

UC San Diego Darwin/Evolution Experts

December 10, 2008

News Media: Need a local expert on evolutionary biology? Or how Darwin's ideas have impacted contemporary research and society? The following scholars at UC San Diego are available for interviews with reporters and editors. If you can't reach the expert directly, the media contacts listed below for each expert can assist you in setting up interviews.

Amy Binder, Associate Professor, Sociology Binder's principal research interests are in the areas of education, social movements, cultural sociology and organizations. Her award-winning book "Contentious Curricula: Afrocentrism and Creationism in American Public Schools" explored efforts to shape curriculum in public school systems. She has since also studied the movement to teach intelligent design and co-wrote an op-ed on the subject for the Washington Post, "Evolving Toward a Compromise."

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Media Contact: Inga Kiderra, ikiderra@ucsd.edu, (858) 822-0661

Related link: <http://www.washingtonpost.com/wp-dyn/content/article/2008/07/25/AR2008072502792.html>

Ronald Burton, Professor of Marine Biology, Scripps Institution of Oceanography

Burton is a population geneticist interested in the connectivity of marine populations and its impact on ecology and evolution. He studies the natural populations of copepods, crabs, sea urchins, and abalone. He also examines the relationships between molecular genetics and physiological variation within species.

Media Contact: Mario Aguilera, Scripps Communications, scrippsnews@ucsd.edu; (858) 534-3624

Related link: <http://scrippsnews.ucsd.edu/Releases/?releaseID=928>

Russell Doolittle, Research Professor, Molecular Biology Doolittle studies the evolution of complex processes like blood clotting by looking at the structures of the proteins involved across hundreds of different organisms. By reconstructing the evolutionary history, Doolittle provides evidence that mechanisms so complex they might seem to need to be invented whole, in fact arose through selection of individual parts.

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Philip Hastings, Professor of Marine Biology, Scripps Institution of Oceanography Hastings studies the pattern of marine biodiversity and its evolutionary and ecological underpinnings. He and his students reconstruct phylogenetic relationships among species using both morphological and molecular data and use these phylogenetic hypotheses to study the geography of speciation and the roles of behavior and development in morphological evolution. Study groups include all marine fishes, with particular emphasis on blennies, gobies and sea basses.

Media Contact: Mario Aguilera, Scripps Communications, scrippsnews@ucsd.edu; (858) 534-3624

Jeff Hasty, Professor of Bioengineering, Jacobs School of Engineering Jeff Hasty is a pioneer in the field of synthetic biology. His work to build artificial gene networks based on precise calculations and models is providing insights on aspects of evolution, including circadian clocks. His recent *Nature paper* outlining the first stable, fast and programmable genetic clock that reliably keeps time by the blinking of fluorescent proteins inside *E. coli* cells is one example.

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Related link: http://www.jacobsschool.ucsd.edu/news/news_releases/release.sfe?id=790

Therese Markow, Professor, Ecology, Behavior and Evolutionary Biology Markow studies the evolution of fruit flies to exploit particular plants that are toxic to other insects and to adapt to harsh environments. She specializes in fruit flies that live in cactuses of the Mojave and Sonoran deserts of the southwestern U.S. and Baja California, Mexico. Markow also maintains the Drosophila Species Stock Center, a collection of nearly 2,000 species of flies used by researchers worldwide. The genomes of a dozen of these have recently been sequenced, providing a rich resource for studying the genetics of evolutionary processes.

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Media contact: Susan Brown, sdbrown@ucsd.edu, (858) 246-0161.

William McGinnis, Professor of Cell and Developmental Biology McGinnis is a leading expert on the genetic elements that have allowed animals throughout evolution to develop different body plans. He is the co-discoverer of homeobox genes, which play a central role in specifying body development. A series of bizarre mutations in fruit flies led to his discovery that all animals, whether fish, fowl, or fly, share similar architectural control genes called Homeobox genes, which have since provided biologists with new insights into the development and evolution of organisms. They've shown biologists how subtle changes in Homeobox genes can lead to changes in major body plans during evolution.

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Media Contact: Kim McDonald kmcdonald@ucsd.edu (858) 534-7572

Jim Moore, Associate Professor, Anthropology A biological anthropologist, Moore has published widely on primate behavior and evolution. He works primarily on nonhuman primate socioecology - the interaction amongst ecology, social structure and social behavior - and how the study of chimpanzee socioecology can inform us about early hominids. His current work focuses on chimpanzee adaptation in savanna habitats, with fieldwork in Ugalla, Tanzania. Moore has also studied primate altruism and kin selection.

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Related link: <http://ucsdnews.ucsd.edu/newsrel/soc/11-07ChimpsDigCluesToHumanPastIK-I.asp>

James Nieh, Associate Professor, Ecology, Behavior and Evolutionary Biology

Many social bees, including honeybees, have amazing ways of telling nest mates where to find the best flowers. This communication system has co-evolved with flowering plants and by controlling pollination, influences the distribution of genes within plants populations. Nieh studies how complex communication behaviors have evolved among highly social bees.

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Bernhard Ø. Palsson, The Galetti Professor of Bioengineering, Jacobs School of Engineering Palsson is using adaptive evolution for biological discovery. He uses laboratory evolution in defined conditions to study the dynamics of bacterial adaptation in response to environmental and genetic challenges. The adaptive trajectories are characterized both at the physiological level and by whole-genome resequencing in order to decipher the genetic basis of adaptation.

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Pavel Pevzner, Ronald R. Taylor Professor of Computer Science, Jacobs School of Engineering Director, Center for Algorithmic and Systems Biology at UCSD Pavel Pevzner's bioinformatics research includes the comparative study of rearrangements between the genomes of different species in order to reveal the ancestral mammalian genome architecture. Pevzner is also working to understand evolution through the new field of "comparative proteogenomics," which sits at the intersection of the fields of "comparative genomics" and "proteomics" - which is the study of all of an organism's proteins.

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Related links: http://www.jacobsschool.ucsd.edu/news/news_releases/release.sfe?id=404

Greg Rouse, Professor of Marine Biology, Scripps Institution of Oceanography Rouse studies evolutionary relationships among animal groups such as annelid worms (about which Darwin wrote a book) and echinoderms as well as broad scale relationships across the whole animal Tree of Life. This involves the use of anatomical and molecular sequence data. Others in his lab also work on marine invertebrates such as corals and mollusks. He has described numerous new marine species and current research focuses on the extraordinary bone-eating worms known as osedax, which exploit sunken whale bones. These animals have dwarf males, a phenomenon that Darwin studied in barnacles.

Media Contact: Mario Aguilera, Scripps Communications, scrippsnews@ucsd.edu; (858) 534-3624

Kaustuv Roy, Associate Professor, Ecology, Behavior and Evolutionary Biology Earth's tropical regions host a much greater variety of life than do temperate zones or the poles. Kaustuv Roy seeks to explain how this global gradient in biodiversity evolved. The larger number of species found in the tropics suggests that climate plays an important role in evolutionary processes, one that Roy's research group is working to understand. They are also asking how the evolutionary histories of species constrain their ability to respond to environmental change, knowledge that will be essential to predicting the biological consequences of ongoing global warming.

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Katerina Semendeferi, Associate Professor, Anthropology Semendeferi is a physical anthropologist who specializes in comparative primate neuroanatomy and in the evolution of the human brain and behavior. Her research interests include evolution of emotional and cognitive processes in hominoids and species-specific adaptations in the organization of neocortical and limbic areas in the brain of humans and apes. Semendeferi's work emphasizes the acquisition of new data on the organization of the human, chimpanzee, bonobo, gorilla, orangutan and gibbon brain at the macroscopic and microscopic levels.

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Margaret J. Schoeninger, Professor, Anthropology Schoeninger is a biological anthropologist, specializing in diet reconstruction, evolution of the human diet, bone chemistry and human nutritional ecology. She is Co-Director of the UC San Diego/Salk Center for Academic Research and Training in Anthropogeny (CARTA), a center for the study of the origins of humans. Her research centers on subsistence strategies with applications to behavior and ecology in anthropological contexts. Her laboratory analyzes carbon, nitrogen and oxygen stable isotope ratios in various organic materials including hair, bone collagen and bone carbonate for diet and ecology reconstruction.

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Shirley Strum, Professor, Anthropology Strum is one of the world's foremost experts on baboon society, who has been studying the same population of baboons in Kenya for some 30 years. Her research has focused on aggression and male dominance; sex roles and social organization; social strategies of competition and defense; cognition in the wild; and socioecology and the use of nonhuman primate behavior in evolutionary interpretations. Strum's study group, the Pumphouse Gang, has been featured in numerous television documentaries including National Geographic's "Among the Baboons" and Discovery's "Baboon Tales." Since 1979, Strum has also been seriously involved in community-based conservation. Contact: sstrum@ucsd.edu, (858)82 2-0765

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Ajit Varki, M.D., Distinguished Professor of Medicine and Cellular & Molecular Medicine and Co-Director, UC San Diego/Salk Center for Academic Research and Training in Anthropogeny (CARTA), a center for the study of the origins of humans.

Varki's research interests focus on a family of sugars called the sialic acids, and their roles in biology, evolution and disease. He has identified and studied multiple differences in sialic acid biology between humans and great apes, differences that are a signature of the multiple cellular and molecular events that occurred during the last few million years of human evolution, and that are relevant to understanding aspects of human health and disease. Varki played a leading role with the Chimpanzee Genome Project, and is a strong proponent for the ethical treatment of the great apes, human's closest evolutionary cousins.

Contact: Debra Kain, ddkain@ucsd.edu or (619) 543-6163.

Christopher Wills, Professor, Ecology, Behavior and Evolutionary Biology How diversity in rainforest ecosystems is preserved turns out to be very similar to how genetic diversity is maintained within individual species Wills has found. Both are critically important for healthy populations and ecosystems, as a way of limiting

the spread of pathogens, for example. Wills has also written a number of popular science books including *Children of Prometheus: The Accelerating Pace of Human Evolution*; *Spark of Life*; and *Plagues: Their Origin, History and Future*.

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