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No. 56 ***Atraphaxis* and *Lagochilus* reveal the significance of Tianshan Mountains to Central Asian flora and vegetation evolution**

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Tianshan Mountains plays a significant role in Central Asian flora and vegetation. Two genera *Atraphaxis* (Polygonaceae) and *Lagochilus* (Lamiaceae), as selected and analytic cases, being with distribution center of Central Asia respectively, and have of prominent elements in montane steppe and desert. Two genera are dealt with well by molecular phylogeny and biogeography by employing reconstruction of phylogenetic tree, divergence time estimate, ancestral area/biome reconstruction. Results shown that the phylogenetic tree improved or defensed the morphological classification within genus, ancestral areas of two genera were estimated to be Tianshan Mountains, other distributions in steppes and deserts were hypothesized to be dispersals or migration, the microevolution appeared montane vertical distribution, middle steppe and low desert in Tianshan Mountains, the explicit origin times were inferred as from late Oligocene to early Miocene. We may explain that the Tethys retreat, Qinghai-Tibetan Plateau (QTP) uplift and Asian Interior aridification, could be acted as the evolutionary dynamic of two genera.

No. 64 **Biodiversity and geodiversity interaction on volcanics in Kula European and UNESCO Geopark**

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The research area, Kula European and UNESCO Geopark covers roughly 300 km^2 area and ?situated on the vegetation and climatic transition zone between Central Anatolia and the Mediterranean regions of Turkey where the annual mean precipitation is 580 mm and annual temperature is around 14 °C.

The Kula Geopark was subjected to intense Quaternary basaltic volcanism. Successive lava flow plains covered large areas during three main eruptive phases dated to 1.1 Mya, 500ka and 5ka. The vegetation on these sterilised volcanic lava plains are natural laboratories to model plant succession and understand the emergence and development of life on Earth. All three basaltic lava flow plains share identical geochemical composition, however topographic and morphological variations accompanied by geological age difference and microclimatic conditions as far as anthropogenic agents resulted in four distinctive vegetation type hosting refugees and key species.

The lichen-moss vegetation is dominant on the youngest basaltic lava flow plains. But absent on the cinder cones due to the unstable morphology of loosely adhered scoria. In contrast with the lichen-moss covered lava surface; deep crevices within lava forms refugees for moist and shade loving species like *Arum* and *Ferns*. Grass is the dominant vegetation type on the young scoria and cinder cones. Due to highly permeable structure and lack of soil, cinder cones are not suitable both for lichen- moss and for tree-shrub vegetation. Mediterranean shrubs can be seen on all kinds of volcanics, however their density and alliance differs. Shrubs are dominant on the 1myo and 500ka years old volcanics due to anthropogenic deforestation. Sparse shrub and grass vegetation are the frontiers of plant succession on young volcanics.

The history of human occupation in Kula area dates back as old as the history of the human itself in Anatolia where 15.000 years prehistoric human footprint fossils preserved in volcanic ash. Due to its geographical advantage, the research area was subjected continuous rise and fall of civilisations including Lydian Empire, Phrygians, Hellenistic Period; Roman, Seluklu and Ottoman Empire. As a result, the vegetation in the research area must have been suffered from intense and continuous anthropogenic pressure to fuel up the civilisations. Consequently forest vegetation remained only as patches. This study is based on the comparison of the vegetation composition variation on successive volcanic lava flows of the Kula Geopark to put forward the biodiversity and geodiversity interaction.