3rd Biennial Winter Institute

March 30 – April 2, 2016
The Banff Centre
Banff, Alberta, Canada

This collaborative event is presented by:
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Daniel Goldowitz
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Rachel Leung
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Melanie Penner
Natalie Russo
Ryan Stevenson
Lonnie Zwaigenbaum
Jennifer Zwicker

Invited guest speakers
Crystal Chin
Heather Hazlett
Christina Nicolaidis
Melanie Penner
Natalie Russo
Carol Schall

Trainee Lightning Talks
Jonathan Lai
Megha Sharda
Gabrielle Rigney
Eric Deneault
Afqah Yusuf
Kamila Szulc
Janet Bang
Allison Brennan
Alyssa Altmare
Alexandre Lussier
Nicole Ali
Jacqueline Beatch
Iskra Peltekova
Jelena Popic
Kim Tan-MacNeill
Ryan Stevenson

Support

The Autism Research Training (ART) Program is funded by the Canadian Institutes of Health Research, the Sinneave Family Foundation, and McGill University.

McGill

NeuroDevNet is funded by the Networks of Centres of Excellence.
Welcome from the conference chairs

Dear Participants to the Winter Institute,

It is a great pleasure to welcome you to the third biennial Winter Institute held in the beautiful setting of The Banff Centre in the heart of the Canadian Rockies! We are looking forward to an exciting and stimulating meeting together with close to 100 participants from a variety of research disciplines involved in neurodevelopmental disorders research. The Autism Research Training (ART) Program, NeuroDevNet, and the Sinneave Family Foundation are proud to host this event which will gather bright young researchers together with Canadian and American academic leaders in their fields as well as other stakeholders in the neurodevelopmental disorders community.

The conference program is designed to actively engage participants in interactive learning opportunities, through guest lectures, expert panels, and breakout discussion groups, while also making time for social activities and networking. A diverse scientific program has been prepared, covering a broad range of exciting topics such as biomarkers for early detection, clinical and ethical issues in neurodevelopmental research, strategies for supported employment in youth and adults with ASD, intervention research, and participatory research designs. We are privileged to have a number of community practitioners and advocates participate in the final two days when we hold a special community engagement event that attempts to support exchange of knowledge and perspectives among stakeholders including researchers, trainees, families, and community advocates.

We would like to take a moment and thank our insightful and dedicated planning committee for their incredible work. The success of this meeting also goes to all the individuals who contributed an enormous amount of behind-the-scenes administrative help and support and to whom we are extremely grateful.

Enjoy the Institute! While attending the meeting, we hope that you will take advantage of the long afternoon break to explore the city of Banff and enjoy the many outdoor activities the surrounding has to offer. Please don’t forget to give us feedback after the meeting about your experience so that we improve each year.

Margaret Clarke
Senior Vice-President of Policy and Programs
Sinneave Family Foundation

Dan Goldowitz
Scientific Director
NeuroDevNet

Lonnie Zwaigenbaum
Program Director
Autism Research Training Program
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## Conference program preview

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<td>Breakfast – Vistas Dinning Room (Sally Borden Building)</td>
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<tr>
<td>8:00 – 8:45</td>
<td>Conference registration</td>
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<td>8:45 – 9:00</td>
<td>Welcoming remarks</td>
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<td></td>
<td>Dr. Margaret Clarke, Sinneave Family Foundation; Dr. Lonnie Zwaigenbaum, Autism Research Training (ART) Program; Dr. Daniel Goldowitz, NeuroDevNet</td>
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<tr>
<td>9:00 – 10:15</td>
<td>Using brain-based biomarkers to understand early development in autism and support presymptomatic detection.</td>
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<td>Dr. Heather Hazlett., University of North Carolina</td>
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<tr>
<td>10:15 – 10:30</td>
<td>Refreshment break (Kinnear Centre 3rd floor Galleria)</td>
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<tr>
<td>10:30 – 12:15</td>
<td>Application of biomarker-based screening approaches: clinical and ethical Issues</td>
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<td>Dr. Heather Hazlett., University of North Carolina; Dr. Mayada Elsabbagh, McGill University; Dr. Melanie Penner, Holland Bloorview Kids Rehabilitation Hospital; Dr. Albert Chudley, University of Manitoba</td>
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<tr>
<td>12:15 – 13:45</td>
<td>Meet-the-Expert Luncheon – Vistas Dinning Room (Sally Borden Building)</td>
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<tr>
<td>13:45 – 15:00</td>
<td>Trainee Lightning Talks</td>
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<td>15:00 – 15:30</td>
<td>Refreshment break (Kinnear Centre 3rd floor Galleria)</td>
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<td>15:30 – 17:30</td>
<td>Advances in neurodevelopmental theory and implications for research approaches in neurodevelopmental disorders</td>
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<td>Dr. Natalie Russo, Syracuse University; Dr. Armando Bertone, McGill University; Dr. Grace Iarocci, Simon Fraser University</td>
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<tr>
<td>17:30 – 19:30</td>
<td>Dinner – Vistas Dinning Room (Sally Borden Building)</td>
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*Boardrooms KC308 and KC310 available for private meetings from 8:00 to 17:30*
### Thursday, March 31

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<th>Time</th>
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<td>7:00 – 8:45</td>
<td>Breakfast – Vistas Dinning Room (Sally Borden Building)</td>
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<tr>
<td>8:45 – 9:45</td>
<td><strong>Breakout groups – Research Management and Professional Skills</strong></td>
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<td><strong>Room KC303</strong></td>
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<td>8:45 – 9:45</td>
<td>Academic / non-academic career tracks</td>
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<td>10:00 – 11:00</td>
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<td>11:15 – 12:15</td>
<td>Teaching and presentation skills</td>
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<td>12:15 – 13:30</td>
<td>Lunch – Vistas Dinning Room (Sally Borden Building)</td>
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<tr>
<td>Afternoon</td>
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<td>Strategies for supported employment in youth and adults with neurodevelopmental disorders</td>
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<td>Dr. Carol Schall, Virginia Commonwealth University</td>
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<td>Intervention research in neurodevelopmental disorders: Lessons from the trenches</td>
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<td>Dr. Carol Schall, Virginia Commonwealth University; Dr. Darcy Fehlings, Holland Bloorview Kids Rehabilitation Hospital; Dr. Adam Kirton, Alberta Children's Hospital; Dr. Carmen Rasmussen, University of Alberta; Dr. Evdokia Anagnostou, Holland Bloorview Kids Rehabilitation</td>
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<td>Dr. Christina Nicolaidis, Portland State University</td>
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<td>Discussants: Crystal Chin, Holland Bloorview Kids Rehabilitation Hospital; Wendy Mitchell, University of Alberta</td>
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<td>Community Engagement Event – breakout discussion groups (KC303)</td>
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<td>10:15 – 10:30</td>
<td>Refreshment break (Kinnear Centre 3rd floor Galleria)</td>
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<td>10:30 – 11:45</td>
<td>Community Engagement Event – large group discussion (KC303)</td>
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<td>11:45 – 12:00</td>
<td>Conclusion of Winter Institute (KC303)</td>
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<tr>
<td>12:15 – 13:30</td>
<td>Lunch – Vistas Dining Room (Sally Borden Building)</td>
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Lecture abstracts

**Using brain-based biomarkers to understand early development in autism and support presymptomatic detection**

Dr. Heather Hazlett, University of North Carolina  
Wednesday March 30, 2016  
9:00 am to 10:15 am  
KC303  
Chair: Dr. Christian Beaulieu, University of Alberta

Advances in neuroimaging allow us to prospectively examine brain development in autism and other neurodevelopmental disorders. These approaches can provide us with clues to the underlying neurobiology of autism and may help us detect autism before characteristic behavioral symptoms become manifest. This talk will review critical periods in early brain development and how these might be disrupted in neurodevelopmental disorders. We will examine how imaging methods can be applied to study early brain development, including what these methods are measuring and some caveats and considerations when using these approaches with young children. We will discuss what neuroimaging findings have been observed in autism and related disorders and will focus on recent work in infants at high-risk for ASD.

**Application of biomarker-based screening approaches: Clinical and ethical issues**

Wednesday March 30, 2016  
10:30 am to 12:15 pm  
KC303  
Chair: Dr. Judy Illes, University of British Columbia

There have been many gains in our understanding of early brain development in autism and related neurodevelopmental disorders. Technologies such as brain MRI have led to findings of early brain overgrowth and aberrant cortical development in autism. Other disorders, such as fragile X syndrome, show distinct patterns of subcortical enlargement. While the use of brain imaging methodologies has increased our understanding of the underlying neuropathology of autism and other disorders, we still lack the capacity to use these tools for diagnoses. Early identification could prove particularly valuable with neurodevelopmental disorders such as autism that do not currently have genetic testing available, as is the case with fragile X syndrome and Down syndrome. Also unknown are how underlying brain differences may impact response to treatment, and whether intervention can change brain morphology and growth trajectories. In this talk, we will examine the potential for using our current understanding of brain differences in autism, fragile X syndrome, and other neurodevelopmental disorders for identification. The challenges of using brain imaging techniques and the ethical implications for doing this will be discussed. Finally, we will explore promising new directions for how these methodologies may develop as a tool for identification and monitoring treatment outcomes.

Suggested readings

Infant biomarkers for autism: Where do we go from here?
Dr. Mayada Elsabbagh, McGill University

A substantial amount of research has focused on the development of biological indicators of autism early in life. As a result, multiple theoretical accounts have debated the utility and potential value of such biomarkers. Nevertheless, empirical research directly relevant for effective translation very limited, posing a challenge for effective translation. I will illustrate these issues, focusing on current and potential applications of biomarkers in the context of screening, etiological investigation, and intervention trials.

Suggested readings
• Yusuf A, Elsabbagh M, At the cross-roads of participatory research and biomarker discovery in autism: The need for empirical data, BMC Medical Ethics, Volume 16, 88

Can ASD Biomarkers be Cost-Effective?
Dr. Melanie Penner, Holland Bloorview Kids Rehabilitation Hospital

This talk will introduce basic concepts of cost-effectiveness, including tradeoffs, incremental cost-effectiveness ratios, and the cost-effectiveness plane. It will review costing studies in ASD. Attendees will be encouraged to envision the ways in which ASD biomarkers may contribute to “effectiveness” outcomes. Health systems tradeoffs of implementing biomarker technology will be explored. Future directions will be discussed, including the evidence base necessary to determine whether biomarkers can be cost-effective.

Suggested readings

Application of Biomarker-Based Screening approaches: The view from the clinical trenches
Dr. Albert Chudley, University of Manitoba
The role of biomarkers is the cornerstone of a medical geneticist’s practice. The suspicion or identification of a specific disorder based on clinical grounds is ideally followed by a single or several diagnostic tests to confirm or exclude a specific diagnosis. A correct diagnosis offers many benefits to the affected individual and the family. Diagnosis is paramount to proper medical management and treatment, identifying complications and co-morbidities associated with a diagnosis, identifying an etiology, providing a prognosis, giving accurate information and genetic counselling to the family and developing a prevention strategy.

The etiology of neurodevelopmental disorders and birth defects are varied and heterogeneous. Some are due to chromosome imbalances that result in duplication or deletion of genetic material, such as the classical disorder of Down syndrome (trisomy 21). Some are due to changes in a sequence of DNA involving a single gene, such as Neurofibromatosis 1 (NF1) or the expansion of a region of a gene leading to gene silencing such as fragile X syndrome. Still others have a more complex cause and require a combination of several genetic and epigenetic changes and environmental triggers such as autism and fetal alcohol spectrum disorder. The latter examples present many clinical and ethical challenges, in part because of the emerging role of the newer genetic technologies and our current incomplete understanding of the significance of some test findings. This presentation will illustrate the benefits and limitations of biomarker and genetic testing through some case examples.

Suggested readings
Trainee Lightning Talks
Wednesday March 30, 2016
13:45 pm to 15:00 pm
KC303
Chair: Douglas Swanson, NeuroDevNet Research and Training Manager

1. Jelena Popic, Post-doctoral Fellow, McGill University:
   The characterization of eIF4E pathway and ASD-like behaviors in Eif4ebp2 knockout mice

2. Eric Deneault, Post-doctoral Fellow, Hospital for Sick Children:
   Modeling Autism by Gene Editing in Human Induced Pluripotent Stem Cells

3. Alexandre Lussier, Doctoral Student, University of British Columbia:
   Prenatal alcohol exposure alters epigenetic patterns in the rat hypothalamus and white blood cells

4. Iskra Peltekova, Master's Student, McGill University:
   A prospective quantitative assessment of the impact of genetic test results on families affected by ASD and related neurodevelopmental conditions

5. Megha Sharda, Post-doctoral Fellow, University of Montreal:
   Language ability predicts cortical structure and covariance in Autism Spectrum Disorders

6. Kamila Szulc, Post-doctoral Fellow, The Hospital for Sick Children:
   Repairing the Brain with Physical Exercise: An Exercise Trial in Pediatric Brain Tumor Survivors. Insights from Deformation Based Morphometry and Cortical Thickness Analysis

7. Afiqah Yusuf, Doctoral Student, McGill University:
   Assessing parents’ perspectives on autism biomarker discovery

8. Alyssa Altomare, Doctoral Student, University of Calgary:
   Coping with Bullying: An Examination of Mental Health among Students with Autism Spectrum Disorder
Advances in neurodevelopmental theory and implications for research approaches in neurodevelopmental disorders
Wednesday March 30, 2016
15:30 pm to 17:30 pm
KC303
Chair: Dr. Ryan Stevenson, University of Toronto; Jake Burack, McGill University

Advances and caveats in the use of neuroscience tools to study developmental disabilities and autism spectrum disorders
Dr. Natalie Russo, Syracuse University

The advance of technology and the increase in the number of researchers who have access to big toys (fMRI, ERPs, MEGs, NIRS etc…) has led to a growing number of studies focused on mapping the relations between how an individual performs on a task and the brain regions that support that performance. The potential utility of these increasingly sophisticated and precise technologies along with the concomitant theoretical and methodological contributions of the field of neuroscience provide promise for yet a new stage in the development of the developmental approach to the study of persons with intellectual disability.

The errors that have been made over the course of the short, yet long, history of the study of persons with intellectual disability should be lessons that we avoid repeating as we move forward in the embrace of cutting-edge technology in the service of the discipline of neuroscience. As neuroscientists and others from across a broad variety of different disciplines begin to delve into the study of intellectual disability, the history of the developmental approach can guide them in detecting landmines to avoid and directions of promise to pursue. Of course the beauty of increasing the breadth of our knowledge with respect to intellectual disability requires scientific freedom that is not constrained too strongly by our past. Nonetheless, there is enrichment to be had by understanding how our history has shaped our present and wisdom to be learned by not repeating the errors of our predecessors. This talk will highlight the importance of developmental tenets to the study of developmental disabilities and autism spectrum disorders.

Defining perceptual and cognitive phenotypes across neurodevelopmental conditions: implication for assessment and remediation
Dr. Armando Bertone, McGill University

As reflected by changes in the diagnostic criteria for Autism Spectrum Disorder (ASD), non-social sensory-related behaviours are now considered to be a defining characteristic of this neurodevelopmental condition. Consequently, understanding ASD-specific sensory abilities has become increasingly important (i) when interpreting sensory-related cognitive and behavioural findings in ASD, as well as (ii) when developing efficient cognitive remediation tools that maximize such abilities. For this presentation, I will demonstrate how perceptual signatures - sensory profiles based on simple visual task performance - can be used to define and dissociate brain differences between neurodevelopmental conditions (autism vs FXS), even when they manifest similar behavioural symptoms. I will also discuss the advantage of using non-social, visually based cognitive training to maximize executive functioning (attention) in different neurodevelopmental conditions, including ASD. I discuss why visually-based training methods, which are non-verbal in nature and do not involve social (higher-order) pretence, are advantageous when working with children with social, language and/or cognitive challenges.

Advancements in defining and measuring social competence in persons with and without neurodevelopmental disorders
Dr. Grace Iarocci, Simon Fraser University

Social competence (SC) is critical to what we think, how we live, and how we interact with each other and the world around us. Many persons with neurodevelopmental disorders struggle to develop social competence. Whereas typically individuals are skilled at interacting with others in a variety of contexts, those with neurodevelopmental disorders struggle to relate to and engage with the people around them. Social deficits
range from mild to severe; in severe cases even basic social behaviors such as verbal communication and joint attention may be impaired. Despite the importance of social competence to developmental outcomes, there is a lack of conceptual clarity as well as valid and reliable measures of social competence. Of those that have been developed, many have not been sufficiently validated and others have been developed to assess symptoms of specific disorders such as autism and, therefore, are not appropriate for use with other populations. In an effort to adequately represent the multidimensional nature of SC, we developed the Multidimensional Social Competence Scale (MSCS), a rating scale with parent, teacher and self-report versions to assess individual profiles of social competence in children 7-18 years and adults. Although the original scale was informed by current knowledge of autism, a developmental disability known for its severe impact on social functioning, the MSCS reflects a broad range of social competence skills and thus captures the variability in social competence in the general population. In this presentation, I will present advancements in theory and research methods that are particularly useful to defining, and measuring social competence in persons with and without neurodevelopmental disorders.

Suggested readings:
Research Management and Professional Skills Workshops
Thursday March 31, 2016
8:45 am to 12:15 pm
KC303, KC305, KC308, KC310
Chair: Dr. Jake Burack, McGill University, Dr. Sukhpreet Tamana, University of Alberta

1. Academic / non-academic career tracks
   A presentation and discussion of career paths and roles in and outside academia for greater consideration for career planning.
   Facilitators: David Nicholas and Jennifer Zwicker, University of Calgary, Melanie Penner, Holland Bloorview Kids Rehabilitation Hospital

2. Management and mentoring skills
   Perspectives and discussion on mentorship, menteeship, and the management of a research lab.
   Facilitators: Natalie Russo, Syracuse University and Jake Burack, McGill University

3. Teaching and presentation skills
   A discussion of teaching and presentation strategies to effectively engage audience.
   Facilitators: Adam Kirton, University of Calgary and Evdokia Anagnostou, Holland Bloorview Kids Rehabilitation

4. Knowledge Translation/Mobilization and Social Media/Networking
   In this session, we will explore various facets of knowledge translation, primarily focusing on issues disseminating research using social media. We will look at the constraints of various channels and mediums. Based on those principles, each participant will create a KT product for their own research and get feedback from others in the group
   Facilitators: Jonathan Lai, York University and Bethany Becker, NeuroDevNet

5. Writing skills
   A presentation of tips and strategies to consider for writing abstracts, papers, studentships, awards, or postdoc applications.
   Facilitators: Lonnie Zwaigenbaum and Christian Beaulieu, University of Alberta

6. Research Ethics
   In this workshop, trainees will learn to identify ethical challenges within the context of clinical research and, in particular, considerations, guidelines, and strategies for working with children with neurodevelopmental disorders. Trainees will learn to address these challenges by integrating bioethics principles and pragmatic neuroethics research.
   Facilitators: Judy Illes and Sharmin Hossain, University of British Columbia
Strategies for supported employment in youth and adults with neurodevelopmental disorders
Dr. Carol Schall, Virginia Commonwealth University
Friday April 1, 2016
8:45 am to 10:15 am
KC303
Chair: Sarah Treit, University of Alberta

This session will review the research regarding employment outcomes for youth with ASD as well as review 3 important pathways to employment. These pathways are pre-employment internships, supported employment and customized employment. Additionally, the presenter will provide specific examples regarding the supports youth and adults with ASD used to acquire and maintain employment in community-based integrated environments.

Suggested readings:

Intervention research in neurodevelopmental disorders: Lessons from the trenches
Friday April 1, 2016
10:30 am to 12:15 pm
KC303
Chair: Dr. Elizabeth Kelley, Queen’s University

Dr. Carol Schall, Virginia Commonwealth University

As a member of this panel, Dr. Schall will describe the challenges faced when completing intervention research in community based settings. Challenges discussed will include balancing research logic versus treatment outcomes and managing the control group engagement. She will also discuss the challenges associated with managing research in non-clinical settings.

Suggested article:

Dr. Darcy Fehlings, Holland Bloorview Kids Rehabilitation Hospital

A personal top ten list of “trench” lessons to increase your impact as a researcher will be presented with each item ‘illustrated’ with personal examples and reflections. Items range from building for success, avoiding pitfalls, embedding clinical intervention research into ‘discovery’ science, maximizing impact, and thinking strategically.

Suggested article:
Dr. Adam Kirton, Alberta Children’s Hospital

Strategies for integrating clinical care and best practices with recruitment and execution of clinical trials and research will be the focus. Examples from a translational clinical research program in perinatal stroke built over the last 8 years will help illustrate different challenges and options to overcome them. Benefits to children and families having the opportunity to contribute and try new things will be demonstrated. The reciprocal benefits to research programs, scientists, and trainees will be discussed. How to start, grow, and diversify such programs will be considered to facilitate the development of such models across a variety of disciplines.

Suggested article:

Dr. Carmen Rasmussen, University of Alberta

This presentation will focus on conducting intervention research with neurodevelopment populations. The presenter will review some of the different study designs used in intervention research and different types of interventions that can be implemented. Challenges in conducting intervention research and lessons learned will also be discussed. Finally, strategies for successful intervention research in both clinical/applied and community-based settings will be discussed.

Suggested article:

Dr. Evdokia Anagnostou, Holland Bloorview Kids Rehabilitation

To be confirmed
Trainee Lightning Talks  
Friday April 1, 2016  
13:45 pm to 15:00 pm  
KC303  
Chair: Douglas Swanson, NeuroDevNet Research and Training Manager

1. Gabrielle Rigney, Post-doctoral Fellow, Dalhousie University:  
   *Behavioural interventions with a sleep outcome for children with neurodevelopmental disorders: A systematic review*

2. Nicole Ali, Doctoral Student, Dalhousie University:  
   *Modifying an Online Intervention to Treat Sleep Problems in Children with Neurodevelopmental Disorders*

3. Kim Tan-MacNeill, Doctoral Student, Dalhousie University:  
   *Sleep Problems in Children with Autism: Barriers and Facilitators to Treatment*

4. Janet Bang, Doctoral Student, McGill University:  
   *Intentions in word learning: Referential gaze versus a moving arrow in children with or without autism spectrum disorders*

5. Jacqueline Beatch, Doctoral Student, University of Calgary:  
   *Sights and Sounds Study*

6. Ryan A. Stevenson, Post-doctoral Fellow, University of Toronto, University of Western Ontario:  
   *Face perception issues in Autism may reflect broad conjunctive processing difficulties*

7. Allison Brennan, Post-doctoral Fellow, Simon Fraser University:  
   *Assessing social functioning of children with ASD using parent-reports and child-parent interaction*

8. Jonathan Lai, Post-doctoral Fellow, York University:  
   *Getting what you really want: priority service needs and predictors of receipt based on a National Needs Assessment for individuals with ASD*
Collaboration strategies in participatory research partnerships in autism and other neurodevelopmental conditions
Dr. Christina Nicolaidis, Portland State University
Discussants: Crystal Chin, Holland Bloorview Kids Rehabilitation Hospital; Wendy Mitchell, University of Alberta
Friday April 1, 2016
15:30 pm to 17:30 pm
KC303
Chair: Dr. David Nicholas, University of Calgary

Though there are many flavors of participatory research (e.g. Participatory Action Research, Community Based Participatory Research, Patient and Stakeholder Involvement, Community-Engaged Research, “insider” research), at their core, participatory approaches to research all challenge the traditional research paradigm by including members of the population being studied as part of the research team. Participatory approaches have been used to strengthen the quality, relevance, and impact of research with many different populations. However, participatory approaches are still infrequently used in research about autism or other developmental disabilities. Dr. Nicolaidis will discuss a variety of participatory approaches that can be used in different research settings, comparing and contrasting the theoretical underpinnings of different approaches and emphasizing how each may strengthen research with people with developmental disabilities. She will then discuss the many practical challenges that need to be addressed in order to turn theory into practice, using concrete examples from her work with the Autism Spectrum Partnership in Research and Education (AASPIRE), the Partnering with People with Developmental Disabilities to Address Violence Consortium, the Pregnancy Decision-Making for Women with Developmental Disabilities Project, the Interconnections Project, and other participatory partnerships. Attendees will be asked to think about what infrastructures, processes, and supports would be needed in order to effectively partner with individuals on the autism spectrum, people with other neurodevelopmental disabilities, or key stakeholders in their own research areas.

Crystal and Wendy will discuss their experience on being part of a participatory team and will offer feedback on Christina’s presentation in relation to their experience. They look forward to the discussion following the presentations.

Suggested readings
Community Engagement Event
Saturday April 2, 2016
8:45 am to 11:45 am
KC303, KC305, KC308, KC310
Chair: Dr. Lonnie Zwaigenbaum, University of Alberta, and Anneliese Poetz, NeuroDevNet and York University

The purpose of this session is to provide a forum for discussion about how to bridge research and practice, with a focus on the topics of the previous day (vocational research, intervention research, participatory research). The session aims at supporting exchange of knowledge and perspectives among diverse stakeholders including researchers, trainees, practitioners, community organizations, and policy-makers. It provides an opportunity to gain a better understanding of others’ perspectives and priorities for policy and practice by experiencing engagement with different stakeholders.

Agenda

8:45 – 9:00 Welcome and Introduction KC303
Explanation of goals and expected outcomes.

9:00 – 10:30 Breakout group discussions KC303, 305, 308, 310
Facilitated discussion based on guiding questions and highlights of arising key discussion points.

10:30 – 10:50 Break 3rd floor Galleria

10:50 – 11:45 Large group discussion KC303
Each group to report back on their main highlights followed by discussion.
Lightning Talk Abstracts

Talk Title: THE CHARACTERIZATION OF eIF4E PATHWAY AND ASD-LIKE BEHAVIORS IN Eif4ebp2 KNOCKOUT MICE

Presenter: Jelena Popic
Institution: McGill University

Co-Authors: Jelena Popic, Ilse Gantois, Nahum Sonenberg

Abstract:

Autism Spectrum Disorders (ASD) represents a group of conditions characterized by early emerging behavioral disruptions (social communication, repetitive behaviors) with a rising rate of diagnosis to an estimated 1 in 68 children. During synaptogenesis, proper assembly of neural circuits depends on the balance between excitatory and inhibitory (E/I) inputs. Disruption of this balance can lead to neurodevelopmental disorders such as autism, epilepsy, Rett syndrome or Fragile X syndrome. Gamma-aminobutyric acid (GABA) is a main inhibitory neurotransmitter in the brain, but during early development GABAergic currents are mainly excitatory. The shift from excitatory to inhibitory actions of GABA occurs between first two postnatal weeks in rodents due to the reduction of intracellular chloride concentration mediated by a decrease in the expression of the main chloride importer NKCC1 and an increase in the main chloride exporter KCC2. Protein synthesis (mRNA translation) is an essential process in all organisms. eIF4E is the least abundant translation-initiation factor, and its activity is rate-limiting and tightly regulated. 4E-BP2 is the major form of eIF4E-binding proteins, and its dephosphorylated form binds to eIF4E and therefore acts as translational suppressor. It has an important role in long-lasting synaptic plasticity, learning and memory in the mammalian brain. The link between translational control, E/I imbalance and ASD-like phenotypes was established in Eif4ebp2 knockout (KO) mice by demonstrating impaired social behavior and learning deficits.

We examined components of eIF4E pathways and chloride transporters by Western blotting in the cortex and hippocampus of 14 day old postnatal (P14) wild type (WT) and Eif4ebp2 KO male mouse pups. We used behavioral tests to measure stereotyped/repetitive behaviors (self-grooming and marble-burying) in adult animals. We showed that the expression of NKCC1 and KCC2 is regulated by 4E-BP2. NKCC1 protein is upregulated in the cortex, while KCC2 is downregulated in the cortex and hippocampus. In addition, the expression of p-eIF4E, p-ERK, p-Akt, and p-mTOR is upregulated in Eif4ebp2 KO, without changes in the expression of total amount of proteins. Adult Eif4ebp2 KO showed increased grooming and marble burying behavior compared to age-matched WT mice. Dysregulation of chloride homeostasis and a delay in the shift of GABAergic transmission during synaptogenesis in Eif4ebp2 KO mice can be the cause of the ASD-like phenotype observed in these mice. Therefore, further studies will address the normalization of increased NKCC1/KCC2 ratio in order to reverse ASD-like phenotype in Eif4ebp2 KO mice using Bumetanide, an FDA approved drug that inhibits NKCC1. The results obtained in this study will provide an important insight into the developmental mechanisms of translational control in ASD and might lead to a new pharmacotherapeutical direction for the prevention of behavioral impairments in ASD.
Talk Title: MODELING AUTISM BY GENE EDITING IN HUMAN INDUCED PLURIPOTENT STEM CELLS

Presenter: Eric Deneault
Institution: Hospital for Sick Children, Toronto

Co-Authors: Sean H. White, Kirill Zaslavsky, Ryan K. Yuen, Tadeo O. Thompson, Alina Piekna, Karun Singh, James Ellis and Stephen W. Scherer

Abstract:

Autism spectrum disorder (ASD) is a complex neurodevelopmental disorder that is poorly understood at the gene level. As live neurons from human brain are not easily accessible, we generated a series of new induced pluripotent stem (iPS) cell lines derived from skin fibroblasts or blood cells obtained from members of different ASD families affected by loss-of-function mutations in ASD candidate genes. The genes affected by these mutations are AGBL4, CAPRIN1, CNTN5, DLGAP2, EHMT2, KAL1, NRXN1 and SET. We used a double-nicking type II CRISPR/Cas9 system to correct mutations in patient-derived iPS cells, hence providing isogenic controls to highlight the role of these genes in autism. Guide RNA (gRNA) sequences were devised in order to minimize the likelihood for off-target binding. In the presence of a single-stranded oligonucleotide (ssODN) template, cellular HDR machinery replaced the disease mutations for the wild-type sequences. Edited alleles were detected using specific DNA probes along with absolute quantification by droplet digital PCR (ddPCR). The frequency of modified alleles was amplified to 100% using sibselection steps in a 96 well format (Miyaoka Y, Nat. Methods, 2014;11[3]). We also designed a similar editing strategy to specifically knockout 8 additional ASD-associated genes in an iPS cell line that can be used as an isogenic healthy control. These include AFF2, ASTN2, ATRX, CACNA1C, CHD8, KCNQ2, SCN2A and TENM1. We hypothesized that artificial disruption of a candidate gene in iPS-derived neurons would promote a similar phenotype to that observed in iPS-derived neurons from probands. We preferentially targeted the earliest exon that is common to the different transcripts for each candidate gene. We inserted a 59bp DNA fragment that includes all-frame termination codons and a V5 epitope tag to possibly reveal truncated forms of proteins. This stop tag is synthesized as ssODN flanked by homology arms that are specific to each candidate gene. Several transcriptional networks associated with synaptic function were disrupted in our CRISPR-knockout iPS cell lines, as revealed by transcription profiling and gene ontology analyses. This suggests that these cells are already primed for neuronal dysfunction. High synaptic density was revealed by immunocytochemistry in cortical neurons derived from CACNA1C/- iPS cells, suggesting interneuron overconnectivity that might interfere with neuronal function. Severe differentiation impairments were also observed upon neuronal differentiation of ATRX/- and CHD8+/+ iPS cells. Early electrophysiology experiments tend to show maturity defects in KAL1/- neurons and various limitations of different knockouts to fire action potentials.
**Talk Title:** Prenatal alcohol exposure alters epigenetic patterns in the rat hypothalamus and white blood cells

**Presenter:** Alexandre Lussier  
**Institution:** University of British Columbia

**Co-Authors:** Tamara Bodnar, Matthew Mingay, Martin Hirst, Michael S. Kobor, Joanne Weinberg

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**Abstract:**

**Introduction:** Prenatal alcohol exposure (PAE) alters the development of neurobiological systems, leading to lasting endocrine and neurobehavioural deficits. The hypothalamus is particularly vulnerable to alcohol's effects, displaying long-term functional changes in the stress response, circadian rhythms, and metabolic regulation. While the etiology of this reprogramming remains unknown, DNA methylation is emerging as a potential mediator and biomarker for the effects of PAE due to its stability over time and malleability in response to environmental cues. Here, we examine the DNA methylation profiles of rat hypothalami and leukocytes at four developmental time-points to assess the genome-wide impact of PAE on the epigenome and identify potential biomarkers of PAE.

**Methods:** The hypothalami of female rats from three prenatal treatment groups (PAE, pair-fed, or control) were collected on postnatal days (PN) 0, 8, 15, and 22, while leukocytes were collected on PN22 alone. Genome-wide DNA methylation analysis was performed by methylated DNA immunoprecipitation, followed by next-generation sequencing.

**Results:** PAE caused lasting changes to DNA methylation profiles across all four developmental ages, with several regions displaying the same direction of change in the hypothalamus and leukocytes of PN22 animals. Furthermore, the majority of differentially methylated regions were located in intergenic regions and contained important regulatory sequences.

**Conclusions:** Persistent DNA methylation changes in the hypothalamus may explain some of the long-term deficits observed in both animal models and clinical studies of PAE. Moreover, correlations between epigenetic alterations in peripheral and central tissues may prove critical to the development of an easily measurable signature of FASD.
Abstract:

**Intro/Objectives:** Autism Spectrum Disorders (ASD) and related neurodevelopmental conditions are rooted in the interplay between genetic and environmental factors. There are hundreds of genetic variants associated with these conditions and genetic tests (microarrays) are a routine part of their clinical assessment. Qualitative studies have highlighted the potential use of genetic results by affected families. These include establishment of an etiology, change in health surveillance, informed family planning and psychological impacts. Furthermore, it has been shown that informed knowledge of genetic results by genetic counseling impacts a specific aspect of health-related quality of life - "empowerment". Knowledge of genetic results may also contribute to increased stress in families. However, there is a lack of quantitative data on the real life impact of genetic results on families affected by ASD and related conditions. Therefore, we want to prospectively evaluate the effect of genetic results knowledge on family empowerment and stress, and assess how this interplay is moderated by various factors.

**Methods:** A prospective quasi-cohort design will be used. The cohort consists of families affected by ASD and related conditions, whose affected children are to undergo genetic testing. The intervention is the disclosure of their genetic test results to families. We will gather data before and after the intervention, through validated questionnaires, on family empowerment and stress. We will also assess: a) family-specific moderators such as knowledge of ASD, presence of the broad autism phenotype within the family, parental relationship, resource use, and perception of family-centered care; b) child-specific moderators, like social impairment, behavioural/emotional regulation, executive function, sleep and feeding problems, and participation; and c) result-specific moderators, such as perceived clinical impact of the genetic result. We will compare outcomes between families with negative genetic results and those with pathogenic results or results that are variants of unknown significance.

**Impact:** This study establishes a methodology for the systematic assessment of the effect of genetic results knowledge on the empowerment and stress of families affected by ASD and related conditions, and the factors moderating this effect. The data will facilitate the development of a family-oriented framework for genetic results disclosure, which will aid the integration of personalized genomic medicine in healthcare.
**Talk Title:**  LANGUAGE ABILITY PREDICTS CORTICAL STRUCTURE AND COVARIANCE IN AUTISM SPECTRUM DISORDERS

**Presenter:** Megha Sharda  
**Institution:** University of Montreal

**Co-Authors:** N.E.V. Foster, A. Tryfon, K.A.R. Doyle-Thomas, E. Anagnostou, A.C. Evans, and K.L. Hyde for NeuroDevnet ASD imaging group

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**Abstract:**

_**Introduction:**_ Autism spectrum disorders (ASD) are characterized by significant difficulties in language and communication. Neuroimaging evidence suggests that language impairments in ASD may be related to atypical connectivity between fronto-temporal brain areas. However, the relationship of language and communication abilities to brain structure remains unknown. The objectives of the current study were to measure cortical thickness and anatomical covariance associated with language and communication in ASD compared with typically developing (TD) controls.

_**Methods/Results:**_ Participants were 46 ASD and 50 TD males, matched on age, with IQ>75. ASD group was diagnosed using ADI-R and ADOS. Structural language and communication abilities in ASD were assessed using CELF-4 (Clinical Evaluation of Language fundamentals) and CCC-2 (Children’s Communication Checklist-2), respectively. High-resolution T1 images for all participants were analyzed using the CIVET pipeline to calculate cortical thickness. Seed-based analysis of anatomical covariance was performed across subjects, between cortical thickness at a seed vertex and all other vertices to generate a group map of covariance. Seed loci were selected in left inferior frontal gyrus (IFG), left superior temporal pole (STP) and their right hemisphere homologues. Statistical analyses were performed using vertex-wise general linear interaction models with age, site, full-scale IQ and brain volume as nuisance variables and vertex-wise seed thickness as variable of interest. Results showed increased cortical thickness in ASD versus TD in left fronto-temporal regions. While SCNs for controls reflected intrinsic connectivity networks described in earlier studies, SCNs for ASD showed widespread disruption. A direct comparison of the SCNs between TD and ASD revealed reduced covariance of the left STP seed with a right frontal loci in ASD, suggesting decreased bilateral interactions. Furthermore, alterations in both cortical thickness and covariance were modulated by structural language ability as measured by CELF-4 of the ASD group but not communicative function (as measured by CCC-2).

_**Conclusions:**_ Our findings reflect distinct differences in cortical structure and covariance of fronto-temporal regions in ASD, which are best explained by their structural language abilities but not communicative abilities. These differences indicate the importance of structural language abilities in the study of altered fronto-temporal cortical structure and covariance in ASD and suggest that diagnostic specifiers, such as language, can be useful tools for understanding heterogeneity while maintaining the generalizability of findings in brain structural differences, much more than either symptom severity or cognitive ability.
Talk Title: **REPAIRING THE BRAIN WITH PHYSICAL EXERCISE: AN EXERCISE TRIAL IN PEDIATRIC BRAIN TUMOR SURVIVORS. INSIGHTS FROM DEFORMATION BASED MORPHOMETRY AND CORTICAL THICKNESS ANALYSIS.**

**Presenter:** Kamila U. Szulc  
**Institution:** The Hospital for Sick Children  
**Co-Authors:** Oyefiade A, Riggs L, Bouffet E, Laughlin S, Timmons BW, Lerch JP, de Medeiros CB, Skocic J, Mabbott DJ

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**Abstract:**

**Intro:** Cranial radiation is a standard form of treatment for malignant brain tumors. While radiation increases survival rates, it also leads to long-term cognitive impairments and neurodegeneration [1-4]. Unfortunately, there is no cure or standard of care for these treatment-related effects. Recently, there have been a growing number of studies showing the benefits of physical activity for the brains of healthy children [5-6], but its potential as a rehabilitative technique remains unknown. We conducted a 12-week program to examine whether aerobic exercise can stimulate brain repair processes in pediatric brain tumor survivors treated with cranial radiation.

**Methods & Results:** 28 children treated for brain tumors participated in 90-minutes of group based aerobic activities 3 times per week for 12 weeks in a “group only” (n=16) or “combined group/home” (n=12) setting. Half of the children was assigned to start training first (Group A) and the other half was assigned to wait 12 weeks and then start training (Group B). Participants in the Group A were evaluated at the beginning of the exercise program, post-intervention and 3 months after cessation of the exercise program. Group B participants were evaluated 3 month before starting the exercise program, at the beginning of the exercise program and post-intervention. A standard 3D T1-weighted anatomical MRI scans of 1 mm$^3$ isotropic resolution was collected at each of the evaluation time points to examine changes in brain anatomy. Cortical thickness and overall morphology were evaluated using previously described methods [7-9]. Based on regional analysis of changes in cortical thickness a significant effect of training on thickness of right precentral gyrus was observed in the “group only” setting. Additionally, based on whole brain vertex-wise analysis, increases in cortical thickness were seen within: right and left temporal pole, right postcentral gyrus, right parietal lobe and right and left parahippocampal gyrus. Lastly, statistically significant increases in volume of white matter underlying: right motor cortex, right somatosensory cortex and right parietal lobe were found after completion of exercise program regardless of the training setting.

**Conclusions:** Previous analysis of this data have shown that the exercise intervention results in statistically significant increases in hippocampal volume in the “group only” setting, improvement in white matter metrics and decreased reaction time in children after completion of the exercise program in both “group only” and “combined group/home” setting. In this study we extended our prior analysis to deformation based morphometry (DBM) and cortical thickness analysis. This data suggest that aerobic exercise may be an effective intervention in fostering neurobehavioural recovery in children treated for brain tumours. Future work will examine the relation between changes in brain structure and cognitive functioning.

Talk Title: ASSESSING PARENTS’ PERSPECTIVES ON AUTISM BIOMARKER DISCOVERY

Presenter: Afiqah Yusuf  Institution: 1Department of Psychiatry, McGill University
Co-Author: Mayada Elsabbagh

Abstract:

Intro: Research on understanding biomarkers for autism spectrum disorders (ASD) provides the potential to identify and monitor children at risk for ASD earlier than currently possible, thus facilitating access to personalized care. However, the complexity of the role of biomarkers coupled with the heterogeneity of ASD warrants a cautious translation of research findings in this field.

Based on previous models of community engagement in autism research (Walsh et al., 2011; Elsabbagh et al., 2014), systematically understanding the priorities and needs of the intended beneficiaries of research would inform the translation of this research. Our previous scoping review revealed limited examples of an empirical assessment of priorities and needs of beneficiaries (Yusuf and Elsabbagh, 2015). Current knowledge gaps include 1) the potential utility of biomarkers to inform care and 2) the perceived balance of risk and benefits from putative biomarkers for ASD.

Objective: Despite emerging findings (Narcisa et al., 2012; Trottier et al., 2013; Wydeven et al., 2012) we could not identify validated tools to assess parent perspectives on biomarker discovery. Therefore, the goal of the study is to develop a questionnaire for use with parents of children with ASD on their needs and priorities for biomarker discovery.

Methods/Results: Questionnaire items were adopted from results of a scoping review, focusing on three constructs: 1) general priorities for research on ASD biomarkers, 2) current and potential utility of biomarkers to inform care for ASD, and 3) perceived impact of biomarker discovery. Once compiled into a provisional questionnaire, the items were reviewed by a parent of a child with autism and by experts in the field of autism biomarkers. The updated version was then pre-tested through a series of cognitive interviews of parents of a child with ASD (n=8) to ensure that the items could be understood, in the same way across participants, and as intended (Collins, 2004). The on-line questionnaire was then pilot tested among parents of children with ASD (n=10). All participants have a male child with ASD with an average age of 15 years old (SD=3.5).

Results: Pilot data (n=10) suggest that parents consider the following priorities for biomarker discovery as very important: understanding how the brain develops in ASD and the developmental pathways in ASD. Potential uses of biomarkers rated as very important include using biomarkers to help develop behavioural interventions and to treat ASD-related medical issues. Half of the participants considered using biomarkers to identify ASD during pregnancy as of little importance. All participants agreed that further understanding of biomarkers for ASD would help others perceive their child more positively, but half did not think that it would change their experience as a parent.

Conclusions: Preliminary results suggest that it is feasible to empirically assess parents’ perspectives on autism biomarker discovery. Future administration of the questionnaire in the target population would inform the translation of biomarker discovery to address families’ needs.
Talk Title: COPING WITH BULLYING: AN EXAMINATION OF MENTAL HEALTH AMONG STUDENTS WITH AUTISM SPECTRUM DISORDER

Presenter: Alyssa Altomare
Institution: University of Calgary
Co-Authors: Dr. Adam McCrimmon (Research Supervisor)

Abstract:

Students with ASD have been reported to experience peer victimization at higher rates than students from the general population (Wainscott, Naylor, Sutcliffe, Tantam, & Williams, 2008), as well as students with other special needs (Rowley et al., 2012; Twyman et al., 2010). Peer victimization has been found to produce high levels of stress in children and to alter their self-concepts (Grills & Ollendick, 2002); therefore, exploring the role of coping strategies in relation to peer victimization may inform intervention. Although previous research has identified several coping strategies used by typically developing students when bullied (e.g., Kochenderfer-Ladd & Skinner, 2002), such findings may not generalize to students with ASD. To date, no known research has systematically explored coping strategies in relation to peer victimization and mental health among students with ASD.

Research Questions:
1) What is the frequency of peer victimization in a Canadian (primarily Alberta-based) sample of students with ASD ages 8 to 17 years old?
2) Is there a relation between peer victimization (form and frequency) and anxiety/depression within this sample?
3) How do different forms of coping buffer or amplify (i.e., moderate) the relation between peer victimization and mental health among students with ASD?

Participants: 49 students with ASD (without an intellectual disability); ages 8-17 (grades 4-12).

Measures: Each rater (parent, student, teacher) completed their respective versions of PREVNet's Bullying Evaluation and Strategies Tool (BEST; Craig et al., 2013) to establish the incidence and forms of peer victimization experienced by the student. Student coping strategies pertaining to peer victimization were measured via a modified version of Causey and Dubow’s (1992) Self-Report Coping Scale (Wright et al., 2010). Parent and teacher perspectives of anxiety and depression were assessed using the Behavior Assessment System for Children, Second Edition (BASC-2; Reynolds & Kamphaus, 2004). Student participants completed the Beck Youth Inventories, Second Edition (BYI-II; Beck, Beck, Jolly, & Steer, 2005) to gain a more in-depth analysis of symptoms of anxiety and depression.

Preliminary Results: According to student self-report, the majority of students did not report experiencing bullying within the past 4 weeks. Specifically, 63.3% reported no victimization. This is in stark contrast to parent and teacher reporting. According to parent report, the majority of students in the sample (83.3%) were reported to have experienced peer victimization within the past 4 weeks. According to teacher report, the majority of the students in the sample (73.5%) were reported to have experienced bullying within the past 4 weeks. Social bullying was the most commonly reported form of bullying experienced by students according to parent and teacher report. Verbal bullying was the most commonly reported form of bullying reported by students (self-report). Results regarding mental health (anxiety and depression) and coping skills will also be discussed.
**Talk Title:** BEHAVIOURAL INTERVENTIONS WITH A SLEEP OUTCOME FOR CHILDREN WITH NEURODEVELOPMENTAL DISORDERS: A SYSTEMATIC REVIEW

**Presenter:** Gabrielle Rigney  
**Institution:** Dalhousie University

**Co-Authors:** The Investigative Team for Better Nights, Better Days for children with Neurodevelopmental Disorders

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**Abstract:**

**Intro/Objectives:** Approximately 85% of children with neurodevelopmental disorders (NDD) experience sleep problems, with insomnia being the most frequent cause of sleep disturbance in children with NDD. Sleep problems have a significant impact on children’s physical and psychosocial health and may contribute to increased NDD symptom presentation. Despite behavioural sleep interventions being highly effective, less than 15% of children with insomnia receive behavioural treatment. Most children with NDD are either treated with medication or not treated at all for their sleep problems. The current systematic review had two main objectives: (1) identify commonalities and differences in sleep problems experienced in children with NDD; (2) evaluate the efficacy of common behavioural treatment interventions for children with NDD.

**Methods/Results:** Nine databases were searched in July 2015. The search strategy consisted of four parameters combined using “AND” relations: children (e.g., paediatrics, child, toddler); sleep problems (e.g., sleep, parasomnia); intervention terminologies (e.g., treatment, therapy); neurodevelopmental disorders, specifically Autism Spectrum Disorder (ASD), Fetal Alcohol Spectrum Disorder (FASD), Cerebral Palsy (CP) and Attention-Deficit/Hyperactivity Disorder (ADHD). To be included in the review studies needed to meet the following criteria: (1) be written in either English or French; (2) report on children aged 3-10 years; (3) include a behavioural intervention; (4) discuss sleep as an outcome measure. Sixty-five full text articles met the inclusion criteria and were included in the review. Findings show that sleep problems are more common in children with NDD, compared to typically developing children. Specific types of sleep problems relate to certain NDDs, for example restless leg syndrome is more common in children with ADHD due to low iron and children with ASD are more likely to experience problems with melatonin secretion and circadian rhythm disorders. Common behavioural interventions trialed include establishing routines, developing positive sleep-related associations, and improving healthy sleep practices as well as the sleeping environment.

**Conclusions/Impact:** There is evidence that behavioural sleep interventions can work for children with ASD or ADHD, but there are limited experimental studies for children with FASD and CP. Further evaluation of behavioural sleep interventions for children with NDD and their effects on child and family health is needed.
Talk Title: MODIFYING AN ONLINE INTERVENTION TO TREAT SLEEP PROBLEMS IN CHILDREN WITH NEURODEVELOPMENTAL DISORDERS

Presenter: Nicole Ali  
Institution: Dalhousie University  
Co-Authors: BNBD-NDD Investigative Team

Abstract:

Up to 85% of children with neurodevelopmental disorders (NDDs) experience sleep problems. This can be very impairing to the child as sleep problems are related to negative daytime consequences such as poorer attention, reaction time, and concentration. The family at large is also impacted, as evidenced through a decline in parents' work attendance, mental health, sleep and stress levels. Treatment of sleep problems can be very effective, but accessing treatment can be a difficult task as few professionals offer these treatments, and when they are offered, families experience time, cost and geographical barriers. Online interventions offer a potentially effective solution for treating sleep problems. There is a growing body of research demonstrating the effectiveness of online intervention. The goal of this research is to transform an online sleep intervention, Better Nights, Better Days, which was designed for typically developing children so that it is appropriate and effective for use with children who have NDDs. Specifically the focus will be on Attention Deficit Hyperactivity Disorder, Autism Spectrum Disorders, Cerebral Palsy and Fetal Alcohol Spectrum Disorder.

A Delphi study will be used with experts in the area of sleep and NDDs to elicit their suggestions for developing an online intervention for sleep problems in children with NDDs. The goal of the Delphi study is to obtain consensus among these selected experts. In the first round of the Delphi study, the experts will answer open-ended question about what an online intervention for sleep problems in children with NDDs should include. Their answers will be compiled and fed back to the experts who will rate, on a 7-point Likert scale, how important they believe each modification to be. During each round they will be able to suggest any additional modifications. Following the second round and any subsequent rounds, the percentage of experts rating each item 1-2 (not at all important), 3-5 (moderate importance), and 6-7 (extremely important) will be calculated, items receiving less than a cut-off (≥75% rating item as 1 or 2) will be eliminated, and the results will be redistributed to the participants. Consensus is considered to be reached when no new items are being suggested nor deleted.

The information gathered from this Delphi study¹, in combination with results from a systematic literature review (presented by Dr. Rigney), will ensure the modifications that are made to the Better Nights, Better Days intervention are based both in research and in expert opinion. Ultimately, having an effective and accessible sleep intervention for children with NDDs will help to improve well-being for both the children and their families.

¹ N.B. Data collection for this study will begin mid-February. Preliminary results will be presented at the conference.
**Talk Title:** SLEEP PROBLEMS IN CHILDREN WITH AUTISM: BARRIERS AND FACILITATORS TO TREATMENT

**Presenter:** Kim Tan-MacNeill  
**Institution:** Dalhousie University

**Co-Authors:** Dr. Isabel Smith, Dr. Penny Corkum

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**Abstract:**

**Intro/Objectives:** Behavioural sleep problems, called insomnia, occur in 50-85% of children with autism spectrum disorder (ASD), and negatively impact children and their families (Reynolds & Malow, 2011). Although behavioural interventions are recommended to treat insomnia in children with ASD, little is known about parents' and healthcare professionals' (HCPs) experiences with accessing and providing treatments. Objectives were to explore barriers and facilitators experienced by parents of children with ASD and HCPs who work with them in access to, uptake, provision, and implementation of behavioural treatments for insomnia.

**Methods/Preliminary Results:** Using a mixed-methods design, 22 parents of 4-12-year old children with ASD and behavioural sleep problems and 21 HCPs who work with this population participated in online, synchronous audio/video focus groups or individual interviews, which followed topic guides on: sleep knowledge; familiarity with evidence-based sleep treatment (HCPs only); access to, uptake (parents), provision (HCPs), and implementation of treatment; and perceived acceptability of an online parent-directed sleep intervention. Transcripts were qualitatively analyzed using conventional content analysis. Key themes for both parents and HCPs included: 1) sleep problems/treatment are perceived as exceptionally challenging, intensive, and demanding compared to other problems/treatment; 2) consistency/routines and perseverance are keys to success; 3) the multifactorial nature of sleep problems complicates treatment; 4) treatment must be highly individualized; 5) important to recognize sleep's impact on entire family; 6) awareness of sleep and how to access help is limited. Major barriers are lack of knowledge/awareness and support, and systematic limitations; flexibility, education, and support are major facilitators.

**Conclusion/Impact:** Parents and HCPs endorsed common barriers and facilitators to effective treatment of sleep problems in children with ASD, many of which were general to neurodevelopmental disorders, rather than ASD-specific. Parent beliefs and attitudes about sleep appear to influence seeking of treatment and whether HCPs will work on sleep. Results will inform the development of an online behavioural intervention for insomnia, *Better Nights, Better Days for Children with Neurodevelopmental Disabilities.*
Talk Title: INTENTIONS IN WORD LEARNING: REFERENTIAL GAZE VERSUS A MOVING ARROW IN CHILDREN WITH OR WITHOUT AUTISM SPECTRUM DISORDERS

Presenter: Janet Bang
Institution: McGill University
Co-Authors: Aparna Nadig

Abstract:

Referential gaze, a person’s eye gaze directed towards an object, has had a central role in many investigations of word learning. Successful learning from referential gaze is often attributed to an innate understanding of the intent behind another’s referential gaze, and intention reading may have important consequences for the depth of word learning (Norbury et al., 2010). Yet learning from referential gaze may not require understanding intentions – referential gaze may simply serve to direct our attention. The present study teases apart the role of intentions for word learning by comparing learning from referential gaze with a cue controlling for directing attention, a moving arrow, in children with or without ASD.

Participants included 6- to 10-year-old children with ASD (n = 15) or TD (n = 15) matched on age, gender, nonverbal IQ, and language. An eye-tracker recorded children’s on-line attention to videos that taught novel words in two conditions: referential gaze cue or a moving arrow cue. Videos included teaching and test phases and children were also asked to point to the target object at test. Two (group) x 2 (cue condition) mixed ANVOAs demonstrated that during teaching, all children looked significantly longer at the gaze ($M = .196, SD = .165$) versus arrow cues ($M = .094, SD = .092$), with no main effect of group or interactions. There were also no main effects or interactions in children’s attention to the target object. During test, many children successfully pointed to the target for both types of cue (10 ASD, 12 TD), with no main effects or interactions for eye-tracking measures of latency of first look to or proportion of time looking at the target.

These findings suggest that children with or without ASD preferentially attend to referential gaze versus a moving arrow during teaching, but the learning of a new word in both groups may be explained more simply from the directional properties of referential gaze. Analyses in progress evaluate in depth measures of learning, beyond children’s fast mapping abilities (Norbury et al., 2010). Findings from this study will have the potential to specify the mechanisms children with ASD use for word learning, and understanding these mechanisms is critical to inform teaching strategies in ASD.
Talk Title: SIGHTS AND SOUNDS STUDY

Presenter: Jaqueline Beatch  
Institution: University of Calgary

Co-Authors: Dr. Suzanne Curtin

Abstract:

Multisensory information, such as audio and visual stimuli, provides the individual with redundant information making it more salient in the environment. Multisensory information that is redundant is reacted to faster compared to when only one source of information (e.g., audio or visual) is provided. When audiovisual (AV) information does not match (e.g., is out of sync), it can affect how the information is integrated. Thus, examining how information is presented is important for better understanding how information is processed across audio and visual sensory systems. Integrating multisensory information may be especially important in early childhood as it may be related to children's emerging ability to communicate the relation between events and ignore irrelevant stimuli. The current study will provide insight into how children integrate multisensory information, based on their behavioural and neural responses, and how processing is related to cognitive and language abilities.

Participants will be 4-and-5-year-old typically developing children and those with Autism Spectrum Disorder (ASD). First, children will be seated at a computer and told to press a button when they hear or see a target animal. Each animal will be presented unisensory (i.e., picture or sound) or multisensory that either match (e.g., picture of a bird and “tweet” sound) or do not match (e.g., picture of a bird and “meow” sound). Second, we will record electroencephalography (EEG) while children observe human face stimuli producing single speech syllables (e.g., “keef”), presented one at a time on a screen. Speech syllables will either be in sync with the video (0ms), or out of sync (offset by 1000ms, 1500ms, or 2000ms). Using standardized measures, their cognitive and language abilities will be determined.

The integration of multisensory information is necessary for a number of cognitive processes and this is one of the first studies to examine it in early childhood. While the ability to integrate multisensory information begins in infancy, the age at which we become efficient at processing it is still unknown. This research explores how processing and integration of multisensory information is carried out in childhood, at a time when children's cognitive abilities, which rely on the integration of information, are becoming more efficient.
Talk Title: **FACE PERCEPTION ISSUES IN AUTISM MAY REFLECT BROAD CONJUNCTIVE PROCESSING DIFFicultIES**

**Presenter:** Ryan A. Stevenson  
**Authors:** R.A. Stevenson¹,²,³, S. Ferber¹,⁴, M.D. Barense¹,²

**Institution:** ¹Department of Psychology, University of Toronto; ²Department of Psychology, University of Western Ontario; ³Brain and Mind Institute, University of Western Ontario; ⁴Rotman Research Institute

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**Abstract:**

**Background:** Numerous studies have suggested that individuals with autism may have difficulties perceiving items (e.g. faces) as single, unified percepts (conjunctive processing), instead defaulting to perceiving the components of a given item as discrete parts (feature-based processing). There is some debate, however, as to whether this perceptual difficulty in Autism Spectrum Disorder (ASD) is specific to faces, which are typically processed in a conjunctive manner, or if this difficulty extends to visual processing in general.

**Objectives:**

1) We used a novel eye-tracking paradigm to assess the degree to which typically developing individuals conjunctively process unfamiliar faces and novel objects.

2) We used the same paradigm in individuals with ASD to quantify conjunctive processing difficulties in ASD, and determine whether they were specific to faces or generalized to visual object stimuli.

**Methods:** Sixteen individuals to date (data collection ongoing; ages 8-21 years) with and without autism (typically developing, TD) have completed an eye-tracking paradigm in which participants were presented with pairs of stimuli from different viewpoints and responded as to whether the two stimuli were the same or different. Four types of stimulus-pairs were presented in blocks: low-ambiguity faces (50% morphs), high-ambiguity faces (80% morphs), low-ambiguity novel objects (one-of-three overlapping features), and high-ambiguity novel objects (two-of-three overlapping features). 72 trials of each were presented, and pilot studies matched accuracies across stimulus types.

This eye-tracking paradigm was developed specifically to compare conjunctive and feature-based perceptual strategies. By comparing the number of within-item saccades, which represent a conjunctive processing strategy, to between-item saccades, which represent a feature-based strategy, one can assess the relative extent to which an individual relies on a particular visual processing strategy. As such, the ratio of within-items saccades relative to between-items saccades was calculated for each individual with each stimulus type (W/B-ratio), and used as an index of conjunctive processing. Higher ratios indicate greater use of conjunctive processing strategies.

**Results:** W/B-ratio scores from currently-collected data were compared across stimulus types and diagnostic groups in a mixed-method, three-way ANOVA (diagnostic group x stimulus type x ambiguity level). A strong three-way interaction between diagnosis, stimulus type, and ambiguity was observed (see Figure). Given this interaction, two-way tests (stimulus type x ambiguity level) were conducted for both ASD and TD. TD individuals showed a significant interaction, conjunctively processing all faces and high ambiguity objects. Individuals with ASD, however, processed all stimuli in a feature-based manner, with no interaction.

**Conclusion:** These data suggest that the difficulties that individuals with ASD have in perceiving faces in not specific to faces, but is instead a broader issue with visual conjunctive processing.
**Talk Title:** ASSESSING SOCIAL FUNCTIONING OF CHILDREN WITH ASD USING PARENT – REPORTS AND CHILD – PARENT INTERACTION

**Presenter:** Allison Brennan  
**Institution:** Simon Fraser University  
**Co-Author:** Grace Iarocci

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**Abstract:**

Although all individuals with ASD meet the diagnostic criteria of social impairment, there is considerable variability in the expression and severity of social deficits. This research assesses the social functioning of children with ASD using two methods: parent–report of individual skills and dynamic social behavior during child–parent interactions. Although social interaction deficits are a core feature of ASD, the majority of existing research characterizes social behavior at an individual level. This research will measure three pivotal aspects of interactional social behavior: verbal exchanges (e.g., conversational turn taking), nonverbal exchanges (e.g., eye contact), and emotion (e.g., regulation, understanding). These measures of child–parent interaction are combined with parent–reported social functioning, measured with the Multidimensional Social Competence Scale (Yager & Iarocci, 2013). By assessing social competence at both the individual skills level and in a social interaction context, this research aims to advance the theory and method of social functioning assessments for children with ASD.
Talk Title: GETTING WHAT YOU REALLY WANT: PRIORITY SERVICE NEEDS AND PREDICTORS OF RECEIPT BASED ON A NATIONAL NEEDS ASSESSMENT FOR INDIVIDUALS WITH ASD

Presenter: Jonathan Lai

Institution: York University

Author(s): J.K.Y. Lai¹, J.A. Weiss¹

Institution(s): ¹Department of Psychology, York University, Toronto, ON, Canada

Abstract:

Intro/Objective: Across the lifespan, individuals with Autism Spectrum Disorder (ASD) have many health, community, and social service needs. These create age related challenges in navigating service sectors. Further, individuals with ASD often have a high level of service need, which are often left unmet, compared to other individuals with disabilities of similar age. Knowing the services that are currently considered priorities by caregivers, and identifying correlates and barriers to having those needs met, will shed light on the resource gaps in the care and support of individuals with ASD and inform policies to improve service access. The objective of this study was to identify differences in priority service receipt of individuals with ASD and the clinical, sociodemographic and systemic correlates of obtaining priority services across the lifespan.

Methods: An online survey was administered across Canada through the Canadian Autism Spectrum Disorders Alliance, completed by 3251 caregivers reporting on 3317 family members with ASD. Caregivers reported on their family member’s top 5 current needs and their current service receipt. Analysis of priority needs and predictor of priority receipt was done in an age-stratified manner.

Results: Across the entire sample, 30.6% of individuals received none of their priority services, while 20.5% received at least half of their priority services. The number of priority receipts decreased across the lifespan; with preschool aged and elementary school age children receiving on average more priority services compared to adolescents and adults. Predictors of priority receipt included sociodemographic, clinical and systemic factors that varied by age.

Conclusions and Impact: The results show the alignment of receipt with addressing priority needs in a large sample of individuals with ASD. Identifying the predictors of priority receipt is integral for responsive, evidence-informed service planning with limited resources.
Bibliographical notes

Anagnostou, Evdokia
Dr. Evdokia Anagnostou is a child Neurologist and clinician scientist at Bloorview Research Institute. Dr. Anagnostou's research focuses on the psychopharmacology and neuroimaging of autism. Dr. Anagnostou is principal or co-investigator on multiple clinical trials in autism and has had extensive funding in both pharmacology and neuroimaging and leads the Ontario Brain Institute initiative in neurodevelopmental disorders (POND). She is on the treatment advisory board for Autism speaks as well the International Rett’s Science Foundation and an associate editor for Molecular Autism.

Beaulieu, Christian
Dr. Christian Beaulieu is a Professor of Biomedical Engineering, Scientific Director of the Peter S Allen MRI Research Centre at the University of Alberta, and an Alberta Innovates – Health Solutions Scientist. His research expertise lies in the development of new magnetic resonance imaging (MRI) methods, particularly diffusion tensor imaging, and their application to better detect quantitative differences of the human brain with typical development/aging and in individuals with neurological disorders (e.g. stroke, epilepsy, fetal alcohol spectrum disorders).

Becker, Bethany
Bethany Becker is Communications Manager of NeuroDevNet. A former print journalist specializing in education and health care, she also has an extensive background in health promotion and communications in research settings. Her interest in neuroscience is based on a family history that includes dementia and autism.

Bertone, Armando
Dr. Bertone is a William Dawson scholar and Assistant Professor in the Department of Educational and Counselling Psychology at McGill University. A cognitive neuroscientist and clinical neuropsychologist, Dr Bertone is the director of the Perceptual Neuroscience Laboratory for Autism and Development (PNLab). His team and collaborators use different experimental approaches to define biologically-plausible brain alterations that can account for sensory-related cognition and behavior in autism. Dr. Bertone’s principal publications concern (1) the characterization of brain function underlying perceptual and cognitive processes in autism and related neurodevelopmental conditions; (2) how altered sensory functioning differentially affects higher-level perception (i.e., social perception), cognition (i.e., visual attention), learning and behavior in autism; (3) defining developmental trajectories for visual and auditory abilities in both typically- and atypically-developing populations; and (4) the development of cognitive assessment and remediation tools based on perceptual performance. Among other goals, Dr. Bertone’s research aims at increasing the efficacy of existing cognitive and behavioral interventions in autism by considering perceptual strengths and challenges in this condition at different periods of development.

Burack, Jake
Jacob A. (Jake) Burack is Professor of School/Applied Child Psychology and Human Development in the Department of Educational and Counselling Psychology at McGill University and Director of the McGill Youth Study Team. Jake, along with his students and colleagues, studies the development of cognition, attention, and perception among children with autism spectrum disorder, Down syndrome, and with typical developmental histories. He and his past and current students are leading proponents of the developmental approach to the scientific study of intellectual disability. In collaboration with Laurent Mottron and colleagues, Jake developed and articulated the “enhanced perceptual functioning” model of autism, which has become a widely cited framework for understanding many different aspects of functioning, especially those of particular strengths, among persons with autism. Jake and his students also study the role of cultural identity and continuity in the development and well-being of First Nations youths.

In addition to journal articles and chapters, Jake has co-edited three recent volumes, The Oxford handbook on intellectual disability and development (Oxford University Press, 2012) with Robert M. Hodapp, Grace Iarocci, and Edward Zigler; Cognitive neuroscience, development, and psychopathology: Typical and atypical trajectories of attention (Oxford University Press, 2012) with James T. Enns and Nathan A. Fox; and Cultural and contextual perspectives on developmental risk and well-being (Cambridge University Press, 2014) with Louis A. Schmidt. Jake is also actively involved in different capacities with schools, service agencies, and summer camps for children and adults with intellectual disability and/or ASD, youths from First Nations backgrounds, and/or those who are otherwise often marginalized by society.
Chin, Crystal

Crystal Chin utilizes her lived and learned experiences as a racialized, young female immigrant living with a visible disability to bring forward the voice of youth facing intersectional barriers to decision making tables across the province. Through her many interactions with the academic and medical sectors, she became engaged in her community, particularly around health and education issues. She serves in many capacities and for many organizations.

At Holland Bloorview Kids Rehabilitation hospital, she previously held the role of Co-Chair, and public relations on the Youth Advisory Council. She is currently a member of the Patient Family Advisory, Council and a Foundation Ambassador. Furthermore, Ms. Chin is a member of the Canadian Association of Pediatric Centers, a Board member of the Richmond Hill Mobility Access Foundation, and a former Board member of Marsha Forest Centre. She was also patient representative on the Integrated Complex Care Advisory Committee with The Provincial Council for Maternal and Child Health, and a former panel member of PANORAMA: A Province wide citizens’ advisory panel that informs and enriches the work of The Change Foundation, Ontario’s independent health policy think tank. She is an involved member of CPNET Patient Advisory Committee with the Ontario Brian Institute. She most recently worked for the Provincial Advocate for Children and Youth as an Independent Officer of the Legislature. While, currently completing her role, and responsibilities as an active Council member of the Premier’s Council on Youth Opportunities: A legislated apolitical advisory body established to provide advice to the Ontario government regarding issues concerning youth populations identified as “High Needs”.

Chudley, Albert

Dr. Albert (Ab) Chudley is Medical Director of the Genetics and Metabolism Program and is a Professor in the Departments of Pediatrics and Child Health, Biochemistry and Medical Genetics, University of Manitoba. His clinical and research interests are in the areas of dysmorphology; the recognition, delineation and prevention of birth defects, including fetal alcohol syndrome; developmental disabilities and autism spectrum disorders; gene mapping and gene discovery. He served on the FASD advisory committee of the Public Health Agency of Canada, and is a co-lead in the FASD stream of the NeuroDevNet. He has consulted on issues related to FASD locally, nationally and internationally. He has co-authored over 400 scientific peer-reviewed publications, book chapters and abstracts related to medical genetics and birth defects. He served as a board member on the Assisted Human Reproduction Agency of Canada. He is a former President of the Canadian College of Medical Geneticists. He is a recipient of the Founder’s Award from the Canadian College of Medical Geneticists for outstanding achievement and exceptional contributions to Medical Genetics.

Elsabbagh, Mayada

Mayada Elsabbagh, Ph.D. is Assistant Professor in Psychiatry at McGill University. Her research, in the area of early infancy and developmental disorders, is focused on understanding the brain basis of behavioural genetic disorders. Prior to returning to Canada from the UK in 2011, Mayada supported the successful launch of collaborative research networks in autism including BASIS and ESSEA, aimed at accelerating the pace of discovery in early autism. Mayada is active in the area of knowledge translation locally and internationally. She was the recipient of the 2010 UK Economic and Social Research Council Neville Butler Memorial Prize for Longitudinal Research awarded in recognition of the public value and social relevance of her research.

Fehlings, Darcy

Dr. Darcy Fehlings is Head of the Division of Developmental Paediatrics and is a Professor in the Department of Paediatrics, at the University of Toronto. She is the inaugural holder of the Bloorview Children’s Hospital Foundation Chair in Developmental Paediatrics. Dr. Fehlings is a Senior Clinician Scientist in the Bloorview Research Institute. Her research focuses on the innovation and evaluation of interventions for children with cerebral palsy. She is the lead investigator of an Ontario Brain Institute integrated neuroscience network focused on children with cerebral palsy (CP-NET) and leads the CP Discovery Project in the Canadian NeuroDevNet Networks of Centres of Excellence. Professor Fehlings was the 2015 president of the American Academy for Cerebral Palsy and Developmental Medicine (AACPDM).

Hazlett, Heather

Dr. Hazlett is a board licensed psychologist with expertise in pediatric neuropsychology and neuro-developmental disorders. She received her professional training at the University of Georgia, Children’s Hospital/Boston, and the University of North Carolina. She is currently an assistant professor in the Department of Psychiatry and an investigator in the Carolina Institute for Developmental Disabilities (CIDD) at UNC. Dr. Hazlett’s research has primarily focused on examining brain development in neurodevelopmental disorders, such as autism, fragile X, and Down syndrome. She uses neuroimaging to examine brain morphology and growth in infants, toddlers, preschoolers and school-age children. Dr. Hazlett has received research funding from NIH and private foundations, such as Autism Speaks, Foundation of Hope, and the Angelman Syndrome Foundation.
In addition to her research activities, Dr. Hazlett has worked as a clinician conducting evaluations for autism spectrum disorders and other neurodevelopmental disorders for almost 15 years. The autism focused clinic is a multi-disciplinary clinic designed to see complex cases where comorbid psychiatric disorder and/or complications from genetic and medical conditions make differential diagnosis particularly challenging. Dr. Hazlett also supervises a pediatric neuropsychology clinic and participates in a multi-disciplinary clinic for neurogenetic disorders. In her role at the CIDD, Dr. Hazlett supervises the clinical work of postdoctoral, predoctoral, and graduate level trainees.

**Hossain, Sharmin**

Dr. Hossain is a Postdoctoral Fellow at the National Core for Neuroethics at the University of British Columbia (UBC) and a NeuroDevNet Trainee. She obtained her B.Sc. in Neuroscience from the University of Texas at Dallas and a Ph.D. in Neuroscience from UBC. Her doctoral dissertation focused on characterizing the dynamic growth patterns of immature neurons during early brain development. Dr. Hossain’s current research focuses on the ethical, legal, and social challenges that emerge from advances in neuroscientific knowledge, advent and novel applications of neurotechnology, and their clinical translation. Specifically, she is interested in identifying gaps in ethical creation, propagation, and management of guidance and policies that pose potential risks to children, with a particular focus on neurodevelopmental disorders. She is also developing a project on barriers to accessing healthcare by refugee and immigrant children, and she is an active member of the NeuroDevNet Trainee Policy and Advocacy Committee.

**Iarocci, Grace**

Grace Iarocci is Professor and Director of the Autism and Developmental Disorders Lab in the Department of Psychology at Simon Fraser University, in British Columbia, Canada. She is a faculty mentor in the Autism Research Training Program (ART) and NeuroDevnet and she works closely with government and community agencies in BC to disseminate research information on ASD and other developmental disabilities. Dr. Iarocci’s research focuses on the processes involved in the development of social competence in individuals with and without autism spectrum disorder as well as how we define and measure the construct of social competence. The overarching theoretical framework is that of developmental psychopathology whereby, typical and atypical development are mutually informative. Dr. Iarocci’s research is funded by NSERC, SSHRC and the Michael Smith Foundation for Health Research.

**Illes, Judy**

Dr. Illes is Professor of Neurology and Canada Research Chair in Neuroethics at the University of British Columbia. She is Director of the National Core for Neuroethics at UBC, and faculty in the Centre for Brain Health at UBC and at the Vancouver Coastal Health Research Institute. She also holds affiliate appointments in the School of Population and Public Health and the School of Journalism at UBC, and in the Department of Computer Science and Engineering at the University of Washington in Seattle, WA, USA, and is a Life Member of Clare Hall, Cambridge University. She obtained her Bachelors’ degree from Brandeis University, Masters from McGill, and doctorate from Stanford.

Dr. Illes’ research focuses on ethical, legal, social and policy challenges specifically at the intersection of the neurotechnology and biomedical ethics. This includes studies in the areas of neurodevelopmental and neurodegenerative disorders, regenerative medicine, incidental findings and functional neuroimaging in basic and clinical research, addiction neuroethics, and the commercialization of cognitive neuroscience. She also leads a robust program of research and outreach devoted to improving the literacy of neuroscience and engaging stakeholders on a global scale. Dr. Illes is an internationally recognized author, lecturer, and mentor. She is a Founder and Governing Board Member of the International Neuroethics Society of which she is also now President. She is a member of the Standing Committee on Ethics for CIHR. Dr. Illes was elected to the Royal Society (Life Sciences) in 2012, to the Canadian Academy of Health Sciences in 2011, and to the American Academy for the Advancement of Science (Neuroscience) in 2013.

**Kirton, Adam**

Dr. Kirton is an attending Pediatric Neurologist at the Alberta Children’s Hospital and Associate Professor of Pediatrics and Clinical Neurosciences at the University of Calgary. His research focuses on perinatal stroke with two major aims. One is to understand why such strokes occur and develop means to prevent them. The other uses advanced technologies including neuroimaging and non-invasive brain stimulation to measure the response of the developing brain to early injury and generate new therapies. Dr. Kirton is a Heart and Stroke Foundation Clinician Scientist and received CIHR Foundations funding in 2015. He directs the Calgary Pediatric Stroke Program, Alberta Perinatal Stroke Project, ACH Pediatric Non-Invasive Brain Stimulation Laboratory and University of Calgary Noninvasive Neurostimulation Network (N3).
Lai, Jonathan

Dr. Jonathan Lai (PhD Neuroscience) is a post-doctoral fellow at York University involved in ASD research with Dr. Jonathan Weiss and working with Autism Speaks Canada in a NeuroDevNet practicum. His research involves: 1) understanding health and service needs of individuals with ASD and factors that influence service utilization and community inclusion, and 2) knowledge mobilization through social media (e.g. Twitter, blogs of lay research summaries) and stakeholder engagement events (e.g. TEDx Salon). With Autism Speaks Canada, he works with Esther Rhee and Dr. David Nicholas on the implementation of Worktopia, a prevocational training program for youth with ASD. He is interested in bridging the gaps between brain science, mental health and society-at-large through translating research into evidence-based policies and programs. Jonathan’s graduate training (MSc, University of Guelph; PhD, McMaster University) was in the biomedical aspects of ASD and brain development. His dissertation focused on understanding the link between the biology and behavioural phenotypes in mouse models of neurodevelopmental disorders, which advanced understanding of the biology of ASD subtypes.

Mitchell, Wendy

Wendy Mitchell is a speech language pathologist with over 20 years of clinical experience with the majority of those years spent working with families with a child with autism. Wendy’s doctoral work focused on young adults diagnosed with an autism spectrum disorder. She investigated the communication profile in this population and the influence communication has on listeners during a functional task (a simulated employment interview). In February 2015 she began working at The Ability Hub in Calgary and is the National Program Development Manager for the Worktopia project. She also is a sessional instructor at the University of Calgary encouraging students to pursue a career in speech language pathology.

Nicholas, David

Dr. Nicholas is an Associate Professor in the Faculty of Social Work, University of Calgary (Edmonton Division); and is cross-appointed to the Department of Pediatrics at the University of Alberta. His area of research addresses transition and vocation, quality of life, family support, and parenting with a focus on autism. He is currently involved in national and international studies addressing the impact of autism on families both at the point of diagnosis and over the course of child and adult development.

Nicolaidis, Christina

Christina Nicolaidis, MD, MPH is Professor and Senior Scholar in Social Determinants of Health in the School of Social Work at Portland State University (PSU) and Associate Professor of Medicine and Public Health at Oregon Health and Science University (OHSU). She focuses much of her career on using participatory research approaches to improve the health and healthcare of marginalized populations, including adults on the autism spectrum. She co-founded and co-directs the Academic Autism Spectrum Partnership in Research and Education (AASPIRE: www.aaspire.org), a well-established academic-community partnership comprised of academic researchers, autistic adults, family members, and healthcare providers. Together they have developed and tested the AASPIRE Healthcare Toolkit (www.autismandhealth.org), an online toolkit meant to facilitate healthcare interactions for autistic adults. In her other work, she has partnered with people with developmental disabilities, racial and ethnic minorities, and people experiencing interpersonal violence, chronic pain, substance abuse, or depression. She has served as the principal investigator or co-investigator on over 20 funded research projects, has authored over 60 publications, and has mentored dozens of students, trainees, and junior faculty members. She has also served as a standing member on a National Institutes of Health study section, a Deputy Editor for the Journal of General Internal Medicine, the Director of the PSU Social Determinants of Health Initiative, and a member of multiple local and national committees focused on autism. She continues to practice internal medicine at OHSU and does her best to pretend to successfully juggle clinical work, research, teaching, parenting, and life.

Penner, Melanie

Melanie Penner is a developmental paediatrician at Holland Bloorview Kids Rehabilitation Hospital in Toronto, a clinician investigator in the Autism Research Centre at the Bloorview Research Institute, and an assistant professor in the Department of Paediatrics at the University of Toronto. She completed a Bachelors of Health Science at McMaster University and her medical degree at Queen’s University. Melanie completed her paediatrics residency and subspecialty developmental paediatrics residency at the University of Toronto. She recently completed a Master’s of Science in Health Services Research at the Institute of Health Policy, Management and Evaluation at the University of Toronto. Her research interests include improving service delivery for children and youth with ASD and economic evaluation of novel service strategies for ASD.
Rasmussen, Carmen

Dr. Rasmussen received her PhD in Developmental Psychology in 2006 from the University of Alberta. She is currently an Associate Professor in the Department of Pediatrics at the University of Alberta and a CIHR New Investigator. Her research is focused on neurobehavioral difficulties of children with neurodevelopmental disabilities (including FASD) as well as the evaluation of cognitive interventions for children. She is a member of the NeuroDevNet FASD research team.

Russo, Natalie

I am a licensed psychologist with a Ph.D. in School Psychology and Applied Development, and completed my APPIC internship at the TEACCH center for autism at the University of North Carolina at Chapel Hill. My research focuses on developmental disability more generally, and autism spectrum disorder (ASD) more specifically. My funded program of research is the area of basic neuroscience focusing on the perceptual and attentional mechanisms underlying the (sensory) symptoms of ASD. As a basic clinical neuroscientist, I use clinical, psychophysical and electrophysiological tools (Event Related Potentials) to understand the interaction between perception and cognition and the relationship between these and symptoms of autism.

Schall, Carol

Dr. Carol Schall is the Co-Director of the Virginia Commonwealth University Autism Center for Excellence, the Director of the Virginia Autism Resource Center, and the Principal Investigator in the development of the Community Based Functional Skills Assessment for Transition Aged Youth with Autism Spectrum Disorders, a grant funded by Autism Speaks. She has over 30 years of experience supporting adolescents and adults with ASD as a teacher, group home supervisor, administrator, researcher, and consultant. Dr. Schall provided positive behavior support consultation and instructional technical assistance for the Project SEARCH Plus ASD Supports program for the past 8 years at Virginia Commonwealth University. Dr. Schall was also the research coordinator for this project. Additionally, Dr. Schall has consulted nationally and internationally on issues related to adolescents and young adults with ASD.

Zwaigenbaum, Lonnie

Dr. Lonnie Zwaigenbaum completed his pediatric training at Queen’s University, and his clinical fellowship in developmental pediatrics at The Hospital for Sick Children in Toronto. He completed a research fellowship and Masters degree in Health Research Methodology at McMaster University. Dr. Zwaigenbaum’s research focuses on early behavioral and biological markers, and early developmental trajectories in children with autism and related disorders. Dr. Zwaigenbaum is a Professor in the Department of Pediatrics and the inaugural Stollery Children's Hospital Foundation Chair in Autism Research at the University of Alberta. He is also the co-director of the Autism Research Centre based at the Glenrose Rehabilitation Hospital, and was the Vice-President of the International Society for Autism Research from 2011-2013. Dr. Zwaigenbaum has been part of the ART Program Advisory Committee since 2007 and is the current Program Director.

Zwicker, Jennifer

Dr. Jennifer Zwicker is Manager of neurodevelopmental disability research in health policy at the University of Calgary, School of Public Policy. Supported by NeuroDevNet and the Sinneave Family Foundation, her research focuses on the socioeconomic impact of neurodevelopmental disability research and interventions as a means for informing evidence based policy development. Dr. Zwicker received her PhD in neurophysiology from the University of Alberta and her Masters of Public Policy from the University of Calgary, supported with generous funding from CIHR and AIHS throughout her graduate training. She is a 2014/2015 Action Canada Fellow, a public member on the council of the Alberta College of Optometrists and a co-chair for the Canadian Science Policy Centre.
The Banff Centre

Accommodation
The Banff Centre is located at 107 Tunnel Mountain Drive in Banff, Alberta, in the heart of the Canadian Rockies and approximately 2 hours from the Calgary International Airport.

The Winter Institute conference package includes accommodation, either in the Professional Development Centre or in Lloyd Hall, wireless internet access in bedrooms and delegates use of the Sally Borden Recreation Facility, housing a 25 metre pool, steam rooms, whirlpool, weight room, full-sized gymnasium with indoor running track, badminton, squash court and climbing wall.

Check-in time is 4:00 p.m. While every effort is made to accommodate guests arriving before the check-in time, rooms may not be available. Luggage may be held at the Bell desk until the guest’s room is ready.

Check-out time is 12:00 noon. Request to retain rooms beyond that hour should be directed to the Front Office Manager and may be subject to a late departure charge. Luggage may be held at the Bell desk until time of departure.

Parking is available, complimentary, for all guests of The Banff Centre.

Dining
The meal package includes: Wednesday to Saturday breakfasts and lunches, and Wednesday and Friday dinners, all served in the Vistas Dinning room atop the Sally Borden Facility. This market-style buffet menu changes daily. For all guests of the Banff Centre, your room key serves as a payment card at the Vistas Cashier. Off-site staying guests have been issued meal tickets and can retrieve them at the Vistas Cashier. Any meals above the included ones are billed to the guest at check-out time (for example: meals for spouses). Continuous nutrition breaks are offered on the 3rd floor Galleria of the Kinnear Centre.

Meeting spaces and Business Centre
Meetings take place at the Kinnear Centre for Innovation & Creativity. The main plenary room for this conference is KC303 and 2 boardrooms, KC308 and KC310, are available for private meetings. Registration to the event will take place Wednesday, March 30, on the 3rd floor Galleria of the Kinnear Centre, from 8:00-8:45.

The Business Centre is located at the Front Desk in the Professional Development Centre and is open 24 hours to serve your photocopy, fax and computer needs.