

Table S1. Source for plastid genomes included this study

| Class | Order | Family | Species | Accession number |
|----------|-----------|------------------|--|------------------|
| Asterids | Solanales | Solanaceae | <i>Solanum lycopersicum</i> | AC_000188 |
| | Lamiales | Scrophulariaceae | <i>Scrophularia takesimensis</i> | KM590983 |
| | | Lamiaceae | <i>Salvia miltorhiza</i> | NC_023209 |
| | | Palowniaceae | <i>Paulownia coreana</i> | NC_031435 |
| | | Orobanchaceae | <i>Triaenophora shennongjiaensis</i> | NC_039781 |
| | | | <i>Rehmannia glutinosa</i> | NC_034308 |
| | | | <i>Rehmannia elata</i> | NC_034312 |
| | | | <i>Rehmannia chingii</i> | NC_033534 |
| | | | <i>Lindenbergia phillippensis</i> | NC_022859 |
| | | | <i>Aeginetia indica</i> | MN529629 |
| | | | <i>Aeginetia indica</i> (This study) | MW851293 |
| | | | <i>Lathraea squamaria</i> | NC_027838 |
| | | | <i>Brandisia swinglei</i> | NC_042954 |
| | | | <i>Castilleja paramensis</i> | NC_031806 |
| | | | <i>Pedicularis cheilanthifolia</i> | NC_036010 |
| | | | <i>Pedicularis hallaisanensis</i> | NC_037433 |
| | | | <i>Pedicularis ishidoyana</i> | NC_029700 |
| | | | <i>Schwalbea americana</i> | NC_023115 |
| | | | <i>Cistanche phelypaea</i> | NC_025642 |
| | | | <i>Cistanche deserticola</i> | NC_021111 |
| | | | <i>Epifagus virginiana</i> | NC_001568 |
| | | | <i>Conopholis americana</i> | NC_023131 |
| | | | <i>Phelipanche purpurea</i> | NC_023132 |
| | | | <i>Orobanche californica</i> | NC_025651 |
| | | | <i>Aphyllon epigalium</i> subsp <i>epigalium</i> | MH050785 |
| | | | <i>Aphyllon fasciculatum</i> | NC_039679 |
| | | | <i>Boulardia latisquama</i> | NC_025641 |
| | | | <i>Orobanche rapum-genistae</i> | NC_031444 |
| | | | <i>Orobanche panicii</i> | NC_031443 |
| | | | <i>Orobanche crenata</i> | NC_024845 |
| | | | <i>Orobanche cernua</i> var. <i>cumana</i> | KT387722 |
| | | | <i>Orobanche densiflora</i> | NC_031442 |
| | | | <i>Orobanche austrohispanica</i> | NC_031441 |
| | | | <i>Orobanche gracillis</i> | NC_023464 |

Table S2. Blast result of plastid-derived DNA segments in mitochondrial genome of *Aeginetia indica*.

| | Query start | Query end | Identity (%) | Alignment length | Subject start | Subject end | E value | Annotation |
|----|-------------|-----------|--------------|------------------|---------------|-------------|----------|---------------------------|
| 1 | 39,541 | 39,485 | 94.737 | 57 | 30,441 | 30,497 | 2.32E-18 | <i>trnI</i> -CAU |
| 2 | 39,609 | 39,538 | 98.611 | 72 | 30,369 | 30,440 | 1.63E-30 | <i>rpl2/trnI</i> -CAU IGS |
| 3 | 164,379 | 164,460 | 95.122 | 82 | 38,485 | 38,566 | 1.13E-31 | <i>ndhB</i> * |
| 4 | 164,458 | 164,611 | 96.104 | 154 | 38,567 | 38,720 | 1.88E-70 | <i>ndhB</i> * |
| 5 | 164,751 | 164,902 | 92.763 | 152 | 38,821 | 38,972 | 1.87E-59 | <i>ndhB</i> * |
| 6 | 179,780 | 179,677 | 82.692 | 104 | 13,274 | 13,377 | 1.62E-19 | <i>rps4</i> ** |
| 7 | 179,993 | 179,922 | 91.667 | 72 | 12,422 | 12,493 | 7.82E-22 | <i>trnS</i> -GGA |
| 8 | 207,951 | 207,868 | 96.429 | 84 | 50,391 | 50,474 | 5.48E-34 | <i>trnN</i> -GUU |
| 9 | 247,816 | 247,739 | 91.026 | 78 | 15,230 | 15,307 | 1.44E-23 | <i>trnM</i> -CAU |
| 10 | 265,842 | 265,764 | 92.405 | 79 | 19,037 | 19,115 | 6.95E-26 | <i>trnW</i> -CCA |
| 11 | 273,732 | 273,793 | 96.774 | 62 | 43,250 | 43,311 | 5.44E-23 | <i>rps7/rrn16</i> IGS |
| 12 | 393,071 | 392,994 | 92.308 | 78 | 9,450 | 9,527 | 2.63E-25 | <i>trnD</i> -GCU |

* indicate pseudogene, ** indicate fragments.

Table S3. The gene contents of Angiosperm mitogenome including *Aeginetia indica*. ●:present ○: absent

| | Aeg | Cas | Mim | Sal | Rot | Aju | Hes | Nic | Sol | Rha | Ara | Sil | Gly | Med | Sen | Lac | Vit | Ory | Tri | Lir |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| atp1 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| atp4 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● |
| atp6 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| atp8 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● |
| atp9 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| atp1-cp | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ccmB | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ccmC | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ccmFc | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ccmFn | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| cob | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| cox1 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| cox2 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ● | ● | ● |
| cox3 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| matR | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| mttB | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● |
| nad1 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad2 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad3 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad4 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad4L | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad5 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad6 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad7 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad9 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| rpl2 | ● | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ● | ● | ○ | ● |
| rpl5 | ● | ● | ● | ● | ● | ○ | ● | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| rpl10 | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | ● | ○ | ○ | ○ | ● |
| rpl16 | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ● | ● | ○ | ● | ● |
| rps1 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ○ | ○ | ● | ● | ● | ○ | ● | ● | ● | ● |
| rps2 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● |
| rps3 | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| rps4 | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| rps7 | ○ | ○ | ○ | ● | ○ | ○ | ● | ○ | ○ | ● | ● | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● |
| rps10 | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ● | ○ | ○ | ● | ● | ● | ○ | ● | ○ | ○ | ● |
| rps11 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ○ | ○ | ● |
| rps12 | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ○ | ● | ● | ● | ● | ● | ● | ● | ● |
| rps13 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ○ | ● |
| rps14 | ● | ● | ● | ● | ● | ○ | ● | ● | ○ | ● | ○ | ● | ● | ● | ● | ○ | ● | ○ | ○ | ● |

| | | | | | | | | | | | | | | | | | | | | | |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| rps19 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● |
| sdh3 | ○ | ● | ● | ○ | ○ | ○ | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ○ | ○ | ● |
| sdh4 | ψ | ○ | ● | ○ | ○ | ○ | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ○ | ○ | ● |

Aeg=*Aeginetia indica*; Cas=*Castilleja paramensis*; Mim=*Mimulus guttatus*; Sal=*Salvia miltiorrhiza*; Rot=*Rothea serrata*; Aju= *Ajuga reptans*; Hes=*Hesperelaea palmeri*; Nic=*Nicotiana tabacum*; Sol=*Solanum pennellii*; Rha=*Rhazya stricta*; Ara= *Arabidopsis thaliana*; Sil=*Silene latifolia*; Gly=*Glycine max*; Med=*Medicago truncatula*; Sen=*Senna tora*; Lac=*Lactuca sativa*; Vit= *Vitis vinifera*; Ory=*Oryza sativa*; Tri=*Triticum aestivum*; Lir=*Liriodendron tulipifera*

| | | | | | | | | | | | | | | | | | | | | |
|-------------|---|----|---|---|---|---|---|---|---|---|------|---|---|---|------|------|------|---|---|---|
| trnS-GCU | ● | ●- | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ○ | ●(2) | ●(3) | ● | ○ | ○ | ● |
| trnS-GGA | ● | ● | ● | ● | ○ | ○ | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ○ |
| trnS-UGA | ○ | ○ | ○ | ● | ○ | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ● | ● | ○ | ○ | ● |
| trnT-CCA-CP | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ●(2) | ○ | ○ | ○ |
| trnT-GGU | ○ | ● | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ○ | ○ |
| trnT-GUA-CP | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| trnT-GUA | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| trnT-TGT | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| trnV-GAC-CP | ○ | ○ | ○ | ● | ○ | ○ | ○ | ○ | ○ | ○ | ● | ○ | ○ | ○ | ○ | ● | ○ | ○ | ○ | ○ |
| trnV-TAC | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● |
| trnW-CCA-CP | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● | ● |
| trnY-GUA | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●(2) | ● | ● | ● | ● | ● | ○ | ● | ● | ● |

Aeg=Aeginetia indica; Cas=Castilleja paramensis; Mim=Mimulus guttatus; Sal=Salvia miltiorrhiza; Rot=Rothea serrata; Aju= Ajuga reptans; Hes=Hesperelaea palmeri; Nic=Nicotiana tabacum; Sol=Solanum pennellii; Rha=Rhazya stricta; Ara= Arabidopsis thaliana; Sil=Silene latifolia; Gly=Glycine max; Med=Medicago truncatula; Sen=Senna tora; Lac=Lactuca sativa; Vit= Vitis vinifera; Ory=Oryza sativa; Tri=Triticum aestivum; Lir=Liriodendron tulipifera

Table S5. The intron contents of Angiosperm mitogenome including *Aeginetia indica*. ●:present ○: absent, x: gene loss

| | Aeg | Cas | Mim | Sal | Rot | Aju | Hes | Nic | Sol | Rha | Ara | Sil | Gly | Med | Sen | Lac | Vit | Ory | Tri | Lir |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| nad1-i394 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad1-i477 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad1-i669 | ● | ● | ● | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad1-i728 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad2-i156 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad2-i542 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad2-i709 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad2-i1282 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad4-i461 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad4-i976 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ● | ● | ● | ● | ● |
| nad4-i1399 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad5-i230 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad5-i1455 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad5-i1477 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad5-i1872 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad7-i140 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad7-i209 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad7-i676 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| nad7-i917 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ccmFc-i829 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| cox1-i729 | ● | ● | ○ | ● | ● | ● | ○ | ○ | ○ | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| cox2-i373 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● | ● |
| cox2-i691 | ● | ● | ● | ● | ○ | ○ | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | ● | ○ | ○ | ● |
| rpl2-i917 | ○ | X | X | ● | ○ | ○ | ○ | ● | ● | ● | ● | X | X | X | X | X | ● | ● | X | ● |
| rps3-i74 | ● | ● | ● | ● | ● | ○ | ● | ● | X | ● | ● | ○ | ● | ● | ● | ● | ● | ● | ● | ● |
| rps10-i235 | ○ | ● | ● | ● | ● | X | ● | ● | x | ● | X | X | ● | ● | ● | ● | ● | X | X | ● |

Aeg=*Aeginetia indica*; Cas=*Castilleja paramensis*; Mim=*Mimulus guttatus*; Sal=*Salvia miltiorrhiza*; Rot=*Rothea serrata*; Aju= *Ajuga reptans*; Hes=*Hesperelaea palmeri*; Nic=*Nicotiana tabacum*; Sol=*Solanum pennellii*; Rha=*Rhazya stricta*; Ara= *Arabidopsis thaliana*; Sil=*Silene latifolia*; Gly=*Glycine max*; Med=*Medicago truncatula*; Sen=*Senna tora*; Lac=*Lactuca sativa*; Vit= *Vitis vinifera*; Ory=*Oryza sativa*; Tri=*Triticum aestivum*; Lir=*Liriodendron tulipifera*

Table S6. Source for mitochondrial genomes included this study.

| Class | Order | Family | Species | Accession number |
|---------------|----------------|---------------|--------------------------------|------------------|
| Magnoliopsida | Magnoliales | Magnoliaceae | <i>Liriodendron tulipifera</i> | NC_021152 |
| Liliopsida | Poales | Poaceae | <i>Triticum aestivum</i> | NC_036024 |
| | | | <i>Oryza sativa</i> | NC_011033 |
| Rosids | Vitales | Vitaceae | <i>Vitis vinifera</i> | NC_012119 |
| | Fabiales | Fabaceae | <i>Senna tora</i> | NC_038053 |
| | | | <i>Medicago truncatula</i> | NC_029641 |
| | | | <i>Glycine max</i> | NC_020455 |
| Pentapetalae | Caryophyllales | Sileneae | <i>Silene latifolia</i> | NC_014487 |
| Rosids | Brassicales | Brassicaceae | <i>Arabidopsis thaliana</i> | NC_037304 |
| Asterids | Asterales | Asteraceae | <i>Lactuca sativa</i> | NC_042756 |
| | Gentianales | Apocynaceae | <i>Rhazya stricta</i> | NC_024293 |
| | Solanales | Solanaceae | <i>Nicotiana tabacum</i> | NC_006581 |
| | | | <i>Solanum pennellii</i> | NC_-35964 |
| | Lamiales | Oleaceae | <i>Hesperelaea paleri</i> | NC_031323 |
| | | Lamiaceae | <i>Salvia miltiorrhiza</i> | NC_023209 |
| | | | <i>Ajuga reptans</i> | NC_023103 |
| | | | <i>Rothea serrata</i> | NC_049064 |
| | | Phrymaceae | <i>Mimulus guttatus</i> | NC_018041 |
| | | Orobanchaceae | <i>Castilleja paramensis</i> | NC_031806 |
| | | | <i>Aeginetia indica</i> | MW851294 |

Table S7. Taxon accession numbers for phylogenetic analysis of IGT and HGT.

| Species | | Accession number | | | |
|----------------|--|------------------|-------------|-------------|-------------|
| | | <i>cemA</i> | <i>ndhB</i> | <i>atpH</i> | <i>atpI</i> |
| Amborellaceae | <i>Amborella trichopoda</i> | | KF754803 | | |
| | | o | o | o | o |
| Nymphaeaceae | <i>Nymphaea lotus</i> | | NC_041238 | | |
| | | o | o | o | o |
| Magnoliaceae | <i>Liriodendron chinense</i> | | NC_030504 | | |
| | | o | o | o | o |
| Araceae | <i>Spirodela polyrhiza</i> | | NC_015891 | | |
| | | o | o | o | o |
| Poaceae | <i>Elymandra subulata</i> | | MH181214 | | |
| | | o | o | o | o |
| Poaceae | <i>Miscanthus sinensis subsp. sinensis</i> | | LN869228 | | |
| | | o | o | o | o |
| Cephalotaceae | <i>Cephalotus follicularis</i> | | NC_042597 | | |
| | | o | x | o | o |
| Aquifoliaceae | <i>Ilex paraguariensis</i> | | NC_031207 | | |
| | | o | o | o | o |
| Aquifoliaceae | <i>Ilex latifolia</i> | | NC_047291 | | |
| | | o | o | o | o |
| Caprifoliaceae | <i>Heptacodium miconioides</i> | | NC_042739 | | |
| | | o | o | o | o |
| Caprifoliaceae | <i>Zabelia biflora</i> | | NC_045063 | | |
| | | o | o | o | o |
| Caprifoliaceae | <i>Zabelia triflora</i> | | NC_045053 | | |
| | | o | o | o | o |
| Oleaceae | <i>Fraxinus latifolia</i> | | NC_042450 | | |
| | | o | o | o | o |
| Plantaginaceae | <i>Triaenophora shennongjiaensis</i> | | NC_039781 | | |
| | | o | o | o | o |
| Orobanchaceae | <i>Rehmannia solanifolia</i> | | NC_034310 | | |
| | | o | o | o | o |
| Orobanchaceae | <i>Rehmannia glutinosa</i> | | NC_034308 | | |
| | | o | o | o | o |
| Orobanchaceae | <i>Rehmannia chingii</i> | | NC_033534 | | |
| | | o | o | o | o |
| Orobanchaceae | <i>Rehmannia henryi</i> | | NC_034309 | | |
| | | o | o | o | o |
| Orobanchaceae | <i>Rehmannia elata</i> | | NC_034312 | | |
| | | o | o | o | o |
| Orobanchaceae | <i>Rehmannia piasezkii</i> | | NC_034311 | | |
| | | o | o | o | o |
| Orobanchaceae | <i>Siphonostegia chinensis</i> | | NC_046038 | | |
| | | o | o | o | o |
| Orobanchaceae | <i>Schwalbea americana</i> | | NC_023115 | | |
| | | o | o | o | o |
| Orobanchaceae | <i>Brandisia swinglei</i> | | NC_042954 | | |
| | | o | o | o | o |
| Orobanchaceae | <i>Lathraea squamaria</i> | | NC_027838 | | |
| | | x | x | o | o |
| Orobanchaceae | <i>Euphrasia regelii</i> | | NC_045041 | | |
| | | x | x | o | o |
| Orobanchaceae | <i>Melampyrum roseum</i> | | MN075942 | | |
| | | o | o | o | o |
| Orobanchaceae | <i>Lindenbergia philippensis</i> | | NC_022859 | | |
| | | o | o | o | o |

| | | | | | |
|---------------|-------------------------------|-----------|---|---|---|
| Orobanchaceae | <i>Orobanche californica</i> | NC_025651 | | | |
| | | x | x | x | o |
| Orobanchaceae | <i>Phelipanche purpurea</i> | NC_023132 | | | |
| | | x | x | o | o |
| Orobanchaceae | <i>Phelipanche aegyptiaca</i> | KU21370 | | | |
| | | x | x | o | o |
| Orobanchaceae | <i>Phelipanche ramosa</i> | NC_023465 | | | |
| | | x | x | o | o |

The present of the each gene in each plastid genome is indicated with an “o”

The absence of the each gene in each plastid genome is indicated with an “x”

Table S8. Candidate CMS genes in *A. indica* mitochondrial genome.

| | ORF start | ORF end | ORF length | Identity | ORF hit start | ORF hit end | Chimera length | Gene hit start | Gene hit end | E-value | Gene | No of Transmembra ne helices / probabilities |
|--------|--------------|------------|---------------|----------|---------------------|-------------------|-------------------|-------------------|-----------------|-----------|--------------|---|
| ORF525 | 358,448 | 358,266 | 183 | 96.774 | 151 | 181 | 31 | 1,554 | 1,584 | 1.08e-08 | <i>rps3</i> | 0/0.67375 |
| ORF709 | 204,364 | 204,095 | 270 | 95.349 | 133 | 175 | 43 | 868 | 910 | 4.52e-14 | <i>atp6</i> | 2/0.41976 |
| ORF103 | 289,222 | 289,401 | 180 | 95 | 126 | 87 | 40 | 538 | 577 | 3.81e-12 | <i>ccmFn</i> | 0/0.39590 |
| ORF403 | 347,931 | 347,707 | 225 | 96.667 | 111 | 82 | 30 | 548 | 577 | 4.30e-08 | <i>ccmFn</i> | 0/0.34781 |
| ORF99 | 282,157 | 282,414 | 258 | 92.308 | 48 | 10 | 39 | 588 | 626 | 7.22e-10 | <i>cox1</i> | 0/0.22222 |
| ORF724 | 137,638 | 137,480 | 159 | 94.286 | 106 | 72 | 35 | 151 | 185 | 2.74e-09 | <i>cox1</i> | 0/0.47309 |
| ORF43 | 338,288 | 339,217 | 930 | 100 | 1 | 298 | 298 | 1 | 298 | 2.71e-165 | <i>cox2</i> | 2/0.00547 |

