Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

BPT026-P01 Room:Convention Hall Time:May 24 10:30-13:00

Development of ”Pikermian mammalian fauna” in the late Miocene of western area of Eurasia

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Mammalian taxa adapted to arid environments characterize the mammalian fauna of Late Miocene in Eurasia. Those taxa are typical distributed in western part of the Eurasia (from Central Europe to Greco-Iranian regions). We present our research results on detailed study on hipparionine horses discovered from the localities in northern shore of the Black Sea, Transcaucasia and Central Asia that had been less studied and poorly compared with other area’s fauna. The results revealed that the hipparionines and other associated mammalian taxa are closely related to those from Greco-Iranian area. The hipparionines widely distributed through wide area of Eurasia make possible chronological correlation among the localities in this wide continent. The similar environments were distributed in those areas. The hipparionines of Central Asia are also similar to those from Northern China. These distribution patterns reflect the mammalian dispersal and biogeographic provincialism in late Miocene period of Eurasia.

Keywords: Miocene, Mammal, Equidae, Cllimate change, Hipparion

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Chinese Pikermian fauna: its similarity with those of other areas and uniqueness in Late Miocene Eurasia

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Recent paleontological and geological studies on Pikermian fauna (Hipparion fauna) have been widely and deeply developed in China, based on its chronological frameworks. We carried out phylogenetic analysis on Chinese hipparions including forms from other Eurasian regions. The result shows some groups of Northern Chinese hipparionines are taxonomically close to the form western and central areas of Eurasia in the same period. This suggests that the arid environments are widely spread in Eurasia at that time. On the other hand, some hipparionine taxa from Northern China are clearly distinct from taxa of western Eurasia, as endemic groups. This endemic forms are possibly more closely related to the North American hipparionines. However, the geological age difference among those localities with endemic and common (widely-distributed) hipparionines. The arid environments created Pikermian fauna occurred in western part of Eurasia in the late Miocene period, and expanded its distribution to eastern Eurasia. Its development in the eastern area is limited.

Keywords: Miocene, Mammals, China, Hipparion, Paleoenvironments

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Three dimensional morphological analysis for the Late Miocene Hipparion (Equidae) cheek teeth from Maragheh, Iran

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Mesowear analysis is one of the most popular methods for recontruction of fossil mammalian paleo-diet. We analyzed mesowear of the Late Miocene Hipparion (Equidae, Perissodactyla) from Maragheh, Iran by three dimensional morphological analysis.

Keywords: 3D morphological analysis, Mesowear, Hipparion, Miocene, Iran, Paleoenvironment

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Mesowear analysis and ecology of Japanese Sika deer (Cervus nippon)

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Mesowear analysis is one of the most popular methods for recontruction of fossil mammalian paleo-diet. We analyzed mesowear of the extant sika deer (Cervus nippon) from four populations in Japan. Four populations of sika deer were divided into two dietary types. This result of mesowear analysis for sika deer corresponded with their known diet.

Keywords: Mesowear, Diet, Ecology, Cervus nippon, Paleoenvironment

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Allometry and interspecific differences in facial cranium of Asian macaque monkeys

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Macaque fossils often show mosaic combinations of cranial features distinct to living species, confusing our efforts to reconstruct the evolutionary history of macaques. We employed the geometric morphometrics to explore the allometric trajectories of craniofacial shape in *M. fascicularis* and *M. fuscata*. The two species exhibit a single shared allometric trajectory in supero-inferior deflection of anterior face, suggesting that the differences in this feature are explained just by size variation. By contrast, the two parallel trajectories are demonstrated in craniofacial protrusion, meaning that *M. fuscata* has antero-posterior shorter face than *M. fascicularis* even if hypothetically they are comparable in size. Thus, the degree of the facial protrusion relatively to size is probably one of the critical features for phyletic evaluation of a given fossil specimen to living taxa, within the *fascicularis* group. Such approaches in varied macaques will contribute to solving controversies about phyletic interpretations of fossil macaques.

Keywords: *Macaca fascicularis*, *M. fuscata*, geometric morphometrics, allometric trajectory, crania

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Paleoecological reconstraction for Miocene Allodesmus (pinnipeds, Carnivora) from Hokkaido

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Sex determination of fossil carnivores is required by canine or penis bone. We analyzed almost complete skeleton of Allodesmus (pinnipeds, Carnivora) from the Miocene Atsunai Group, Urahoro, Hokkaido. We determined this fossil material to male by osteological study of extant pinnipeds materials.

Keywords: Miocene, Hokkaido, Allodesmus, pinnipeds, Paleoenvironment