EIGHTH ANNUAL NEUROSCIENCE, BEHAVIOR AND HEALTH RESEARCH FORUM

The University of Vermont
Dudley H Davis Center, Grand Maple Ballroom
January 19-20, 2018

Sponsored by:
University of Vermont Neuroscience, Behavior and Health Initiative
Vermont Chapter of the Society for Neuroscience Vermont Chapter
Images: Top left: Riley St Clair, top right: Ashely Waldron, bottom right: Sarah Emerson, bottom left: Megan Shipman
Keynote Speaker

Gavan McNally, PhD

University of New South Wales, Sydney Australia

Our research is concerned with the fundamental psychological and brain mechanisms for associative learning and motivation and how these apply to clinical conditions such as addictions, anxiety disorders, and mood disorders. We are interested in identifying these mechanisms, at the cellular, circuit, and systems level and also in translating this fundamental information into new treatments of psychological conditions. To do so, we adopt a systems neuroscience approach, unique at UNSW and nationally, whereby we combine well controlled behavioural approaches with state of the art approaches (optogenetics, chemogenetics, in vivo calcium imaging, whole brain circuit mapping) in normal and transgenic animals to map and manipulate, at cellular and circuit levels, brain mechanisms.
NBH RESEARCH FORUM SCHEDULE OF EVENTS

Friday, January 19 – Grand Maple Ballroom

4:00 pm  Hors d’oeuvres

4:30 pm  Welcome and Introduction: John Green, PhD, President, Vermont Chapter of the Society for Neuroscience

4:35 pm  Keynote Lecture: Gavan McNally, PhD, University of New South Wales. “Striatopallidal output pathways promoting versus preventing relapse to alcohol seeking”

5:35 pm  Reception

Saturday, January 20 – Grand Maple Ballroom

8:00 am  Registration and light breakfast and Poster setup

8:30-8:40 am  Opening Remarks: Mark Bouton, PhD, Director, Neuroscience, Behavior and Health Initiative

Platform Session I (Megan Shipman & Hannah Schoenberg)

8:40-8:55  Matt Mahoney, PhD, UVM “Functional genomic networks and the resolution barrier of genetic mapping in seizure disorders”

8:55-9:10  Michael Steinfeld, UVM “Are actions and habit erased by behavior change?”

9:10-9:25  Patrick Mullen, UVM “Novel CMT associated HARS variants disrupt aminoacylation and neurite outgrowth”

9:25-9:40  Nicholas D’Alberto, UVM “Individual Differences in stop-related activity are inflated by the adaptive algorithm in the Stop Signal Task”

9:40-9:55  Travis Todd, PhD, Dartmouth College “More than space and place? Retrosplenial cortex and cue-specific learning and memory”

10:15-10:40  Coffee Break
Platform Session II (Matthew McCabe & Willie Curry)

10:45-11:00  **John McInnis, UVM**  “Endothelin Receptor-B regulates the paracrine responses of reactive astrocytes during ischemic stroke”

11:00-11:15  **Zhaojin Li, UVM**  “Sex differences of leptomeningeal anastomoses reactivity and function in rats”

11:15-11:30  **Gregory Johnson, UVM**  “Regulation of hippocampal dentate gyrus granule cell excitability by pituitary adenylate cyclase activating polypeptide”

11:30-11:45  **Olivia Miles, UVM**  “Intra-cellular mechanisms by which PAC1 receptor activation mediates stress-induced reinstatement”

11:45-12:00  **Jeremy Barry, PhD, UVM**  “You can't get there from here: The necessity of hippocampal temporal coordination for spatial cognition”

Lunch and Posters

12:00-2:00  Lunch

12:30-1:15  Poster Session I (Odd Numbers)

1:15-2:00  Poster Session II (Even Numbers)

Platform Session III (Riley St. Clair & Nicholas D’Alberto)

2:00-2:15  **James Stafford, PhD, NYU.**  “Isolating the persistent epigenetic signature of memory retrieval processes”

2:15-2:30  **Amanda Crocker, PhD, Middlebury College**  “Novel mechanisms of pain processing in Drosophila melanogaster”

2:30-2:45  **Hugh Garavan, PhD, UVM**  “The adolescent brain cognitive development study: A multi-modal, ten year longitudinal study of 10,000 adolescents”

2:45-3:00  **Dawei Li, PhD, UVM**  “Support in genetic and genomic analyses of human diseases”
Poster 1
“Principles of Motor Learning in a Virtual Environment: applying instructional focus to virtual task acquisition using brain-computer interface”
Emma Rose Horowitz-McCadden1 & Michael S. Cannizzaro1&2
Undergraduate Neuroscience Program1 & Department of Communication Sciences and Disorders2, University of Vermont

Poster 2
“A split-brain case study on the hemispheric lateralization of response inhibition”
Nicholas D’Alberto1, Margaret Funnell2, Bader Chaarani1, Philip Spechler1, Kelsey Hudson1, Scott Mackay1, Nick Allgaier1, Matthew Albaugh1, Catherine Orr1, Robert Althoff1, Alexandra Potter1, and Hugh Garavan1
1 The University of Vermont, 2 Dartmouth College

Poster 3
Do very brief mindfulness interventions adequately teach undergraduate students skills useful for regulating their stress responses?
Raffel, P. 1, Wilkinson, E. 2, Wu, J. 1, Smith -Randle, T. 2, Susman, E. 2, Pronovost, P. 1, Morris, D. 1, & Cronise, K 1&2
Neuroscience Program 1, Psychology Department2 Middlebury College

Poster 4
“Prior Stress Differentially Alters Anxiety-like Responding to Intra-BNST Pituitary Adenylate Cyclase Activating Polypeptide (PACAP) in Male and Female Rats”
S. Bradley King1, Donna J. Toufexis1, Victor May2 and Sayamwong E. Hammack1
1Department of Psychological Science, 2Department of Neurological Sciences, University of Vermont

Poster 5
“Epilepsy-associated Dnm1 mutation alters synaptic dynamics and spontaneous activity in in vitro cortical networks”
Matthew McCabe1, Caitlynn Barrows1, Amy Shor1e, Wayne Frankle2, Matthew Weston1
1 Department of Neurological sciences, University of Vermont, 2 Institute for Genomic Medicine, Columbia University

Poster 6
“Inactivation of prelimbic and infralimbic cortex respectively affect expression of minimally-trained and extensively-trained goal-directed actions”
Megan L. Shipman, Sydney Trask, Mark E. Bouton, John T. Green
University of Vermont

Poster 7
“Characterization of Crk and Crkl in zebrafish eye development”
Helaina Stergas, Riley St. Clair, Bryan Ballif, and Alicia Ebert
Department of Biology, University of Vermont
Poster 8  “Biochemical and Functional Characterization of PlexinA Phosphorylation Events in Zebrafish Eye Development”
Riley M. St. Clair 1,2, Sarah E. Emerson1, Marion E. Weir1, Anna M. Schmoker1, Alicia M. Ebert1,*, and Bryan A. Ballif1,*
1Department of Biology and 2Neuroscience Graduate Program, University of Vermont

Poster 9  “Hear no evil, See no evil: Knock-down of Zebrafish histidyl-tRNA synthetase results in fewer retinal neurons and mechanosensory hair cells.”
Ashley Waldron1, Claire Wilcox1, Graham Wright1, Christopher Francklyn2, Alicia Ebert1
1 Departments of Biology, University of Vermont 2 Department of Biochemistry, University of Vermont

Poster 10  “Shootin-1 is a downstream target of Semaphorin6A/PlexinA2 signaling and is important for neuronal development in zebrafish.”
Sarah E. Emerson and Alicia M. Ebert
Department of Biology, University of Vermont

Poster 11  “Can discriminated operants become habits?”
Eric A. Thrailkill, José Alcala, Pedro Vidal, Sydney Trask, and Mark E. Bouton
Department of Psychological Science, University of Vermont

Poster 12  “The Adaptor Protein SHD Reversibly Binds to the CrkL-SH2 Domain and is Required for Proper Eye Formation in the Zebrafish”
Brendan W. Chandler, Ashley L. Waldron, Jaye L. Weinert, James J. Vincent, Alicia M. Ebert and Bryan A. Ballif
Department of Biology, University of Vermont

Poster 13  “Genome-wide mapping of ethanol sensitivity in the Diversity Outbred mouse Population”
Erick Masias 1, Troy Wilcox 2, Erica Busch 3, Steven Kasparek 1, Drew Kreuzman 1, Benjamin Mansky 1, Sophie Masneuf 3, Erica Sagalyn 3, Kayvon Sharif 1, Dominik Taterra 1, Walter Taylor 1, Mary Thomas 1, Elissa J. Chesler 2, Andrew Holmes 3, Clarissa C. Parker 1
1 Department of Psychology and Program in Neuroscience, Middlebury College 2 Center for Genome Dynamics, The Jackson Laboratory 3 Laboratory of Behavioral and Genomic Neuroscience, NIAAA, NIH
Poster 14  “Genome-wide mapping of conditioned fear in the Diversity Outbred mouse population”
Wilson, Kathleen1, D Gatti2, T Wilcox2, E Busch3, S Kasperek1, D Kreuzman1, B Mansky1, S Masneuf3, E Sagalyn3, K Sharif1, D Tattera1, W Taylor1, M Thomas1, EJ Chesler2, A Holmes3, CC Parker1
1Department of Psychology and Program in Neuroscience, Middlebury College, 2Center for Genome Dynamics, The Jackson Laboratory 3Laboratory of Behavioral and Genomic Neuroscience, NIAAA, NIH.

Poster 15  “Sex Differences, Training Effects, and Methamphetamine Effects on Habit Formation in Rats”
Hannah Schoenberg
University of Vermont

Poster 16  “Neural Mechanisms underlying ToM and Emotion in ASD
Yu Han, Patricia A. Prelock, Scott Mackey
Neuroscience Graduate Program, College of Nursing and Health Sciences, Department of Psychiatry, University of Vermont

Poster 17  “BDNF Downregulates Adrenergic β-Receptor-Mediated Hypotensive Mechanisms in the Paraventricular Nucleus of the Hypothalamus (PVN)”
Daniella Thorsdottir, Nicholas C. Cruickshank, Zachary D. Einwag, Richard Dutko, Benedek Erdos.
Department of Pharmacology, University of Vermont

Poster 18  “Behavioral Categorization of Outbred Mice for d-Amphetamine Withdrawal: A GWAS Pilot Study”
Jenny Do1, Ambachew R1, Kumar P1, Masias E1, Sharif K1, Thomas, M1, Wilson, K1, Yuan J2, Parker CC1,3
1 Program in Neuroscience, Middlebury College 2 Program in Molecular Biology and Biochemistry, Middlebury College 3 Department of Psychology, Middlebury College

Poster 19  “Pituitary Adenylate Cyclase-activating Polypeptide (PACAP) Expression in Lower Urinary Tract Pathways (LUT) Following Cyclophosphamide (CYP)-Induced Cystitis in PACAP Promoter-Dependent EGFP BAC Transgenic Mice”
Victor May1, Morgan E. Mathews1, Neysharie Sanchez Torres1, Jenna McQuesten1, Phat L. Chang1, Eric Hauke1, Jacqueline Ojala1, Susan Malley1, Beatrice M. Girard1, Karen M. Braas1, James A. Waschek2 and Margaret A. Vizzard1
1 Dept. of Neurological Sciences, University of Vermont College, 2 Dept. of Psychiatry and Behavioral Sciences, David Geffen School of Medicine, University of California Los Angeles
Poster 20  “Role of PACAP/PAC1 Signaling in Micturition Reflexes and Somatic Sensitivity Following Repeated Variate Stress (RVS) in PACAP Promoter-Dependent EGFP BAC Transgenic Mice”
Victor May1, Morgan E. Mathews1, Neysharie Sanchez Torres1, Jenna McQuesten1, Phat L. Chang1, Eric Hauke1, Jacqueline Ojala1, Susan Malley1, Beatrice M. Girard1, Karen M. Braas1, James A. Waschek2 and Margaret A. Vizzard1
1 Dept. of Neurological Sciences The University of Vermont, 2 Dept. of Psychiatry and Behavioral Sciences, 3 David Geffen School of Medicine, University of California Los Angeles.

Poster 21  “Systemic blockade of proNGF/p75 signaling improves urinary bladder function in mice after complete spinal cord injury (SCI)”
K. Tooke1, S.M. Vizzard*, S. Malley, Nisha Ganesh, Francis Farhadi, Jae C. Ryu, S.O. Yoon
1 Department of Neurological Sciences University of Vermont, 2 Department of Biological Chemistry and Pharmacology and Neurological Surgery Ohio State University

Poster 22  “Regulation and expression of CXCL chemokines in mouse urinary bladder with inflammation”
Beatrice M. Girard, Michael Guo, Phat Chang, Eric Hauke, Katharine Tooke, Susan Malley, Jacqueline Ojala, and Margaret A. Vizzard
Department of Neurological Sciences University of Vermont

Poster 23  “Neurobiological antecedents of self-harm and suicidal behavior in adolescence”
Philip A. Spechler, Kelsey E. Hudson, Bader Chaarani, Matthew D. Albaugh, Nicholas Allgaier, Nicholas D’Alberto, Scott Mackey, Catherine A. Orr, Robert Althoff, Hugh Garavan & the IMAGEN consortium.
Departments of Psychological Science, Psychiatry. University of Vermont.

Poster 24  “The effect of interneuron progenitor cell implantation on a task of hippocampus-dependent working memory in an animal model of temporal lobe epilepsy”
Willie J. Curry1, Amanda E. Hernan1, Greg Richard1 & Rod C. Scott1, 2
1 Department of Neurological Sciences, University of Vermont, 2 Institute of Child Health, University College London

Poster 25  “Testosterone Replacement Causes Dose-dependent Improvements in Spatial Memory Among Aged Male Rats”
Daryl E. Morrison, Emily C. Goins, Eliza C.B. Jaeger, L. Erin Miller, John W. Lower, Rajan A. Ramdev, Mark D. Spritzer
Poster 26  “You can’t get there from here: The necessity of hippocampus temporal coordination for spatial cognition”
P. Mouchati$^1$, G.L. Holmes$^1$, J.L. Kubie$^2$, J. M. Barry$^1$
$^1$Department of Neurological Sciences, University of Vermont; $^2$Department of Molecular and Cell Biology, SUNY Downstate Medical Center

Poster 27 “Hippocampal and Prefrontal Cortical Temporal Coding in a Model of Cortical Malformation”
Hernan AE$^1$, Mahoney JM$^1$, Scott RC$^{1,2}$
$^1$Department of Neurological Sciences, University of Vermont College of Medicine
$^2$University College London, Institute of Child Health, London WC1N 1EH, UK

Poster 28 “Genetic activation of mTORC1, but not mTORC2, rescues the synaptic effects of Pten Loss”
Matthew P McCabe, Caitlyn M Barrows and Matthew C Weston
Department of Neurological Sciences, University of Vermont

Poster 29 “Factors that Encourage Generalization from Extinction to Test Reduce Relapse of an Instrumental Response”
Sydney Trask, University of Vermont

Bonnie Cantrell 1, Nathan Jebbett 1, Robert C. Switzer 2, Eugene Delay 1, Steven Zinn 3, Sharon Aborn 3, Jane O’Neil 1, Rick Funston 4, Robert Weaber 5, Stephanie McKay 1
1 University of Vermont, 2 NeuroScience Associates, Inc. Knoxville TN, 3 University of Connecticut, 4 University of Nebraska, 5 Kansas State University

Poster 31 “Children’s Affective Responses to Live Interparental Conflict”
Holly Weldon and Alice Schermerhorn
University of Vermont

Poster 32 “The Balance of Constructiveness to Destructiveness in Interparental Conflict as a Predictor of Child Emotional Security”
Holly Weldon and Alice Schermerhorn
University of Vermont