

Supplementary Material

1 Supplementary Tables

Supplementary Table S1. Specimen and sequence data of *Chrysomyxa* used in the molecular analyses in this study.

Species	Specimen no.	Host	Origin	GenBank or BOLD no.	
				LSU	ITS
<i>C. arctostaphyli</i>	^b DAOM 183586	<i>Arctostaphylos uva-ursi</i>	Kenora district, Ontario, Canada	CHITS053-08	CHITS053-08
	^b DAOM 229628	<i>Picea mariana</i>	Klondike Loop, Yukon, Canada	CHITS040-08	CHITS040-08
<i>C. cassandrae</i>	^b QFB25005	<i>Picea mariana</i>	Abitibi, Quebec, Canada	CHITS052-08	CHITS052-08
	^b QFB25007	<i>Chamaedaphne calyculata</i>	Le'vis, Quebec, Canada	CHITS004-08	CHITS004-08
<i>C. chiogenis</i>	^b QFB25026	<i>Gaultheria hispidula</i>	Charlevoix, Quebec, Canada	CHITS022-08	CHITS022-08
	^b Only DNA extraction	<i>Gaultheria hispidula</i>	Charlevoix, Quebec, Canada	CHITS031-08	CHITS031-08
<i>C. conituberculata</i>	* BJFC-MQ02	<i>Picea crassifolia</i> Kom.	Qinghai, China	MZ444055	MZ444048
<i>C. diebuensis</i>	^a BJFC-R00556	<i>Picea asperata</i> Mast.	Gansu, China	MW898417	KX225393
	^a BJFC-R00507	<i>Picea asperata</i> Mast.	Gansu, China	MW063523	KX225394
<i>C. dumeticola</i>	^a BJFC-R02706	<i>Rhododendron micranthum</i> Turcz	Sichuan, China	MK874650	MK770386
	^a BJFC-R02707	<i>Rhododendron micranthum</i> Turcz	Sichuan, China	MK874651	MK770387
<i>C. empetri</i>	^b QFB25033	<i>Empetrum nigrum</i>	Radisson, Quebec, Canada	CHITS032-08	CHITS032-08
	^b QFB25060	<i>Empetrum nigrum</i>	Charlevoix, Quebec, Canada	CHITS033-08	CHITS033-08
<i>C. ledi</i>	^b DAOM 138900	<i>Ledum palustre</i>	Bialowieza Forest, Poland	CHITS056-08	CHITS056-08
	^b DAOM 162213	<i>Picea abies</i>	Pudasjärvi, Jonku, Finland	CHITS059-08	CHITS059-08
	^b QFB25034	<i>Picea glauca</i>	Chisasibi, Quebec, Canada	CHITS028-08	CHITS028-08
	^b Only DNA extraction	<i>Ledum groenlandicum</i>	Waswanipi River, Canada	CHITS060-08	CHITS060-08
	^a BJFC-R02705	<i>Picea jezoensis</i> Carr.	Jilin, China	MK874654	MK770390
<i>C. monesis</i>	^b DAOM 221985	<i>Pyrola uniflora</i>	Graham Island, British	CHITS044-08	CHITS044-08
	^b DAVFP 10017	<i>Picea sitchensis</i>	Columbia, Canada	CHITS107-09	CHITS107-09
<i>C. nagodhii</i>	^b Only DNA extraction	<i>Rhododendron groenlandicum</i>	Manicouagan, Quebec, Canada	CHITS065-08	CHITS065-08
	^b QFB25054	<i>Picea mariana</i>	Charlevoix, Quebec, Canada	CHITS030-08	CHITS030-08
<i>C. neoglandulosi</i>	^b DAOM 229530	<i>Ledum glandulosum</i>	Okanagan, British Columbia, Canada	CHITS042-08	CHITS042-08

<i>C. petalina</i>	* BJFC-JS145	<i>Picea crassifolia</i> Kom.	Qinghai, China	MZ444054	MZ444047
<i>C. piperiana</i>	^b DAFVP 14998	<i>Ledum macrophyllum</i> C.	Hope, British Columbia, Canada	CHITS113-09	CHITS113-09
<i>C. purpurea</i>	^a BJFC-R02299	<i>Picea purpurea</i> Mast.	Sichuan, China	MW063518	KX225401
	^a BJFC-R02300	<i>Picea purpurea</i> Mast.	Sichuan, China	MW898418	KX225402
<i>C. pyrolae</i>	^b QFB25056	<i>Picea sp.</i>	Bic, Quebec, Canada	CHITS066-08	CHITS066-08
	^b QFB25055	<i>Picea glauca</i>	Lac St-Jean, Quebec, Canada	CHITS013-08	CHITS013-08
	^a BJFC-R02634	<i>Picea schrenkiana</i> Fischet Mey.	Xinjiang, China	MK874655	---
<i>C. qilianensis</i>	^a BJFC-R02303	<i>Picea crassifolia</i> Kom.	Qinghai, China	MZ444062	KX225398
	^a BJFC-R02100	<i>Picea crassifolia</i> Kom.	Qinghai, China	MW898414	MW900425
	* BJFC-RA27T	<i>Rhododendron przewalskii</i> Maxim.	Qinghai, China	MW898415	MW900430
	* BJFC-RA44T	<i>Rhododendron przewalskii</i> Maxim.	Qinghai, China	MW898416	MW900431
<i>C. retiformis</i>	* BJFC-MQ11	<i>Picea crassifolia</i> Kom.	Qinghai, China	MZ444056	MZ444049
<i>C. rhododendri</i>	^b WM 1183	<i>Picea abies</i>	Obere Chlusi, Bernese, Switzerland	CHITS009-08	CHITS009-08
	^b QFB19829	<i>Rhododendron ferrugineum</i>	Simplon, Valais, Switzerland	CHITS036-08	CHITS036-08
	^b DAFVP 14606	<i>Ledum lapponicum</i>	Summit Pass, British, Columbia, Canada	CHITS105-09	CHITS105-09
	^b DAFVP 14607	<i>Ledum lapponicum</i>	Summit Pass, British, Columbia, Canada	CHITS106-09	CHITS106-09
	^a BJFC-R02712	<i>Ledum palustre</i> L	Heilongjiang, China	MK874652	MK770388
	^a BJFC-R02713	<i>Ledum palustre</i> L	Heilongjiang, China	MK874653	MK770389
<i>C. rhododendri-capitati</i>	^a BJFC-R01054	<i>Rhododendron lapponicum</i> (L)Wahlenb.	Qinghai, China	MW063519	MK770382
	^a BJFC-R02433	<i>Rhododendron laudandum</i> Cowan.	Tibet, China	MW898420	MW900429
<i>C. strumaria</i>	* BJFC-RA17	<i>Rhododendron przewalskii</i> Maxim.	Qinghai, China	MZ444057	MZ444050
	* BJFC-RA40	<i>Rhododendron przewalskii</i> Maxim.	Qinghai, China	MZ444058	MZ444051
<i>C. succinea</i>	^a BJFC-R02306	<i>Picea wilsonii</i> Mast.	Shaanxi, China	MW898419	KX462882
	^a BJFC-R02307	<i>Picea wilsonii</i> Mast.	Shaanxi, China	MK874625	KX462883
	^a HMAS-6142	<i>Rhododendron fauriae</i> Franch.	Japan	---	KX462884
<i>C. tsukubaense</i>	^a BJFC-R02716	<i>Rhododendron lepidotum</i> Wall. ex G. Don	Sichuan, China	MW898412	KY963954
	^a BJFC-R02720	<i>Rhododendron lepidotum</i> Wall. ex G. Don	Sichuan, China	MW898413	MW900428
<i>C. turiformis</i>	* BJFC-RA27U	<i>Rhododendron przewalskii</i> Maxim.	Qinghai, China	MZ444059	MZ444052
	* BJFC-RA44U	<i>Rhododendron przewalskii</i> Maxim.	Qinghai, China	MZ444060	MZ444053

<i>C. vaccinii</i>	^b DAOM 45774	<i>Vaccinium parvifolium</i>	Graham Island, British, Columbia, Canada	CHITS070-08	CHITS070-08
	^b DAVFP 18160	<i>Vaccinium parvifolium</i>	Victoria Island, British, Columbia, Canada	CHITS115-09	CHITS115-09
<i>C. woroninii</i>	^b QFB25009	<i>Ledum groenlandicum</i>	Charlevoix, Quebec, Canada	CHITS006-08	CHITS006-08
	^b DAOM 230441	<i>Picea abies</i>	Sodankylä, ruoselkä, Finland	CHITS072-08	CHITS072-08
	^a BJFC-QH02	<i>Picea crassifolia</i> Kom.	Qinghai, China	MW898410	MW900423
	^a BJFC-QH05	<i>Picea crassifolia</i> Kom.	Qinghai, China	MW898411	MW900424
<i>C. yunnanensis</i>	^a BJFC-R02336	<i>Picea likiangensis</i> (Franch.) Pritz. var. <i>linzhiensis</i> Cheng et L.K.Fu	Tibet, China	MK874644	KY211080
	^a BJFC-R02337	<i>Picea likiangensis</i> (Franch.) Pritz. var. <i>linzhiensis</i> Cheng et L.K.Fu	Tibet, China	MK874645	KY211081
<i>C. zhuoniensis</i>	^a BJFC-R02430	<i>Rhododendron phaeochrysum</i> Balf. f. et W. W. Smith	Tibet, China	MW066955	KY963958
	^a BJFC-R00521	<i>Picea asperata</i> Mast.	Gansu, China	MZ444061	KX225396
<i>Melampsora epitea</i>	^{ab} US0022745	<i>Salix</i> sp.	Abisko, Sweden	AF522170	AY471648

BJFC: Museum of Beijing Forestry University, Beijing, China; BPI: U.S. National Fungal Herbarium; DAOM: Agriculture and Agri-Food Canada, Ottawa, ON, Canada; HMAS: Herbarium Mycologicum Academiae Sinicae, Beijing, China; QFB: Rene Pomerleau Herbarium, Canadian Forest Service, Laurentian Forestry Centre, Quebec, Canada; TSH: Mycological Herbarium of the Graduate School of Life and Environmental Sciences, University of Tsukuba, Japan.

^a Sequences from the GenBank database.

^b Sequences from BOLD, and indicates sequences from Feau et al. (2011).

^{ab} Sequences used as an outgroup.

*specimens used in this study.

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