International Behavioral Neuroscience Society Annual Meeting

Event Schedule

Sun, Jun 25, 2023

9:00 AM

Council Meeting
9:00 AM - 12:00 PM, Jun 25
Executive Boardroom
Council Meet…

2:00 PM

Travel Award Blitz
2:00 PM - 4:00 PM, Jun 25
Great Room C
Travel Award B…

Three minute presentations from the IBNS 2023 Travel Awardees. Please view their poster for complete details on their research.

Speakers

Chantal Aaron
Tufts Univ.

Olamide Adebiyi
Western Univ.

Lauren Bellfy
Pennsylvania State Univ.

Alyson Blount
Univ. of Maryland, Baltimore

Rochele Castelo-Branco
Federal University of Paraíba (UFPB)

Chloe Chernofff
Graduate student
UBC

Lea Decarie-Spain
Univ. of Southern California

Livia Di Crescenzo
KU Leuven

Barbara Dotto Fontana
Wayne State Univ.

María Fernanda López-Gutiérrez
Doctoral candidate
Instituto de Neurobiología UNAM

Xavier Maddern
Florey Institute of Neuroscience & Mental Health

Yumi Munir
Univ. of California, San Diego

Alexandra Ng
Boston College

Diána Pejtsik
Semmelweis Egyetem (Semmelweis Univ.)

Timothy Philbeck
Univ. of Mary Washington

Joel Raymond
PhD Candidate
Brain and Mind Centre, The University of Sydney

Leah Truckenbrod
The Univ. of Texas at Austin/DMS

Maya Williams
Aix Marseille University

Rebecca Wilson
PhD Candidate
Univ. of California - Davis

Mohd Yaseen Malik
Univ. of Oxford

Mudi Zhao
Univ. of British Columbia

Anna Y. Yotova
Early Career Neuroscientist | Doctoral Candidate
Translational Psychiatry | University Hospital Frankfurt

Kyna Conn
Monash Univ.

4:00 PM

Refreshment Break

4:00 PM - 4:30 PM, Jun 25

Great Room A

Networking Br…

4:30 PM

Symposium 1: Zebrafish

4:30 PM

Symposium 1: Zebrafish

4:30 PM - 6:30 PM, Jun 25

Great Room C

Symposiu…

Speakers

Jose Ortiz

Univ. of Puerto Rico School of Medicine

Robert Gerlai

Univ. of Toronto Mississauga

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4 Subsessions

● Zebrafish as a model to study purinergic signaling and its role in neurological disorders

4:30 PM - 5:00 PM, Jun 25

● Towards the Neural Basis of Individual Differences in Adult Zebrafish Behavior

5:00 PM - 5:30 PM, Jun 25

● Does ethanol affect zebrafish social behaviour via the dopaminergic system? A behavioural and neurochemical analysis.

5:30 PM - 6:00 PM, Jun 25

● The first steps towards optimizing zebrafish housing conditions: The effect of tank size & fish density on the behaviour of zebrafish.

6:00 PM - 6:30 PM, Jun 25

Symposium 2: Animal models of environmental risk for neurodevelopmental disorders

4:30 PM - 6:30 PM, Jun 25

Strategy Room 3

Symposiu…

It is widely posited that neurodevelopmental disorder (NDD) risk is determined by interactions between hereditary and environmental factors. The traditional focus on genetic causes of disease has biased research toward an underestimation of environmental risk. A wide range of environmental chemicals, including air pollution, pesticides, pharmaceuticals and chemicals in consumer products, are in the human chemosphere and are readily detected in human tissues, including placental tissues, breast milk, and the developing brain. Moreover, many of these environmental chemicals can alter neuronal growth and function in the developing brain. A better understanding of how chemical contaminants in the environment alter neurodevelopment, and the identification of levels of concern are critically needed to understand and address the role of environmental factors in determining individual risk and/or severity of NDDs.This symposium will highlight the specific contribution and importance of animal models in identifying environmental risk factors and gene X environment interactions in NDDs. We will first outline the challenges and opportunities of animal models, including a discussion of best practices, particularly in the behavioral space. We will then present a series of talks at the frontier of research integrating cellular, molecular and animal models of human-relevant exposures related to neurodevelopment, focused on behavioral neurotoxicology.Dr. Halladay and Dr. Silverman (co-presenting): Optimizing In Vivo Outcomes For Neurotoxicology and Elucidating Functional Outcomes of Gene by Environment InteractionsNDDs, such as ASD and ID, continue to be diagnosed behaviorally and thus it is critical that alteration of appropriate behavioral outcomes in valid models be utilized to assess novel environmental risk factors, screen therapeutics or recommend guidelines for prevention. However, social behavior and cognitive abilities and the additional behavioral domains that confound their interpretation remain understudied and undervalued. Thus, investigators must be cautious in the behavioral assays they choose to utilize, be responsible in the analysis of the data and the protocols they design and implement. We will outline the challenges in conducting translationally relevant behavior in neurotoxicological work and begin to define the best practices in neurobehavioral studies in rodents. Dr. Lein: Integrating in vitro and in vivo animal models to understand how environmental chemicals influence risk for NDDsPolychlorinated biphenyls (PCBs) are legacy environmental contaminants that continue to pose a significant risk to the developing human brain. This talk will illustrate an approach that employs human-relevant exposure paradigms and NDD-relevant quantitative endpoints to identify overlapping cellular effects of PCBs in primary cultured rodent neurons and developing brain in animal models. These cellular phenotypes are then used as the biological substrate for mechanistic studies using in vitro models to understand molecular mechanisms and animal models to determine whether cellular outcomes coincide with NDD-relevant behavioral deficits.Dr. Patisaul: Novel approaches to examine environmental risk factors on socioemotional behavior, relevant to NDDsAlthough genetic contributions to NDD risk of neurodevelopmental disorders have been extensively explored, environmental contributions have not, despite widespread acknowledgement that chemical exposures and other external factors contribute, at a minimum, upwards of 35%. Experimentally establishing the chemical exposures that may exacerbate risk is challenging but new tools are improving the potential to determine causality. This talk will illustrate novel approaches by which environmental contributions to NDDs, particularly those with socioemotional components, can be examined.Dr. Burkett: Developmental pyrethroid pesticide exposure and risk for NDDsPyrethroid pesticides are rapidly becoming the most commonly used in the US, with data suggesting a near-ubiquitous exposure level. New epidemiology suggests a risk for NDDs when pregnant women are exposed. This talk will present new data from multiple rodent models on low-dose exposure to the pyrethroid deltamethrin, the impact on behavior and neurobiology, and a potential preventative treatment.

Speakers

Jill Silverman
MIND Institute, Univ. of California Davis

James Burkett
Univ. of Toledo College of Medicine

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4 Subsessions

- **Optimizing In Vivo Outcomes For Neurotoxicology and Elucidating Functional Outcomes of Gene by Environment Interactions.**
  4:30 PM - 5:00 PM, Jun 25
- **Integrating in vitro and in vivo animal models to understand how environmental chemicals influence risk for neurodevelopmental disorders (NDDs)**
  5:00 PM - 5:30 PM, Jun 25
- **Novel approaches to examine environmental risk factors on socioemotional behavior, relevant to neurodevelopmental disorders (NDDs)**
  5:30 PM - 6:00 PM, Jun 25
- **Developmental pyrethroid exposure and neurodevelopmental disorder risk using the prairie vole model**
  6:00 PM - 6:30 PM, Jun 25

Symposium 3: How do psychedelics alter brain function to change behaviour? Mechanistic insights into the therapeutic potential of ketamine, psilocybin and LSD from animal models

4:30 PM - 6:30 PM, Jun 25

Strategy Room 2

Symposiu…

About the symposium:

The psychoactive properties of plants and fungi have been central to the spiritual bases of life in many cultures, with evidence for their ceremonial use dating back to 1500 B.C. For a brief period of modern history, in the 1950s-1960s, it seemed that psilocybin and lysergic acid diethylamide (LSD) would represent a panacea that could counter the escalation in addictions affecting post-war America. However, political ideologies hindered the continued use and investigation of this class of compounds until now. The spectacular renaissance of psychedelics in recent years has again given them the status of â€œcure-allâ€ compounds. These psychoactive compounds ameliorate symptoms across a range of psychiatric disorders, with benefits seen across emotional, social, and cognitive functions. The recent FDA approval of esketamine for treatment-resistant depression, together with at least 200 clinical trials using psilocybin or LSD, brings hope to a better understanding and treatment of mental health conditions. Nevertheless, considering how broadly psychedelics are being trialled clinically, surprisingly little is known about the mechanisms through which they act to elicit long-term changes in behaviour and psychological state. Moreover, the inability to effectively â€œblindâ€ participants in clinical trials to the intense subjective effects of psychedelics mean that they may be susceptible to placebo effects based on an expectation of positive outcomes. It is clear that psychedelics exert complex biological actions, and a mechanistic understanding of these requires animal-based experimentation to examine psychedelic effects at a level of detail not possible in human studies. To this end, this symposium will feature preclinical research on psychedelics from the very forefront of this rapidly expanding field. Using a suite of the most advanced contemporary neuroscience approaches, including electrophysiology, optogenetics, fiber photometry and 2-photon imaging, in combination with control over specific receptors and neuronal subtypes, we will provide a detailed account of the neurobiological mechanisms underlying behavioural effects of psychedelics in animal models. The behavioural outcomes of interest span mood-related, social and exploratory behaviours and reinforcement learning paradigms that take advantage of novel touchscreen-based and home-cage testing methods. First, Dr Munguba will describe the fundamental role of a particular population of inhibitory neurons in the prefrontal cortex mediating ketamineâ€™s antidepressant effects in mice. Dr Inserra will give an overview about the mechanism of action of LSD, highlighting the roles of the prefrontal cortex, dorsal raphe and thalamic brain regions. Ms Liao will showcase the neurobiological effects of psilocybin on stress-related in mice, using specific serotonin receptor knockdown in cortical regions. Finally, Dr Foldi will describe the specific actions of psilocybin relevant to anorexia nervosa in a rat model known as activity-based anorexia, with a focus on adaptive learning and neurochemical signalling.

About the speakers:

Dr Hermany Munguba completed his doctoral training at the Karolinska Institute in Stockholm, Sweden, and is currently a postdoctoral researcher at the Liston and Levitz labs at Weill Cornell Medicine, New York City, supported by a prestigious Swedish Research Council International Fellowship and a BBRF Young Investigator Award. Dr Inserra is a postdoctoral fellow in the laboratory of Gabriella Gobbi at McGill University, Montreal. His work on LSD has been published in Br. J. Pharmacology, Neuropsychopharmacology and PNAS, among others. Clara Liao is a Yale University PhD student in the laboratory of A/Prof Alex Kwan (now at Cornell University, Ithaca). Part of her PhD work was published in Neuron in 2021, demonstrating for the first time that psilocybin induces rapid and persistent dendritic outgrowth in mouse cortex. Dr Claire Foldi established her independent research group in 2019. Since then, she has attracted >$2.2M in research support, including the first Australian Government funding to investigate the therapeutic potential of psilocybin for treating anorexic behaviours in rodent models.

Speakers

Claire Foldi
Monash Univ.

Kyna Conn
Monash Univ.

4 Subsessions

- **Control of antidepressant efficacy by prefrontal cortical somatostatin-expressing interneurons**
  4:30 PM - 5:00 PM, Jun 25
- **Prefrontal Cortex DNA Methylome Modulation by Repeated Lysergic Acid Diethylamide (LSD)**
  5:00 PM - 5:30 PM, Jun 25
- **Role of specific serotonin receptors in psilocybin-induced neuroplasticity and behavior**
  5:30 PM - 6:00 PM, Jun 25
- **Post-acute psilocybin attenuates weight loss in activity-based anorexia and improves cognitive flexibility via 5-HTR dependent mechanisms**
  6:00 PM - 6:30 PM, Jun 25

6:30 PM

IBNS Trainee Social - Themed Event

6:30 PM - 7:30 PM, Jun 25

Fallsview Studio ABC

Networking E…

The IBNS Trainee Social is designed to allow trainees to get acquainted with other trainees. Great way to develop new friendships and collaborations.

This year our theme for the event... is HATS. Wear your favorite hat, there will be games, prizes and food!

8:00 PM

Welcome Reception - Waterfall Illumination and Fireworks

8:00 PM - 10:15 PM, Jun 25

Fallsview Studio ABC and Foyer

Networking E…

Join us for a drink and light *hors d'oeuvres* to officially start of the IBNS 31st annual meeting with spectacular views of the illuminated Niagara Falls followed by fireworks at 10 p.m.

https://www.niagarafallstourism.com/illumination/#history-of-falls-illumination

https://youtu.be/Gd5ZPZNN2gY

Mon, Jun 26, 2023

8:00 AM

Breakfast

8:00 AM - 8:30 AM, Jun 26

Great Room A

Networking Br…

8:30 AM

Bench-to-Bedside Lecture: Translation of anxiety into actions by prefrontal cortex and dopamine neurons

8:30 AM - 9:30 AM, Jun 26

Great Room C

Keynote

Translation of anxiety into actions by prefrontal cortex and dopamine neurons.

Bita Moghaddam1 David S. Jacobs1, Junchol Park31. Presenting author Oregon Health and Science University, 2. Oregon Health and Science University3. Janelia Research Campus

The prefrontal cortex (PFC) has been dubbed the “doer cortex” with a primary role of representing and selecting purposeful actions. In the context of psychiatric disorders, much of the neuronal data and computational work on the PFC encoding of behavior focuses on the representation (or perception) of internal and external events that precede these actions. We have been interested in the encoding of goal-directed actions by PFC neurons and how it is affected by anxiety. The focus on anxiety stems from the fact that its relevance to mental health extends well beyond anxiety disorders. Critically, anxiety is a debilitating symptom of most psychiatric disorders including PTSD, major depression, autism, schizophrenia and addictive disorders. Anxiety is often studied as a stand-alone construct in laboratory animals using tasks that focus on fear response. But in the context of coping with real-life anxiety, its negative impacts extend beyond aversive feelings to involve disruptions in ongoing goal-directed behaviors and cognitive functioning. I will present data from two behavioral models of anxiety that allowed us to perform unit, local field potential, and fiber photometry recordings from the PFC and ventral tegmental area during reward-guided goal-directed behaviors and how diazepam or psilocybin influence these neural responses. We find that anxiety diminishes the recruitment of action encoding neurons and influences the coordinated activity between PFC and VTA neurons. We also find sex differences in some aspects of the performance. These results provide mechanistic insight for how anxiety influences reward-guided behavior and suggest that encoding of actions, as opposed to cues or outcomes, by PFC neurons as particularly vulnerable to anxiety.Funded by National Institutes of Health

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Speaker

Bita Moghaddam
Oregon Health and Sciences Univ.

9:30 AM

Break

9:30 AM - 10:00 AM, Jun 26

Networking Br…

10:00 AM

IBNS Past, Present, Future - Meet the IBNS Council

10:00 AM - 10:30 AM, Jun 26

Great Room C

Business Mee…

Join us for a brief business meeting in which you will have a voice in the future of the IBNS. Open to all attendees.

10:30 AM

Education Workshop: Submitting Your Work to an International Journal: The Peer Review and What We Expect in a Good Paper

10:30 AM - 11:30 AM, Jun 26

Great Room C

Workshop

Submitting your work to an international journal: The peer review and what we expect in a good paper

Julie Fudge

Journals exist to disseminate new research findings and the latest new thinking to scholarly and professional communities worldwide. This is a rare opportunity for early career researchers and students to hear from the deputy Editor of Neuroscience and ask her the questions they want answered in a friendly and collegiate environment. The aim is to train and inform early career researchers on various aspects of the scholarly research and communication process. One aspect of this is to help provide information on how to write and review for a scientific journal and give researchers an insight into how the publishing process works, taking as an example Neuroscience, the flagship journal of IBRO. During this workshop, the following topics will be at least addressed:

Preparing your Manuscript: It will outline the various important steps that, as an Author, you need to follow in preparing your manuscript for a successful publication.

Structuring an Article: It will provide advice about how to properly structure your article. From the title and keywords, right through to the conclusion and references, all the essential criteria are covered to make sure it can be a success.

Using Proper Scientific Language: The importance of using of proper scientific language in a manuscript as well as why proper language is vital, will be featured in this module.

Authorship and Responsibilities: This part details the main points of authorship. When must it be established, plus how to handle authorship disputes, are just two of the points.

Plagiarism: The significant points on the key area of plagiarism are highlighted in this presentation. Making sure you know all there is and to prevent the rules and regulations from being broken and harming your work.

1. Introduction: Neuroscience, a longstanding journal serving the entire world community
2. What happens to your paper once submitted to a journal. What an editor looks for in a good paper, what makes a paper worthy of going into the peer-review process and, by extrapolation, what an editor considers a ‘bad’ paper or bad aspect of a paper.
3. The peer-review process: what Editors expect Reviewers to do. What editors expect from their reviewers and describe how we handle reviews once returned.
4. Preparing your Manuscript: Itwill outline the various important steps that, as an Author, you need to follow in preparing your manuscript for a successful publication.
5. Structuring an Article:It will provide advice about how to properly structure your article. From the title and keywords, right through to the conclusion and references, all the essential criteria are covered to make sure it can be a success.
6. Discussion and Debate.

Speaker

Julie Fudge
Senior Editor, Neuroscience
IBRO, Neuroscience

11:30 AM

Early Career Achievement Award Talk: Taking Fear Out of Context

11:30 AM - 12:00 PM, Jun 26
Great Room C

Speaker

Sydney Trask
Purdue Univ.

12:00 PM

Lunch on Own

12:00 PM - 2:00 PM, Jun 26

Networking Br…

2:00 PM

Symposium 4: Diverse perspectives on socio-affective communication during rewarding situations

2:00 PM - 4:00 PM, Jun 26

Great Room C

Symposiu…

Animals communicate in many ways and in a variety of situations. One common situation in which signals are observed is when an animal is experiencing reward, for example during social play, mating or administration of psychostimulants. Across species, animals will actively seek out and gather resources that provide rewards, sometimes beginning these behaviors at a young age. This reward-seeking during early life leads to the development of complex physical, cognitive, and social behaviors. Many studies show that reward is an exceptionally powerful organizer and motivator of behavior. The neurobiological systems for reward have been studied in many different contexts, such as reward learning, evaluation of reward, reinforcement and reward seeking. However, the role of the communicative response to the reward and what beneficial aspects are obtained by communicating a reward response, are not clearly understood. For example, an animalâ€™s response to the reward can be conveyed through vocal communication, indicating the animalâ€™s affective state. Animal studies have shown that this affective state is socially transmitted leading to alterations in the brain and behavior of other individuals. Across taxa, the diversity of communication signals during reward situations is immense, with some expressed visually, vocally, and chemically in some species. This symposium will take a cross-species approach looking at rodents, primates and whales to examine the functionality of the rewarding behaviors by highlighting examples of how reward communication is conveyed and how reward signals influence not only the behavior of the sender but also the receivers. Theresa Kisko in her talk entitled â€œThe role of ultrasonic vocalizations in juvenile ratsâ€ will discuss how juvenile rats spend a significant amount of time engaged in highly rewarding social play which is essential for healthy brain development. During play juvenile rats emit 50-kHz ultrasonic vocalizations (USV); thought to be markers of positive affect. Recent evidence suggests that the ability to produce 50-kHz calls is essential for maintaining a playful mood and learning social coordination. Additionally, she will show how hearing 50-kHz USV is similarly rewarding and that the production and reception of the calls are essential for healthy brain and behavioral development. Adult rats emit a rich repertoire of 22-kHz and 50-kHz USVs. Paul Clarke will address how rewarding and aversive drugs differentially alter the relative prevalence of different types of calls in his presentation entitled: â€œAdult rat ultrasonic vocalizations: useful indices of positive or negative affect?â€. From this, he will critically discuss which particular call subtype(s) may serve as an indicator of positive or negative affect in the adult rat. Signalling in the play fighting of many primates mainly involves the visual modality. In the presentation entitled â€œSignaling during play: A primate perspectiveâ€ Sergio Pellis will describe how many of the postures and gestures used are functionally derived from combat actions, however, when presented during play it can be difficult to discern whether the postures and gestures are performed to communicate or are tactics of attack and defence. Even for those actions performed as signals, discerning what they are communicating can be difficult as they can be used to maintain the playful mood of the performer or the recipient, or to facilitate or terminate playful contact. To understand the occurrence and function of signals, they need to be analyzed in the context of the dynamics of playful interactions. Finally, Heather Hill will describe the role of visual displays as a form of communication between belugas during socio-sexual and courtship interactions in her talk entitled â€œVisual displays by belugas during various social interactions." These social interactions appear to reinforce the bonds between male belugas while also helping them practice key behaviors to be used during courting as adults.

Speakers

Theresa Kisko
KU Leuven

Markus Wöhr
Brain and Cognition - KU Leuven

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4 Subsessions

- **The role of ultrasonic vocalizations in juvenile rats**
  2:00 PM - 2:30 PM, Jun 26
- **Adult rat ultrasonic vocalizations: useful indices of positive or negative affect?**
  2:30 PM - 3:00 PM, Jun 26
- **Signaling during play: A primate perspective**
  3:00 PM - 3:30 PM, Jun 26
- **Visual displays by belugas during various social interactions**
  3:30 PM - 4:00 PM, Jun 26

Symposium 5: A double-edged sword: Medication assisted treatment of opioid use disorder during pregnancy

2:00 PM - 4:00 PM, Jun 26

Strategy Room 3

Symposiu…

The current opioid epidemic has led to a dramatic increase in the number of pregnant women with opioid use disorder (OUD). Medication for opioid use disorder (MOUD) with either buprenorphine or methadone is recommended for all pregnant women with OUD and clinical data find better overall health outcomes associated with MOUD compared to untreated OUD. The use of MOUD, however, is not without consequence, including effects on maternal affect and behavioral outcomes in the offspring. This symposium will present evidence of neurobiological effects associated with MOUD from both preclinical and clinical studies. The goal of this symposium is not to impugn the utility of MOUD, but rather to identify vulnerable circuits with the long-term goal of developing treatment approaches that enhance the health and well-being of both mother and offspring. Dr. Susanne Brummelte ("Buprenorphine during pregnancy affects maternal care and offspring survival in a translational rodent model of opioid use disorders"): A translational rodent model was used to mimic chronic opioid use (morphine) or maintenance opioid drug use (buprenorphine) and investigate the behavioral and neurochemical consequences of gestational opioid exposure on rat dams and their offspring. Opioid administration was either continued until postpartum day 2 or discontinued shortly before parturition to test whether removing the drug before birth can rescue adverse effects. Findings indicate that gestational exposure to buprenorphine inhibits the neuronal 'switch' in the dam that normally shifts the perception of pups from aversive to rewarding, subsequently influencing offspring survival. Dr. Kelsea Gildawie ("Neural mechanisms of feeding dysregulation following prenatal opioid exposure in male and female rats"): This study was developed in collaboration with a neonatologist at Tufts Medical Center who has documented increased hyperphagia in male offspring of women with OUD treated with MOUD. In this preclinical model, gestational buprenorphine and methadone exposure via osmotic minipumps reduced offspring body weight and resulted in sex-dependent developmental and adult feeding dysregulation in rats. These changes may be driven by altered gene expression in the ventral striatum and arcuate nucleus of the hypothalamus. The goal of this model is to identify mechanisms driving opioid-induced changes in neural modulation of feeding-related behaviors. Meredith Gamble ("Adult hippocampal dysfunction and related cognitive impairments following prenatal methadone exposure"): This study examined persistent cognitive deficits in adult offspring following prenatal methadone exposure in rodents and associated changes in hippocampal activity. Results indicate significant behavioral impairments and hippocampal dysfunction in adult offspring prenatally exposed to methadone, with females showing higher sensitivity to these disruptions. This work supports the continued investigation of methadone exposures during pregnancy and how prenatal methadone exposure may alter the behavior and neural function of offspring throughout their lifetime. Dr. James Swain ("Parental brain circuits for empathy and pain in mothers with opioid use disorder"): This pilot study of postpartum fMRI scans of mothers with and without opioid use disorder sought to characterize regions associated with the Maternal Behavior Neurocircuit that are impacted by buprenorphine treatment. Findings demonstrate similar time-by-treatment interaction effects on the dorsal anterior cingulate gyrus and rostral anterior cingulate gyrus-dependent resting-state functional connectivity. This work may identify brain mechanisms for the potential benefits of buprenorphine treatment on reversing dysfunction of maternal brain and behavior over the first four months postpartum. These findings will be integrated with studies that use personalized stimuli to interrogate parental brain, behavior, and child development.These speakers will use their varied backgrounds and perspectives to delve into effects of MOUD that impact mothers (Brummelte and Swain) and offspring (Gildawie and Gamble). This symposium will end with 15-20 minutes of discussion with the panelists (moderated by the Co-Chair Dr. Byrnes), on how to better disseminate and/or apply these findings to help improve outcomes in mothers and children impacted by OUD.

Speakers

Kelsea Gildawie

Tufts Univ.

Elizabeth Byrnes

Tufts Univ.

4 Subsessions

- **Buprenorphine during pregnancy affects maternal care and offspring survival in a translation rodent model of opioid use disorders**
  2:00 PM - 2:25 PM, Jun 26
- **Neural mechanisms of feeding dysregulation following prenatal opioid exposure in male and female rats**
  2:25 PM - 2:50 PM, Jun 26
- **Adult hippocampal dysfunction and related cognitive impairments following prenatal methadone exposure**
  2:50 PM - 3:15 PM, Jun 26
- **Parental brain circuits for empathy and pain in mothers with opioid use disorder**
  3:15 PM - 3:40 PM, Jun 26

Symposium 6: Noradrenergic regulation of cellularly defined behavioral functions

2:00 PM - 4:00 PM, Jun 26

Strategy Room 2

Symposiu…

Noradrenergic regulation of cellularly defined behavioral functionsName of the chairperson(s): Abha Karki Rajbhandari and Natale SciolinoStress can have profound impact on the brain and body functions impacting overall wellbeing and health. The noradrenergic system plays a key role in regulation of behavioral, physiological, and cognitive processes associated with stress. Specifically, noradrenergic modulation of the sympathetic nervous system regulates a variety of behaviors in the continuum of the fight-or-flight-freeze. This symposium will bring together 4 investigators who are using innovative strategies to address the neural and molecular mechanisms through which the noradrenergic systems impact behavioral processes using the rodent model. Dr. Berridge will share his work on how noradrenergic signaling impacts prefrontal cortical regulation of cognitive processes. Dr. Bohachek will share his work on how noradrenaline release shapes the molecular (transcriptomic) profile of the hippocampus. Dr. Sciolino will share her work on how locus coeruleus-norepinphrine circuits regulate feeding and promote negative valence. Dr Rajbhandari will share her work on how the interplay of sympathetic and parasympathetic balance affects stress-related fear behaviors. This panel is chaired by two early career resarchers, and includes one international speaker and equal gender balance. List of four (4) speakers with affiliations and email addresses: 1.Craig Berridge, University of Wisconsin-Madison, berridge@wisc.edu2.Abha Rajbhandari, Icahn School of Medicine at Mount Sinai, abha.rajbhandari@mssm.edu3.Natale Sciolino, University of Connecticut, natale.sciolino@uconn.edu4.Johannes Bohachek, ETH Zurich, johannes.bohacek@hest.ethz.chTentative talk titles1.Differential actions of noradrenergic receptors across PFC-dependent cognitive processes: relevance to ADHD (Dr. Berridge)2.Sympathetic regulation of behavioral processes through the brain and body axis (Dr. Rajbhandari)3.The role of locus coeruleus-norepinphrine circuits in motivated behaviors (Dr. Sciolino)4.The molecular fingerprint of noradrenaline release (Dr. Bohachek)

Speakers

Abha Rajbhandari
Assistant Professor
Icahn School of Medicine at Mount Sinai

Natale Sciolino
Univ. of Connecticut

4 Subsessions

- **Circuit and Receptor Mechanisms Underlying the Procognitive actions of Clinically Relevant Psychostimulants**
  2:00 PM - 2:30 PM, Jun 26
- **Sympathetic regulation of behavioral processes through the brain and body axis**
  2:30 PM - 3:00 PM, Jun 26
- **Natural Locus Coeruleus Dynamics During Feeding**
  3:00 PM - 3:30 PM, Jun 26
- **The molecular fingerprint of noradrenaline release**
  3:30 PM - 4:00 PM, Jun 26

4:00 PM

Break

4:00 PM - 4:30 PM, Jun 26

Great Room A

Networking Br…

4:30 PM

Symposium 7: Microrna: Small regulators of complex behavioral processes

4:30 PM - 6:30 PM, Jun 26

Great Room C

Symposiu…

In recent years, the extensive class of short non-coding microRNAs (miRNAs) has been discovered as key regulators of post-transcriptional gene expression. Typically, miRNAs act by repressing the translation of target mRNAs through binding to partially complementary sequences within the 3â€™ untranslated region of these mRNAs, thus mediating experience-dependent changes in brain plasticity. More than 1000 individual miRNAs are present in mammals, each of them usually regulating a few hundred target mRNAs, suggesting that at least half of all expressed transcripts are subject to miRNA control in any given cell type. Given their high regulatory potential, miRNAs have been implicated in almost every cellular process, including various aspects of nervous system development and function, such as activity-dependent changes in the morphology of dendrites and spines and synaptic plasticity processes. Very recently, first examples of individual miRNAs with a role in complex neurobehavioral processes, such as social behavior, learning and memory and emotional processing, have been published. These studies further provided intriguing links between miRNAs and neuropsychiatric conditions, which are further supported by recent genome-wide association and miRNA profiling studies in diseases such as autism, bipolar disorder and schizophrenia. The goal of this symposium is to provide examples of miRNAs relevant for complex behaviors and discuss the perspective in the context of prevalent neuropsychiatric conditions.Cecilia Flores will discuss the identification of the microRNA miR-218 as a potent regulator of genes controlling adolescent prefrontal cortex and cognitive development in adolescence. In her talk entitled â€œCirculating microRNA profiles in adolescence: markers of developmental stage and of risk for depressionâ€œ Dr. Flores will show manipulating miR-218 levels in the prefrontal cortex in adolescence alters lifetime sensitivity to stress exposure and that miR-218 levels in blood samples from adolescent mice predicts vulnerability to social defeat stress in adulthood. She will then focus on her collaborative research regarding noninvasive high-throughput analysis of microRNA proï¬les of peripheral ï¬‚uids derived from two independent and ethnically diverse cohorts of adolescents with or without depression. She will highlight that discovering early biomarkers and mediators of psychiatric risk could help guide early diagnosis, treatment, and prognosis.Katharina Gapp will present "Behavioral remnants of paternal genotypeâ€. Her talk will describe the impact of a variety of paternal stressors on offspring behavioral phenotype as a means of increasing neuropsychiatric disease risk. It explores potential confounders of intergenerational observations and presents sperm RNAs as a molecular mechanism of non-mendelian transmission. In his talk entitled â€œmicroRNA-dependent regulation of social behaviorâ€, Gerhard Schratt will address the emerging role of microRNAs in the control of social behavior, using the imprinted placental mammal-specific miR379-410 cluster as a paradigm. He will present mostly unpublished work showing developmental stage and cell-type specific roles of individual cluster miRNAs, as well as their downstream target genes, in the mouse hippocampus. Moreover, he will present first links between miR379-410 dysregulation in human neurons and Williams Syndrome, a neurodevelopmental disorder characterized by hypersociability. Finally, Ã–zge Sungur will present the role of miR-499: â€œManipulating bipolar-associated microRNAs in the brain: effects on behavior in Cacna1c haploinsufficient ratsâ€. Her talk will address the behavioral phenotypes induced by hippocampal miR-499 overexpression. Her recent results will show that miR-499-5p overexpression in the hippocampus inâ€‰vivo induces short-term memory impairments selectively in rats haploinsufficient for the Cav1.2 pore forming subunit Cacna1c. Given the strong association of miR-499 and bipolar disorder shown by recent GWAS, these findings highlight the pivotal role of miRNAs in regulating complex behaviors.

Speaker

Özge Sungur

KU Leuven

4 Subsessions

- **Circulating microRNA profiles in adolescence: markers of developmental stage and of risk for depression**
  4:30 PM - 5:00 PM, Jun 26
- **Behavioral remnants of paternal stress**
  5:00 PM - 5:30 PM, Jun 26
- **Regulation of mouse social behaviour by the imprinted, placental-mammal specific miR379-410 cluster**
  5:30 PM - 6:00 PM, Jun 26
- **Manipulating bipolar-associated microRNAs in the brain: effects on behavior in Cacna1c haploinsufficient rats**
  6:00 PM - 6:30 PM, Jun 26

Symposium 8: Recent progress in identifying the genes and genetic pathways that impact addiction-traits

4:30 PM - 6:30 PM, Jun 26

Strategy Room 3

Symposiu…

Substance use disorders consist of traits under substantial genetic influence. Human and rodent forward genetic studies are rapidly increasing the discovery of genetic factors that impact addiction traits. Complementary methods, including genetic engineering, are utilized to validate candidate genes and reveal their pleiotropic effects and the pathways by which addiction genes alter neurobiology to impact behavioral traits. This symposium will include presentations from leading experts in addiction genetics that highlight recent advances in the field.Dr. Jared Bagley will present the use of a genetically diverse mouse panel to identify genes that impact cocaine use. Intravenous self-administration (IVSA) is a gold standard method employed in model species to investigate the genetics and neurobiology of cocaine use. IVSA was utilized to characterize cocaine taking in the Hybrid Mouse Diversity Panel (HMDP), a large panel of inbred strains. These data have nominated neuron navigator 1 (Nav1) as a candidate gene that impacts cocaine taking. A Nav1 knockout (KO) model confirmed that this gene has a role in cocaine taking, in addition to effects on opioid reward, food self-administration, memory, and cortical/hippocampal synaptic function.Dr. Amanda Barkley-Levenson will discuss recent cross-species work to investigate candidate genes, from human subjects research, by use of mutant mouse models. Human genome-wide association studies (GWAS) have identified numerous genetic variants associated with alcohol consumption and problematic use. KO mouse models are utilized to confirm a causal effect on alcohol consumption and to elucidate the underlying mechanisms of action. Data from 3 mutant mouse lines (Fut2, Dpp6, and Slc39a8 KOs) show different patterns of effects on alcohol drinking and related phenotypes such as sweet solution consumption, nest building, and depression-like behavior. These results are consistent with the highly pleiotropic nature of many genes associated with problematic alcohol use and confirm the need for broad phenotyping in comprehensive GWAS follow-up.Dr. Camron Bryant will present the use of closely related mouse strains as a strategy to discover genes that impact opioid-related traits. Closely related, phenotypically divergent inbred substrains can be utilized to rapidly map and validate causal genetic factors. BALB/c substrains show numerous neurobehavioral trait differences, suggesting that they may be used to identify neurogenetic factors. Dr. Bryant will discuss progress in identifying the genetic basis of brain weight, thermal nociception, oxycodone brain metabolite (oxymorphone) concentrations, and oxycodone-induced behaviors. He will focus on mapping and validating Zhx2, as a gene underlying oxycodone neurobehavioral traits using reciprocal gene editing on the BALB/c backgrounds and tissue-specific AAV targeting of Zhx2. Samantha Rios will present the use of mice, selectively bred for low (MALDR) or high (MAHDR) methamphetamine (MA) intake, to identify the neurogenetic mechanisms that may mediate aversion to MA. High sensitivity to aversive drug effects likely results in drug avoidance and reduced probability of addiction. MALDR mice exhibit high sensitivity to MA aversion, whereas MAHDR mice are resistant. Activation of lateral habenula (LHb) afferents projecting to dorsal raphe (DR) serotonin (5-HT) and GABA neurons is implicated in aversive responses. Differential genetic risk for MA intake and aversion impacts MA-induced activation of the LHb and DR 5-HT neurons. MA induced greater neural activation in the LHb of MALDR mice and potentiated excitatory postsynaptic currents in DR 5-HT neurons of MALDR, but not MAHDR, mice. Preliminary data suggest that MA affects firing frequency of DR 5-HT neurons in MALDR, but not MAHDR, mice. Sensitivity to MA-induced aversion may be related to trace amine-associated receptor 1 (TAAR1) function, which is only present in MALDR mice, due to a mutation.

Speakers

J

Jared Bagley
Binghamton University

J. David Jentsch
Binghamton Univ.

4 Subsessions

● TBA
4:30 PM - 5:00 PM, Jun 26

● Gazing into the crystal BALB: Opportunities for neurobehavioral genetic discovery in near-isogenic BALB/c substrains
5:00 PM - 5:30 PM, Jun 26

● Role of the Lateral Habenula-Dorsal Raphe Circuit in Methamphetamine-Induced Aversion
5:30 PM - 6:00 PM, Jun 26

● Neuron navigator 1 regulates the self-administration of cocaine
6:00 PM - 6:30 PM, Jun 26

Symposium 9: The diverse roles of parvalbumin-expressing neurons on behavior

4:30 PM - 6:30 PM, Jun 26

Strategy Room 2

Symposiu…

Behavior is supported by a balance of underlying excitatory and inhibitory signals throughout the brain. Parvalbumin neurons are classically considered as GABAergic inhibitory interneurons. However, some parvalbumin-expressing neurons are glutamatergic and serve excitatory roles in the central nervous system. With both inhibitory control and excitatory actions, parvalbumin-expressing neurons play a significant role in regulating neuronal circuitry throughout the brain. In the proposed symposium, we will highlight the diverse nature of parvalbumin-expressing neurons on social behavior, learning and memory, and nociceptive behaviors.The molecular mechanisms driving normative and pathological maturation of prefrontal inhibitory circuits during the adolescent period and the acquisition of adult cognitive and social functions remain to be fully elucidated. Dr. Laurence Coutellier identifies the brain specific transcription factor Npas4 as a major player in the maturation of prefrontal parvalbumin cells (PV+) and of executive functions. Their recent work indicates that the effects of early adverse experiences, including social isolation and stress, on PV+ cells and cognitive and social functions are mediated by changes in Npas4 expression in the prefrontal cortex, which can be targeted to rescue developmental stress-induced behavioral deficits.Failure to inhibit fear in response to harmless stimuli contributes to anxiety disorders. GABAergic PV+ cells restrict plasticity in adult brains, thus increasing PV+ cell plasticity could promote the suppression of fear memories following extinction training. Histone deacetylase 2 (Hdac2) restrains both structural and functional synaptic plasticity; however, whether and how Hdac2 controls adult PV+ cell plasticity is unknown. Dr. Graziella Di Cristo will present that Hdac2 deletion or pharmacological inhibition in PV+ cells attenuate spontaneous recovery of fear memory after fear extinction learning in adults. These manipulations promote a temporal downregulation of Acan, a critical perineuronal net component expressed by PV+ cells in medial prefrontal cortex. Finally, it is shown that Acan transient downregulation before extinction training but after fear memory acquisition is sufficient to reduce spontaneous fear memory recovery.With Alzheimer's Disease (AD), there is a generalized decrease in GABAergic signalling which correlates with cognitive decline. Dylan Terstege will present altered electrophysiological and morphological properties of PV+ cells in the retrosplenial cortex (RSC) of the 5xFAD transgenic mouse model of AD and the sex-specific nature of these effects. The effects of these altered PV+ cells in the RSC will be demonstrated on a brain-wide level as altered functional connectivity and behavioral performance during contextual memory retrieval.Defensive and nociceptive behaviors are essential for survival. Beginning with early lesion and electrical stimulation studies, the hypothalamus has long been considered crucial in regulating survival behaviors. However, the contributions of specific genetically-identified neuronal types have yet to be determined. Dr. Yeka Aponte will present a combination of optogenetics, chemogenetics, electrophysiology, functional imaging, and behavioral assays to elucidate the roles of hypothalamic neurons identified by the expression of the calcium-binding protein parvalbumin in modulating pain and defensive behaviors. These data demonstrate that PV+ neurons in the lateral hypothalamus and the anterior hypothalamic area modulate pain and defensive behaviors, respectively. Moreover, these neurons are shown to be fast-spiking, glutamatergic, and send long-range projections throughout the brain. Thus, this work challenges long-standing concepts that define fast-spiking neurons as exclusively GABAergic and expand the repertoire of survival behaviors regulated by hypothalamic circuits.

Speakers

Jonathan Epp
Univ. of Calgary

Dylan Terstege
Univ. of Calgary

4 Subsessions

- **Molecular mechanisms of maturation of prefrontal parvalbumin neurons and associated cognitive and social functions**
  4:30 PM - 5:00 PM, Jun 26
- **Acan downregulation in Parvalbumin GABAergic cells reduces spontaneous recovery of fear memories**
  5:00 PM - 5:30 PM, Jun 26
- **Sex-dependent impairments of parvalbumin expressing neurons in the retrosplenial cortex in Alzheimer's disease**
  5:30 PM - 6:00 PM, Jun 26
- **Hypothalamic parvalbumin neurons orchestrate survival behaviors**
  6:00 PM - 6:30 PM, Jun 26

6:30 PM

Women in Learning

6:30 PM - 8:00 PM, Jun 26

Fallsview Studio ABC

Networking E…

Join us for the Women in Learning (WIL) networking event to promote women in Science! We will host a fun interactive event where attendees will expand their networks and learn how they can help improve the climate for women in science. All genders welcome! We will have snacks and a cash bar.

Tue, Jun 27, 2023

8:00 AM

Breakfast

8:00 AM - 8:30 AM, Jun 27

Great Room A

Networking Br…

8:30 AM

Poster Session I

8:30 AM - 10:30 AM, Jun 27

Great Room B

Posters

100 Subsessions

- **1. Neonatal resource scarcity alters anxiety-like behaviour in a rat model**
  8:30 AM - 10:30 AM, Jun 27
- **2. Resource scarcity in early life has a lasting impact on rats' social behaviour in adolescence and adulthood**
  8:30 AM - 10:30 AM, Jun 27
- **3. Medial prefrontal-amygdala circuits facilitate cue-guided probabilistic decision-making in rats.**
  8:30 AM - 10:30 AM, Jun 27
- **4. Distinct and dynamic alterations of the synaptic proteome and behaviour follow prenatal immune challenge.**
  8:30 AM - 10:30 AM, Jun 27
- **5. Dopamine D1 signaling influence in rat behavior in the T-maze alternation**
  8:30 AM - 10:30 AM, Jun 27
- **6. Dynamical processes in rat observational learning**
  8:30 AM - 10:30 AM, Jun 27
- **7. Comparison of male and female avoidance, darting, and freezing behavior within the SPS model.**
  8:30 AM - 10:30 AM, Jun 27
- **8. Developmental exposure to the Fox River Mixture of polychlorinated biphenyls (PCBs) modulates behavioral endpoints in juvenile male and female mice.**

8:30 AM - 10:30 AM, Jun 27

● **9. The neural dynamics of the subthalamic nucleus hyperdirect pathway during cocaine use and â€˜naturalâ€™ reward seeking behavior.**
8:30 AM - 10:30 AM, Jun 27

● **10. Effects of fentanyl self-administration on risk-taking behavior in rats.**
8:30 AM - 10:30 AM, Jun 27

● **11. Disgust-like Responses to Infection Threat and their Modulation in a Land Snail**
8:30 AM - 10:30 AM, Jun 27

● **12. Contributions of estradiol and progesterone to female risk aversion**
8:30 AM - 10:30 AM, Jun 27

● **13. Single-trial Pavlovian discrimination using morphine learning in rats.**
8:30 AM - 10:30 AM, Jun 27

● **14. Sex Differences in Endocannabinoid Regulation of Behavioral Flexibility**
8:30 AM - 10:30 AM, Jun 27

● **15. The prelimbic cocaine self-administration acquisition engram mediates well-trained cocaine seeking**
8:30 AM - 10:30 AM, Jun 27

● **16. Early-life adversity and adult chronic social stress alteration in blood-brain barrier gene expression**
8:30 AM - 10:30 AM, Jun 27

● **17. The role of HDAC3 on memory competition.**
8:30 AM - 10:30 AM, Jun 27

● **19. Cigarette smoke extract and nicotine evoke similar interoceptive effects in an appetitive Pavlovian task in male and female rats**
8:30 AM - 10:30 AM, Jun 27

● **20. Early life stress and nicotine addiction during adolescence**
8:30 AM - 10:30 AM, Jun 27

● **21. Spatiotemporal dynamics of mesocorticolimbic dopamine in risk/reward decision making.**
8:30 AM - 10:30 AM, Jun 27

● **22. Differential mediation of cue-guided risky reward decision making by dopamine receptor subtypes in the nucleus accumbens core and shell**
8:30 AM - 10:30 AM, Jun 27

● **23. Modulation of the anxiolytic effects of cis-resveratrol by cap-dependent translation**
8:30 AM - 10:30 AM, Jun 27

● **24. Drosophila social spacing: elucidating the neural circuitry**
8:30 AM - 10:30 AM, Jun 27

● **25. High-dose caffeine reduces male, but not female, target detection and task engagement in the mouse 5-choice continuous performance test of sustained attention.**
8:30 AM - 10:30 AM, Jun 27

● **27. Sleep and sociability: The influence of acute sleep loss on social motivation in female and male rats.**
8:30 AM - 10:30 AM, Jun 27

● **28. In vivo striatal dopamine dynamics across the striatum guide stimulus-response learning in mice**
8:30 AM - 10:30 AM, Jun 27

● **29. The effects of the alpha7 nAChR PAMs on rats' social play behavior in the neurodevelopmental model of schizophrenia**
8:30 AM - 10:30 AM, Jun 27

● **30. Behavioural phenotyping of a mouse model of Fragile X Syndrome reveals mild phenotype**
8:30 AM - 10:30 AM, Jun 27

● **31. Learning history with morphine alters subsequent morphine place conditioning in female rats.**
8:30 AM - 10:30 AM, Jun 27

● **32. Spatial Transcriptomics Analysis of Sex Differences in Gene Expression after Single Prolonged Stress**
8:30 AM - 10:30 AM, Jun 27

● **33. Sex, but not juvenile stress, affects reversal learning and behavioral inhibition following cocaine administration**
8:30 AM - 10:30 AM, Jun 27

● **34. Functional role of dopamine at D1-receptors in object memory destabilization.**
8:30 AM - 10:30 AM, Jun 27

● 35. Behavioral and Neurophysiological outcome measures in two unique mouse models of ADNP Syndrome
8:30 AM - 10:30 AM, Jun 27

● 36. I-Tetrahydropalmatine attenuates morphine withdrawal-induced hypersensitivity to pain in a rat model of dependence
8:30 AM - 10:30 AM, Jun 27

● 38. Sex and age influence motivation for social reward in female and male Long-Evans rats.
8:30 AM - 10:30 AM, Jun 27

● 39. Deciphering variations in sensory and motor behaviors as predictors of cognitive decline in aging marmosets with genetic risk for Alzheimerâ€™s disease.
8:30 AM - 10:30 AM, Jun 27

● 40. Effects of a model of opioid addiction on pair bonding of male prairie voles (Microtus ochrogaster).
8:30 AM - 10:30 AM, Jun 27

● 41. Investigating the Role of AMPA Receptors and their Transient Exchange in Perirhinal Cortex for Object Memory Destabilization
8:30 AM - 10:30 AM, Jun 27

● 42. Investigation of convergent neural circuity to behavioral outcomes following learned helplessness and acute social defeat stress in male and female mice.
8:30 AM - 10:30 AM, Jun 27

● 43. ENERGY METABOLISM DEFICITS AND EARLY AGE MOTOR DISTURBANCES IN MICE WITH CONDITIONAL TRKB DELETION FROM STRIATOPALLIDAL NEURONS
8:30 AM - 10:30 AM, Jun 27

● 44. Sex differences in the role of cocaine- and amphetamine-regulated transcript in binge drinking.
8:30 AM - 10:30 AM, Jun 27

● 45. Changes in brain functional networks by development and parental rearing in the prairie vole
8:30 AM - 10:30 AM, Jun 27

● 46. A non-hallucinogenic LSD analogue with therapeutic potential in mood disorders
8:30 AM - 10:30 AM, Jun 27

● 47. Sex-specific effects of naloxone on rat ultrasonic alarm vocalizations in fear conditioning
8:30 AM - 10:30 AM, Jun 27

● 48. Rapid estrogenic influence on hippocampus-dependent memory in males.
8:30 AM - 10:30 AM, Jun 27

● 49. Behavioral and neuroimaging analysis of the marmoset maternal brain.
8:30 AM - 10:30 AM, Jun 27

● 50. High ambient temperatures potentiate the lethality of MDMA and MDMA-like synthetic psychoactive cathinones in larval zebrafish
8:30 AM - 10:30 AM, Jun 27

● 51. This is the title of my abstract: 'Purkinje cell activity regulates fear memory consolidation'.
8:30 AM - 10:30 AM, Jun 27

● 52. Difficulty in switching attention and its neural basis in problematic smartphone use: validation using a smartphone log application and brain MRI.
8:30 AM - 10:30 AM, Jun 27

● 53. 'The effect of Magnolia officinalis Bark Extract on neuropsychiatric disorders in a mouse model of colitis: involvement of serotonergic system' is the title of my abstract.
8:30 AM - 10:30 AM, Jun 27

● 54. Studying the role of the sensory nervous system in ASD using a mouse model of KBG syndrome
8:30 AM - 10:30 AM, Jun 27

● 55. Assessment of dopaminergic contribution to morphine drug discrimination in male and female rats.
8:30 AM - 10:30 AM, Jun 27

● 56. Appetitive associative learning & memory: A new fish model in behavioral neuroscience with Mikrogeophagus ramirezi
8:30 AM - 10:30 AM, Jun 27

● 57. Restorative effects of ethanol and nicotine on dopamine and tyrosine

hydroxylase depletion in the brain of MPTP-treated mice
8:30 AM - 10:30 AM, Jun 27

● **58. Systemic modulation of the cholinergic system during memory reactivation enables spatial memory destabilization in aged mice**
8:30 AM - 10:30 AM, Jun 27

● **59. Potentiating NMDARs reverses age-related memory loss in male, but not female rats**
8:30 AM - 10:30 AM, Jun 27

● **60. Prefrontal Cortex Corticotropin Releasing Hormone Interneurons Mediate Stress-induced Working Memory Impairment**
8:30 AM - 10:30 AM, Jun 27

● **61. Effect of psychedelic therapy on male Betta splendens aggression as compared to traditional pharmaceuticals**
8:30 AM - 10:30 AM, Jun 27

● **62. Does popularity lead to better juvenile experiences? Play partner preferences in groups of male rats**
8:30 AM - 10:30 AM, Jun 27

● **63. This is the title of my abstract: Sex differences in the effects of age on prefrontal cortex-mediated cognition in Fischer 344 x Brown Norway F1 hybrid rats.**
8:30 AM - 10:30 AM, Jun 27

● **64. Anxiety, depressive, and cognitive behavioural characterization of PirBKO mice in the presence and absence of environmental enrichment.**
8:30 AM - 10:30 AM, Jun 27

● **65. Aging and memory are altered by genetically manipulating lactate dehydrogenase in the neurons or glia of flies**
8:30 AM - 10:30 AM, Jun 27

● **66. Prefrontal parvalbumin-expressing neurons facilitate working memory maintenance and protect against interference**
8:30 AM - 10:30 AM, Jun 27

● **67. Transient plasticity of neuronal ensembles for cocaine-seeking using self-administration and relapse model.**
8:30 AM - 10:30 AM, Jun 27

● **68. Basomedial amygdala maturation and regulation of social interaction**
8:30 AM - 10:30 AM, Jun 27

● **69. Cognitive flexibility in mice: effects of adolescence and role of NMDA receptor subunits**
8:30 AM - 10:30 AM, Jun 27

● **70. Enduring effects of pubertal gut dysbiosis on behaviours associated with neurodegeneration.**
8:30 AM - 10:30 AM, Jun 27

● **71. Assessing the Cntnap2 knockout rat prepulse inhibition deficit using startle and sound scaling.**
8:30 AM - 10:30 AM, Jun 27

● **72. The effects of contingent and non-contingent punishment on oral morphine consumption in rats.**
8:30 AM - 10:30 AM, Jun 27

● **73. Orexinergic modulation on chronic jetlag-induced deficits in mouse cognitive flexibility.**
8:30 AM - 10:30 AM, Jun 27

● **74. Endocannabinoid-mediated rescue of somatosensory cortex activity, plasticity and related behaviors following an early life brain trauma**
8:30 AM - 10:30 AM, Jun 27

● **75. The Lethal Toxicity of 3,4-Methylenedioxymethamphetamine (MDMA) and Methylone in Combination with Alcohol or Nicotine**
8:30 AM - 10:30 AM, Jun 27

● **76. Using machine learning to identify individual differences in fear responses and memory in zebrafish (Danio rerio)**
8:30 AM - 10:30 AM, Jun 27

● **77. The impact of early postnatal environment on the Cntnap2-knockout rat model for autism spectrum disorder**
8:30 AM - 10:30 AM, Jun 27

● **78. Intranasal oxytocin fails to recapitulate the suppressing effects of intraperitoneal oxytocin on methamphetamine addiction behaviours in male and female rats.**
8:30 AM - 10:30 AM, Jun 27

● **79. The Effects of Neuropeptide S Receptor Ligands on Cocaine-seeking Behavior and Natural Rewards in Rats**
8:30 AM - 10:30 AM, Jun 27

● **80. Impaired expression of the autism candidate gene Reelin in somatostatin cortical neurons leads to altered developmental trajectories in mouse pups: A pilot study**
8:30 AM - 10:30 AM, Jun 27

● **81. Trapping a meal engram in the ventral hippocampus**
8:30 AM - 10:30 AM, Jun 27

● **82. Investigating the roles of the intralaminar thalamus, prefrontal cortex, and dorsal striatum in punished cocaine seeking in rats.**
8:30 AM - 10:30 AM, Jun 27

● **83. This is the title of my abstract, "Chronic unpredictable stress affects mitochondrial function in the HPA axis in a sex-dependent manner."**
8:30 AM - 10:30 AM, Jun 27

● **84. Neurobiological comparisons of wild-trapped and laboratory Norway rats: Evidence of diminished stress responsiveness in laboratory rodents**
8:30 AM - 10:30 AM, Jun 27

● **85. Unpredictable Mixed-Valence Reinforcement Promotes a Generalized Anxiety-like State in Genetically Heterogeneous Mice**
8:30 AM - 10:30 AM, Jun 27

● **86. Cocaine-induced neurophysiological alterations in corticostriatal circuits to reward predictive cues following outcome devaluation**
8:30 AM - 10:30 AM, Jun 27

● **87. Effects of psilocybin on reward learning and subcortical dopaminergic transmission in female rodents.**
8:30 AM - 10:30 AM, Jun 27

● **88. Sodium butyrate protects against the harmful effects of prenatal opioid exposure on the brain, behavior and gut health of rats**
8:30 AM - 10:30 AM, Jun 27

● **89. Cannabidiol (CBD) as a potential therapeutic for cocaine use disorder: effects on the microbiome**
8:30 AM - 10:30 AM, Jun 27

● **90. Locus coeruleus noradrenaline neurons guide risky decision making in the presence of win-paired audiovisual cues: Interactions with sex and baseline impulsivity**
8:30 AM - 10:30 AM, Jun 27

● **91. Effects of monoparental upbringing on pair bonding and c-Fos activity in the monogamous vole (Microtus ochrogaster)**
8:30 AM - 10:30 AM, Jun 27

● **92. Processing similar memories - Neural correlates of recall in rats performing a spatiotemporal task with different degrees of difficulty.**
8:30 AM - 10:30 AM, Jun 27

● **94. Rapid Effects of Estrogen Receptors on Social Recognition in the Medial Amygdala of Female Mice: Interactions with Oxytocin**
8:30 AM - 10:30 AM, Jun 27

● **95. Attenuation of lithium chloride-induced anticipatory nausea following immune activation**
8:30 AM - 10:30 AM, Jun 27

● **96. Quantifying prefrontal-hippocampal circuit engagement using scalp EEG and the Paired Associates Learning task**
8:30 AM - 10:30 AM, Jun 27

● **97. Time-of-day effects on memory consolidation may be due to hippocampal Per1**
8:30 AM - 10:30 AM, Jun 27

● **98. The interplay between dorsal hippocampal D2-type dopamine receptors and steroid hormones in the regulation of social learning in male mice.**
8:30 AM - 10:30 AM, Jun 27

● **99. A new behavioral task for emotional empathy in rats.**
8:30 AM - 10:30 AM, Jun 27

● **100. Effects of cross-fostering on neural development in degu (Octodon degus) pups**
8:30 AM - 10:30 AM, Jun 27

● **102. Long-term cognitive function impairments in male and female rats following prenatal alcohol exposure**
8:30 AM - 10:30 AM, Jun 27

● 103. GLAST-CreERT2 mice exhibit off-target recombination in microglia
8:30 AM - 10:30 AM, Jun 27

● 104. Chemogenetic activation of hippocampal CAMKiiÎ±-expressing neurons accelerates remyelination and improves cognition in lysolecithin model of multiple sclerosis
8:30 AM - 10:30 AM, Jun 27

● 105. Oxycodone self-administration during pregnancy & adult risk of substance use disorder.
8:30 AM - 10:30 AM, Jun 27

10:30 AM

Break
10:30 AM - 11:00 AM, Jun 27
Great Room A
Networking Br…

11:00 AM

Presidential Lecture: Whatever works: A new framework for understanding the extent, constraints, and implications of brain diversity in evolution
11:00 AM - 12:00 PM, Jun 27
Great Room C
Keynote

Whatever works: A new framework for understanding the extent, constraints, and implications of brain diversity in evolution

This talk will make the point that brains are not optimized – nor could they be, for there is no single way to put a brain together, or to put a brain in a body. While physical constraints apply that determine for instance the degree of folding of a cortex, numbers of neurons and average neuronal size are free to vary, with consequences for brain metabolism, cognitive capability, behavioral economy, and, it turns out, duration of childhood and maximal longevity of warm-blooded species – and humans are no exception. Brain evolution should therefore be conceptualized not as improvement through selection, but simply as Whatever Works given the reality of biological diversity operating under physical constraints.

Speaker

Suzana Herculano-Houzel
Vanderbilt Univ.

12:00 PM

Lunch on Own
12:00 PM - 2:00 PM, Jun 27
Networking Br…

2:00 PM

Meet the Professionals
2:00 PM - 4:00 PM, Jun 27
Great Room A
Trainee Eve…

Students will get the chance to sign up to meet with a professional in small groups. It is an opportunity for trainees to meet with renowned senior scientists to discuss research, career development, and any other relevant topics.

4:00 PM

Break
4:00 PM - 4:30 PM, Jun 27
Great Room A
Networking Br…

4:30 PM

Symposium 10: Dopaminergic contributions to complex behavior

4:30 PM - 6:30 PM, Jun 27

Great Room C

Symposiu…

How does dopamine mediate the decision-making and motivational processes towards reward? How does disruptions in dopaminergic signaling interfere in these responses and contribute to the emergence of psychiatric and neurodegenerative disorders? With the advent of powerful new neuroscientific techniques, we are able to address these questions with a level of precision that has previously not been possible. For example, optogenetic techniques now allow for precise temporal and spatial precision for the manipulation of dopaminergic circuits. Additionally, recent advances in the development of novel biosensors has resulted in the generation of dopamine-sensitive biosensors. These biosensors have provided an opportunity to study the dynamics of dopamine with significantly better temporal precision. With a better understanding of dopaminergic function in the brain, researchers can begin to better understand how dopaminergic modulation can be used in neuropsychiatric and neurodegenerative conditions. Dopaminergic modulation is a potential mechanism for treating a variety of conditions such as psychiatric disorders, addiction, and obesity. Therefore, this symposium will set out to highlight important contributions to the understanding of dopamine in the brain.This symposium will present 5 talks from world experts in the study of dopamine function who have pushed the field forward with new technologies and insights. The speakers will discuss how dopamine release, calcium signaling, and striatal outputs dictate learning and motivation, as well as how early-life experiences can impact these systems and discuss translational pathways for better understanding severe mental illnesses. Dr. Erin Calipari will describe the role of dopamine in novelty processing, showing that dopamine release in the nucleus accumbens core responds to novelty and declines with habituation. This trajectory influences future learning in a way that cannot be explained by valence or error signals and is a critical aspect of dopamine role in learning and memory. Dr. Alexxai Kravitz using in vivo assays of population calcium and dopamine release in the dorsomedial striatum has characterized the necessity of both calcium and dopamine for reinforcement learning. He will describe how striatal calcium reflects an eligibility trace that controls the ability of dopamine to promote learning. Dopamine release may be modulated by different mechanisms. In the striatum, tonically active cholinergic interneurons (CINs) are relevant to modulate dopamine release via nicotinic receptors. Moreover, CINs directly regulate, via M1- and M2-class muscarinic receptors, or indirectly via the activation of parvalbumin-positive GABAergic interneurons, the concurrent activity of D1- and D2-expressing spiny projecting neurons (SPNs) projecting to the direct striatonigral (D1-SPNs) or indirect striatopallidal (D2-SPN) basal ganglia pathways. Thus, Dr. Miguel Skirzewski will talk about how CINs encode motivational signals supporting gating mechanisms regulating plasticity at corticostriatal synapses onto SPNs. Furthermore, early-life experience can have a profound impact on the risk for neuropsychiatric disorders such as depression and addiction, which are linked to dopamine system function. Dr. Talia Lerner has established mouse models of both early-life stress and early-life enrichment and has found that these conditions change dopamine circuit structure and function, as well as impact behaviors such as punishment-resistant (compulsive) reward-seeking. Additionally, cross-species assessments of decision-making may be our best avenue to understand the neurobiology of psychotic disorders such as schizophrenia. Dr. James Kesby will cover how dorsomedial striatal dysfunction in rodents may replicate phenotypes observed in patients with early and persistent psychosis during decision-making. Thus, the speakers will share a 2-hour session, presenting a 24-minutes talk each, including 4 minutes for questions.

Speakers

Lisa Saksida
Western Univ.

Meira Forcelini Machado
Postdoctoral Associate
Western University

5 Subsessions

- **Novelty influences dopamine responses to conditioned and unconditioned stimuli over extended temporal windows**
  4:30 PM - 4:54 PM, Jun 27
- **Interactions between dopamine and calcium in the striatum mediate reinforcement learning**
  4:54 PM - 5:18 PM, Jun 27
- **Cholinergic interneurons co-releasing acetylcholine and glutamate: new mechanisms underlying striatal circuits and behaviour**
  5:18 PM - 5:42 PM, Jun 27
- **Glucocorticoid Regulation of Dopamine Function**
  5:42 PM - 6:06 PM, Jun 27
- **The role of striatal dopamine in contingency-dependent, and psychosis-related, reversal learning phenotypes.**
  6:06 PM - 6:30 PM, Jun 27

Symposium 11: Neuromodulation of mood and its alteration in brain disorders

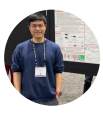
4:30 PM - 6:30 PM, Jun 27

Strategy Room 2

Symposiu…

Emotional behaviors are regulated by many brain processes such as synaptic transmission and neuroimmune communication. Dysregulation of these processes leads to brain disorders including depression. Advances in this area have identified key brain substrates and circuits that control emotional behaviors, paving the path to mental wellness of these patients. More recently, mounting evidence has shown that mood can be modulated by neurohormonal and neuroimmune status, as such, perturbation of hormonal and immune systems can markedly impact on mood and increase the incidence of depression. In this symposium titled "Neuromodulation of mood and its alteration in brain disorders", we invite investigators working on this topic to lead a discussion on unconventional aspects of this neuromodulation, aiming to stimulate ideas that could translate these findings to a better treatment of brain disorders including depression. The symposium will be co-chaired by Prof. Kleinridders (University of Potsdam, Germany) and postdoc trainee Dr. Chen (Harvard Medical School, USA). The other two invited speakers include Dr. Zhang (Tsinghua University, China) and Dr. Fulton (Universite de Montreal, Canada). Prof. Kleinridders started his lab in Germany in May 2015 and is now a full professor, focusing on understanding how brain insulin resistance impacts on mood and whether applying nutritional interventions can reverse depression. His recent work mainly published on Antioxidants, Molecular Metabolism, JCI Insights, Lancet Diabetes Endocrinol, etc. In this symposium, he will be talking about the crosstalk of nutrition and insulin action on brain metabolism and mood modulation. Dr. Chen started his second postdoc in October 2019 with Dr. C Ronald Kahn at Harvard Medical School. He mainly works on revealing cellular heterogeneity of brain reward system and molecular factors underly comorbidity of diabetes and brain disorders. His previous work mainly published on Nature communications, Nature Neuroscience, Science Advances, PNAS, and Trends in Neuroscience. He will be talking about the crosstalk of microglia and astrocytes regulated by insulin and how its dysregulation leads to mood and cognitive disorders. Dr. Zhang will finish her postdoc training with Prof. Guoping Feng at MIT soon and start her own lab in January 2023, as an assistant professor at Tsinghua University. She mainly works on identifying thalamic substrates that modulate motor, mood, and cognition. As a rising star in the area of neurological diseases, her recent work was published on Nature and highlighted by major media sources. Her other work was published on Neuron, Nature Communications, Nature Medicine, and Nature Reviews Neuroscience. In this symposium, she will be talking about her unpublished work on Cholinergic modulation of mood and behavior in neurological disease models. These talks will expand our current understanding of neuromodulation of mood/behavior to deeper levels that involve various neuromodulations (insulin, serotonergic, and cholinergic systems). Further, these talks will connect these mechanisms to neural and immune interaction. In summary, we anticipate the IBNS participants will learn from this symposium and stimulate collaborations for their further research.

Speakers



Wenqiang Chen
Harvard Medical School

Andre Kleinridders
Univ. of Potsdam

4 Subsessions

- **Insulin Signaling in Microglia Regulates Brain Metabolism, Innate Immunity and Modulates Mood and Social Behaviors**
  4:30 PM - 5:00 PM, Jun 27
- **The crosstalk of nutrients and insulin action in the brain shapes metabolism and modulates behavior**
  5:00 PM - 5:30 PM, Jun 27
- **Thalamic function in health and disease**
  5:30 PM - 6:00 PM, Jun 27
- **Neuroinflammatory mediators in diet-induced mood deficits**
  6:00 PM - 6:30 PM, Jun 27

7:00 PM

Exhibitor's Reception (by invitation only)
7:00 PM - 8:00 PM, Jun 27
TBA

Wed, Jun 28, 2023

8:00 AM

Breakfast
8:00 AM - 8:30 AM, Jun 28
Great Room A
Networking Br…

8:30 AM

Poster Session II
8:30 AM - 10:30 AM, Jun 28
Great Room B
Posters

106 Subsessions

- **106. Investigating the neuroanatomical properties of startle-eliciting neurons that may underlie increased acoustic startle in Cntnap2 knockout rats.**
  8:30 AM - 10:30 AM, Jun 28
- **107. Investigating anxiety- and depressive-like behaviors of male and female rats following prenatal alcohol exposure**
  8:30 AM - 10:30 AM, Jun 28
- **108. The effect of early life environmental enrichment on cognitive performance and anxiety in the triple transgenic Alzheimer's disease (3xTg-AD) mouse model.**
  8:30 AM - 10:30 AM, Jun 28
- **109. The title of my abstract is Investigating Mechanisms Underlying Estrous Cycle-Dependent Changes in Cue-Induced Cocaine Seeking Behavior.**
  8:30 AM - 10:30 AM, Jun 28
- **110. Effects of brain serotonin deficiency on early development and socio-affective communication in rat pups.**
  8:30 AM - 10:30 AM, Jun 28
- **111. Hormonal contraception use in young adult women: implications for mood and neuroendocrine functioning**
  8:30 AM - 10:30 AM, Jun 28
- **112. Effects of Chronic Pregnancy Stress on tyrosine hydroxylase mRNA Expression in the Midbrain Dorsal Raphe**
  8:30 AM - 10:30 AM, Jun 28
- **113. Behavioral and neurobiological differences in rodent model of enhanced anticipation of positive experiences**
  8:30 AM - 10:30 AM, Jun 28
- **115. Eukaryotic initiation factor 4E-binding proteins mediate depressive behaviours in mice exposed to chronic variable stress**

8:30 AM - 10:30 AM, Jun 28

● **116. Binge drinking during mature adulthood induces mild cognitive impairment associated with indices of Alzheimer's Disease-related neuropathology**

8:30 AM - 10:30 AM, Jun 28

● **117. Hippocampal-striatal interactions and response-driven behavior across the lifespan.**

8:30 AM - 10:30 AM, Jun 28

● **118. A model of oral cannabidiol use in rodents: an evaluation of CBDs pharmacokinetic, neurochemical, microbial, and behavioral outcomes**

8:30 AM - 10:30 AM, Jun 28

● **119. The Limits of Quantity Discrimination in Zebrafish**

8:30 AM - 10:30 AM, Jun 28

● **120. Serotonin modulates reward representations in the dorsomedial striatum during goal-directed behavior**

8:30 AM - 10:30 AM, Jun 28

● **121. Sensory reactivity and filtering in Autism: Do parent-reported measures reflect behavioral measures?**

8:30 AM - 10:30 AM, Jun 28

● **122. In vivo Ca2+ imaging of astrocytes and oxytocin neurons in the hypothalamic paraventricular nucleus during social and stress stimuli.**

8:30 AM - 10:30 AM, Jun 28

● **123. Serotonergic modulation of the excitability in claustral neurons in male rats.**

8:30 AM - 10:30 AM, Jun 28

● **124. Ubiquitous overexpression of E3-ubiquitin protein ligase results in phenotypes relevant to duplications 15q11.2-q13**

8:30 AM - 10:30 AM, Jun 28

● **125. Behavioral and pharmacokinetic assessment of nicotine e-cigarette inhalation in female rats**

8:30 AM - 10:30 AM, Jun 28

● **126. The Effects of Buprenorphine or Morphine Exposure During Pregnancy on Maternal Care Behaviors and Offspring Development**

8:30 AM - 10:30 AM, Jun 28

● **127. EFFECTS OF MUSIC IN EEG FUNCTIONAL CONNECTIVITY DURING TIME ESTIMATION IN MUSICIANS Vs. NON-MUSICIANS.**

8:30 AM - 10:30 AM, Jun 28

● **128. Individual and sex differences in cocaine intake and motivation predict measures of anxiety and cue-sensitivity**

8:30 AM - 10:30 AM, Jun 28

● **129. Roles of corticosterone and glucocorticoid receptor activation levels in the hippocampus associated with retrieval of moderate learning**

8:30 AM - 10:30 AM, Jun 28

● **131. Neurodevelopmental effects of low-dose pyrethroid pesticide exposure in prairie vole**

8:30 AM - 10:30 AM, Jun 28

● **132. An inquiry into the validity of the Tube Test as a measure of dominance in mice.**

8:30 AM - 10:30 AM, Jun 28

● **133. Vaporized delta-9-tetrahydrocannabinol inhalation in female sprague dawley rats: a pharmacokinetic and behavioral assessment.**

8:30 AM - 10:30 AM, Jun 28

● **134. A translational model of comorbid anxiety and depression.**

8:30 AM - 10:30 AM, Jun 28

● **135. Increase in nucleus accumbens activity during social interaction is absent in Cntnap2-null and Fmr1-null mice.**

8:30 AM - 10:30 AM, Jun 28

● **136. Marshmallow test for flies: Suppression of low-quality food by Drosophila melanogaster**

8:30 AM - 10:30 AM, Jun 28

● **137. Rapid effect of interplay between estrogens in the supraoptic nucleus and medial amygdala oxytocin receptors on social recognition**

8:30 AM - 10:30 AM, Jun 28

● **139. Psychobiological sequelae of adolescent social stress in male mice**

8:30 AM - 10:30 AM, Jun 28

● **140. Exploring sex-specific and developmental outcomes of early life adversity**

on DNA methylation in parvalbumin-containing interneurons
8:30 AM - 10:30 AM, Jun 28

● 141. Impact of EcoHIV infection and sex on effort-based decision-making
8:30 AM - 10:30 AM, Jun 28

● 142. Serotonin modulates social responses to stressed conspecifics via insular 5-HT2C receptors in male and female rat
8:30 AM - 10:30 AM, Jun 28

● 143. Chemogenetic activation of astrocytes using a GFAP promoter in prelimbic cortex and hippocampus can impair spatial working memory: A focus on activation of GFAP and sex differences.
8:30 AM - 10:30 AM, Jun 28

● 144. Executive functions and catecholamine regulatory protein levels within the prefrontal cortex following repetitive mild traumatic brain injury
8:30 AM - 10:30 AM, Jun 28

● 145. Characterizing neural activity during cognitive bias in male and female offspring from a model of postpartum depression
8:30 AM - 10:30 AM, Jun 28

● 146. Cannabidiol increased the risky decision-making profile of mice regardless of dopamine transporter expression: implications for cannabis use in people with bipolar disorder.
8:30 AM - 10:30 AM, Jun 28

● 147. Insular cortex lesions attenuate sensitivity to the aversive properties of ethanol.
8:30 AM - 10:30 AM, Jun 28

● 148. Re-activation of a psychedelic neural signature reduces anxiety-like behavior.
8:30 AM - 10:30 AM, Jun 28

● 149. Persistent changes to the epigenome and transcriptome in the extinction of nicotine and cocaine self-administration.
8:30 AM - 10:30 AM, Jun 28

● 150. Generational effects of hypothyroidism on maternal behavior
8:30 AM - 10:30 AM, Jun 28

● 151. Scopolamine has dose dependent effects on memory in zebrafish.
8:30 AM - 10:30 AM, Jun 28

● 152. Abl Kinase Mediates Amyloid Beta 1-42 Peptides-induced Alteration of Synaptic Transmission, Potentially Leading to Cognitive Impairment with Changes of Neurochemical Profile and Brain Electrical Activity (mouse model study)
8:30 AM - 10:30 AM, Jun 28

● 153. Effects of female reproduction on CRFR2 expression within GAD-, TPH-, and TH-containing cells of the dorsal raphe.
8:30 AM - 10:30 AM, Jun 28

● 154. Chronic stress enhances working memory in aging male rats via glucocorticoid and mineralocorticoid receptors
8:30 AM - 10:30 AM, Jun 28

● 155. Sex-dependent effects of chemogenetic inhibition of the ventral hippocampus on compulsive ethanol seeking in a two-alternative forced choice task
8:30 AM - 10:30 AM, Jun 28

● 156. Oral oxycodone self-administration alters behavior and neurocognition during adolescence
8:30 AM - 10:30 AM, Jun 28

● 157. MYT1L and weight gain: understanding MYT1L role in feeding and metabolic processes.
8:30 AM - 10:30 AM, Jun 28

● 159. The effect of sucrose pre-exposure on quinpirole-induced locomotor sensitization: An investigation of sex differences in adult rats.
8:30 AM - 10:30 AM, Jun 28

● 160. Investigating gene-environment interaction in a double-hit model for autism spectrum disorder.
8:30 AM - 10:30 AM, Jun 28

● 161. Altered synaptic properties of the startle-mediating neurons in the caudal pontine reticular nucleus of Cntnap2 KO rat model of autism.
8:30 AM - 10:30 AM, Jun 28

● 162. Temporal restriction of neurodevelopmental disorder associated gene MYT1L to identify potential windows for interventions.

8:30 AM - 10:30 AM, Jun 28

● 163. The creation of an inducible, isoform specific SDK1 viral vector for the study of SDK1 isoforms in neurons

8:30 AM - 10:30 AM, Jun 28

● 164. Exercise training regulates perineuronal nets but not microglia or vascularization in the hippocampus of female and male mice.

8:30 AM - 10:30 AM, Jun 28

● 165. Validating Zhx2 in oxycodone metabolite (oxymorphone) brain concentration and behavior via reciprocal gene editing and viral manipulation of gene expression in BALB/c substrains

8:30 AM - 10:30 AM, Jun 28

● 166. How long does zebrafish aversive memory last?

8:30 AM - 10:30 AM, Jun 28

● 167. Temperature effects on development and performance in zebrafish

8:30 AM - 10:30 AM, Jun 28

● 168. A novel tool to study learned helplessness in zebrafish: the hypoxia escape test

8:30 AM - 10:30 AM, Jun 28

● 169. Beyond the neurons: Cerebrovascular comparisons in wild-trapped and laboratory rats (Rattus norvegicus)

8:30 AM - 10:30 AM, Jun 28

● 170. Involvement of vasopressinergic inputs to the ventral pallidum in regulating social play behavior in juvenile male and female rats

8:30 AM - 10:30 AM, Jun 28

● 171. Context regulates fear memory consolidation in the basolateral amygdala complex

8:30 AM - 10:30 AM, Jun 28

● 172. NO EVIDENCE OF ASSOCIATION BETWEEN IN UTERO SARS-CoV-2 EXPOSURE, EARLY RELATIONAL HEALTH AND INFANT SOCIOEMOTIONAL DEVELOPMENT

8:30 AM - 10:30 AM, Jun 28

● 173. Role of dopamine D3 receptors in nucleus accumbens core in conditioned memory modulation

8:30 AM - 10:30 AM, Jun 28

● 174. Amphetamine and Punished Reward-seeking: Monoaminergic Modulation of Inhibitory Impulse Control

8:30 AM - 10:30 AM, Jun 28

● 175. Opioids mediate ingroup favoritism in rats

8:30 AM - 10:30 AM, Jun 28

● 176. HORMONAL REGULATION OF METHAMPHETAMINE VERSUS FOOD CHOICE IN RATS.

8:30 AM - 10:30 AM, Jun 28

● 177. Mapping the neural basis for individual differences in zebrafish behavior by combining the adult zebrafish brain atlas (AZBA) with BrainGlobe

8:30 AM - 10:30 AM, Jun 28

● 178. The role of prediction error in encoding new learning.

8:30 AM - 10:30 AM, Jun 28

● 179. Evaluating the effects of temporal and effort costs in foraging task decisions

8:30 AM - 10:30 AM, Jun 28

● 180. Circuit dissection of state-dependent shifts in perception.

8:30 AM - 10:30 AM, Jun 28

● 181. Cognitive dysfunction caused by perinatal asphyxia in inflammation-sensitized mice.

8:30 AM - 10:30 AM, Jun 28

● 182. Ups or downs, the effect of caffeine and over the counter calming agents on aggression in betta splendens.

8:30 AM - 10:30 AM, Jun 28

● 183. Anchor protein modulates ethanol-related behaviors in a drosophila knockdown model.

8:30 AM - 10:30 AM, Jun 28

● 184. Auditory processing in Cntnap2 knockout rats treated with R-Baclofen during critical period of auditory development

8:30 AM - 10:30 AM, Jun 28

● 185. Endocrinological levels of Corticosterone and Dehydroepiandrosterone in wild rats.

8:30 AM - 10:30 AM, Jun 28

● 186. Drug self-administration alters the expression of dopamine transporter in striatal astrocytes

8:30 AM - 10:30 AM, Jun 28

● 187. Diving into the two-hit hypothesis: A comparison between multiple forms of â€œsecond hitâ€ in rats

8:30 AM - 10:30 AM, Jun 28

● 188. Familiarity determines how memories are integrated in a sensory preconditioning protocol with rats.

8:30 AM - 10:30 AM, Jun 28

● 189. The title is Reward Deficiency as a Predictor of Bariatric Surgery Outcomes after 1 year.

8:30 AM - 10:30 AM, Jun 28

● 190. Effects of Apoe over-expression on a touchscreen-based sustained attention task in mice

8:30 AM - 10:30 AM, Jun 28

● 191. Protracted morphine withdrawal corresponds with sex-specific alterations to motivated behavior and mesoaccumbal subcircuit dopamine cell plasticity

8:30 AM - 10:30 AM, Jun 28

● 192. Stress responsive grooming in F344 rats.

8:30 AM - 10:30 AM, Jun 28

● 193. Aged common marmosets (Callithrix jacchus) show domain-specific cognitive impairment

8:30 AM - 10:30 AM, Jun 28

● 194. Maternal corticosterone increases depressive-like endophenotypes in both sexes

8:30 AM - 10:30 AM, Jun 28

● 195. A cross-lesion approach to assess the perirhinal-prefrontal cortical collaboration supporting fear extinction memory.

8:30 AM - 10:30 AM, Jun 28

● 196. Transitioning from Morphine to Buprenorphine During Pregnancy: Effects on Maternal Care and Offspring Neurodevelopment in a Translational Rodent Model

8:30 AM - 10:30 AM, Jun 28

● 197. The title of my abstract is striatal processing of attention-demanding signals in rats with opposing attentional control styles.

8:30 AM - 10:30 AM, Jun 28

● 199. Vulnerable for addiction-like behavior: Disrupted cholinergic signaling and exaggerated (neuro)immune response in sign-tracking rats.

8:30 AM - 10:30 AM, Jun 28

● 200. Effects of early life stress on hippocampal cell death and microglia morphology in degu pups

8:30 AM - 10:30 AM, Jun 28

● 201. Toward a new model of nicotine withdrawal

8:30 AM - 10:30 AM, Jun 28

● 202. Sex-Specific Epigenetic Regulation of Context Fear Memory.

8:30 AM - 10:30 AM, Jun 28

● 203. Ultrasonic vocalization playback as a translational tool to reveal sex-specific affective processing following early life adversity in rats.

8:30 AM - 10:30 AM, Jun 28

● 204. Role of the R7 Rgs protein family on the modulation of kappa opioid receptor (KOR)-mediated behaviors in mice.

8:30 AM - 10:30 AM, Jun 28

● 205. Neuronal ensemble plasticity in the infralimbic cortex underlies increased cued fear memory generalization over time.

8:30 AM - 10:30 AM, Jun 28

● 206. The ecology of the pandemic nest: maternal caregiving behavior in the home in a pandemic epicenter

8:30 AM - 10:30 AM, Jun 28

● 207. Androgen and estrogen receptors rapidly modulates social recognition in the bed nucleus of the stria terminalis of male mice

8:30 AM - 10:30 AM, Jun 28

● 208. Maternal resilience as a potential moderator of an association between maternal stress and infant social-emotional development at 6 months.

8:30 AM - 10:30 AM, Jun 28

● 209. No Evidence of Association between Early Relational Health and Infant

Socioemotional Functioning at 6- and 18-months.
8:30 AM - 10:30 AM, Jun 28

● 210. Chronic Oral Methylphenidate Plus Fluoxetine Treatment Increases Cocaine Self-Administration
8:30 AM - 10:30 AM, Jun 28

● 211. Modulation of dopamine release by neuronal glutamate transporters
8:30 AM - 10:30 AM, Jun 28

● 212. Ethologically relevant natural stimuli for the zebrafish: Are they rewarding enough in an associative learning task?
8:30 AM - 10:30 AM, Jun 28

● 213. Novelty during reactivation promotes destabilization of strongly encoded contextual fear memories.
8:30 AM - 10:30 AM, Jun 28

● 214. Environmental conditions of recognition memory testing induce neurovascular changes in the hippocampus in a sex-specific manner in mice
8:30 AM - 10:30 AM, Jun 28

● 215. Peripubertal Bisphenol-A Exposure is Associated with Early Puberty Onset, Dysregulated Feeding, and Anhedonia-like Outcomes in Adulthood: A Role for the Orexin (Hypocretin) System
8:30 AM - 8:30 AM, Jun 28

● 216. International High School Neuroscience Competition
8:30 AM - 8:30 AM, Jun 28

10:30 AM

Break
10:30 AM - 11:00 AM, Jun 28
Great Room A
Networking Br…

11:00 AM

Symposium 12: Investigating the influence of sex and estrous cycle on self-administration and seeking behavior across multiple classes of drugs of abuse
11:00 AM - 1:00 PM, Jun 28
Great Room C
Symposiu…

Substance Use Disorders (SUDs) are chronic, relapsing diseases that continue to grow at alarming rates, with drug-related overdose deaths reaching record levels in the past several years. While SUDs are prevalent in both men and women, recent epidemiological data in the United States indicates that drug misuse is increasing faster in women than men. Sex and ovarian hormones are known to influence patterns of drug use and relapse vulnerability in both recovering users and in rodent models. However, less is known regarding the mechanisms contributing to these sex differences, including how they vary across different drugs of abuse such as opioids, stimulants and alcohol. Studies that address these gaps are critical because they hold potential to lay the groundwork for the development of innovative treatment strategies as well as determine whether sex and ovarian hormones modulate the efficacy of medications used to treat SUDs. The seminars in this symposium will highlight innovative research that carefully considers the role that sex and estrous cycle fluctuations play in influencing chronic and compulsive drug taking and drug seeking behavior in rodent models (both mice and rats). In particular, this symposium will highlight how the influence of sex and estrous cycle fluctuations on these measures can significantly vary across different drug classes (e.g., stimulants versus opioids versus alcohol) and different animal models (e.g., short access vs. long access, extinction training vs forced abstinence, reinstatement vs. incubation). A focus will also be placed on identifying mechanisms underlying observed sex differences in drug taking and drug seeking behavior. This symposium will allow for critical discussion and integration of these findings, which will advance our understanding of how sex and ovarian hormones should be considered when developing treatment strategies to reduce craving and promote abstinence in recovering users of various drugs of abuse.

Speaker

Jessica Loweth
Rowan Univ. School of Osteopathic Medicine

4 Subsessions

● Effects of Sex and Estrous Cycle Fluctuations on Incubation of Oxycodone Craving
11:00 AM - 11:30 AM, Jun 28

● Estrus Cycle Effects on Economic Demand for Cocaine
11:30 AM - 12:00 PM, Jun 28

● Estrous cycle effects on reinstatement in ethanol-dependent mice
12:00 PM - 12:30 PM, Jun 28

● Effects of sex and estrous cycle on intravenous oxycodone self-administration and oxycodone-seeking behavior in rats
12:30 PM - 1:00 PM, Jun 28

Symposium 13: Marmoset cognition: Neurophysiology and disease modeling
11:00 AM - 1:00 PM, Jun 28

Strategy Room 3

Symposiu…

The common marmoset (Callithrix jacchus) is a promising primate model for the neural basis of cognition and its impairment throughout the lifespan, thanks to its unique traits. Its fecundity and fast maturation facilitate the development of transgenic models. Its prosociality and vocal abilities align well with the study of social dynamics. Moreover, its smooth cortex permits laminar analysis of areas homologous to sulcal regions in human. Recently, the toolbox for training marmosets on cognitive tasks has entered a phase of rapid expansion, as will be showcased in this symposium. Dr. Stacey Sukoff Rizzoâ€”University of Pittsburgh, will present â€œEstablishment of a comprehensive touchscreen-based testing battery for longitudinal assessments of cognitive decline in marmosets across the lifespanâ€. The primary risk factor for Alzheimerâ€™s disease (AD) is chronological aging. The ability to decipher between cognitive decline related to healthy aging versus impairment due to early prodromal AD is crucial for diagnosis, treatment, and prevention. Animal models that can best recapitulate the divergence of aging-related changes in humans are critical for supporting translational studies of potential therapeutics. Common marmosets exhibit aging-related changes like those observed in humans, including cognitive decline. Dr. Sukoff Rizzo will present her work on a test battery sensitive to age-dependent cognitive decline in normal aging marmosets, and its application in genetically engineered marmosets with the early onset AD risk variant PSEN1, for the evaluation of the trajectory of cognitive impairment.Dr. Courtney Glavis-Bloom, PhDâ€”Salk Institute, will present â€œA novel mechanism of synaptic dysfunction underlies age-related working memory impairment in marmosetsâ€. Working memory (WM) relies critically on the dorsolateral prefrontal cortex (dlPFC). Morphology and function of the dlPFC, and corresponding WM performance, are affected early in the aging process. However, these effects are heterogeneous, with nearly half of aged individuals spared of WM deficits. Dr. Glavis-Bloom will present data demonstrating age-related WM impairment in marmosets that includes a remarkable degree of heterogeneity in performance, and findings from electron microscopy work that reveals a novel mechanism of synaptic dysfunction that distinguishes aged marmosets with WM impairment from those without. Dr. Stefan Everling, Dr.rer.nat.â€”Western University, will present â€œDelay-related activity in marmoset prefrontal cortexâ€. Persistent delay-period activity in prefrontal cortex (PFC) has long been regarded as a neural signature of working memory (WM). Electrophysiological investigations in macaque PFC have provided much insight into WM mechanisms, however a barrier to understanding is the fact that a portion of PFC lies buried within the principal sulcus and is inaccessible for laminar recording. The relatively lissencephalic cortex of the common marmoset circumvents such limitations. It remains unknown however, whether marmoset PFC neurons exhibit persistent activity. Dr. Everling will present findings from wireless recordings in PFC of marmosets performing a delayed-match-to-location task on a home cage-based touchscreen, and discuss the suitability of marmoset as a model for investigating the microcircuitry underlying WM.Dr. Julio Martinez-Trujillo, PhDâ€” Western University, will present â€œSubstrates of spatial navigation in the marmoset hippocampusâ€. The role of the Hippocampus in spatial cognitive map formation has been extensively documented during experiments in freely moving rodents. This structure has been named the brain Global Positioning System (GPS). However, evidence for the same role in primates is scarce, due to the difficulty of conducting electrophysiological recordings in the Hippocampus of freely moving primates. Here we used a video-tracking system and wireless recordings to explore the relationship between neural activity in areas CA3 and CA1 of freely moving marmosets. We found that neuronal selectivities and population codes for spatial maps in the marmoset Hippocampus during navigation mainly reflect the visual contingencies of the environment. Moreover, neuronal selectivities for dynamic variables are dominated by coding of head-gaze velocity during visual exploration of the environment.

Speakers

Liya Ma
York Univ.

Stacey Sukoff Rizzo
Univ. of Pittsburgh

4 Subsessions

- **A comprehensive touchscreen-based testing battery for longitudinal assessments of cognitive decline in marmosets across the lifespan.**
  11:00 AM - 11:30 AM, Jun 28
- **Aged common marmosets show domain-specific cognitive impairment with heterogeneity explained by lost scaling of synaptic components**
  11:30 AM - 12:00 PM, Jun 28
- **Persistent delay-period activity in marmoset prefrontal cortex**
  12:00 PM - 12:30 PM, Jun 28
- **The marmoset hippocampus is a GPS, but G is for gaze**
  12:30 PM - 1:00 PM, Jun 28

Symposium 14: Non-invasive brain stimulation in the treatment of neuropsychiatric disorders

11:00 AM - 1:00 PM, Jun 28

Strategy Room 2

Symposiu…

Recent advances in knowledge relating to the organization of neural circuitry in the human brain have increased understanding of disorders involving brain circuit asymmetry. These asymmetries, which can be measured and identified utilizing EEG and LORETA analysis techniques, may be a factor in mental disorders. New treatments involving non-invasive brain stimulation (NIBS), including trans-cranial magnetic stimulation, direct current stimulation, vagal nerve stimulation, and other peripheral stimulation techniques involving the cerebellar and vestibular systems have emerged in recent years. We propose that EEG identification of circuit asymmetry geometries can direct non-invasive brain stimulation more specifically for treatments of mental disorders. In this symposium we will present an overview the current understanding and applications of NIBS in the literature as well as recent results of our application of NIBS in cases of depression, PTSD and autism. We will also describe recently developed clinical treatment platforms to assist clinicians in the application of NIBS and the development of clinical online training programs to allow home delivery of NIBS to people incapable of travel, or who are located remotely. The symposium will include questions and answer segments following each speaker presentation and a general panel discussion in conclusion.

4 Subsessions

- **TBA56**
  11:00 AM - 11:30 AM, Jun 28
- **TBA57**
  11:30 AM - 12:00 PM, Jun 28
- **TBA58**
  12:00 PM - 12:30 PM, Jun 28
- **TBA59**
  12:30 PM - 1:00 PM, Jun 28

1:00 PM

E&D Lunch Workshop

1:00 PM - 2:30 PM, Jun 28

Great Room C

Workshop

Members of the Ethics and Diversity committee will be hosting a discussion on Imposter Syndrome and how it especially impacts minority populations in neuroscience. We have activities and discussions planned and will provide lunch. Please join us!

Lunch on Own

1:00 PM - 3:00 PM, Jun 28

Networking Br…

3:00 PM

Keynote Speaker: The Biology of Grasping in Elephants

3:00 PM - 4:00 PM, Jun 28

Great Room C

Keynote

The Biology of Grasping in Elephants

Michael Brecht, Bernstein Center for Computational Neuroscience Berlin, Humboldt-Universität zu Berlin, Philippstr. 13, Haus 6, 10115 Berlin, Germany Bernstein

I will present data on a systemic investigation of grasping in elephants. The analysis of sensory nerves suggests that elephants are extremely tactile animals. In elephants, trunk whisker length is lateralized as a result of heavily lateralized trunk behaviors. The elephant trunk tip appears to be represented by a large cortical three-dimensional trunk-tip model; this observation is reminiscent of the somatosensory cortical snout representation in pigs. The trunk musculature of elephants is breath-takingly complex and filigree (~90.000 muscle fascicles). Trunk morphology, motor neuron organization and grasping differs between African elephants (which pinch objects with their two trunk fingers) and Asian elephants (which have only one finger and wrap objects with their trunk). Elephant behaviors such as tool-use and banana-peeling show that elephant grasping is sophisticated, heavily experience-dependent and individualized.

Speaker

Michael Brecht

Professor
Humboldt-University Berlin

4:30 PM

Symposium 15: Drosophila as a powerful model for testing molecular mechanisms governing behaviour

4:30 PM - 6:30 PM, Jun 28

Great Room C

Symposiu…

A surprisingly large amount of brain functions are conserved between invertebrates like Drosophila and mammals like humans. Therefore Drosophila can be used to investigate many behavioural neuroscience questions and retain generalizability to other organisms. Since the discovery that Drosophila have neurons and glia in their brain that communicate using the same electrical and chemical signals that mammalian brains do, there has been massive development of the repertoire of the Drosophila behavioural assays. Moreover, Drosophila behaviour is evidently analogous to mammalian behaviour because they are both perturbed by similar genetic and pharmaceutical interventions.

For this symposium we will have four speakers give 20-minute talks with 10 minutes between speakers for Q&A. Each speaker will highlight a different Drosophila behaviour. Dr. Anna Phan (University of Alberta, Canada) will speak about how she investigates learning and memory, specifically the role of memory suppressor genes. Dr. William Ja (University of Florida, USA) will present his work on the central genetic and neuronal mechanisms that underlie appetite and feeding behaviour in Drosophila. Dr. Joel Levine (University of Toronto Mississauga, Canada) will discuss the emerging properties of social interaction networks observed in flies. Lastly, Wesley Robinson (Western University, Canada) will present his work on deciphering the neural circuitry - involving an autism-related gene (neuroligin 3) - in Drosophila social behaviour.

Drosophila are a powerful model organism to use for behavioural neuroscience. We believe this symposium will bring increased recognition to the utility of Drosophila for studying behaviour and foster much needed collaborations between Drosophila behaviour researchers and the wider behavioural neuroscience community.

Speakers

Ariel Frame
Western University

Anne Simon
Western University

4 Subsessions

- **Studying memory suppressors reveal regulation of synaptic vesicle pool sizes**
  4:30 PM - 5:00 PM, Jun 28
- **Using Drosophila to Understand Social Networks**
  5:00 PM - 5:30 PM, Jun 28
- **Time to eat: Circadian regulation of Drosophila feeding behavior**
  5:30 PM - 6:00 PM, Jun 28
- **Drosophila social spacing: Elucidating the neural circuitry**
  6:00 PM - 6:30 PM, Jun 28

Symposium 16: Adolescence, stress and neuropsychiatric disorders: new targets and time periods

4:30 PM - 6:30 PM, Jun 28

Strategy Room 3

Symposiu…

An undeniable link exists between stress and detriments to mental health. While evidence continues to accumulate identifying the mechanisms underlying this link, questions remain regarding how the landscape of development, particularly during adolescence, may modulate the impacts of stress. Greater understanding in this area is critical to effectively intervene â€“ treat and even prevent â€“ the deleterious effects of stress on mental health. This symposium will discuss evidence that not all stress is created equal, with the type and timing of stress emerging as critical modulatory factors. Talk Title 1: Stress, adolescence, and neuropsychiatric disease: What are we missing? Jill A. McGaughy, University of New Hampshire, Durham, NH USA. Though it is widely accepted that stress increases vulnerability to and exacerbates cognitive impairments linked to neuropsychiatric disease in adolescents, pre-clinical models often fail to model the impact of stress during adolescence adequately. The introductory talk will describe the challenges of assessing executive function in pre-clinical models aimed at understanding the effects of stress during adolescence. Talk Title 2: The role of norepinephrine in the detrimental effects of acute restraint stress on executive function. Madison Clement, University of New Hampshire, Durham, NH USA: Impairments in executive function during adolescence have been linked to immaturity in the anterior cingulate cortex (ACC) and prelimbic cortex (PL). These same areas are critical to adapting to acute stress. We have found that acute stress increases cognitive rigidity in adolescents but not adults. Because cognitive rigidity has been consistently linked to impaired function in cortical noradrenergic afferents, we measured cellular activity in the ACC, PL, and locus coeruleus (LC) using c-Fos and double-labeled for norepinephrine transporters. These data will be discussed in terms of the unique role of norepinephrine in mediated stress-related cognitive impairments and differences in age-related differences in network connectivity. Talk Title 3: Examining developmental age constraints for the effects of stress on fear regulation. Heidi Meyer, Boston University, Boston, MA, USA. Our work has begun to investigate how developmental exposure to chronic and acute stress alters learning and memory processes directed toward threat. I will discuss evidence that both chronic and acute stress experienced during periadolescence lead to deficits in fear regulation (safety learning, fear extinction) in adult mice. Notably, the emergence of these deficits is delayed â€“ adolescent mice exhibit unaltered fear regulation following periadolescent stress. Moreover, pairing acute stress with explicit safety learning during adolescence mitigates the detrimental impacts of aversive experience for fear extinction in adulthood. Together this work indicates a peri-adolescent period ripe for intervention, preceding a later decline in fear regulation associated with adversity. Ongoing work is considering the impact of environmental enrichment during pre-adolescence on fear regulation. Talk Title 4: Comparing the effects of stress on brain mitochondrial function and emotional behavior across critical development periods. Fiona Hollis, University of South Carolina School of Medicine, Columbia, South Carolina. Mitochondria are dynamic organelles that are emerging as key players in health and disease. Mitochondria are intimately linked to the stress response as well as numerous developmental processes. Here I will present data showing that stress has different effects on cortical mitochondrial function depending on the type of stress and exposure period and discuss links to emotional behavior.

Speaker

Jill McGaughy
Univ. of New Hampshire

4 Subsessions

- **Stress, adolescence, and neuropsychiatric disease: What are we missing?**
  4:30 PM - 5:00 PM, Jun 28
- **The role of norepinephrine in the detrimental effects of acute restraint stress on executive function**
  5:00 PM - 5:30 PM, Jun 28
- **Examining developmental age constraints for the effects of stress on fear regulation**
  5:30 PM - 6:00 PM, Jun 28
- **The effects of stress on brain mitochondrial function and emotional behavior across critical development periods.**
  6:00 PM - 6:30 PM, Jun 28

Symposium 17: Environmental enrichment and gene-environment interactions modulating brain function and behavior

4:30 PM - 6:30 PM, Jun 28

Strategy Room 2

Symposiu…

Neurological and psychiatric disorders constitute one of the biggest health challenges facing society today and currently we have limited treatments, often with poor efficacy and major side-effect profiles. We are beginning to understand that there are some overlapping mechanisms in multiple disorders with shared risk factors, including lifestyle and other environmental exposures. In this symposium, we bring together scientists working on different aspects of brain function and behavior, to discuss some of the potential mechanisms whereby environmental enrichment, and associated and gene-environment interactions, modulate of brain development, function and dysfunction. Understanding the fundamental biology of brain disorders, and the complex, dynamic, interactions between genes and environment, may pave the way for the development of new therapeutics. It has been discovered that particular interventions, including those based on environmental enrichment and exercise, can enhance various aspects of cognitive and affective function. The mechanisms whereby these environmental stimuli exert beneficial effects on healthy brain function are beginning to be elucidated. Understanding how environmental factors such as cognitive stimulation and physical exercise impact the brain has major therapeutic implications. The therapeutic applications of these approaches include enviromimetics, and their subclass exercise mimetics. Enviromimetics are novel therapeutics that mimic or enhance the therapeutic effects of environmental stimuli. Exercise mimetics specifically mimic or enhance the beneficial effects of physical activity. These, and other, novel therapeutic approaches could be applied to various neurological and psychiatric disorders, which constitute a major burden of disease. This symposium will bring together key neuroscientists in this field who have been exploring how environmental enrichment and gene-environment interactions can modulate brain function and behavior, and the potential for using this information to develop novel therapeutics. Amanda Kentner is studying experience-dependent modulation of brain development and behavior, including environmental enrichment and stress (e.g. Zhao et al., 2021, Brain Behav. Immun.). Paola Tognini is continuing to make major contributions to our understanding of how the gut microbiome may contribute to beneficial effects of environmental enrichment on the brain and the role of the microbiota-gut-brain axis (e.g. Lupori et al., 2022, Cell Rep.). Marissa Smail has pioneered the study of how the gain and loss of environmental enrichment can lead to different consequences in rodents (e.g. Smail et al., 2020, Pharmacol. Biochem. Behav.). Anthony Hannan is examining how environmental enrichment and exercise interventions modulate brain function and behavior in mouse models, and their therapeutic applications (e.g. Gubert & Hannan, 2021, Nat. Rev. Drug Discov.). This symposium would be of interest to a wide variety of neuroscientists attending the IBNS Annual Meeting. It will cover a wide range of technical approaches, from molecular and cellular neuroscience and microbiology through to cognitive and behavioral neuroscience. It will also include a dynamic mix of basic and translational approaches, at the frontiers of neuroscience. In this symposium, we bring together neuroscientists to discuss environmental enrichment and gene-environment interactions informing various aspects of brain development, function and behavior. This will include pathogenic mechanisms and novel interventions for specific neurological and psychiatric disorders. The symposium will convey current understanding of the neurobiology mediating the effects of environmental enrichment, with the experience-dependent modulation of brain development and function by environmental factors. The symposium will provide data illuminating how cognitive stimulation, physical exercise and other environmental stimuli modulate the brain, and behavior. The presenters will also discuss how such fundamental neuroscience discoveries could also lead to novel therapeutic approaches, targeting molecular mechanisms to develop enviromimetics and exercise mimetics, in order to treat specific neurological and psychiatric disorders.

Speakers

Anthony Hannan
Florey Inst., Univ. of Melbourne

Marissa Smail
Univ. of Cincinnati

4 Subsessions

- **Can environmental complexity offset the developmental trajectory following early life adversity?**
  4:30 PM - 5:00 PM, Jun 28
- **The Impact of Environmental and Nutritional Challenges on Brain Plasticity and Behavior**
  5:00 PM - 5:30 PM, Jun 28
- **Molecular Neurobiology of Enrichment Loss: Role of the Extracellular Matrix**
  5:30 PM - 6:00 PM, Jun 28
- **Gene-environment interactions modulating brain function within and between generations**
  6:00 PM - 6:30 PM, Jun 28

Thu, Jun 29, 2023

8:00 AM

Breakfast
8:00 AM - 8:30 AM, Jun 29
Great Room A
Networking Br…

8:30 AM

Symposium 18: Neurocircuits mediating stress resiliency in animal models
8:30 AM - 10:30 AM, Jun 29
Great Room C
Symposiu…

Neurocircuits mediating stress resiliency in animal models

Acute and chronic stressors are known risk factors for psychopathology. However, not all individuals exposed to stress develop mental health disorders. Similarly, rodents subjected to various stressors can be divided into two general categories: those that succumb to maladaptive behavioral responses, generally termed “susceptible”, and those that continue to behave similar to controls, generally termed “resilient”. Importantly, in both humans and animal models, genetically identical individuals can display dichotomous behavioral responses to stressors. For example, the concordance rate for depression and posttraumatic stress disorder (PTSD) in monozygotic twins who undergo similar levels of stress, such as exposure to the Vietnam war, is around 50%. Understanding the neurocircuit differences that mediate this divergence in vulnerability to stressors is critical to the development of novel therapeutic and preventative solutions for mental health disorders such as depression and PTSD, which currently constitute some of the most difficult to treat and economically burdensome diseases of the modern world. In this session, the speakers will discuss cutting edge translational research aimed at dissecting the neural circuits that mediate divergent stress responses in rodents. Starting us off at the behavioral level, Eva Mikics from the Hungarian Academy of Sciences in Budapest, Hungary, uses a wide array of behavioral tests prior to exposing rats to a traumatic event (inescapable shock), in order to probe behavioral predictors of susceptibility versus resilience. The team found pre-trauma specific anxiety-like traits and operant learning-like characteristics are predictive factors of PTSD-like symptoms. Probing the mechanism of vulnerability factors in the development of fear generalization, the team identified medial prefrontal cortical (mPFC) CRH signaling to play a mediatory role. Moving us into a different fronto-cortical brain region, Dr. Maithe Arruda-Carvalho from the University of Toronto will show that the dorsal peduncular cortex (DP) is a novel bidirectional regulator of stress responses and anxiety-like behavior in male and female mice. Her lab found that chemogenetic excitation of the DP increases anxiety-like behaviors while chemogenetic inhibition improved auditory fear learning. Tackling a neuromodulatory system, Dr. Patrizia Campolongo from Sapienza University of Rome in Rome, Italy, will discuss endocannabinoid modulation in a PTSD model of susceptibility/resilience. Finally, the role of specific neurocircuits in mediating susceptibility versus resilience will be discussed. Dr. Dani Dumitriu from Columbia University in New York City, USA, will discuss the role of overactivation of the prelimbic (PL) to basolateral amygdala (BLA) pathway in mediating trait vulnerability in a mouse model of acute social defeat stress. When activity in the PL✉BLA pathway is dampened using intersectional chemogenetic inhibition during this stressor, the population response shifts toward the resilient phenotype. Similarly, Dr. Rosemary Bagot from McGill University in Montréal, Canada, investigates the role of inputs from the ventral hippocampus (vHIP) and mPFC to the nucleus accumbens (NAc) in fear generalization during a Pavlovian conditioning paradigm. Using fiber photometry to image in vivo calcium activity in male and female mice, the team found that neural activity in both the vHIP✉NAc and PFC✉NAc encodes foot-shock and differentiates threat-predictive from neutral cues in a sex specific manner. Taken together, these preclinical models show divergent neurocircuitry between susceptible and resilient individuals at the level of behavior, neuromodulatory systems, and individual circuits, offering insight into early identification of at-risk individuals and possible targets for the prevention and treatment of neuropsychiatric diseases in the future.

Speakers

Dani Dumitriu
Columbia University

Eva Mikics
Institute of Experimental Medicine

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5 Subsessions

- **Cognitive risk factors of vulnerability to post-traumatic stress disorder**
  8:30 AM - 8:54 AM, Jun 29
- **Dorsal peduncular cortex activity influences anxiety-like behaviors in mice**
  8:54 AM - 9:18 AM, Jun 29
- **Modeling Susceptibility and Resilience to PTSD in rats**
  9:18 AM - 9:42 AM, Jun 29
- **Overactivation of the prelimbic to basolateral amygdala pathway in mediating trait vulnerability in a mouse model of acute social defeat stress**
  9:42 AM - 10:06 AM, Jun 29
- **Sexually dimorphic neural encoding of threat discrimination in nucleus accumbens drives suppression of reward behavior**
  10:06 AM - 10:30 AM, Jun 29

Symposium 19: Cannabinoids as mediators for resilience or vulnerability to substance use disorder and stress

8:30 AM - 10:30 AM, Jun 29

Strategy Room 3

Symposiu…

Substance use disorders (SUD) and stress are highly comorbid and reciprocal. SUDs are characterized by cycles of drug use, abstinence, and relapse and stress can impact each stage of the cycle. Conversely, drug use and withdrawal induce negative affect and heighten stress responsivity. Thus, it is important to understand the relationship between stress and SUD as identifying key mediators of this relationship can yield promising therapeutic targets. Endogenous and exogenous cannabinoids are effective modulators of both stress- and reward-related behaviors. Cannabinoid signaling has a significant role in promoting stress buffering and alterations in the endocannabinoid system have been associated with resilience to stress and trauma. Additionally, cannabinoid signaling can regulate motivation for both natural and drug rewards, reward-based learning and reward-cue encoding, and relapse-like behavior in rodents. Therefore the endocannabinoid system is ideally positioned to mediate synaptic plasticity underlying both stress responsivity and drug-related behaviors. However, how endogenous or exogenous cannabinoids contribute to the presentation of addiction-related and negative affect behaviors, or how this system may be leveraged for novel therapeutics, is poorly understood. This is why it is important to integrate data from pre-clinical animal models, which are critical to defining cannabinoid-dependent changes in neurocircuitry that mediate these dysregulated behaviors, and clinical data from human SUD populations to identify the role that cannabinoid signaling plays in addiction vulnerability and stress regulation. This panel will highlight novel clinical and preclinical research on the role that endogenous and exogenous cannabinoids play in addiction and stress/negative affect. Jayme McReynolds (University of Cincinnati) will discuss how repeated stress at the time of cocaine self-administration increases cocaine intake and results in long-lasting increases in drug-seeking behavior in rats. She will also discuss how mesolimbic and prefrontal cortical endocannabinoid signaling mediate the effects of stress on drug-taking and -seeking behavior. Sara Kroll (University of Zurich) will show recent findings of an altered endocannabinoid system in human cocaine and opioid addiction at basal levels and after acute stress-induction. Leah Mayo (University of Calgary) will highlight clinical neural, behavioral, and molecular data illustrating how early life adversity impacts vulnerability to developing a SUD and highlight the endocannabinoid system as a potential marker of SUD resilience following chronic stress exposure. Jacqueline-Marie Ferland (Icahn School of Medicine) will present data on the therapeutic potential of cannabidiol (CBD) for cue-induced anxiety and heroin-seeking. She will also present the impact of CBD on endocannabinoid and lipid substrates in the nucleus accumbens shell, a region critically involved in drug self-administration and affective behaviors. Together, these presentations will provide an overview of our current understanding as to how cannabinoids influence and respond to stress and drugs of abuse.

Speakers

Jacqueline-Marie Ferland

Icahn school of medicine at Mount Sinai

Jayme McReynolds

University of Cincinnati College of Medicin

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4 Subsessions

● Endocannabinoid regulation of cocaine taking and seeking behavior in rats with a history of repeated stress

8:30 AM - 9:00 AM, Jun 29

● Endocannabinoid plasma levels with and without stress induction in chronic cocaine and prescription opioid users

9:00 AM - 9:30 AM, Jun 29

● The endocannabinoid system as a potential biomarker of resilience to the development of a substance use disorder following early life adversity

9:30 AM - 10:00 AM, Jun 29

● Cannabidiol alleviates cue-induced anxiety linked to endocannabinoid mechanisms in the nucleus accumbens

10:00 AM - 10:30 AM, Jun 29

Symposium 20: Astrocytes and cognition – non-neuronal players in myriad behaviours

8:30 AM - 10:30 AM, Jun 29

Strategy Room 2

Symposiu…

The preeminent goal of neuroscience is to understand how neural circuits contribute and control physiological functions and behavioural outputs. As such, neuroscientific research has focused on the neuron as the functional unit of these circuits, from molecule through to brain-wide circuitry. However, a non-neuronal cell type that makes up a large proportion of the cells in the brain is the astrocyte. The most well-understood roles of astrocytes are those of providing structural support, metabolic interfacing between the circulatory system and the brain, and supporting neurotransmission at the synapse via the recycling of neurotransmitters, particularly glutamate. Alongside pre- and post-synaptic neurons, these cells make up the â€œtripartite synapseâ€ through which neurons and astrocytes communicate. As a result, astrocytes are intimately involved in synapse formation, modulation, and elimination across the lifespan. It is surprising, therefore, that relatively little is known about how astrocytes mediate behaviour and cognition. The purpose of this symposium, therefore, is to bring together researchers working in this inchoate field of astrocytes and behaviour. Current research shows that astrocytes play greater roles in cognition than previously believed. Astrocytes, while not capable of firing action potentials, release â€œgliotransmittersâ€, compounds which modulate neuronal and glial activity. These compounds are highly varied but include brain-derived neurotrophic factor (BDNF), purines, glutamate/glutamine, D-serine, and GABA. While it is now appreciated that astrocytes are important for synapse formation, plasticity, and function, in-depth explorations into their roles in behaviour are in their relative infancy. Recent findings suggest roles for astrocytes in myriad behaviours including memory, sleep, feeding, fear, sensorimotor activity, and other cognitive processes.This symposium will feature four 20-minute talks (allowing for ~10-minute Q&A for each speaker) in which speakers will highlight recent investigations into the roles of astrocytes in different domains of behaviour. Dr. Dilek Colak (Weill Medical College, Cornell University, USA) will speak about autism spectrum disorder (ASD) astrocytes and the influence of ASD-patient derived astrocytes on ASD-like behaviour, as well as memory deficits, when transplanted into healthy mice. She will further present non-disease examples where astrocytes with disrupted RNA degradation pathway led to anxiety in mice. Dr. Giannina Descalzi (University of Guelph, Canada) will present on astrocyte-neuron interactions in the pain-induced neuroplasticity and the expression of pain behaviours in mice. Dr. Inbal Goshen (The Hebrew University, Israel) will present recent evidence of involvement of astrocytes in reward and memory encoding. Finally, Dr. Paul Sheppard (Western University, Canada) will discuss work exploring the influences of dentate gyrus astrocytes on pattern separation, the cognitive process of keeping similar memories distinct from one another.We present that these non-neuronal brain cells are complex and intimately integrated into neuronal circuitry underlying behaviour. Through this symposium, we endeavour to suggest astrocytes require further appreciation and investigation in neuroscience and behavioural sciences.Tentative talk titles:Dilek Colak - Astrocyte pathology and behaviorGiannina Descalzi - Astrocyte-neuronal lactate shuttling in the mouse cingulate cortex drives chronic pain developmentInbal Goshen - Astrocytes in high brain functionPaul Sheppard - The influence of dentate gyrus astrocytes on spatial pattern separation

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Speakers

Paul Sheppard
Western Univ.

Timothy Bussey
Western Univ.

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4 Subsessions

- **Astrocytic mechanisms in regulation of synaptic plasticity and behavior**
  8:30 AM - 9:00 AM, Jun 29
- **Astrocyte-neuronal lactate shuttling in the mouse cingulate cortex promotes chronic pain development**
  9:00 AM - 9:30 AM, Jun 29
- **Astrocytes in high brain function**
  9:30 AM - 10:00 AM, Jun 29
- **Dentate gyrus astrocytes modulate spatial pattern separation**
  10:00 AM - 10:30 AM, Jun 29

10:30 AM

Break

10:30 AM - 11:00 AM, Jun 29
Great Room A
Networking Br…

11:00 AM

E&T Career Development Symposium: Optimizing for an Enjoyable Career:

Universal Strategies for Professional Success

11:00 AM - 1:00 PM, Jun 29

Great Room C

Workshop

The range of career paths relevant to IBNS members is as diverse and interdisciplinary as our field itself. Identifying and navigating these paths can be overwhelming and intimidating without proper mentorship, education, and proactive insight, even for individuals advanced in their career. In this workshop, hosted by the IBNS Education and Training Committee, participants will hear from a panel of speakers about their experiences across diverse career paths. Panelists and attendees will reflect on universal non-didactic skills commonly shared across scientific careers, and discuss how IBNS members can support each other at various career stages. Through this session, attendees can expect to gain an understanding of 1) how to identify career paths that align with their values, interests, and skills; 2) the importance of proactive career planning and preparation; and 3) how to foster professional networks through mentors and peers. This career development symposium is intended to be useful for IBNS members at various career stages, from undergraduates to faculty and professionals.

Moderator

Rachel Navarra
Rowan Univ.

Speakers

Erin Calipari
Vanderbilt

Sofiya Hupalo
Program Officer
National Institute of Mental Health

Trent D Lund
President
Stoelting Co.

Becky Fallon
Scientific Sales Consultant
Inscopix a Bruker Company

1:00 PM

Lunch on Own

1:00 PM - 2:00 PM, Jun 29

Networking Br…

2:00 PM

Symposium 21: Transforming the preclinical treatment development pipeline with assays of circuit engagement relevant to cognition

2:00 PM - 4:00 PM, Jun 29

Great Room C

Symposiu…

Over the past several decades, the neuroscience field has made technological discoveries that have enabled a deeper, mechanistic understanding of behaviors and circuits that support mental health. Despite the wealth of available technologies, progress toward developing novel safe and effective treatments for mental illness has been lagging. To guide the selection of lead candidates for treatment development, the preclinical drug discovery pipeline relies on screening assays to demonstrate whether an intervention engages the brain targets predicted to mediate its effects on behavioral processes related to clinical outcomes. Commonly used rodent behavioral assays including the forced swim test, tail suspension test, elevated plus maze, novelty induced suppression of feeding, and open field test may be useful for evaluating the effects of novel ligands on brain penetrance and/or dose response relationships. However, these assays have not been found to reflect specific neural processes and are poor predictors of clinical efficacy of novel compounds. In addition, relationships between these task measures and behavioral or biological deficits in human patients are not known. The poor predictive validity of current animal models in drug development for mental illness impedes the translation of preclinical data into clinical research, rendering the drug discovery process more costly and inefficient. There is a critical need for translational assays that reflect functional outputs of neural circuits that support mental health related processes in humans. The National Institute of Mental Health supports research aiming to develop quantitative neurophysiological and behavioral measures that engage functionally relevant neural processes and can be used as preclinical assays for target validation and therapeutic screening. Given currently available treatments are largely ineffective at treating cognitive dysfunction, a core symptom of many mental illnesses, measures that tap into cognitive domains are essential for therapeutic development research. Therefore, the goal of this symposium is to describe examples of novel neurophysiological and behavioral measures that interrogate distinct cognitive processes and their underlying neural circuit mechanisms. Dr. Gregory Carr will describe how a modified version of the rodent continuous performance test is being combined with behavioral phenotyping using DeepLabCut to dissociate the effects of novel compounds on vigilance vs. motivational processes [â€˜Utility of translational assays of sustained attention for developing novel cognitive enhancersâ€™]. Dr. Sara Burke will present on approaches her group has developed to model aspects of clinical neuropsychological tests in rodents and link performance in these tests with combined invasive neurophysiological recordings from the hippocampus and prelimbic frontal cortex with non-invasive electroencephalogram (EEG) measures [â€˜Behavioral and neurophysiological assays for closing the preclinical to human translation gap in the treatment of mental health disordersâ€™]. Dr. Sohal will discuss his groupâ€™s efforts to optimize EEG-based measures that link rule shifting task-evoked gamma oscillations to specific prefrontal cortical circuit phenomena using genetically encoded voltage indicators and optogenetic manipulations [â€˜Targeting gamma synchrony to develop treatments for schizophrenia-associated cognitive deficitsâ€™]. Dr. Thilo Womelsdorf will describe how a kiosk station paradigm measuring a range of cognitive and motivational processes in non-human primates is being combined with neurophysiological recordings and neurochemical sampling to identify neural â€˜fingerprintsâ€™ associated with different pro-cognitive pharmacological agents [â€˜Tracking neural and behavioral correlates of multiple RDoC constructs in nonhuman primatesâ€™]. Collectively, this symposium will highlight efforts to develop a suite of in vivo behavioral and physiological measures reflecting circuit engagement. By bridging the micro-macro spatial scales, this work is beginning to reveal how local circuit processes impact network dynamics in the context of clinically relevant behaviors. As such, this represents a foundational step toward identifying translational assay measures that may be used as therapeutic screens in animals and adapted for use in humans in the future.

Speaker

Sofiya Hupalo
Program Officer
National Institute of Mental Health

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4 Subsessions

● Utility of translational assays of sustained attention for developing novel cognitive enhancers
2:00 PM - 2:30 PM, Jun 29

● Behavioral and Neurophysiological Assays for Closing the Pre-clinical to Human Translation Gap in the Treatment of Mental Health Disorders
2:30 PM - 3:00 PM, Jun 29

● Gamma synchrony biomarkers for prefrontal-dependent cognition
3:00 PM - 3:30 PM, Jun 29

● Identifying the neurophysiological and neurochemical fingerprint of receptor-specific drugs using a multi-task RDoC paradigm in nonhuman primates
3:30 PM - 4:00 PM, Jun 29

Symposium 22: Dissecting the role of neuronal primary cilia through behavioral analysis

2:00 PM - 4:00 PM, Jun 29

Strategy Room 3

Symposiu…

Primary cilia are small cellular appendages found on most cell types including neurons and cells throughout the central nervous system. Nearly all neurons have a primary cilium that concentrates receptors for key neuromodulators and yet we have only an emerging understanding of how cilia affect neuronal signaling, physiology and, ultimately, behavior. This symposium will highlight new findings that reveal how defects in cilia formation and function contribute to disease and investigate how neuronal primary cilia contribute to behaviors. The neuronal primary cilium is a microtubule-based organelle of approximately 10 microns in length that projects from the cell body membrane. Despite the small size of primary cilia, genetic disorders disrupting cilia function, collectively called ciliopathies, are associated with numerous neural defects. Patients with ciliopathies exhibit sensory dysfunction, changes in eating behaviors and obesity, cognitive deficits, and behavioral disturbances. While our understanding of the role of cilia in neuronal development and function has increased, many unanswered questions remain, particularly the role cilia play on post-mitotic neurons. Further research is now investigating the role of this organelle on post-mitotic neurons. These studies seek to elucidate the functional role of cilia and how cilia, once considered rudimentary organelles, affect brain physiology and behavior. This diverse symposium will highlight new findings, connecting neuronal cilia to behaviors including learning and memory, motivation. addiction and feeding behavior. Presenters in this symposium take advantage of multiple genetic manipulations and behavioral tasks to evaluate the contribution of ciliary signaling to neuronal function. Given the broad nature of the meeting, these talks will also highlight the cellular organization of neuronal cilia and address several of the specific G-protein coupled receptors that localize to these structures. Nick Berbari, Ph.D. will present work from his lab addressing the role of ciliary signaling and its contributions to feeding behaviors. Developmentally sonic hedgehog signaling is critical for pattern development and well recognized as being mediated through primary cilia. In his talk, Dr. Berbari will present data on changes to feeding behaviors when signaling is altered either through ciliary GPCR antagonists and through genetic manipulations of the hedgehog pathway. Jiami Guo, Ph.D. will discuss the role of primary cilia on synaptic connections and impacts on social dominance behaviors. She will present data from experiments using an AAV-viral (AAV-Cre injection in Arl13blox/lox mice) mediated approach, to specifically induce ciliary deficiency in the mPFC at adolescent or adult stage. In these experiments they find mice with ciliary defects from adolescent stage show significantly higher social dominance ranking as adults compared to the vehicle control group. Their results show that the lower ranked mice with ciliary deficiency show significantly increased social dominance ranking compared to the vehicle control groups and suggest that primary cilia help modulate neuronal plasticity in mPFC and its controlled social dominance behaviors. Toniesha Stubbs, a graduate student at The Ohio State University, will present data showing the behavioral consequences of altering ciliary signaling in D1 Dopamine Receptor expressing neurons. Using a series of behavioral tests, they find that disrupting D1 in primary cilia leads to increased body weight through reducing locomotor behavior without altering food intake, thereby implicating ciliary signaling in motivated behaviors. Finally, Jeremy McIntyre, Ph.D. will present data on the role of primary cilia in reward associated behaviors. Data from mice with cell-type specific cilia deletions will be presented that show differences in behavioral phenotypes in response to psychostimulants. We hope that this novel symposium will raise awareness of the crucial roles played in the CNS by these previously unappreciated organelles. Despite their small size, primary cilia are clearly contributing to neuronal function and behavior, and this symposium will help more neuroscientists appreciate their importance.

Speakers

Jeremy McIntyre
Assistant Professor
Univ. of Florida

Kirk Mykytyn
The Ohio State Univ.

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4 Subsessions

● Ciliary hedgehog signaling in adult feeding behavior
2:00 PM - 2:30 PM, Jun 29

● Primary Cilia Signaling Shapes Excitatory Neural Circuit formation
2:30 PM - 3:00 PM, Jun 29

● Neuron specific contributions of ciliary signaling to psychostimulant induced behaviors
3:00 PM - 3:30 PM, Jun 29

● Disruption of dopamine receptor 1 ciliary localization is associated with reduced locomotor activity and obesity
3:30 PM - 4:00 PM, Jun 29

Symposium 23: Considering individual and sex differences in preclinical models of Substance Use Disorders
2:00 PM - 4:00 PM, Jun 29
Strategy Room 2

Symposiu…

While individuals diagnosed with Substance Use Disorder (SUD) periodically abstain from drug use, relapse rates remain strikingly high even in the face of negative consequences. The detrimental impact of SUD for affected individuals, their families, and society necessitates better treatment approaches, which presently do not prevent relapse for a vast majority of diagnosed individuals. Here we present recent advances in preclinical rodent models of drug-use, drug-seeking and relapse, as well as their impact on the brain, that have identified individual and sex differences that parallel findings from clinical studies. We describe how such approaches have the potential to identify novel brain mechanisms and druggable targets that have increased clinical relevance for preventing and/or treating relapse to substance use in humans. Dr. Jennifer Bossert (National Institute on Drug Abuse) will describe a rat model of opioid maintenance therapy that allows testing of novel opioid agonists on different relapse-related behaviors. The buprenorphine validated model identified that the mu opioid receptor (MOR) partial agonist TRV130 mimics buprenorphineâ€™s effects in male rats but is less effective in females. The mixed MOR and nociceptin peptide receptor agonists BU08028 and AT-201 produce sex-specific effects on some measures of relapse. The clinical significance of these findings will be discussed, as well as future characterizations of other novel drug candidates.Dr. Rutsuko Ito (University of Toronto) will present data showing individual and sex differences in approach-avoidance bias and compulsive ethanol seeking. She will present data that male rats (and humans) exhibit stronger approach bias (for natural reward) under motivational conflict, which is strongly associated with compulsive or problematic ethanol drinking that persists despite the presence of increasing foot-shock intensity. In contrast, conflict-avoidant female rats display higher intake and preference for ethanol than males in voluntary homecage drinking, which preliminary evidence suggests is mediated by the ventral hippocampus.Dr. Donna Calu (University of Maryland School of Medicine) will describe individual and sex differences in behavioral flexibility before and after opioid experience. Before opioid experience male sign-tracking rats develop behavioral flexibility while female sign-tracking rats do not. This behavioral flexibility in male sign-trackers is mediated by dorsomedial striatal endocannabinoid receptor signaling. However after opioid self-administration experience, individual and sex differences in behavioral flexibility are no longer evident, with both male and female sign-trackers showing high levels of opioid relapse that persists despite negative consequences. Dr. Jibran Khokhar (Schulich School of Medicine and Dentistry, Western University) will present data from rats exposed to different types of vaporized cannabis during adolescence, and the impact of this exposure on sign-tracking and active avoidance behaviors in adulthood. This will be presented in conjunction with findings from functional and structural connectivity-based MRI studies in these rats that identify the neural correlates of these behavioral outcomes. Furthermore, he will also explore the impact of manipulating study parameters on sign-tracking behaviors, and how some of these parameters impact our ability to both study and understand the long-lasting impacts of developmental drug exposure on reward learning and future risk for substance use. Discussion in this symposium will focus on relating findings across labs to inform next steps and new directions for preclinical models of SUD.

Speakers

Donna Calu
Univ. of Maryland School of Medicine

Jibran Khokhar
Associate Professor and Canada Research Chair in Translational Neuropsychopharmacology
Western University

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4 Subsessions

● Effects of the partial μ-opioid receptor (MOR) agonist TRV130, the buprenorphine analog BU08028, and the mixed MOR/nociceptin (NOP) receptor agonist AT-201 on relapse-related behaviors in a rat model of opioid maintenance therapy
2:00 PM - 2:30 PM, Jun 29

● Individual and sex differences in approach-avoidance bias and their relationship to ethanol-seeking in rats.
2:30 PM - 3:00 PM, Jun 29

● Individual and sex differences in behavioral flexibility before and after opioid experience
3:00 PM - 3:30 PM, Jun 29

● Long-term effects of adolescent cannabis vapour exposure on Pavlovian sign-tracking and functional and structural connectivity in adult rats.
3:30 PM - 4:00 PM, Jun 29

4:30 PM

Keynote Speaker: Making memories in mice
4:30 PM - 5:30 PM, Jun 29
Great Room C

Keynote

Making memories in mice. Understanding how the brain uses information is a fundamental goal of neuroscience. Several human disorders (ranging from autism spectrum disorder to PTSD to Alzheimer's disease) may stem from disrupted information processing. Therefore, this basic knowledge is not only critical for understanding normal brain function, but also vital for the development of new treatment strategies for these disorders. Memory may be defined as the retention over time of internal representations gained through experience, and the capacity to reconstruct these representations at later times. Long-lasting physical brain changes ('engrams') are thought to encode these internal representations. The concept of a physical memory trace likely originated in ancient Greece, although it wasn't until 1904 that Richard Semon first coined the term 'engram'. Despite its long history, finding a specific engram has been challenging, likely because an engram is encoded at multiple levels (epigenetic, synaptic, cell assembly). My lab is interested in understanding how specific neurons are recruited or allocated to an engram, and how neuronal membership in an engram may change over time or with new experience. Here I will describe data in our efforts to understand memories in mice.

Speaker

Sheena Josselyn
Hospital for Sick Children/Univ. of Toronto

6:00 PM

Social Hour

6:00 PM - 7:00 PM, Jun 29
Fallsview Studio ABC and Foyer

Networking Br…

Networking. Cash bar.

7:00 PM

Awards Banquet: Dinner and Entertainment

7:00 PM - 11:59 PM, Jun 29
Great Room A & B

Networking E…

ROCKIN' Awards Banquet

Join us for the traditional IBNS Awards ceremony and dinner followed by dancing and the fabulous BAM! neuroscientist rock band.

Themed attire: Rock your lab coats!

BAM! is a 3-piece rock band from London (Ontario) Canada. The members of the band (Adrian Owen, Tim Bussey, Sidath Rankaduwa) are all cognitive/behavioural neuroscientists at Western University who care passionately about science, how science is perceived by the public and (of course) music.

For those who prefer a quieter venue for networking, the Fallsview ABC will remain open after dinner. Please feel free to enjoy the view of the Falls.

Fri, Jun 30, 2023