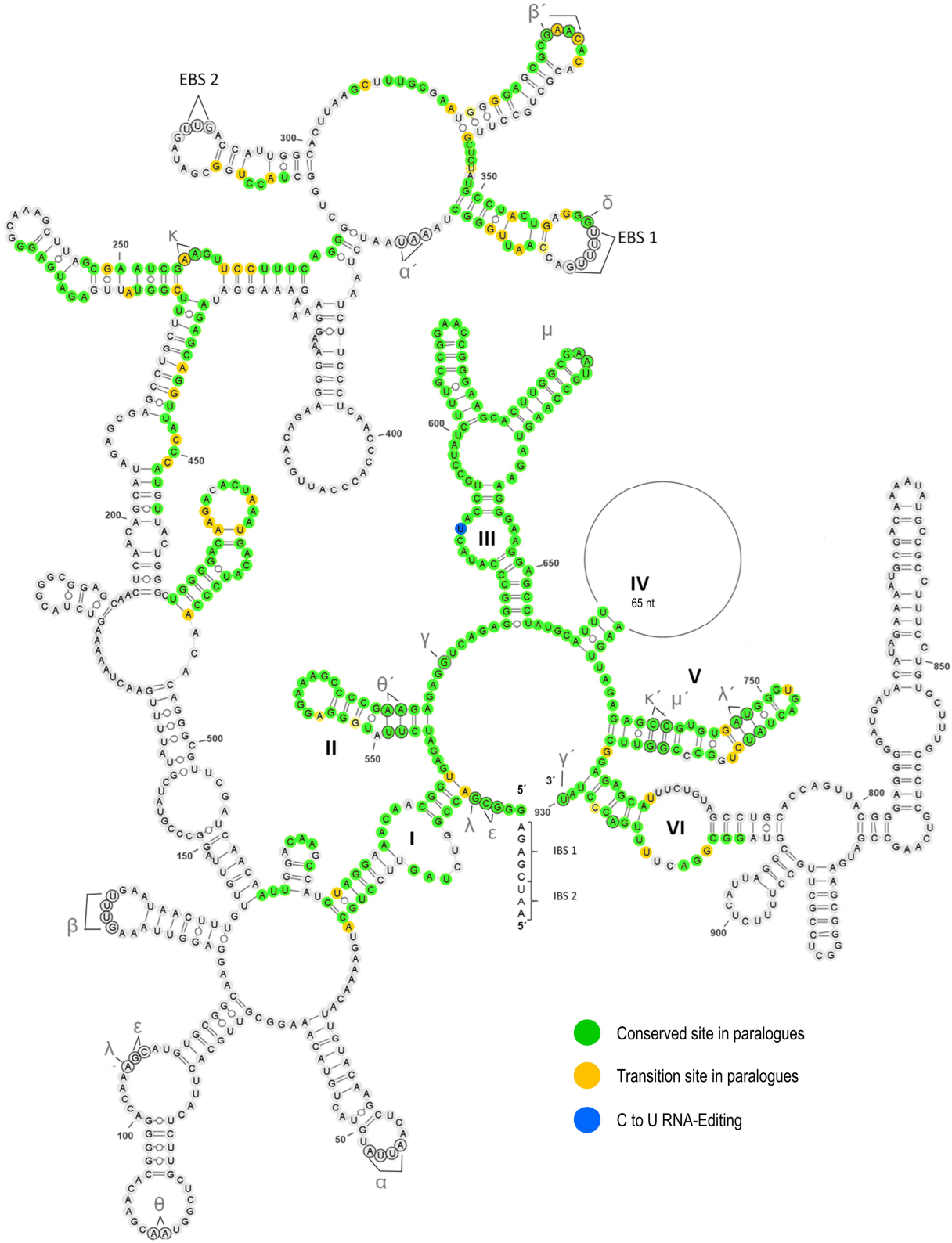
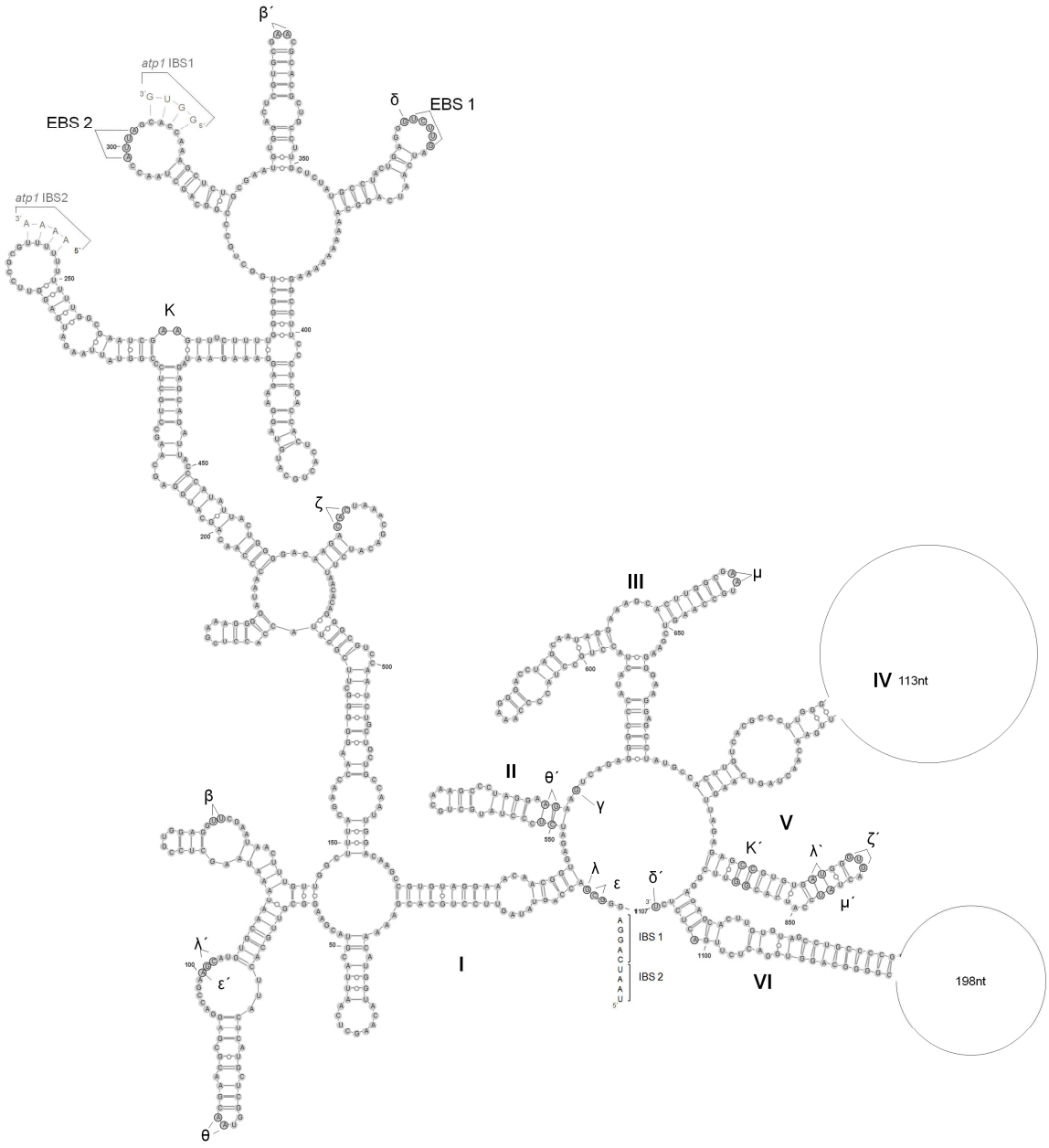
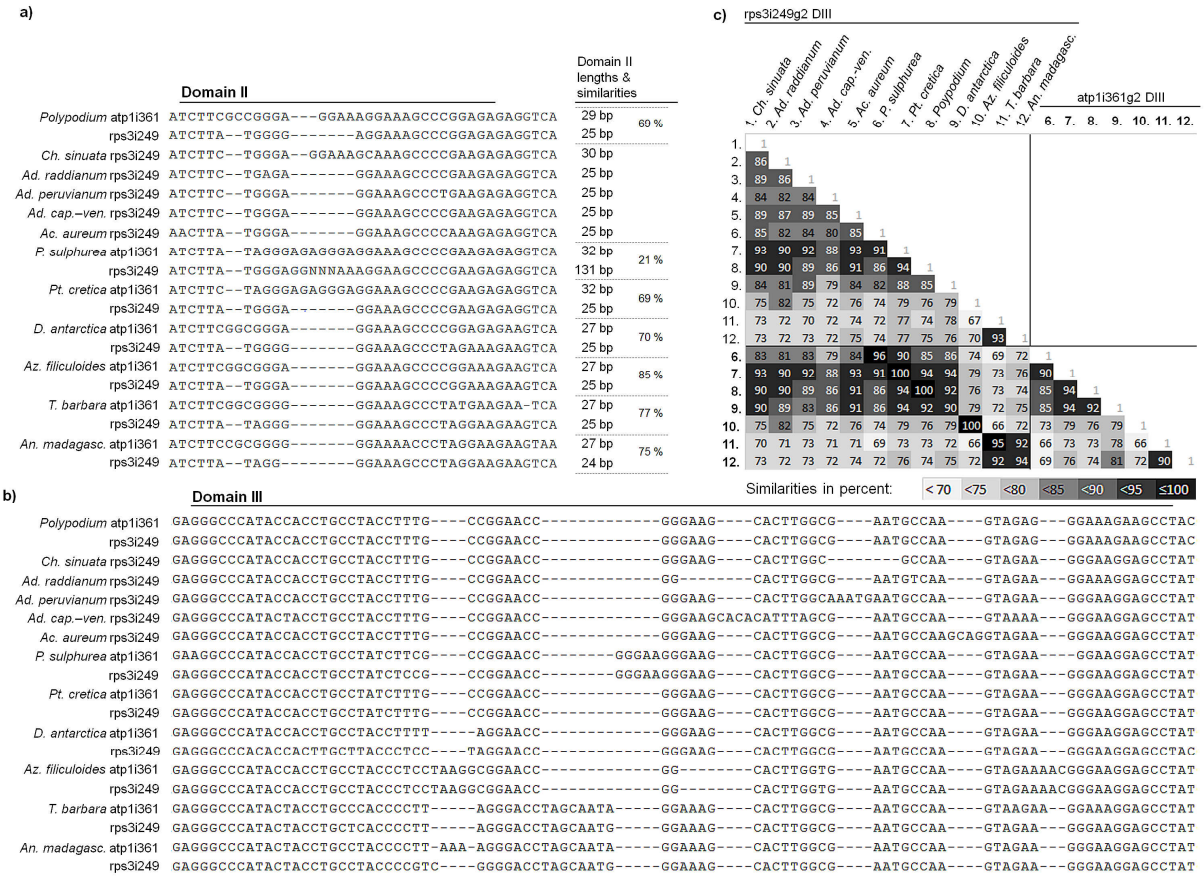


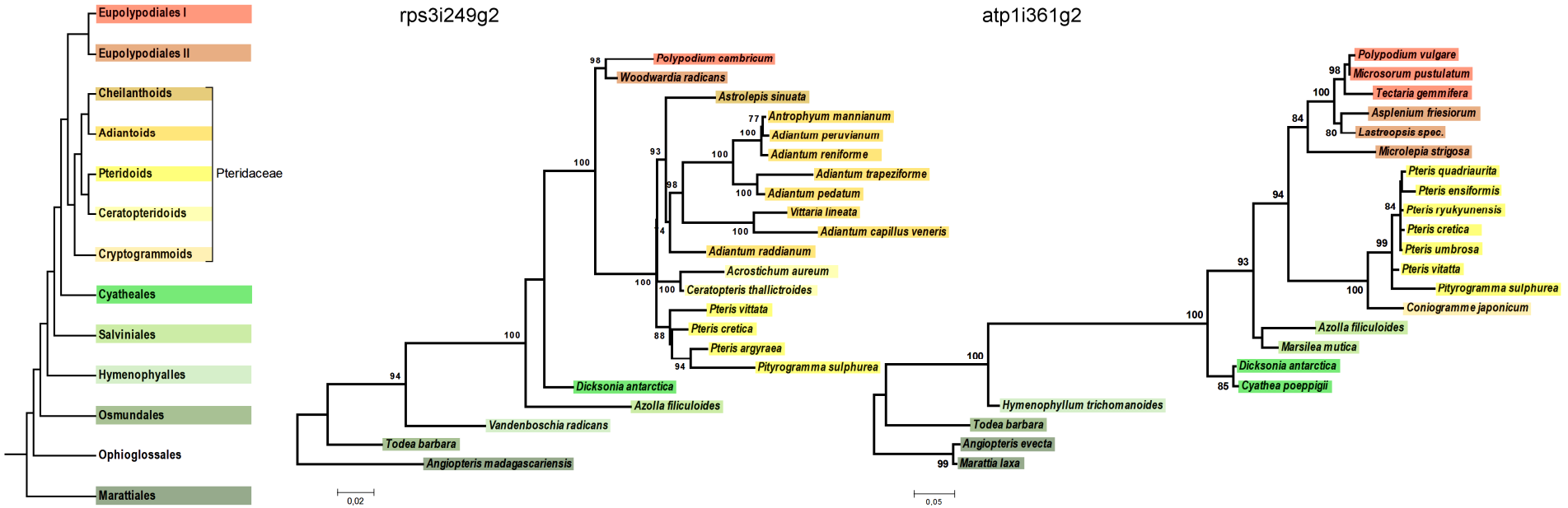
Supplementary figure 1. Secondary structure model of rps3i249g2 in *Pteris cretica*. Display is analogous to figure 6.



Supplementary figure 2. Secondary structure model of rps3i249g2 from *Phlegmariurus squarrosus* shows the six radiating domains (Roman numbers) of this group II intron with their tertiary interaction sites (Greek letters and black circles around nucleotides) and the exon binding sites 1 & 2 (EBS) and intron binding sites 1 & 2 (IBS). Additionally atp1i361g2 IBS 1 & 2 consensus sequence from monilophytes and the lycophyte *Phlegmariurus squarrosus* are displayed in grey.



Supplementary figure 3. Sequence alignment of atp1i361g2 and rps3i249g2 domains II (a) and III (b) of selected fern species as displayed in figures 7 and 8. A unique large sequence insertion in rps3i249g2 domain II of *Pityrogramma sulphurea* is represented by NNN. Sequence similarities are given for pairwise comparisons of the short domains II of the two intron paralogues next to the alignment. A similarity matrix for the larger domains III is shown top right (c), demonstrating high similarities of the two paralogues in the bottom left rectangle of the matrix. The atp1i361g2 paralogues are labelled in bold. Full taxon names are: *Cheilanthes sinuata* (1), *Adiantum raddianum* (2), *Adiantum peruvianum* (3), *Adiantum capillus-veneris* (4), *Acrostichum aureum* (5), *Pityrogramma sulphurea* (6), *Pteris cretica* (7), *Polypodium vulgare* (atp1i361g2) & *cambricum* (rps3i249g2) (8), *Dicksonia antarctica* (9), *Azolla filiculoides* (10), *Todea barbara* (11) and *Angiopteris madascariensis* (12).



Supplementary figure 4. Phylogenetic analysis of the rps3i249g2 and atp1i361g2 was generated using maximum likelihood analysis. Each dataset underwent 1000 bootstrap repeats. As substitution model GTR+I+G4 was used. Bootstrap support below 70% are not shown. The leptosporangiate fern topology was created based on a multi-locus chloroplastid dataset shown in Figure 2 and 3. Species were colored respective to the order, suborder or subclade of family they belong to. Incongruences respective the taxon-sampling for the one or the other intron are due to missing data.

Supplementary Table 1. Oligonucleotide primer sequences. All primers which were used in this study and their respective sources are listed below. Primer names ending "up" or "do" are forward or reverse primer, respectively. Primers binding in introns are named with "intron". Some exon primers ("edit") fit known editing sites in their sequence and are used to selectively amplify edited cDNA.

Name	Locus	Sequence from 5´ to 3´	Study
rbcL_up_pry	*rbcL*	ATGTCACCACAAACGGAGACTAAAGC	Pryer et al. (2004)
rbcL_do_pry	*rbcL*	TCAGGACTCCACTTACTAGCTTCACG	Pryer et al. (2004)
atpB_up_pry	*atpB*	AATGTTACTTGTGAAGTWCAACAAT	Pryer et al. (2004)
atpB_do_pry	*atpB*	ATTCCAAACWATTCGATTWGGAG	Pryer et al. (2004)
atpA_up_pelz	*atpA*	GARCARGTTCGACAGCAAGT	Schuettpelz et al. (2006)
atpA_do_pelz	*atpA*	GTATAGGTTCRARTCCTATTGGACG	Schuettpelz et al. (2006)
rps19_up	*rps19*	GRTTGGTCATAAATYTGGAGAG	This study
rpl16_do	*rpl16*	TATCTGCSAARAYTCTTACCC	This study
rps3_upex1	*rps3*	RTMAATCCGATTTCAGTCAGA	This study
rps3_upex2	*rps3*	GGTGTATTATTCATCATTYYCC	This study
rps3_do2ex3	*rps3*	CGTAATTTTCCTTCAGTAATCC	This study
rps3_do3ex2	*rps3*	GGRRAATGATGAATAATACACC	This study
rps3_upin1	*rps3*	GACCGGTCTAGTTYCTGC	This study
rps3_doDV	*rps3*	RTGCTCTCYGAACCGKGCTRG	This study
rps3 ex2upc	*rps3*	TCTTTTTTCTAGTTCAACGACG	This study
rps3 i2do1	*rps3*	CAGAGCGTGACAAATACATAGG	This study
rps3 ex3doc	*rps3*	TCYTCTTCCAGCAACAATGAC	This study
atp1_up	*atp1*	GATGGAAYTGCACGTGTTTATGG	Knie et al. (2015)
atp1_do	*atp1*	ACRTCYCCAGCTTRKRTTTC	Knie et al. (2015)
atp1_do2	*atp1*	YAAAAGGTAGCCAGTTGASTG	This study
atp1_do3	*atp1*	CASTCAACTGGCTACCTTTTR	This study
atp1cDup	*atp1*	ATGCTAGGTCGTGTAGTTGATGCG	This study
atp1cDdo	*atp1*	GAA ATG ACA TTG GTA GGA ATA TAA GC	This study
atp1inup3	*atp1*	TCA ACG TGT TGC CAG ATA GAC G	This study
atp1indo	*atp1*	AAA GAT AGG CAG GTG GTA TGG	This study
atp1ido5	*atp1*	TGA CYA TRA TGT GCC TAT RGC	This study
matKup1	*matK*	AGACARACCGKATCRAAGWTGAACG	This study
matKdo1	*matK*	AATTTTTATYTRAYRGAKGGYAAACG	This study

Supplementary Table 2. List of all detected RNA editing sites in *atp1* exons. The position labelling was set to "self". For some taxa marked with an asterisk (*) the RNA editing sites were predicted with the PREPACT alignment prediction tool (Lenz and Knoop 2013) using *Pteris umbrosa* cDNA as reference. Editing sites which are found in the CR clade and at least one other clade are considered to be plesiomorphic in the Pteridaceae and are shaded in green. Edits which are restricted to certain subclades of Pteridaceae, e. g. Pteridaceae without CR or AD/CH clade are shown in yellow. Edits which only occur in a single genus are shaded in blue.

Supplementary Table 3. List of experimentally verified intronic RNA editing sites. The intronic RNA editing sites were analyzed through a cDNA analysis of premature and unspliced mRNAs. Extending the usual nomenclature (Rüdinger et al. 2009) the intronic editing sites are named after the intron name, the type of RNA editing (eU for C-to-U and eC for U-to-C editing) and the intron nucleotide position.

Species and clone name	Gene	Intronic RNA editing sites
Pteris cretica intronup1	*atp1*	atp1i361g2eC285
Pteris cretica introndo1	*atp1*	atp1i361g2eU276, atp1i361g2eU385, atp1i361g2eU386; atp1i361g2eU506, atp1i361g2eC742
Pteris umbrosa introndo1	*atp1*	atp1i361g2eU276
Pteris vittata intronup1	*atp1*	atp1i361g2eU200, atp1i361g2eU271, atp1i361g2eC280
Pteris vittata intronup2	*atp1*	atp1i361g2eC280
Pteris vittata introndo1	*atp1*	atp1i361g2eU271, atp1i361g2eU380, atp1i361g2eU381, atp1i361g2eC397, atp1i361g2eU509, atp1i361g2eC590, atp1i361g2eU746
Pteris vittata introndo2	*atp1*	atp1i361g2eU271, atp1i361g2eU380, atp1i361g2eU381, atp1i361g2eU509, atp1i361g2eC590, atp1i361g2eU746
Pteris vittata introndo3	*atp1*	atp1i361g2eU380, atp1i361g2eC513, atp1i361g2eC590
Pteris cretica intronup1	*rps3*	rps3i249g2eU590, rps3i249g2eU658
Pteris argyraea intronup1	*rps3*	rps3i249g2eC346, rps3i249g2eU591, rps3i249g2eU658
Pteris argyraea intronup2	*rps3*	rps3i249g2eU591, rps3i249g2eU658
Pteris vittata intronup1	*rps3*	rps3i249g2eU132, rps3i249g2eU597, rps3i249g2eU602, rps3i249g2eU670
Pteris vittata intronup2	*rps3*	rps3i249g2eU132, rps3i249g2eU670
Pteris vittata intronup3	*rps3*	rps3i249g2eU132, rps3i249g2eU632, rps3i249g2eU670
Pteris vittata intronup4	*rps3*	rps3i249g2eU132, rps3i249g2eU503, rps3i249g2eU670
Onychium japonicum intronup1	*rps3*	rps3i249g2C332, rps3i249g2eU583, rps3i249g2C647, rps3i249g2C651

Supplementary Table 4. Taxa and loci. Additional database accessions of sequences investigated in this study are shown ‘’-’’ indicates that no data are available. The respective epithet is indicated below the accession number when originating from a different species of the same genus.

Pteridaceae	*rbcL*	*atpB*	*atpA*	*matK*	*atp1*
Acrostichum danaeifolium	EF452129	EF452008	EF452065	-	-
Adiantum malesianum	EF452132	EF452011	EF452068	-	KC984412
Adiantum tenerum	EF452134	EF452014	EF452072	-	KC984415
Adiantum tetraphyllum	EF452135	EF452015	EF452073	-	KC984416
Anetium citrifolium	U21284,	EF452017	EF452075	-	KC984417
Argyrochosma limitanea	EF452139	EF452019	EF452077	-	-
Anogramma leptophylla	AY168715	-	-	-	-
Antrophyum latifolium	EF452138	EF452018	EF452076	-	KC984418
Bommeria hispida	EF452142	EF452022	EF452081	-	KC984419
Ceratopteris richardii	AB059585	AY612691	EF452082	-	-
Cheilanthes alabamensis	EF452143	EF452023	EF452083	-	-
Cheilanthes eatonii	EF452144	EF452024	EF452084	-	-
Cheilanthes nitidula	EF452146	EF452025	EF452085	-	-
Cheilanthes viridis	EF452147	EF452026	EF452086	-	-
Coniogramme fraxinea	AM177359	AY612693	AM176470	-	-
Cryptogramma crispa	EF452148	EF452027	EF452087	-	KC984421
Doryopteris sagittifolia	EF452151	EF452032	EF452093	-	-
Eriosorus cheilanthoides	EF452152	EF452034	EF452095	-	-
Haplopteris elongata	EF452153	EF452035	EF452096	-	KC984423
Hecistopteris pumila	U21286	EF452036	EF452097	-	KC984424
Jamesonia verticalis	EF452155	EF452038	EF452099	-	-
Llavea cordifolia	U27726	EF452039	EF452100	-	-
Monachosorum henryi	U05932	AY612706	AM176469	-	-
Monogramma graminea	EF452157	EF452040	EF452102	-	KC984428
Nephrolepis cordifolia	U05933	EF452041	EF452103	-	-
Neurocallis praestantissima	EF452158	EF452042	EF452104	-	-
Notholaena aschenborniana	EF452159	EF452043	EF452105	-	-
Ochropteris pallens	EF452160	EF452044	EF452106	-	-
Pellaea intermedia	EF452163	EF452047	EF452109	-	-
Pellaea truncata	EF452164	EF452048	EF452110	-	-
Pentagramma triangularis	EF452165	EF452049	EF452111	-	KC984431
Pityrogramma austroamericana	EF452166	EF452050	EF452112	-	KC984432
Platyzoma microphyllum	AY168721	EF452051	EF452113	-	-
Polytaenium cajenense	U20934	EF452052	EF452114	-	-
Pteris arborea	EF452168	EF452053	EF452116	-	-
Pteris multifida	EF452171	EF452056	EF452119	-	-
Pteris propinqua	EF452172	EF452057	EF452120	-	-
Pteris tremula	EF452174	EF452059	EF452122	-	-
Pterozonium brevifrons	EF452175	EF452061	EF452124	-	-
Radiovittaria gardneriana	U21294	EF452062	EF452125	-	-
Vittaria graminifolia	U21295	EF452064	EF452128	-	KC984434
Rheopteris cheesmaniae	EF452176	EF452063	EF452126	-	KC984433
Outgroups					
Anemia phyllitidis	AJ303391	AY612687	AM176474	JF303905	KJ944577
Asplenium nidus	U05907	AY612688	DQ390545 *A. theciferum*	JF303923 *A. tripteropus*	KJ944566
Asplenium unilaterale	EF452140	EF452020	EF452078	-	-
Blechnum occidentale	U05910	U93838	EF452080	AJ548851	-
Botrychium lunaria	L13474 *B. biternatum*	AY612689	DQ390549	KP757848	DQ110159
Cyathea poeppigii	AF313585	AF313553	EF463640	JF303907 *C. dealbata*	KP757843 *C. dealbata*
Cystopteris reevesiana	EF452149	EF452028	EF452088	-	-
Davallia solida	AB212712	EF452029	EF452089	-	-
Dennstaedtia punctilobula	U05918	U93836	EF452090	-	-
Didymochlaena truncatula	AF425105	EF452030	EF452091	-	-
Dryopteris aemula	AY268881	EF452033	EF452094	DQ646243 *D. wallichiana*	-
Equisetum bogotense	KP75784	AY226139	KC893871	KP757844	-
Equisetum hyemale	NC020146	DQ646213	-	-	-
Gleichenia dicarpa	AF313584	AF313550	DQ390562	HM021798 *G. japonica*	KJ944572
Helminthostachys zeylanica	EU352293	DQ646095	-	KP757847	DQ110149
Hymenophyllum hirsutum	AF275645	AF313538	DQ390565	JF303898 *H. trichomanoides*	DQ646226 *H. trichomanoides*
Leptopteris superba	AY612678 *L. wilkesiana*	AY612699 *L. wilkesiana*	DQ390566 *L. hymenophylloides*	KM925081	KJ944576

Lygodium japonicum	KF225593	KF225593	KF225593	KF225593	KP757845
Marattia laevis	AF313581 *M. attenuata*	AF313546 *M. attenuata*	DQ390567 *M. alata*	KM925080	KJ944578
Marsilea drummondii	EU352306	AF313551	EF463786	HM021801 *M. mutica*	KJ944563 *M. hirsuta*
Matonia pectinata	EU352307	AY612704	DQ390568	JF303903	KJ944573
Microlepia platyphylla	U18642	U93832	EF452101	-	-
Ophioglossum californicum	KC117178	KC117178	KC117178	KC117178	KJ944573 *O. petiolatum*
Pteridium aquilinum	HM535629	HM535629	HM535629	HM535629	AJ548852
Pteridium esculentum	U05940	U93834	EF452115	-	-
Psilotum nudum	AP004638	AP004638	AP004638	AP004638	AJ548873
Salvinia molesta	EU269668	AF313552	DQ390576 *S. cucullata*	JF303906	KJ944562
Schizaea dichotoma	AY612683	AY612709	EF463861	JF303899	n.d.
Tmesipteris elongata	EU352294	U93823	DQ390579	KJ569699	KJ944579
Thelypteris palustris	U05947	AY612713	EF452127	-	-

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