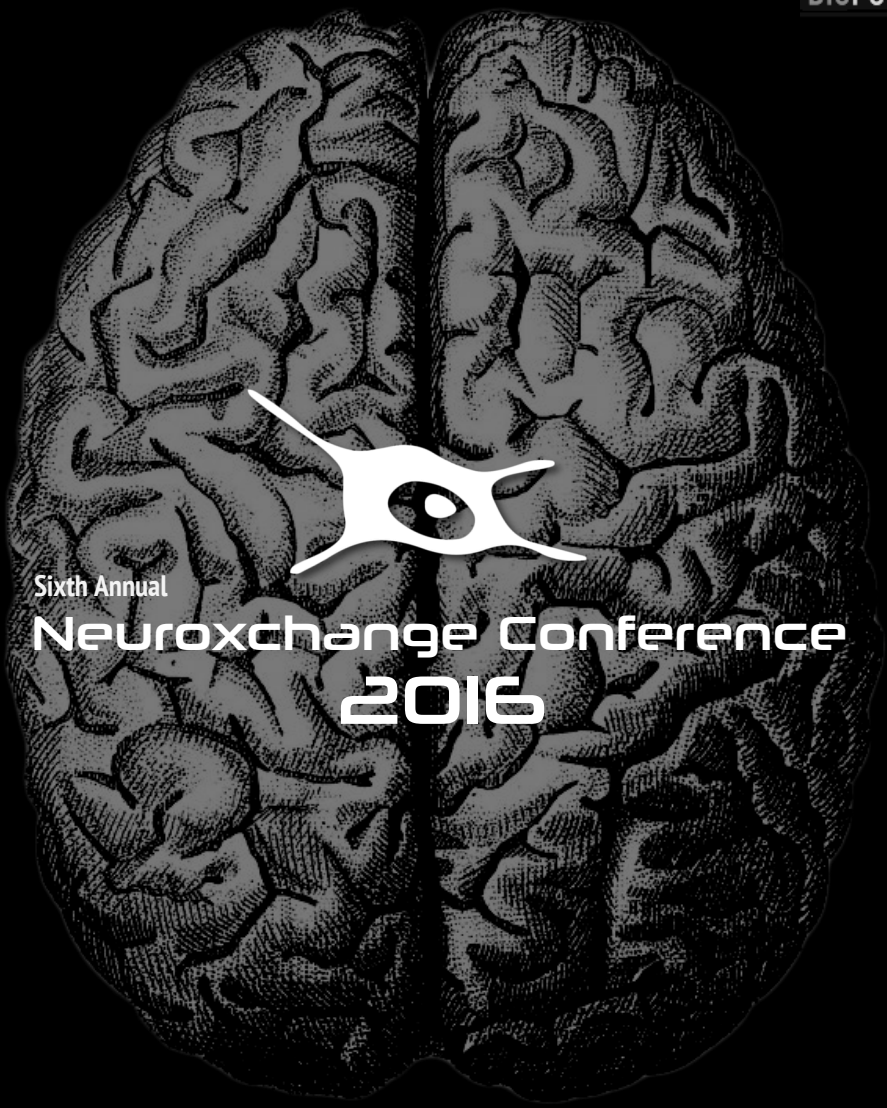
McMaster University

HONOURS BIOPSYCH



Sixth Annual

Neuroxchange Conference 2016

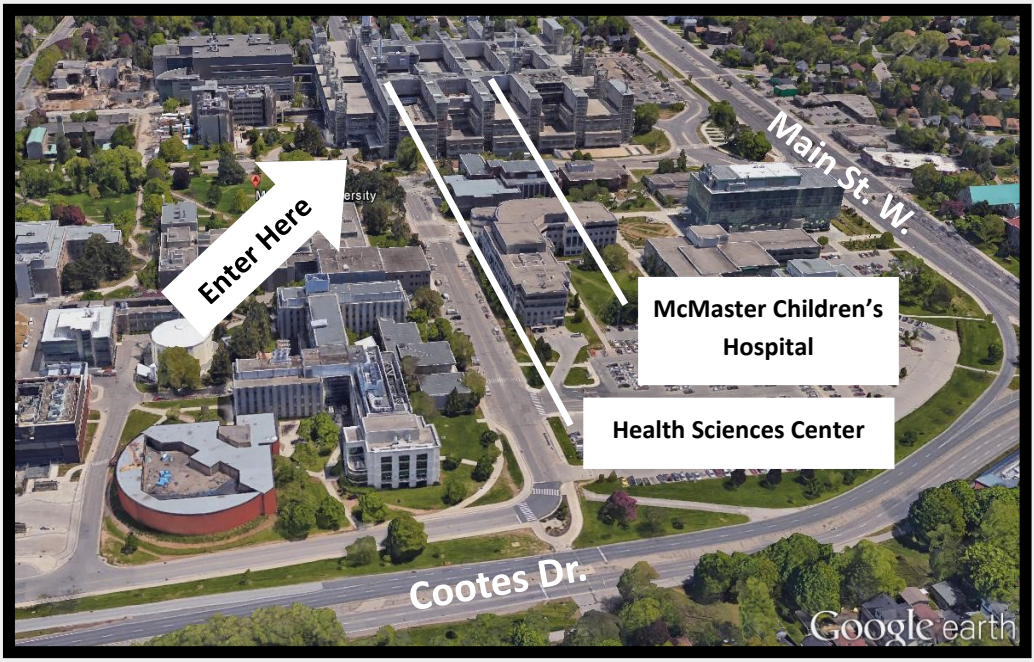
abstract book

Table of Contents

Schedule of Events

Time	Event
8:30—9:00 AM	Attendee and Presenter Check-In
9:00—9:30 AM	Welcoming Address
9:30—10:30 AM	Poster Session A
10:30 —12:00 PM	Oral Presentations
12:00—12:10 PM	Lunch
12:10—12:50 PM	Mental Health Panel
12:50—1:30 PM	Graduate Panel
1:30—2:30 PM	Poster Session B
2:30—3:30 PM	Keynote Speaker
3:30—4:00 PM	Closing Address

Map of McMaster



Letters of Welcome

McMaster University

Office of the Provost, Vice-President (Academic)

1280 Main Street West Hamilton, Ontario L8S 4K1

April 1st, 2016

Dear Students,

Welcome to the NeuroXchange Conference (NXC) at McMaster University. This Ontario-wide conference brings together undergraduate students who have been conducting research in neuroscience areas. It is a wonderful opportunity for students to showcase their research and for you to share your experiences and results as well as get to know other people working in the field.

On behalf of McMaster University, I would like to congratulate you on your research accomplishments. Engaging in the process of discovery is a key means of enhancing your learning outcomes while helping expand our knowledge of neuroscience. This conference helps recognize your work while providing a platform for exchange of ideas and encourages research growth as you pursue future studies.

McMaster is excited to host the NXC and we hope that you thoroughly enjoy your time here.

Sincerely,

David S. Wilkinson, FRSC, FCAE, FCIM, FACerS, P.Eng.

Provost and Vice-President Academic

McMaster University

Letters of Welcome

McMaster University

Vice-President (Research and International Affairs)

1280 Main Street West Hamilton, Ontario L8S 4K1

April 1st, 2016

On behalf of McMaster University, it is my pleasure to welcome you to our campus and to Hamilton, and to thank you for attending the Ontario Undergraduate NeuroX-change Conference.

McMaster University is one of only four Canadian universities listed among the Top 100 universities in the world and is renowned for its innovation in both learning and discovery. We boast a student population of more than 30,000, a faculty complement of 1,400 and more than 170,000 alumni in 137 countries.

Our research enterprise has grown with vigor, topping out at more than $322 million. That's more than $234,500 for every researcher we employ, ranking our per capita research income in the top seven Canadian Universities. It's an enviable reputation that extends beyond our borders. Our pioneering academic programs are problem-based, multi-disciplinary and student-centered, and have been adopted by leading universities around the world.

All of us here at McMaster University are thrilled to have you take part in this exciting day of research and ideas exchange in the various fields of neuroscience. Your achievements displayed here today represent hard work and creative efforts. I am sure that all participants – both visitors and McMaster students – will have a great deal in common to discuss, compare and celebrate.

Congratulations and best wishes for a great conference and a memorable visit to our campus.

M. A. ElBestawi

Mo Elbestawi

Vice-President, Research and International Affairs

Letters of Welcome

McMaster University

Chair (Psychology, Neuroscience and Behaviour)

1280 Main Street West Hamilton, Ontario L8S 4K1

April 1st, 2016

On behalf of the department of Psychology, Neuroscience, and Behaviour, I would like to welcome you to McMaster University and thank you for attending today's

conference. NeuroXchange provides a terrific opportunity for you to share your interest in, and enthusiasm for, neuroscience, and I want to extend special thanks to all of the students who worked so hard to make this conference a reality.

Many of you undoubtedly have learned that research can be an exhilarating process—a filled with unexpected highs and lows – that requires intelligence, hard work, creativity, and even a bit of good luck. I want to offer congratulations on your achievements, and I look forward to hearing about your discoveries! You represent the future of neuroscience, and so I hope that today's excitement and camaraderie inspires many of you to pursue careers in research.

Welcome to McMaster, and have a wonderful conference.

Sincerely,

Patrick J. Bennett, PhD

Professor

Chair, Canada Research in Vision Science

Keynote Speaker

Donald Mabbott Ph.D., C. Psych

Dr. Mabbott is a Senior Scientist in the Research Institute of the Hospital for Sick Children and Associate Professor of Psychology at the University of Toronto evaluating brain/behaviour relations in normal and impaired neurodevelopment using cognitive data and quantitative MRI methods. He is currently examining neurocognitive outcomes following diagnosis and treatment with radiation for brain tumors and demonstrating that cranial radiation is associated with intellectual decline. He recently began exciting new work to find ways to foster brain repair following radiation injury in children treated for brain tumors, including using physical exercise and drugs that stimulate the growth of new brain cells.

Neurocognitive Outcome following Brain Tumour Diagnosis and Treatment:

Dr. Mabbott is evaluating brain/behaviour relations in normal and impaired neurodevelopment using cognitive data and quantitative MRI methods. Currently, Mabbott is examining neurocognitive outcome following diagnosis and treatment with radiation for brain tumours: cranial radiation is associated with intellectual decline. Specific objectives of the program include: (a) to determine whether the use of lower doses and/or focal fields of radiotherapy significantly reduce neurocognitive late effects and (b) to examine processing speed, attention, and working memory to determine if deficits in these core neurocognitive domains underline the decline in intelligence.

White Matter Injury and Neurocognitive Outcome:

Dr. Mabbott is beginning to examine the relations between white matter integrity and neurobehavioural functioning using Diffusion Tensor MRI. Specifically, his goal is to determine whether quantitative DT-MRI values within regions of interest in the brain are related to neurocognitive outcome. Using MRI imaging methods to identify changes in the brain that are predictive of later neuropsychologic toxicity may make it possible to modify treatment among patients at risk, perhaps avoiding severe sequelae.

How Structure Impacts Function (MEG, MRI, neurocognitive performance):

Dr. Mabbott is particularly interested in understanding the links between white matter injury, neuronal function and neurocognitive impairment following cranial radiation; and doing this by integrating several neuroimaging techniques such as MEG, MRI approaches such as DTI and MTI that measure functional (MEG) and structural (DTI and MTI) changes in children treated for brain tumours.

Graduate Panel

Dr. Sukhvinder Obhi

Sukhvinder S. Obhi is the Director of the Social Brain, Body and Action lab in the Department of Psychology, Neuroscience and Behaviour at McMaster University. Dr. Obhi's research interests focus on the role of mirroring in social cognition and the neurocognitive bases of intentional action and agency. He also has several areas of applied research interest. He was a recipient of an Ontario Early Researcher Award and over recent years has held funding from NSERC, SSHRC, CFI, ORF and industry. Dr. Obhi serves as an expert reviewer for numerous granting agencies and has editorial roles at Acta Psychologica, and Experimental Brain Research.

Words of Advice: "Let curiosity drive you but have a destination in mind, and seek out mentorship from those you respect; quality time and discussion with these individuals is priceless."

Dr. Zainab Samaan

Dr. Zainab (Zena) Samaan is an Assistant Professor, Department of Psychiatry and Behavioral Neurosciences, Associate Member, Department of Clinical Epidemiology and Biostatistics and Associate Faculty, Population Genomics Program at McMaster University. Dr. Samaan is also a staff psychiatrist, member of the Royal College of Psychiatrists, UK and Certified Academic Psychiatrist by The College of Physicians and Surgeons of Ontario. Dr. Samaan completed a Master's in Science at the Dept. of Psychiatry, Trinity College Dublin, Ireland and further trained in psychiatric genetic epidemiology with Professors Peter McGuffin and Anne Farmer at the Institute of Psychiatry and Maudsley Hospital, London, UK where she obtained PhD in psychiatric genetics. Dr. Samaan is also a Staff Psychiatrist at St. Joseph's Healthcare and Hamilton Health Sciences.

Her clinical interests are centered on the interface between psychiatry and medicine specifically, depression comorbidity with obesity and cardiovascular disease.

Words of Advice: "Publish everything you do."

Graduate Panel

Jasmine Turna Graduate Student

Jasmine is currently a 1st year PhD student in the MiNDS Neuroscience program at McMaster University. Her graduate work explores the gut–brain connection in Obsessive-Compulsive Disorder by focusing on the gut microbiota (bacteria found in the human gut). Prior to beginning graduate studies, Jasmine worked as a clinical study coordinator/research assistant in the Department of Psychiatry and Behavioural Neurosciences at McMaster for 2 years. This position triggered her interest in clinical research as she became involved with several studies evaluating treatments for anxiety and mood disorders. She is also a graduate of the Biology & Psychology program.

Words of Advice: Don't dismiss a field of research until you've had some exposure to it, you never really know what you like until you've tried it!

Imtiaz Karamat Graduate Student

Imtiaz completed his undergraduate degree in the Biology and Psychology program at McMaster University. During his undergraduate career, he was a member of the McMaster Bat Lab, investigating wound healing and firing preferences of duration-tuned neurons in the Big Brown Bat. He is currently pursuing a Master of Science degree in the Medical Science program at McMaster. His research focuses on the role of mast cells in gut to brain communication during stress. His work will add to our understanding of the physiology of stress, with potential benefits for anxiety-related disorders.

Words of Advice: "Prepare yourself to manage your time more efficiently and make a greater commitment to your studies than ever before."

Casey Myers Graduate Student

Casey Myers completed her Bachelor of Science at McMaster University in Psychology, Neuroscience, and Behaviour, and is currently completing her Masters of Neuroscience at McMaster. Casey's research has been focused on the interface between mental illness and sexual and violent offending. She has contributed to chapters, conference presentations, and is an active member of the forensic research team at St. Joseph's Healthcare Hamilton.

Words of Advice: "Research will come easy if you pick something you're passionate about."

Mental Health Panel

Dr. Van Lieshout

Dr. Van Lieshout is the Albert Einstein/Irving Zucker Chair in Neuroscience and Associate Director of the Neuroscience Graduate Program at McMaster University. He is also a psychiatrist at the Women's Health Concerns Clinic at St. Joseph's Hospital in Hamilton where he works with women struggling with mental illness during pregnancy and the early postpartum period. He has an active program of research examining how intrauterine and early postnatal exposures affect offspring brain development and their subsequent impact on risk for psychopathology.

Words of Advice: "Students wishing to enter psychiatry should ideally have a genuine interest in understanding others and their struggles."

Beth Patterson

Beth received her Bachelor of Nursing at McMaster. She began her career working at the inpatient psychiatric unit at McMaster University Medical Centre (MUMC) before obtaining a position as a nurse/therapist at the MUMC Anxiety Disorders Clinic, where she worked for 12 years. For the past 15 years, she has been working for McMaster University managing a research program in anxiety disorders, and has completed her Master's Degree in Health Research Methodology. Beth also runs a private cognitive behavioural therapy practice treating anxiety disorders, depression and ADHD. She has co-authored many peer-reviewed articles and book chapters.

Words of Advice: "Find a mentor early on in your career."

Mental Health Panel

Jenya Tate

Jenya has graduated from Gorlovka Pedagogical University (Ukraine) and worked as a college instructor for 10 years before arriving in Canada. She has completed the MSc (Occupational Therapy) Program at McMaster University and has been working in the public and private sectors. She is currently an occupational therapist with Schizophrenia and Community Integration Services. She helps people with psychiatric disabilities form habits of daily living that permit them to more fully participate in everyday activities, achieve purpose and life satisfaction.

Words of Advice: "Whenever possible let your clients tell you what they should do".

Maya Gupta

Maya is currently completing her residency at St. Joseph's Healthcare Hamilton in the Schizophrenia and Mood Disorder Programs, where she provides therapy and assessment to individuals with a wide range of mental health concerns. She completed her dissertation at Queen's University, where her research focused on understanding factors that promote family resilience and coping in families with a loved one with early episode psychosis. After her residency, Maya will be starting a career in Early Intervention for Psychosis, where she will work as part of interdisciplinary team to provide recovery-oriented services to individuals with early psychosis and their families, as well as conducting research and teaching.

Words of Advice: "Clinical psychology is a dynamic and exciting field – in addition to therapy and assessment it also requires intensive training in research, statistics, teaching, and program development. As a student, gain as much experience as you can by working with different clinical psychologists!"

Notes for Q & A

Poster Session A

Cellular and Molecular Neuroscience

Poster ID	Authors and Project Titles
A-01	**Comet Assay Reveals Optimal Experimental Conditions for Testing the Effects of Kinetin on the DNA Damage Response in Huntington's Disease** Abu Hela *McMaster University*
A-02	**Probing the Interactions between Epigallocatechin Gallate and Amyloid Beta Assemblies** Rashik Ahmed *McMaster University*
A-03	**Elucidating the Mechanisms of Synaptic Vesicle Release** Julia Bandura *McMaster University*
A-04	**T-lymphocytes Influence Microglia-Neuron Crosstalk** Douglas Chung *McMaster University*
A-05	**LPS-Induced Blood-Brain Barrier Disruption: An Assessment of Lithium's Molecular and Therapeutic Effects** Aaron Edward *McMaster University*

Health and Clinical Neuroscience

A-06	**The Separate and Combined Effects of CDP-Choline and Transcranial Direct Current (tDCS) Brain Stimulation on Sensory Gating in Healthy Volunteers** Ali Acar *Carleton University*
A-07	**“Don’t Judge a Book by Its Cover”: A Qualitative Study of Methadone Patients’ Experiences of Stigma** Julia Woo & Anuja Bhalerao
A-08	**Restrictions in the Life of Children with Epilepsy: Need for an Assessment Tool** Anahita Dehmoobad Sharifabadi *McMaster University*

Poster Session A

Cognitive and Computational Neuroscience

Poster ID	Authors and Project Titles
A-09	**A Stage Specific Mechanism of Desirable Difficulties: Evidence From Semantic Priming** Sara Ahmed *McMaster University*
A-10	**Pattern-based Functional Connectivity and Brain Alignment in the Human Visual Cortex** Ayaan Chaudhry *University of Toronto*
A-11	**Investigating Learning Methods of Surgical Procedures with Orthopaedic Residency Education** Kaitlyn Gonsalves *McMaster University*
A-12	**This One or That One? Using Eyetracking to Measure the Influence of Visual Interference on Object Processing Strategies** Bryan Hong *University of Toronto*
A-13	**Isolating Automatic Effects from Strategic Effects in Grapheme-Colour Synaesthesia** Arielle Levy *University of Waterloo*
A-14	**Investigating Affective States and Visual Scene Perception** Tania Mahendiran *University of Toronto*

Poster Session A

Systems and Behavioural Neuroscience

Poster ID	Authors and Project Titles
A-15	**Investigating Paopa, a New Potential Antipsychotic for the Treatment of Schizophrenia: an In Vivo Microdialysis Study** Omar Shawaf *McMaster University*
A-16	**Subcaste Differences in Neural Activation Suggest a Prosocial Role for oxytocin in Eusocial Naked Mole-Rats** Mariela Faykoo-Martinez *University of Toronto*
A-17	**Mathematical Model of a CA1 Serotonergic Synapse** Laura Green *McMaster University*
A-18	**Migration Time of Adult Born Neural Cells in the Hippocampus of Naked-Mole Rats** Fiza Javed *University of Toronto*
A-19	**Evaluating the Behavior of the Disperser Subcaste of Naked Mole-Rats towards Unfamiliar Animals** Nagham Kaka *University of Toronto*
A-20	**The Prelimbic Cortex is Critical for Contextual Memory Retrieval** Dinat Khan *University of Toronto*

Poster Session B

Cellular and Molecular Neuroscience

Poster ID	Authors and Project Titles
B-01	**The Effects of Androgren Receptor Over-Expression on the Spinal Nucleus of the Bulbocavernosus** Lindsay Melhuish Beaupre *University of Toronto*
B-02	**Spatiotemporal Expression of Autism-Related and FMRP Target Genes in the FMR1 Knockout Mouse Model** Daiana Pogacean *McMaster University*
B-03	**Expression Patterns of GAD65 and GAD67 in the Developing Auditory Brainstem** Chloe Bair-Marshall *McMaster University*
B-04	**The Effect of Ultra Low Dose CB1 Antagonist Rimonabant on Chronic Morphine-Induced Antinociceptive Tolerance and Gliosis** David Wiercigroch

Cognitive and Computational Neuroscience

B-05	**Visual Working Memory Representations Do Not Bias Spatial Attention as Measured by a Spatial Cueing Task** Krista Miller *University of Guelph*
B-06	**Heritability of Neuroanatomical Properties of the Human Hippocampus** Shaughnelene Smith *Queen's University*
B-07	**Interaction Between Shape and Texture Processing During Visual Scene Perception** Vignash Tharmaratnam *University of Toronto*

Poster Session B

Cognitive and Computational Neuroscience

Poster ID	Authors and Project Titles
B-08	**Analysis of Cognitive Nondeterminism Through Electroencephalography** Kate Turner *University of Guelph*
B-09	**A Computational Model of Adaptation Effects on Tactile Perception** Michael Wan *McMaster University*

Health and Clinical Neuroscience

B-10	**The Objective Evaluation of Hypsarrhythmia in the Diagnosis of Infantile Spasms** Alexandra Garbe *McMaster University*
B-11	**Video Game Use for Disseminating Knowledge About Psychosis** Anjanee Naidu *McMaster University*
B-12	**Alterations in Cerebellar Purkinje Cell Activity in the Pathophysiology of ARSACS** Moushumi Nath *McGill University*

Poster Session B

Systems and Behavioural Neuroscience

Poster ID	Authors and Project Titles
B-13	**A Longitudinal Study of the 5xFAD Mouse Model of Alzheimer's Disease Using Touchscreen-Operant Boxes Running the Paired Associates Learning (PAL) Task** Theresa Martin *University of Guelph*
B-14	**The Effects of a Hyperandrogenic Prenatal Environment on Anxiety-Like Behaviour in Mice** Emily Martin *University of Guelph*
B-15	**Modeling Synergistic Effects of Transcranial Direct Current Stimulation and Cognitive Training in Rats** Ashutosh Patel *University of Toronto*
B-16	**The Effects of Cocaine Sensitization on Active Avoidance Behavior in a Free-Operant Active Avoidance Paradigm** Mihilkumar Patel *University of Toronto*
B-17	**The Nucleus Accumbens Core is Critical in Cue-Elicited Approach-Avoidance Decision Making** Osai Samadi *University of Toronto*
B-18	**Strength Matters: Manipulation of Sensation in the Cutaneous Rabbit Illusion** Akash Deep *McMaster University*

PAOPA – A Promising Drug Candidate for Neuropsychiatric Disorders and its Neuroprotective Effects

Hetshree Joshi, McMaster University

Dept. of Psychiatry and Behavioural Neurosciences, Dr. Ram Mishra

Neuro-inflammation is a pathological feature of many psychiatric disorders and conditions such as multiple sclerosis, schizophrenia, Alzheimer's and Parkinson's disease. Recent evidence shows greater expression of the human complement component 4A gene in the brain tissues of individuals with schizophrenia. This gene encodes a protein that plays a key role in the immune system and development of inflammation. Current treatment for schizophrenia focuses on antagonism of dopamine and serotonin receptors. However, the reduction of neuro-inflammation along with antagonism of the receptors may provide more effective treatment. Our lab has been studying PAOPA (3(R)-[(2(S)-pyrrolidinylcarbonyl)amino]-2-oxo-1-pyrrolidineacetamide) as a potential and promising drug for schizophrenia. As one of the most potent allosteric modulators of the dopamine D2 receptor, PAOPA is able to reverse and prevent biochemical and behavioural abnormalities observed in the amphetamine-sensitized and the MK-801 induced preclinical models of schizophrenia. However, the molecular mechanisms through which it attenuates these abnormalities are not well known. In this study, we investigate the effects of PAOPA on the expression of neurotrophic factors (NTFs). NTFs promote survival, differentiation and maintenance of neurons and may help reduce neuro-inflammation. In this experiment, neuroblastoma cells were treated with increasing concentrations of PAOPA and mRNA expression of cerebral dopamine neurotrophic factor (CDNF), brain derived neurotrophic factor (BDNF), and mesencephalic astrocyte-derived neurotrophic factor (MANF) was quantified using real-time PCR. PAOPA altered the expression of all three NTFs which is suggestive of its protective effect. This novel finding advances the development of PAOPA as a drug candidate for schizophrenia, and potentially other diseases involving neuro-inflammation.

What Took So Long, Doc? Diagnostic Delay in Pediatric Brain Tumours

Brij Karmur, McMaster University
Dept. of Pediatric Neuro-oncology, Dr. Sheila Singh, Dr. Adam Fleming,
Dr. Katrin Scheinemann

Cancer diagnosis is not easily concluded due to its low index of suspicion, rarity of the disease, and non-specific presenting features of malignancy. Among all pediatric solid tumours, the greatest diagnostic delay (DD) has been reported in brain tumours. It logically follows that a longer pre-symptomatic interval (PSI) would be associated with survival outcome, more advanced disease stage, or a decreased quality of life. Although some studies have failed to identify decreased survival in patients, there have only been few that have studied the impact on morbidity. In this study, we use the McMaster Pediatric Brain Tumour Study Group database to report quantitative data and qualitative reports. Using the patients that lied above the 2SD measure, we statistically determined the DD value to be 6 months (time before first symptoms). In a patient population of 164, aged 0-18 years, we report a 13% rate in DD; interestingly, 85% of those with DD were females. We found a significant relation of PSI with age; older children have a greater delay in diagnosis than younger children. Those with DD had a significantly smaller lesion than those without. Among common symptoms, DD was significantly associated with vomiting and almost half of the DD patients were low-grade astrocytoma patients. Our case reports of patients with DD indicate increased complications, increased morbidity, and decreased quality-of-life during their course of stay in the hospital. Better education of primary care physicians is necessary to create awareness of early signs of brain tumours.

Silencing the Neuronal Populations that Represent a Cocaine Memory

Albert Park, University of Toronto

SickKids, Neurosciences and Mental Health, Dr. Sheena A. Josselyn

---

Drug addiction is a mental health disorder characterized by the impulse to acquire and consume substances of abuse, despite their negative social consequences. Substantial experimental evidence has demonstrated that memories related to drug use are represented by distributed neurons throughout the brain, and that these neurons play a role in reinstating drug-seeking behaviour during relapse. Drug relapse is a hallmark symptom associated with drug addiction, and understanding its neural basis will help to inform more educated treatment programs. Previous experiments have shown that neurons in the lateral amygdala (LA) compete to represent a fear memory, and that the most excitable neurons at the time of memory formation preferentially capture the memory trace. Our experiments, using a cocaine conditioned place preference paradigm, demonstrate that neurons in the lateral amygdala compete for allocation to a cocaine memory trace based on relative excitability. During preference testing, optogenetic silencing of the cocaine memory trace was sufficient to abolish cocaine conditioned place preference. We then attempted to reinstate cocaine place preference following a period of extinction training, and found that silencing the cocaine memory trace was sufficient to prevent the reinstatement of cocaine place preference. Our results represent further evidence demonstrating that neuronal competition generates the allocation of a cocaine-related memory trace, and that the reactivation of this memory trace is necessary for the reinstatement of drug seeking. Therefore, manipulating the physiology of cocaine memory traces may represent an effective strategy for preventing relapse to drug abuse in patients.

Ubisol-Q10 as a Therapeutic in a Transgenic Mouse Model of Alzheimer's Disease

Alexandra Marginean, University of Windsor
Dept. of Chemistry and Biochemistry, Dr. Siyaram Pandey

Alzheimer's disease (AD) is a progressive, fatal neurodegenerative disease affecting over 500 000 Canadians. It is caused by neuronal death, with research pointing to oxidative stress as a mechanism of neurodegeneration that leads to cognitive deficits, and impaired behaviour. There is currently no treatment available to cure or slow the progression of AD and with the increasing aging demographic, there is a growing concern for public healthcare and socioeconomic costs. Consequently, it is urgent to identify remedies to halt the progression of AD. Using antioxidants to combat free-radical damage and decrease oxidative stress, a water-soluble formulation of Coenzyme Q10 (Ubisol-Q10) has shown to provide neuroprotection in animal models of Parkinson's disease. We investigated if this formulation could prevent the progression of AD in a genetically predisposed double transgenic mouse model of AD. These transgenic mice express genes for human amyloid precursor protein and mutant human presenilin-1 for the predisposition of early-onset AD. The treatment continued for 14 months whereby the treated group received Ubisol-Q10-supplemented water and the untreated group received regular water. Behavioural studies indicated improved long- term memory and emotional reactivity in treated groups. Immunohistochemistry and Congo red fluorescence both showed a decrease in the level of amyloid plaque in the hippocampus of Ubisol-Q10 treated mice compared to the untreated groups. GFAP immunohistochemistry staining showed increased astrocyte activation in the hippocampus and cortical regions of the treatment group compared to the untreated group. Thus, Ubisol-Q10 has demonstrated potential in providing neuroprotection against neurodegenerative diseases like AD.

Concluding Thoughts

Dear Peers,

When we hear the word "research", several images spring to mind: a scientist desperately trying to solve an equation, an extravagant apparatus with chemicals boiling, rodents frantically pushing a lever to receive a palatable treat, maybe even a volunteer responding to stimuli by pressing buttons on a keyboard. What we do not see, however, are the efforts of the individuals who have worked tirelessly and ventured into unknown territory to bring about their results. The NeuroXchange Conference (NXC) attempts to do just that, specifically recognizing the efforts of undergraduate neuroscience researchers. Your hard work and research achievements were on display here today, which for some of you may represent the culmination of your undergraduate careers. We would like to congratulate you on your accomplishments and wish you the best in your future endeavours.

We are grateful to many people for making today's conference possible. First, we would like to thank the entire McMaster BioPsych Society and NeuroXchange Planning Committee for bringing the NXC back to McMaster and subsequently putting in countless hours over the past few months in organizing the event. We thank all of our sponsors for their sincere commitment to develop the NXC into the exciting event that we hope it was. We would also like to thank Dr. Donald Mabbott for attending and presenting at our conference. Thank you to Dr. Obhi, Dr. Samaan and the graduate students for taking part in the question and answer graduate panel. Similar thanks are owed to the individuals on the Mental Health panel. We would also like to thank the administrative staff in the Department of Psychology, Neuroscience & Behaviour and McMaster University, for their support and assistance. Finally, we would like to thank all of you, the students, who were the driving force of this conference - it would not have been possible without you.

This conference is the epitome of collaborative undergraduate work. We thank you all for participating in the sixth annual NeuroXchange Conference and making it a great success. We hope the conference was an enjoyable and rewarding experience.

Sincerely,

The NeuroXchange Planning Committee 2015-2016

Sponsor's Page

BioPsych Society

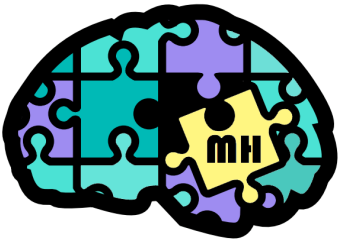
Office of the President, McMaster University

Department of Biology

Department of Psychology, Neuroscience and Behaviour.

Undergraduate Student Initiatives Funding (USIF)

Special Project Funding (SPF), McMaster Student Union



Mental Health Society

MiNDS

McMaster Integrative Neuroscience Discovery & Study

Notes

Notes

Design by Keon Arbabi