(Reisem, 1994). The cemetery=s death records include: date of death, name, age, sex, address, location of burial, and cause of death. These valuable resources have been used to report disease specific mortality (Sirianni, 2002) and patterns of gastrointestinal infection (Sirianni and Higgins, 2007) for nineteenth century Rochester. The purpose of this investigation is to examine demographic patterns of disease and death of children during a twenty year period (1837-1856) using the death records from Mt. Hope Cemetery.

A total of 4,842 death records of infants and children were examined. Ages ranged from birth to15 years. The first three years of life appear to be particularly hazardous for children living during the early nineteenth century. Among the various causes of death, gastrointestinal infections accounted for 24% of the recorded deaths, followed by respiratory diseases (13.5%), and childhood diseases (7.8%), e.g. measles, scarlet fever and whooping cough. After the age of three the number of recorded deaths gradually dropped from 257 children aged three to 39 fifteen year olds. From three to fifteen, there is a slight decrease in the number GI infections relative to respiratory ailments, and an increase in the number of deaths due to scarlet fever.

These data are compared to death records for both Monroe County and Erie County Poorhouses, as well as, the skeletal demographic analysis of the Highland Park Cemetery.

Phylogeny and phylogeography of the chacma baboon (*Papio ursinus*); an assessment of evolutionary history and genetic variation.

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A high level of external and behavioural variation within *P.ursinus* has been documented. The chacma baboon is widely dispersed and utilizes a wider array of ecological niches than any other baboon. This degree of variation in characters of pelage and behaviour is not surprising if you assume that chacmas are in fact the oldest lineage within *Papio* (Newman et al., 2004). This study continues from a preliminary study, which revealed a deep divergence event within chacma baboons (Babb et al., 2005). In the present study we have sought to refine this phylogenetic tree as well as to look at the influence of gene flow on genetic sub structuring within chacma. Samples were collected from South Africa, Namibia and Botswana. All samples were sequenced for the mitochondrial control region, and a subset were sequenced for the mitochondrial Brown region. Sequences were analysed by parsimony, maximum likelihood and trees were rooted using yellow baboon (*P.cynocephalus*) sequence data. Brown region data showed

that animals from Namibia and the South African coastal belt formed a clade, while individuals from the Caprivi Strip group together in a clade with individuals from the South African interior. The control region data shows that populations tend to group along lines of geographic rather than evolutionary distance. These results suggest that the current pattern of genetic structuring within chacma is a result of the interaction between large-scale landscape changes brought about by climatic fluctuations, as well as more recent gene flow events.

77. **The importance of bipedality/bending in mediating morphological adaptation in the chimpanzee femoral neck might be overstated.**

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Support for the view that the chimpanzee femoral neck receives habitual superior-inferior bending is based, in part, on morphological evidence (elliptical/elongated cross-section; robust cortices). In contrast to the anterior-posterior glutei of chimpanzee hips, the *laterally oriented* human gluteus medius neutralizes bending. Thus, the cross-sectional geometry of the human femoral neck (thin cortices, and more ovoid shape than chimpanzees) seems designed for superior-inferior *compression*, not bending—this idea influences debate with regards to using skeletal morphology to infer bipedalism. However, bone cross-sectional robusticity/circularity can be highly unreliable in this context. We employed a more reliable characteristic for inferring habitual bending [predominant collagen fiber orientation(CFO)] to test the hypothesis that chimpanzee proximal femora receive habitual superior-inferior bending. Four undecalcified/unstained sections from nine adult chimpanzee femora were examined: mid-neck, base-neck, subtrochanteric, proximal diaphysis. Methacrylate-embedded sections (100-micron ultramilled) were quantified for regional CFO variations from mean graylevels (GLs=birefringence) in circularly polarized light (dark GLs= longitudinal collagen in habitual tension; bright GLs= oblique/transverse collagen in habitual compression). In the neck, no significant CFO difference was found between putative 'tension'(superior) and 'compression'(inferior) regions(p=0.51). Proximal diaphyseal sections showed clear 'compression'(medial)/'tension'(lateral) differences(p=0.03). As in humans, habitual loading of chimpanzee proximal femora might occur in two 'domains': combined bending/torsion in the femoral neck, and predominant bending across the subtrochanteric region (the complexly loaded intertrochanteric region separates these 'domains'). This conclusion is based on the

idea—shown in many other torsionally loaded bones—that the *absence* of regional CFO variations likely reflects adaptation for shear stresses produced by torsion.

Distinct patterns of protostylid expression at the enamel-dentine junction of *Paranthropus robustus* and *Australopithecus africanus* lower molars

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Distinctive expressions and incidences of discrete dental traits form part of the diagnosis of many early hominin taxa. It has been claimed that one of these discrete dental traits, the protostylid, can be used to discriminate between southern African archaic fossil hominin taxa. However, there is ongoing debate about the extent to which the shape of the enamel-dentine junction (EDJ) determines protostylid morphology, the influence of differential enamel distribution on the expression of such EDJ traits at the outer enamel surface (OES), and whether cingulum-like features across the buccal face of lower molar tooth crowns are developmentally independent.

We compared protostylid expression qualitatively and quantitatively at the EDJ and at the OES of the lower molars of *Paranthropus robustus* (N = 22) and *Australopithecus africanus* (N = 28). The results include evidence A) of statistically significant taxon-specific patterns of protostylid morphology at the EDJ that are not evident at the enamel surface; B) of non-independence of these features across the buccal face; C) that the correspondence between protostylid expression at the EDJ and OES expression is affected by differences in enamel distribution, and D) that the form of the protostylid at the EDJ of worn teeth has taxonomic valence.

The error of midshaft cross-sectional location on human femora.

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The position of femoral midshaft has to be estimated when biomechanical length is not sufficiently preserved. We compared the amount of error for the position of femoral midshaft in different locations of biomechanical length. Differences are studied from 65% to 35% of biomechanical length. The sample consists of 30 females and 30 males from the Late Eneolithic and the Early Bronze Age in Central Europe. The cross-