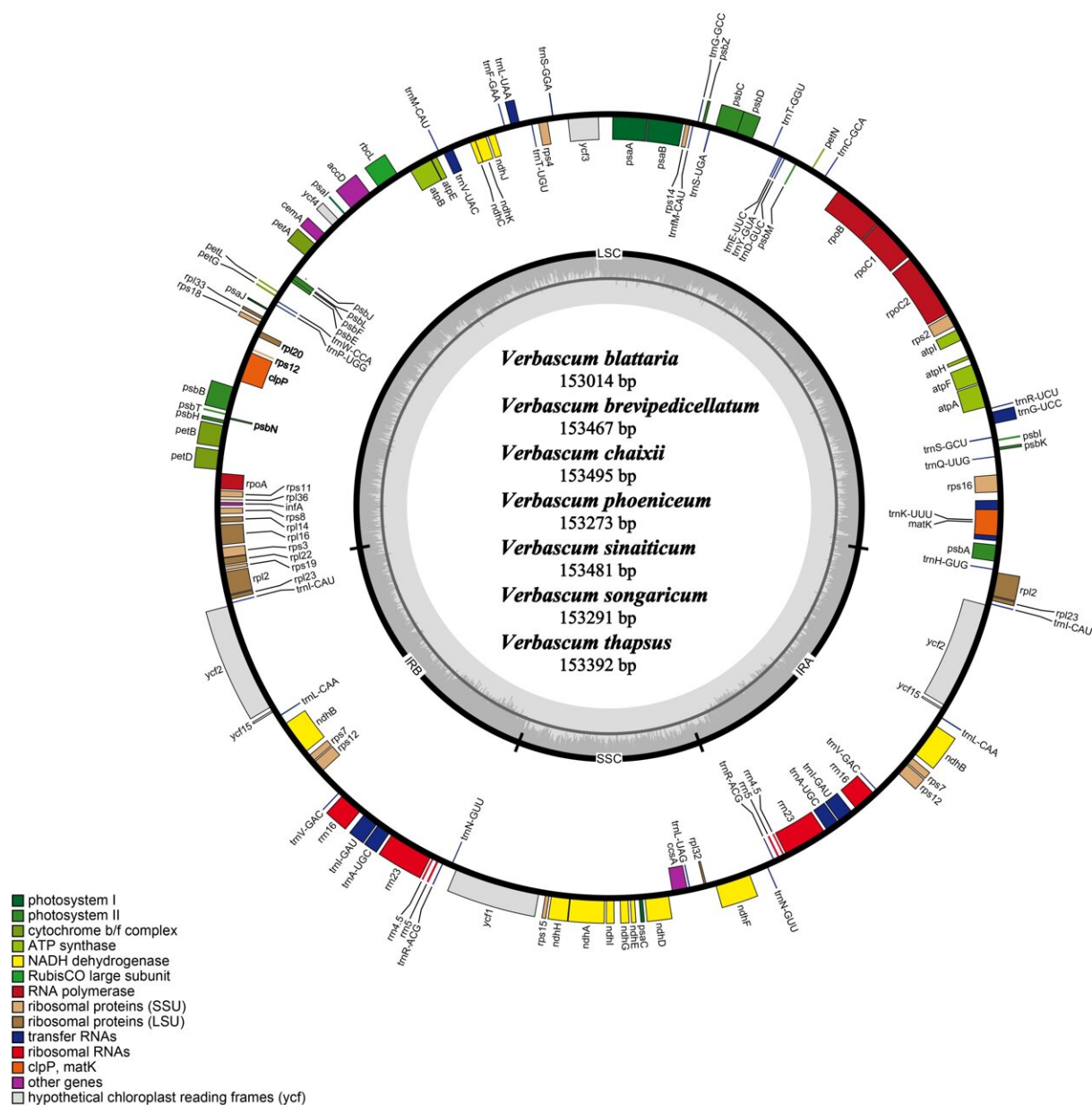


# Research untangles evolutionary history of Mullein plant species from China and Kenya

October 20 2022, by Zhang Nannan



The complete chloroplast plastomes circular map of the *Verbascum*. Credit: WBG

The genus *Verbascum* (Scrophulariaceae, Lamiales), often referred to as Mullein, comprises about 360 species widely distributed in temperate regions in Europe, Africa, and Asia. The generic circumscriptions and location of the genus *Verbascum* is a challenge that has been the focus of debate among researchers. The genus *Verbascum* is still poorly understood and new species are described regularly. The taxonomy of *Verbascum* has been a source of contention, and it varies depending on the treatment.

To understand the evolutionary relations of *Verbascum* species and other species in order Lamiales. Researchers from the Wuhan Botanical Garden of the Chinese Academy of Sciences (CAS) analyzed the complete chloroplast (cp) genomes of the eight samples of *Verbascum*.

The complete plastomes of the seven species were typical circular double-stranded structures and ranged from 153,014 bp in *V. blattaria* to 153,291 bp in *V. chaixii*. All plastomes encoded 114 unique genes, comprising 80 protein-coding genes, 30 tRNA genes (Transfer RNAs genes), and four rRNA genes (Ribosomal RNA [genes](#)).

Although the plastid genome structure of *Verbascum* is generally conserved and stable, a total of 348 simple sequence repeat loci were still detected in seven species, and these regions were expected to be developed as important molecular markers for Lamiales. Based on the phylogenetic results, the species status of *V. brevipedicellatum* (Engl.) Hub.-Mor was reinstated.

In addition, the researchers suggested the reinstatement of the families Phrymaceae and Mazaceae because they formed separate clades with high bootstrap support values. Notably, their divergence period was also different. Mazaceae diverged early compared to Phrymaceae [species](#).

This study elucidates the relationship of various families as well as the divergence time estimate in order Lamiales.

The study, titled "Taxonomy, Comparative Genomics of Mullein (Verbascum, Scrophulariaceae), with implications for the evolution of Verbascum and Lamiales," was published in *BMC Genomics*.

**More information:** Xiang Dong et al, Taxonomy, comparative genomics of Mullein (Verbascum, Scrophulariaceae), with implications for the evolution of Verbascum and Lamiales, *BMC Genomics* (2022).

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