

Sectional survey series: A new maxillary and mandibular radiographic technique.

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A review of the literature shows that forensic and paleoanthropologists routinely study extraoral radiographs of the hominid skull. Traditional radiographic cassette films produce images that display anatomic distortion and superimposition of structures, thus limiting anatomic and pathologic analyses. When asked to produce a radiographic record of the crania from the Tenth Street First African Baptist Church Cemetery (Philadelphia, PA), the project first relied upon the usual full plate frontal, lateral, and lateral-oblique views. To supplement these views, this researcher devised a procedure utilizing dental intraoral radiographic films and techniques to record a mosaic image of the maxilla and mandible, thereby minimizing anatomic superimposition and distortion. This method maximizes the potential for accurate measurement of calcified structures, greatly expanding diagnostic potential. This approach also has application to studies of fossil hominids and paleopathology.

Does topography affect the foraging effort of mountain gorillas in Bwindi Impenetrable National Park, Uganda?

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Gorillas in Bwindi Impenetrable National Park, Uganda, live at high altitudes (1400-2300 m) with a terrain composed of multiple peaks and valleys. This study examined the extent to which slope affects the daily foraging effort of a habituated gorilla group. With a hand clicker, paces were counted following the gorillas' complete path length from morning to evening noting trail incline. Inclines ranged from minus three (steepest slope down) to plus three (steepest slope up) with zero representing flat land. The mean daily path length of the Nkuringo group was 710 m (n = 118, range = 38 - 2398 m, SD = 395). Although we expected an inverse relationship between the proportion of trail spent climbing and daily path length, no such relationship was evident ($r^2 = 0.01$, $p = 0.35$). In addition, no relationship existed between the proportion of trail descending

and path length ($r^2 = 0.01$, $p = 0.68$). To examine this further, the mean proportion of trail climbing and descending were compared for extremely short (< 200 m, n = 8) and long (> 1200 m, n = 12) path lengths. Forty-four percent of short and 41% of long path lengths were spent climbing ($p = 0.68$), while 31% of short and 29% of long path lengths were spent descending ($p = 0.82$). These findings suggest that topography has no effect on the foraging effort of Bwindi's gorillas, and that extra energetic requirements normally necessary for climbing do not interfere or constrain their daily travel distance.

LINE-1 evolutionary dynamics among apes.

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LINE-1 (L1) elements constitute a large family of mammalian retrotransposable elements that have been replicating and evolving in mammals for more than 100Myr and now compose 20% or more of the DNA of some mammals. In addition, L1 activity probably caused the amplification of SINE (short interspersed repeated DNA) elements. As L1 and SINE insertions can inactivate genes, cause genetic rearrangements, and affect gene regulation, L1 activity has had a defining effect on the structure and function of modern mammalian genomes. Most L1 copies are defective on insertion and cannot be excised; and it is possible to recognize cohorts of these elements that inserted into the genome at various times and to follow their fates in different regions of the genome and in different species.

Successive emergence and amplification of distinct L1 (Ta) subfamilies occurred in the human genome, beginning about 4 Mya. However, little is known about the evolutionary history of L1 elements in other primate genomes. Here, we characterize L1 activity since the divergence of all the extant hominoid clades (Hylobatidae, Pongidae and Hominidae). Our analysis of L1 elements (n > 600) includes DNA sequences from representative species belonging to each of the hominoid clades. Our preliminary analysis suggests that L1 activity has been greatly reduced in *Pan* and *Gorilla*, while unique subfamilies appear to have been active in *Pongo* and in *Hylobates*. These results suggest that that L1 retrotransposition has

played an important and an active role in shaping the genomes and evolution of these lineages.

Size matters - Does body mass?

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A class of body size variables derived from skeletal measurements known as global skeletal size variables (GSVs) exists in which the variables 1) scale isometrically with mass and 2) are directly proportional to mass - both within single populations and across multiple species. These variables are volumetric transformations of geometric means of measurements from multiple skeletal elements (e.g., the geometric mean of linear measurements raised to the third power). Direct proportionality of the size variables (body mass and GSV) has several useful mathematical properties, particularly that 1) variable means are directly proportional, 2) variable variances are directly proportional, 3) regression slopes for log-log plots are identical using either size variable, and 4) regression intercepts are transformed by a known constant for a log-log plot using either variable. Since GSVs are measured, not predicted, they may be used without concerns regarding associated prediction intervals.

This poster presents a variety of sample applications using GSVs to address typical anthropological research questions. GSVs are superior to body mass for a wide variety of studies. GSV will vary less over an individual's adult life than body mass, providing a more stable measure of overall adult body size than single measurements of body mass. Additionally, GSV can be measured for specimens that do not have associated body mass information, including relatively complete fossil individuals.

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Diet in pre-contact Central California explored through dental microwear and stable isotope analyses.

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Pre-contact California was populated largely by hunter-gatherer groups, at densities much higher than usual for hunter-gatherers elsewhere. Reliance on resources which could be obtained in