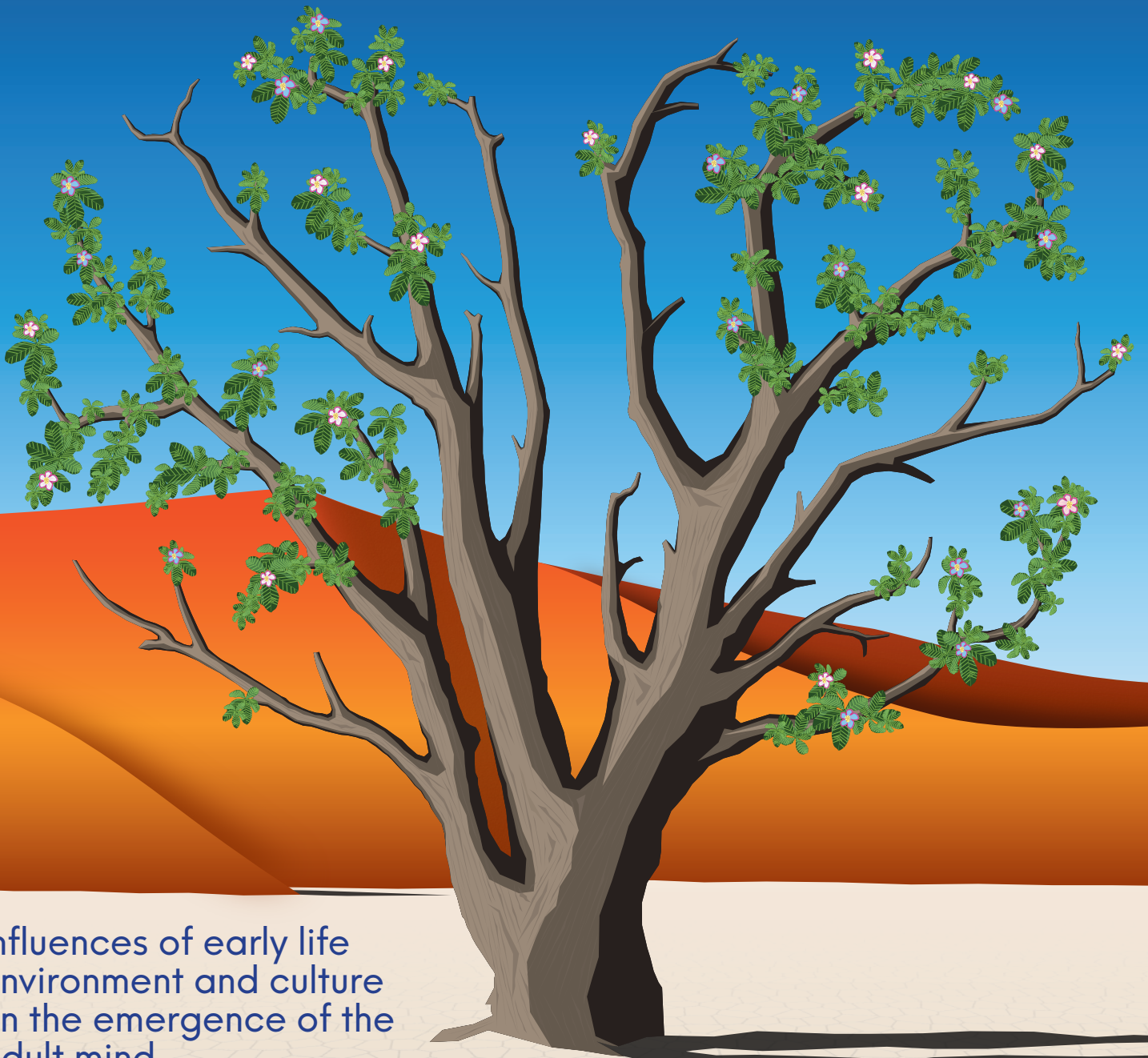


anthropogeny tracks

a CARTA newsletter

vol. 7/3 - oct 2019



Influences of early life environment and culture on the emergence of the adult mind

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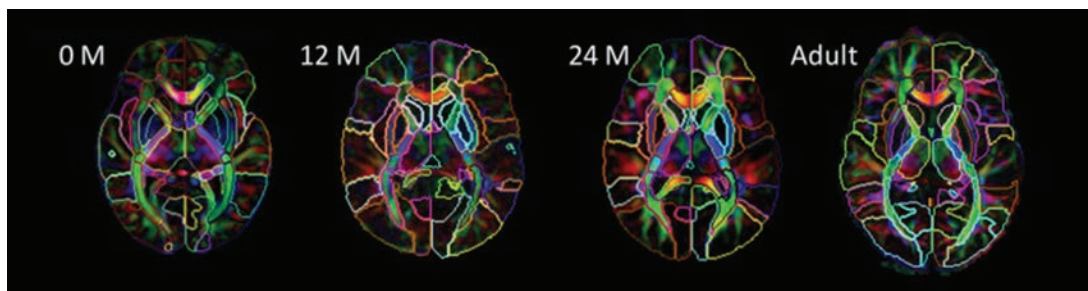
CARTA-
INSPIRED
PUBLICATIONS

SYMPOSIUM

A public symposium co-sponsored by the Center for Academic Research and Training in Anthropogeny (CARTA) and the KAVLI Institute for Brain and Mind (KIBM).

IMPACT OF EARLY LIFE DEPRIVATION ON COGNITION IMPLICATIONS FOR THE EVOLUTIONARY ORIGINS OF THE HUMAN MIND

FRIDAY, OCTOBER 11, 2019, 1:00 - 5:30 PM (PT) Conrad T. Prebys Auditorium, Salk Institute
FREE ADMISSION & LIVE WEBCAST!



Brain atlas of 3D anatomical information at different developmental stages (multi-dimension). Different colors represent different orientation of white-matter fibers [anisotropy map based on diffusor tensor imaging, DTI]. Image courtesy of Dr. Michael Miller, et al., from: Miller, M., Faria, A., Oishi, K., Mori, S. High Throughput Neuro-Imaging Informatics. *Frontiers in Neuroinformatics*. 2013;7(31). DOI: 10.3389/fninf.2013.00031.

Unlike most other animals, brain development and maturation in humans mostly occurs after birth and continues into early adulthood.

This unusual pattern allows for greater influences of environment and culture on the emergence of the adult mind.

Ethical considerations disallow most experiments that might address the interactive contributions of nature and nurture, which likely played a key role in the origins of the human species and in the evolution of distinct features of our minds.

Impact of Early Life Deprivation on Cognition: Implications for the Evolutionary Origins of the Human Mind (October 11, 2019), a symposium co-sponsored by the Center for Academic Research

and Training in Anthropogeny (CARTA) and the Kavli Institute for Brain and Mind (KIBM), will address the matter to the extent possible based on available evidence and experiments by ancient monarchs, lessons from “feral” children of various kinds, to the follow-up of Romanian orphans, while addressing comparative and neurobiological issues.

The lineup of presenters include scientists and scholars who are experts in the field of brain and social development (see next page for more details).

We hope you will consider joining us for this free event, either in person or by watching the live webcast.

Anthropogeny Tracks newsletter is produced by CARTA staff and faculty



Center for Academic Research and Training in Anthropogeny

“to explore and explain the origins of the human phenomenon”

University of California, San Diego • 9500 Gilman Drive, MC# 0060 • La Jolla, CA 92093

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UC San Diego

Featured Speakers



Douglas Candland
Bucknell University



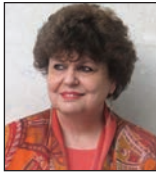
Charles Nelson
Harvard University & Boston Children's Hospital



Elissa Newport
Georgetown University



Paula Tallal (Co-Chair)
Salk Institute



Faraneh Vargha-Khadem (Co-Chair)
UCL Great Ormond Street Institute of Child Health



Danielle Stolzenberg
UC Davis



Marcus Pembrey
University of Bristol



Bruce McEwen
Rockefeller University



Ann Masten
University of Minnesota, Twin Cities

Symposium Program

(All times listed in Pacific)

- 1:00 pm** *Welcome & Prologue: Royal Experiments on Language Origins*
- 1:10 pm** *Opening Remarks*
- 1:15 pm** **Douglas Candland:** *Feral Children: Two Living Examples and a Little Neurology*
- 1:35 pm** **Charles A. Nelson:** *The Effects of Early Psychosocial Deprivation on Brain-Behavioral Development: Findings from the Bucharest Early Intervention Project*
- 1:55 pm** **Elissa Newport:** *Maturational Constraints on Learning*
- 2:15 pm** **Paula Tallal:** *Individual Differences in Language Development and Disorders*
- 2:35 pm** **Faraneh Vargha-Khadem:** *Developmental Amnesia*
- 3:20 pm** **Danielle Stolzenberg:** *Where is My Mother? Uncovering Mechanisms of Neglect in the Maternal Brain*
- 3:40 pm** **Marcus Pembrey:** *Deprivation of Nutrition as a Factor in Human Cognitive Evolution*
- 4:00 pm** **Bruce McEwen:** *The Resilient Brain: Epigenetics, Stress, and the Lifecourse*
- 4:20 pm** **Ann Masten:** *Resilience Processes in Development*
- 4:40 pm** *Wrap-up*
- 4:45 pm** *Question and Answer Session*
- 5:25 pm** *Closing Remarks*

Curious about where we came from and how we got here? Consider attending one of our **FREE** symposia on anthropogeny (the study of human origins) where experts present on topics addressing the origins of the human phenomenon. Can't make it in person? We also offer a **FREE LIVE WEBCAST**. For more details, including registration, the live webcast, or for information on past and future events, please visit:

carta.anthropogeny.org & kibm.ucsd.edu



**CENTER FOR ACADEMIC RESEARCH
AND TRAINING IN ANTHROPOGENY**
"To explore and explain the origins of the human phenomenon"

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UC San Diego

ANTHROPOGENY FELLOWS 2019-20

UC San Diego's Anthropogeny Graduate Specialization is a unique human origins training program that offers a parenthetical degree for graduate students from eight diverse fields of study. Each year, fellowships are given to the most deserving students, which allows for significant investment in their studies. It is with great pleasure that we announce the fellowship recipients for the 2019-20 academic year.

Annette C. Merle Smith Fellowships: Established in 2015, thanks to a generous gift from long-time CARTA supporter, Annette C. Merle-Smith, this award is given to students who have performed at the highest level in the Graduate Specialization in Anthropogeny.



Tim Sainburg (Psychology) is a Ph.D. student in the Gentner Lab at UC San Diego. His research interests touch on the evolution, computation, and development of communicative systems, both in humans and non-humans. Of particular interest is how these systems differ, both from each other and from other cognitive mechanisms. Tim's Ph.D. is currently focused on sequence learning in songbird species, and developing techniques for communication analysis that draw on approaches in computational neuroscience, machine learning, operant conditioning, electrophysiology, and field/behavioral analysis. At UC San Diego, he has worked primarily with songbirds previously studied Cotton-Top Tamarins and Chimpanzee communication. Tim hopes to continue working with primates, and other vocal learners, such as dolphins, whales, bats, and humans.



Arturs Semenuks (Cognitive Science) seeks to bring us a bit closer to answering how language came to be, what underlying mechanisms make it possible, and how it affects other aspects of cognition. Language is a cognitive ability that both belongs uniquely to humans and is crucial for being a human. Arturs' current project is investigating whether cross-linguistic differences in grammars of languages translate into differences between how speakers of these languages think about the world around them. For example, does the necessity to constantly mark a noun as feminine (or masculine) in your language make you think of its referent as being more similar to and having some properties of human females (or males)? If that is indeed the case, we would find an example of a small peculiarity of language having broad consequences on cognition and culture.



Nina Semushina (Linguistics) is a Ph.D. student at UC San Diego who works with professor Rachel Mayberry in the Laboratory of Multimodal Language Development. Her specialization is Sign Language Linguistics and she currently works on Russian Sign Language (RSL) and ASL. One line of Nina's research is related to numeral systems and time expressions and in sign languages around the world. Nina did research on numeral incorporation (when a calendric term simultaneously combined with numeral) - a typologically frequent phenomenon in sign languages, which, being a moderately productive and highly constrained, can give unique insights about morpho-phonology of sign languages and therefore must be studied crosslinguistically. It is also a great material to study the acquisition of numeral

Continued on the next page...

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morphology and historical change in numeral systems. Nina's dissertation project is about the effects of delayed first language acquisition on the development of numerical cognition and linguistic number use. She works with late first language learners of ASL (individuals who were not exposed to any language in their childhood)

and compares them to the deaf native signers of ASL. This work can help us to understand the relationship between language, symbolic number and perception of quantity. Nina is interested in the relationship between language and number, as well as numeral systems of the world and especially in sign languages.

CARTA Fellowships: CARTA fellowships are possible due to the generosity of The G. Harold and Leila Y. Mathers Charitable Foundation and the support from an anonymous donor.



Jason Adams (Neurosciences) is a Ph.D. student at UC San Diego in the lab of Dr. Alysso Muotri. Jason is particularly interested in how microscopic neurological systems, such as neuronal structural and functional interconnectivity, manifest as macroscopic phenomena, including memory, cognition, and behavior. In addition, he is interested in neural structure across the lifespan, from development to degeneration.



Julia Adrian (Cognitive Science) loves the interdisciplinarity of cognitive science and the anthropogeny specialization at UC San Diego. She went through multiple research fields, starting with studying protein expression of cells following heavy ion irradiation (TU Darmstadt, Germany), brain development of young rats exposed to fluctuating oxygen levels (NTNU, Norway), and now cognitive and brain development of preterm and full-term born children during childhood at UC San Diego. Julia also volunteers as a doula at the UC San Diego hospitals, where she gets to support women during childbirth. She is fascinated by how our birth process developed from an evolutionary perspective, and by birth practices in different cultures.



Vanessa Bateman (Visual Arts) is a doctoral candidate in Art History, Theory, and Criticism at UC San Diego. Currently, her dissertation research focuses on visual representations of hunting in the early twentieth century; connecting hunting practices to technological developments in visual media that were concurrent with the conservationist movement in the United States (1890-1920). Although Vanessa focuses on the modern, she situates the subjects of hunting and animals through their place in the development of visual language and larger conceptions of the human/animal divide. Broader questions in her research considered the artistic representations of human evolution and the many past species for which

we now have fossils and how these representations are by definition between the animal and the human. How can anthropogeny help us to determine what makes us human? How did visual language play a role in humans as self-realized? Or do early visual representations reflect a confusion of what it means to be animal, and the loss of animality through cultural and biological evolution?



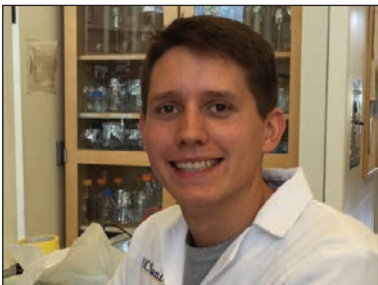
Emily Davis (Linguistics) is a Ph.D. student at UC San Diego. She is interested in the evolutionary basis of human language, especially concerning the phenomenon of recursion - the process by which one sentence can be nested within another. Recursion is a key characteristic of human language, but it may be neither specifically linguistic nor specifically human. For example, there is evidence for recursion in non-linguistic domains of cognition, such as navigation, calculation, task planning, and tool use. Emily is curious about how these cognitive

abilities relate to each other (in both humans and animals) and may have contributed to the evolution of language. She investigates these phenomena through the process of iterated learning (the modification of sequences through repeated transmission from person to person), and through behavioral experiments on birds. In her spare time, Emily likes to watch and photograph local birds.



Stephan Kaufhold (Cognitive Science) works in the Comparative Cognition Laboratory of Dr. Federico Rossano. A psychologist by training, he has spent the last years mainly studying the behavior and cognitive abilities of different ape species (gibbons, orangutans, gorillas, humans, bonobos, chimpanzees). Stephan's research aims at gaining insights about the ultimate and proximate origins of social cognition in humans and animals through comparative and developmental approaches. More precisely, he asks questions such as: To what extent do cultures influence the social behavior in primate societies? How much intraspecific variation

can be found in different primate species? What are the ultimate and proximate factors that lead individuals to either cooperate or compete with each other in specific interactions?



Michael Vaill (Biomedical Sciences) is a MD/Ph.D. student in the lab of Ajit Varki. He completed his undergraduate work in biochemistry at the University of Georgia. At UGA he studied archaeal CRISPR-Cas defense systems in the lab of Mike Terns, and O-GlcNAc glycosylation in the lab of Lance Well. Michael then went on to study leptin signaling in Ruth Harris's lab at the Medical College of Georgia before arriving at UC San Diego to pursue a Ph.D. in biomedical sciences with a specialization in anthropogeny. His current research aims to uncover the role of sialoglycoconjugates in

the evolution of the human brain, combining his interests in glycosylation, neural development, and human evolution.



Linnea Wilder (Anthropology) is a Ph.D. student in anthropology at UC San Diego working under Katerina Semendeferi in the Laboratory of Human Comparative Neuroanatomy. Her research interests lie in the evolution and development of the brain, and in defining neuroanatomical features and developmental patterns that are either unique to humans or shared with our closest living relatives, the great apes. Linnea's current project focuses on the development of the ventromedial prefrontal cortex, which is critically involved in social behavior and decision making, in humans (typically developing and Williams Syndrome) and non-human apes. The goal of this research is to elucidate the specializations in neural

circuitry that underlie human social behavior and decision making, with a focus on how these develop in infancy.

IN MEMORIAM: SASCHA POHFLEPP

UC San Diego and CARTA mourn the loss of a Visual Arts Ph.D. and Anthropogeny Graduate Specialization student.

By Pascal Gagneux, CARTA Associate Director, Professor of Pathology and Anthropology, UC San Diego.

It is with great regret and sorrow that I relay the passing of Sascha Pohflepp (1978-2019), a Ph.D. candidate in the Visual Arts program at UC San Diego and a student in the Anthropogeny Graduate Specialization administered by CARTA.

Sascha died in his sleep this summer in his home country, Germany, two weeks before he was to embark on the Anthropogeny Field Course in East Africa.

Sascha was a key participant in the Anthropogeny Graduate Specialization where he contributed his enthusiasm and ability to formulate unique ideas. He was extremely interested in topics relating to the human practice of *divination*: A diverse collection of practices in which extrinsic factors are employed in “an impersonal and relatively uncontrolled process” in an effort to gain knowledge of the future or determine the hidden causes of events and conditions.

Sascha also developed a keen interest in the phenomenon of *apophenia*: The tendency to perceive patterns in otherwise uncorrelated data or an attribution of causality to unrelated events. Related to *apophenia* are other cognitive biases such as the propensity to recognize faces or other familiar shapes (*pareidolia*). It remains a mystery if humans are alone in processing these patterns or whether other animal species engage in either *divination* or *apophenia*.

Outside of Anthropogeny, Sascha’s interests were wide-ranging and he was an accomplished artist with many international art installations,



including exhibits at the Museum of Modern Art in New York, The Science Gallery in Dublin, The Art Institute of Chicago, and the Mediamatic Fabriek in Amsterdam.

Sascha received critical acclaim from the VIDA Art and Artificial Life Awards, was a 2013 Eyebeam resident, and he was shortlisted for the Berlin Art Prize. He was also selected as a 2017-18 Annette Merle-Smith Fellow and a 2018-19 CARTA Fellow during his tenure in the Anthropogeny Graduate Specialization.

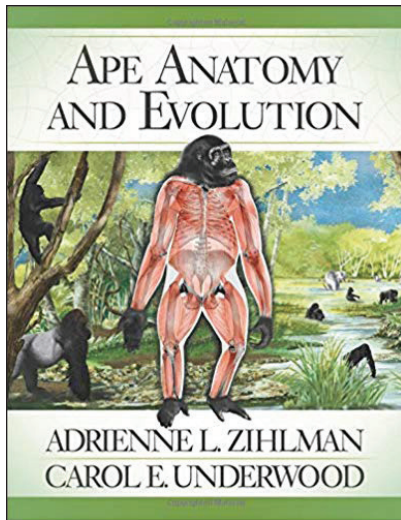
He will certainly be missed by all the diverse people brought together by his contagious curiosity and gentle manner.

Sascha’s Website:
<https://pohflepp.net/>

Wikipedia entry on Sascha:
https://en.wikipedia.org/wiki/Sascha_Pohflepp

NEWS- WORTHY ANTHROPOGENY

Anthropogeny in the popular press featuring CARTA members.



From the publisher: *Ape Anatomy and Evolution* presents for the first time a comparative anatomy of all four lineages of apes — gibbons and siamangs, orangutans, gorillas, and chimpanzees.

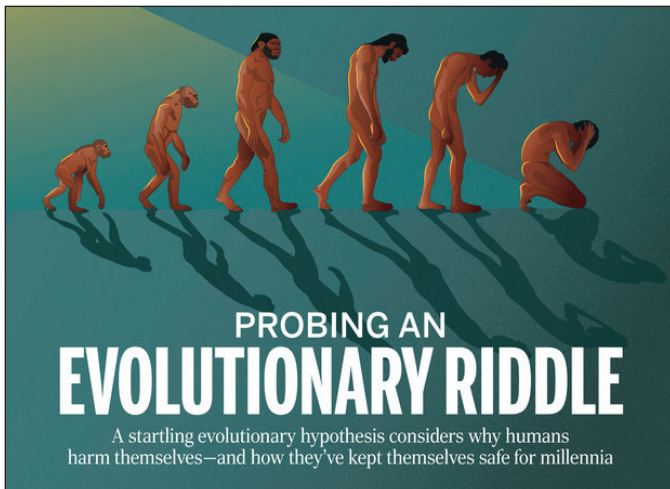


Featured CARTA Member:

Adrienne L. Zihlman

Distinguished Emerita
Professor of Anthropology,
UC Santa Cruz

Science MAGAZINE



By Elizabeth Colutta

Published Aug. 23, 2019



Featured CARTA Member:

Nicholas Humphrey

Senior Member, Darwin
College, University of
Cambridge

The New York Times

MATTER

Organoids Are Not Brains. How Are They Making Brain Waves?

Clusters of living brain cells are teaching scientists about diseases like autism. With a new finding, some experts wonder if these organoids may become too much like the real thing.

By Carl Zimmer

Published Aug. 29, 2019



Featured CARTA Member:

Alysso Muotri

Professor, Pediatrics and
Cellular and Molecular
Medicine, UC San Diego

ASK AN ANTHROPOGENY EXPERT

Are you chewing on a particular and ponderous problem related to anthropogeny? Perhaps you're cogitating on where we came from and how we got here. Propose your question to us and we'll recruit experts to weigh in with answers.

It is evident that early human populations only had access to water sources available in the natural environment also used by other animal populations and which included all forms of micro-organisms. Modern human populations lack resistance to many of these micro-organisms and will get sick if drinking untreated water. When and how did human populations lose natural resistance to water-borne micro-organisms?

Submitted by Dan, via email

This interesting question raises several points for which we do not have definite answers. However, studies of the gut microbiota in human populations living in urban centers differ from those of humans in rural settings or foragers in the wild. Modern urbanized life correlates with a massive loss of gut-biodiversity, which likely contributes to gut-health problems.

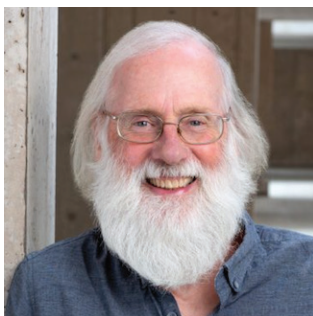
Untreated water, however, remains a health risk for all human populations and it is perhaps telling that two deadly water borne diseases, cholera and typhoid fever, appear to have evolved a strict specialization for infecting humans as we are their only natural host. By virtue of their much lower population densities, non-agricultural, foraging people are less likely to encounter these infections, but would face a high risk of sickness if and when they encounter them.

The threat of water-borne infections must have existed ever since hominins started exploiting drier habitats, which forced them to utilize water holes used by many other animals. In contrast, apes living in wet forests get most of their water from their food and other common forest water sources (running rivers and water in tree holes).

Answered by Pascal Gagneux, CARTA Associate Director, Professor of Pathology and Anthropology, UC San Diego

AWARDS & HONORS

The following awards and honors were received by CARTA members during the past year.



Tony Hunter
Salk Institute for
Biological Studies

Received the Rell Sunn
"Queen of Makaha"
Award, 2019, 2019.



Chris Stringer
Natural History
Museum, London

Elected a Member of the
American Philosophical
Society, 2019.

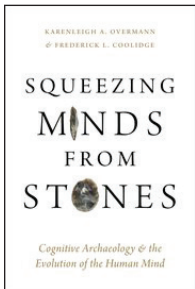


Lyn Wadley
University of the
Witwatersrand

Received Fellowship of
the British Academy, 2019.

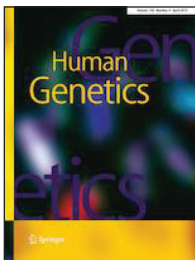
Transdisciplinary interaction is a core CARTA principle, and our anthropogeny symposia provide a forum for experts from different spheres of knowledge to interact and spark new research on the origins of the human phenomenon. These selected publications were inspired by such interactions. CARTA members are listed in bold. Visit carta.anthropogeny.org for the complete list.

CARTA-INSPIRED PUBLICATIONS



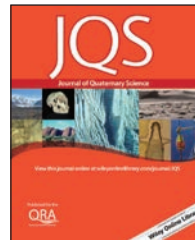
Davidson, I. Evolution of Cognitive Archaeology through Evolving Cognitive Systems: A Chapter for Tom Wynn. In: Overmann, KA and Coolidge, FL, eds. *Squeezing Minds From Stones: Cognitive Archaeology and the Evolution of the Human Mind*. Oxford, UK: Oxford University Press; 2019.

A deliberately personal account of aspects of changes in theoretical understanding of cognitive evolution since Tom Wynn's pioneering work applying Piagetian developmental sequences to the patterns in stone tool production and use during hominin and human evolution. Using selected case studies shows how ideas have changed through the production of new variations followed by selection.



Fiddes, IT, et al., including JM, **Sikela, JM.** Paired involvement of human-specific Olduvai domains and NOTCH2NL genes in human brain evolution. *Hum Genet.* 2019;138(656):1-7.

Two striking genomic changes linked to brain evolution are the >150 human-specific copies of the Olduvai (DUF1220) protein domain and three human-specific NOTCH2NL genes. This paper shows that these two sets of sequences evolved together and are tightly co-regulated. The findings suggest that the two families work together to promote neurogenesis and human brain evolution in a dosage-dependent manner.



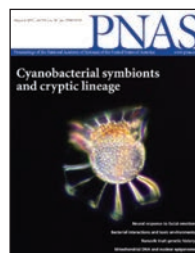
Galway-Witham, J, Cole, J, **Stringer, C.** Aspects of human physical and behavioural evolution during the last 1 million years. *J QuatSci.* 2019.doi:10.1002/jqs.3137

This paper attempts a broad review of some of the main recent advances in our understanding of human evolution over the last 1 million years, exploring discoveries and research for human fossils, palaeogenetics and the behavioral record.



Jao Keehn, RJ, Iversen, JR, Schulz, I, **Patel, AD.** Spontaneity and diversity of movement to music are not uniquely human. *Curr Biol.* 2019;29(13):R621-R622.

Jao Keehn et al. show that spontaneous and diverse movements to music, which appear to be uniquely human among primates, are also present in parrots, and suggest that dancing to music emerges when five specific cognitive and neural capacities converge in animal brains.

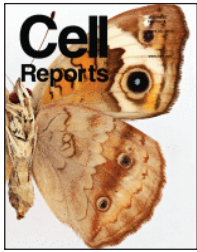


Kawanishi, K, Dhar, C, Do, R, **Varki, N**, Gordts, PLSM, **Varki, A.** Human species-specific loss of CMP. *Proc Natl Acad Sci U S A.* 2019;116(32):16036-16045.

Heart attacks and strokes due to “hardened arteries” cause many human deaths, but first-time events can occur without risk factors. Such events are very rare in other animals despite some of the same risk factors. We show that a human-specific genetic mutation affecting cell-

Continued on the next page...

surface sialic acids is a likely contributor. The same mutation can help explain human-specific risks of red meat consumption.



Kostic, M, Paridaen, JTML, Long, K, Kalebic, N, Langen, B, Wimberger, P, Kawasaki, H, Namba, T, **Huttner, WB**. YAP activity is necessary and sufficient for basal progenitor abundance and proliferation in the developing neocortex. *Cell Rep.* 2019;27(4):1103-1118.

Neocortex expansion during human evolution has been linked to an increase in proliferation of neural progenitors in the subventricular zone. The greater proliferative capacity of these progenitors in developing human than mouse neocortex is now shown to be caused by a higher activity of YAP, the major effector of the Hippo pathway, implicating YAP in the evolutionary expansion of the neocortex.



Landig, CS, Hazel, A, Kellman, BP, Fong, JJ, Schwarz, F, Agarwal, S, **Varki, N**, Massari, P, Lewis, NE, Ram, S, **Varki, A**. Evolution of the exclusively human pathogen *Neisseria gonorrhoeae*: Human-specific engagement of immunoregulatory Siglecs. *Evol Appl.* 2019;12(2):337-349.

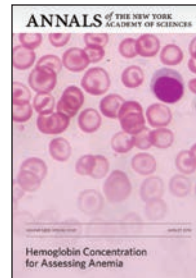
Sexually transmitted gonorrhea is unique to humans. The bacterium uses multiple strategies, including acquisition of host sialic acids to blunt immune responses. We found that the organism engages multiple human but not chimpanzee “Siglecs” on immune cells and in the genital tract and that human Siglec variations affect infection risk. The origins of this common disease and impact on human evolution are open questions.



Larsen, CS, et al., including, **Ruff, CB**. Bioarchaeology of Neolithic Çatalhöyük reveals fundamental transitions in health, mobility, and lifestyle in early farmers. *Proc Natl Acad Sci U S A.* 2019;116(26):12615-12623.

The foraging-to-farming transition in late

Pleistocene western Asia occasioned changes in health and lifestyle shaping the evolution of *Homo sapiens*. Study of hundreds of skeletons of early farmers from the Neolithic proto-urban community at Çatalhöyük, Turkey (7100-5950 BCE), presents a microcosm of temporal shifts in biological variation having global significance for today and the future.



Lieberman, P. The antiquity and evolution of the neural bases of rhythmic activity. *Ann N Y Acad Sci.* 2019. doi:10.1111/nyas.14199

The evolution of the anatomy and neural circuits that regulate the rhythm of speech can be traced back to the Devonian age, 400 million years ago. Epigenetic processes 300 million years later modified these circuits. Analogous processes involving the *FOXP2* transcriptional factor allowed Neanderthals and humans to plan, sequence and execute motor as well as cognitive acts, including spoken language.



Nesse, RM. *Good Reasons for Bad Feelings: Insights from the Frontier of Evolutionary Psychiatry*. New York; Dutton; 2019.

This book asks and answers a new question; why did natural selection leave humans so vulnerable to mental disorders? Bad feelings are common because their absence can be devastating and because they maximize fitness, not health. Eating disorders and addiction result from vicious cycles set off by modern environments. Schizophrenia and autism genes may stabilize traits near fitness cliffs. Evolutionary biology is a crucial basic science that can advance psychiatry.



Sheffler, C et al., including , **Bogin, B.** Stunting is not a synonym of malnutrition. *Eur J Clin Nutr.* doi: <https://doi.org/10.1038/s41430-019-0439-4>.

Many nutritionists are wedded to the idea that short stature is nutritional. But, through history well-fed human groups have varied in height by more than 26 cm (10 inches). Social mammals, including monkeys and apes, vary in size due to competition for social status. Our study finds that being short or tall may merely reflect differential effects of the social community.



Trujillo, CA, et al., including **Muotri, AR.** Complex Oscillatory Waves Emerging from Cortical Organoids Model Early Human Brain Network Development. *Cell Stem Cell.* In Press.

The inaccessibility of the human brain has blocked the study of early neurodevelopment. This work describes a novel protocol to create

brain organoids (aka mini-brains) with similar electrical activity as in the developing human brain. In the future, brain organoids carrying ancestral genetic variants can contribute to our understanding of human brain evolution.



Vangenot, C, et al., including **Gagneux, P.** Humans and Chimpanzees Display Opposite Patterns of Diversity in. *G3 (Bethesda).* 2019;9(7):2199-2224.

We investigated the genetic diversity of toxin metabolizing genes in seven hominid species. The results point to the evolution of divergent functions of these genes in the different primate species, possibly related to their specific chemical/dietary environment (exposome). We speculate that the unique pattern of polymorphism in humans is likely linked to the emergence of controlled fire use.

CARTA Symposia Schedule

Impact of Early Life Deprivation on Cognition: Implications for the Evolutionary Origins of the Human Mind

Friday, October 11, 2019, The Salk Institute

Exploring the Origins of Today's Humans

February 21, 2020

The Evolution of Human Physical Activity

May 15, 2020

Find past CARTA symposia at



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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 concerning 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. Transdisciplinary interaction is at the core of CARTA’s mission to advance human origins research.

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

Support CARTA

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