

Comparison of landmarks among *Papio* skulls, with extension of Procrustes methods to ridge curves. L.F. MARCUS^{1,2,4,6}, S.R. FROST^{2,6}, F. BOOKSTEIN³, D. REDDY⁴, E. DELSON^{2,4,6}. ¹Queens College, ²City University of New York Graduate School, ³Institute of Gerontology, University of Michigan, ⁴American Museum of Natural History, ⁵Lehman College, ⁶New York Consortium in Evolutionary Primatology (NYCEP).

Forty five three dimensional (3D) craniometric landmarks, as well as 15 facial ridge curves have been recorded on 44 *Papio hamadryas anubis* and 27 *P. h. ursinus* skulls using a Microscribe 3D digitizer. Both males and females are represented for each sub-species. Equidistant points were sampled along the ridge curves and examined using a new hybrid technique combining Procrustes and thin-plate spline analyses. The landmarks were aligned in Kendall's tangent space using Rohlf's tpsSmall program. Centroid size was computed in SAS. The sexes and sub-species differ in centroid size. There is no significant interaction between sex and sub-species. For the landmark data there are significant differences in shape between sexes and sub-species. There is a small amount of interaction in shape. Shape differences are visualized using the principal components option in the GRF-ND software of Slice. Two dimensional projections of the data allow better description of shape differences and allometric relationships to centroid size using the tps series of programs. Bookstein's new method of thin plate spline relaxation and Procrustes analysis of ridge curves allows comparison of features using powerful multivariate tools for inferring sex and sub-species differences. Discriminant analysis using ridge features of extant papionins permits tentative identification of fossil facial fragments. Supported by NSF DIR 91-13609 (NYCEP) and grants from the PSC-CUNY Faculty Research Award Program

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