very old age, they served as control group for age-related changes not attributed to tooth-loss. The German sample, however, showed severe tooth-loss for older individuals.

The landmarks were used to establish an initial spatial orientation within the sample. Based on this information surface registration was performed by applying an elastic ICP-Algorithm consisting of two parts: An iterative Gaussian smoothed deformation is performed with the resulting deformation being additionally regularized by minimizing deformation energy. Due to ambivalent quality of the CT-data in the condylar region and the coronoid processes, as well as the inconsistent presence/absence of teeth, these areas were excluded from further statistical analyses.

After correcting for population differences, the resulting set of registered coordinates was statistically evaluated for effects of aging. The predictor *age* provided a high explanatory value within the German sub-sample and a low one in the Chinese data. Visualizations show a similar pattern in both populations in the gonial region. But, while these are the only shape differences among Chinese individuals (not affected by tooth-loss), the German sample exhibits significant "shrinkage" of the corpus mandibulae, when compared to the rami, owed to atrophication caused by tooth-loss.

Maternal effects influence the heritability of adult obesity traits but not obesogenic growth trajectories in vervet monkeys (*Chlorocebus* spp.)

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There are known maternal effects on obesity outcomes in humans and nonhuman primates, but few have investigated these effects on obesogenic growth throughout the lifespan. To investigate the impact of maternal effects on the genetic underpinnings of obesogenic growth we used growth curve analysis on measures taken thrice yearly from 2000 to 2013 on body size and composition in a captive population of 641 vervet monkeys (*Chlorocebus* spp). Of these, 38 were defined as chronically obese, having had an adult waist circumference above 40.5 cm for three successive measurements. Growth was modeled using three-parameter logistic growth curves in nonlinear mixed models, with parameters modeled as fixed and subject and sex/obesity status modeled as random effects. We assessed heritability of individual growth parameters using SOLAR, with the variance attributed to maternal ID (c2) partitioned from environmental variance to determine maternal effects. We found significant heritability and maternal effects on all static measures of adult body condition (e.g., BW, h^2=0.86, p=6.52x10^{-10} and c^2=0.11, p=0.04; BMI, h^2=0.77, p=1.39x10^{-09} and c^2=0.12, p=0.05), and high heritability but no significant maternal effects on parameters of growth (e.g., BW, asymptote of growth, h^2=0.77, p=4.93x10^{-21} and c^2=0.05, p=0.11). This study suggests that although adult obesity is a developmental process driven in part by heritable obesogenic trajectories resulting in larger adult size, those trajectories do not appear to be influenced by maternal effects. A better understanding of how growth can be decoupled from maternal effects on adult obesity will be necessary to assess early obesity risks.

Three dimensional cut mark analysis in order to discern ancient cutmark tools

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This study employs a White Light Confocal Profiler to analyze both experimental and archaeological cutmarks. All analyses used SolarMap® software and a Sensofar Plμ profiler. Surfaces were scanned in multiple profile mode at 10X with cuts oriented so that they were vertical on the screen. Two dimensional data acquisition followed procedures developed previously (Schnellenberger and Schmidt 2014). For 3D study, analysis took place using the 'volume of hole/peak' option, which rendered kerf surface, volume, maximum, and mean depths data. The sample included cut marks from archeological samples (Middle and Late Archaic people from the eastern US), as well as experimental cuts made with ground stone celts, chert bifaces, and modern trowels. Experimental cuts were made by placing tools in a clamp and dropping them down a steel post from a standard height to impact a cow ribs. The results indicate ancient cuts were very wide relative to their depths. In 3D, they have large volumes and large mean depths. Cut marks from celts were most similar to the ancient cuts. Some bifaces made large cuts, but on average their cuts were smaller. The steel trowel cuts (which were made by hand) were very narrow by comparison. It appears the ancient cutmarks were made with large stone tools, like ground stone tools, and were not made with fine bladed implements. It is also clear that the cuts were not the result of excavation.

Estimated total time spent in social play prior to adulthood is strongly associated with brain size in primates

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Play behavior is of considerable evolutionary interest. The energetic costs and increased likelihood of injury suggest play confers an evolutionary benefit. A number of comparative studies of primates have shown that typical percent of time spent in play (%PLAY) correlates with the sizes of various interesting brain components, including overall brain size. Brain size also correlates with measures of social complexity, suggesting that play functions as a means to learn adult social behaviors. However, %PLAY reportedly does not correlate with maturation time, even though this latter measure also correlates strongly with brain size.

Previous studies used a frequency measure (%PLAY) rather than total time spent playing prior to adulthood. It is possible that species that mature more rapidly given their brain size tend to compensate by playing more frequently (and vice-versa for species that mature more slowly). If so, brain size would correlate more strongly with total time spent playing prior to adulthood. This was tested on a sample of 18 primate species for which %PLAY, age at menarche, and brain size was available in the literature. Total time spent playing prior to adulthood was estimated by multiplying %PLAY by age at menarche. This measure correlated more strongly with brain size (r=0.94, p<0.0000001) than did %PLAY (r=0.90, p<0.000001), though both were highly significant. This association remained after controlling for phylogenetic relatedness using PGLS. Furthermore, the slope of the relationship was close to one (1.108), indicating that total time spent playing scales approximately isometrically with brain size.

Vervets in an anthropogenic landscape: Reduced breeding seasonality and mixed diet

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The availability of food could significantly impact female reproduction, and seasonal variation in this resource can influence the timing of reproductive events. Here we examine the relationship between food availability and the timing of births in vervet monkeys (*Chlorocebus pygerythrus*) living in a forest-agriculture matrix at Lake Nabugabo, Uganda. We examined 26 births from 11 adult females over 3-years in relation to resource availability in this modified landscape, where natural foods are supplemented