



Evolutionary relationships and plastome structure in slipperflowers (*Calceolaria*)



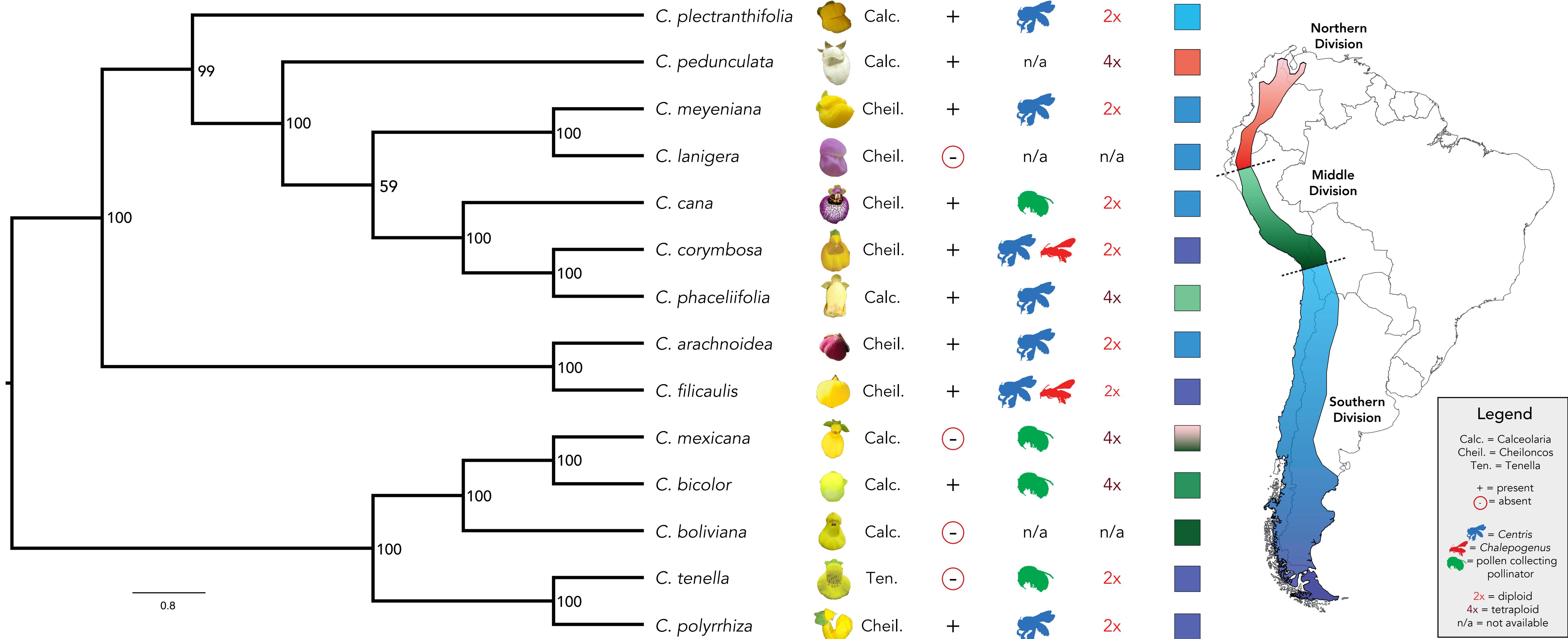
Background

- *Calceolaria* (Calceolariaceae) is a Neotropical plant genus of ~310 species
 - Notable for their **oil-rewarding**, nectar-less pollination
 - Prior studies with three chloroplast genes recover **few bifurcating relationships**¹
 - Previous understanding of biogeographical dispersal:
northward expansion from southern Andes origin²

Questions:

- Can we resolve the ***Calceolaria*** phylogeny with increased plastome sampling?
 - Will relationships support prior understandings of taxonomy, biogeography, and trait evolution?
 - Can we describe ***Calceolaria*** plastome structure?

Results: phylogeny + traits



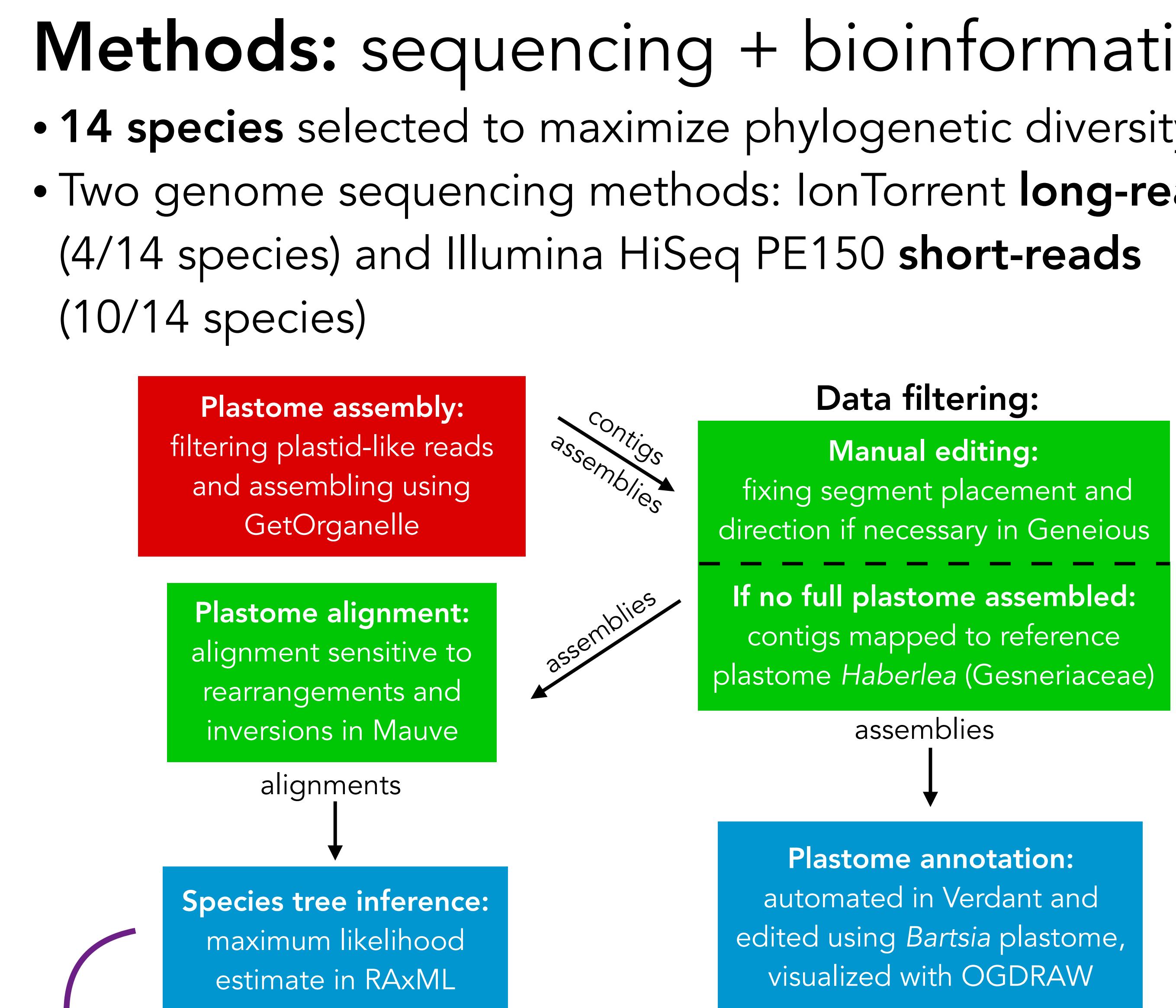
References

- [1] Stephan Nylinder, personal communication.
 - [2] Cosacov, A., et al. (2009). *Am. J. Bot.*, 96(12), 2240-2255.
 - [3] Uribe-Convers, et al. (2014). *App. plant sci.*, 2(1), 1300063

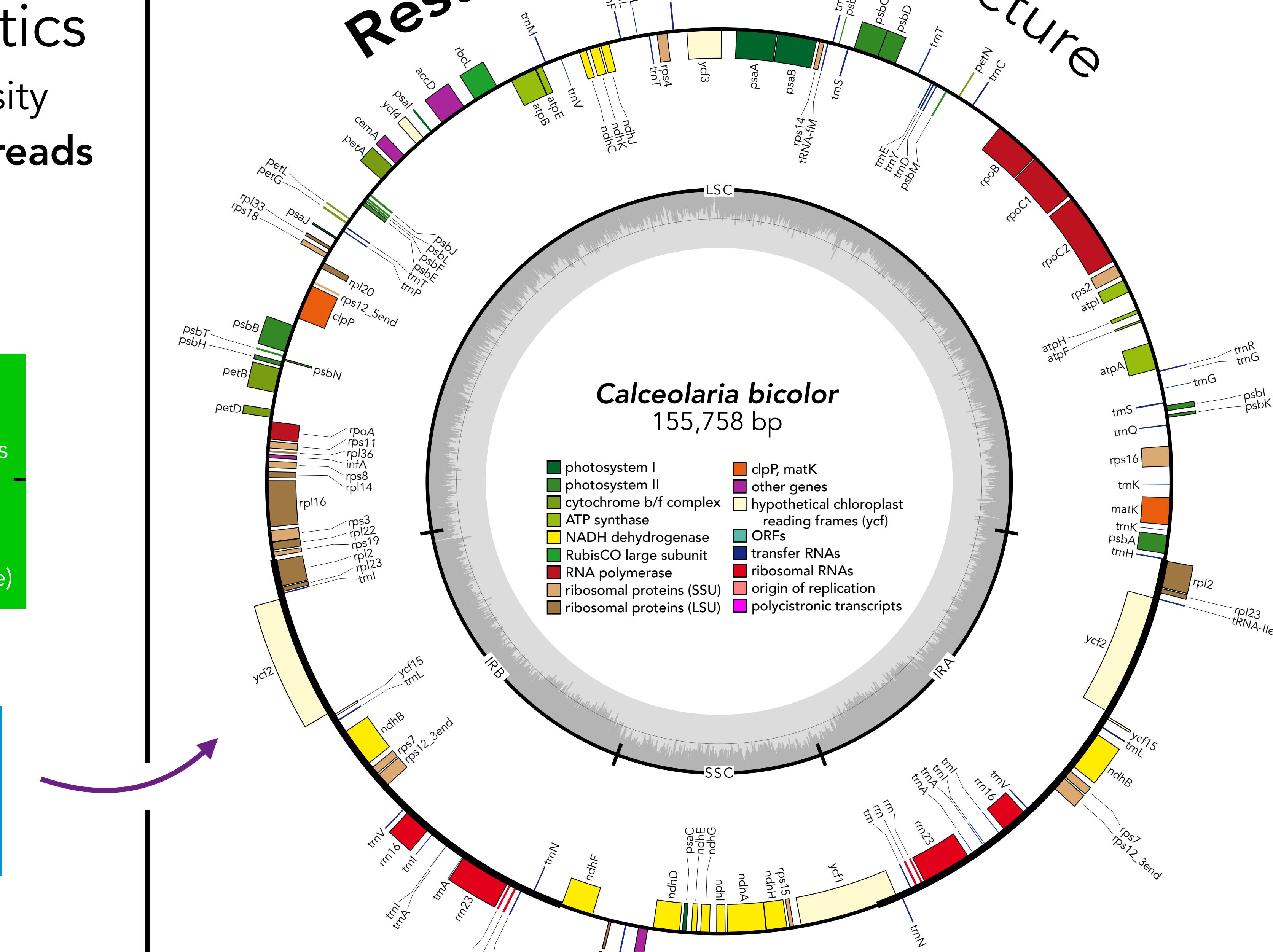
Acknowledgments

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Results: plastome structure



Discussion

- Phylogeny is **resolved with overall high support**
 - Taxonomic sections are **not monophyletic**
 - Elaiophore has **evolved independently** several times
 - Disputing previous biogeographical understandings: **no single southern clade**
 - Instead, in both major clades are species from all three geographic divisions
 - Further sampling required to model biogeography
 - Typical quadripartite plastome structure with **83 unique protein-coding genes**
 - Future work: incorporating nuclear markers, developing sequence capture probes for genus-wide work

The *Calceolaria* backbone can be resolved with strong support! Previous understandings of biogeographical dispersal are not supported.