

# New insight on the formation of East Asian flora

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Wu & Wu (1996) first proposed the former Eastern Asiatic region to be an independent Floristic kingdom. However, there are still some questions that need to be discussed. As many living fossil plants (Cenozoic plant relicts) are only found in East Asia today, many researchers have suggested that the East Asiatic Floristic is an ancient flora and the cradle of North American, European floras, and even the modern Paleo-tropical flora.

In addition, East Asia has also been considered to be the diversification or origin center of angiosperms. Additionally, most paleoendemic taxa of the East Asiatic Floristic are found among the Sino-Japanese [flora](#) and neoendemic taxa were concentrated in the Sino-Himalayan flora. Previous studies suggested that the Sino-Japanese flora is older than the Sino-Himalayan flora. Are these hypotheses true or not? These questions were previously challenging due to the limitations of research methods and materials.

On the basis of previous studies, Prof. Sun Hang's Group from Kunming Institute of Botany, Chinese Academy of Sciences (KIB/CAS), proposes the term Metasequoia Flora to represent the core area of the Sino-Japanese Flora, since the [living fossil](#) plant *Metasequoia glyptostroboides* is one representative of the relicts that are found in this area. Similarly, They propose the term Rhododendron Flora to better represent the core region of the Sino-Himalayan flora, as *Rhododendron* is the largest genus and forms a diversity center in this region. It is also a representative plant of the flora in this area.

On this basis, the group first analyzed published molecular phylogenetic data as well as fossil information on the seed [plants](#), and tried to trace the temporal and spatial evolution of East Asian flora by integrating these datasets with paleo environmental studies that are related to this area. The results suggest that the East Asiatic might be relatively young, with most of its clades originating in the Miocene, and should be the refugia for ancient relict plants rather than the birthplace. The Rhododendron Flora and the Metasequoia Flora are probably of a similar age.

The formation and development of the Asian monsoon might have been the main factors that drive the evolution of East Asian flora. The unequal distribution of species diversity in Rhododendron and Metasequoia flora may be due to the diverse and heterogeneous topography and climate of this region caused by the uplift of Qinghai-Tibetan Plateau. Meanwhile, this phenomenon may be also correlated with the direction of mountains ranges in these regions. The East Asian flora appears to have multiple biogeographical origins, being closely affiliations not only with other floras in the Northern Hemisphere, but also with Gondwanan floras.

**More information:** Yong-Sheng Chen et al, Is the East Asian flora ancient or not?, *National Science Review* (2017). [DOI: 10.1093/nsr/nwx156](#)

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