Réseau sommeil

MINI-RETREAT ON WEARABLE TECHNOLOGIES

Between Challenges and Opportunities for Connected Sleep in Both Clinical and Research Settings

November 13, 2024 | Jeanne Timmins Amphitheatre, The Neuro

90 ANS neuro Institut-Hôpital neurologique de Montréal

THE FIRST PROVINCIAL MINI-RETREAT DEDICATED TO WEARABLE SLEEP TRACKING TECHNOLOGIES

Agenda

- **2** Keynote lectures
- **8** Short presentations
- **1** Round table

Exploring Two Key Questions:

How can wearable sleep tracking devices be enhanced to deliver more accurate and comprehensive data?

What strategies can help us overcome the learning curve presented by rapid advancements in ambulatory sleep monitoring?

These questions stem from a series of recent studies examining the accuracy and integration of wearable sleep tracking devices in both research and clinical settings, steering the discussion towards innovation, user experience, and the broader impact of these technologies.

Register at reseausommeil.ca/en/events/mini-retraite-technologies-potables

SCHEDULE FOR THE DAY

8:30 am	Participant Check-in
9:00 am	**Opening Remarks** **Dr. Adrien Peyrache** Co-director, Quebec Sleep Research Network
9:05 am	**Presentation of Provincial Survey Results on Wearable Technologies** **Dr. Caroline Arbour and Dr. Christophe Grova** Co-leaders, Provincial Group on Wearable Technologies
9:15 am	**Keynote Address** **Dr. Rebecca Robillard** Co-chair, Canadian Sleep Research Consortium and Director, Sleep Research Unit, University of Ottawa Institute of Mental Health Research
10:30 am	Break
11:00 am	**Short Presentations**
11:00 am – 11:15 am	**Dr. Michelle Carr** Professor, University of Montréal
11:15 am – 11:30 am	**Dr. Guido Simonelli** Professor, Université de Montréal
11:30 am – 11:45 am	**Dr. Manuel Soulard** Psychiatry Resident, McGill University
11:45 am – 12:00 pm	**Dr. Christophe Moderie** Psychiatry Resident, Stanford University
12:00 pm	Lunch
1:00 pm	**Keynote Address** **Dr. Andrew Lim** Neurologist and Researcher, Department of Clinical Evaluative Sciences, Sunnybrook Research Institute, University of Toronto
2:00 pm	**Testimonial on Industry Partnership** by **Dr. Célyne H. Bastien** Professor and Researcher, Laval University
2:30 pm	Break
3:00 pm	**Short talks**
3:00 pm – 3:15 pm	**Dr. Elie Bou Assie** Professor , University of Montreal
3:15 pm – 3:30 pm	**Dr. Giovanni Beltrame** Professor, École Polytechnique
3:30 pm – 3:45 pm	**Dr. Emily BJ. Coffey** Professor, Concordia University
3:45 pm	**Round Table Discussion** led by **Dr. Thanh Dang-Vu** Neurologist and Full Professor, Chair of Sleep, Neuroimaging and Cognitive Health, Concordia University
4:30 pm	**Closing Remarks** **Dr. Adrien Peyrache and Dr. Nadia Gosselin** Co-directors, Quebec Sleep Research Network
5:00 pm	Cocktail Dinner

Rebecca Robillard, PhD

CANADIAN PERSPECTIVES ON PORTABLE SLEEP TECHNOLOGIES

Abstract

In the fast-moving landscape of portable sleep technologies, unprecedented opportunities emerge in parallel to complex new challenges. Researchers, clinicians, and technology developers have much to gain from working together and deepening their understanding of how good and bad sleepers relate to these technologies. This session will highlight insights from survey data on the use of portable sleep technologies in a representative sample of Canadians. An overview of some of the recommendations for the integration of various levels of actigraphy devices in research will be provided. Some clinical applications of novel wearable and nearable sleep trackers will also be discussed. Ongoing initiatives in which the Canadian Sleep Research Consortium is invested will be mapped to stimulate reflection on potential areas of collaboration.

Biography

Rebecca Robillard serves as co-chair of the Canadian Sleep Consortium and leads the Clinical Sleep Research Unit at the Institute of Mental Health Research at the University of Ottawa. She also co-directs the Sleep Laboratory at the School of Psychology at the same university, where she holds the position of Associate Professor. Her research has made significant contributions to the understanding of sleep disorders in individuals with mental health issues. Additionally, she focuses on optimizing sleep and chronobiology interventions for mental disorders, particularly major depression and post-traumatic stress disorder.

Andrew Lim, MD, MSc, FRCPC

SLEEP WEARABLES FOR OLDER ADULTS WITH INSOMNIA AND AT RISK FOR DEMENTIA

Abstract

Both sleep disruption and cognitive impairment are common in older adults, and a growing body of evidence supports a bidirectional relationship between the two. As such, the accurate and objective measurement of sleep and sleep disorders has potentially important roles to play in clinical prediction, prevention, treatment, and management of patients with or at risk of cognitive impairment and dementia. However, commonly clinically used tools such as in-lab polysomnography are ill-suited to this population, and insufficiently scalable for widespread use. A plethora of wearable technologies have emerged to meet this need. In this session, I will discuss use cases for sleep measurement in the spectrum of care of patients with or at risk for cognitive impairment, ranging from prediction and prevention to symptom management, along with the pros and cons of wearable technologies to meet these needs. Then, I will dicuss in greater depth our own work in deploying various classes of wearables in both research studies and in the clinic, in developing analytic techniques for analyzing these data, and in relating these data to dementia outcomes.

Biography

Dr. Andrew Lim is a sleep neurologist at Sunnybrook Health Sciences Centre and an Associate Professor at the University of Toronto. He serves as the Principal Investigator of the Ontario Sleep Health Study and co-Principal Investigator of the Canadian Consortium on Neurodegeneration in Aging Sleep Team. Dr. Lim also leads or co-leads several projects focused on measuring sleep and circadian rhythms within the Rush Memory and Aging Project and the Canadian Longitudinal Study of Aging. His research investigates the bi-directional relationships between sleep and circadian disruptions and neurodegenerative disorders. Additionally, his clinical practice centers on older adults, both with and without neurodegenerative diseases, who are experiencing sleep and circadian rhythm disturbances.

SPEAKERS SHORT PRESENTATIONS

Michelle Carr, PhD

11:00 – 11:15 a.m.

Conducting Sleep Studies with ZMax and Dream Devices: Uses and Challenges

Dr. Michelle Carr is a neuropsychologist and Assistant Professor in the Department of Psychiatry and Addictology at the University of Montreal. Her research specializes in "dream engineering," a field that employs techniques and technologies to influence dreams for therapeutic purposes, including the treatment of psychiatric disorders.

Guido Simonelli, MD, MSc

11:15 – 11:30 a.m.

Sleep Research in Operational Environements

Dr. Guido Simonelli is a physician and Assistant Professor at the Faculty of Medicine at the University of Montreal. His research integrates actigraphy, polysomnography, self-reported questionnaires, and cognitive tasks to investigate the relationship between sleep, public health, and human performance in extreme conditions, such as in the Great North and during military deployments.

Manuel Soulard, MD

11:30 – 11:45 a.m.

Smart Gear, Deeper Minds: The Feasibility and Hurdles of Wearables in Deep Phenotyping

Dr. Manuel Soulard is a physician and Psychiatry Resident. His research focuses on developing innovative computational screening and assessment methods to enhance the understanding and prediction of psychosis onset.

Christophe Moderie, MD, MSc, PhD(c)

11:45 a.m – 12:00 p.m.

Sleepless Nights, Endless Data: Navigating Wearables in Sleep Medicine

Dr. Christophe Moderie is a physician and Psychiatry Resident with several years of interest in the connections between sleep, circadian rhythms, and mental health. He frequently utilizes wearable devices in both his clinical practice and research endeavors.

SPEAKERS SHORT TALKS

Célyne H. Bastien, PhD

2:00 p.m.

Testimonial on Partnership with the Industry

Dr. Célyne H. Bastien is a psychologist and Full Professor at the School of Psychology at Laval University. Her research focuses on the protective mechanisms of sleep that enable both good sleepers and those with sleep difficulties to maintain sleep. She aims to identify effective treatments for insomnia.

Elie Bou Assie, Eng, PhD

3:00 – 3:15 p.m.

Wearable-Based Sleep Analysis for Epileptic Seizures Forecasting

Dr. Elie Bou Assie is a biomedical engineer and Assistant Professor in the Department of Neurosciences at the University of Montreal, affiliated with the Institute for Data Valorization (IVADO). His research focuses on applying artificial intelligence techniques and connected devices to improve the management and monitoring of neurological and psychiatric disorders.

Giovanni Beltrame, Eng, PhD

3:15 – 3:30 p.m.

The Portiloop: An Open Source, Deep-Learning Based Tool for Closed Loop Auditory Stimulation

Dr. Giovanni Beltrame is a Professor in the Department of Computer Engineering and Software Engineering at Polytechnique Montréal. Prior to his academic career, he served as a microelectronics engineer at the European Space Agency. His expertise lies in the design, simulation, and verification of embedded systems for space applications.

Emily BJ. Coffey, PhD

3:30 – 3:45 p.m.

Neurophysiological Impacts of Stimulating Sleep Spindles with Closed-Loop Auditory Stimulation

Dr. Emily BJ Coffey is a neuroscientist and Assistant Professor in the Department of Psychology at Concordia University. Her research focuses on understanding how raining and sleep interventions can enhance auditory and language functions, ultimately improving learning and quality of life across the lifespan.

MINI-RETREAT ON SLEEP

Organizing Committee

- Caroline Arbour, University of Montreal
- Christophe Grova, Concordia University
- Adrien Peyrache, McGill University
- Elnaz Alikarami, McGill University

Advisory Group

- Véronique Daneault, University of Montreal
- Thanh Dang-Vu, Concordia University
- Nadia Gosselin, University of Montreal
- Jean-Marc Lina, École de Technologie Supérieure
- Christophe Moderie, Stanford University

Facilitators / Moderators

- Thanh Dang-Vu, Concordia University
- Catherine Duclos, University of Montreal
- Milan Nigam, University of Montreal
- Shady Rahayel, University of Montreal

Location information

Jeanne Timmins Amphitheatre
The Neuro

3801 University Street
Montreal, Québec
H3A 2B4

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