

Table S1: Species and DNA sequences examined in this study. The species name in Huang et al. 2011 was updated according to World Register of Marine Species (WoRMs). GenBank accession numbers are displayed for each molecular marker (28S rDNA, histone H3, ITS rDNA and mt COI). N.D.: sequences were failed from PCR. Accession date of 28S rDNA sequences: 21-FEB-2011 [16], 26-OCT-2021 (This study); histone H3: 25-JUL-2016 [16], 23-NOV-2021 (This study); ITS rDNA: 21-FEB-2011 [16], 04-DEC-2021 (This study); mt COI: 25-JUL-2016 [16], 25-OCT-2021 (This study).

No.	Species	Sample ID	28S rDNA	histone H3	ITS rDNA	mt COI	Reference
1	<i>Astrea curta</i>	G61882	HQ203483	HQ203604	HQ203370	HQ203285	[16]
2	<i>Astrea curta</i>	P122	HQ203484	HQ203605		HQ203286	[16]
3	<i>Astrea curta</i>	4715K143	OK586177	OK556580	OL670813	OK576101	This study
4	<i>Astrea curta</i>	6723R1	OK586178	OK556581	OL670814	OK576102	This study
5	<i>Astrea curta</i>	4715K145	OK586179	OK556582	OL670815	OK576103	This study
6	<i>Astrea curta</i>	4715K137	OK586180	OK556583	OL670816	N.D.	This study
7	<i>Astrea curta</i>	582R1	OK586181	OK556584	OL670817	OK576104	This study
8	<i>Astrea annuligera</i>	P117	HQ203481	HQ203602	HQ203369		[16]
9	<i>Astrea annuligera</i>	471T18	OK586191	OK556593	OL670826	OK576114	This study
10	<i>Caulastrea echinulata</i>	S041	HQ203401	HQ203522		FJ345414	[16]
11	<i>Caulastrea furcata</i>	P108	HQ203402	HQ203523		HQ203248	[16]
12	<i>Caulastrea tumida</i>	G61875	HQ203403	HQ203524	HQ203310	HQ203249	[16]
13	<i>Coelastrea aspera</i>	S107	HQ203458	HQ203579	HQ203354	FJ345430	[16]
14	<i>Coelastrea aspera</i>	471T12	OK586227	OK556626	OL670862	OK576149	This study
15	<i>Coelastrea aspera</i>	471T9	OK586228	OK556627	N.D.	N.D.	This study
16	<i>Coelastrea palauensis</i>	S021	HQ203466	HQ203587	HQ203359	EU371699	[16]

No.	Species	Sample ID	28S rDNA	histone H3	ITS rDNA	mt COI	Reference
17	<i>Coelastrea palauensis</i>	471T2	OK586229	N.D.	N.D.	OK576150	This study
18	<i>Cyphastrea chalcidicum</i>	G61902	HQ203404	HQ203525	HQ203311	HQ203250	[16]
20	<i>Cyphastrea chalcidicum</i>	S103	HQ203405	HQ203526	HQ203312	FJ345415	[16]
21	<i>Cyphastrea chalcidicum</i>	6823R2	OK586182	OK556585	OL670818	OK576105	This study
22	<i>Cyphastrea chalcidicum</i>	6823R3	OK586183	OK556586	OL670819	OK576106	This study
23	<i>Cyphastrea microphthalma</i>	S069	HQ203406	HQ203527		FJ345416	[16]
24	<i>Cyphastrea serailia</i>	G61889	HQ203407	HQ203528	HQ203313	HQ203251	[16]
25	<i>Cyphastrea serailia</i>	S024	HQ203408	HQ203529	HQ203314	EU371659	[16]
26	<i>Cyphastrea serailia</i>	P120	HQ203409	HQ203530		HQ203252	[16]
27	<i>Dipsastraea amicornum</i>	S047	HQ203400	HQ203521	HQ203309	FJ345412	[16]
28	<i>Dipsastraea danai</i>	G61885	HQ203416	HQ203537	HQ203321		[16]
29	<i>Dipsastraea danai</i>	S092	HQ203417	HQ203538		EU371663	[16]
30	<i>Dipsastraea favus</i>	G61880	HQ203418	HQ203539	HQ203322	HQ203255	[16]
31	<i>Dipsastraea favus</i>	G61915	HQ203419	HQ203540	HQ203323	HQ203256	[16]
32	<i>Dipsastraea favus</i>	S003	HQ203420	HQ203541	HQ203324	EU371710	[16]
33	<i>Dipsastraea favus</i>	S025	HQ203421	HQ203542		EU371664	[16]
34	<i>Dipsastraea favus</i>	S040	HQ203422	HQ203543	HQ203325	EU371665	[16]
35	<i>Dipsastraea favus</i>	P105	HQ203423	HQ203544		HQ203257	[16]
36	<i>Dipsastraea favus</i>	471T4	OK586184	OK556587	OL670820	OK576107	This study
37	<i>Dipsastraea favus</i>	471T10	OK586185	OK556588	OL670821	OK576108	This study

No.	Species	Sample ID	28S rDNA	histone H3	ITS rDNA	mt COI	Reference
38	<i>Dipsastraea favus</i>	6821R6	OK586186	OK556589	OL670822	OK576109	This study
39	<i>Dipsastraea favus</i>	6821R5	OK586187	OK556590	N.D.	OK576110	This study
40	<i>Dipsastraea cf. laxa</i>	S013	HQ203424	HQ203545		EU371707	[16]
41	<i>Dipsastraea cf. laxa</i>	S014	HQ203425	HQ203546	HQ203326	EU371708	[16]
42	<i>Dipsastraea lizardensis</i>	G61872	HQ203426	HQ203547	HQ203327		[16]
43	<i>Dipsastraea lizardensis</i>	S072	HQ203427	HQ203548	HQ203328	EU371668	[16]
44	<i>Dipsastraea lizardensis</i>	P136	HQ203428	HQ203549			[16]
45	<i>Dipsastraea lizardensis</i>	6824R4	OK586188	N.D.	OL670823	OK576111	This study
46	<i>Dipsastraea cf. maritima</i>	G61912	HQ203429	HQ203550	HQ203329	HQ203258	[16]
47	<i>Dipsastraea matthaii</i>	G61881	HQ203430	HQ203551	HQ203330		[16]
48	<i>Dipsastraea matthaii</i>	G61883	HQ203431	HQ203552	HQ203331	HQ203259	[16]
49	<i>Dipsastraea matthaii</i>	S005	HQ203432	HQ203553	HQ203332	EU371669	[16]
50	<i>Dipsastraea matthaii</i>	S029	HQ203433	HQ203554	HQ203333	EU371671	[16]
51	<i>Dipsastraea matthaii</i>	471T15	OK586189	OK556591	OL670824	OK576112	This study
52	<i>Dipsastraea maxima</i>	S052	HQ203434	HQ203555	HQ203334	EU371674	[16]
53	<i>Dipsastraea maxima</i>	P142	HQ203435	HQ203556		HQ203260	[16]
54	<i>Dipsastraea cf. maxima</i>	P134	HQ203436	HQ203557	HQ203335	HQ203261	[16]
55	<i>Dipsastraea pallida</i>	G61898	HQ203437	HQ203558	HQ203336		[16]
56	<i>Dipsastraea pallida</i>	S036	HQ203438	HQ203559	HQ203337	EU371675	[16]
57	<i>Dipsastraea rosaria</i>	G61911	HQ203439	HQ203560	HQ203338	HQ203262	[16]

No.	Species	Sample ID	28S rDNA	histone H3	ITS rDNA	mt COI	Reference
58	<i>Dipsastraea rotumana</i>	S068	HQ203440	HQ203561	HQ203339	FJ345427	[16]
59	<i>Dipsastraea rotumana</i>	471T19	OK586190	OK556592	OL670825	OK576113	This study
60	<i>Dipsastraea speciosa</i>	S001	HQ203443	HQ203564	HQ203341	EU371677	[16]
61	<i>Dipsastraea speciosa</i>	S026	HQ203444	HQ203565		EU371680	[16]
62	<i>Dipsastraea speciosa</i>	P103	HQ203445	HQ203566	HQ203342	HQ203264	[16]
63	<i>Dipsastraea truncatus</i>	G61897	HQ203447	HQ203568	HQ203344	HQ203266	[16]
64	<i>Echinopora gemmacea</i>	S120	HQ203411	HQ203532	HQ203316	FJ345418	[16]
65	<i>Echinopora horrida</i>	G61907	HQ203412	HQ203533	HQ203317	HQ203253	[16]
66	<i>Echinopora lamellosa</i>	S109	HQ203413	HQ203534	HQ203318	FJ345419	[16]
67	<i>Echinopora mammiformis</i>	G61884	HQ203414	HQ203535	HQ203319	HQ203254	[16]
68	<i>Echinopora pacificus</i>	S110	HQ203415	HQ203536	HQ203320	FJ345420	[16]
69	<i>Favites abdita</i>	S002	HQ203448	HQ203569	HQ203345	HQ203267	[16]
70	<i>Favites chinensis</i>	S084	HQ203449	HQ203570	HQ203346	HQ203268	[16]
71	<i>Favites colemani</i>	P118	HQ203482	HQ203603		HQ203284	[16]
72	<i>Favites complanata</i>	S007	HQ203450	HQ203571	HQ203347	EU371689	[16]
73	<i>Favites flexuosa</i>	P116	HQ203451	HQ203572	HQ203348	HQ203269	[16]
74	<i>Favites flexuosa</i>	4720R1	OK586192	OK556594	OL670827	OK576115	This study
75	<i>Favites halicora</i>	S115	HQ203452	HQ203573	HQ203349	HQ203270	[16]
76	<i>Favites magnistellata</i>	G61896	HQ203485	HQ203606	HQ203371	HQ203287	[16]
77	<i>Favites magnistellata</i>	P109	HQ203486	HQ203607		HQ203288	[16]

No.	Species	Sample ID	28S rDNA	histone H3	ITS rDNA	mt COI	Reference
78	<i>Favites magnistellata</i>	471T24	OK586225	OK556624	OL670858	OK576145	This study
79	<i>Favites magnistellata</i>	4719R3	OK586248	OK556645	N.D.	OK576167	This study
80	<i>Favites paraflxuosa</i>	S100	HQ203453	HQ203574	HQ203350	EU371694	[16]
81	<i>Favites pentagona</i>	S086	HQ203454	HQ203575	HQ203351	EU371695	[16]
82	<i>Favites pentagona</i>	P111	HQ203455	HQ203576		HQ203271	[16]
83	<i>Favites pentagona</i>	471T22	OK586220	OK556619	OL670853	OK576140	This study
84	<i>Favites pentagona</i>	471T23	OK586207	OK556609	OL670842	OK576129	This study
85	<i>Favites pentagona</i>	4718R6	OK586211	OK556613	OL670846	OK576132	This study
86	<i>Favites pentagona</i>	4718R7	OK586221	OK556620	OL670854	OK576141	This study
87	<i>Favites pentagona</i>	583R3	OK586212	OK556614	OL670847	OK576133	This study
88	<i>Favites pentagona</i>	583R12	OK586201	OK556603	OL670836	OK576124	This study
89	<i>Favites pentagona</i>	6727R5	OK586213	OK556615	OL670848	N.D.	This study
90	<i>Favites rotundata</i>	G61874	HQ203441	HQ203562	HQ203340	HQ203263	[16]
91	<i>Favites rotundata</i>	P132	HQ203442	HQ203563			[16]
92	<i>Favites russelli</i>	G61895	HQ203456	HQ203577	HQ203352	HQ203272	[16]
93	<i>Favites stylifera</i>	P128	HQ203457	HQ203578	HQ203353	HQ203273	[16]
94	<i>Favites stylifera</i>	4819R5	OK586223	OK556622	OL670856	OK576143	This study
95	<i>Favites stylifera</i>	6819R5	OK586224	OK556623	OL670857	OK576144	This study
96	<i>Favites valenciennesi</i>	G61904	HQ203489	HQ203610		HQ203291	[16]
97	<i>Favites valenciennesi</i>	S006	HQ203490	HQ203611	HQ203374	EU371713	[16]

No.	Species	Sample ID	28S rDNA	histone H3	ITS rDNA	mt COI	Reference
98	<i>Favites valenciennesi</i>	S008	HQ203491	HQ203612		EU371714	[16]
99	<i>Favites valenciennesi</i>	P102	HQ203492	HQ203613	HQ203375	HQ203292	[16]
100	<i>Favites valenciennesi</i>	471T14	OK586226	OK556625	OL670860	OK576147	This study
101	<i>Favites valenciennesi</i>	4719R1	N.D.	OK556659	OL670861	OK576148	This study
102	<i>Goniastrea edwardsi</i>	S045	HQ203462	HQ203583	HQ203357	EU371697	[16]
103	<i>Goniastrea edwardsi</i>	S117	HQ203463	HQ203584		FJ345432	[16]
104	<i>Goniastrea favulus</i>	G61877	HQ203464	HQ203585	HQ203358		[16]
105	<i>Goniastrea favulus</i>	S022	HQ203465	HQ203586		EU371698	[16]
106	<i>Goniastrea pectinata</i>	G61879	HQ203467	HQ203588	HQ203360		[16]
107	<i>Goniastrea pectinata</i>	S043	HQ203468	HQ203589		FJ345434	[16]
108	<i>Goniastrea pectinata</i>	P110	HQ203469	HQ203590			[16]
109	<i>Goniastrea retiformis</i>	S083	HQ203470	HQ203591	HQ203361	EU371700	[16]
110	<i>Goniastrea retiformis</i>	P119	HQ203471	HQ203592		HQ203275	[16]
111	<i>Dipsastraea stelligera</i>	P141	HQ203446	HQ203567	HQ203343	HQ203265	[16]
112	<i>Hydnophora exesa</i>	P127	HQ203472	HQ203593	HQ203362	HQ203276	[16]
113	<i>Hydnophora microconos</i>	P121	HQ203473	HQ203594	HQ203363	HQ203277	[16]
114	<i>Hydnophora pilosa</i>	P138	HQ203474	HQ203595	HQ203364	HQ203278	[16]
115	<i>Leptoria irregularis</i>	P133	HQ203475	HQ203596		HQ203279	[16]
116	<i>Leptoria phrygia</i>	S081	HQ203476	HQ203597	HQ203365	EU371705	[16]
117	<i>Merulina ampliata</i>	P106	HQ203477	HQ203598		HQ203280	[16]

No.	Species	Sample ID	28S rDNA	histone H3	ITS rDNA	mt COI	Reference
118	<i>Merulina scabricula</i>	P114	HQ203478	HQ203599	HQ203366	HQ203281	[16]
119	<i>Mycedium elephantotus</i>	S121	HQ203494	HQ203615	HQ203377	HQ203294	[16]
120	<i>Mycedium elephantotus</i>	584R2	OK586244	OK556641	OL670891	N.D.	This study
121	<i>Mycedium mancaoi</i>	4817R2	OK586242	OK556639	OL670874	OK576162	This study
122	<i>Mycedium robokaki</i>	S126	HQ203495	HQ203616	HQ203378	HQ203295	[16]
123	<i>Mycedium robokaki</i>	4817R3	OK586243	OK556640	OL670875	OK576163	This study
124	<i>Orbicella annularis</i>	A622	HQ203479	HQ203600	HQ203367	HQ203282	[16]
125	<i>Oulophyllia bennettiae</i>	G61873	HQ203496	HQ203617		HQ203296	[16]
126	<i>Oulophyllia bennettiae</i>	S033	HQ203497	HQ203618	HQ203379	FJ345436	[16]
127	<i>Oulophyllia</i> aff. <i>bennettiae</i>	P140	HQ203498	HQ203619	HQ203380	HQ203297	[16]
128	<i>Oulophyllia crispa</i>	S055	HQ203499	HQ203620	HQ203381	EU371721	[16]
129	<i>Paragoniastrea australensis</i>	G61876	HQ203459	HQ203580	HQ203355	HQ203274	[16]
130	<i>Paragoniastrea australensis</i>	S088	HQ203460	HQ203581	HQ203356	FJ345431	[16]
131	<i>Paragoniastrea australensis</i>	S098	HQ203461	HQ203582		EU371696	[16]
132	<i>Paragoniastrea australensis</i>	4819R2	OK586230	OK556628	OL670863	OK576151	This study
133	<i>Paragoniastrea australensis</i>	6819R13	OK586231	OK556629	OL670864	OK576152	This study
134	<i>Paragoniastrea australensis</i>	6821R19	OK586232	OK556630	OL670865	OK576153	This study
135	<i>Paragoniastrea australensis</i>	6821R25	OK586233	OK556631	OL670866	OK576154	This study
136	<i>Paragoniastrea australensis</i>	6821R18	OK586234	OK556632	OL670867	OK576155	This study
137	<i>Paragoniastrea deformis</i>	6725R14	OK586238	OK556636	OL670871	OK576159	This study

No.	Species	Sample ID	28S rDNA	histone H3	ITS rDNA	mt COI	Reference
138	<i>Paragoniastrea deformis</i>	6726R23	OK586237	OK556635	OL670870	OK576158	This study
139	<i>Paragoniastrea deformis</i>	6724R12	OK586239	OK556637	OL670872	OK576160	This study
140	<i>Paragoniastrea deformis</i>	583R9	OK586240	N.D.	OL670890	N.D.	This study
141	<i>Paragoniastrea deformis</i>	6724R7	OK586241	OK556638	OL670873	OK576161	This study
142	<i>Paragoniastrea deformis</i>	4716R3	OK586222	OK556621		OK576142	This study
143	<i>Paramontastraea salebrosa</i>	P139	HQ203488	HQ203609	HQ203373	HQ203290	[16]
144	<i>Pectinia alcornis</i>	P124	HQ203500	HQ203621	HQ203382	HQ203298	[16]
145	<i>Pectinia aylei</i>	S122	HQ203501	HQ203622	HQ203383	HQ203299	[16]
146	<i>Pectinia lactuca</i>	P115	HQ203502	HQ203623	HQ203384	HQ203300	[16]
147	<i>Pectinia lactuca</i>	4820R3	N.D.	N.D.	N.D.	OK576164	This study
148	<i>Pectinia paeonia</i>	P126	HQ203503	HQ203624	HQ203385	HQ203301	[16]
149	<i>Pectinia paeonia</i>	4820R1	OK586245	OK556642	N.D.	N.D.	This study
150	<i>Platygyra acuta</i>	P123	HQ203504	HQ203625	HQ203386		[16]
151	<i>Platygyra contorta</i>	P112	HQ203505	HQ203626	HQ203387		[16]
152	<i>Platygyra daedalea</i>	G61878	HQ203506	HQ203627			[16]
153	<i>Platygyra daedalea</i>	S116	HQ203507	HQ203628	HQ203388	FJ345440	[16]
154	<i>Platygyra daedalea</i>	6819R10	OK586246	OK556643	OL670876	OK576165	This study
155	<i>Platygyra lamellina</i>	G61887	HQ203508	HQ203629	HQ203389	HQ203302	[16]
156	<i>Platygyra lamellina</i>	S114	HQ203509	HQ203630		FJ345441	[16]
157	<i>Platygyra lamellina</i>	4718R2	OK586247	OK556644	OL670877	OK576166	This study

No.	Species	Sample ID	28S rDNA	histone H3	ITS rDNA	mt COI	Reference
158	<i>Platygyra lamellina</i>	4819R3	OK586249	OK556646	OL670878	OK576168	This study
159	<i>Platygyra pini</i>	G61899	HQ203510	HQ203631	HQ203390	HQ203303	[16]
160	<i>Platygyra pini</i>	S035	HQ203511	HQ203632	HQ203391	FJ345443	[16]
161	<i>Platygyra pini</i>	4819R1	OK586250	OK556647	OL670879	OK576169	This study
162	<i>Platygyra pini</i>	4821R3	OK586251	OK556648	OL670880	OK576170	This study
163	<i>Platygyra ryukyuensis</i>	P101	HQ203512	HQ203633	HQ203392	HQ203304	[16]
164	<i>Platygyra ryukyuensis</i>	4819R4	OK586252	OK556649	OL670881	OK576171	This study
165	<i>Platygyra ryukyuensis</i>	4821R1	OK586253	OK556650	OL670882	OK576172	This study
166	<i>Platygyra ryukyuensis</i>	6728R16	OK586254	OK556651	OL670883	OK576173	This study
167	<i>Platygyra ryukyuensis</i>	4816R2	OK586255	OK556652	OL670884	N.D.	This study
168	<i>Platygyra ryukyuensis</i>	4820R2	OK586256	OK556653	OL670885	OK576174	This study
169	<i>Platygyra sinensis</i>	S118	HQ203513	HQ203634	HQ203393	FJ345442	[16]
170	<i>Platygyra sinensis</i>	P130	HQ203514	HQ203635		HQ203305	[16]
171	<i>Platygyra sinensis</i>	6821R27	OK586257	OK556654	OL670886	OK576175	This study
172	<i>Platygyra cf. verweyi</i>	S037	HQ203515	HQ203636	HQ203394	EU371722	[16]
173	<i>Platygyra cf. verweyi</i>	6821R9	OK586258	OK556655	OL670887	OK576176	This study
174	<i>Platygyra cf. verweyi</i>	4821R2	OK586259	OK556656	OL670888	OK576177	This study
175	<i>Platygyra cf. verweyi</i>	4818R1	OK586260	OK556657	OL670889	OK576178	This study
176	<i>Scapophyllia cylindrica</i>	S060	HQ203516	HQ203637	HQ203395	FJ345444	[16]
177	<i>Trachyphyllia geoffroyi</i>	J001	HQ203517	HQ203638	HQ203396	HQ203306	[16]

No.	Species	Sample ID	28S rDNA	histone H3	ITS rDNA	mt COI	Reference
178	<i>Montastraea multipunctata</i> (outgroup)	P131	HQ203487	HQ203608	HQ203372	HQ203289	[16]
179	<i>Acanthastrea echinata</i> (Lobophyllidae-XX)	S031	HQ203399	HQ203520	HQ203308	EU371658	[16]
180	<i>Moseleya latistellata</i> (Lobophyllidae-XX)	G61909	HQ203493	HQ203614	HQ203376	HQ203293	[16]
181	<i>Diploastrea heliopora</i> (Diploastraeidae-XV)	S048	HQ203410	HQ203531	HQ203315	EU371660	[16]
182	<i>Favia fragum</i> (Faviidae-XXI)		AF549222			AB117222	[16]
183	<i>Lobophyllia corymbosa</i> (Lobophylliidae-XIX)		AF549237			AB117241	[16]
184	<i>Montastraea cavernosa</i> (Montastraeidae-XVI)	A005	HQ203480	HQ203601	HQ203368	HQ203283	[16]
185	<i>Mussa angulosa</i> (Faviidae-XXI)		AF549236		AB441402	NC_008163	[16]
186	<i>Plesiastrea versipora</i> (Plesiastreidae-XIV)	S127	HQ203397	HQ203518	HQ203307	HQ203246	[16]
187	<i>Plesiastrea versipora</i> (Plesiastreidae-XIV)	P137	HQ203398	HQ203519		HQ203247	[16]

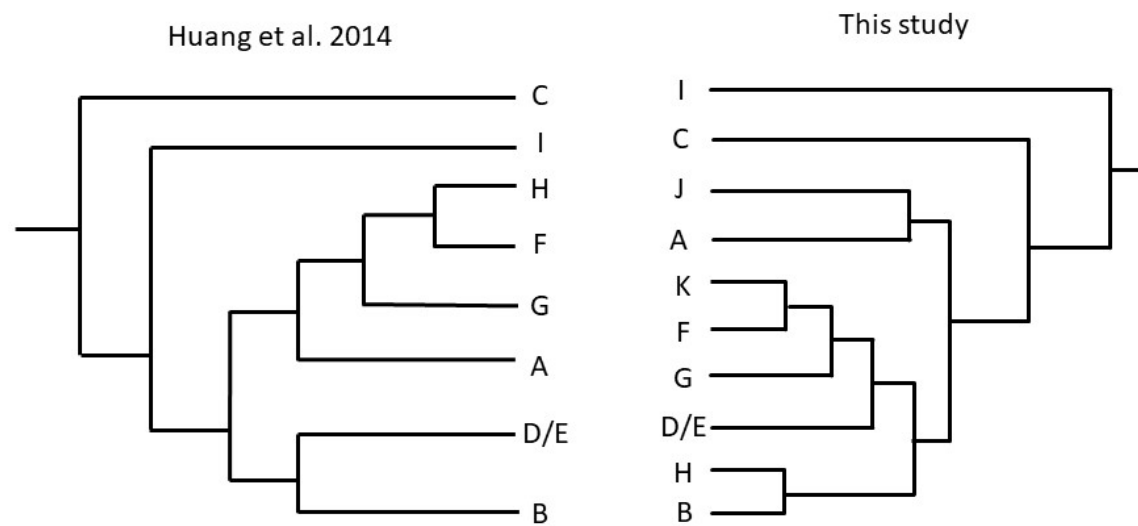


Figure S1. Phylogeny of Merulinidae reconstructed from Huang et al. [10] and this study.