

Quantification of facial variation in the Papionini (Cercopitheciinae, Cercopitheciidae). S.R. FROST<sup>1,2</sup>, L.F. MARCUS<sup>2,4,5</sup>, E. DELSON<sup>1,2,3</sup>, D. REDDY<sup>6</sup>. <sup>1</sup>Lehman College, <sup>2</sup>City University of New York Graduate School, <sup>3</sup>New York Consortium in Evolutionary Primatology (NYCEP), <sup>4</sup>Queens College, <sup>5</sup>American Museum of Natural History, <sup>6</sup>Radio-Logic, Inc.

We have derived a method for quantifying some aspects of facial skeletal morphology in the papionins. The method involves recording 45 craniometric landmarks, as well as 15 ridge or space curves describing particular contours and proportions of the face, in the form of three-dimensional coordinate data. The purpose of this method is to quantify variation in facial morphology, both within and among species, in an attempt to allocate significant differences to sex, sub-species, larger taxa and compare fossil specimens.

Coordinates were recorded in Excel using a Microscribe-3DX 3-dimensional digitizer. This device has a precision of approximately 0.24 mm, including human error, in landmark location. Data from individual specimens are fitted to one another and aligned to a common coordinate system using Generalized Rotational Fitting of N-Dimensional Data (GRF-ND) written by Dennis Slice and software written for a UNIX work station. Landmarks are compared using squared distances from a consensus specimen. Curves are compared using a specific number of evenly spaced points along the lines.

A sample of specimens from extant papionin species have been digitized at the American Museum of Natural History, as well as a sample of extant and extinct papionins at the National Museum of Ethiopia. The method is capable of distinguishing sexes, subspecies, and higher taxa; and

depicting the differences in graphical displays of the skulls, as summarized by the landmarks.

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