

The lemurs of Madagascar are hosts to several gastrointestinal parasites, although reports of the intensity and diversity of these parasites vary by species. Gastrointestinal parasites may pose a sublethal threat to wild lemurs as several of these pathogens drain immune systems and reduce digestive efficiency. Effort should be made to understand variables affecting parasite load in order to better inform conservation policy and minimize the spread of potential zoonoses.

We collected fecal samples from lemurs living in fragmented forests at Mahatsinjo in the Tsinjoarivo region during June 2013. Feces were collected from *Hapalemur griseus*, *Propithecus diadema*, *Microcebus lehilahytsara*, and *Lepilemur mustelinus*. Samples were processed within 24 hours of collection using zinc sulfate flotations and examined microscopically. In June 2013 (as reported earlier in May-June 2012), adult *H. griseus* individuals had significantly higher parasite load than other species. All individuals with high (>50 eggs/gram) or medium (25-50 eggs/gram) parasite loads were *H. griseus*; only one *H. griseus* had a low (<25 eggs/gram) parasite load. The most common parasites in *H. griseus* were nematodes of the superfamily Strongyloidea.

We took GPS points and soil samples for all observed geophagy sites for *H. griseus*. Soil samples were examined for eggs/larvae using zinc sulfate flotations and a modified Baermann technique. Three of the five geophagy sites contained strongyloid eggs/larvae preliminarily identified from both techniques. One of these was within six meters of a bamboo lemur latrine site. These data may provide a partial explanation for the high degree of strongyloid infection in *H. griseus*.

#### Changes in endocast shape precede encephalization in anthropoid evolution

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It has been proposed that endocranial shape co-evolved with encephalization as a consequence of spatial and/or developmental constraints on cephalic growth. However, early anthropoid endocasts possess qualitative similarities with living anthropoids at relatively small endocranial volumes, perhaps indicating a disconnect between endocast shape and encephalization in early anthropoid evolution. This project quantifies endocast shape in extant and fossil primates via geometric morphometrics to explore variation in endocranial shape and its relationship to encephalization over time.

Three-dimensional landmarks were collected on virtual endocasts, segmented from micro-CT scans of primate crania. The sample includes thirty-one extant primate species, an Oligocene stem anthropoid (*Parapithecus*), a stem catarrhine (*Aegyptopithecus*), and two Miocene stem platyrrhines (*Homunculus*, *Tremacebus*). Endocast shape is explored via Principal Components Analysis of General Procrustes-aligned variables.

The first principal component separates extant strepsirrhines and tarsiers from anthropoids. Shape changes on this axis include: olfactory fossa size and projection, anterior-posterior position of the foramen magnum, posterior projection of the cerebrum, and flexion of the

endocast base. Accounting for phylogenetic effects, PC1 scores for extant primates significantly correlate with residual endocranial volume ( $p < 0.001$ ). On PC1, *Parapithecus* is intermediate between extant strepsirrhines and anthropoids. *Aegyptopithecus* falls within the lower limit of the extant anthropoid group, while *Homunculus* and *Tremacebus* are aligned with extant platyrrhines.

Despite the correlation between encephalization and endocast shape among modern primates, fossil anthropoids have a somewhat anthropoid-like endocranial form at a strepsirrhine-like endocranial volume. Thus, the fossil record indicates that a potentially adaptive reorganization of the endocranium preceded encephalization in anthropoids.

Support provided by the National Science Foundation (DDIG BCS #1232534), the Leakey Foundation, and Duke University.

#### Immigrants in America: Experiences with tuberculosis amongst Buffalo's poor

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Infectious disease, a viable enemy which has significantly influenced humans and the trajectory of history, remains elusive in the osteological record. Because of this difficulty, other lines of evidence to support skeletal analyses have become imperative.

Historic urban institutions built to serve the poor (poorhouses, asylums, and hospitals), often geographically forgotten, are more frequently being discovered and salvaged. In the case of the Erie County Poorhouse Cemetery excavation in Buffalo, NY, surviving documentation from the infirmary provides a unique opportunity to study those who experienced economic hardship and were served by these institutions. Utilizing historic documents, we aimed to learn specifically about the experience and prevalence of tuberculosis amongst this 19<sup>th</sup> and early 20<sup>th</sup> century skeletal population.

As one of the most prolific and diverse infections throughout human history, tuberculosis has often struck hardest at impoverished individuals. Utilizing mortuary registers from the infirmary, the population from which our sample came from lists 1,440 of 7,182 deaths as associated with tuberculosis from 1880-1913. With 663 recorded with a nativity outside the United States, we have exposed an existence of marginalization amongst the era's newest Americans. With less than 3% of the skeletal sample showing markers congruent with chronic tuberculosis, this historic record provides a unique view into a phenomenon the osteology severely under-represents. By integrating historic records, archaeological evidence and osteological analyses, a holistic picture of suffering and social stigma due to tuberculosis amongst impoverished immigrants and Buffalo's poor recreates the experience of a demographic which history has all but forgotten.

#### Modularity, covariance patterns and morphological integration in the human skull

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Models based on both fossil and genetic evidence suggest that the genesis of modern humans occurred in Africa 200,000 years B.P., and then migrated to other parts of the world. With regard to the cranial morphology, authors observed the decrease of variability as the populations diverged, spatially and temporally, from each other and from their African ancestors, although it is also recognized among experts that human cranial diversity is partitioned into two fundamental patterns: one represented by morphology similar to that characterizing the first *Homo sapiens*, so-called "general morphology", and the other represented by other morphological variations, called "specialized morphology". In this context, the primary objective of this research is to characterize the evolution of human cranial variation, approached from two themes: 1) The investigation of the composition, pattern of occurrence, distribution and structuring of human cranial morphological diversity, and, 2) analysis of the context of evolutionary change observed in the human skull, due to its characteristics of integration, modularity and evolutionary stasis investigated from the exploitation of their patterns of variance and covariance. For this, we used the metric cranial characteristics (24 variables from Howells) of 9,287 individuals distributed in 161 indigenous people of worldwide dispersion. The results obtained through the different strategies employed in this work reinforce the idea that the evolution of cranial morphology is best explained by a model that assumes the occurrence of different evolutionary dictates, as genetic drift and natural selection, for example, acting on cranial modules in a differentiated mode.

Grant: FAPESP 2008/58729-8.

#### Seasonal fluctuation of men's testosterone levels and body composition in rural Poland

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The steroid hormone testosterone coordinates male reproductive function and behavior, and supports secondary sexual characteristics. Testosterone is hypothesized to mediate trade-offs between reproduction and survival through the management of sexually dimorphic muscle