21st Annual Neuroscience Day at Dartmouth

Friday • February 16, 2007
DHMC Auditoriums A-E
Dartmouth-Hitchcock Medical Center
Lebanon, New Hampshire
The first Annual Neuroscience Day at Dartmouth was held in 1986. Today, the Annual Neuroscience Day at Dartmouth continues its original goal of fostering and facilitating opportunities for valuable collaborations and exchanges. Over recent years, numbers of poster presentations have increased, an oral presentation component has been added and these presentations call attention to the continued vitality and expanding scope of neuroscience research at Dartmouth.

The interdisciplinary strengths within neuroscience are stronger and continue to develop and expand with support and commitment from the institution, the Neuroscience Center at Dartmouth, and the outstanding scientists and clinicians who have joined many of the original faculty responsible for initially promoting neuroscience at Dartmouth. An environment rich in experience and enthusiasm exists and the task of training the next generation of neuroscientists so that they can transform the nation’s medical research capabilities and speed the movement of neuroscience research discoveries from the bench to the bedside is a priority of the faculty.

Within the past year, great strides have been made to increase the neuroscience training at Dartmouth. In addition to the existing undergraduate neuroscience major and minor, a neuroscience graduate track is now available under the umbrella of the recently initiated Program in Experimental and Molecular Medicine (PEMM) graduate program. Funding has been awarded by the National Institutes of Health to assist in supporting a Translational Neuroscience Postdoctoral Program that has been designed to provide research experience to neurology, neurosurgery, psychiatry residents and others postdoctoral candidates interested in expanding their neuroscience research and expedite our goal to assist basic, applied, and clinical scientists in combining and coordinating their efforts in translating basic discoveries to the bedside.

This 21st Annual Neuroscience Day once again demonstrates the flourishing neuroscience research environment that exists across the institution. – Welcome!
SCHEDULE

Poster Presentations - 9-11:30 A.M. - Auditoriums A-D

Neurology and Neurosurgery Grand Rounds - Auditorium E

"Emerging therapeutic targets in the perinatal brain: Translation from basic science research"

Frances E. Jensen, M.D.
Associate Professor of Neurology at Harvard Medical School and Director of Epilepsy Research at Children's Hospital, Boston, MA

Oral Presentations – 1:15-3:15 P.M. - Auditorium E

Keynote Lecture - 4 P.M. - Auditorium E

"Beyond the dopamine hypothesis: The role of glutamate in the pathophysiology of schizophrenia"

Joseph T. Coyle, M.D.
The Eben S. Draper Professor of Psychiatry and of Neuroscience at Harvard Medical School, Boston, MA
"Emerging therapeutic targets in the perinatal brain: Translation from basic science research"

Frances E. Jensen, M.D.
Associate Professor of Neurology
at Harvard Medical School
and Director of Epilepsy Research
at Children's Hospital, Boston, MA

Dr. Jensen, Associate Professor of Neurology at Harvard Medical School and Director of Epilepsy Research at Children's Hospital, Boston, obtained her medical degree from Cornell University Medical College, and trained in the Harvard Longwood Neurology Residency Training Program.

Dr. Jensen has authored numerous original research publications and reviews concerning the interaction between brain development and mechanism of disease, specifically epilepsy and perinatal brain injury. Dr. Jensen is Chair of the Council of Medical Education of the American Epilepsy Society, serves on many advisory boards for private and public research foundations, and is the 2007-2008 Chair of the Program Committee for the Society of Neuroscience.
"Beyond the dopamine hypothesis: The role of glutamate in the pathophysiology of schizophrenia"

Joseph T. Coyle, M.D.
The Eben S. Draper Professor of Psychiatry and of Neuroscience at Harvard Medical School, Boston, MA

Dr. Coyle is a distinguished scientist whose research discoveries in biological psychiatry and research treatments for conditions such as Alzheimer’s and schizophrenia is widely recognized, and have contributed significantly to advancing therapies. From 1991 to 2001, Dr. Coyle served as Chairman of the Consolidated Department of Psychiatry at Harvard Medical School, and he now holds the Eben S. Draper Chair of Psychiatry and Neuroscience at Harvard.

He received his MD degree from Johns Hopkins School of Medicine in 1969. Following an internship in pediatrics, he spent three years at the National Institutes of Health as a research fellow in the laboratory of Nobel Prize winner Julius Axelrod, Ph.D. He returned to Hopkins in 1973 to complete his Psychiatric residency, in which he is board certified, and joined the faculty. In 1980 he was promoted to Professor of Neuroscience and Psychiatry; and in 1982 he assumed the Directorship of the Division of Child and Adolescent Psychiatry, being named the Distinguished Service Professor in 1985.

A recipient of numerous awards, including the John Jacob Abel Award from the American Society for Pharmacology and Experimental Therapeutics, the Gold Medal Award from the Society for Biological Psychiatry, and the Efron Award from the American College of Neuropsycho-pharmacology, he has authored over 500 peer-review publications, has edited numerous books, and served on many editorial boards. In addition to many professional memberships, he is past president of the Society for Neuroscience and the American College of Neuropsychopharmacology.
SUMMARY OF PRESENTATIONS

1. Enhanced neurogenesis and fear learning in NMDA NR1 knockdown mice
   S.Bursztajn1, W.A. Falls2 S.A.Berman3, M.J. Friedman4. Departments of 1Pathology, 3Neurology 4Psychiatry, Dartmouth Medical School and VA Med., CTR, WRJ, VT 05009 and 2Psychology, Univ. Vermont, Burlington, VT 05405.

2. Role of infiltrating CD4+ T lymphocytes in a mouse model of neuropathic pain
   Ling Cao and Joyce A. DeLeo Department of Anesthesiology, Dartmouth-Hitchcock Medical Center, Lebanon, NH

3. A Physiologically Realistic Model of a CO2-Sensitive Neuron
   Myktya M. Chernov and James C. Leiter Department of Physiology, Dartmouth Medical School, Lebanon NH

4. Cytochrome C as Early Biomarker for ALS
   Crapser, D., Merkens, K. and Harris, B.T. Department of Pathology, Dartmouth Medical School, Lebanon, NH

5. Alcohol exposure in utero affects the development of GABAergic cortical interneurons.
   V.C. Cuzon1 and H.H. Yeh1, 1Department of Physiology, Dartmouth Medical School, Lebanon, NH

6. Cerebral heme-a is increased in Alzheimer’s disease
   Barney E. Dwyer1-2, Meghan L. Stone3, Nadia Gorman1-3, Peter R. Sinclair1-3, George Perry4, Mark A. Smith4, Xiongwei Zhu4, 1Research Service, VA Medical Center, White River Junction, VT, and 2 Department of Medicine (Neurology) and 3 Department of Pharmacology & Toxicology, Dartmouth Medical School, Hanover, NH and 4Department of Pathology, Case Western Reserve University, Cleveland, OH.

7. Distinct microglia and macrophage immune activity occurs in the ventral horn and proximal nerve roots prior to symptom onset in a transgenic rat model of amyotrophic lateral sclerosis
   David J. Graber, Karlina Merkens, William F. Hickey, and Brent T. Harris Department of Pathology, Dartmouth Medical School, Lebanon, NH

8. EAE Induced CNS Inflammation Accelerates ALS-Like Disease In The hmSOD1 Transgenic Rat Model
   Harris, BT, Bercury, KK, Graber, DJ, Davidson, TS, Merkens, KP, van Hoff, RM, Hickey, WF. Department of Pathology, Dartmouth Medical School. Lebanon, NH.

9. Structural and Functional Studies of AMPA Receptors
   A. Birdsey, A. Gill, C. Midgett, & D.R. Madden Department of Biochemistry, Dartmouth Medical School, Lebanon, NH

10. The Role of Id2 in Olfactory Neurogenesis
    Havrda, M.C., Harris, B.T., Watson., N, Israel, MA. Norris Cotton Cancer Center, Dartmouth Medical School, Lebanon, NH

11. Distinct neuroimmune activation and tolerance profiles of opioids: Implications and future studies
    1,2Ryan J. Horvath, 1,2Vivianne L. Tawfik, 1,2Michael L. LaCroix-Fralish, 2,3Nancy Nutile-McMenemy, 1,2,3Joyce A. DeLeo 1Department of Pharmacology, 2Neuroscience Center at Dartmouth, 3Department of Anesthesiology Dartmouth-Hitchcock Medical Center, Dartmouth Medical School, Lebanon, NH
12. **p75NTR REGULATES CLIMBING FIBER TRANSLOCATION ATNASCENT CLIMBING FIBER-PURKINJE CELL SYNAPSES**  
*Erin M. Johnson and Hermes H. Yeh*  
Department of Physiology, Dartmouth Medical School, Dartmouth Hitchcock Medical Ctr., Lebanon, NH

13. **The Effect of IL-4 on Proinflammatory Cytokine and Chemokine Production in Glial Cultures**  
L. Fei¹, L. Cao¹², J.A. DeLeo¹²  
¹Dartmouth Medical School, Hanover, NH; ²Dartmouth-Hitchcock Medical Center, Lebanon, NH

Alison A. Motsinger¹, Stephen L. Lee², George Mellick³, and Marylyn D. Ritchie¹  
¹Center for Human Genetics Research and Department of Molecular Physiology and Biophysics, Vanderbilt University Medical Center, Nashville, TN, 37232-0700, USA. ²Dartmouth Medical School, One Medical Center Drive, Lebanon, New Hampshire 03756-001, USA. ³University of Queensland, School of Medicine and Department of Neurology, Princess Alexandra Hospital, Brisbane, Australia

15. **The role of glia and neurotrophic factors on motor neuron survival in vitro: Implications in amyotrophic lateral sclerosis**  
Dieu-Thi Nguyen '07*, David Graber PhD+, Karlina Merkens+, Brent Harris MD, PhD+  
*Dartmouth College, Hanover NH, +Department of Pathology, Dartmouth Medical School, Lebanon NH

16. **The Effect of Minocycline on Microglial Motility, Kv1.3 Channels and Beta Integrin Expression**  
Nancy Nutile-McMenemy ¹ ³, Arye Elfenbein ², Tina Ting-Lan Chang ², Joyce A. De Leo* ¹ ² ³  
¹Department of Anesthesiology, Dartmouth-Hitchcock Medical Ctr., Lebanon, NH; ²Department of Pharmacology, Dartmouth Medical School, Hanover, NH; ³Neuroscience Center at Dartmouth, Lebanon, NH

17. **Sex-specific differences in action potential firing patterns of medial preoptic area neurons upon treatment with the anabolic androgenic steroid, 17α-methyltestosterone**  
Carlos A.A. Penatti, Donna M. Porter, Elizabeth Wheat and Leslie P. Henderson  
Department of Physiology, Dartmouth Medical School, Hanover, N.H.

18. **Spinal cannabinoid receptor type 2 activation reduces hypersensitivity and spinal cord microglial and astrocyte activation following incisional surgery**  
E.A. Romero-Sandoval and J.C. Eisenach.  
Department of Anesthesiology, Wake Forest University School of Medicine, Winston Salem, NC USA

19. **Effects of Elevated Kynurenic Acid Concentration on Place and Response Learning**  
Torey E. Alling¹, Amy C. Chess² & David J. Bucci¹  
¹Department of Psychological & Brain Sciences, Dartmouth College and ²Department of Psychology, University of Vermont

20. **Subjective ratings prediction by flatmapped covariance**  
Bennett CM, Kraemer DJ, Cross ES, Tunik E, and Ortigue SN  
Department of Psychological & Brain Sciences, Dartmouth College, Hanover, NH

21. **Chinchilla horizontal semicircular canals are necessary but not sufficient for normal head-direction cell activity**  
*J. E. BROWN¹, J. P. CAREY², L. B. MINOR², J. S. TAUBE¹  
¹Psychological & Brain Sciences, Dartmouth College, Hanover, NH; ²Otolaryngology, Johns Hopkins University School of Medicine, Baltimore, MD.
22. Increased Concentration of Endogenous Kynurenic Acid does not Affect Fear Conditioning in Rats
Tara H. Burns¹, Amy C. Chess², David J. Bucci¹
¹Department of Psychological & Brain Sciences, Dartmouth College and ²Department of Psychology, University of Vermont

23. Lesions of the interpeduncular nucleus do not abolish head direction cell activity, but disrupt stability of the preferred firing direction
Benjamin J. Clark, Asha Sarma, Jeffery S. Taube
Department of Psychological & Brain Sciences, Dartmouth College, Hanover, NH.

Michael E. Hopkins and David J. Bucci
Department of Psychological and Brain Sciences, Dartmouth College, Hanover, NH.

25. Lesions of retrosplenial cortex selectively disrupt contextual memory following fear conditioning: Effects of pre- and post-training lesions
Christopher S. Keene & David J. Bucci
Psychological and Brain Sciences, Dartmouth College, Hanover, NH

26. Damage to the retrosplenial cortex disrupts processing of multiple stimuli
Christopher S. Keene, Justine E. Cormier, David J. Bucci
Department of Psychological and Brain Sciences, Dartmouth College, Hanover, NH

27. Female Rats Exhibit a Conditioned Place Preference for Nonpaced Mating
Sarah H. Meerts and Ann S. Clark
Department of Psychological and Brain Sciences, Dartmouth College, Hanover NH 03755

28. The Role of Nicotinic Acetylcholine Receptors in Conditioned Inhibition
Megan M. Vucovich, Michael E. Hopkins, Jill E. MacLeod, David J. Bucci
Department of Psychological and Brain Sciences, Dartmouth College, Hanover, NH

29. Microdialysis of Gabazine in the NTS prevents thermal prolongation of the laryngeal chemoreflex in decerebrate piglets
Luxi Xia, Tracey Damon, Soo-Yeon Kang, J.C. Leiter, and Donald Bartlett, Jr.
Department of Physiology, Dartmouth Medical School, Lebanon, NH

30. Postsubiculum projections to lateral mammillary and anterodorsal thalamic nuclei: layers of origin and functional implications
Ryan M. Yoder & Jeffrey S. Taube
Dept. of Psychological & Brain Sciences. Dartmouth College, Hanover, NH

31. Molecular classification of “V V-2” and “basal ganglia hyper-intensities” on MRI: A rare case of spontaneous Creutzfeldt-Jakob disease
C. Daniel Ansevin, M.D¹,², Syed T. Arshad, M.D¹, Brent Harris, M.D.³, Morris Levin, M.D.¹,²
¹Section of Neurology, Dartmouth-Hitchcock Medical Center, Lebanon, NH, ²Dartmouth Stroke Program, Dartmouth-Hitchcock Medical Center, Lebanon, NH, ³Department of Pathology, Dartmouth Medical School, Lebanon, NH

32. Association of recurrent cryptogenic stroke with dislodgement and malfunction of two year long successfully implanted “PFO device”.
Syed T. Arshad, M.D.¹, Omar I. Khan, M.D.¹, Timothy G. Lukovits, M.D.¹,²
¹Section of Neurology, Dartmouth-Hitchcock Medical Center, Lebanon, NH, ²Dartmouth Stroke Program, Dartmouth-Hitchcock Medical Center, Lebanon, NH,
33. Understanding Deep Brain Stimulation as a Treatment for Parkinson’s Disease
Christina Behrend1, J. Andrew Daubenspeck1,2, A. Hartov2, James Leiter, M.D.2
1Thayer School of Engineering at Dartmouth College, Hanover, NH, 2Physiology, Dartmouth-Hitchcock Medical Center, Lebanon, NH

34. Seizure Outcome in Patients with Mesial Temporal Sclerosis and Refractory Epilepsy after Standard or Selective Temporal Lobectomy
1Eric Dinnerstein, 2Fuyuki Hirashima, 1Karen L. Gilbert, 2David W. Roberts, 1Vijay M. Thadani, and 1Peter D. Williamson
1. Section of Neurology, DHMC, 2. Section of Neurosurgery, DHMC, 3. Dartmouth Medical School, Lebanon, NH

35. Cognitive seizure arrest methods in localized epilepsy may be hemisphere specific
Eric Dinnerstein, Karen R. Richardson, and Barbara C. Jobst
Section of Neurology, Dartmouth-Hitchcock Medical Center, Lebanon, NH

36. Neuro-Anesthetic Considerations in Brain Trauma Research in Immature Swine
Carter Dodge, Anesthesia, DHMC; Richard Curtis, BA, DMS; Terry Darcey, Neurology, DHMC; AC Duhaime, Pediatric Neurosurgery, DHMC.

37. Retrophylogenesis of Memory in Alzheimer Dementia: Comparisons with Vascular Dementia on Motor Memory, Emotional Memory, and Neocortical Memory
Virginia Olga B. Emery, Ph.D.
Department of Psychiatry, Dartmouth Medical School, Lebanon, NH

38. Cognitive and Behavioral Consequences of Early Childhood Deprivation; an Example of Acquired Autistic Spectrum Disorder

39. Dissociation of Awareness of Different Components of Illness in Schizophrenia
Laura A. Flashman, Robert M. Roth, Thomas W. McAllister, Jo Cara Pendergrass, Matthew A. Garlinghouse, & Andrew J. Saykin.
Brain Imaging Laboratory, Department of Psychiatry, Dartmouth Medical School, Lebanon, NH

40. Cortical Deafness Presenting as Aphasia in a Patient with an Intra-cerebral Hemorrhage
Juan Gonzalez, Eric Dinnerstein, Daniel Morrison, Timothy Lukovits
Section of Neurology and Otolaryngology, Dartmouth-Hitchcock Medical Center, Lebanon, NH

41. Value of Multislice CT and Reformatted Images: Illustrative Case of Migratory Intraventricular Clot Exacerbating Obstructive Hydrocephalus
Rihan Khan, MD (1), Alexander C Mamourian, MD (1), Tarek Radwan, MRCP, MRCS (2)
Departments of (1) Radiology and (2) Neurosurgery, Dartmouth-Hitchcock Medical Center, Lebanon, NH

42. Neural Correlates of Reaction Time Variability during Working Memory Performance in Schizophrenia
Nancy S. Koven1, Robert M. Roth2, Laura Bozzuto3, Jo C. Pendergrass2, Laura A. Flashman2, & Andrew J. Saykin4
1Program in Neuroscience, Department of Psychology, Bates College, Lewiston, ME, 2Neuropsychology Program and Brain Imaging Laboratory, Department of Psychiatry, Dartmouth Medical School/DHMC, Lebanon, NH, 3Dartmouth College, Hanover, NH, 4Department of Radiology, Indiana University School of Medicine, Indianapolis, IA
43. Robotic catheter ventriculostomy: feasibility, efficacy, and implications  
S. Scott Lollis, MD and David W. Roberts, MD  
Section of Neurosurgery, Dartmouth Hitchcock Medical Center, Lebanon, NH

44. Reduction of syrinx size after surgery in patients with syringomyelia associated with intradural spinal arachnoid cysts  
Symeon Missios, M.D., Perry Ball, M.D. and Nathan Simmons, M.D.  
Division of Neurosurgery, Dartmouth-Hitchcock Medical Center, Lebanon, NH

45. Cerebellar loss and brain stem atrophy associated with neonatal alloimmune thrombocytopenia in a discordant twin.  
Carrie A. Mohila MD, PhD1, Kim Ornvold MD1, Zuzanna J. Kubicka MD2, Brent T. Harris MD, PhD1  
1Department of Pathology and 2Department of Neonatology, Dartmouth-Hitchcock Medical Center, Lebanon, NH

46. Severe Myoclonic Epilepsy of Infancy (Dravet syndrome): a not-so-benign channelopathy  
Richard P. Morse, MD, Dept. of Pediatrics, Section of Neurology, Dartmouth-Hitchcock Medical Center, Lebanon, NH

47. Supplementary Motor Area Seizures in Children  
Richard P. Morse, MD1, Barbara Jobst, MD2, and Ann-Christine Duhaime3, MD  
Depts. Of Pediatrics1, Neurology2, and Neurosurgery3, Dartmouth-Hitchcock Medical Center, Lebanon, NH

48. Characterization of Verbal Learning Processes in MCI AND AD  
Nadia Pare, Andrew J. Saykin, Laura A. Rabin, Margaret S. Nordstrom, Heather A. Wishart, Laura A. Flashman, & Robert B. Santulli  
Neuropsychology Program and Brain Imaging Laboratory, Department of Psychiatry, Dartmouth Medical School/DHMC, Lebanon, NH

49. Neural Correlates of Response Inhibition and Reaction Time Variability in Bipolar Disorder  
Jo Cara Pendergrass, Ph.D.1, Robert Roth, Ph.D. 1, Nancy S. Koven, Ph.D. 2; Laura A. Flashman, Ph.D. 1, Heather S. Pixley, B.A. 1, Andrew J. Saykin, Ph.D. 3  
1 Neuropsychology Program and Brain Imaging Laboratory, Department of Psychiatry, Dartmouth Medical School / DHMC; Lebanon, NH; 2 Program in Neuroscience, Department of Psychology, Bates College, Lewiston, ME; 3 IU Center for Neuroimaging, Department of Radiology, Indiana School of Medicine, Indianapolis, IN

50. Heroin-induced leukoencephalopathy after one year of “chasing the dragon”  
Petras, ML1, Stommel, EW2, Harris, BT1  
1Department of Pathology, 2Department of Medicine (Neurology), Dartmouth-Hitchcock Medical Center, Lebanon, NH

51. The Safety & Utility of Interhemispheric Intracranial Electrodes in Guiding Resective Epilepsy Surgery  
Tarek A Radwan, MB, MRCS1, David W Roberts, MD1, Vijay M Thadani, MD2, Peter D Williamson2, MD, Richard P Morse, MD3, Ann-Christine Duhaime, MD1, Terrance Darcey, PhD2, and Barbara C Jobst, MD2  
Dartmouth Epilepsy Program, Neurosurgery1 & Neurology2, Dartmouth-Hitchcock Medical Center, Lebanon, NH

52. Subjective Integrity of Working Memory is Related to Brain Activation during an N-Back Task in Schizophrenia  
Robert M. Roth, Laura A. Flashman, Jo Cara Pendergrass, Nancy S. Koven, Matthew A. Garlinghouse, Thomas W. McAllister, & Andrew J. Saykin  
Brain Imaging Laboratory, Department of Psychiatry, Dartmouth Medical School, Lebanon, NH
53. Epidemiology of ALS in the Upper Valley of Vermont and New Hampshire
   Kathryn West¹, Andrea Ball¹, Rich Tsen¹, Mary Curtin¹, Noel Mariyampillai¹, Elijah Stommel², Jeffrey Cohen², Brent Harris³
   ¹Dartmouth College, Hanover, NH, ²Section of Neurology and ³Department of Pathology DMS/DHMC, Lebanon, NH

54. Gliomatosis Cerebri as a Cause of Sudden Death in a Young Woman
   Timothy L. Williams, MD¹, John A. Taylor, DO², William F. Hickey, MD¹, Thomas A. Andrew, MD³
   ¹Department of Pathology, ²Section of Neurology, Dartmouth Hitchcock Medical Center, Lebanon, NH
   ³Office of the State Chief Medical Examiner, Concord, NH

55. Deep brain stimulation (DBS) for the treatment of epileptic encephalopathy
   Jonathan W Florczak, David W Roberts¹, Richard P Morse², Terrance Darcey², Gregory L. Holmes², Barbara C. Jobst²
   Departments of ¹Neurosurgery & ²Neurology, Dartmouth Medical School/Dartmouth-Hitchcock Medical Center, Lebanon, NH

56. Potentiating noradrenergic activity of the dopamine D2 receptor antagonist haloperidol decreases alcohol drinking in rodents
   David Chau, Ph.D., Michael Henderson, J.D., Jayme Ahmed, B.S., and Alan I. Green, M.D.
   Department of Psychiatry, Dartmouth Medical School, Lebanon, NH 03756

57. Inter-hospital Helicopter Transport in Acute Stroke: Initial Report from New Hampshire
   Robin R. Clark, A.R.N.P & Timothy G. Lukovits, M.D.
   Dartmouth-Hitchcock Medical Center