

*"From so simple a beginning, endless forms  
most beautiful and most wonderful have been,  
and are being, evolved."* — Charles Darwin

## Center for Human Evolutionary Studies

### CHES Officers 2017-2018

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**Mark your calendars:** On **Nov. 14-16, 2018**, CHES will hold its **Second Lembersky Conference in Human Evolutionary Studies**. This year's conference topic will be ***Advances in Paleoecology***.

### NEWS: Two New Faculty Members



CHES welcomes **DAN CABANES**, who has joined the Department of Anthropology. Prof. Cabanes's research aims to understand the association between environment and human cognitive and cultural evolution. He has investigated biological, social, and economic changes using micro-archaeological remains associated with the emergence of the genus *Homo* in Africa, the transition from the Middle to Upper Paleolithic in Europe, and the evolution of urban centers in the Levant. His current research focuses on demographic changes in the Middle and Upper Paleolithic in several European sites (using variation in the micro-botanical record as a proxy for site intensity use) and on the role fire technology played in the demise of Neanderthals.

His interests also include developing new tools for the analysis of micro-remains.

## NEWS: New Faculty Members

CHES also welcomes **DAN HOFFMAN**, an Associate Professor in the Department of Nutritional Sciences. Prof. Hoffman's research combines economic, cultural, and evolutionary perspectives to answer diverse questions about nutrition, physiology, metabolism, and health in modern humans in South America, Asia, and Europe. By studying metabolic adaptation, his team aims to better understand how nutrition early in life affects growth and health later, during childhood (particularly the expression of growth retardation), during adulthood, and even inter-generationally. He and his research team are also studying diets of people in "transitional countries" that are experiencing rapid economic development and the introduction of new and different foods and market forces.



## New CHES PhD and Masters Degrees Congrats!

**2017** saw a large number of CHES Graduate Affiliates earning their PhD or Masters Degrees:

**DARCY SHAPIRO** completed her dissertation *Characterizing Density and Anisotropy in the Trabecular Architecture of the Primate Ilium and Ischium*.

**SARAH HLUBIK** produced a dissertation entitled *Finding Prometheus: Evidence for Fire in the Early Pleistocene at FxJj20 AB, Koobi Fora, Kenya*. Sarah also presented some of her research results at the First **CHES Lembersky Conference** (see next page).

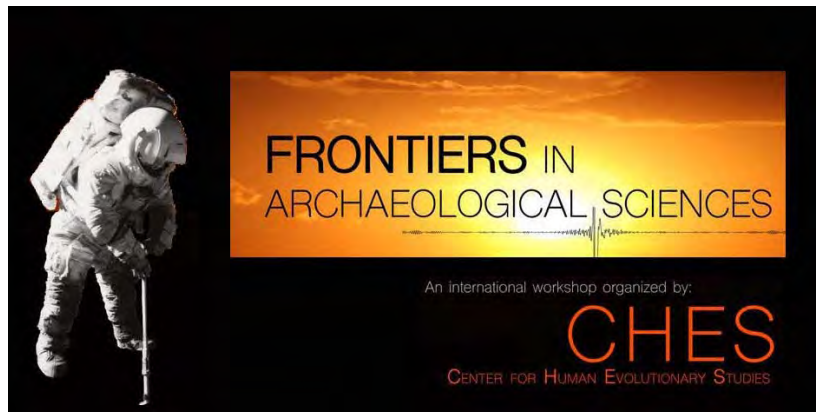
**MAREIKE JANIAK'S** exhaustive laboratory work generated the dissertation *Adaptations for Folivory and Insectivory in the Digestive Enzymes of Nonhuman Primates*. Her research also garnered two awards at the annual conference of the American Association of Physical Anthropologist (right): the Earnest Hooton Prize for Exemplary Student Research and the Outstanding Student Poster in Anthropological Genetics.



**STANISLAUS KIVAI** successfully defended his dissertation, *Effects of Food Nutritional and Mechanical Properties on Foraging of Juvenile Tana River Mangabeys, Cercopithecus galeritus*, Kenya, to members of his committee shown left (Jess Rothman, Susan Cachel, Erin Vogel, [S. Kivai], & Ryne Palombit)

Following museum research in La Serena, Chile, **RUSSELL GRANT** produced a Masters Thesis entitled *Determining South American Camelid Domestication Through Skeletal Morphology*. **XIAOYA ZHAN** also obtained the Masters degree based on her research on exported Chinese porcelain transported along the Silk Road in the 16<sup>th</sup> to 19<sup>th</sup> centuries.

# The First Lembersky Conference in Human Evolutionary Studies



This year, CHES launched the **Lembersky Conferences in Human Evolutionary Studies**, named in memory of a long-time and valued friend of CHES, **DR. BARRY C. LEMBERSKY** (below right).

Organized by **DAN CABANES**, this first conference, "Frontiers in Archaeological Sciences," brought together an international group of participants—from distinguished professors to graduate students—to explore a diverse array of subjects, from developing new methods for extracting ancient DNA to modeling archaeoacoustics. The opening keynote address was by **Paul Goldberg** (Boston Univ.), one of the most prolific and central scholars in Geoarchaeology. **Francesco Berna** (Simon Fraser Univ.) described new methods for identifying fire remains, which CHES Graduate Student **SARAH HLUBIK** also discussed when presenting her data on fire use at Koobi Fora, Kenya, and



Goldberg



Frahm



Henry



Hlubik



Berna

which **Carolina Mallol** (University of La Laguna) expanded upon with her latest analyses of organic charred remains from the Paleolithic. Other advances in methodology were tackled, from **Ellery Frahm's** (Yale Univ.) exploration of next generation portable X-Ray Fluorescence (XRF) in studying Paleolithic raw material, to CHES Associate Member **HYLKE DE JONG'S** use of stable strontium isotope analysis to understand salt consumption in the past, to **Giliane Monnier's** (Univ. Minnesota) assessment of the limits of Fourier Transform Infrared Spectroscopy (FTIR) for residue analysis of stone tools. **Amanda Henry** (Leiden Univ.) described new ways to study human diets using microremains, and **DAN CABANES** explored the potential of high-resolution analyses of microremains to shed light on past human behavior. **Matthias Meyer** introduced the audience to the latest developments in ancient DNA extraction, which **Viviane Slon** pursued in a lecture on utilizing aDNA from archaeological sediments. **Antonio Rosas** discussed the problems of coordinating anthropological fieldwork with high-resolution analyses at El Sidrón cave. Fisher Thermo-Scientific™ also provided support for the conference. The participants' data, methods, ideas, and unambiguous passion for their field of inquiry made the meeting a remarkable success.

# Albert Fellows Doctoral Dissertation Research Awards

CHES has long supported the pilot research and preliminary data collection of its graduate student members, but we recently expanded this initiative to include major funding of doctoral dissertation research itself. Thanks to the generous and much appreciated bequest of Mr. **ALBERT FELLOWS**, CHES inaugurated a program that each year awards a grant of \$13,000 to two advanced CHES PhD graduate students pursuing scientific research bearing broadly on the survival of animals and plants threatened by the deterioration of the environment. These awards are comparable in size to those allocated to graduate students by funding agencies such as the L.S.B. Leakey Foundation. The recipients of the award this year are **ELIZABETH BALLARE** and **ALEX PRITCHARD**.

**ELIZABETH BALLARE** studies the health implications of the rehabilitation process in orangutans. Among the newly released orangs at two rehabilitation centers in Borneo, she measures protein/energy balance, hormonal indicators of stress, and immunoresponsiveness (from urine) as well as gastrointestinal parasites (from feces). She's comparing these health parameters with data from the wild orangutans studied at her advisor, **ERIN VOGEL'S**, Tuanan research site. By better informing rehabilitation methods, Elizabeth's research will help to ensure the survival of this highly endangered great ape species.



**ALEX PRITCHARD'S** research focuses on how consistent individual differences in handling stress both affects and is affected by social life. Studying the wild olive baboons at his advisor, **RYNE PALOMBIT'S**, Kenya field site, Alex examines how individuals differ in biopsychologically defined coping styles and coping outlets underlying the stress response. He's particularly interested in the consequences of these differences for the stability of the complex social relationships and coalitionary support system for which baboons are famous. His measurement of variation in stress hormones adds a valuable physiological dimension to his analysis. Alex has also recently received an NSF Doctoral Dissertation Improvement Grant.



The Lembersky award targets an undergraduate doing Senior Honors Thesis research under the supervision of a CHES faculty member. This year there were two recipients: **MEG BARRETT** and

**JOHN CALCITRAI**. Meg spent the summer studying chacma baboons at a sanctuary in South Africa. Her aim is to determine if male and female infants differ in social behavior and if such differences contribute to the development of the social sex differences observed in adult baboons studied by **RYNE PALOMBIT**. John's research focuses on the relationship between stress and social behavior in wild Bornean orangutans. He is working in **ERIN VOGEL'S** laboratory of Dietary Ecology & Physiology to analyze stress hormone levels in urine samples collected at her site. John is determining if variation in hormone levels in individuals is related to the data Vogel has on their social behavior.



## Barry C. Lembersky Undergraduate Research Awards

## 2017 ZELNICK AWARD

The Zelnick Family Research Fund, an endowment established by the Zelnick-Belzberg Charitable Trust, provides funding each year for the research of a second-year CHES graduate affiliate. This year's awardee is **REBECCA BRITAIN** (PhD program in Anthropology), who studies the associations between diet, gut microbial composition, and energetics in orangutans. This research involves observation of behavior and collection of urine and fecal samples from orangutans at **ERIN VOGEL'S** Tuanan field site for later analysis in laboratories back at Rutgers. Becca is especially interested in how the gut microbiome contributes to health and nutrition. Her research will provide a new and valuable ecological-evolutionary perspective to that important topic.



## GRADUATE AFFILIATE Updates



**TIBISAY NAVARRO-MAÑÁ** (left) is the newest CHES Graduate Affiliate member. Working with advisor **DAN CABANES**, Tibisay aims to analyze the microscopic remains of Neanderthals and Anatomically Modern Humans. She wants to answer questions about how these two groups of humans may have differed demographically and behaviorally.

Three CHES Grads were awarded Doctoral Dissertation Improvement Grants from the **National Science Foundation**: **ALEX PRITCHARD** (see p. 4), **TIM BRANSFORD**, and **MICHELLE NIGHTPIPE**.

Tim (right) is studying the energetic costs of motherhood in wild Bornean orangutans at **ERIN VOGEL'S** field site. He is currently analyzing a large body of both behavioral and physiological data. Michelle is in South Dakota continuing her study of intergroup relationships between Native & non-Native communities from the perspective of coalitional psychology. Her ethnographic research includes a focus on Native American Wokiksuye memorial rides (left).



Besides achieving her PhD, **DARCY SHAPIRO** worked with Prof. **ROB SCOTT** to win a grant from the Rutgers Libraries Open and Affordable Textbooks Project to develop an online version of *Introduction to Human Evolution*. Darcy has also been the CHES Social Media Consultant, launching and maintaining our presence on **Twitter** (@CHES\_RU) & **Facebook** ([www.facebook.com/CHES.Rutgers/](http://www.facebook.com/CHES.Rutgers/)).

**LASHANDA WILLIAMS** was featured on the cover of *Explore* Magazine of the Cleveland Museum of Natural History. Lashanda studied a large collection at the CMNH as part of her research on the effects of modern sociocultural changes on the human oral microbiome.



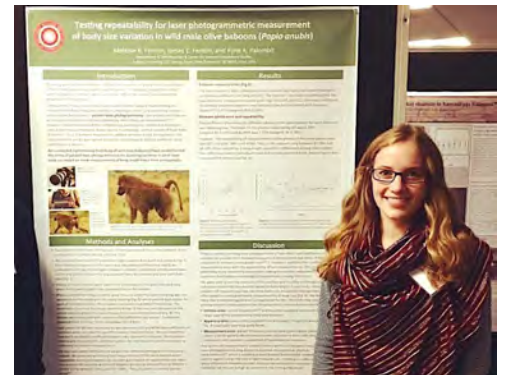
**DIDIK PRASETYO** finished his fieldwork at the Nyarumenteng Orangutan Rehabilitation Center, which included behavioral observation, collection of over 1000 urine samples, and careful photography of adult male faces for morphometric analysis of their “cheek flanges.”

**TOM CONTE** (on motorcycle in front of his yurt, see also p.1) returned from 10 grueling but rewarding months studying a group of nomadic herders in Mongolia’s harsh but beautiful Zavkhan Province. Tom’s research ex-



amines how social ties and labor sharing among people are affected by periods of environmental resource scarcity and by a person’s social reputation. **SHAUHIN ALAVI**, at the computer on which he is analyzing his numerous field data on spatial movement and foraging decisions in wild orangutans, found time to work on developing tracking technologies that may one day allows us to *remotely* track these endangered apes. **ALYSSE MOLDAWER** (below center) completed preparations to launch her fieldwork on human-orangutan interactions in Indonesia. As part of the new field of *ethnoprimateology*, her research will focus equally on both species, how they co-exist and influence one another.

**MELANIE FENTON** presented her photogrammetric data on baboon body size at the Northeastern Evolutionary Primatology (NEEP) Conference. Melanie is designing her field study of sexual conflict in olive baboons to commence next year.



CHES  
Associate  
Post-  
Doctoral  
Research



As part of the Human Generosity Project (co-directed by **LEE CRONK**), CHES postdoc **MATT GERVAIS** (with members of his research team) spent many months on Yasawa Island in Fiji, gathering data on wealth inequality and social support networks. Matt will return to Fiji in 2020 in order to assess how social networks influence the development of wealth inequality over time. For now, however, he has begun a postdoc in the Department of Psychology at the University of British Columbia, Vancouver.

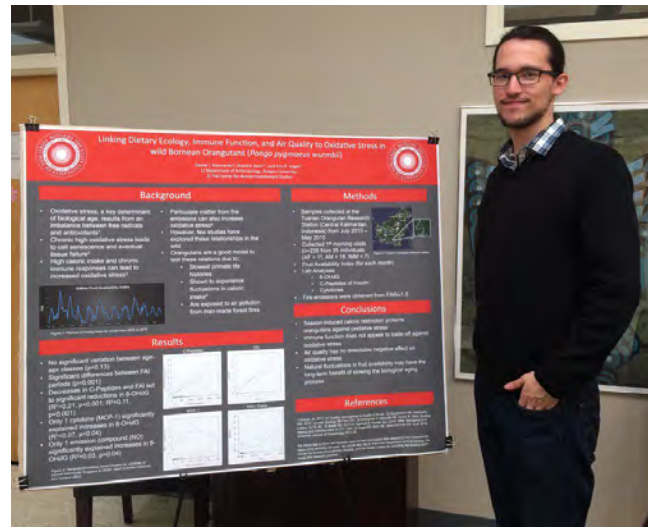
## UNDERGRADUATE Senior Honors Theses

Two CHES Undergraduate Affiliates wrote Senior Honors Theses based on research they conducted under the supervision of a CHES faculty member, which they presented at an Honors Symposium.

**DANIEL NAUMENKO'S** thesis, *Linking Dietary Ecology and Oxidative Stress in Wild Bornean Orangutans*, examined data collected over two years at **ERIN VOGEL'S** field site. Daniel showed that caloric restriction and increased protein intake during seasons of low fruit availability reduce oxidative damage in orangs.

**LANI WYMAN'S** research, *Ancient Middle Stone Age Climates at SM-1 in NW Ethiopia as Revealed by Stable Isotope Schlerochronology* (supervised by Prof. **CRAIG FEIBEL**), sought to clarify the foraging behavior of humans in this period by reconstructing their ancient climate at the Shinfa River, Ethiopia.

Both Daniel and Lani earned Highest Honors for their work and were Henry Rutgers Scholars.



## FACULTY Updates

Prof. **LEE CRONK** continues to co-direct the Human Generosity Project ([www.humangenerosity.org](http://www.humangenerosity.org)), a transdisciplinary initiative to better understand cooperation, aid, and sharing among



humans throughout the world. Among the highlights of the past year were visits to two HGP project sites in Uganda. He first visited the Karimojong, a group of people who were the focus of last year's completed dissertation by CHES alumna **PADMINI IYER**. He then visited the Ik, who were being studied at the time by CHES Postdoc Associate **CATHRYN TOWNSEND** (shown left with Cronk in Uganda). He also spent a few weeks at his own HGP field sites in Arizona and New Mexico, where he interviewed local ranchers about their systems of sharing and mutual aid.

Prof. **JINCHUAN XING'S** genetic research this year emphasized both human and nonhuman primates. He conducted a study of genetic diversity in a population of South Asians and also examined hybridization and the evolutionary origin of the stump-tailed macaque monkey. Professors **SUSAN CACHEL** and **ROB SCOTT** collaborated with V.N. Mason on a study of cranial airway morphology and the energetics of the nasal cavity, presented at the American Association of Physical Anthropologists in New Orleans. Prof. **CACHEL** also supervised work of Rutgers grad students at the Mutter Museum of the College of Physicians in Philadelphia (right) as part of her human evolution course.



Prof. Emeritus **LIONEL TIGER**, presented the lecture "Isn't Human Nature Nature Too?" in October at a gathering of the *Cosmos Club* in Washington D.C.





Prof. **RYNE PALOMBIT'S** research "Project Papio" on olive baboons in Kenya continues, and a paper this year with his former grad advisee Dr. **EMILY LYNCH** garnered some added attention when the publishing journal *Behavioral Ecology and Sociobiology* issued the accompanying press release "Sibling bonding is stronger when Dad's around." Behavioral and DNA data collected over two years showed that juveniles who were half-siblings had significantly stronger social bonds with another when their father was present in the group compared to those whose father was absent. It's not entirely clear how

dads might promote close ties among their young offspring with different females, but interestingly, the presence of mothers had no such effect on the development of relationships of paternal half-sibs. Prof. **ERIN VOGEL'S** Orangutan Project continues, both at Tuanan in Borneo, which survived devastating forest fires in recent years (right), and at Rutgers in the Laboratory for Primate Dietary Ecology and Physiology. This last year, Vogel and her colleagues published the results of a 7-year analysis of feeding and nutrition, which revealed how much seasons of reduced fruit availability impact orangutan energy intake and metabolism.



## CHES Alumni Updates

**SUSAN COINER-COLLIER** has been a post-doctoral researcher at Notre Dame University. She spent the first year in this position traveling to a number of primate research centers across the country. Her goal was to collect data on how primate chewing behavior and function are influenced by variation in the mechanical properties of the foods being eaten. She's now analyzing those data. In her spare time, she enjoys hanging out with retired experimental alpacas.



**KARI PRASSACK** presented data on a new canid from the Hagerman Paleontology, Environments, and Tephrochronology Project, which is working to develop a tephrostratigraphic framework from which to better reconstruct Hagerman's ancient landscapes and faunal communities. Kari and collaborator **Peter Ungar** (University of Arkansas) entered the dog domestication debate with a trip to Brno, Czech Republic, to collect microwear data on the Upper Paleolithic Předměstí canids, which are thought by some to provide the earliest evidence of dog domestication. Kari also continues to mentor Geoscientists-in-the-Parks interns in developing High School lesson plans that encourage effective science communication skills in next generation scientists.

In celebration of the 250th anniversary of the founding of Rutgers University, distinguished alumni were invited to give public lectures across campus. CHES alumnus Dr. **MATT SPONHEIMER** (University of Colorado, Boulder) (right) presented the talk, "Reconstructing the Paleoecology of Fossil Humans from the Chemistry of Prehistoric Teeth and Bones."



## Selected Recent Publications & Lectures by CHES Members, Affiliates, and Alumni

- Aktipis, A., R. de Aguiar, R., A. Flaherty, **Padmini Iyer**, **Dennis Sonkoi**, & **Lee Cronk**. 2016. Cooperation in an uncertain world: For the Maasai of East Africa, need-based transfers outperform account keeping in volatile environments. *Human Ecology*, 44:353-364.
- Alavi, Shauhin**, E., S.S. Utami-Atmoko, M. Djiru, M. & **Erin R. Vogel**. 2017. Nutrient limitation and orangutan facilitated nutrient recycling in a peat swamp habitat. Lecture presented at the Annual Meeting of the American Association of Physical Anthropologists, New Orleans.
- Cronk, Lee**. 2017. Culture's influence on behavior: Steps toward a theory. *Evolutionary Behavioral Sciences*, 11:36-52.
- Janiak, Mareike C.** 2016. Digestive enzymes of human and nonhuman primates. *Evolutionary Anthropology*, 25:253-266.
- Janiak, Mareike C.**, M.E. Chaney, & A.J. Tosi. 2017. A phylogeny of the *CHIA* gene in the context of insectivory. Lecture presented at the Annual Meeting of the American Association of Physical Anthropologists, New Orleans.
- Kivai, Stanislaus, Erin R. Vogel**, J.M. Rothman, C.M. Kivasu, & **Ryne A. Palombit**. 2017. Extractive foraging in wild Tana River mangabeys (*Cercocebus galerritus*): Implications of different physical properties. Poster presented at the Annual Meeting of the American Association of Physical Anthropologists, New Orleans.
- Lepre, Christopher J.** 2017. Crevasse-splay and associated depositional environments of the hominin-bearing lower Okote Member, Koobi Fora formation (Plio-Pleistocene), Kenya. *The Depositional Record*, doi: 10.1002/dep2.31.
- Lynch, Emily C.**, A. di Fiore, **Robert E. Lynch**, & **Ryne A. Palombit**. 2017. Fathers enhance social bonds among paternal half-siblings in immature olive baboons (*Papio hamadryas anubis*). *Behavioral Ecology and Sociobiology*, 71:120, DOI: 10.1007/s00265-017-2336-y.
- Lynch, Robert**, B.G. Palestis, & **Robert Trivers**. 2017. Religious devotion and extrinsic religiosity affect in-group altruism and out-group hostility oppositely in rural Jamaica. *Evolutionary Psychological Science*, DOI 10.1007/s40806-017-0103-y.
- Palestis, B.G. & **Robert Trivers**. 2016. A longitudinal study of changes in fluctuating asymmetry with age in Jamaican youth. *Symmetry*, 8: doi:10.3390/sym8110123.
- Palombit, Ryne A.** 2017. Baboon (*Papio*). In: *The International Encyclopedia of Primatology* (A. Fuentes, ed.), DOI: 10.1002/9781119179313.wbprim0425. John Wiley & Sons, Inc., New York.
- Prassack, K.A.** 2016. A new Pliocene river otter (Mammalia, Carnivora, Mustelidae, Lutrinae) from the Hagerman Fossil Beds (Hagerman Fossil Beds National Monument), Idaho, USA. *J. Vertebrate Paleontology*, e1149075 36(4).
- Pritchard, Alexander**. 2017. Developing project on: The personality of stress coping and its influence on social complexity. Lecture presented at the Annual Meeting of the American Association of Physical Anthropologists, New Orleans.
- Rustagi, N., A. Zhou, W. S. Watkins, E. Gedvilaite, S. Wang, N. Ramesh, D. Muzny, R. A. Gibbs, L. B. Jorde, F. Yu, & **Jinchuan Xing**. 2017. Extremely low-coverage whole genome sequencing in South Asians captures population genomics information. *BMC Genomics*, 18:396
- Santika, T., M. Ancrenaz, ...**Didik Prasetyo**,...& E. Meijaard. 2017. First integrative trend analysis for a great ape species in Borneo. *Scientific Reports*, 7, doi:10.1038/s41598-017-04435-9.
- Vogel, Erin R., Shauhin S. Alavi**, S.S. Utami-Atmoko, M.A. van Noordwijk, **Timothy D. Bransford**, **Wendy M. Erb**, A. Zulfa, F. Sulisty, W.R. Farida, & J.M. Rothman, 2017. Nutritional ecology of wild Bornean orangutans (*Pongo pygmaeus wurmbii*) in a peat swamp habitat: Effects of age, sex, and season. *Am. J. Primatol.*, 79:e22618
- Williams, Lashanda R.**, S. Sholts, D. Hunt, **Robert S. Scott**, **Siobain Duffy**, & C. Hofman. 2017. Tracking how the modern era has shaped microbial diversity. Lecture presented at the Rutgers, Princeton, Penn State, and Columbia University Ecology and Evolutionary Biology Conference, New York.