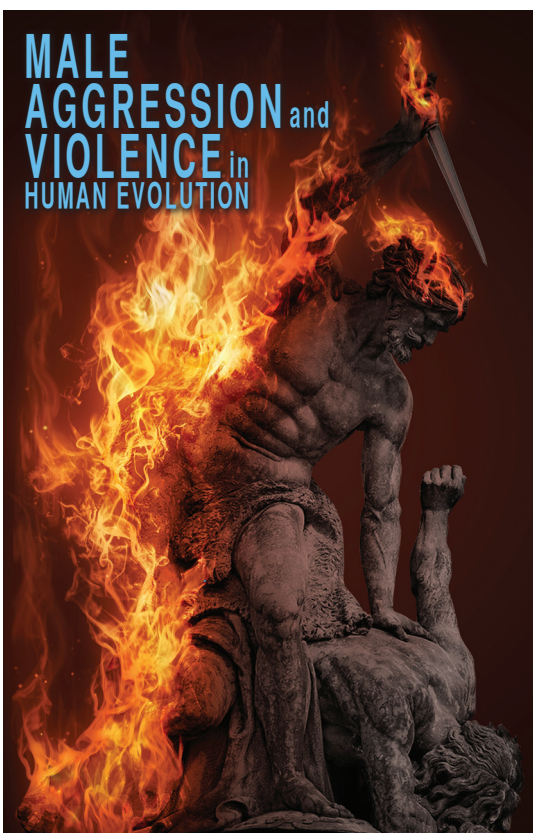




anthropogeny tacks

a CARTA newsletter

Volume 2, Issue 2 - May 2014



Symposium Details

Friday, May 16, 1:00 - 5:30 p.m., Pacific

De Hoffmann Auditorium, Salk Institute

Free registration and live webcast at: <http://carta.anthropogeny.org/events/male-aggression-and-violence-human-evolution>

This CARTA symposium is made possible by
The G. Harold and Leila Y. Mathers Charitable Foundation

Did Male Aggression and Violence Play a Role in Shaping the Human Lineage?

In the last few decades, new sources of evidence have continued to indicate that male violence has impacted the evolution of human behavior. The frequency and nature of such violence varies widely among populations, which raises questions about the factors responsible for such variation.

CARTA's May 16, 2014 symposium, **Male Aggression and Violence in Human Evolution**, will explore this fascinating, and possibly contentious, topic. The aim of this symposium is to take a fresh look at the causes and consequences of variation in aggression, both between and within species. The expert panel of speakers will critically examine and represent the available evidence from multiple sources, including comparative ethology, ethnology, archaeology, political science, and evolutionary neuroscience. While the symposium may not come to any definitive conclusions, it should allow for the best interpretation of the current evidence, and help suggest research agendas for the future.

Presentations and Speakers

Warfare and Feuding in Pleistocene Societies • Christopher Boehm, University of Southern California

Intergroup Violence: Chimpanzees and Lions • Anne Pusey, Duke University

Neuroendocrine Mechanisms Underlying Male Aggression • Donald Pfaff, Rockefeller University

Bioarchaeological Perspectives on Male Violence in Prehistory • Patricia Lambert, Utah State University

Male Violence Among the Aché and Hiwi Hunter-Gatherers • Kim Hill, Arizona State University

Resource Unpredictability, Socialization and War • Carol Ember, Yale University

Violence: What's Culture Got to Do With It? • Polly Wiessner, University of Utah

The Parallel Evolution of Humanity and Savagery • Richard Wrangham, Harvard University

Do Hunter-Gatherers Tell Us About Human Nature? • Robert Kelly, University of Wyoming



Center for Academic Research and Training in Anthropogeny
"to explore and explain the origins of the human phenomenon"

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Students Reflect on the Anthropogeny Field Course in Africa

This May, four students will complete the requirements for the Graduate Specialization in Anthropogeny, adding a parenthetical degree in Anthropogeny to their Ph.D.s already in progress. Melanie Beasley, Kari Hanson, Rachel Zarndt, and Robert Thomas, who have participated in the three-year program consisting of human origins curriculum, active engagement in CARTA symposia, networking with leading researchers across the globe, a field course in Africa, and regular participation in an anthropogeny think tank, are this year's graduates. As a final farewell, Melanie, Kari, Robert, and Rachel reflect on their experience as an Anthropogeny Specialization student and the impact of the Specialization to their career.

Melanie Beasley, Anthropology



Melanie takes a moment from an osteology session

The Specialization has been a great experience during my time at UCSD. There are only three biological anthropologists in the Department of Anthropology, so CARTA has served as a way to make connections with other faculty on campus and other anthropologists at other institutions. CARTA symposia have served as a way to network with these other anthropologists and discuss a variety of topics that address questions of human uniqueness. The other CARTA students have served as a resource outside of anthropology to discuss fields of research that I am not regularly exposed to and for that I am grateful.

Robert Thomas, Biomedical Sciences

The Specialization has expanded the scope of my graduate studies in biomedical sciences by providing opportunities to engage in coursework and fieldwork that addressed evolutionary contributions to human health and disease. By providing epidemiologic field experience and training in comparative methods, the specialization track shaped my interest in evolutionary medicine and clinical research design. Between travel journals, MOCA entries, and faculty mentorship, my experience in the Specialization profoundly affected how I approach problems as a physician scientist. I feel more comfortable studying problems outside of the lab or clinic, and I am better equipped to engage in global, cross-cultural health projects, and participate in scientific discussions outside my own research niche.



Robert, while on the lookout for chimpanzees in Gombe

Kari Hanson, Anthropology

My three years in the Specialization have significantly shaped the way that I think about my own research. As a result of the Field Course in Africa, I truly got a sense of the disparity in ecological conditions that define primate life. I've begun to re-conceptualize my research questions from the perspective of environments involved in shaping the primate brain. CARTA symposia have also been an



Kari poses with Lucy in Addis Ababa

excellent resource in expanding my knowledge base and allowed for socialization into a broader scientific community of researchers in my own field and beyond. Being encouraged to engage in discussions with prominent scientists has helped to bridge the seemingly rigid hierarchical boundaries between graduate students and senior researchers, and fostered meaningful conversations that force you to translate your work into more accessible terms.

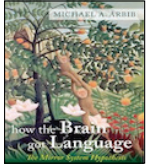
The Anthropogeny Specialization emboldens students to continually explore the Big Picture. As CARTA faculty nurtured our inquiry into the complexity of human origins, I found my scientific inquisitiveness expanding even as my research focus narrowed. Participation in Anthropogeny Symposia introduced an array of scientific topics I'd never previously considered, and I now surprise myself by enjoying comfortable and competent conversation with academics in a wide array of fields. These are skills which are invaluable not only in a growing scientific career, but further translate into a genuine passion to seek explanations, wherever they may be found, for the unanswered questions of what it is to be human. The influence of the Specialization has allowed my own research into the genetic underpinnings of hypoxia adaptation in the *Drosophila* heart to expand from the minutiae of mechanism to explorations of population dynamics. Skills honed in journal clubs with fellow Anthropogeny students, and discussions partaken while on the Field Course, give me the confidence to grasp at deciphering a broad array of ideas with my research.



Rachel, bottom right, at the Ngoro Ngoro National Park

CARTA-Inspired Publications

Transdisciplinary interaction is at the core of CARTA's mission to advance human origins research. CARTA symposia provide a forum for experts from vastly different fields to share knowledge and work together to spark new research. The following is a selection of publications inspired by interactions amongst CARTA members (**in bold**) and facilitated by CARTA. (Complete list at the CARTA website)



Arbib, M.A. Précis of How the brain got language: The Mirror System Hypothesis. *Language and Cognition*. 2013; 5(2-3):107–131.

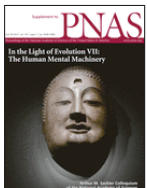
This article on how the brain evolved language is featured in a special double issue of *Language and Cognition*. It is followed by 12 commentaries from experts in anthropology, apraxia, archaeology, linguistics, neuroanatomy, neuroimaging, neuropsychology, primatology, sign language emergence and sign language neurolinguistics. The issue concludes with a response from Arbib entitled "Complex imitation and the language-ready brain."

Free access to the entire special issue is offered by the publisher until June 1, 2014: <http://journals.cambridge.org/action/displayIssue?iid=9168659>



Bogin, B., Azcorra, H., Wilson, H.J., Vázquez-Vázquez, A., Avila-Escalante, M.L.C.-B., M. T. Varela-Silva, I., Dickinson, F. Globalization and children's diets: The case of Maya of Mexico and Central America. *Anthropological Review*. 2014; 77(1):11–32.

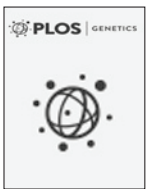
Understanding human origins is a complicated business. At its simplest, it is all about 'food and sex' – the adaptations that our ancestors made to acquire enough to eat, reproduce, and feed offspring. People have come a long way from our hunting-gathering origins and today increasing numbers of people eat a globalized diet of processed foods which may compromise the evolutionary basis for health.



Cela-Conde, C.J., Gutierrez Lombardo, R., **Avise, J.C.**, **Ayala, F.J.** In the light of evolution VII: The human mental machinery. *Proc Natl Acad Sci U S A*. 2013; 110 Suppl 2:10339–10342.

Aesthetic values are one of the unique mental traits of humans, along with others such as self-reflection, conscious reasoning powers, and ethics.

Understanding the brain processes behind these traits and how they evolved in our primate ancestry is the topic of this symposium volume sponsored by the Sackler program of the United States National Academy of Sciences.



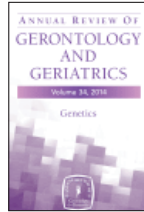
Davis, J.M., Searles, V.B., Anderson, N., Keeney, J., Dumas, L., **Sikela, J.M.** DUF1220 Dosage Is Linearly Associated with Increasing Severity of the Three Primary Symptoms of Autism. *PLoS Genet*. 2014; 10(3):e1004241.

DUF1220 protein domains show an extreme human-specific increase in copy number and have been linked to the evolutionary expansion of the human brain. Recent work has now found that, in individuals with autism, as DUF1220 dosage increased, the severity of the three primary symptoms of autism became progressively worse. Thus, the same gene family that has been linked to human brain evolution may also be involved in autism severity.



Dunn, R.H., **Tocheri, M.W.**, Orr, C.M., Jungers, W.L. Ecological divergence and talar morphology in gorillas. *Am J Phys Anthropol*. 2014; 153(4):526–541.

This article demonstrates that western gorillas have strikingly different talar morphology (ankle) than do eastern gorillas, suggesting that western gorillas are more adaptively committed to climbing than are eastern gorillas living in highland habitats. These results provide important insights into the longstanding debate over the role and importance of climbing in early human evolution.



Finch, C.E., Austad, S. Evolution of human brain aging and neurological disease. *Annu Rev Gerontol Geriatr*. 2014; 34(1):139–170.

As the longest-lived primate, we have much higher risk for Alzheimer disease (AD) than great apes, which typically show mild brain aging changes. One exception proves the rule: an obese hypertensive chimpanzee who had some AD-like changes, confirming the human associations of obesity with AD. With new restrictions on studying captive apes, much may still be learned about aging in wild populations.



Hatala, K.G., Dingwall, H.L., Wunderlich, R.E., **Richmond, B.G.** The relationship between plantar pressure and footprint shape. *J Hum Evol*. 2013; 65(1):21–28.

Richmond and his colleagues have discovered new evidence of foot anatomy, body size, and upright gait of early humans based on 1.5 million-year-old footprints at Ileret, Kenya. These footprints provide some of the best evidence yet that our extinct relatives who produced those footprints 1.5 million years ago were already as large as humans living today.



Hawkes, K., Coxworth, J.E. Grandmothers and the evolution of human longevity: a review of findings and future directions. *Evol Anthropol*. 2013; 22(6):294–302.

The Grandmother Hypothesis may explain the evolution of human postmenopausal longevity, our early weaning and our late maturity compared to the other great apes, plus the precocious preferences for shared understanding that are the foundation of our cultural lives. The hypothesis also stimulates comparisons of aging physiology between humans and chimpanzees that continue to provoke more questions.



Hewlett, B.S., Winn, S. Allomaternal Nursing in Humans. *Curr Anthropol*. 2014; 55(2):200–229.

Few data exist on allomaternal nursing in humans and this is the first paper to present quantitative behavioral data and a cross-cultural survey on the topic. The paper addresses three basic questions: How often does it occur, who provides it, and under what contexts does it take place? Humans are cooperative breeders and it was, therefore, not surprising to find that allomaternal nursing existed in over 90% of the cultures with data. Three unexpected results emerged from the study: regular allomaternal nursing occurred almost exclusively before four months of age, grandmothers often provided the allomaternal nursing, and tropical forest hunter-gatherers were much more likely to allonurse than were foragers in arid environments.



Marshall, P.J., **Meltzoff, A.N.** Neural mirroring mechanisms and imitation in human infants. *Philos Trans R Soc Lond B Biol Sci*. In Press

Human beings are social creatures who learn from watching others. We are the most imitative creatures on the planet. Imitation is a basic mechanism for learning prior to language. The paper investigates the mirror neuron system in human children, illuminating a fundamental aspect of what it means to be human. The findings provide leverage for understanding tool use, language, action representation, and theory of mind.

CARTA-Inspired Publications, Continued



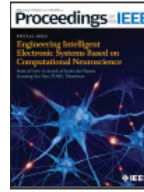
Saker, P., Farrell, M.J., Adib, F.R.M., Egan, G.F., McKinley, M.J., **Denton, D.A.** Regional brain responses associated with drinking water during thirst and after its satiation. *Proc Natl Acad Sci U S A*. 2014; 111(14):5379-8413.

For humans, drinking water as response to thirst is a pleasant subjective experience with activations of the anterior cingulate and orbitofrontal cortex. However, compliant continuing drinking when already satiated is unpleasant and eventually aversive. Activations in the insula, amygdala, and periaqueductal gray subserving inhibition of swallowing are associated with increased motor signals needed to turn on swallowing, and with midcingulate activation reflecting unpleasantness. The results show an important mechanism of high survival value in regulation of body water balance.



Patel, A.D. The evolutionary biology of musical rhythm: was Darwin wrong? *PLoS Biol.* 2014; 12(3):e1001821.

Do other species process basic musical rhythm in the same way we do? Darwin supported this intuitive idea, but it is being challenged by new cross-species research. This research suggests that the human capacity to move in synchrony with a musical beat may be shared with only a few other species. This has implications for our understanding of the evolutionary origins of human musicality.



Sejnowski, T.J., Poizner, H., Lynch, G., Gepshtein, S., **Greenspan, R.** Prospective Optimization. *Proc IEEE Inst Electr Electron Eng*. In-Press.

Human performance in some perceptual and motor tasks approaches the ideal optimum after a long period of learning while the cerebral cortex interacts with the basal ganglia, an ancient part of the vertebrate brain. The same brain structures in the cortex and basal ganglia that are active online during optimal behavior are also active offline during planning, called prospective optimization.



Stiner, M.C., Buitenhuis, H., Duru, G., Kuhn, S.L., Mentzer, S.M., Munro, N.D., Quade, J., Tsartsidou, G., Özbaşaran, M. The forager-herder trade off, from broad spectrum hunting to sheep management at Aşıklı Höyük, Turkey. *Proc Natl Acad Sci U S A*. In-Press

This article provides original results on the formative conditions of sheep domestication in the Near East. None of the results have been published before, and the results are expected to be of wide interest to archaeologists, biologists and other professionals interested in evolutionary and cultural processes of animal domestication.

CARTA Symposia Schedule

Male Aggression and Violence in Human Evolution
May 16, 2014 • Salk Institute

Domestication and Human Evolution
October 10, 2014 • Salk Institute

How Language Evolves
February 20, 2015, UC San Diego

Climate Change in Human Origins: Past, Present, and Future
Spring 2015, Location TBD

CARTA on the Web



carta.anthropogeny.org



[facebook.com/ucsdcarta](https://www.facebook.com/ucsdcarta)



Want to rewatch a CARTA symposium? All our symposia, including “**Birth to Grandmotherhood: Childrearing in Human Evolution**” (February 2014), are available at these websites.

What is CARTA?

The UC San Diego/Salk Institute Center for Academic Research and Training in Anthropogeny (CARTA) is dedicated to answering the age old questions “where did we come from?” and “how did we get here?” As CARTA explores the origins of humanity, we are not only answering philosophical and existential questions, but also addressing very practical issues such as human nutrition, medicine, mental disease, the organization of society, the upbringing of our young, and the interactions of humans with one another and with our environment. CARTA organizes symposia aimed at exploring key issues surrounding the pursuit of understanding our origins.

For more information, please visit <http://carta.anthropogeny.org>

Support CARTA

Your donation to CARTA has the power to impact and transform the study of anthropogeny and the understanding of human origins. There are three ways to donate to CARTA:

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