331	China	PQ898707	PQ898734	–	PQ932630	this study
<i>Leucopaxillus laterarius</i>	KUN-HKAS 124332	China	PQ898708	PQ898732	–	PQ932632	this study
<i>Leucopaxillus laterarius</i>	KUN-HKAS 124334	China	PQ898709	–	PQ898719	PQ932631	this study
<i>Leucopaxillus laterarius</i>	TENN:029877	USA	KJ417292	KJ417204	–	–	Sánchez-García et al. 2014
<i>Leucopaxillus laterarius</i>	TENN:044433	USA	KJ417291	KJ417203	–	–	Sánchez-García et al. 2014
<i>Leucopaxillus laterarius</i>	TENN:063507	USA	KJ417290	KJ417202	KJ417163	–	Sánchez-García et al. 2014
<i>Leucopaxillus lilacinus</i>	TENN:066653	Australia	KJ417295	KJ417205	KJ417164	KJ424382	Sánchez-García et al. 2014
<i>Leucopaxillus pakistanicus</i>	LAH37520 (T)	Pakistan	OP538064	OQ851496			Khan et al. 2024
<i>Leucopaxillus paradoxus</i>	GB:0110968	Hungary	KJ417296	KJ417206	KJ417165	KJ424383	Sánchez-García et al. 2014
<i>Leucopaxillus</i> cf. <i>paradoxus</i>	Mushroom Observer 248798	USA: Arizona	MT677858	–	–	–	Direct submission
<i>Leucopaxillus</i> sp.	LAH37136	Pakistan	ON350841	–	–	–	Khan et al. 2024
<i>Leucopaxillus</i> sp.	MRG5	China	OL678099	–	–	–	Direct submission
<i>Leucopaxillus</i> sp.	SULT223	Pakistan	ON350839	–	–	–	Khan et al. 2024
<i>Leucopaxillus</i> sp.	TO AVL20114	Italy	JQ639159	–	–	–	Vizzini et al. 2012
<i>Leucopaxillus</i> sp.	TO AVL20115	Italy	JQ639160	–	–	–	Vizzini et al. 2012
<i>Leucopaxillus</i> sp.	ZJ0010BM01	China	KU836592	–	–	–	Direct submission
<i>Leucopaxillus tricolor</i>	TFB13462	USA: Tennessee	KJ417323	KJ417207	KJ417166	KJ424384	Sánchez-García et al. 2014
<i>Leucopaxillus</i> cf. <i>tricolor</i>	MB-000946	Germany	MW724429	PQ898738	MW732347	PQ932633	Ding et al. 2023 and this study
<i>Leucopaxillus</i> cf. <i>tricolor</i>	MB-102629	Germany	PQ898710	PQ898733	PQ898720	PQ932634	this study
<i>Leucopaxillus verrucosus</i>	KUN-HKAS 106509 (holotype)	China	PQ898705	PQ898729	PQ898721	PQ932628	this study
<i>Leucopaxillus verrucosus</i>	KUN-HKAS 134957	China	PQ898706	PQ898730	PQ898722	PQ932629	this study

<i>Porpoloma amyloideum</i>	MEL:2320691	Australia	KP311414	KP311381	–	–	Direct submission
<i>Porpoloma portentosum</i>	MICH:00011834 (T)	Argentina	KJ417300	–	–	–	Sánchez-García et al. 2014
<i>Porpoloma portentosum</i>	NYBG: REH5788	Argentina	KJ417299	KJ417211	–	KJ424387	Sánchez-García et al. 2014
<i>Porpoloma sejunctum</i>	CONC:F0416	Chile	KJ417301	KJ417212	–	KJ424388	Sánchez-García et al. 2014
<i>Porpoloma sejunctum</i>	MICH:00011835 (T)	Argentina	KJ417302	–	–	–	Sánchez-García et al. 2014
<i>Porpoloma</i> sp.	TENN:065358	Australia	KJ417303	KJ417213	KJ417169	KJ424389	Sánchez-García et al. 2014
<i>Porpoloma</i> sp.	TENN:065473	Australia	KJ417304	KJ417214	KJ417170	KJ424390	Sánchez-García et al. 2014
<i>Porpoloma terreum</i>	CONC:F0030	Chile	KJ417306	KJ417216	–	–	Sánchez-García et al. 2014
<i>Porpoloma terreum</i>	NYBG: REH5830	Chile	KJ417305	KJ417215	–	KJ424391	Sánchez-García et al. 2014
<i>Pseudobaeospora aphana</i>	MushroomObserver.org/268227	USA	MH298912	–	–	–	Direct submission
<i>Pseudobaeospora brunnea</i>	AH:49303	Spain	OP375152	–	–	–	Direct submission
<i>Pseudobaeospora celluloderma</i>	TENN:067659	USA	ON791268	KU058538	ON791259	KU139001	Sánchez-García et al. 2017
<i>Pseudobaeospora cyanea</i>	GDOR M3986	Italy	MT271829	MT889638			Gisotti et al. 2021
<i>Pseudobaeospora deckeri</i>	Mushroom Observer # 270813	USA	MF144428	–	–	–	Direct submission
<i>Pseudobaeospora deckeri</i>	UCSC 7451 (T)	USA	JF898319	–	–	–	Schwarz 2012
<i>Pseudobaeospora mutabilis</i>	SAV F-20580	Slovakia	ON791270	ON791277	ON791261	–	Direct submission
<i>Pseudobaeospora mutabilis</i>	SAV F-20589	Slovakia	ON791271	ON791278	ON791262	–	Direct submission
<i>Pseudobaeospora lilacina</i>	KUN-HKAS 134959	China	PQ898711	PQ898735	PQ898725	PQ932637	this study
<i>Pseudobaeospora lilacina</i>	KUN-HKAS 134960	China	PQ898712	PQ898736	–	PQ932639	this study
<i>Pseudobaeospora lilacina</i>	KUN-HKAS 134961	China	PQ898713	PQ898737	PQ898724	PQ932638	this study
<i>Pseudobaeospora lilacina</i>	SYAU: FUNGI-011	China	KU528841	KU528837	PQ898723	PQ932640	Wu et al. 2017 and this study
<i>Pseudobaeospora lilacina</i>	SYAU: FUNGI-009	China	NR_158917	NG_064400	–	–	Wu et al. 2017
<i>Pseudobaeospora lilacina</i>	SYAU: FUNGI-010	China	KU528842	KU528838	–	PQ932641	Wu et al. 2017 and this study
<i>Pseudobaeospora</i> sp.	ECV5553	USA	KU058502	KU058539	KU058575	KU139003	Sánchez-García et al. 2017
<i>Pseudobaeospora</i> sp.	TENN:070699	USA	KU058500	KU058537	–	KU139000	Sánchez-García et al. 2017
<i>Pseudobaeospora terrayi</i>	SAV: F-3317 (T)	Slovakia	NR_187027	–	–	–	Adamčík & Jančovičová 2011
<i>Pseudobaeospora wipapatiae</i>	HAW-F-00369	USA: Hawaii	MW018883	–	–	–	Direct submission
<i>Pseudobaeospora wipapatiae</i>	SFSU:DED 8605 (T)	USA	NR_158893	NG_060108	–	–	Desjardin et al. 2014
<i>Pseudopopuloma pes-caprae</i>	CF-PORP27080802	France	KU255192	KU255193	–	KU255194	Sánchez-García et al. 2017
<i>Pseudopopuloma pes-caprae</i>	TO-AV20915	Italy	KU255195	KU255196	–	–	Sánchez-García et al. 2017
<i>Pseudotracheloma azoricum</i>	AH51453	Spain	OL604896	–	–	–	Iglesias et al. 2021
<i>Pseudotracheloma azoricum</i>	ERRO2019112701	Spain	OL604895	–	–	–	Iglesias et al. 2021
<i>Pseudotracheloma</i> aff. <i>azoricum</i>	KUN-HKAS 134962	China	PQ898715	PQ898740	PQ898726	PQ932636	this study
<i>Pseudotracheloma griseum</i>	KUN-HKAS 134963 (holotype)	China	PQ898714	PQ898739	–	PQ932635	this study
<i>Pseudotracheloma metapodium</i>	AH22102006	United Kingdom: Wales	KJ417308	KJ417219	KJ417171	KJ424394	Sánchez-García et al. 2014
<i>Pseudotracheloma metapodium</i>	GB: EL155-09	Norway	KJ417310	–	–	KJ424396	Sánchez-García et al. 2014

<i>Pseudotracholoma metapodium</i>	GB:066422 (T)	Sweden	KJ417309	KJ417220	–	KJ424395	Sánchez-García et al. 2014
<i>Pseudotracholoma metapodium</i>	MB-002938	Germany	MF034220	–	–	–	Ding et al. 2023
<i>Pseudotracholoma umbrosum</i>	MICH 00012331 (T)	Canada	NR_154304	–	–	–	Sánchez-García et al. 2014
<i>Pseudotracholoma umbrosum</i>	TENN:052643	USA	KJ417311	KJ417221	–	–	Sánchez-García et al. 2014
<i>Pseudotracholoma umbrosum</i>	TENN:064489	USA	KJ417315	KJ417224	–	KJ424398	Sánchez-García et al. 2014
<i>Tricholoma elegans</i>	TENN:063711	New Zealand	KJ417316	KJ417226	–	–	Sánchez-García et al. 2014
<i>Tricholoma equestre</i>	EqFr3	France	HM590872	–	–	–	Moukha et al. 2013
<i>Tricholoma matsutake</i>	Tn9	Japan	AB188557	U62964	U62538	–	Matsushita et al. 2005
<i>Tricholoma myomyces</i>	KMS589	USA	DQ825428	U76459	DQ367422	DQ367436	Matheny et al. 2006
<i>Tricholoma palustre</i>	PBM2494	USA	–	AY700197	AY757267	DQ484055	Matheny et al. 2006
<i>Tricholoma saponaceum</i>	PBM2514	USA	DQ494700	AY647209	AY654883	–	Matheny et al. 2006
<i>Tricholoma subresplendens</i>	TENN065679	USA	KJ417319	KJ417230	–	–	Sánchez-García et al. 2014
<i>Tricholoma viridiolivaceum</i>	PBM3093	New Zealand	JF706316	JF706317	JF706318	JF706319	Baroni & Matheny 2011
Outgroups							
<i>Callistosporium elegans</i>	13382 (CORT)	Puerto Rico	MN017508	MN017449	–	MN018839	Vizzini et al. 2020
<i>Macrocybe titans</i>	59217 (FLAS-F)	USA	MN017546	MN017485	–	MN018853	Vizzini et al. 2020
<i>Pseudolaccaria pachyphylla</i>	59217 (FLAS-F)	USA	KU058504	KU058542	–	KU139006	Sánchez-García et al. 2017
<i>Xerophorus olivascens</i>	18226 (AMB)	Italy	MN017558	MN017496	–	MN018856	Vizzini et al. 2020