

Table S1

Species ^{1,2}	Family	Data type	Voucher number [Collector number, herbarium]
Pandanales			
<i>Asplundia moritziana</i> (Klotzsch) Harling	Cyclanthaceae	plastid, mitochondrial	M.W. Chase 1236, no data
<i>Carludovica palmata</i> Ruiz & Pav.	Cyclanthaceae	mitochondrial ³	M.W. Chase 14836, K
<i>Chorigyne cylindrica</i> R. Erikss.	Cyclanthaceae	plastid, mitochondrial	S.Y. Smith 175, MICH
<i>Cyclanthus bipartitus</i> Poit. ex A. Rich	Cyclanthaceae	mitochondrial ³	M.W. Chase 1237, K
<i>Dianthoveus cremnophilus</i> Hammel & G.J. Wilder	Cyclanthaceae	plastid, mitochondrial	Hammel 16058, MO
<i>Dicranopygium microcephalum</i> (Hook.f.) Harling	Cyclanthaceae	plastid, mitochondrial	D. Scherberich 110608, G
<i>Evodianthus junifer</i> (Poit.) Lindm.	Cyclanthaceae	plastid, mitochondrial	S. Barrier 1825, K
<i>Ludovia lancifolia</i> Brongn.	Cyclanthaceae	plastid, mitochondrial	D. Scherberich 090621, W
<i>Schultesiophytum chorianthum</i> Harling	Cyclanthaceae	plastid, mitochondrial	D. Canal 717, JBB
<i>Sphaeradenia woodsonii</i> Harling	Cyclanthaceae	plastid, mitochondrial	S.Y. Smith 178, MICH
<i>Stelestylis surinamensis</i> Harling	Cyclanthaceae	plastid, mitochondrial	D. Scherberich 041129, G
<i>Thoracocarpus bissectus</i> (Vell.) Harling	Cyclanthaceae	plastid, mitochondrial	A. Fuentes & F. Torrico 5447, MO
<i>Benstonea copelandii</i> Merr. Callm. & Buerki	Pandanaceae	plastid, mitochondrial	C. Sherman & K. Bynum 303, MO
<i>Freycinetia banksii</i> A. Cunn.	Pandanaceae	mitochondrial ³	S.W. Graham 02-03-14, UBC
<i>Martellidendron hornei</i> (Balf.f.) Callm. & Chassot	Pandanaceae	plastid, mitochondrial	Gallaher 281, BISH, HAW
<i>Pandanus tectorius</i> Parkinson ex Du Roi	Pandanaceae	plastid, mitochondrial	Gallaher 443, BISH, HAW
<i>Sararanga sinuosa</i> Hemsl.	Pandanaceae	mitochondrial ³	Gallaher 461, BISH, HAW
<i>Croomia japonica</i> Miq.	Stemonaceae	mitochondrial ³	Rothwell & Stockey 43, ALTA
<i>Pentastemona sumatrana</i> Steenis	Stemonaceae	mitochondrial ³	B.G. Leiden 910375, K

<i>Stemona tuberosa</i> Lour.	Stemonaceae	mitochondrial ³	Rothwell & Stockey 46, ALTA
<i>Stichoneuron caudatum</i> Ridl.	Stemonaceae	mitochondrial ³	Rothwell & Stockey 45, ALTA
<i>Sciaphila densiflora</i> Schltr.	Triuridaceae	mitochondrial ³	Pillon Y. et al. 88, NOU, P
<i>Acanthochlamys bracteata</i> P.C. Kao	Velloziaceae	plastid, mitochondrial	P.C. Kao 1993, K
<i>Barbacenia involucrata</i> L.B. Sm.	Velloziaceae	plastid, mitochondrial	L.R. Lima et al. 254, K
<i>Barbaceniopsis castillonii</i> (Hauman) Ibisch	Velloziaceae	plastid, mitochondrial	C. & P. Ibisch 93.1248, 28.10.1993, BONN (BO-0-BONN-12974)
<i>Vellozia</i> sp. Vand	Velloziaceae	plastid, mitochondrial	Kubitzki & Feuerer 97-30, HBG
<i>Xerophyta elegans</i> (Balf.) Baker	Velloziaceae	plastid, mitochondrial	Rothwell & Stockey 48, ALTA
<i>Xerophyta retinervis</i> Baker	Velloziaceae	mitochondrial ³	B.G. Reeves 14, NBG
Dioscoreales			
<i>Dioscorea membranacea</i> Pierre ex Prain & Burkill	Dioscoreaceae	mitochondrial	M.W. Chase 21050, K
Liliales			
<i>Campynemanthe viridiflora</i> Baill	Campynemataceae	mitochondrial ³	Pillon et al. 24, NOU
Asparagales			
<i>Iris missouriensis</i> Nutt.	Iridaceae	mitochondrial	M.A. McPherson 000707-5a-7, ALTA
Petrosaviales			
<i>Japonolirion osense</i> Nakai	Petrosaviaceae	mitochondrial ¹	M.W. Chase 3000, K
Alismatales			
<i>Butomus umbellatus</i> L.	Butomaceae	mitochondrial ³	Chase 6414, K
<i>Scheuchzeria palustris</i> L.	Scheuchzeriaceae	mitochondrial ³	D.W. Stevenson 23/2012, NY
<i>Stratiotes aloides</i> L.	Hydrocharitaceae	mitochondrial ³	J. Bogner s.n., ALTA
<i>Tofieldia coccinea</i> Richardson	Tofieldiaceae	mitochondrial ³	M.J. Waterway 2006-241, UBC

¹Additional plastid data: *Sciaphila thaidanica* K. Larsen (MG757197.1); *Japonolirion osense* (JQ068951-JQ069028). Additional mitochondrial data: *Arabidopsis thaliana* (L.) Heynh. (NC_037304).

²See Lam et al. (2018) for source information for taxa not included in table (plastid data only).

³Plastid data published in Lam et al. (2015), Ross et al. (2015) or Givnish et al. (2016).