The UNIVERSITY of VERMONT

FIFTH ANNUAL NEUROSCIENCE, BEHAVIOR AND HEALTH RESEARCH FORUM

The University of Vermont
Dudley H. Davis Center
Livak Ballroom / Mansfield Room
January 23 - 24, 2015

Sponsored by:
Society for Neuroscience
Society for Neuroscience Vermont Chapter
UVM Neuroscience, Behavior and Health Initiative
UVM Neuroscience Graduate Program
Neuroscience COBRE
MBF Bioscience
Med Associates / Catamount Research

André Fenton:

André Fenton is a recognized neuroscientist, biomedical engineer and entrepreneur working on three related problems: how brains store information in memory; how brains coordinate knowledge to selectively activate relevant information and suppress irrelevant information; and how to record electrical activity from brain cells in freely-moving subjects.His lab recordings of electrical brain activity are elucidating the physiology of cognitive control and cognitive dysfunction in schizophrenia. Dr. Fenton is a Professor at the Center for Neural Science at New York University. He founded Bio-Signal Group Corp., to develop brain-recording technology for medical applications that include enabling the rapid assessment of a patient's functional brain state for emergency medicine.

NBH RESEARCH FORUM SCHEDULE OF EVENTS

FRIDAY, JANUARY 23

4:00 pm	Registration: White Pine Lounge, Davis Center 4th Floor
4:20 pm	Welcome and Introduction: Victor May, PhD, President, Vermont Chapter for the Society of Neuroscience; Jeremy Barry, PhD, Neurological Sciences, Livak Ballroom, Davis Center
4:30 pm	Keynote Lecture: ***André Fenton, PhD, Professor of Neural Science, New York University Center for Neural Science****, "Tracing, Erasing and Harnessing Memory"* Livak Ballroom, Davis Center
5:30 pm	Reception: White Pine Lounge, Davis Center 4th Floor

SATURDAY, JANUARY 24

8:00 am	Registration, Handy Room, Davis Center 4th Floor Light Breakfast - coffee/tea
	Poster Setup, Mansfield Room, Davis Center 2nd Floor
8:30 am	Introductory Remarks: Rae Nishi, PhD, Director, Neuroscience, Behavior and Health Research Initiative, Livak Ballroom, Davis Center

Platform Talks

Session I	Chairs: Anthony Pappas and Nicholas D'Alberto Neuroscience Graduate Program, University of Vermont
8:40 am	***Benedek Erdos, PhD, Department of Pharmacology, UVM*** *"Brain-derived neurotrophic factor: a novel regulator of cardiovascular function"*
9:00 am	***Stephanie Spohn, NGP, Department of Neurological Sciences, UVM*** *"Mucosal 5-HT4 receptors as a novel therapeutic target in colitis"*
9:20 am	***Nektarios Konstantinopoulos, Department of Surgery, UVM*** *"Studying the role of the TRPV3 channel in mouse urinary bladder function and sensation"*
9:40 am	***Estelle Spear, NGP, Department of Neurological Sciences, UVM*** *"Gastrointestinal dysmotility in a mouse model of multiple sclerosis"*

10:00 am ***Eric Gonzalez, NGP, Department of Neurological Sciences, UVM***
"The contribution(s) of transforming growth factor-beta to bladder afferent nerve hyperexcitability with cyclophosphamide-induced cystitis"

10:20 am Coffee Break

Session II Chairs: Casey Sherwin and Riley St. Clair
Neuroscience Graduate Program, University of Vermont

10:40 am ***Jeremy Barry, PhD, Department of Neurological Sciences, UVM***
"Hippocampal place cells as an assay of spatial memory: Applications for basic and translational science"

11:00 am ***Kutibh Chihabi, NGP, Department of Pharmacology, UVM***
"Regulation of cerebellar Kv1.2 by PKM-ζ and its implication for learning and memory"

11:20 am ***Sydney Trask, Department of Psychology, UVM***
"Reducing relapse by presenting a reinforcer associated with behavioral inhibition"

11:40 am ***Amanda Hernan, PhD, Department of Neurological Sciences UVM***
"The role of ACTH in improving cognitive outcomes in pediatric epilepsy"

12:00 pm Lunch Break / Poster Viewing and Judging
Mansfield Room, Davis Center

Session III Chairs: Olivia Miles and Megan Shipman
Department of Psychology, Neuroscience Graduate Program
University of Vermont

1:20 pm ***Anthony Pappas, NGP, Department of Pharmacology, UVM***
"Astrocyte calcium signaling drives inversion of neurovascular coupling after subarachnoid hemorrhage"

1:40 pm ***Riley St. Clair, NGP, Department of Biology, UVM***
"Delineation of a novel role for collapsin response mediator proteins in the development of the vertebrate visual system"

2:00 pm ***Emily Stephen, Department of Physiology and Neurobiology, Dartmouth College*** *"Activity-dependent serotonergic excitation of callosal-projection neurons in the mouse prefrontal cortex"*

2:20 pm ***Michael Williams, PhD, Department of Physiology & Neurobiology, Dartmouth College*** *"Viral strategies to probe autism-associated genes in developmental neurophysiology"*

2:40 pm Coffee Break

Session IV Chairs: Steven King and Willie Curry
Department of Psychology, Neuroscience Graduate Program
University of Vermont

3:00 pm ***Christopher Berger, PhD, Department of Molecular Physiology, UVM***
"Structural dynamics of tau: implications for neurodegenerative disease"

3:20 pm ***Clarissa Parker, PhD Department of Psychology, Middlebury College***
"Genome-wide mapping of methamphetamine sensitivity in commercially available outbred mice"

3:40 pm ***Dawei Li, PhD, Department of Microbiology & Molecular Genetics, UVM***
"Alcohol dependence and copy number variation"

4:00 pm Awards

NEUROSCIENCE, BEHAVIOR AND HEALTH RESEARCH FORUM
POSTER SESSION

Poster 1 ***Representation of predacity of animal species in the human brain.***
Andres Connolly
Department of Neurology, Dartmouth Geisel School of Medicine, Hanover, NH

Poster 2 ***Do experienced meditators differ from non-meditators in emotion identification, competitive reactions, or compassionate responses***
Cullen, B. [1]; Stallworthy, I. ; Lesenskyj, A. ; Boles, L.; Weinert-Stein, M. [1]; Percelay, R. [1]; Kahn, H. [1]; McGuirk, E.1; Sellers, J. [3] and Cronise, K [1,2].
[1]Neuroscience Program, Middlebury College, Middlebury, VT; [2]Psychology Department, Middlebury College, Middlebury, VT; [3]Psychology Department, Green Mountain College, Poultney, VT

Poster 3 ***The effect of early life adversity on brain development in children and adolescents***
D'Alberto, N.[1], Holbrook, H.[1], Oloughlin, K.[1], Kaufman, J.[2], and Hudziak, J.J.[1]
[1]Vermont Center for Children Youth and Families, University of Vermont, Burlington, VT, [2]Yale University College of Medicine, New Haven, CT

Poster 4 ***Role of prelimbic and infralimbic regions of medial prefrontal cortex in extinction and renewal of extinguished appetitive instrumental responding.***
Meghan C. Eddy and John T. Green
Department of Psychological Science, University of Vermont

Poster 5 ***Determining shared working memory systems for rhyhtmic incongruities in music and language using functional near-infrared spectroscopy***
Jackson Mathews and Michael Cannizzaro
Neuroscience Undergraduate Program, Department of Communication Sciences and Disorders, University of Vermont, Burlington, VT

Poster 6 ***Reducing relapse by manipulating the temporal distribution of reinforcers in an animal model of contingency management treatment***
Scott T. Schepers and Mark E. Bouton
Department of Psychological Science, University of Vermont, Burlington, VT

Poster 7 ***An associative analysis of instrumental behavior chains***
Eric A. Thrailkill and Mark E. Bouton
Department of Psychological Science, University of Vermont, Burlington, VT

Poster 8 ***Melanocortin receptor expression after early life seizures***
Andrew Massey[1,2], Rod Scott[2,3] and Amanda Hernan[2]
[1]Department of Biological Sciences, University of Bath, Bath, UK, [2]Department of Neurological Sciences, University of Vermont, Burlington, VT, [3]Institute of Child Health, University College London, London, UK

Poster 9 ***Environmental enrichment improves hippocampal networks in animals with malformations of cortical development***

*Curry, W. J.[1], A. E. Hernan[1], M. M. Lucas[2], K. R. Jenks[2], J. M. Barry[1,2], M. E. Testorf[2], P.P. Lenck-Santini[1], G. L. Holmes[1] and R. C. Scott[1,3 *]*

[1]Department of Neurological Sciences, University of Vermont College of Medicine, Burlington, VT, [2]Department of Neurology, Geisel School of Medicine at Dartmouth, Lebanon, New Hampshire, [3]University College London, Institute of Child Health, London WC1N 1EH, UK

Poster 10 ***CA1 Nav1.1 knockdown alters spatial information coding in the hippocampus***

Sakkaki S[1], Bender AC[2], Barriere S[1], Gulledge A[2] and Lenck-Santini PP[1]

[1] Department of Neurological Sciences, University of Vermont, Burlington, VT, [2] Department of Neurology, Geisel School of Medicine at Dartmouth, Lebanon, NH

Poster 11 ***Head direction cell activity in the dorsal striatum and medial precentral cortex requires intact anterodorsal thalamic nuclei***

Mehlman, M.L., Winter, S.S. and Taube, J.S.

Psychological and Brain Sciences Department, Dartmouth College, Hanover, NH

Poster 12 ***Evoked cortical potentials associate with center of mass displacement in response to an induced loss of standing balance***

Roman E. Popov[1], Carrie L. Roy[2], Juvena R. Hitt[2], Sharon M. Henry[2] and Jesse V. Jacobs[2]

[1]Neuroscience Graduate Program, Department of Neurological Sciences, [2]Department of Rehabilitation and Movement Science, University of Vermont, Burlington, VT

Poster 13 ***KCNS1 as a biomarker for pain perception in patients with chronic musculoskeletal pain***

Alan French and Magdalena Naylor

Department of Psychiatry, University of Vermont College of Medicine, Burlington, VT

Poster 14 ***Evaluation of white matter architecture across different diffusion-weighted imaging acquisition and voxel-wise reconstruction methods***

James Bishop, Sarah Lichenstein, Fang-Cheng Yeh and Tim Verstynen

Department of Psychiatry, University of Vermont College of Medicine, Burlington, VT; Department of Psychology, Carnegie Mellon University, Pittsburgh, PA.

Poster 15 ***Variation in ethanol sensitivity in the Diversity Outbred mouse population: implications for genome-wide association mapping***

Benjamin Mansky, Walter M. Taylor and Clarissa Parker

Program in Neuroscience, Department of Psychology, Middlebury College, Middlebury, VT

Poster 16 ***Identifying genes that contribute to conditioned fear in mice: a novel, forward genetic approach that may have implications with PTSD in humans***
Walter M. Taylor, Benjamin Mansky, Dominick Taterra and Clarissa C. Parker
Program in Neuroscience, Department of Psychology, Middlebury College, Middlebury,VT

Poster 17 ***PACAP signaling enhances BNST neuronal excitability and increases circulating corticosterone***
K. R. Lezak[1], E. Roelke[1], O. Harris[1], G. Cocchiaro[1], G. Missig[2], C. W. Roman[2], D. J. Toufexis[1], K. M. Braas[2], V. May[2] and S. E. Hammack[1]
[1]Department of Psychological Sciences, University of Vermont; [2]Department of Neurological Sciences, University of Vermont College of Medicine, Burlington, VT

Poster 18 ***Intra-BNST PACAP Reinstatement to Cocaine Seeking in Rats***
Olivia W. Miles, Eric A. Thrailkill, Mark E. Bouton and Sayamwong E. Hammack
Department of Psychological Science, University of Vermont, Burlington VT

Poster 19 ***Parabrachial nucleus (PBn) PACAP projections to the lateral capsular division of the amygdala: modulatory roles in the sensory and behavioral aspects of pain***
Galen Missig[1], Carolyn W. Roman[1], Margaret A. Vizzard[1], Karen M. Braas[1], Sayamwong E. Hammack[2], and Victor May[1]
[1]Department of Neurological Sciences, [2]Department of Psychological Science, University of Vermont College of Medicine, Burlington, VT

Poster 20 ***Differential mechanisms of vasodilation of PACAP and CGRP in rat middle meningeal artery: potential role in migraine headache***
Arsalan U. Syed[1], Masayo Koide[1], Victor May[1,2], and George C. Wellman[1]
Departments of Pharmacology[1] and Neurological Sciences[2], University of Vermont College of Medicine, Burlington, VT

Poster 21 ***Measuring changes in surface Kv1.2 expression in cerebellar cortex following eyeblink conditioning***
Jason R. Fuchs[1], Anthony D. Morielli[2], and John T. Green[1]
[1]Department of Psychological Science, [2]Department of Pharmacology, University of Vermont, Burlington, VT

Poster 22 ***Plasticity in ion channel expression (BKCa, SKCa) in micturition reflex pathways during postnatal rat development***
Beatrice Girard, Susan Malley, and Margaret A. Vizzard
Department of Neurological Sciences, University of Vermont, Burlington, VT

Poster 23 ***The contribution(s) of transforming growth factor-beta to bladder afferent nerve hyperexcitability with cyclophosphamide-induced cystitis***
Gonzalez EJ[1], Heppner TJ[2], Nelson MT[2], and Vizzard MA[1,2].
[1]Department of Neurological Science, [2]Department of Pharmacology, University of Vermont College of Medicine, Burlington, VT

Poster 24 ***Endothelin-1 potentiates Heparin-binding EGF-like growth factor-induced vasoconstriction in rat parenchymal arterioles.***
Masaru Idei,[1, 2] Masayo Koide,[1] Shigeru Nishizawa[2] and George Wellman[1]
[1]Department of Pharmacology, University of Vermont College of Medicine, Burlington, VT, [2]Department of Neurosurgery, University of Occupational and Environmental health, Fukuoka, Japan

Poster 25 ***In vivo and ex vivo dysfunction of neurovascular coupling in a mouse model of subarachnoid hemorrhage***
Masayo Koide[1], Kathryn M. Dunn[1], Evelyn A. Bulkeley[1], Mark T. Nelson[1,2], and George C. Wellman[1]
[1]Department of Pharmacology, University of Vermont College of Medicine, Burlington, VT; [2]Institute of Cardiovascular Sciences, University of Manchester, Manchester, UK

Poster 26 ***Brain-derived neurotrophic factor overexpression in the bed nucleus of stria terminalis has no effect on blood pressure regulation***
Chris L.Schaich[1], S. Bradley King[2], Sayamwong E. Hammack[2], and Benedek Erdos[1]
[1]Department of Pharmacology, [2]Department of Psychology, University of Vermont, Burlington, VT

Poster 27 ***Rho kinase regulates myogenic depolarization of cerebral parenchymal arterioles***
Yao Li and Joseph E. Brayden
Department of Pharmacology, University of Vermont College of Medicine, Burlington, VT

Poster 28 ***Umami taste potentiation in mice***
Daniella Thorsdottir, Michael Gomella and Joel Itkin
Department of Biology, University of Vermont, Burlington, VT

Poster 29 ***The synergistic effects of minerals and lactic acid contributing to the taste of dried-bonito dashi***
Benjamin Weaver, Douglas Lane, and Eugene R. Delay
Department of Biology, University of Vermont, Burlington, VT

Poster 30 ***The prototoxin LYPD6B modulates heteromeric alpha3 beta4 containing nicotinic acetylcholine receptors but not alpha7 homomers.***
Vanessa Ochoa[1], Andrew George[2], Rae Nishi[1], and Paul Whiteaker[1]*
[1]Neuroscience Graduate Program and Dept. Neurological Sciences, University of Vermont, Burlington VT, [2]Division of Neurobiology, Barrow Neurological Institute, Phoenix AZ.

Poster 31 ***Cerebellar mGluR1 modulates cerebellar-dependent learning***
Shipman, ML[1], Madasu, SC[2], Morielli, AD[1,3], and Green, JT[1,4]
[1]Neuroscience Graduate Program, [2]Cellular, Molecular, and Biomedical Sciences Graduate Program, [3]Department of Pharmacology, [4]Department of Psychological Science, University of Vermont

Poster 32 ***Regulation of microtubule dynamics by Tau***

Rehan Ali and Christopher L. Berger
Neuroscience Graduate Program, Department of Molecular Physiology and Biophysics, University of Vermont College of Medicine, Burlington, VT

Poster 33 ***The role of plexinA1 in visual system development of Danio rerio***

Sarah Light and Alicia Ebert
Neuroscience Program, Department of Biology, University of Vermont, Burlington, VT

Poster 34 ***Defining the role of histidyl tRNA synthetase in the zebrafish eye and ear***

Ashley Waldron, Susan Robey-Bond and Alicia Ebert
Department of Biology, University of Vermont, Burlington, VT

Poster 35 ***Novel tyrosine phosphorylation sites fine tune the activity and substrate binding of the Src family kinase Fyn***

Marion E. Weir[a], Jacqueline E. Mann[b], Zachary W. Fulton[a,c], Thomas Corwin[d], Jennifer M. Hao[a], Jeanine F. Maniscalco[a], Elizabeth F. Chapdelaine[a,c], Marie C. Kenney[a], Kristal M. Roman Roque[a], Ulrich Stelzl[d], Paula B. Deming[b], Bryan A. Ballif[a,] and Karen L. Hinkle[a,c,*]*
[a]Department of Biology, University of Vermont, Burlington, VT; [b]Department of Medical Laboratory and Radiation Sciences, University of Vermont, Burlington, VT; [c]Department of Biology and Physical Education, Norwich University, Northfield, VT; [d]Otto-Warburg Laboratory, Max Planck Institute for Molecular Genetics, Ihnestraße 63-73, D-14195, Berlin, Germany.

Poster 36 ***A role for Fgf8a in neurovasculature signaling in the developing zebrafish retina***

Erin E. Wysolmerski and Alicia M. Ebert
Department of Biology, University of Vermont, Burlington, VT

Poster 37 ***University of Vermont COBRE Neuroscience Cell and Molecular Biology Core Facility***

Sheryl White, Rae Nishi, Cindy Forehand and Rodney Parsons
Department of Neurological Sciences, University of Vermont College of Medicine, Burlington, VT

Poster 38 ***Dynamic modulation by Trim32 as a novel mechanism for regulating a voltage-gated potassium channel in the brain.***

Eugene Cilento[1], Bryan Ballif[2], and Anthony Morielli[1]
Neuroscience Graduate Program, [1]Department of Pharmacology, [2]Department of Biology, University of Vermont, Burlington, VT

Poster 39 ***Regulation of cerebellar Kv1.2 by PKM-ζ and its implication for learning and memory***

Kutibh Chihabi[1], John Green[2] and Anthony Morielli[1]
Neuroscience Graduate Program, [1]Department of Pharmacology, [2]Department of Psychological Science, University of Vermont, Burlington, VT

Poster 40 ***Intravesical transient receptor potential vanilloid family member 4 (TRPV4) blockade reduces voiding frequency in mice with chronic urothelial overexpression of NGF (NGF-OE).***

Beatrice Girard, Abbey Peterson, and Margaret A. Vizzard
Department of Neurological Sciences, University of Vermont College of Medicine, Burlington, VT