Related Content

Laboratory for Intelligence Modeling and Neurophysics

Neurosciences Interdisciplinary Modeling and Simulation Center

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Dr. Peter Bergethon, MD is the Head of the Neuroscience Interdisciplinary Modeling and Simulation Center (NIMS Center) and a member of the faculty in both the Departments of Anatomy/Neurobiology and Biochemistry at Boston University. He is also a member of the adjunct faculty at Tufts University in Bioengineering and Neurology. He graduated with honors in neurocybernetics and computational biology from Williams College. Following graduation from Jefferson Medical College he completed residencies in both Internal Medicine and Neurology at Boston City Hospital and trained in biophysical chemistry at Boston University. Dr, Bergethon is is board-certified in internal medicine and neurology and is trained as an NIH supported physician-scientist in biochemistry and biophysical chemistry. His research spirals around a core question: "What is the physical and systemic basis for creativity and intelligent behavior and how could such behavior be practically constructed or reconstructed?" This core query has significance on several levels. The basic neurophysics significance lies with the value in determining the fundamental processes, equations and organizational principles that give rise to intelligent behavior. However there are important clinical applications that relate to the molecular and cellular processes of brain damage, potential mechanisms for neuro-protection, and recovery of lost function in ischemia, epilepsy, and neurodegenerative disease. The ultimate thrust of his laboratory is the design, construction and interaction with "intelligent machines" inspired by biological understanding.

His research program uses a unified, theoretical model based on a systems-dynamics approach to explore the mechanisms underlying nervous system behavior. The model has the advantage that it allows processes from the level of biophysical mechanisms to be related to cognitive models, such as a model of education and learning. His laboratory is active in using mathematical and computational tools as well as the design and construction of hybrid biological-electronic physical systems capable of intelligent response. This work has resulted in collaborations and funding from the Carnegie Foundation for the Advancement of Teaching and the National Institutes of Health as

All Core Faculty

Dr. Mark Moss

Terri Ach, MS.

Dr. Peter Bergethon

Dr. Marlene Oscar Berman

Dr. Gene Blatt

Dr. Todd Hoagland

Dr. Richard Hoyt

Dr. Robert Joseph

Dr. Thomas Kemper

Dr. Ronald Killiany

Dr. Dae-Shik Kim

Dr. Jennifer Luebke

Dr. Tara Moore

Dr. Kalidas Nandy

Dr. Deepak Pandya

Dr. Monica Pessina

Dr. Alan Peters

Dr. Daniela Plesa Skwerer

Dr. Itamar Ronen

Dr. Douglas Rosene

Dr. R. Jarrett Rushmore

Dr. Ivelisse Sanchez

Dr. Julie Sandell

Dr. Donald Siwek

Dr. Jean-Jacques Soghomonian

Dr. Helen Tager-Flusberg

Dr. Louis Toth

Dr. Antoni Valero-Cabre

Dr. Deborah Vaughan

Dr. Elizabeth Whitney

Dr. Irina Zhdanova

Dr. Charles Zucker

well as industry. In addition to patents, research papers and textbooks he is the creator of SymmetryScience a K-8 science education program - a science literacy program teaching science as "way of looking at the world".

He is an active member of the American Academy of Neurology, the Electrochemical, Biophysical, American Chemical Societies, the Society for Neuroscience and the American Society of Biochemistry and Cellular Biology. He has been elected to the American Neurological Association and is a past president of the Boston Society of Neurology and Psychiatry. He has been an active physician-scientist while he has managed and run major academic Neurology departments as the Director of Clinical Neurology and Interim Chief of Pediatric Neurology at Tufts-New England Medical Center.

Recent Publications

Glass GA. Glass, Stankiewicz J, Freeman R, Mithoefer A, Bergethon PR, Levetiracetam for seizures after transplantation, Neurology, 64:1084-85, 2005.

Bergethon PR and Sabin TD, "A Cognitive Dynamics and Cybernetic Analysis of Entropy Related to Multiple Hand-Offs of Patient Care Under "Sleep-rules", Neurology, 64:A32, 2005.

Scott TM, Peter I, Tucker KL, Arsenault L, Bergethon P, Bhadelia RA, Buell, J, Collins L, Dashe J, Griffith J, Hibberd P, Folstein M. The Nutrition, Aging, and Memory in Elders (NAME) Study: Design and Methods for a Study of Micronutrients and Cognitive Function in a Homebound Elderly Population. International Journal of Geriatric Psychiatry, 2006

Bergethon, PR US Patent # 7024238, Detecting Ischemia, 4/4/2006.

Allen JA, Adlakha A, Bergethon PR, "Reversible posterior leukoencephalopathy syndrome after bevacizumab/ FOLFIRI regimen for metastatic colon cancer", Arch Neurol, 2006.

Tong Y, Martin JM, Sassaroli A, Clervil PR, Bergethon PR and Fantini S, "Fast optical signals in the peripheral nervous system", Journal of Biomedical Optics, 11: 044014, 2006.