

SIZE VARIATIONS OF THE MOLARS OF THE QUATERNARY JAPANESE MACAQUE

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Japanese macaques (*Macaca fuscata*) are distributed in major islands of Japan except Hokkaido, and also in a southern island, Yakushima. The morphological variations of *M. fuscata* have been reported relating with a geographical cline such as latitude and temperature, and observed in geographically isolated areas as well. Recent molecular studies revealed that *M. fuscata* can be divided into two lineages, “eastern” and “western” groups, with the boundary around 134°E in western Honshu. In this study, we aim to reveal geographical and chronological variations of the Quaternary *M. fuscata*, based on the measurements of molars. We compared fossil specimens collected from seven late Pleistocene and seven early Holocene localities in Japan with modern specimens. The results indicate that the mean values of the molar size of the “western” group are significantly smaller than those of the “eastern” one among the early Holocene and modern specimens, although the size variations don't correlate with the geographical cline. On the other hand, the molar sizes, especially buccolingual width, of both “eastern” and “western” late Pleistocene specimens are as large as the modern “eastern” group and/or significantly larger than the “western” Holocene group ($P < 0.05$). These results suggest that the rapid reduction of molar size in Japanese macaques may have occurred around the latest Pleistocene/early Holocene in western Japan. We infer that the appearance of the molar size differentiation between “eastern” and “western” Japan groups may be consistent with the phylogeographical pattern suggested by the mitochondrial DNA analysis.

Keywords: Japanese macaque (*Macaca fuscata*), fossil, Quaternary, dental size