

**Supplementary Table S1. 45S nrDNA information of nine PJ accessions used in this study.**

Accession	Length (bp)	18S (bp)	ITS1 (bp)	5.8S (bp)	ITS2 (bp)	26S (bp)	GenBank accession
Pj-1	5,815	1,809	220	156	229	3,401	KX757776
Pj-2	5,815	1,809	220	156	229	3,401	KX757777
Pj-3	5,815	1,809	220	156	229	3,401	PQ288681*
Pj-4	5,815	1,809	220	156	229	3,401	PQ288682*
Pj-5	5,815	1,809	220	156	229	3,401	PQ288683*
Pj-6	5,815	1,809	220	156	229	3,401	PQ288684*
Pj-7	5,815	1,809	220	156	229	3,401	PQ288685*
Pj-8	5,815	1,809	220	156	229	3,401	PQ288686*
Pj-9	5,815	1,809	220	156	229	3,401	PQ288687*

\*: Newly assembled in this study

Supplementary Table S2. Variants and heterozygous positions of 45S nrDNA among PJ.

Heterozygous Position	Pj-1 and Pj-2 (KX757776~7)	Pj-3	Pj-4	Pj-5	Pj-6	Pj-7	Pj-8	Pj-9
669	C	C	C	C	C	C	<b>C(88.4)/T(11.6)</b>	C
1512	C	C	C	C	C	C	<b>C(95.0)/T(5.0)</b>	C
1520	G	G	G	G	<b>G(94.0)/A(5.8)</b>	G	G	G
1876	C	<b>C(92.5)/T(7.2)<sup>b</sup></b>	C	C	C	C	C	C
<b>2160<sup>a</sup></b>	C	T	<b>T(77.9)/C(22.1)</b>	T	T	<b>T(57.8)/C(42.2)</b>	T	C
2198	G	G	G	G	G	G	<b>G(83.2)/T(16.8)</b>	G
2199	C	C	C	C	C	C	<b>C(94.8)/T(5.2)</b>	C
<b>2213</b>	A	T	<b>T(77.2)/A(22.7)</b>	T	T	<b>T(59.0)/A(41.0)</b>	T	A
2293	C	<b>C(93.7)/T(6.0)</b>	C	C	C	C	C	C
2366	A	A	A	<b>A(86.0)/G(13.6)</b>	A	A	A	A
2405	G	G	G	G	G	G	<b>G(90.8)/A(9.1)</b>	G
3038	A	A	A	<b>A(84.2)/T(15.6)</b>	A	A	A	A
<b>3802</b>	T	C	<b>C(79.2)/T(20.8)</b>	C	C	<b>T(59.8)/C(39.3)</b>	C	T
3804	C	C	C	C	C	C	C	<b>C(83.7)/T(16.0)</b>
3848	C	<b>C(93.3)/T(6.3)</b>	C	C	C	C	C	C
3900	A	A	A	<b>A(79.4)/T(20.4)</b>	A	A	A	A
4028	C	<b>C(94.6)/T(5.4)</b>	C	C	C	C	C	C
<b>4047</b>	C	<b>T(55.2)/C(44.8)</b>	<b>T(72.4)/C(27.6)</b>	<b>C(87.8)/T(11.8)</b>	<b>C(94.4)/T(5.3)</b>	<b>C(81.2)/T(18.8)</b>	C	C
5129	G	G	<b>G(93.7)/T(5.7)</b>	G	G	G	G	G
5478	C	C	C	C	C	C	<b>C(81.1)/T(18.8)</b>	C
5525	T	T	T	<b>T(93.4)/C(6.6)</b>	T	T	T	T

a: Bold letters denote SNP regions in Heterozygous position.

b: Bold letters denote heterozygous composition. The letter represents a nucleotide, while the number surrounded in a round bracket denotes reads percentage of the position.

**Supplementary Table S3. Synonymous-substitution rates ( $d_s$ ) of each gene belonged in different compartments.**

Compartment Number of CDS	Whole PT 76 CDS	LSC 49 CDS	SSC 11 CDS	e-IR 14 CDS	o-IR 2 CDS
Pj-1*	0.1177	0.1285	0.168	0.0743	0.0118
Pj-2*	0.1177	0.1285	0.168	0.0743	0.0118
Pj-3*	0.1177	0.1285	0.168	0.0743	0.0118
Pj-4*	0.1177	0.1285	0.168	0.0743	0.0118
Pj-5*	0.1179	0.1289	0.1675	0.0743	0.0118
Pj-6	0.1179	0.1286	0.1668	0.0753	0.0117
Pj-7	0.1174	0.1281	0.1669	0.0743	0.0117
Pj-8	0.1175	0.1284	0.1668	0.0742	0.0117
Pj-9	0.1177	0.1281	0.1693	0.0748	0.0118
Pj-10	0.1177	0.1281	0.1693	0.0748	0.0118
<i>Peucedanum ampliatum</i>	0.1177	0.1285	0.1676	0.0744	0.0117
<i>Peucedanum harry-smithii</i>	0.1181	0.1284	0.1681	0.0764	0.0118
<i>Peucedanum praeruptorum</i>	0.1178	0.128	0.1673	0.0763	0.0118
<i>Peucedanum longshengense</i>	0.1162	0.1264	0.1669	0.0738	0.0118
<i>Saposhnikovia divaricata-1</i>	0.1173	0.1268	0.1709	0.0758	0.0118
<i>Saposhnikovia divaricata-2</i>	0.1173	0.1268	0.1709	0.0758	0.0118
<i>Peucedanum mashanense</i>	0.1147	0.1254	0.1662	0.0707	0.0118
<i>Peucedanum medicum</i>	0.1145	0.1252	0.1650	0.0705	0.0118
<i>Angelica decursiva</i>	0.1161	0.1258	0.1713	0.0723	0.0141
<i>Angelica morii</i> <sup>+</sup>	0.1148	0.1243	0.1700	0.0719	0.0118
<i>Angelica tsinlingensis</i> *	0.1152	0.1249	0.1717	0.0710	0.0118
<i>Coriander sativum</i>	0.1182	0.1279	0.1735	0.0707	0.0332
<i>Apium leptophyllum</i>	0.1189	0.1292	0.1837	0.0691	0.0141
<i>Daucus carota</i>	0.1265	0.1351	0.1990	0.0780	0.0187
Mean $d_s$	0.1175	0.1278	0.1704	0.0738	0.0132
Max $d_s$	0.1265	0.1351	0.1990	0.0780	0.0332
Min $d_s$	0.1145	0.1243	0.1650	0.0691	0.0117

\*: 17 kbp of IR expansion

+: 7 kbp of IR expansion

LSC/IR: LSC in S-type plastomes and IR in L-type plastomes

**Supplementary Table S4. KASP marker information used in this study.**

Name	Position	Allele	Allele-specific primer (5' >3')	Common primer (5' > 3')
PJ_KASP_psbK	<i>psbK</i>	FAM X	CATTTGTCTTAATTATGCCTTTTATTCGA[ <b>G</b> ]	CGGGCAATTTGGCGAAGAAAAGACTA
		HEX Y	GCATTTGTCTTAATTATGCCTTTTATTCGA[ <b>A</b> ]	
PJ_KASP_rpoC2	<i>rpoC2</i>	FAM X	CATTTCCATATGTAAATTCAGGTGCAT[ <b>G</b> ]	GAAATGCACTGGAATACCGACGTGTA
		HEX Y	AACATTTCCATATGTAAATTCAGGTGCAT[ <b>A</b> ]	
PJ_KASP_psaA	<i>psaA</i>	FAM X	CCTTATCCGTATCTAGCTACTGA[ <b>C</b> ]	GTGTGAACAATGACAGTTGTGTACCATA
		HEX Y	CCCTTATCCGTATCTAGCTACTGA[ <b>T</b> ]	
PJ_KASP_ycf4	<i>ycf4</i>	FAM X	AAATCGTCGCATCTTCCTCCGATT[ <b>A</b> ]	CTTCTATTCTGACGGACTGAATATCCTTT
		HEX Y	CGTCGCATCTTCCTCCGATT[ <b>C</b> ]	
PJ_KASP_rpoA	<i>rpoA</i>	FAM X	GCATTTATCAATTGATTTACCGAAAAAGT[ <b>C</b> ]	GAGTTGTGCTAAAGATTCAAACCCATTTT
		HEX Y	AAAGCATTTATCAATTGATTTACCGAAAAAGT[ <b>A</b> ]	

**Supplementary Table S5. Sample information used in this study.**

ID	Collected from	ID	Collected from
1	purchased from Aram Seed company	29	Ulleung island, Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do
2	Sowon-myeon, Taean-gun, Chungcheongnam-do	30	Ulleung island, Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do
3	Sowon-myeon, Taean-gun, Chungcheongnam-do	31	Ulleung island, Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do
4	purchased from dong won nong san seed	32	Ulleung island, Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do
5	Doyang-eup, Goheung-gun, Jeollanam-do	33	Ulleung island, Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do
6*	Geumodo, Nam-myeon, Yeosu-si, Jeollanam-do	34	Ulleung island, Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do
7*	Songji-myeon, Haenam-gun, Jeollanam-do	35	Ulleung island, Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do
8	Anui-myeon, Hamyang-gun, Gyeongsangnam-do	36	Ulleung island, Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do
9	provided by Hantaek Botanical Garden	37	Ulleung island, Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do
10	provided by Hantaek Botanical Garden	38	Ulleung island, Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do
11	provided by Hantaek Botanical Garden	39	Ulleung island, Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do
12	provided by Hantaek Botanical Garden	40*	Wando-eup, Wando-gun, Jeollanam-do
13	provided by Hantaek Botanical Garden	41	provided by the Medicinal Plant Garden of the college of Pharmacy, SNU
14*	provided by Hantaek Botanical Garden	42	provided by the Medicinal Plant Garden of the college of Pharmacy, SNU
15	provided by Hantaek Botanical Garden	43*	provided by the Medicinal Plant Garden of the college of Pharmacy, SNU
16	provided by Hantaek Botanical Garden	44	provided by the Medicinal Plant Garden of the college of Pharmacy, SNU
17	provided by Hantaek Botanical Garden	45	provided by the Medicinal Plant Garden of the college of Pharmacy, SNU
18*	Seongsan-eup, Seogwipo-si, Jeju-do	46	provided by the Medicinal Plant Garden of the college of Pharmacy, SNU
19*	Namwon-eup, Seogwipo-si, Jeju-do	47	provided by the Medicinal Plant Garden of the college of Pharmacy, SNU
20	Daejeong-eup, Seogwipo-si, Jeju-do	48	Yeondo, Nam-myeon, Yeosu-si, Jeollanam-do
21	Irun-myeon, Geoje-si, Gyeongsangnam-do	49	Yeondo, Nam-myeon, Yeosu-si, Jeollanam-do
22	Seohong-dong, Seogwipo-si, Jeju-do	50	Yeondo, Nam-myeon, Yeosu-si, Jeollanam-do
23	purchased from worldseed	51	Yeondo, Nam-myeon, Yeosu-si, Jeollanam-do
24	Seongsan-eup, Seogwipo-si, Jeju-do	52	Yeondo, Nam-myeon, Yeosu-si, Jeollanam-do
25	Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do	53	Yeondo, Nam-myeon, Yeosu-si, Jeollanam-do
26	Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do	54	Yeondo, Nam-myeon, Yeosu-si, Jeollanam-do
27	Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do	55	Yeondo, Nam-myeon, Yeosu-si, Jeollanam-do
28	Ulleung-eup, Ulleung-gun, Gyeongsangbuk-do		*: accessions used for plastome assembly