Seminar on neurosciences

Thursday, October 7 – Toronto – Canada

General Consulate of France in Toronto

Office for Science and Technology

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RÉPUBLIQUE FRANÇAISE

CRICM-Ontario seminar on neuroscience

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The Organizer

The Office for science and technology

The Office for science and technology (OST), within the Embassy of France in Canada has been created as a response to the always growing process of internationalization of universities and research. Given the specific character of the Canadian system, two networks were created to support for French science policy. One network is located in Quebec, while the other is located in Ottawa in charge of the whole Canada excluding Quebec. The two offices cooperate in order to improve and develop further cooperation between France and Canada.

The main objectives of the OST, whose domain of action is the higher education and science (from exact sciences to humanity), can be summarized as follow:

- To observe and to provide information to French researchers and institutions on the evolutions of higher education organization as well as the technical and scientific advancements in Canada, and vice versa;
- To facilitate and develop collaborative projects in the fields of higher education and research to strengthen the French-Canadian partnership;
- To provide support for innovation and the exchange of technology;
- Based on its expertise and the knowledge of both countries in science and higher education , to accompany and advice researchers and faculties in their search for partnerships and the constitution of application for grants.

Disciplines in natural sciences, humanities and social sciences are all taken into consideration. However, the following subjects are given priority: Neurosciences, Nanotechnologies, Biotechnologies, Ecotechnologies, Energy (nuclear), Migration and integration, etc.

French Embassy, Ottawa, Canada

Philippe CARLEVAN, Counselor for science and technology
Office for science and technology
464 Wilbrod Street – Ottawa, ON, K1N 6M8
Tel: +1-613-593-7412 – Email: philippe.carlevan@diplomatie.gouv.fr

General Consulate of France, Toronto, Canada

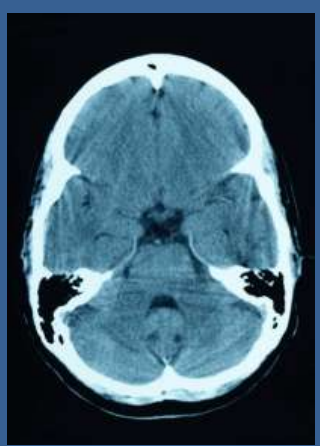
Christian Turquat, Ph.D., Attaché for science and technology
Office for Science and technology
2 Bloor St East Suite 2200 – Toronto, ON, M4W 1A8
Tel: +1-416-847-2000 – Email: christian.turquat@diplomatie.gouv.fr

Introduction

The World Health Organization (WHO) summarizes accurately the problematic related to neurology and public health. The WHO states that mental and neurological disorders are highly prevalent worldwide. The WHO's Global Burden of Disease report drew the attention of the international health community to the fact that the burden of mental and neurological disorders has been seriously underestimated by traditional epidemiological methods that took into account only mortality, but not disability rates. This report specifically showed that while the mental and neurological disorders are responsible for about one per cent of deaths, they account for almost 11 per cent of disease burden the world over. The Study has demonstrated that magnitude and burden of neurological disorders are huge and that they are priority health problems globally.

What's more, the extension of life expectancy and the ageing of the general populations in both developed and developing countries are likely to increase the prevalence of many chronic and progressive physical and mental conditions including neurological disorders. The proportionate share of the total global burden of disease due to neuropsychiatric disorders is projected to rise to 14.7% by 2020. Therefore, neuroscience research and its translation into diagnostic and therapeutic measures are a high priority in industrialised countries.

In that context and taking into account the always-increasing cost of research (material and labour), neuroscientists are required to collaborate to address the unresolved issues of this field of research. France and Canada have in their own manner invested heavily in neuroscience – i.e. in France the "plan Alzheimer" (1,6 billion € over 5 years) – and can be considered as highly knowledgeable in that field. France and Canada have already collaborated together mainly through the province of Quebec (ERA NET – Neuron). The aim of the French government today, through the Office for science and technology (OST) in Canada, is to allow closer collaborations with the French and Canadian neuroscientists outside the province of Quebec. To reach that goal, the OST has decided to organize a gathering of French and Ontarian neuroscientists in Toronto at the fall 2010, hoping that this seminar will lead to the development of fruitful collaborations between France and Canada and subsequently innovations for the good of all.



Christian Turquat
Scientific Attaché

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Program of the day

Morning

08:30-09:00	**Opening of the doors, coffee**
09:00-09:05	**Welcome from General Consul of France, Toronto**
09:05-09:10	**Welcome from Counselor for science and technology, Ottawa**
09:10-09:50	**Bernard ZALC**, Research Center of the Institute for Brain and Spinal Cord (CRICM), Inserm UMR S 975 *Neurological research at the Hospital "Salpêtrière," Focus on development, glial pathology & Repair*
09:50-10:30	**Laurent COHEN**, Hôpital de la Salpêtrière (Paris), Inserm UMRS 975 *Research activities in the cognition, emotion and action*
10:30-10:45	**Coffee break**
10:45-11:25	**Ann LOHOF**, University of Pierre et Marie Curie *Cellular, molecular, and systems neurosciences at the UPMC*
11:25 -12:05	**Eric DUMONT**, Queen'sUniversity, Centre for Neuroscience Studies *Doing it yourself matters: Drug self-administration paradigms reveal new molecular targets uniquely associated with addiction*
12:05-12:45	**Cella OLMSTEAD**, Queen'sUniversity, Dpt of Psychology *Collaborative work Queen's-Strasbourg.*

Afternoon

12:45-13:30 **Lunch**

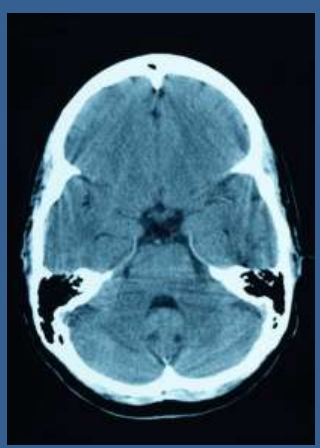
12:45-13:30 **Christian Turquat**, Office for Science and Technology
What can we do for you?

13:30-14:10 **Martin PARE,** Queen's University, Dept of Physiology
Investigating the neural basis of cognition in nonhuman primate models

14:10-14:50 **John C. RODER/Greer KIRSCHENBAUM**, University of Toronto, Dpt of Molecular Genetics, Mount Sinai Hospital, Samuel Lunenfeld Research Institute
Mouse models of Bipolar Affective Disorder

14:50-15:30 **Joseph F.X. DeSOUZA**, York University, Dept of Psychology, Centre for Vision Research
Examining multisensory attentional response suppression signals and a novel visual-somatosensory illusion: using behavioural, electrophysiology, fMRI, MEG, computational neuroscience approaches in human and nonhuman primates

15:30-15:40 **Coffee break**



15:40-16:20 **Vinod GOEL**, York University, Dept. of Psychology, Goel Cognitive Neuroscience Lab
Fractionating the Reasoning Brain

16:20-17:00 **Patrick McGOWAN**, University of Toronto at Scarbourough, Dpt of Biological Sciences
The epigenetic signature of early adversity



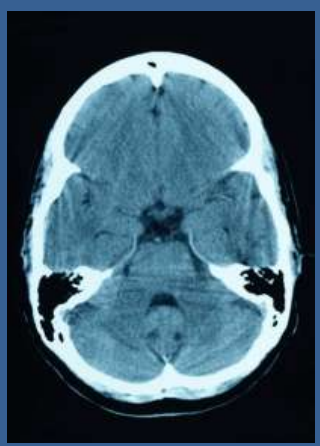


Short history of the French speakers

Zalc, Bernard – Dr. Zalc is currently the “head" of the Research Center of the Institute for Brain and Spinal Cord (CRICM). Based at the “Pitie-Salpetriere” in Paris, this structure has brought together researchers in neuroscience from laboratories of University Pierre et Marie Curie (Paris 6), INSERM and CNRS since 2009.
The CRICM focus is investigation on 4 research themes:
Neurodegenerative diseases;
Excitability, synapse & associated pathologies;
Development, glial pathologies & reparation
Cognition, emotion, action
To these 4 well-define themes, the CRICM is also interested by two interdisciplinary/transversal themes that are: Biotechnology & biotherapy and Cognitive Neuroscience & Brain Imaging (COGIMAGE).

Cohen, Laurent – Dr. Cohen is professor of neurology at the “Hôpital de la Salpêtrière (Paris)”, and director of the research team “Neuropsychology and Neuroimaging” (ICM Research Center, INSERM UMRS 975).
Prof. Cohen shares his time between clinical neurology, research, and teaching. His research is devoted to the brain mechanisms of specifically human cognitive functions, particularly language and reading. I combine the study of brain-damaged patients with various anatomical and functional brain imaging techniques. Prof. Cohen also contributes to the diffusion of cognitive neuroscience to a wide audience, through two books (Odile Jacob Editions), and a regular chronicle on television.

Lohof, Ann – Dr. Lohof is Associate Professor at the University Paris 6 and codirector of the group of neuronal development and genesis of synapse. The group research activities are centred on studies of the glutamatergic synapses of the cerebellar Purkinje cell, from their formation and maturation during development to pathological processes involving synaptic receptors leading to neuronal cell death.
The group studies, using a variety of technical approaches, the synaptic refinement that occurs during development of the olivocerebellar connection, between the climbing fibres (CF) and their target Purkinje cells (PCs). The olivocerebellar system allows the study of normal developmental multi-innervation and synapse elimination, but also is a model system for studies of the reformation of these synapses during postlesional repair.
At the level of this same synapse, our group has been interested in the roles played by different types of synaptic glutamate receptors expressed by PCs. In particular, we are interested in the developmental modifications of the site of expression of the NMDA receptor at excitatory synapses in the cerebellum, and in the role of this receptor in the plasticity of these synapses.
Finally, we have been involved in studies aimed at understanding mechanisms of neuronal stress and death, using a well-characterised mouse mutant, Lurcher. In collaboration with several members of the group “DVSN”, we are carrying out a number of studies aimed at understanding the mechanisms of neuronal stress and the cell death processes that follow chronic neuronal depolarisation induced by a glutamate receptor.





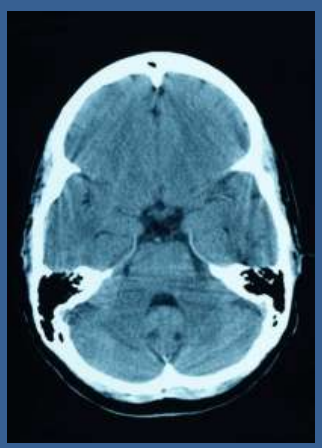


Short history of the Canadian speakers

DeSouza, Joseph Francis – Joseph F.X. DeSouza's research team (7 graduate students and a postdoc - www.joeLAB.com) addresses research questions that involve cortical regions involved in visual, motion, auditory, somatosensory, multisensory and gaze movement networks and how they are modulated by eye position and attention. We use systems neuroscience approaches of behavioural eyetracking, fMRI, MEG, computational and primate electrophysiology within the lab and with our collaborations with Sick Childen's Hospital, Queen's University, York Centre for Vision Research and CAP-NET (www.cap-net.ca). Currently, we are presenting some novel research at the Society for Neuroscience meeting with one project. A multisensory visuotactile illusion induced by monocular occlusion with a black contact lens by Jobst, Kucyi, Pynn and DeSouza – was selected as a "hot topic" and will have a news release based on it during the upcoming conference.

Goel, Vinod – Dr. Goel studied architectural design and computer science as an undergraduate. He received his PhD in Cognitive Science from UC-Berkeley, followed by postdoctoral training in cognitive neuroscience at the NIH, USA and Institute of Neurology/UCL, UK. He is currently a Professor of Cognitive Neuroscience at York University, Canada, and the University of Hull, UK. His research uses brain imaging (fMRI) and lesion analyses techniques to study the cognitive, computational, and neural basis of rational thought processes ranging from logical inference to design problem-solving. This work has resulted in numerous, highly cited publications and has been recognized by a number of awards, including the McDonnell-Pew Program in Cognitive Neuroscience Award.

Dumont, Éric – Dr. Dumont is a junior scientist that received his Ph.D. in Pharmacodynamics and Biochemistry from the Université de Montréal in 1999. He was a postdoctoral trainee at Université Laval from 1999 to 2001 where he studied the neurobiology of stress and anxiety under the co-supervision of Drs. Guy Drolet and Denis Paré. He completed his postdoctoral formation at the Vollum Institute in Portland (Oregon) where he studied drugs of abuse-induced synaptic adaptations under the supervision of Dr. John T. Williams. He was recently appointed Assistant Professor in the Department of Anesthesiology and Perioperative Medicine at Queen's University. The overall goal of Dr. Dumont's research program is to elucidate the neurological basis of stress as an environmental trigger leading to neuropathological behaviour such as addiction. His laboratory attacks this question using a multi-faceted systems biological approach that considers critical and causal factors at the molecular, cellular, systems and behavioral levels. From a technical perspective, his laboratory combines a broad range of molecular, surgical, behavioral, and electrophysiological techniques that are essential for conducting state-of-the-art research in neurophysiology. His research is funded through multiple grants including CIHR and NSERC operating grants. He published 20 peer-reviewed research articles, 1 review article, 1 editorial, and 40 scientific abstracts. In 2010, he was Guest-editor for a Special Issue of the scientific journal Progress in Neuropsychopharmacology and Biological Psychiatry. Of his most significant discoveries, published in Nature Neuroscience, was to uncover neural mechanisms specifically and uniquely associated with voluntary drug intake. Dr. Dumont's recently initiated a collaboration with French neuroscientists Drs. François Georges and Erwan Bézard from the Université de Bordeaux II.



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Olmstead, Cella – Dr. Olmstead completed an honours BSc at the University of Toronto majoring in Psychology and Music. Her interest in motivation, and how it is controlled by the brain, began when she worked with Prof. John Yeomans in the Dept. of Psychology. She then completed a MSc and PhD at McGill University with Prof. Keith Franklin where she investigated neural systems of reward-related learning. During this time, she collaborated with Prof. Roy Wise in the Centre for Studies in Behavioral Neurobiology at Concordia University, extending her previous work on brainstem contributions to motivated behaviour. As a post-doctoral fellow, she worked with Prof. Trevor Robbins, Prof. Barry Everitt, and Prof. Tony Dickinson in the Dept. of Experimental Psychology at the University of Cambridge. This work examined how rewarding signals, generated in the forebrain, interact with brain regions mediating learning to produce motivated (i.e., goal directed) behaviour.

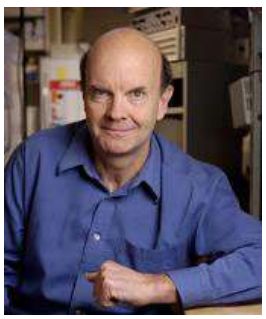
In 1998, she joined the Dept. of Psychology at Queen's University where she have continued to investigate cognitive-motivational interactions -- or how rewarding stimuli influence learning. Her working hypothesis is that goal-directed behaviours and cognitive process, as part of a dynamic interactive system, reciprocally modulate each other. To investigate these process, She have adopted two complementary approaches. The first is a theoretical overview of the interaction between motivation and cognition that examines how reward-related learning is manifested in behaviour. The second is an examination of specific neural systems which may mediate the cognitive-motivational interface. Much of the research in her lab focuses on drug addiction, as this disorder is characterized by a breakdown in the 'normal' balance between motivation and cognition. Most recently, she spent one year as a visiting scientist at the Institut de Génétique et de Biologie Moléculaire et Cellulaire in Strasbourg France.

Mc Gowan, Patrick – One of the great scientific debates of the 20th century was that of 'nature versus nurture'. How much of our behaviour and physiology (our phenotype) can be explained by the DNA we inherit from our ancestors, and how much by our environment? In the 21st century, we recognize that the interaction of both is important. This awareness implies the need to understand the whole beyond the parts, and that context is the space in which genetic information has meaning.

We use molecular neuroscience and systems biology approaches to study phenotype. Our specific focus is on the role of parental factors early in life in altering the function of genes involved in the response to stress. We study a variety or organisms, from animals in the lab, to wild populations and humans.

Martin Paré – Dr. Martin Paré is a member of the Centre for Neuroscience Studies at Queen's University and an Associate Professor in the Departments of Physiology and Psychology. He obtained a PhD from McGill University and received postdoctoral training at the National Institutes of Health (USA). His research program is funded by grants from the Canadian Institutes of Health Research (CIHR) and the Natural Science & Engineering Research Council (NSERC) and aims to elucidate the neural basis of cognition using nonhuman primates as animal models and the visual and eye movement systems as neural system models.

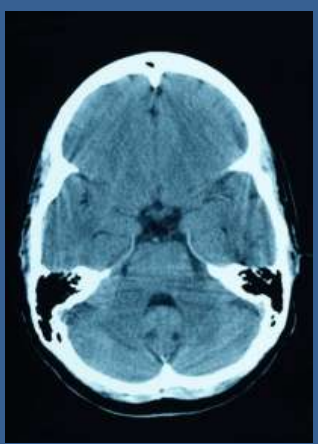
Dr. Paré leads multiple research projects investigating the neural mechanisms underlying attention, working memory, audiovisual communication, and the voluntary control of action. The experimental approaches include the recording of neuronal activity and pharmacological manipulations while subjects perform tractable behavioral paradigms that are grounded in solid theoretical framework.



John C. Roder – Dr. Roder is a neurobiologist, and Senior Investigator at the Samuel Lunenfeld Research Institute of Mount Sinai Hospital. As a Professor in the Department of Molecular Genetics at the University of Toronto, Dr. Roder holds a Canada Research Chair (Tier 1) in Learning and Memory.

Dr. Roder's ultimate goal is to discover new treatments for schizophrenia, anxiety, epilepsy, depression, and other mental disorders.

His research focuses on the roles of molecules in the central nervous system and aims to determine targeted new drug therapies for neurological and psychiatric disease. He has carried out genome-wide forward and reverse genetic screens of ENU mutagenized mice. The Roder lab is also focused on identifying new genes, synapse and signaling pathways that contribute to learning and memory. In a groundbreaking study in 2007, Dr. Roder demonstrated for the first time in mouse models that malfunction of the gene DISC 1, previously associated with schizophrenia and depression, does, in fact, cause symptoms of those disorders.



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DATE: October 7, 2010
STARTING AT: 9:00 am
LOCATION: Ontario Investment and Trade Centre (OITC)
250 Yonge Street, 35th floor, Toronto, ON