

JOHN HART, JR., M.D

John Hart, Jr., M.D. presently holds the Jane and Bud Smith Distinguished Chair and the Cecil Green Chair in Systems Biology at the University of Texas at Dallas (UTD). He is also the Medical Science Director at the UTD Center for BrainHealth, and is a Professor of Neurology and Psychiatry at the University of Texas Southwestern Medical Center.

Dr. Hart graduated with a B.A. degree in psychology from Johns Hopkins University in 1979 and received his M. D. from the University of Maryland School of Medicine in 1983. He received his Neurology residency training and completed a fellowship in Behavioral/Cognitive Neurology and Neuropsychology at the Johns Hopkins Hospital and School of Medicine, and held a faculty position in the Department of Neurology at Hopkins until 2001. At that time, he accepted a position at the Donald W. Reynolds Center on Aging at the UAMS as Director of the Laboratory of Cognition and Brain Imaging and became a Physician Researcher in the Geriatric Research, Education, and Clinical Center (GRECC) in the Central Arkansas Veterans Healthcare System (CAVHS). In 2004, Dr. Hart accepted the position as Associate Director for Clinical Programs in the GRECC. UTD subsequently recruited Dr. Hart, and he began his appointment as the first Medical Science Director at the new Center for BrainHealth in November 2005. He also serves as Director of the Berman Laboratory in Learning and Memory, also at UTD. Additionally, Dr. Hart holds an appointment as a Professor of Neurology and Psychiatry at the University of Texas Southwestern Medical Center.

Dr. Hart is past-President of both the Society for Behavioral and Cognitive Neurology and the Behavioral Neurology Section of the American Academy of Neurology (AAN). These two organizations consist of neurologists that focus upon the fields of healthy cognitive aging, memory, dementia, etc. He is also continues his work as a member of the Medical Economic and Management Committee of the AAN. Through these positions in the AAN, Dr. Hart was responsible for the approval of the functional MRI (fMRI), which allows for noninvasive mapping of the cognitive functions in the human brain, as a procedure by all medical societies and billing groups.

Dr. Hart is one of the world's foremost experts on how knowledge is stored and accessed the brain - the field of cognition referred to as semantic memory. His work spanning several decades has focused on identifying the organization of semantic memory in the human brain by proposing that there is both a categorical and featural structure to object memory that exists in multiple memory subsystems in the brain. These findings have been published over the years in two seminal publications in *Nature*. This work was followed up in 1998 and 2002 with two more major discoveries published as Track II articles in *Proceedings of the National Academy of Sciences (USA)* that showed the actual time it takes in the brain to recall an object memory, and Dr. Hart's lab key discovery of the actual mechanism of how the brain combines parts of memories together to form an integrated object memory. Dr. Hart's laboratory has proposed one of the leading models in the field of cognitive neuroscience, the Neural Hybrid Model of Semantic Memory,

which delineates how regions of the brain function to store and utilize knowledge and proposes a mechanism of synchronizing, rhythmical neuronal firing that mediates the

retrieval of specific memories. He has recently edited the inaugural book in the field that presents the state-of-the-art theories and models of how the human nervous system encodes semantic memory, *Neural Basis of Semantic Memory*.

He is now investigating object memory and word finding deficits in multiple disease states in terms of both diagnosing and designing treatment options based on these models. He and his collaborators have now used their findings to assess patients with a wide variety of disorders including dementia, Alzheimer's disease, Mild Cognitive Impairment, Frontotemporal dementia, traumatic head injury, neurotoxic conditions, attention deficit disorder, post-traumatic stress disorder, schizophrenia, and also in normal aging. The findings from these studies will lead to targeted diagnostic markers, treatment interventions, rehabilitative strategies, and/or preventive measures for semantic memory retrieval deficits in these disease states.

Dr. Hart has published numerous articles and book chapters in the field of semantic memory and also in behavioral neurology. Additionally, he has delivered numerous addresses at national and international meetings on these topics. He is an Ad hoc reviewer on the leading journals in the field of memory and cognitive neurology and has served as an NIH study section reviewer. He is on the editorial board of *Neurocase*, *Neuropsychology*, and *the Journal of Innovative Optical Health Sciences* as well as the Board of the Britton Chance Center for Biomedical Photonics (BCCBP) of Huazhong University of Science of Technology (HUST) of Wuhan, China.

Dr. Hart has received support for his research efforts over the years from the National Institute of Health, the Veterans Administration, and the Department of Defense, as well as private foundations.