



Primate evolution and faunal dynamics in the Pannonian Basin during the middle and late Miocene

M.C. Nargolwalla, D.R. Begun and M.P. Hutchison

Department of Anthropology, University of Toronto (mariam.n@utoronto.ca)

The Pannonian Basin, surrounded by the Carpathians, Alps and Dinarids, has long been recognized as a sedimentary catchment area, rich in information on the climatic and biotic evolution of Central Europe in the middle and late Miocene. The Pannonian Basin is conducive to paleoanthropological field studies due to the diversity of fossil primates found at localities situated on the peripheries of the basin system. Fossil primates identified from the region include *Griphopithecus*, *Pliopithecus*, *Dryopithecus fontani*, *Epipliopithecus* (MN6-8), *Dryopithecus brancoi*, *Anapithecus* (MN9), *Mesopithecus* (MN11) and *Dolichopithecus* (MN13?).

Our recent surveys along the margins of the Pannonian Basin have identified ~60 vertebrate localities in Hungary, Romania and Croatia. Together with previously known localities, we discuss the biotic and abiotic evolution of the Pannonian Basin during the middle and late Miocene, with specific emphasis on primate evolution in this region. Using *ArcGIS* 9.1, we examine temporal successions of locality distribution and faunal dynamics within the Pannonian Basin, considering also the changing ecology and geology of the area over time.

The results of our study indicate shifting patterns in the geographical distribution and ecology of our sample of vertebrate localities. The vertebrate taxa clearly document faunal turnover at ~9.5Ma (the “mid-Vallesian crisis”), with the extinction of forest dwelling taxa, including pliopithecoids and the hominoid, *Dryopithecus*, and the subsequent diversification of more open country taxa, including the cercopithecoids, *Mesopithecus* and *Dolichopithecus*. However, there is also evidence for multiple dispersal events of vertebrate taxa from the Pannonian Basin, both within Eurasia and between Eurasia and Africa during the late Miocene. These dispersal events are thought to be related predominantly to changes in climate during the middle and late Miocene.

Also during this time period, continuing orogenic uplift in the basin margins, together with global sea level variation, may have significantly contributed to the isolation of many of the sub-basins of the Pannonian Basin system. This eventually led to the evolution of a freshwater late Miocene lacustrine environment (Lake Pannon), replacing the fully marine epicontinental precursor of the Paratethys seaway in Central Europe.

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