ARTS & THE MIND

WITH LISA KUDROW

EXPERTS

Dr. James S. Catterall, Ph.D.

James S. Catterall is Professor Emeritus and past Chair of the Faculty at the UCLA Graduate School of Education and Information Studies. He is an Affiliate Faculty member at the UCLA Center for Culture, Brain, and Development. In July 2011, Dr. Catterall became Principal Investigator at the *Centers for Research on Creativity*, (*CRoC),* based in Los Angeles and London, UK. (*www.croc-lab.org*)

Professor Catterall's research focuses on measurement of children's cognitive development and motivation in the context of learning in the arts. He is the author of the 2009 book, *Doing Well and Doing Good by Doing Art, a 12-year longitudinal study of the effects of learning in the arts on the achievements and values of young adults* (Los Angeles, CA: I-Group Books). Dr. Catterall and colleagues Prof. Susan Dumais and Prof. Gillian Hampden-Thompson, published *The Arts and Achievement in At-risk Youth: Findings from Four Longitudinal Studies*, released in 2012 by the National Endowment for the Arts.

Dr. Catterall currently works under a grant to *CRoC* from the Walt Disney Company to explore the assessment of creative thinking in children and youth, including the possible utility of mobile technologies such as the I-Pad in assessment strategies. This work is investigating the development of creativity in theatre arts, graphic design, youth leadership, and science. *CRoC* is also testing assessment processes at a dedicated "creativity lab" at Inner-City Arts in Los Angeles.

Professor Catterall holds degrees in economics (with honors) from Princeton University and in public policy analysis from the University of Minnesota; he holds a Ph.D. in Education from Stanford University.

Dr. Anjan Chatterjee, M.D., FAAN

Anjan Chatterjee is a Professor of Neurology, and a member of the Center for Cognitive Neuroscience, and the Center for Neuroscience and Society at the University of Pennsylvania. He received his BA in Philosophy from Haverford College. His clinical practice focuses on patients with cognitive disorders. His research focuses on spatial cognition and language, attention, and aesthetics using neuropsychological and functional neuroimaging methods. He also writes about neuroethics. He is on the editorial boards of: *Cognitive Neuropsychology*, *Cognitive and Behavioral Neurology*, *Behavioural Neurology*, *Neuropsychology*, *Journal of Cognitive Neuroscience, Journal of the International Neuropsychological Society, European Neurology, Empirical Studies of the Arts* and *Policy Studies in Ethics, Law and Technology*. He was awarded the 2002 Norman Geschwind Prize in Behavioral and Cognitive Neurology by the American Academy of Neurology. He is a founding member of the Board of Governors of the Neuroethics Society, the President of the International Association of Empirical Aesthetics, and the President-elect of the Behavioral and Cognitive Neurology Society.

http://ccn.upenn.edu/chatterjee/

Dr. Antonio R. Damasio, M.D., Ph.D.

ANTONIO DAMASIO, M.D., Ph.D. Antonio Damasio is University Professor and David Dornsife Professor of Neuroscience and Director of the Brain and Creativity Institute at the University of Southern California; he is also an adjunct professor at the Salk Institute in La Jolla, California. Damasio has

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made seminal contributions to the understanding of how the brain processes memory, language, emotions, and decisions and has described his discoveries in books (Self Comes to Mind, Descartes' Error, The Feeling of What Happens, and Looking for Spinoza) translated into over 30 languages and taught in universities worldwide. He is the recipient of numerous awards (including, most recently, the Honda Prize in 2010; Asturias Prize in Science and Technology, 2005; and the Signoret Prize, 2004, which he shared with his wife Hanna Damasio). Damasio is a member of the Institute of Medicine of the National Academy of Sciences and a fellow of the American Academy of Arts and Sciences, the Bavarian Academy of Sciences, and the European Academy of Sciences and Arts. He has been named "Highly Cited Researcher" by the Institute for Scientific Information. His current work is aimed at illuminating the brain basis of social behaviors (ranging from moral judgments and communication to economic decisions), and understanding mechanisms of creativity in art, science, and technology. (For more information go to the Brain and Creativity Institute website: http://www.usc.edu/bci/)

Dr. Peter Davies, Ph.D.

Plaques and tangles may be the sign posts for Alzheimer's disease, but Peter Davies, PhD, Scientific Director of the Litwin-Zucker Center for Alzheimer's Disease Research at the Feinstein Institute for Medical Research, North Shore/LIJ Health System, has discovered the road itself - and it is a pathway that scientists in the field have missed after decades spent exploring the terrain of the diseased brain. Dr. Davies runs a large Alzheimer's research center and his scientists come at the disease from all sides. Their work may well change the way people think about Alzheimer's disease. Today, most of the attention goes to the amyloid-filled plaques and tau-laden tangles. But Dr. Davies said that Alzheimer's disease may be a process of cell cycle division gone wild.

He has evidence that the switch that drives the cell cycle of neurons, which is a one-time event when the neuron is born, is somehow tripped and reactivated late in life. It is this catastrophic occurrence that sets the stage for cell death. "Neurons don't divide but for some reason the machinery for cell division is turned on in the brains of Alzheimer's patients," Dr. Davies said. "These are differentiated neurons that are not built to divide. The machinery is making enzymes and proteins that the cells are not supposed to see, and this just isn't good for the cell." They designed an experiment to turn on the cell cycle in laboratory models. They put a viral oncogene into differentiated neurons and watched as pathological events unfolded. If Dr. Davies is right, it's the unbridled and unexpected cell division that is the initial event in the disease process. Many other teams have replicated the finding.

Dr. Davies is also known for his work on the tau protein that accumulates in the damaged neurons of Alzheimer's patients. His studies have led him to rethink the relationship tau plays in the diseased brain. "Alzheimer's doesn't start with tau or amyloid," Dr. Davies said. "They are the sign posts that tell us that the cell cycle has been turned on." That would mean a drug that stops this machinery could prevent both of these pathological events. More importantly, it may stop the brain cells from dying. The goal of the research lab is to develop and test new treatments for Alzheimer's disease.

Dr. Mary Helen Immordino-Yang, Ed.D.

Mary Helen Immordino-Yang, Ed.D. is an affective neuroscientist and human development psychologist who studies the neural, psychophysiological and psychological bases of emotion, social interaction and culture and their implications for development and schools. She is an Assistant Professor of Education at the Rossier School of Education, an Assistant Professor of Psychology at the Brain and Creativity Institute, and a member of the Neuroscience Graduate Program Faculty at the University of Southern California, where she was formerly a joint postdoctoral fellow under the mentorship of Robert Rueda and Antonio Damasio. A former junior high school teacher, she earned her doctorate at the Harvard University Graduate School of Education, where she was the recipient of grants from the Spencer Foundation and the American Association of University Women Educational Foundation. She is the Associate Editor for North America for the award-winning journal Mind, Brain and Education, and the inaugural recipient of the Award for Transforming Education through Neuroscience. She and her co-authors received the 2010 Cozzarelli Prize from the National Academy of Sciences for the most distinguished paper of the year in the behavioral and social sciences category, for the paper, "Neural correlates of admiration and compassion." PNAS, 106(19), 8021-8026. In 2011 she was named a "Rising Star" by the Association for Psychological Science. She lectures nationally and abroad on the neural and psychosocial implications of brain and cognitive

science research for curriculum and pedagogy, and is the content director for a new online, free course for teachers on learning and the brain, funded by the Annenberg Media Foundation (available Fall, 2011; www.learner.org).

Dr. Charles J. Limb, M.D.

Dr. Charles Limb is an associate professor of Otolaryngology-Head & Neck surgery. He is also faculty at the Peabody Conservatory of Music. His presentation at TEDx MidAtlantic, where he showed the results of what he and his team uncovered when they put jazz musicians and rappers in an fMRI to find out how the brain works during musical improvisation. The research has deep implications for the understanding of creativity of all kinds.

Dr. Yaakov Stern, Ph.D.

Yaakov Stern is a Professor of Clinical Neuropsychology in the Departments of Neurology, Psychiatry, and Psychology, as well as the in Sergievsky Center and the Taub Institute for the Research on Alzheimer's Disease and the Aging Brain, at Columbia University College of Physicians and Surgeons. Dr. Stern directs the Cognitive Neuroscience Division of the Sergievsky Center and is Director of Neuropsychology for the Memory Disorders Clinic at the New York State Psychiatric Institute. He also directs the post-doctoral training program Neuropsychology and Cognition in Aging.

Dr. David S. Whitley, Ph.D.

David S. Whitley received his PhD from UCLA, in 1982. He has taught at UCLA, where he was previously Chief Archaeologist, the University of the Witwatersrand in South Africa and, most recently, at the Universidad de San Carlos in Guatemala. His current academic affiliation is: Adjunct Professor, Geography Department, Arizona State University.
Dr. Whitley's primary area of research is far western North American rock art, especially in California and the Great Basin, but he has also worked at southern Africa, French and Guatemalan rock art sites. His research interests are the archaeology of religion, cognitive neurosciences, rock art dating and shamanism. Recent books include *The Art of the Shaman: Rock Art of California* (University of Utah Press, 2000) and the edited volume *Handbook of Rock Art Research* (AltaMira Press, 2001), both of which are available through Amazon.Com. His *Introduction to Rock Art Research* (Left Coast Press, 2005) is scheduled for publication soon.

Dr. Ellen Winner, Ph.D.

Ellen Winner is Professor of Psychology at Boston College, and Senior Research Associate at Project Zero, Harvard Graduation School of Education. She received her Ph.D. in Psychology from Harvard University in 1978 working with Roger Brown on child metaphor. Her research focuses on cognition in the arts in typical and gifted children. She is the author of over 100 articles and four books: *Invented Worlds: The Psychology of the Arts* (Harvard University Press, 1982); *The Point of Words: Children's Understanding of Metaphor and Irony*(Harvard University Press, 1988); *Gifted Children: Myths and Realities* (BasicBooks, 1997, translated into six languages and winner of the Alpha Sigma Nu National Jesuit Book Award in Science); and *Studio Thinking: The Real Benefits of Visual Arts Education* (Teachers College Press, 2007, co-authored with Lois Hetland, Shirley Veenema, and Kimberly Sheridan).

She received the Rudolf Arnheim Award for Outstanding Research by a Senior Scholar in Psychology and the Arts from the American Psychological Association. She is a Fellow of the American Psychological Association (Division 10, Psychology and the Arts) and of the International Association of Empirical Aesthetics. With a grant from the National Science Foundation, she, along with her collaborators, Lynn Goldsmith and Lois Hetland, is researching the effects of drawing instruction on spatial reasoning, examining whether the kinds of spatial thinking trained by drawing leads to improved reasoning in geometry.