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The Official Journal of the American Association of Physical Anthropologists

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On the cover: Minneapolis Skyline at Dusk with Spoonbridge and Cherry, photo provided by meetminneapolis (http://www.mspnewsroom.com/page/2multimedia.jsp)

Claes Oldenburg and Coosje van Bruggen
Spoonbridge and Cherry 1985–1988
Aluminum, stainless steel, paint
Collection Walker Art Center
Gift of Frederick R. Weisman in honor of his parents, William and Mary Weisman, 1988

A highlight of the Minneapolis Sculpture Garden is the monumental fountain-sculpture Spoonbridge and Cherry by Claes Oldenburg and Coosje van Bruggen. While Oldenburg and van Bruggen, his wife and collaborator, have produced a number of large-scale sculptures of everyday objects, such as a flashlight in Las Vegas and a firehouse in Freiburg, Switzerland, Spoonbridge and Cherry is their first fountain sculpture. The giant spoon stretches 52 feet across a small pond shaped like a linden tree seed. A fine stream of water, just enough to make the aluminum cherry gleam, flows over the cherry from the base of the stem. A second stream of water sprays from the top of the stem over the cherry, down into the spoon and the pool below. In winter, snow and ice accumulate on the cherry and the bowl of the spoon, changing the sculpture's character with the seasons. The colossal spoon and cherry required unusual facilities for their construction, and two New England ship-building firms were contracted to build the huge aluminum and steel forms.

Supplement 52 was mailed the week of February 21, 2011.

Heavy density liquids as a method for extracting microfaunal remains from sediments.

MATTHEW CHIMERA. Department of Anthropology, The University of Texas at Austin.

Microfaunal analyses provide important insight in paleoecological reconstructions. Microfauna have a limited range, so the presence and abundance of a particular species is indicative of a particular climate. However, sorting through microfauna can be very tedious due to the small size of the skeletal elements and they very easily blend in with the surrounding soils. A method that can expedite this process will greatly improve microfaunal studies. One such method, heavy density liquid floatation, has been used for sorting phytoliths from soil samples. This technique can be applied to microfaunal analyses by limiting the amount of time sorting through sediments. This study uses materials excavated from Grotte des Contrebandiers, Temara, Morocco. The soils sediments were screen-washed at 5, 2 and 1 mm. Using the heavy liquid Lithium Metatungstate solution, these samples are separated into high density (stones, pebbles and some high density teeth) and low density (bones, pollens, woods) materials. The heavy density materials sink to the bottom while the low density materials float to the surface, sorting the materials for the researchers. This separation occurs in a funnel and upon the separation of high versus low density materials, the heavy density materials are released into one beaker and the lighter density materials are released into another beaker. Preliminary results have demonstrated that large amounts of microfauna can be sorted in a shorter amount of time than sorting by hand. This methodology can greatly help microfaunal analyses by decreasing the amount of time a researcher must spend sorting through sediments.

Intraskeletal variability and bone remodeling dynamics in a modern Mexican cemetery population.

HELEN CHO[1], VERA TIESLER[2] and SHINTARO SUZUKI[2]. [1]Department of Anthropology, Davidson College, [2]Facultad de Ciencias Antropológicas, Universidad Autónoma de Yucatán.

The rate of age-associated bone loss is inconsistent among skeletal elements of an individual and dependent on the proportion of cortical and trabecular bone and their habitual loading environments. Thus, intraskeletal variation in age-associated bone loss is problematic in the clinical field for discriminating between normal and osteoporotic bone.
We employ histomorphology on a preliminary skeletal sample from Xoclán, a modern cemetery population in the Yucatan peninsula, to compare the midshaft rib and clavicle from the same individuals to investigate intraskeletal variability in the histomorphometric variables. Through bone histomorphology, microstructures such as osteons are quantified to derive variables that are indicative of bone remodeling dynamics and patterns of age-related bone loss.
The mean age of the sample is 50.75 years with 22 males and one female. Osteon Population Density (OPD), the density of intact and fragmentary osteons per unit area of bone and an accumulated product of bone remodeling, differs significantly between the rib (mean 30.320 SD 8.320) and clavicle (mean 17.743 SD 5.299) in the t-test for dependent samples and Wilcoxon Matched Pairs test ($p<0.001$). The average cross-sectional area of the intact osteons, a variable necessary for deriving bone remodeling dynamics, did not differ significantly between the two skeletal elements in the t-test ($p = 0.205$) and Wilcoxon Matched Pairs test ($p = 0.191$). Although the rib and clavicle are abundant in cortical bone, the habitual loading environment for respiration and upper limb function may be distinct enough to produce different remodeling dynamics and histomorphometric values.

Gene gain and loss of protein expression driven by sexual selection, revealed by comparative proteomics of human and chimpanzee seminal plasma.

PETER CHOVANEC[1], MARCUS LOUIS[2], STEPHANNIE RUIZ[2], DANA L. HASSELSCHWERT[2] and MICHAEL I. JENSEN-SEAMAN[1]. [1]Department of Biological Sciences, Duquesne University, Pittsburgh, PA; [2]University of Louisiana at Lafayette New Iberia Research Center, New Iberia, LA.

Numerous anatomical and physiological traits have evolved in chimpanzees due to their presumed high levels of sperm competition, resulting from high female promiscuity. These traits include large testes, high sperm count, and the presence of a copulatory plug. As with most phenotypic differences between humans and chimpanzees, the molecular basis for these adaptations are not known. In order to investigate the molecular evolution of hominid seminal proteins, we subjected the seminal plasma of three humans and three chimpanzees (including the solidified plug) to two-dimensional gel electrophoresis followed by spot identification with liquid chromatography/tandem mass spec (LC-MS/MS), one dimensional SDS-PAGE gels with peptide identification by LC-MS/MS, and gel-free (or "shotgun") proteomic characterization with LC-MS/MS.
This comprehensive proteomic characterization of seminal plasma revealed the complete absence of semenogelin 2 (SEMG2) in chimpanzees, despite being one of the most abundant human proteins, along with upregulation of prostate-specific transglutaminase (TGM4) and fibronectin (FN1) in chimpanzees. Most surprisingly, chimpanzees express at high levels in their semen an extracellular secreted protein not found in human semen, and not previously reported to be expressed in reproductive tissues. Together, our data suggest that chimpanzees have evolved unique aspects of their reproductive physiology, including the acquisition of a copulatory plug, through up- and down-regulation of many proteins, and through the gain and loss of the expression of specific seminal proteins. The abundance and structure of these proteins allows us to hypothesize a mechanistic model to explain the origin of the chimpanzee copulatory plug in response to sexual selection.
This research was supported by the Wenner-Gren Foundation for Anthropological Research (Gr. #8079), and the National Science Foundation (BCS-0922525).

The history of anthropometry within the Fels Longitudinal Study: growth, development and aging in the 20th Century.

W. M. CAMERON CHUMLEA. Departments of Community Health and Pediatrics, Lifespan Health Research Center, Boonshoft School of Medicine, Wright State University, Dayton, OH.

Anthropometry has a long history, but its use in describing growth and development flourished with the establishment of the "longitudinal" growth studies in the United States in the early 20th Century such as the Fels Longitudinal Study. Early measurements were limited in their descriptive scope and borrowed from osteological measurement methodology. Increased interest in anthropometry occurred with World War II and the need for "standardized" uniforms and equipment. The increased prevalence of obesity furthered the development of methodology and equipment to measure body fatness such as skinfold calipers. Similarly, the greater proportion of older adults living to older ages in the world's population has increased the available equipment and specialized methodology for anthropology in the elderly. The use of anthropometry within the Fels Longitudinal Study has mirrored its application in the National Health Surveys of the United States and the World Health Organization.
This work was funded by grant HD-12252 from the National Institutes of Health, Bethesda MD.

A reappraisal of the effects of phylogeny on social behavior.

KRISTA CHURCH. Department of Anthropology, University of Texas, Austin.

The socioecological model has been used extensively to identify correlations