

**uOBMRI
ANNUAL
REPORT
2018-
2019**



uOttawa

Institut de recherche
sur le cerveau

Brain and Mind
Research Institute

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CONNECT. EXCITE. HEAL

The University of Ottawa Brain and Mind Research Institute (uOBMRI) is Ottawa's largest assembly of basic researchers and clinician scientists that are focused on brain and mind related health.

The uOBMRI helps orchestrate research in a collaborative and innovative fashion by overcoming the barriers that exist between research at the basic and clinical levels. It does so by helping to coordinate research efforts among its research members at the various uOttawa faculties, local hospitals, affiliated networks and local research institutes.

The uOBMRI supports its members by enhancing the research environment, facilitating access to resources and expanding programs in order to attract the best candidates.

We are working together to promote awareness and education of brain and mind related health in the community.

INTRODUCING DR. RUTH SLACK



Dr. Slack's research focuses on developing novel strategies to restore the damaged brain, in the context of neural degeneration and brain injury.

She is highly respected among her peers as a researcher and leader, directing an internationally recognized research program. Dr. Slack has published over 120 research articles with over 15,000 citations.

MESSAGE FROM THE DIRECTOR

Since initiating my role as the Director of the uOBMRI on June 1st, 2019, I have had the pleasure of meeting with all of our pillar leads, members of our partner faculties and institutes, as well as our community stakeholders. It has been a real privilege to learn about the highly interactive collaborations and the tremendous impact our members are making towards brain health research.



The uOBMRI is home to innovative research, clinical treatments and stellar trainees; and I am honoured to share this message with our partners, donors and community. In the past year, we had the opportunity to host Brain Health Awareness Week and showcase our research efforts to our Ottawa community. We've also hosted various knowledge mobilization workshops including the Neural Dynamic summer school with the goal of enhancing the trainee experience.

In the coming months, the uOBMRI will be undergoing an institute-wide strategic planning process to set out priorities and directions for the next five years. Our objective is to define our future priorities that are crucial to facilitate productive collaborations in order to deliver ground-breaking discoveries. The first step of our strategic planning process requires the collection of accurate data to enable us to objectively evaluate our strengths, areas that require further support, and new opportunities for the future. Recently, through our surveys and consultations, we are hearing crucial feedback from our uOBMRI Community, including researchers, pillar leads, trainees, our administration staff and community members. We will continue to keep you updated on our strategic planning progress.

This is an exciting time for the uOBMRI and we look forward to working together to thoughtfully and successfully plan the future of the uOBMRI.

Thank you,

Dr. Ruth Slack
uOBMRI Director

MESSAGE FROM OUR uOBMRI TEAM

Over the past year, the uOBMRI administrative team has worked diligently to keep the momentum going as we transitioned and excitedly welcomed our new Director. We are a small but mighty team and look to build on the success of the uOBMRI through communication, outreach and support of our many important stakeholders.

We look forward to setting new goals in the next year that will allow us to build on a solid foundation.

All the best,
The uOBMRI team



THANK YOU TO DR. MICHAEL SCHLOSSMACHER

On behalf of the many stakeholders of the uOBMRI, we would like to personally thank Michael Schlossmacher for stepping in as Interim Director on Sept 1, 2018 and leading the many efforts to help pave the way for new leadership.

He was instrumental in sharing his knowledge on the breadth of research going on among collaborators, the needs of our stakeholders and the extent of outreach and awareness going on in our community.

Thank you Michael, your experience and guidance was invaluable.

Thank you,

Dr. Ruth Slack & the uOBMRI Team



OUR MEMBERS AT A GLANCE

"The sense of community and commitment to collaboration are very strong at the uOBMRI. While many of the scientists are coming from diverse and somewhat disparate fields, they share the same mentality of breaking down silos and working together to tackle important questions."

-Maxime Rousseaux, PhD, uOBMRI, OHRI

252

TOTAL MEMBERS

From across multiple faculties, partners and areas of expertise

8

FACULTIES

Including: uOttawa Faculties of Medicine, Science, Social Sciences, Health Sciences, Education, Art, Engineering and Law.

6

PARTNERS

Including: Bruyère Continuing Care/BRI, CHEO/CHEO-RI, The Royal/IMHR, Hôpital Montfort /IRHM, The Ottawa Hospital/OHRI, and Carleton University



WHO ARE WE?

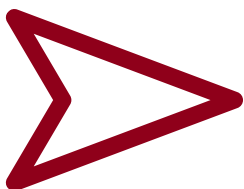


We currently have over 250 scientific members. Our members include clinicians, clinician scientists, fundamental researchers from across numerous specialties, who work to understand the nervous system (central and peripheral) in order to make an impact on brain health.

To view our membership profiles, **please visit our website at [here](#).**

MEMBER BENEFITS:

- Opportunities for project funding based on approval from the Scientific Council
- Opportunities to participate in collaborative uOBMRI Projects
- Programs and groups within the uOBMRI that facilitate interactions and provide direction to brain research activities within Ottawa
- **And more!**



**Learn how to join uOBMRI?
Contact Us: uobmri@uottawa.ca**



ACROSS THE SPECTRUM

NOTE FROM MSRG CO-CHAIRS

The uOBMRI-Multiple Sclerosis Research Group is uniquely positioned to further the field of MS research given the broad and diverse experience of our researchers coupled with a collaborative spirit. The work of our uOBMRI-MSRG members spans the spectrum of cutting edge research from basic science on cellular mechanisms of injury and neural repair to outcome evaluation of new and innovative therapies at the uOBMRI partner hospitals in Ottawa.



Dr. Mark S. Freedman, HBSc MSc MD CSPQ
FANA FAAN FRCPC

Dr. Lisa Walker, C. Psych



REGULATING GENES

TO IMPROVE CLINICAL TREATMENTS

Dr. Rashmi Kothary is investigating how molecules called microRNAs regulate gene networks responsible for the process whereby oligodendrocytes become myelin (the coating around nerve fibres in the brain and thought to be the cause of inflammation behind MS).

This is an important step towards the development of better treatments for MS.

Learn more about Dr. Kothary's and his lab's efforts here.

OF CUTTING EDGE RESEARCH



INTERNATIONAL COLLABORATIVE TO EXAMINE NEW STEM CELL THERAPIES

Dr. Mark Freedman and the Stem Cell Team are examining the feasibility, safety and potential benefit of autologous mesenchymal stem cell therapy (MSCT) for various forms of MS. MSCT does not involve immunoablation and thus may be a more tolerable treatment option compared to other stem cell procedures.

This project is the Canadian arm of a larger international initiative to evaluate outcomes in those undergoing MSCT.



MOBILIZING PEOPLE WITH MS FOR IMPROVED OUTCOMES

Dr. Lara Pilutti and members of her Clinical Exercise Physiology Laboratory are working towards improving outcomes in those with progressive forms of MS. Exercise training improves mobility in those with MS but those with substantial walking impairment have often been excluded.

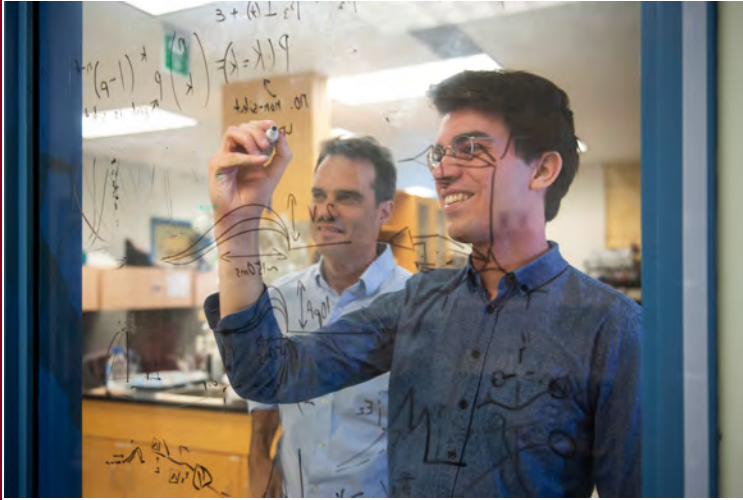


Functional electrical stimulation (FES) cycling involves applying mild electrical stimulation to muscle groups to promote leg cycling movement. The researchers anticipate that this approach may improve walking, quality-of-life and participation in everyday activities for those with progressive forms of MS. **Read her latest publications here.**



... TO BEDSIDE

CRACKING THE NEURAL CODE



NOTE FROM THE CENTRE

FOR NEURAL DYNAMICS

The Centre for Neural Dynamics (CND) is an initiative from the faculties of Medicine, Social Sciences and Science. Its current members are internationally recognized scientists who specialize in neural networks. Because networking lies at the root of most outcomes for brain disorders, it is critical to study it within the framework of the uOBMRI's research focuses.

The current strengths of the CND will be leveraged to understand how brain circuits are affected by various diseases including stroke, depression and Parkinson's disease.

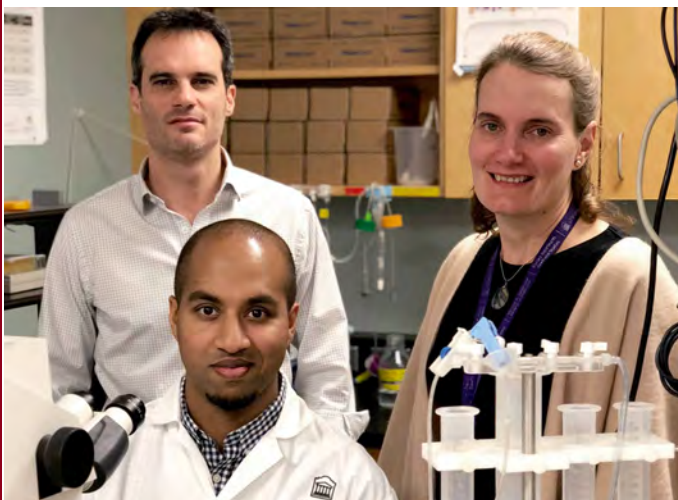
CND ACCOMPLISHMENTS AT A GLANCE

DECODING THE NEURAL NETWORK

Understanding the neural code is to attribute proper meaning to temporal sequences of action potentials. Dr. Richard Naud's research reported a simple neural code based on distinguishing single spikes from spikes in close succession, commonly called "bursts."

By separating these two types of responses, his research shows that ensembles of neurons can communicate rapidly changing and graded information from two sources simultaneously and with minimal cross-talk.

Discover more here.



STEM CELLS CAN BECOME NEURONS WITHIN THE STROKE-INJURED BRAIN

The team's work published in Stem Cell Reports shows that stem cells in the adult brain can migrate to the site of stroke damage and become neurons. Although limited in number, these new cells can fire action potentials and are functionally connected with surrounding networks, all defining features of fully functioning neurons. **Learn more.**

BUILDING THE NETWORK OF FUTURE NEURAL DYNAMICS RESEARCHERS

In June 2018, the Centre for Neural Dynamics hosted its eighth Summer School of the Centre of Neural Dynamics (SSCND). Led by the CND researchers, SSCND has helped hundreds of local and international trainees develop their skills in neural data analysis and mathematical modelling by hosting a 2-week program ranging from lectures to interactive laboratory sessions for the past 10 years.



PIONEERING VIRTUAL REALITY USE TO TREAT PARKINSON'S PATIENTS

Through the use of Virtual Reality (VR) technology, Dr. Adam Sachs and his team have pioneered a cutting-edge technique that increases the accuracy and effectiveness of deep brain stimulation, an innovative surgery used to improve symptoms in Parkinson's patients.

The technique developed to improve the accuracy of the game-changing surgery for patients with Parkinson's and other neurological diseases and represents a world-first for the Ottawa Community.

Read more here.



The uOBMRI is proud to support the next generation of brain health researchers by distributing over 20 trainees fellowships and awards in the past year.

Trainee awards encourage excellence in both basic and clinical research at graduate and post-doctoral levels. These competitive awards attract top trainees to cutting edge laboratories where they can become tomorrow's leaders in medical research. Our scientists and clinicians are building a brighter future by training the next generation of brain health researchers in Canada.

Here's a look at our trainee awardees by the numbers:



- 2 Undergraduates**
- 14 Graduate**
- 6 PhD**
- 3 Post-Doctoral Fellow**
- 3 Research Associate**

"Graduate students and postdoctoral fellows are the beating hearts of academic research. They are the ones who do the hard work, learn difficult and deep concepts, solve challenges; all to relentlessly push our knowledge boundaries"

-Dr. Jean-Claude Béique
Director, Neuroscience Graduate Program

Trainee Awardee Affiliations

Pillars

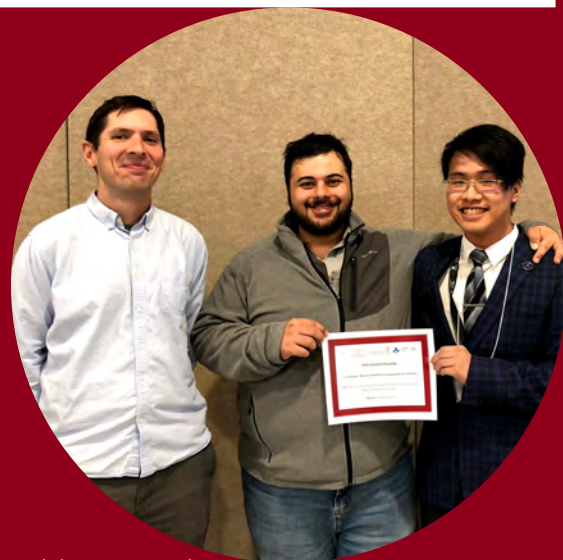
- Memory and Cognition
- Parkinson's Disease
- Multiple Sclerosis
- Neural Dynamics
- Stroke
- Mental Health

Faculties

- Faculty of Science
- Faculty of Medicine
- Faculty of Social Sciences
- Faculty of Health Sciences

Partners

- Carleton University
- The Royal's Institute of Mental Health Research
- Ottawa Hospital Research Institute
- Bruyère Research Institute



Supporting trainees directly impacts groundbreaking discoveries and new therapies, now and for the future



A sincere thank you to our contributors for generously supporting trainees since 2012. It is our honour to play a part in shaping the next generation of researchers.

The Crabtree Family
The Toth Family
Ms. Audrey Grant
The Poole Family

The Hayter Family
The Haffner Family
The Marcogliese Family
The Krembil Foundation

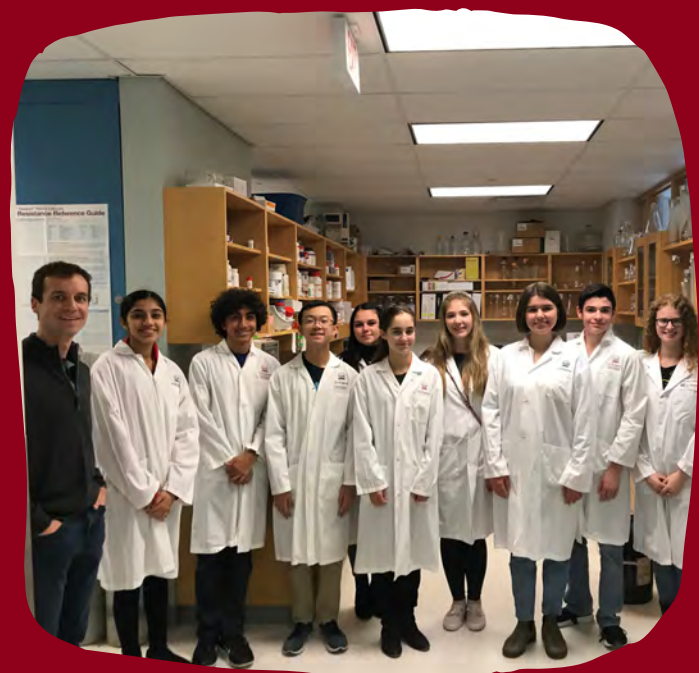


OUR COMMUNITY

From lab tours showcasing the work we do to outreach events that educate and inform, our goal is to make research accessible and understandable to improve brain and mind health and awareness.

INSIDER ACCESS TO THE uOBMRI: DOORS OPEN OTTAWA

In May 2018, the uOBMRI, alongside the Faculty of Medicine, welcomed over 250 visitors to Roger Guindon Hall to tour our facilities as a part of Doors Open Ottawa. Attendees had the opportunity to learn more about Stroke, Parkinson's and Neural Dynamics research through lab tours, interactive workshops and presentations.



REACHING NEW RESEARCHERS: ENCOUNTERS WITH CANADA

The uOBMRI partnered with Encounters with Canada and Let's Talk Science to host over 100 high school students from across Canada for lab tours throughout the year. Students are encouraged to discover the exciting research taking place in uOBMRI labs while learning how they can build a future in scientific and medical research.



BRAIN HEALTH AWARENESS WEEK

5 AREAS OF RESEARCH PRESENTED

500+ ATTENDEES



MARCH FOR CONCUSSION

100+ ATTENDEES

1 KEYNOTE SPEAKER

2 LOCAL SPEAKERS



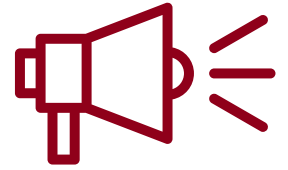
UOBMRI ACADEMY OF MINDFULNESS & CONTEMPLATIVE STUDIES CONFERENCE

1 KEYNOTE SPEAKER

8 LOCAL SPEAKERS

100+ ATTENDEES

KNOWLEDGE MOBILIZATION



In the past year, the uOBMRI has continued its efforts to connect scientists, physicians and the community by working with our partners to create collaborative and informative workshops, conferences and more.

Examples of uOBMRI KNOWLEDGE MOBILIZATION INITIATIVES

401 Smyth Rd.
Seminar Room 1421

Presents the
uOBMRI - David Park Colloquium Series
Featuring

Alfonso Abizaid, PhD
Professor, Department of Neuroscience at Carleton University, President for the Society for Neuroscience Ottawa Chapter

Kim Cornea, PhD, CPsych
Director, Clinical Programming and Research, Substance Use and Co-occurring Disorders Program, Royal Ottawa Mental Health Centre

Seminar Title:
"From Gut Hormones in Mice to New Targets for the Treatment of Addiction"

Learning Objectives:

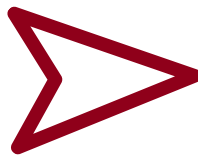
1. Describe brain reward circuitry and how it can be modulated by gut hormones like ghrelin and GLP-1
2. Present evidence pointing to the potential for analogs in decreasing cravings and consumption of alcohol and other substances with potential for abuse.
3. Describe a rapid access addiction medicine care model to improve access to care and reduced emergency department utilization for people with opioid and/or alcohol use problems
4. Recognize the importance of partnerships and seamless care pathways to improve outcomes.

Please contact Jennifer Jean-Louis at #8123 or jjeanlouis@uottawa.ca

Bruyère CHEO Montfort

INTRODUCING THE uOBMRI COLLOQUIUM SERIES

In 2019, the uOBMRI launched the uOBMRI Colloquium Series, dedicated to highlighting how our members are working together, from bench to bedside, to tackle brain health challenges. Each seminar showcases exciting research advancements from uOBMRI partners with the aim of connecting our vast research community.



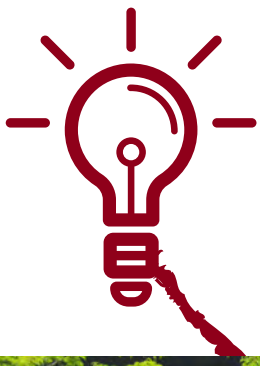
Want to learn more? Click here.

APPLIED DEEP LEARNING IN INTRACRANIAL NEUROPHYSIOLOGY WORKSHOP

In Spring 2019, Dr. Adam Sachs' lab held a workshop attended by over 40 trainees, researchers and industry members to introduce and advance their knowledge in applied deep learning technology. Led by Senior RA Dr. Chadwick Boulay, this workshop helped to familiarize attendees with the programming and techniques used in deep learning.



a uOBMRI Knowledge Mobilization Series Event



GUIDING THE NEXT GENERATION OF TRAINEES



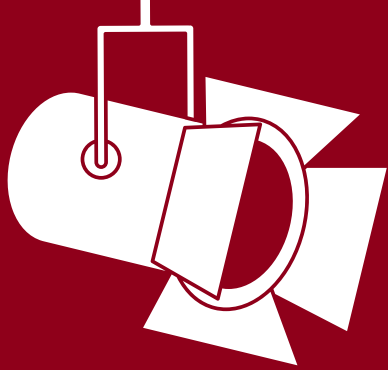
The **Summer School of the Centre of Neural Dynamics (SSCND8)** returned for its 8th year in June 2018. Led by the Centre for Neural Dynamics, SSCND8 helped 40 local and international trainees develop their skills in neural data analysis and mathematical modelling for a 2-week program ranging from lectures to interactive laboratory sessions.

In March 2019, the uOBMRI supported the Institut du Savoir Montfort's **Body and Mind Conference**, a full day bilingual event that explored the links between diabetes, heart and chronic diseases and mental health.



The **Young Researchers' Brain Health Research Day** was held in May 2019 and brought together the broad research community of the uOBMRI and The Royal's IMHR. The day featured a keynote address from Dr. Liisa Galea, a world-renowned leader on sex and hormone research and its impact on brain health. Exciting clinical and basic research were also highlighted as attendees heard from researchers and trainees from various uOBMRI partners.





u O B M R I SHOWCASE

*May 2018-May 2019



The Centre for Neuromuscular Disease named in honour of Dr. Éric Poulin

In April 2019, the Centre for Neuromuscular Disease was named in memory of Dr. Éric Poulin. His wife, Margo Brousseau's generous \$1 million gift will support neurological disease research at the Éric Poulin Centre for Neuromuscular Disease. **Learn more about the gift here.**

Dr. Tiago Mestre introduces made-in-Ottawa approach to Parkinson's care to Europe:

A personalized approach for Parkinson's care pioneered in Ottawa will soon be tested in Europe, thanks to a prestigious \$2.2 M grant from JPND, led by Dr. Mestre. This approach, called the **Integrated Parkinson's Care Network**, was developed by Drs. Tiago Mestre and David Grimes. **Learn more from the OHRI here.**



Developing comprehensive Concussion/mTBI guidelines and improving patient care

Led by Dr. Shawn Marshall, the Third Edition of the "Guidelines for Concussion/Mild Traumatic Brain Injury" were published in Spring 2019. These guidelines will give people strategies to help them better cope when a concussion does not heal according to their expectations. **Read about the impact of these guidelines here.**



Parkinson Research Consortium (PRC) awarded with the Research Excellence Team Award

In April 2019, the PRC was awarded the The Ottawa Hospital's Research Excellence Team Award. This award recognizes a team who has made a significant contribution to the research mandate of the hospital. Want to know more about the PRC? **Click here.**



uOBMRI SHOWCASE



Hanns Lochmüller, CRC Tier 1 in neuromuscular genomics and health joins CHEO-RI, TOH & the uOBMRI

Dr. Hanns Lochmüller, a neurologist and senior scientist recently recruited to CHEO Research Institute from the U.K. He will establish a "really exciting research program in neuromuscular genomics and health" at CHEO-RI in partnership with the uOBMRI and TOH. Learn more about his profile [here](#).

Dynamic Approach to Understanding Chronic Pain

From Carleton University Media: For nearly 10 years, Dr. Michael Hildebrand used spinal cord tissue from rats to record electrical signals travelling between neurons and study the molecules, present or absent, that control the delivery of pain signals to the brain. But thanks to a unique collaboration with Dr. Eve Tsai, Dr. Hildebrand's team is now capturing recordings from spinal cord neuron synapses using human tissue, something they believe has never been done before. [Discover more here](#).



Enhancing Potential Stem Cell Treatments for Stroke

From the OHRI: Imagine removing blood or skin cells from a patient after a stroke, turning them into powerful stem cells in the lab, and then transplanting them back into the same patient's brain so they can give rise to new neurons to repair the damage. This is the promise of induced pluripotent stem cell (iPSC) technology, and new research led by Dr. Jing Wang could help make it a reality. Dr. Wang's lab discovered that metformin, a diabetes drug, can stimulate neural stem cells derived from iPSCs, helping them integrate into the brain and give rise to more neurons. [Find more here](#).



Unraveling the links between Sleep, Memory and Aging

Dr. Stuart Fogel is dedicated to understanding the functions of sleep and its impact on memory and aging. In January 2019, his research was highlighted on CBC's The National, as a part of their series on sleep. [Watch the feature here](#).



RESEARCH FUNDING

23

AVERAGE H INDEX IMPACT

**Estimated between 2018-2019 period*

500+

2018-2019 PUBLICATIONS

**Estimated between 2018-2019 period*

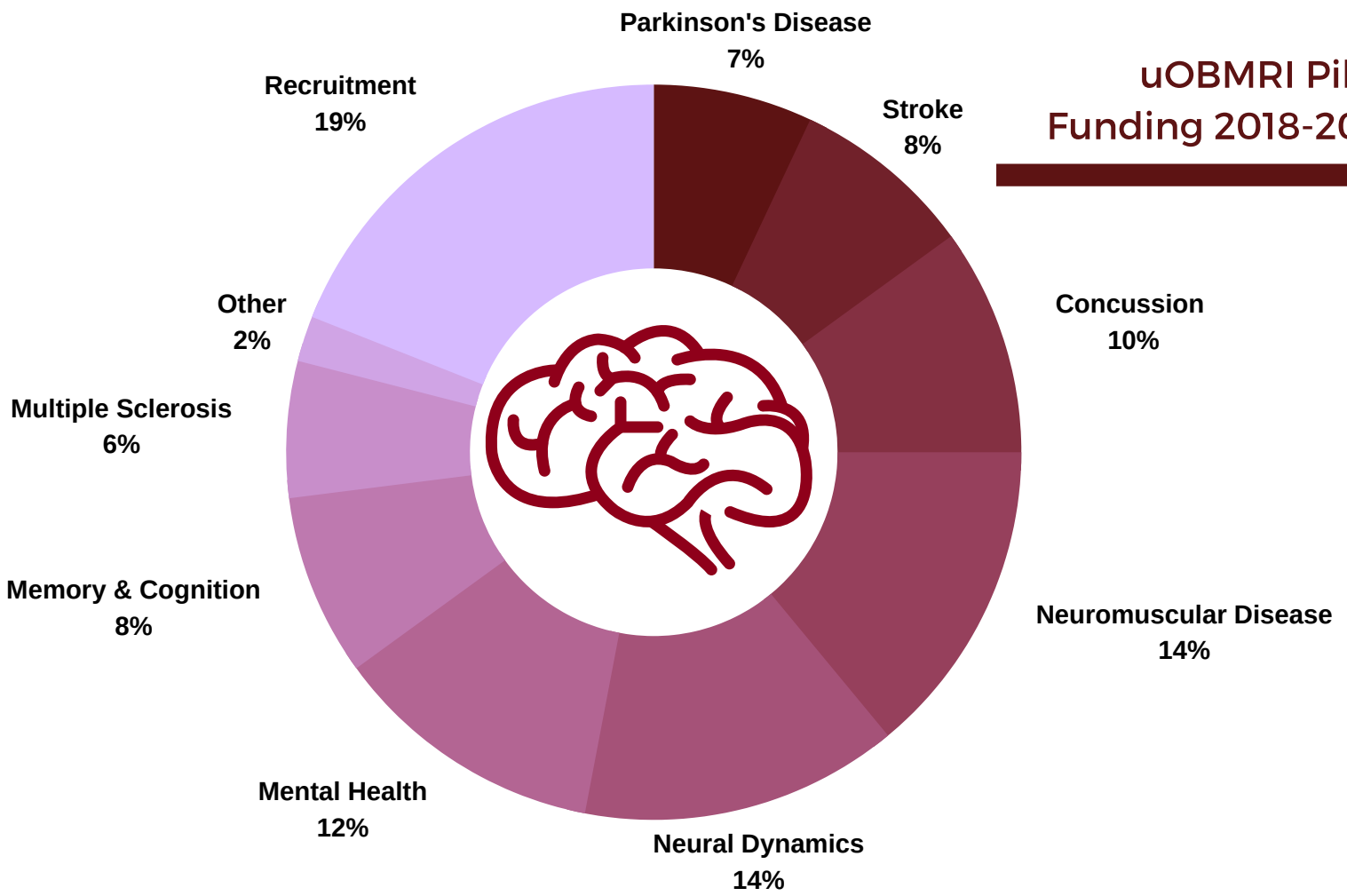
\$30
MILLION

2018-2019 EXTERNAL FUNDING

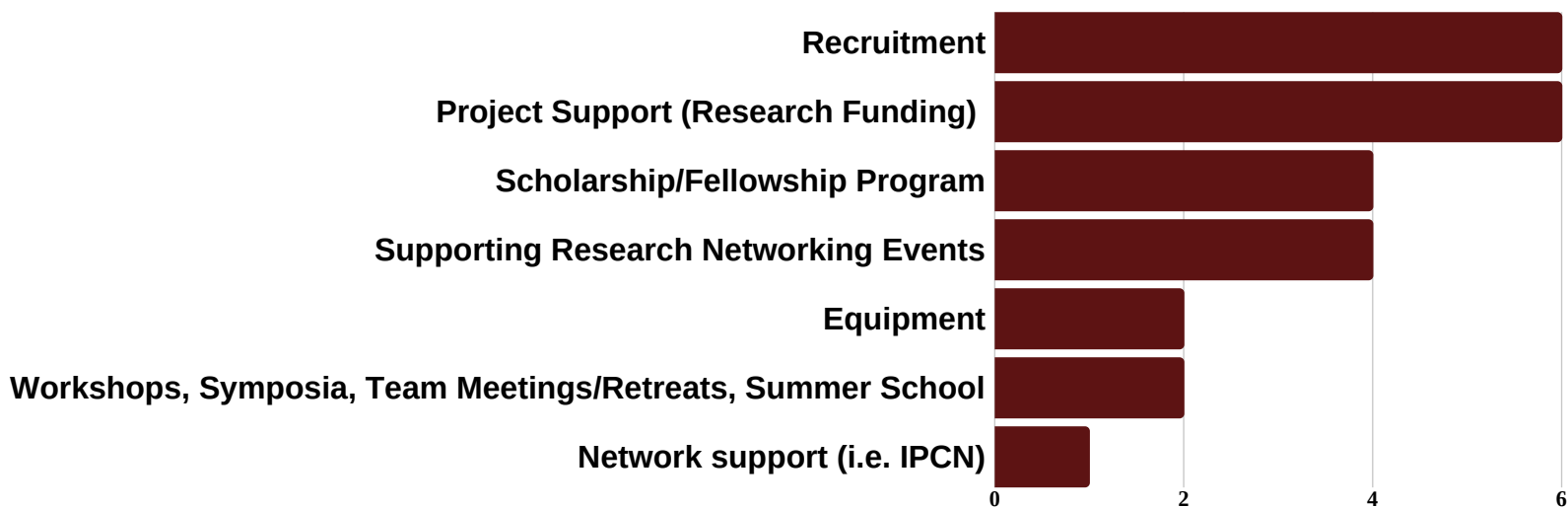
**Estimated between 2018-2019 period*

uOBMRI FUNDING AT A GLANCE

uOBMRI Pillar Funding 2018-2019



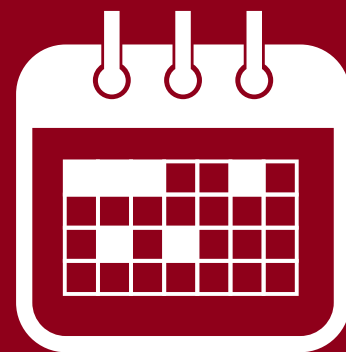
uOBMRI Funded Initiatives



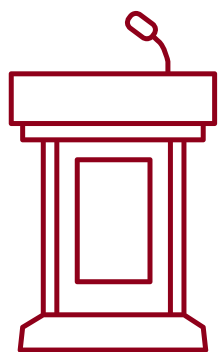
OUR ACTIVITIES

EVENTS:

- Brain Health Awareness Week
- Brain Health Research Day
- March for Concussion
- The Summer School of the Centre of Neural Dynamics (SSSCND8)
- 2nd Conf. uOBMRI Academy of Mindfulness and Contemplative Studies
- Applied Deep Learning Workshop
- Audrey Grant Better Bridge Event for Parkinson's Disease
- Body and Mind Conference (Jointly hosted with Hôpital Montfort)
- CMM/NSC Research Day
- Doors Open Ottawa
- Parkinson's Lap the Gats
- Post-Concussion Research Consortium (PCRC) Workshop
- Tavern on the Falls Event for Memory Cognition



SEMINARS & WORKSHOPS:



4

uOBMRI Pillar-Focused Workshops

5

uOBMRI Colloquium Series Seminars

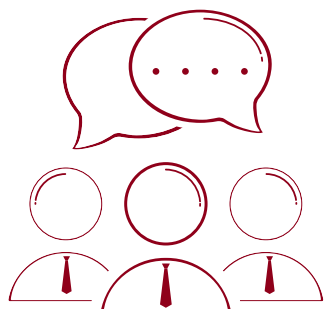
25

Neuroscience Series Seminars

**co-supported by the uOBMRI*

SPONSORSHIPS:

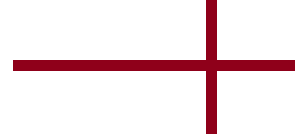
- CAN-ACN – Poster Session Sponsorship
- Body and Mind Conference
- CAN-ACN - Neurophotonics Satellite Sponsorship
- Ottawa Stroke Summit



OUTREACH:

- uOBMRI Community List
- Member Updates
- Annual Pillar Newsletters
- Brain and Mind Buzz Community Newsletters
- Social Media

OUR GOVERNANCE



*In the 2018-2019 Period



Governing Council:

- **Sylvain Charbonneau (Chair)**
- Guy Chartrand
- Marc Ekker
- Bernard Jasmin
- Kevin Kee
- Bernard Leduc
- Zul Merali
- Martin Osmond
- Brian Ray
- Michael Schlossmacher
- John Sylvestre

Advisory Board:

- **Michael Schlossmacher (Chair)**
- Louis Barriault
- Richard Barwell
- Pierre Blier
- Sylvain Charbonneau
- Guy Chartrand
- Daniel Figéys
- Bernard Jasmin
- Kevin Kee
- Jack Kitts
- Bernard Leduc
- Maurice Levesque
- David Lohnes
- Zul Merali
- Alex Munter
- Martin Osmond
- Kathleen Pajer
- Catherine Plowright
- Denis Prud'homme
- Ruth Slack
- Duncan Stewart
- Christine Suurtamm
- Heidi Sveistrup
- Lucie Thibeault
- Phil Wells
- George Weber



Scientific Council:

- **Michael Schlossmacher (Chair)**
- Paul Albert
- Jean-Claude Béique
- Richard Bergeron
- Dennis Bulman
- Kym Boycott
- Tuan Bui
- Dale Corbett
- Dar Dowlatshahi
- Stephen Ferguson
- Andrew Frank
- William Gardner
- Patrick Giguère
- David Grimes
- Simon Hatcher
- Nafissa Ismail
- Diana Koszycki
- Baptiste Lacoste
- Diane Lagace
- Clare Liddy
- André Longtin
- Leonard Maler
- Shawn Marshall
- Claude Messier
- Georg Northoff
- Kathleen Pajer
- Robin Parks
- Adam Sachs
- Andra Smith
- Heidi Sveistrup
- Giggio Tasca
- Jean-Philippe Thivierge
- Lisa Walker
- Jodi Warman
- Sharon Whiting
- Roger Zemek



OUR PARTNERS

The success of the University of Ottawa Brain and Mind Research Institute depends on its institutional members: The Ottawa Hospital and the Ottawa Hospital Research Institute, The Royal Ottawa Health Care Group and The Royal's Institute of Mental Health Research, affiliated with the University of Ottawa, Bruyère Continuing Care and the Bruyère Research Institute, the Children's Hospital of Eastern Ontario (CHEO) and the CHEO Research Institute, as well as, Hôpital Montfort and Institut de recherche de l'Hôpital Montfort.

Our University of Ottawa faculties include; the faculties of Medicine, Science, Social Sciences, Health Sciences, Arts, Education, Engineering, and Law



Institut de recherche sur le cerveau

Brain and Mind Research Institute



OUR INTEGRATED NETWORKS

Our integrated networks result from our efforts to help bridge the gap between the needs of the community and the research going on at the uOBMRI.

These networks are primarily comprised of our members, patients, caregivers, community leaders and ambassadors of the uOBMRI.

We come together to share ideas, build awareness and ultimately thrive to advance community outreach and engagement.

- Parkinson Research Consortium (PRC)
- Centre for Neural Dynamics (CND)
- Centre for Neuromuscular Disease (CNMD)
- Multiple Sclerosis Research Group (MSRG)
- Stroke Research Consortium (SRC)
- Concussion Advisory Group (CAG)
- Memory and Cognition Group (MCG)
- The Academy of Mindfulness and Contemplative Studies (AMCS)
- Canadian Partnership for Stroke Recovery (CPSR)





Work with our Team

Director:

Dr. Ruth Slack

Program Manager:

Natasha Hollywood

Administrative Coordinator:

Candace Fortier

Marketing and Communications:

Victoria Racher

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www.uottawa.ca/brain

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