

"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 2016-2017

Ryne Palombit, Director
Susan Cachel, Executive Board
Robert Scott, Executive Board
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Mark your calendars: On **September 29, 2016**, CHES will hold its annual **Open House** in the Life Sciences Atrium (Busch Campus) to inform all of our supporters about the important work we have done over the past year – more details to follow!

NEWS



This year CHES welcomes its newest member, Prof. **Siobain Duffy**. Prof. **Duffy** will continue to diversify the intellectual reach of CHES and contributes her theoretical interests, expertise in bioinformatics, and a thriving laboratory research program in experimental evolution to the CHES research network. Her interests in adaptive constraints on evolution and questions of organism evolvability broaden the theoretical scope of CHES research. Her research includes a focus on pathogen emergence. For example, she has linked rates of evolution in RNA viruses to the types of host cells they target for infection, a potentially significant insight concerning co-evolution of human hosts and RNA viruses. Prof. **Duffy** has several active grants and projects. She is pictured here (right) in the field during her work on one of these projects focused on the cassava-virus dynamics affecting a major human crop system.

First Recipients of the new Albert Fellows Doctoral Dissertation Research Award

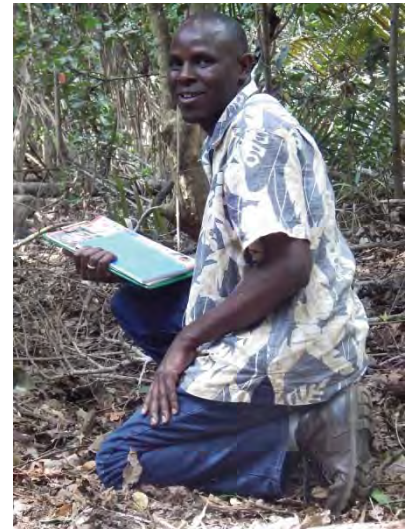
CHES achieved an important advance in **support of graduate student research**. We have always supported the pilot research and preliminary data collection of its graduate student members, but beginning this year we have expanded this initiative to include major funding of doctoral dissertation research 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 each of two 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 institutions such as the L.S.B. Leakey Foundation. The recipients of the award are **MAREIKE JANIAK** and **STAN KIVAI**.



MAREIKE JANIAK is studying the genetic variation of the digestive enzymes rela-

ted to the little studied insect diets of many species of New World monkeys. Her research on the chitinase & pepsin A enzymes will help to answer questions about the relative importance of digestive versus the more studied dental & behavioral adaptations in the evolution of primate diets, both past & present. Mareike's data will improve conservation of wild primates & other mammals as well as their management in captivity by providing better information about the interaction of digestive abilities & feeding requirements.

STAN KIVAI studies how juvenile primates overcome the nutritional & mechanical problems of their foods to become efficient feeders. The monkey he studies—the Tana River Mangabey — is endemic to Kenya & one of the world's most endangered primate species. Besides testing foraging theory in the rarely studied juvenile age class, Stan's research includes outreach, such as conservation education at local Kenyan primary schools, tree transplanting & habitat restoration, as well as management practice development.



This year CHES also launched a new program to help support undergraduate research. Named in honor of long-time CHES friend and donor, **DR. BARRY C. LEMBERSKY**, seen here (left) with his wife **DIANE FAUST** at a 2014 CHES event honoring **DR. RICHARD LEAKEY**, this annual award targets an undergraduate doing Senior Honors Thesis research under the

supervision of a CHES faculty member. **DANIEL NAUMENKO** (Rutgers 2017) received the award for his study of the relationship between age, diet, and oxidative stress in wild orangutans. He spent the summer at advisor Dr. **ERIN VOGEL'S** Bornean field site and will continue with laboratory analyses of urine samples this Fall.



First Recipient of the new Barry C. Lembersky Undergraduate Research Award

2016 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 **LASHANDA WILLIAMS** (PhD program in Ecology & Evolution) whose project integrates approaches in paleopathology and paleomicrobiology to reconstruct oral health and disease in early 20th Century USA. Working at the National Museum of Natural History in Washington D.C., Lashanda's research will shed light on the evolution of major human periodontopathogens as well as on sociocultural influences on the prevalence of dental pathologies.



GRADUATE AFFILIATE Updates

Two CHES Grads were recently awarded Doctorial Dissertation Improvement Grants from the **National Science Foundation**. **SHAUHIN ALAVI** is studying the role of cognition in foraging decision-

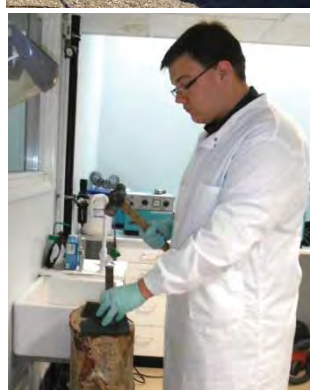


making in wild orangutans at **ERIN VOGEL'S** Borneo site. He's particularly interested in how spatial memory and physiologically measured nutritional needs interact to produce the travel and foraging paths of these apes. **TOM CONTE'S** research examines how severe ecological calamities shed light on the adaptive function of the evolved sys-



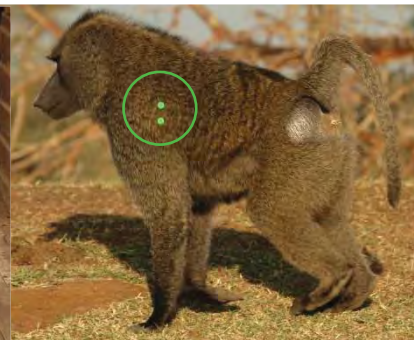
tems of extreme cooperation that define humans. He's studying nomadic herders inhabiting Mongolia's Darhad Valley, in particular, how the willingness and ability to cooperate with one another are affected by severe winter storms known as *zud*, during which temperatures may plummet to -50 °F. Tom also received a prestigious **Fulbright Fellowship** to support this work.

Besides analyzing her computer tomography (CT) scanning data for her study of primate locomotion and iliac anatomy, **DARCY SHAPIRO** (right) has been looking for Miocene fossil apes near Rudabánya, Hungary. **LIZ BALLARE** (lower right) releases a formerly captive orangutan as part of her work at the Nyaru Menteng Rehabilitation Center in Indonesia. She recently received a grant from **Margot Marsh** for her study of nutrition and immune function of rehabilitants.



MICHELLE NIGHTPIPE (left) is studying intergroup relationships between Native & non-Native communities in South Dakota from the perspective of coalitional psychology. Her ethnographic research includes participating in Native American ceremonial rides (see the photo on Page 1). Working here with a percussion mortar, **RENE STUDER-HALBACH** (left) uses anatomical and isotopic data to understand how competition structured ancient primate communities and ecological niches.

MELANIE FENTON has been studying social behavior in olive baboons at **RYNE PALOMBIT'S** Kenyan field site, and this year she developed a means of taking body measurements without having to sedate the animals. The method uses parallel lasers mounted to a camera. First, the two laser beams are calibrated to a standard 4-cm distance using a subject—in this case, Melanie herself! (right). This “ruler” can then be used to measure the length and height of a baboon from a photograph. These data will contribute to Melanie’s ongoing study of the interplay of aggression & bonding in male-female relationships.



XIAOYA ZHAN (right) collaborated this summer with colleagues at North Carolina University and the Gansu Archaeology Institution on a dig at Mogou, a Neolithic cemetery in northwestern China. Xiaoya’s research goal is to better understand cranial trauma among the human skeletal remains at this burial site.



New PhDs:



PADMINI IYER (left, with her Ugandan research assistant) successfully defended her dissertation, *Risk Management Strategies of Male and Female Pastoralists in Karamoja, Uganda*. Her research uses evolutionary theory on cooperation to explain how human social networks centered on livestock and food exchange (right) function ecologically & socially. **FRANK BATISTE'S** dissertation, *Theory of*



Mind and the Role of Target Individuals' Group Affiliation, is based on a series of psychological experiments with which he examined the influence of variation in mental attribution on the coalitional attitudes and tendencies of humans.

CHES Associate Post- Doctoral Research

HYLKE DE JONG'S (right) PhD from the University of Bristol focused on strontium isotopic variability in human tooth enamel. As a CHES Associate, he has extended this research to study the ratio of strontium isotopes in salt used by contemporary pastoralists & in the archaeological record. His aim is to model salt consumption and its impacts on society in Late Neolithic-Early Bronze Age Europe. **WENDY ERB** (PhD Stony Brook, below right, in a dugout in Borneo) finished her 3-year postdoc with **ERIN VOGEL**, during which she studied how variation in health and physiological stress among male orangutans affects the performance and acoustics of their famously loud “long calls” and, thereby, the



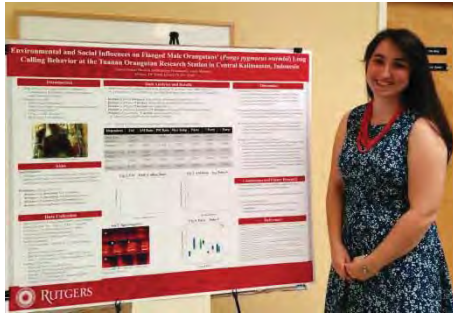
“honesty” of the information these calls convey. But Wendy was also swept up into the grueling work of fighting the devastating fires that ravaged the rainforests of Borneo and attracted international attention. She’ll soon be returning to Indonesia as a newly awarded **Fulbright Senior Scholar**. Two postdocs are currently working with **LEE CRONK'S** Human Generosity Project. **CATHRYN TOWNSEND** (PhD, University College London) is spending 2016 conducting fieldwork among the





lk people of northeastern Uganda. Her research focuses on patterns of sharing, cooperation, and mutual aid among these subsistence farmers. **MATT GERVAIS** (PhD, University of California, Los Angeles) continues his study of social support networks in rural villages in Yasawa, Fiji (left). Matt collects behavioral and ethnographic data supplemented by carefully designed economic games. His aim is to understand how these networks are influenced by risks associated with illness or environmental disasters (such as cyclones) as well as by kinship and spatial distance.

UNDERGRADUATE RESEARCH



A number of CHES Undergraduate Affiliates wrote Senior Honors Theses based on research they conducted under the supervision of a CHES faculty member. Students presented their research at an Honors Poster Symposium in April. **EMILY MARTINES** (left) received Highest Honors and the Sympos-



ium award In Evolutionary Anthropology for her thesis supervised, by **ERIN VOGEL**, *Environmental and Social Influences on Flanged Male Orangutan (Pongo pygmaeus wurmbii) Long Calling Behavior at the Tuanan Orangutan Research Station in Central Kalimantan, Indonesia*. **CAROLINE CLARK** (above right with **CRAIG FEIBEL**) earned Honors for her thesis, *Analysis of Feature 119 at The Speaker's House, Trappe, Pennsylvania* (supervisor, **CARMEL SCHIRE**). **JAYDE HIRNIAK**, *Spatial and Temporal Analysis of Paleoanthropological Data Associated with Paleo-Lorenyang Lake* (supervisor, **CRAIG FEIBEL**), and **MARY PIECHOWICZ**, *Feeding Rates in Wild Bornean Orangutans (Pongo pygmaeus wurmbii): A Comparison of Methods* (supervisor, **ERIN VOGEL**) both earned High Honors. **ALLEN WODLINGER** (right with Kenyan field assistant) earned Honors for *Female Social Relationships and Access to the Male in a Group of Wild De Brazza Monkeys, Cercopithecus neglectus, of Mathew's Range, Kenya* (supervisor, **RYNE PALOMBIT**).



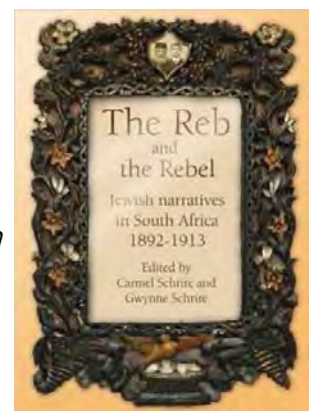
FACULTY Updates

Prof. **SUSAN CACHEL** consulted this year with colleagues at the University of Calgary about modeling human sociality based on paleontological, archaeological, and comparative behavioral evidence. Dr. Julio Mercader and his graduate students discussed with her a portable clean lab they have developed, which they are bringing to new excavations at Olduvai Gorge, Tanzania. Dr. Cachel was also recently interviewed about Neanderthal diets by National Public Radio and invited to be a commentator for the new journal *Animal Sentience*.

Prof. **JINCHUAN XING** is a co-investigator in a four million dollar, four year grant from the National Human Genome Research Institution. He will assist in running the coordinating center for the Genome Sequencing Program (<http://gsp-hg.org/>).

Prof. **CARMEL SCHIRE** is continuing her work on the Dutch East India Company (VOC) at the Cape (1652-1795), which involves analysis of VOC artifacts from the Golden Acre in central Cape Town, South Africa. Dr. Schire has also recently published, with Gwynne Schire, *The Reb and the Rebel: Jewish Narratives in South Africa*.

With his collaborators at the University of Göttingen and Wagner College, Prof. **ROBERT TRIVERS** continues his research on anatomical symmetry and



athletic performance in a population in Jamaica. Some of this research on knee symmetry and sprinting can be viewed at: <http://tedxtalks.ted.com/video/Symmetrical-Knees-and-Sprinting>.

Prof. **ERIN VOGEL'S** Tuanan Orangutan Research Station was among the many places in Borneo threatened by rampaging fires this year, but fortunately—due to major efforts in fire-fighting by her team—it survived and continues to support a large number of projects. Her Laboratory for Primate Dietary Ecology and Physiology at Rutgers is also a major site of research by graduate and undergraduate students investigating the interaction of feeding ecology, physiology, and morphology.



Prof. **CRAIG FEIBEL** continued exploring the Turkana Basin of Kenya with fieldwork at the world's oldest archaeological locality Lomekwi 3. Fieldwork there with CHES Graduate Affiliate **MELISSA BOYD** focused on understanding the habitats preserved around this 3.3 million-year-old site.

Prof. **RYNE PALOMBIT'S** research project on olive baboons continues in Kenya. Fieldwork with his advisee and new PhD, **EMILY LYNCH**, revealed some interesting patterns of kinship and bonding among juveniles. Even though matrilineal kinship through the mother is so important in these baboons' social lives, paternal kinship also emerged as an important factor in promoting strong social bonds among youngsters with the same father.

Prof. **LEE CRONK** continues to co-direct the Human Generosity Project (www.humangenerosity.org), a transdisciplinary initiative to better understand cooperation, aid, and sharing among humans throughout the world, including ranchers in Arizona, one of whom appears with Dr. Cronk below. Among the highlights of the past year were visits to two of the eight HGP



field sites. The first visit was among Maasai pastoralists in Kenya, whose system of mutual aid is being studied by Cronk's advisee and CHES graduate affiliate **DENNIS SONKOI**. The second was among Hadza foragers in Tanzania, who are being studied by HGP team member Dr. Colette Berbesque of the University of Roehampton. In addition, Dr. Cronk teamed up with two CHES Alumni, **HELEN WASIELEWSKI** and **ROBERT LYNCH**, on a CHES-funded study of sex-biased parental behavior.

Prof. Emeritus **LIONEL TIGER** completed his soon-to-be published book, *Darwin's Only Defeat*, on the links between the contraceptive pill and sexual selection theory. And a new edition of his book co-authored with Michael Maguire, *God's Brain*, was published this year.

ALUMNI Updates

CHES Alumnus **DAVID BRAUN**, (George Washington University) seen here with some of his collaborators in Ethiopia, continues his work there and in other parts of Africa. His teams are studying the paleo-ecology of *Homo erectus* at Koobi Fora near Lake Turkana, Kenya, as well as finishing an excavation focused on Middle Pleistocene ecology at Elandfonstein, South Africa. Along with Prof. Emeritus **JACK HARRIS**, and **CRAIG FEIBEL**, he's also advising graduate affiliate **SARAH HLUBIK** with her dissertation research on fire at Koobi Fora.



KARI PRASSACK is Park Paleontologist and Fossil Curator at the Hagerman Fossil Beds National Monument in Idaho. This last year she discovered a new fossil otter, and she's currently studying fossil birds for the Olduvai Gorge Geochronology and Archaeology Project in Tanzania. **ROBERT LYNCH** is currently doing a postdoc at the University of Missouri, where **Emily Lynch** is teaching courses in Anthropology and Primate Behavior.



BRIANA POBINER (left) addresses visitors to the Smithsonian Institution, Washington, D.C., where she is Research Scientist and Museum Educator. She recently completed a 3-year, NSF-funded education project studying the effects of evolution curricula and developing teaching strategies for AP biology classes that use human case studies to promote student understanding and interest in evolution. Briana is also continuing her taphonomic research with collaborators at the National

Museums of Kenya, which is focused on the ~1 million year old fossil animal bones from Olorgesailie. And she maintains her experimental butchery research to better understand the behaviors that produce variable patterns of markings on animal bones.

CHES Outreach Activities

CHES members use their research to pursue local outreach activities in numerous ways. In Indonesia, **ERIN VOGEL**, **WENDY ERB**,



and their team have conducted environmental education lectures at five villages as well as clean water and waste management workshops (left). As part of his research in Kenya, **RYNE PALOMBIT** and his students have

pursued educational outreach in the form of long-term support of local primary schools (bottom left), and lectures and student exercises about conservation, wildlife issues, and natural resource maintenance, as shown by graduate affiliate **MELANIE FENTON** and her husband Jim Fenton (bottom right). During his field research in northern Kenya, **CRAIG FEIBEL** (right) gives lectures to High School students in the Lake Turkana Basin Institute about fossil finds he and his collaborators are unearthing there. As part of **LEE CRONK'S** involvement in the Human Generosity Project, the Exploratorium in San Francisco, California will present a display this year addressing the evolution of cooperativeness in human beings.



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

- Amato, K., R. Matinez-Mota, N. Righini, M. Raguét-Schofield, ..., **Lashanda Williams**, A. Luong, M.G. Dominguez-Bello, R. Stumpf, B. White, K. Nelson, R. Knight, & S. Leigh. 2015. Phylogenetic and ecological factors impact the gut microbiota of two Neotropical primate species." *Oecologia*: 180: 717-733
- Coiner-Collier, Susan, Robert S. Scott**, J. Chalk-Wilayto, S.M. Cheyne, P. Constantino, N.J. Dominy, A.A. Elgart, H. Glowacka, L.C. Loyola, K. Ossi-Lupo, M. Raguét-Schofield, M.G. Talebi, E.A. Sala, **Pavel Sieradzy & Erin R. Vogel**. 2016. Primate dietary ecology in the context of food mechanical properties. *Journal of Human Evolution*, doi <http://dx.doi.org/10.1016/j.jhevol.2016.07.005>.
- Cronk, Lee**. 2016. Culture's influence on behavior: Steps toward a theory. *Evolutionary Behavioral Sciences*.
- Dibble, H.L., S. Holdaway, S.C. Lin, **David R. Braun**, M.J. Douglass, R. Iovita, S.P. McPherron, D. Olszewski, & D. Sandgathe. 2016. Major fallacies surrounding stone artifacts and assemblages. *Journal of Archaeological Method & Theory*, DOI 10.1007/s10816-016-9297-8.
- Erb, Wendy**, T. Ziegler, N.S. Lestari, & K. Hammerschmidt. Are simakobu (*Simias concolor*) loud calls energetically costly signals? *American Journal of Physical Anthropology*, 161: 44-52.
- Foster, Fred & Darcy Shapiro**. 2016. Convergent loss of paranasal sinuses in mammals is explained by their deleterious effects on high-frequency communication. Lecture presented at the *International Congress of Vertebrate Morphology*.
- Harmand, S., J. E. Lewis, **Craig S. Feibel, Christopher J. Lepre**, S. Prat, A. Lenoble, X. Boës, **Rhonda L. Quinn**, Brenet, M., Clément, S., Daver, G., Brugal, J. -P., Leakey, L., Kent, D. V., Mortlock, R. A., Wright, J. D., & Roche, H. 2015. Before the Oldowan: 3.3 Ma Stone Tools from Lomekwi 3, West Turkana, Kenya. *Nature* 521:310-315.
- Palombit, Ryne A**. 2016. The olive baboon (*Papio anubis*). In: *All the World's Primates*, (N. Rowe, ed.) Pogonias.
- Platt II R. N., Y. Zhang, D. J. Witherspoon, **Jinchuang Xing**, A. Suh, M. S. Keith, L. B. Jorde, R. D. Stevens, & D. A. Ray. 2015. Targeted capture of phylogenetically-informative Ves SINE insertions in genus *Myotis*. *Genome Biology & Evolution* 7:1664-1675.
- Pobiner, Briana L**. 2016. Accepting, understanding, teaching, and learning (human) evolution: Obstacles and opportunities. *Yearbook of Physical Anthropology* 159: S232-S274.

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