**Table S1. Plastomes included in phylogenetic analyses with GenBank accession.**

|  |  |  |  |
| --- | --- | --- | --- |
| Taxon | Family | Order | GenBank Accession |
| *Hansenia forrestii* | Apiaceae | Apiales | KX808494 |
| *Aralia undulata* | Araliaceae | Apiales | KC456163 |
| *Ilex suaveolens* | Aquifoliaceae | Aquifoliales | MN830249 |
| *Helwingia himalaica* | Helwingiaceae | Aquifoliales | KX434807 |
| *Atractylodes lancea* | Asteraceae | Asterales | MG874804 |
| *Cirsium arvense* | Asteraceae | Asterales | KY562583 |
| *Tiquilia plicata* | Ehretiaceae | Boraginales | MG573056 |
| *Dipsacus asper* | Caprifoliaceae | Dipsacales | MH074864 |
| *Eucommia ulmoides* | Eucommiaceae | Garryales | KU204775 |
| *Carissa macrocarpa* | Apocynaceae | Gentianales | KX364402 |
| *Catharanthus roseus* | Apocynaceae | Gentianales | KC561139 |
| *Echites umbellatus* | Apocynaceae | Gentianales | KJ953904 |
| *Nerium oleander* | Apocynaceae | Gentianales | KJ953907 |
| *Plumeria rubra* | Apocynaceae | Gentianales | MN812495 |
| *Antirhea chinensis* | Rubiaceae | Gentianales | MK102723 |
| *Emmenopterys henryi* | Rubiaceae | Gentianales | KY273445 |
| *Galium mollugo* | Rubiaceae | Gentianales | KY562588 |
| *Mitragyna speciosa* | Rubiaceae | Gentianales | KY085908 |
| *Mussaenda hirsutula* | Rubiaceae | Gentianales | MK203878 |
| *Neolamarckia cadamba* | Rubiaceae | Gentianales | MG572117 |
| *Iodes cirrhosa* | Icacinaceae | Icacinales | MF574684 |
| *Andrographis paniculata* | Acanthaceae | Lamiales | KF150644 |
| *Justicia flava* | Acanthaceae | Lamiales | MK548577 |
| *Amphilophium steyermarkii* | Bignoniaceae | Lamiales | MK163626 |
| *Dolichandra cynanchoides* | Bignoniaceae | Lamiales | MG831874 |
| *Tecomaria capensis* | Bignoniaceae | Lamiales | MG831880 |
| *Lysionotus pauciflorus* | Gesneriaceae | Lamiales | KX752081 |
| *Streptocarpus teitensis* | Gesneriaceae | Lamiales | MF596485 |
| *Lavandula angustifolia* | Lamiaceae | Lamiales | KT948988 |
| *Perilla setoyensis* | Lamiaceae | Lamiales | KT220692 |
| *Premna microphylla* | Lamiaceae | Lamiales | KM981744 |
| *Tectona grandis* | Lamiaceae | Lamiales | HF567869 |
| *Nestegis sandwicensis* | Oleaceae | Lamiales | NC\_042457 |
| *Olea lancea* | Oleaceae | Lamiales | MH817878 |
| *Priogymnanthus hasslerianus* | Oleaceae | Lamiales | MH817879 |
| *Syringa yunnanensis* | Oleaceae | Lamiales | MH817943 |
| *Brandisia swinglei* | Orobanchaceae | Lamiales | MK381315 |
| *Paulownia kawakamii* | Paulowniaceae | Lamiales | MK875777 |
| *Erythranthe lutea* | Phrymaceae | Lamiales | KU705476 |
| *Hemiphragma heterophyllum* | Plantaginaceae | Lamiales | MN383192 |
| *Plantago ovata* | Plantaginaceae | Lamiales | MH205737 |
| *Veronica persica* | Plantaginaceae | Lamiales | KT724052 |
| *Veronicastrum sibiricum* | Plantaginaceae | Lamiales | KT724053 |
| *Buddleja sessilifolia* | Scrophulariaceae | Lamiales | MH411151 |
| *Scrophularia henryi* | Scrophulariaceae | Lamiales | MF861203 |
| *Aloysia citrodora* | Verbenaceae | Lamiales | KY085903 |
| *Lippia origanoides* | Verbenaceae | Lamiales | MK248831 |
| *Wightia speciosissima* | Wightiaceae | Lamiales | MK381318 |
| *Pittosporopsis kerrii* | Metteniusaceae | Metteniusales | MK488090 |
| *Ipomoea purpurea* | Convolvulaceae | Solanales | EU118126 |
| *Acnistus arborescens* | Solanaceae | Solanales | KU568472 |
| *Atropa belladonna* | Solanaceae | Solanales | NC\_004561 |
| *Atropanthe sinensis* | Solanaceae | Solanales | MK411818 |
| *Datura stramonium* | Solanaceae | Solanales | NC\_018117 |
| *Dunalia solanacea* | Solanaceae | Solanales | KP998157 |
| *Hyoscyamus niger* | Solanaceae | Solanales | KF248009 |
| *Lycium chinense* | Solanaceae | Solanales | MK040922 |
| *Nicandra physalodes* | Solanaceae | Solanales | MN165114 |
| *Physalis peruviana* | Solanaceae | Solanales | KP295964 |
| *Physochlaina orientalis* | Solanaceae | Solanales | MK492324 |
| *Saracha punctata* | Solanaceae | Solanales | KP280050 |
| *Scopolia parviflora* | Solanaceae | Solanales | KU900232 |
| *Solanum macrocarpon* | Solanaceae | Solanales | MN218081 |
| *Vassobia dichotoma* | Solanaceae | Solanales | KP294521 |
| *Stewartia obovata* (Outgroup) | Theaceae | Ericales | MH782187 |