Altered States of the Human Mind: Implications for Anthropogeny

Public Symposium • Saturday, March 13, 2021

Co-chairs:
Patricia Churchland, University of California, San Diego
Jean-Pierre Changeux, Collège de France & Institut Pasteur

Sponsored by:
Center for Academic Research and Training in Anthropogeny (CARTA)
Ben Cipollini, PhD '14, alumnus of the UCSD Graduate Specialization in Anthropogeny, CogSci

BIOGRAPHICAL SKETCHES: CO-CHAIRS

Patricia Churchland is Professor Emerita of Philosophy and former chair of philosophy at UC San Diego, as well as adjunct professor at the Salk Institute. She holds degrees from Oxford University, the University of Pittsburg and the University of British Columbia. For decades, Churchland has contributed to the fields of philosophy of neuroscience, philosophy of the mind and neuroethics. Her research has centered on the interface between neuroscience and philosophy with a current focus on the association of morality and the social brain. She has been awarded the MacArthur Prize, The Rossi Prize for Neuroscience and the Prose Prize for Science. She has authored multiple pioneering books, her most recent being *Touching a Nerve: The Self as Brain* (2013). She has served as President of the American Philosophical Association and the Society for Philosophy and Psychology.

Jean-Pierre Changeux is Honorary Professor at the Collège de France & Pasteur Institute Paris and International Faculty, Kavli Institute for Brain & Mind, UC San Diego. At the advent of the era of molecular biology, he pioneered the study of the role of conformational changes linking topographically distinct sites in regulatory processes. His Ph.D. studies, carried under the supervision of Jacques Monod, provided the experimental and conceptual bases for the formal model of allosteric interactions in regulatory proteins, subsequently put forward in a joint paper that had become one of the most quoted papers of the scientific literature. Throughout a long career, Changeux has consistently built upon and extended his early theory, to spawn many new and flourishing fields of investigation. His main contributions and discoveries in the course of the past 50 years are centered on the general theme of receptors and their allosteric transitions, primarily in the nervous system and were initiated by the first identification of a neurotransmitter receptor: the nicotinic acetylcholine receptor. He combined approaches from supposedly disparate disciplines of pharmacology, molecular biology and developmental biology as well as behavioural and pathological studies, as and when required, to demonstrate that the nicotinic receptor is a bona fide allosteric protein. He further elucidated the molecular mechanism through which drugs modulate receptor efficacy when binding to distinct allosteric sites thereby opening a revolutionary new avenue in the field of drug discovery. His contributions to understanding the regulation of acetylcholine receptors in turn contributed to advancing our understanding of the nature of long-term synaptic plasticity within neural networks and on the neural bases of cognitive functions up to conscious processing. The consequences for human pathology are immense: from the understanding of drug addiction to the therapeutics of neuropsychiatric diseases. The publication of his book, *Neuronal Man: The Biology of The Mind* (Princeton Science Library, 1985), brought Changeux celebrity status among the wider public. Since then he has authored or co-authored several other books notably, *Conversations on Mind Matter and Mathematics* (Princeton University Press, 1998) with the mathematician Alain Connes, *What Makes Us Think* (Princeton University Press, 2002) with the philosopher Paul Ricoeur, *Physiology of truth* (Belknap Press, 2005),*The Enchanted Neurons* (Odile Jacob, 2019) with the composers Pierre Boulez and Philippe Manoury, which initiated an instructive dialogue between neuroscience and other disciplines. Changeux's academic accolades include the Gairdner foundation award in 1978, the Wolf prize in 1983, the Louis Jeantet Prize for Medicine in 1993, the Balzan Prize in 2001, the National Academy of Sciences Award in Neurosciences USA in 2007, the Olav Thon international research award in biomedicine, Oslo, Norway, 2016, the Albert Einstein World Award of Science, Hong Kong, 2018.

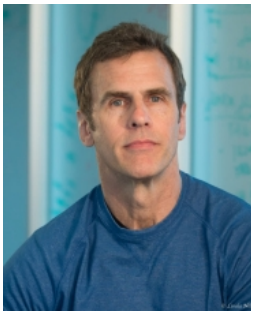
Frederick Barrett is Assistant Professor of Psychiatry/Director of Neurophysiological Mechanism and Biomarker Assessment at the Johns Hopkins Center for Psychedelic & Consciousness Research. He is a cognitive neuroscientist with training in behavioral pharmacology. Dr. Barrett has been conducting psychedelic research at Johns Hopkins University since 2013, and his research in heathy participants and in patients with mood and substance use disorders focuses on the psychological and neurological mechanisms underlying the enduring therapeutic and other effects of psychedelic drugs. In 2017, he received an NIH "R03" grant as Principal Investigator to investigate biological mechanisms of psilocybin effects, the first federally funded research since the 1970s administering a classic psychedelic to people with psychedelic effects as the primary focus. He developed the first comprehensive questionnaire to measure subjective aspects of challenging experiences encountered with psilocybin. He also published the first studies in humans characterizing the enduring effects of psilocybin on the brain (up to a month after psilocybin administration), the effects of psilocybin on a brain structure called the claustrum (which has been proposed to variously mediate consciousness and cognition), the effects of LSD on the brain's response to music, and the effects of the atypical hallucinogen salvinorin A on human brain network function. He is currently leading a clinical trial to investigate the use of psilocybin to treat patients with major depressive disorder and co-occurring alcohol use disorder, and he is leading a number of ongoing studies aimed at better understanding the psychological, biological, and neural mechanisms underlying therapeutic efficacy of psychedelic drugs.

Thomas J. Csordas is Distinguished Professor in the Department of Anthropology at UC San Diego, where he holds the Dr. James Y. Chan Presidential Chair in Global Health. He serves as Founding Director of the Global Health Program and Director of the UCSD Global Health Institute. His research interests include medical and psychological anthropology, global mental health, anthropological theory, comparative religion, cultural phenomenology and embodiment, globalization and social change, and language and culture. He has conducted ethnographic research among Charismatic Catholics, Navajo Indians, adolescent psychiatric patients in New Mexico, and Catholic exorcists in the United States and Italy. He is author of The Sacred Self: A Cultural Phenomenology of Charismatic Healing (1994); Language, Charisma,and Creativity (1997); Body/Meaning/Healing (2002); Transnational Transcendence: Essays on Religion and Globalization (2009); Engaging Evil: A Moral Anthropology (with William C. Olsen, 2019); Troubled in the Land of Enchantment (with Janis H. Jenkins, 2020).

Kenneth K. Kidd started his research career in 1960 as a technician in a genetics laboratory at the City of Hope while an undergraduate at the University of Southern California. He later received his Ph.D. from the University of Wisconsin in 1969. Following postdocs at the University of Pavia, Italy and at Stanford University he joined the Department of Genetics at Yale School of Medicine in 1973 where he has spent the rest of his career. His research at Yale has focused on human population genetics and related areas of disease gene mapping, bioinformatics, and forensics, among others. He has published over 575 research papers in his long career. He became Professor Emeritus in 2016 and finally closed his lab and "retired" in 2020.

George F. Koob, Ph.D. is an internationally-recognized expert on alcohol and stress, and the neurobiology of alcohol and drug addiction. He is the Director of the National Institute on Alcohol Abuse and Alcoholism (NIAAA), where he provides leadership in the national effort to reduce the public health burden associated with alcohol misuse. As NIAAA Director, Dr. Koob oversees a broad portfolio of alcohol research ranging from basic science to epidemiology, diagnostics, prevention, and treatment. Dr. Koob earned his doctorate in Behavioral Physiology from Johns Hopkins University in 1972. Prior to taking the helm at NIAAA, he served as Professor and Chair of the Scripps' Committee on the Neurobiology of Addictive Disorders and Director of the Alcohol Research Center at the Scripps Research Institute. Early in his career, Dr. Koob conducted research in the Department of Neurophysiology at the Walter Reed Army Institute of Research and in the Arthur Vining Davis Center for Behavioral Neurobiology at the Salk Institute for Biological Studies. He was a post-doctoral fellow in the Department of Experimental Psychology and the MRC Neuropharmacology Unit at the University of Cambridge. Dr. Koob began his career investigating the neurobiology of emotion, particularly how the brain

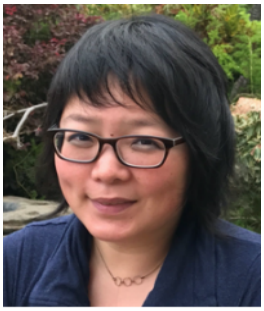
processes reward and stress. He subsequently applied basic research on emotions, including on the anatomical and neurochemical underpinnings of emotional function, to alcohol and drug addiction, significantly broadening knowledge of the adaptations within reward and stress neurocircuits that lead to addiction. This work has advanced our understanding of the physiological effects of alcohol and other substance use and why some people transition from use to misuse to addiction, while others do not. Dr. Koob has authored more than 750 peer-reviewed scientific papers and is a co-author of The Neurobiology of Addiction, a comprehensive textbook reviewing the most critical neurobiology of addiction research conducted over the past 50 years. Dr. Koob is the recipient of many prestigious honors and awards recognizing his contributions to research, mentorship, and international scientific collaboration. These include: the Research Society on Alcoholism (RSA) Seixas Award for extraordinary service in advancing alcohol research; the RSA Distinguished Investigator Award; the RSA Marlatt Mentorship Award; the Daniel Efron Award for excellence in basic research and the Axelrod Mentorship Award, both from the American College of Neuropsychopharmacology; the NIAAA Mark Keller Award for his lifetime contributions to our understanding of the neurobiology of alcohol use disorder; and an international prize in the field of neuronal plasticity awarded by La Fondation Ipsen. He was recently honored by the government of France with the insignia of Chevalier de la Légion d'honneur (Knight of the Legion of Honor) for developing scientific collaborations between France and the United States.



Read Montague is Director of the Human Neuroimaging Lab and Computational Psychiatry Unit at the Fralin Biomedical Research Institute at Virginia Tech, where he also holds the title of the inaugural Virginia Tech Carilion Vernon Mountcastle Research Professor. Montague is also a professor in the Department of Physics at Virginia Tech in Blacksburg, Virginia and professor of Psychiatry and Behavioral Medicine at Virginia Tech Carilion School of Medicine. Dr. Montague's research focuses on computational neuroscience: the connection between physical mechanisms present in real neural tissue and the computational functions that these mechanisms embody. His early theoretical work focused on the hypothesis that dopaminergic systems encode a particular kind of computational process, a reward prediction error signal, similar to those used in areas of artificial intelligence like optimal control. The Montague Lab uses theoretical, computational, and experimental approaches to the problems of mental health and its derangement by disease and injury. They recently pioneered new approaches to measure sub-second fluctuations in dopamine and serotonin levels in the striatum of conscious human subjects.

Barbara L. Parry, M.D. is Professor of Psychiatry at the UC San Diego where she has served as Director of the Women's Mood Disorders Clinic of the UCSD Outpatient Psychiatric Services, Director of the Women's Mental Health Clinic at the San Diego Veterans Administration Healthcare Center and Associate Director of the Medical Student Clerkship in Psychiatry. Her clinical research focus is the chronobiology of mood disorders specific to women: premenstrual, pregnancy/postpartum and menopausal depression. She conducts sleep, light, melatonin and other hormonal studies with the aim of developing non-pharmacological approaches to treatment. Her work is supported by NIH funding, she has authored or co-authored over 280 publications and served on NIH study sections, Data and Safety Monitoring Boards and the editorial boards of the American Journal of Psychiatry, the Journal of Biological Rhythms, the International Journal of Endocrinology and Equilibria, the Journal for Postpartum Psychiatric Illness Research.

Ann Taves is Research Professor and Distinguished Professor (Emerita) of Religious Studies at University of California, Santa Barbara and PI of the Inventory of Nonordinary Experiences Project. Her books include Fits, Trances, and Visions (Princeton, 1999), Religious Experience Reconsidered (Princeton, 2009), and Revelatory Events (Princeton, 2016). Her socio-cognitive approach to the study of religion is discussed in Building Blocks of Religion, ed. G. Larsson, J. Svenson, and A. Nordin (Equinox, 2020).



Helen Weng, Ph.D., is an Assistant Professor in Psychiatry at the UC San Francisco Osher Center for Integrative Medicine and Neuroscape Center. Trained as a neuroscientist and clinical psychologist, she studies how meditation may improve social and physical health using a neuroscientific perspective. Dr. Weng has developed new ways to quantify meditation skills using machine learning and fMRI data to identify mental states during meditation. As part of an Intersectional Neuroscience framework, she is also increasing the diversity of meditators in neuroscience studies using community engagement with the East Bay Meditation Center (Oakland, CA). Her earlier work showed that compassion meditation may increase both altruistic and neural responses to suffering, and has been featured in the NY Times and NPR. She had the honor of presenting to His Holiness the Dalai Lama in 2012 and 2016, was named one of the 12 Powerful Women in the Mindfulness Movement at mindful.org in 2019.