

ANNUAL REPORT

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2014 15

ENGAGING MINDS

A CANADIAN NETWORK OF CENTRES OF EXCELLENCE

VISION

To improve the lives of children with neurodevelopmental disorders and their families, by accelerating and integrating the discovery and utilization of knowledge about disorders of the brain, their early diagnosis, prevention and treatment.

MISSION

NeuroDevNet is a national multi- and trans-disciplinary network dedicated to bringing hope to children with Autism Spectrum Disorder (ASD), Cerebral Palsy (CP), Fetal Alcohol Spectrum Disorder (FASD) and related neurodevelopmental disorders, as well as to their families and caregivers. NeuroDevNet focuses its funding on integrated, team-based, research initiatives related to cause, early diagnosis, and interventions. Engaging families, clinicians, other stakeholders and partners nationally and internationally, NeuroDevNet leverages and enhances the talents of new and seasoned researchers to translate research findings into effective therapies and changes in policy and practice.

OBJECTIVES

CAPACITY BUILDING Train the next generation of experts in brain development disorders

RESEARCH EXCELLENCE Support and conduct exemplary multi-disciplinary research

KNOWLEDGE TRANSLATION

Maximize the social and economic impacts of research and training in developmental brain disorders

BUSINESS DEVELOPMENT & VALORIZATION

Translate research findings into diagnostic, preventative and therapeutic applications

SUPPORT

NeuroDevNet is made possible by the Networks of Centres of Excellence, a program of the federal government to meet Canada's needs to focus a critical mass of research resources on social and economic challenges, commercialize and apply more of its homegrown research breakthroughs, increase private-sector R&D, and train highly qualified people. NeuroDevNet gratefully acknowledges host support from the University of British Columbia and the Child and Family Research Institute.



NeuroDevNet's spiral logo communicates change, progression and evolution. Its bright multi-colour palette emphasizes the Network's focus on children. Starting from a smaller yellow neuron, denoting hope, the neurons rise in a crescendo that ends with green neurons, signifying health.







a place of mind THE UNIVERSITY OF BRITISH COLUMBIA

- INDEX
- 4 MESSAGES
- 8 NEURODEVNET BY THE NUMBERS
- 10 RESEARCH UPDATE
- 11 AUTISM SPECTRUM DISORDER
- 12 CEREBRAL PALSY
- 13 FETAL ALCOHOL SPECTRUM DISORDER
- 14 KNOWLEDGE TRANSLATION
- 15 NEUROETHICS
- 16 NEUROINFORMATICS
- 17 STRATEGIC INITIATIVES PROGRAM

- **18 RESEARCH TRAINEES**
- 20 KUDOS
- 22 EVENTS
- 28 PARTNERS
- **30 NETWORK COMMUNITY**
- 34 FINANCIAL STATEMENTS

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ANNUAL REPORT



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EXECUTIVE MESSAGE

JOINT MESSAGE FROM OUR CHAIR AND EXECUTIVE DIRECTOR

One in six children lives with a neurodevelopmental disability. NeuroDevNet is pursuing vital work in improving early diagnosis and treatment for three of the most common of these conditions: autism spectrum disorder (ASD), fetal alcohol spectrum disorder (FASD) and cerebral palsy (CP).

This trio of disorders was chosen at the inception of the Network because they reflect a much larger range of neurodevelopmental disabilities, and the complex interactions between genes and the environment in brain development. As a result, they have been the main focus of our high-impact research and training efforts over the past five years.

Exciting results have emerged over this period from each research program within the Network, as well as synergies between our multi-disciplinary teams. Drawing on the combined efforts of 300 personnel from 26 Canadian and 7 international academic health centres, we have already made progress in the early detection of ASD, CP, and FASD which enables evidencebased treatments that achieve significant improvements in quality of life for individual children and their families, as well as reductions in the lifetime social and economic costs of care and support. Central to NeuroDevNet's undertakings is our capacity to support the research from early discovery through to its impact on communities across the country. We are pleased to present this annual report of NeuroDevNet's activities and attainments during fiscal year 2014-2015. To the board, researchers, staff and volunteers, the most outstanding achievement has unquestionably been the renewal of our Network by the federal Networks of Centres of Excellence Program for an additional five years. To those in our broader community this is a validation of the tremendous achievements the Network has made in its first five years.

In these pages we provide a look at some of the recognition and attainments of our investigators and trainees, and a glimpse of one of the exciting research programs launching in the second five years of the Network (2015-2020).

We wish to thank the NCE Secretariat, our investigators, our partners, the leadership and administrative team, the Scientific Advisory Committee (SAC), Research Management Committee (RMC), and the Research Training Committee (RTC) for all their hard work in contributing to our success. We are indebted to parliamentarians, legislators and the governing bodies that have offered moral and financial support to the Network. Special thanks also to: Dr. Henri Rothschild—past Chair; Dr. Michael Fehlings—past Associate Scientific Director; and Jim Brooks—past Interim Executive Director.

NeuroDevNet remains passionately committed and focused on understanding brain development and improving the quality of life of children with brain disorders and their families. We hope that readers of this annual report will be excited by our progress and inspired to continue to support us in so many ways.

Patrick Lafferty Chair of the Board of Directors, NeuroDevNet





Thomas Philpott Executive Director, NeuroDevNet

OVERVIEW of the NeuroDevNet Research Program

SCIENTIFIC DIRECTOR

NeuroDevNet is a federally-funded national Network of Centres of Excellence (NCE), rooted in academia, with a membership of world-class investigators. Yet, as an NCE, we are transcending a strict focus on research, embedding in our approach four additional domains: training, knowledge translation, partnerships and management. The last three domains are key to defining our success as an NCE and, ultimately, distinguish us from a research network. The capacity of NeuroDevNet to improve the lives of children with neurodevelopmental disabilities and their families is intrinsically tied to the uptake and implementation of our findings, the partners who engage and promote this process, and the ways we manage our activities. The impact we have as a Network rests on our excellence in all five domains.

Looking back over NeuroDevNet's initial five, formative years, I am struck by the accelerating pace of discovery, fueled by collaboration, which has positioned us for an exhilarating translational phase over the next 5 years of our second funding cycle.

Our growing emphasis on application-based research, directed through our investigators in consultation with key stakeholders, the Scientific Advisory Board, and Research Management Committee, is producing marked progress in the development of screening tools that improve and enable earlier diagnosis, in the generation of evidence-based behavioural interventions, and in the establishment of novel ways to improve the quality of life for children with neurodevelopmental disabilities and their families.

Fetal Alcohol Spectrum Disorder (FASD)

In our FASD research group, Joanne Weinberg's team is making important strides in understanding the human condition through the lens of animal research that relates cortisol levels to neurologically based behavioural outcomes. My own research team has linked genetics and gene expression to increased vulnerability to damage from prenatal exposure to alcohol. The research from Christian Beaulieu's team has provided new insights into the nature and degree of brain injury from fetal exposure to alcohol. This work was reported in the first paper to link specific structural anomalies in the brain to specific neurobehavioural outcomes. Published in one of the leading journals in the field, Neuroimage: Clinical, the study has been downloaded 500 times from the journal website. James Reynolds' team has developed an easy-to-administer, rapid screening tool that has the potential to have substantial impact by greatly increasing the capacity to identify children with FASD. As mounting evidence points to the need for individualized treatment, the tools and skills for behaviour management created within our Strongest Families collaboration with Patrick McGrath and the IWK Health Centre promises to play an important role in one of the most formative venues in the life of a child with FASD: the home.

Dr. Daniel Goldowitz Scientific Director, NeuroDevNet

continued on next page

OVERVIEW of the NeuroDevNet Research Program

SCIENTIFIC DIRECTOR continued

Cerebral Palsy (CP)

From a small registry of children with CP in Quebec, our Cerebral Palsy research group has developed a national resource: the Canadian Cerebral Palsy Registry. In large part due to support from the Network, the registry now contains confidential data about children with CP from Quebec, British Columbia, Alberta, Greater Toronto Area (Toronto & York Regions), Nova Scotia, and Newfoundland. This registry is the largest of its kind in North America and has played an essential role in 14 published studies. Using it, the CP group has been studying current diagnostic and referral patterns among primary care physicians in order to understand the decision-making that influences the trajectory of children who present with impaired movement at a young age. We have made linkages with health economists to use registry data to speak to best practices. The first joint paper emerging from this collaboration has been submitted for publication showing that the incidence of non-ambulatory CP cases (children who are unable to walk due to CP) was not affected by the level of neonatal care available at the hospital where delivery occurred. This is a potential testimony to the uniform quality of maternity services in Canada and the proactive identification of high-risk pregnancies. The promises of this resource are many, including cutting-edge genomic work of international importance. Recent genetic findings-duplications, deletions and other differences called Copy Number Variations, or CNVs—appear to point to vulnerability to CP. Another important facet of the CP group's emphasis is rooted in the themes of prevention, rescue and repair, where pre-clinical work animal models has investigated the use of promising natural health products to prevent developmental disabilities and CP, as well as the use of stem cells, as a potential treatment for the condition. [See Cerebral Palsy Research Project P.12]

Autism Spectrum Disorder (ASD)

Members of our Autism Research Group are helping move evidence-based improvements in diagnosis at the policy level. They have played key roles on two key committees of the Public Health Agency of Canada (PHAC), including the National Autism Surveillance Program and the newer ASD Assessment National Guidelines Committee. Significant findings emerging from our genomics research also underpin diagnostic advances. A landmark *Nature Genetics* paper on Copy Number Variations in siblings is featured in this annual report and highlights a clear path from bench research to informing practice. The work of the PI and co-PI of the ASD-DP (Drs. Lonnie Zwaigenbaum and Steve Scherer) has garnered international recognition. Dr. Scherer was appointed director of the Autism Speaks-Google supported MSSNG initiative, which will support whole genomic sequencing of 10,000 individuals from families with ASD, and make these data available digitally to the global scientific community (http://www.mss.ng/). Dr. Scherer was also selected as a 2014 "Nobel-class" Citation Laureate in the category of physiology or medicine by Thomson Reuters Intellectual Property & Science (Thomson Reuters IP & Science). Dr. Zwaigenbaum leads national and international research collaborations aimed at improving early detection and diagnosis of ASD. Goldstein et al. (2014) reported a recent analysis of international collaboration and productivity, indexed by number of peer-reviewed abstracts presented from 2008-2013 at the International Meeting for Autism Research (IMFAR). Dr. Zwaigenbaum was ranked 1st internationally, and 4 additional ASD project investigators (Drs. Peter Szatmari, Wendy Roberts, Susan Bryson and Isabelle Smith) were ranked in the top 10.

Neuroethics

The Network's Neuroethics Core, led by Drs. Judy Illes and Eric Racine, has played a critical role in identifying key ethical issues arising in the academic and clinical sectors, as well as ethical and social challenges faced by NeuroDevNet research and clinical teams. Core researchers joined forces with leading pediatric neurologists to initiate international consultations on ethical challenges in the practice of developmental medicine and pediatric neurology. A plenary session on the topic was held at the European Academy of Child Disability in Vienna in 2014. Members of the Core organized a meeting with researchers at the University of Capetown to collaborate on projects aimed at identifying social and ethical implications of using neurotechnology to diagnose FASD in children living in lowresource settings where availability of treatment services and specialized education is limited.



Overview of the NeuroDevNet Research Program

SCIENTIFIC DIRECTOR *continued*

Neuroinformatics

Management and sharing of the massive, complex datasets that underpin NeuroDevNet research is in the hands of the innovative Neuroinformatics Core, led by Dr. Paul Pavlidis. The group took the lead in a data harmonization workshop that brought together trainees and researchers attending the 2014 Canadian Association of Neuroscience conference to discuss key challenges and solutions for Neuroinformatics data sharing standards and resource development. They carried forward this collective insight into an ethics-informed data sharing policy for the Network that now constitutes part of the agreements signed by institutions receiving funds from NeuroDevNet. Neuroinformatics continues its work with Maelstrom Research on the development of tools to refine our data and the NeuroDevNet project clearinghouse that will ultimately serve as the public portal for data generated within the Network.

Knowledge Translation (KT)

Helping us mobilize our stellar research towards impact at the individual and policy levels is our Knowledge Translation (KT) Core, which has made the Network's findings accessible through plain language summaries, supported policy engagement, and assisted with a prize-winning video submission to a Canadian Institute of Health Research (CIHR) contest (awarded to the members of the Neuroethics Core), and created a host of resources that enable better KT practice within the Network. In the pages of this Report there is one example of how the Core helped organize, document, and detail a very successful stakeholder meeting held by NeuroDevNet investigator Dr. Jonathan Weiss as a part of his national conversation about mental health research in ASD.

Partnerships

This past year has seen the fruition of unprecedented collaborations between NeuroDevNet and its stakeholders and partners. Some of these were unique co-organizing of scientific research and training opportunities in the developmental neurosciences. A triumph in international co-operation was evidenced by holding our 5th Annual Brain Development Conference in collaboration with the International Society for Developmental Neurosciences in Montreal. We also

co-sponsored and -organized the 47th Banff International Conference on Behavioural Science on the topic "Autism in Transition" and a Workshop with the Canadian ASD Association (CASDA) on "Examining a multi-systems approach to autism and the environment: challenges and opportunities for research." In training, we engineered a collaboration between Canadian research institutes and Brain Canada to support a multi-million dollar training program in the developmental neurosciences, set to launch in 2015/16. Other connections have resulted in the coming together of over 20 national and local organizations as a Community for Brain Development. Members of this new Community then spread the word of their inaugural gathering in meetings with Members of Parliament and the Senate to discuss issues surrounding the support for children with neurodevelopmental disabilities and their families. As befitting of a trans-Canadian Network, NeuroDevNet has been involved in national initiatives such as the rollout of Community Works, a federally supported program for vocational training of youth/ young adults with autism and a special CIHR conference on Innovating Child and Family Health. We presented our research agenda at a meeting of NAPHRO, the National Alliance of Provincial Health Research Organizations, to sow the seeds for collaborations on brain health in the pediatric population across Canada. This year also saw the 5th annual meeting (CP in Motion) in Nova Scotia between our CP researchers and clinicians and informal caregivers to share the Network's research and engage families and clinicians in the latest advances in CP research.

These activities speak to the vibrancy of our Network and the significant steps that members of NeuroDevNet have taken to make an impact that would never have been coalesced and catalyzed without the NCE's support of NeuroDevNet. As Scientific Director of this tremendous gathering of forces, I look forward with anticipation to the next five years, as we demonstrate social and economic benefits to Canadian society by propelling our discoveries into transformative impacts.

Dr. Daniel Goldowitz Scientific Director, NeuroDevNet





Top Tweet earned 1,065 impressions

NeuroDevNet @NCE_RCE renewed for 5 more yrs to continue support 4 children w/neuro #disabilities & their families fb.me/38zqtNpOT

♠2 €38 ★7

View Tweet activity

View all Tweet activity

Total of **Refereed Publications**



8

NeuroDevNet by the Numbers

Year 1 Year 2 Year 3 200 110 189 6 9 36 7 33 41 44

Trainees & Young Professionals (Highly Qualified Personnel - HQP)



autism spectrum disorder - 1 issued - 4 pending Method of Determining **Risk of a Neuropsychiatric** Disorder - 1 pending Methods and **Compositions for Screening and Treating Developmental Disorders** - 2 pending Method of Determining

PATENTS

Biomarkers for

Disease Causality of Genome Mutations - 1 pending

Pending and issued patents: Dr. Stephen Scherer

in journals such as: JAMA, Nature Medicine, and PLOS-One

RESEARCH UPDATE

This section of the NeuroDevNet Annual Report showcases our research program and developments unfolding in the fifth year of our mandate. In the pages of the Research Update that follow, you will read about:



• The introduction of whole genome sequencing by our Autism Spectrum Disorder Research Group whose partnership with Genome Canada has advanced the understanding of the genetic architecture of ASD, boosted capacity for accurate clinical assessment, and produced a landmark paper on the genetic diversity found in autism in *Nature Medicine*.

• Seminal animal studies that have laid the foundation for neural repair in the infant or young child that has suffered a stroke. This work will progress to clinical trials within the next decade, thanks to the pioneering work of our Cerebral Palsy Research Group.



• A unique partnership between our Fetal Alcohol Spectrum Disorders Research Group and the Canada FASD Research Network has formed that is igniting diagnostic capacity and providing evidence for potential policy and services for children and adults with FASD, against a backdrop where many experts contend that prenatal exposure to alcohol is underdiagnosed.



• The capacity of our Knowledge Translation (KT) Core to support and magnify the uptake and utilization of NeuroDevNet research. The Core's support helped ensure the success of a major stakeholder engagement event focusing on developments in autism research and the presentation of the results of a national needs assessment survey.



• An award-winning video produced by the Neuroethics Core part of a popular series of conversations on issues of ethical concern in relation to neurodevelopmental disabilities called "CENDS." The contest submission attracted a national audience to a discussion about complementary therapies and their use in children with cerebral palsy.

• A novel, integrated analysis of data from our ASD and FASD Research Groups by the Neuroinformatics Core. This collaborative exploration seeks structural and functional similarities in the brains of children with these disorders that may relate to cognition and/or behaviour. This unique cross-disorder approach harnesses the Network's pioneering datasets to gain insights into brain development with broader implications and potential benefits. AUTISM SPECTRUM DISORDER RESEARCH PROJECT

ASD

Cracking the "black box of autism", one gene at a time

Why does one young boy living with autism spectrum disorder (ASD) love computers and is very social, while his brother with ASD is non-verbal and disinterested in technology?





Dr. Stephen Scherer Co-lead, NeuroDevNet Autism Research Group

Parents of multiple children with autism have long observed that siblings can have markedly different expressions of the disorder. Groundbreaking findings by NeuroDevNet researcher Stephen Scherer have provided a genetic basis for the individuality of people on the autism spectrum.

In January 2015 Dr. Stephen Scherer, co-lead of NeuroDevNet's autism research group and director of the Centre for Applied Genomics at the SickKids Research Institute in Toronto, and colleagues published "Whole genome sequencing of quartet families with autism spectrum disorder" in *Nature Medicine*. The findings and their implications for diagnosis were also the focus of a CBC radio documentary on *The Current*.

"We only looked at genetic factors that had a large effect with respect to symptoms of autism," Scherer said of the study's approach, which sequences the entire genome of each individual. "In two-thirds of the sibling pairs that were informative, at least one kid carried different genetic codes. This makes it critical to understand subtype so that children can be treated in a different way."

Researchers initially believed that most forms of ASD arose due to the same genes being involved in a family, says Scherer, but his study actually found that this is typically not the case. Currently, more than 100 different genes are thought to play a role in more than 100 subtypes of ASD, and Scherer predicts as many as 500 genes may eventually be identified to have some sort of a role.

These findings may be important for a more individualized diagnosis of the disorder, but the real benefit will be improving the lives of families raising children and youth with autism.

"What's exciting is that we have cracked open this black box and by studying families with ASD we have some tests to enable early identification, as well as novel molecular targets to test new medicines," said Scherer. "This will lead to personalized medicine, or more accurate treatments for people who are on the spectrum."



CEREBRAL PALSY RESEARCH PROJECT

Evidence and insight gathering to support human trials of stem cell treatments



Dr. Michael Fehlings is preparing for a translational leap from promising neural repair findings in the lab to clinical trials involving humans.

Building on his previous findings that suggested injected stem cells built myelin sheaths (conductive white matter around unmyelinated nerve fibers) in the brains of specially bred mice and restored normal conductivity in damaged nerve cells, Fehlings projects early phase human trials will be forthcoming within the decade.

"It was a very severe model, but the neural stem cells integrated beautifully into the brain," says Dr. Fehlings. This demonstration of remyelination can have important clinical implications for a variety of neurodevelopmental conditions including cerebral palsy (CP) where myelin damage is a key component, he adds.



Dr. Michael Fehlings Associate Scientific Director, NeuroDevNet, and investigator, Cerebral Palsy Research Group

In anticipation of this progress, Fehlings' team has joined forces with NeuroDevNet's Neuroethics Core to run a focus group for families of children with CP. The goal is to determine how patients view stem cell therapy, as well as to assess what family members and health professionals believe will most improve the lives of children with cerebral palsy. The group will also explore the level of risk aversion people have with regards to stem cell therapy, and what degree of treatment complications they would be willing to tolerate.

With the advent of NeuroDevNet and a focus on neural repair in Fehlings' University of Toronto lab, great strides are being made to translate stem cell findings into improved quality of life for children with CP around the world.

"There used to be no team researching regenerative technologies for cerebral palsy in Canada," says Fehlings. "This is a huge step forward for Canada and for the international scientific community that's focusing attention in the areas of CP and potentially using neural stem cells for treatment."

Stem cells (in green) are transplanted in the Corpus Callosum, a key structure that connects the left and right hemispheres of the brain. Over the course of 45 days, the stem cells survive, migrate and grow connections with surrounding cells, and contribute to recovery of purposeful movement after injury caused by lack of oxygen.



FASD FETAL ALCOHOL SPECTRUM DISORDER RESEARCH PROJECT

NeuroDevNet takes Canada's first, largest FASD database to the next level

More than 300 patients. Forty different assessment clinics. Five different provinces. These are some of the numbers behind the first and largest national clinical database for fetal alcohol spectrum disorder (FASD) in Canada, funded by NeuroDevNet and led by the Canada FASD Research Network (CanFASD).

Clinical information in the database is being gathered via CanFASD's unique assessment form, says Dr. Amy Salmon, executive director of the organization. The majority of FASD diagnostic clinics across Canada now use the form to collect confidential and safeguarded data on children and adults in a standardized way, creating a national picture of FASD and allowing comparable data to be analyzed for the first time.

Phase one of the project—the development and integration of the data form into clinical practice—was funded by the Public Health Agency of Canada. NeuroDevNet involvement spearheaded by Dr. James Reynolds—is taking the project to the next level.

"Now we can describe and better understand what's actually going on with kids and adults living with FASD, and figure out what sort of supports and services need to be in place to help them," Salmon says, noting that institutions such as Vancouver's Asante Centre are using the assessment form.



Dr. James Reynolds Co-lead, NeuroDevNet FASD Research Program

STORY

The collaboration with NeuroDevNet has also led to a partnership with the Canadian Association of Pediatric Health Centres (CAPHC) to run cross-disorder comparisons of data generated in the FASD data project with CAPHC's similar autism spectrum disorder and cerebral palsy projects.

"I'm so excited about the potential for a project like this to give us the type of information that can influence government decision making," says Reynolds, co-lead of NeuroDevNet's FASD research program. "We hope we can use this quantifiable data to improve outcomes for kids with FASD and their families. It's a terrific project that has the potential to really have a big impact."



Matching animals to their environments: tools including exercises like this are used in assessing FASD.

Knowledge Translation

Community and stakeholder perspectives shape autism research agenda

When Dr. Jonathan Weiss was awarded Canada's Chair in Autism Treatment and Care Research, he had a vision of his research agenda. Encounters with thousands of parents, service providers, community agencies and other stakeholders changed that.

"The community let me know that I should study what already exists," said Weiss. At his second annual stakeholder meeting in Toronto on Nov. 7, 2014, Weiss reported back on that approach, and revealed preliminary findings of a nationwide survey of parents, professionals and self-advocates co-conducted with the Canadian Autism Spectrum Disorder Alliance (CASDA).

"One thing that was interesting and unexpected about the findings was that when we looked at patterns of service need and access in different areas, it was remarkably similar," says Weiss, noting that CASDA survey respondents included 3,273 caregivers, 166 self-advocates with ASD, and 2,104 professionals. "We expected much larger regional differences—but the results suggest that many patterns are more similar across Canada than they are different."

NeuroDevNet's KT Core provided support and advice leading up the event, that drew 65 stakeholders including provincial and community based organizations, parliamentarians and parents. Many participated in interviews with KT manager Anneliese Poetz, who later produced a video about the importance of the consultation.



Dr. Jonathan Weiss Canada Chair in Autism Treatment and Care Research

STORY

"KT helps to maximize the impact of research and training in neurodevelopmental disabilities," says Poetz. "And you do that by asking people what they need from research. Jonathan is amazing, he really cares about people. He asked questions about how to make a difference with his research - and he actually wants to hear the answers."

Parent Doug McCreary, a father of two children with autism, affirms the approach. "The work that NeuroDevNet and the KT Core are doing is aimed at dramatically shortening the time it takes for new research to filter down to clinical practice. As a parent who needs answers and strategies immediately, I regard these efforts as absolutely critical to the well-being of my children and our family."

Working together to have positive impact on the lives of families and individuals living with ASD is exactly what the stakeholder meeting aims to do, adds Weiss. "This really was a process of engagement with thousands of individuals right from the very beginning," he said. "It takes a community, and a large community of Canadians to have an impact, and that's what we're trying to achieve."



Scientific Director Dan Goldowitz and Doug McCreary, a parent, converse at the stakeholder event

Neuroethics

Discussion about alternative therapies and cerebral palsy garners an award

Video from the Conversations in Ethics and NeuroDevelopmental Disorders series recognized by CIHR Institute

Alternative therapies for cerebral palsy. Prenatal screening for fetal alcohol syndrome disorders. Stem cell treatment and neurodevelopmental disorders.

These are just a few of the innovative Conversations in Ethics and Neurodevelopmental Disorders (CENDS) videos spearheaded by the Neuroethics Core in 2014 under Dr. Judy Illes' direction.

"We're hoping the videos shed some light on the work NeuroDevNet is doing, and members of the public and families affected by these conditions get to hear from the network researchers on topics that are important to them," says Dr. Nina Di Pietro, a former research associate and project leader of the Network's Neuroethics Core at the University of British Columbia.

The CENDS initiative generated six videos and five accompanying podcasts, and has had more than 600 online views. The quality of the CENDS program was also recognized by CIHR's Institute of Human Development, Child and Youth Health (IHDCYH), who

https://www.youtube.com/watch?v=3Oc402Zh2Ao



Dr. Nina Di Pietro Project Manager, NeuroDevNet Neuroethics Core

awarded one of the videos, "Talking About Alternative Therapies for Cerebral Palsy," with a \$1,500 special commendation prize in the first-ever IHDCYH Talks Video Competition.

For Di Pietro, the potential impact of the videos on families and children with neurodevelopmental disabilities is of greater importance. "We saw this really as a joint Knowledge Translation and Neuroethics initiative," she says. "The Network and its unique capacities played a pivotal role in their creation."

"It's really about raising public awareness around these big ethical issues and neurodevelopmental conditions," adds Di Pietro. "The ultimate hope we have for impact is to give people information and resources that could be useful to them. We're trying to raise awareness and to get people to speak to their doctors about these issues."





Neuroinformatics

Neuroinformatics Core leading the way in cross-disorder studies



What if there were a way of comparing brain images of youth living with neurodisabilities to determine if structural similarities exist between disorders?

This is the goal of NeuroDevNet's Neuroinformatics Core, which is analyzing data from autism spectrum disorder (ASD) and fetal alcohol spectrum disorder (FASD) to see if brain damage in certain regions is related to cognitive or behavioural profiles.

"This project is the fulfillment of a major Network aim of enabling and performing cross-disorder studies," says Dr. Paul Pavlidis, based at the University of British Columbia, who is spearheading the project with McGill University's Dr. Alan Evans. "The study will also teach researchers what is required to make this kind of analysis easier and more meaningful in the future. NeuroDevNet is really playing a big role in encouraging this kind of research." This is also the only Core project retrospectively comparing data, utilizing 138 patient images in NeuroDevNet's ASD cohort and 238 for FASD. Both projects collected the images within the LORIS database, which standardizes NeuroDevNet data to facilitate cross-disorder analysis.

The project's long-term aim is to identify diagnostic features that would explain aspects of the observed characteristics of both FASD and ASD. "One of our main goals is to understand more about what is different about the brains of children and youth with these disabilities," says Pavlidis. "The more we know, the more we are going to be able to diagnose and treat these disorders in patients, and more positively impact their lives."



Dr. Paul Pavlidis lead, NeuroDevNet Neuroinformatics Core

Strategic Initiative Program 2014

Turning ideas into opportunities

Sometimes all it takes to transform a great idea into reality is a bit of extra support. That's the approach that NeuroDevNet's 2014 Strategic Initiative (SI) program is taking to spark novel, potentially commercializable research across the network.

NeuroDevNet supported seven up-and-coming SIs that managed to leverage the funding to obtain additional support from other institutions. For example, Dr. Osman Ipsiroglu's *Better Nights, Better Days, Less Medications* app project attracted sponsorship from the University of British Columbia's Teaching and Learning Initiative, the Down Syndrome Research Foundation, and the Telus Community Board.

Ipsiroglu and his team have developed an App for tracking sleep disorders and contributing factors in children with neurodevelopmental disabilities. His goal is simple: to change the way children with both conditions are treated, by getting to the root of the problem, versus immediately prescribing medications that may create additional issues and also fail to improve sleep.

"The NeuroDevNet Strategic Initiative funding provided the fundamental framework for my project," says Ipsiroglu, a developmental pediatrician based at BC Children's Hospital in Vancouver, and an investigator on NeuroDevNet's new Sleep Program. "The funding enabled us to create three communitybased clusters for testing our sleep/wake-behaviour assessment strategy under the mentorship of the BC Paediatric Society."



The following seven innovative projects received 2014 Strategic Initiatives funding from NeuroDevNet:

- Quantitative Modeling of Spontaneous
 Movements in Infants
 Dr. Victoria Galea, McMaster University
- Testing Sleep/Wake-Behaviours & Medication Apps in three BC - Community-Clusters Dr. Osman Ipsiroglu, BC Children's Hospital
- Making a Difference to Families Caring for Children with Neurodevelopmental disorders (NDD)
 Dr. Ian William Gotter, McMaster University
- Pathways to Better Developmental Health in Autism Spectrum Disorder Dr. Peter Szatmari, McMaster University
- Diagnosis & Discovery of Treatable Inborn Errors of Metabolism in Cerebral Palsy Dr. Clara van Karnebeek, Centre for Molecular Medicines and Therapeutics, University of British Columbia
- FAST: A Physical Activity Program for Children with FASD
 Kathy Keiver and Alison Pritchard Orr, University of the Fraser Valley
- Executive Function and Attention Training in Children: The Caribbean Quest – Age Related Change and Metacognitive Approaches Sarah J. Macoun, University of Victoria

Dr. Osman Ipsiroglu tests a screening app created for restless leg syndrome that measures muscle tension and twitches via electrodes. This condition makes it hard to fall and stay asleep. Children with restless legs are often misdiagnosed with ADHD and treated with stimulant medications, which can lead to adverse drug reactions and poor health outcomes.

RESEARCH TRAINEES

NeuroDevNet's trainee community includes an impressive range of more than 200 students and professionals working on Network projects and participating in training program activities.

Three members of our trainee community exemplify the next generation of leaders in neurodevelopmental research. Drs. Gillian Hanley, Jonathan Lai and Ephrem Zewdie are profiled below, speaking to the opportunities and impacts of their engagement with NeuroDevNet.

The Research Training Committee and 8-member Trainee Advisory Committee (TrAC) are the catalysts behind our trainees' Network experiences, informing and developing program offerings including symposia that bring top Canadian and international investigators for in-depth exploration of research on diagnosis, treatment and lived experience of neurodisability, workshops focusing on job market skills and knowledge translation, and webinars sharing cross-disciplinary research and experiences throughout the Network.

TrAC membership and activities are continuing to grow and enhance the training experience for Canada's young experts in neurodevelopment as NeuroDevNet prepares them for future careers in academia, industry, and non-profit service organizations.



Dr. Gillian Hanley

Dr. Gillian Hanley's innovative research examining the relationship between psychotropic drug use during pregnancy and child development is helping Canadian women make informed decisions about their health.

In 2011, Hanley joined the labs of Drs. Tim Oberlander and Patricia Janssen at the Child and Family Research Institute for a postdoctoral fellowship supported by NeuroDevNet, BC's Women's Health Research Institute, and the Michael Smith Foundation for Health Research. Dr. Hanley, who advanced her career taking an assistant professorship in the Department of Obstetrics & Gynaecology at the University of British Columbia in 2014, says this fellowship helped pave the way for her research achievements.

"It was great for me to be exposed to methodologies and subject areas outside of my day-to-day norm. Learning about different approaches, like basic science and animal research, things that I don't normally think about it, was so beneficial. I always felt like I was learning so much—it was just fantastic."

RESEARCH TRAINEES continued



Dr. Jonathan Lai

Dr. Jonathan Lai's groundbreaking research in the Developmental Disabilities and Mental Health Lab at York University focuses on identifying the unmet needs of families with children living with autism spectrum disorder (ASD) across Canada. By understanding where gaps are experienced in health care and services, Lai hopes to help align programs across the country to have a bigger impact.

When asked what led him to pursue post-doctoral studies in ASD at York, Lai credits NeuroDevNet. "I served as a trainee representative for NeuroDevNet's Day on the Hill last year," said Lai, who was completing a doctorate in neuroscience at McMaster University at the time. "It was there [in Ottawa] that I met my current post-doc supervisor, Dr. Jonathan Weiss. We started chatting, and six months later I started a post-doc with him, doing research about influencing policy directions in ASD and knowledge translation to stakeholder groups."

Even though Lai's doctoral work studying mouse models of ASD was not directly part the Network research programs, as an associate trainee member of the network, he participated in many aspects of the NeuroDeNet trainee experience. These opportunities included serving as a member of the Trainee Advisory Committee, attending the bi-annual Winter Institute, participating in the NeuroDevNet101 course, and winning travel scholarships for NeuroDevNet's Annual Brain Development Conference.

"Through NeuroDevNet I've met so many people involved in neurodevelopmental brain research across Canada," adds Lai. "The network has really created a national unity between neurodevelopmental researchers. It's been so eye-opening for me, and for my career!"



Dr. Ephrem Zewdie

As a child growing up in Debre Markos, Ethiopia, Dr. Ephrem Zewdie was passionate about helping people living with disabilities. Today, Zewdie is using his PhD in biomedical engineering to enhance paediatric stroke research.

"I want to use my engineering knowledge not for power or money, but to really help the medical field and people who are disadvantaged," says Zewdie, who is a member of the University of Calgary Paediatric Stroke Program headed by Network Investigator Dr. Adam Kirton. "From a young age, my motto has been 'making the able-bodied more able is not as valuable as making the disabled able'."

NeuroDevNet helped Zewdie take his research to the next level by sponsoring him to attend a two-week "Summer Institute in Neurotechnology Innovation, Commercialization, and Entrepreneurship (NICE)" run by Network training partner RADIANT CREATE at Dalhousie University in August 2015.

"I'm really keen to develop neurotechnology to help kids with neurodisabilities, so this program will be a really good opportunity for me to learn the process," says Zewdie. "You can develop something brilliant, but you need to know how to actually bring it to the people. NeuroDevNet support is having a real impact on my career, and what I want to do."

KUDOS



Dr. Michael Fehlings named a Fellow of the Royal Society of Canada

Elected for outstanding contributions towards the development of translational therapeutics for spinal cord and brain injuries, including cerebral palsy, Dr. Michael Fehlings became a Fellow to the Royal Society of Canada (RSC) November 22, 2014 in Quebec City.

Election to the RSC is one of the highest honours a scholar can receive and recognizes the exceptional contributions that the recipient has made to their respective field. Associate Scientific Director of NeuroDevNet during its first five years, Dr. Fehlings is the Medical Director of the Krembil Neuroscience Centre and heads the Spinal Program at the Toronto Western Hospital. Dr. Fehlings combines an active clinical practice in complex spinal surgery with a translational research program focused on discovering novel treatments for spinal cord injury.

Dr. Jill Zwicker receives MSFHR Scholar Award for research in developmental coordination disorder



Former NeuroDevNet post-doctoral fellow Dr. Jill Zwicker was one of 32 health researchers in British Columbia to receive a July 2014 Michael Smith Foundation for Health Research (MSFHR) Scholar new faculty award in recognition of her research program aimed at increasing awareness and improving outcomes for children with developmental coordination disorder (DCD).

Children with DCD find it hard to learn motor skills and perform everyday activities, such as getting dressed, tying shoelaces, using a fork and knife, printing, riding a bicycle, or playing sports. They often feel lonely, depressed or anxious, and may have low self-esteem and problems with peers. Despite being a common condition affecting 5-6% of the school age population, DCD is under-recognized, under-diagnosed, and under treated. Children who are born very preterm (2-4 months early) are particularly at risk of developing the condition.

Trainee Angelina Paolozza receives prestigious merit award for contributions to FASD research



Strengthening the historically elusive connections between behavioural and cognitive deficits in FASD, and the structural and functional brain injuries caused by prenatal alcohol exposure won trainee Angelina Paolozza an accolade from the Research Society on Alcoholism.

The Queen's University PhD student's

contributions to FASD research were celebrated by the FASD study group at the Society's June 21-25, 2014 meeting with the Kenneth Warren Merit Award, a prestigious recognition of graduate and postdoctoral contributions to advancing FASD research. The first author of five papers during her PhD work, Paolozza presented at the RSA meeting her latest study on eye movement control doing a simple task that requires the child to look at a target that appears to the left or right of the screen. Children with FASD showed deficits in accuracy.

Network Investigators named new and renewed Canada Research Chairs



Dr. Judy Illes – Tier I Canada Research Chair

Neuroethics Core co-lead Dr. Judy Illes, a Professor of Neurology based at UBC was renewed March 28, 2014 as a Tier I Canada Research Chair (CRC) in Neuroethics.

A sign of Canada's ongoing commitment

to advancing critical ethical thinking in relation to the study of the brain and nervous system, the renewal enables Dr. Illes to continue her work aligning human values and culture with research and translation aimed at improving brain health, and decreasing suffering. The funding also supports an ongoing leadership role for Canada in the field of neuroethics.

Among Dr. Illes' research interests are the handling of incidental findings in neuroimaging research when an unexpected abnormality is discovered; the off-label prescription of antipsychotic medications to children with neurodevelopmental disabilities; and examining the most ethical way to adopt revolutionary new technologies to modulate people's cognition (thinking), mood, attention, and personality.

Created in 2000, the Canada Research Chair program pours \$265 million per year into attracting and retaining top-tier talent at Canadian post-secondary institutions, including Dr. Illes and NeuroDevNet Scientific Director Dr. Dan Goldowitz, both of whom worked previously in the United States.



Dr. Evdokia Anagnostou – Tier II Canada Research Chair

Network Investigator Dr. Evdokia Anagnostou was named a first-time, Tier II Canada Research Chair on October 16, 2014. She joined an influential group of 137 new chairholders across Canada at a cost of \$118 million.

Autism has lacked biological and molecular targets, leading to the failure of many therapeutic approaches. Researchers have also faced challenges stratifying children with ASD appropriately so they have difficulty knowing which children will respond to a given approach. Dr. Anagnostou's research program is comprehensive, including genetic and epigenetic analyses, neuroimaging, and investigations linking behavior with biology. Also on the agenda: improving clinical trials infrastructure and testing novel models of drug discovery with the goal of translating her findings into effective treatments for people on the autism spectrum.

Dr. Darcy Fehlings appointed president of the American Academy of Cerebral Palsy and Developmental Medicine



Greeting her colleagues at her inaugural address as the new president of the American Academy of Cerebral Palsy and Developmental Medicine (AACPDM), Dr. Darcy Fehlings focused on themes that resonate to the core of NeuroDevNet's values.

Her remarks, entitled "To Boldy Go-

Moving the Field of Childhood-Onset Disabilities Forward," emphasized four big ideas: i) Translational Neuroscience Networks that bring together basic and clinical researchers to work on collaborative research goals for children with disabilities, ii) the importance of "connectedness and networks" to drive innovation (increasing the chance of two partial ideas colliding to create one great idea), iii) the integration of Art and Medicine to create a powerful partnership to foster attitudinal change and focus on wellness and participation, and iv) technological innovation to promote function for individuals with disabilities.

Dr. Fehlings' three year term leading a membership of 1100 physicians, surgeons, therapists, engineers, scientists, nurses, and educators from around the world commenced in October, 2014 at the AACPDM annual conference. The organization has a mandate to promote science, education and advocacy.

Neuroethics post doc selected to tackle Science Magazine ethical challenge in neuroscience



Science Magazine's NextGen VOICES asked young scientists: what is the most challenging ethical question facing young investigators in your field? How should it be addressed?

In the July 4, 2014 issue, NextGen VOICES posted online excerpts from 15 of the many interesting responses they received.

Dr. Nina Di Pietro, a NeuroDevNet-supported, post-doctoral fellow based at UBC with the National Neuroethics Core, was one of the young scientists selected. Dr. Di Pietro has co-authored a number of studies and commentaries, recently publishing in the Canadian Medical Association Journal on the increasing use of anti-psychotic medications to treat children and youth. Her NextGen VOICES comment, focusing on challenges inherent in large-scale, multi-centre trials can be accessed online at the following url: http://www.sciencemag.org/content/345/6192/24/suppl/DC1.

EVENTS

EVENT



National collaboration aims to strengthen support for children with neurodisabilities

A shared commitment to improving outcomes for children with brain disorders drew 13 national and regional organizations to Ottawa in October to launch a new Community for Brain Development.

This NeuroDevNet-initiated gathering in 2014 convened to explore shared interests and strategize around collective efforts in areas such as capacity building, improving graduate-level training in neurodevelopmental disabilities, policy engagement, advocacy and knowledge translation.

Activities proposed by participants included:

TRAINING: Providing opportunities for professional development, including soft skills training and linkage with organizations with connections to families as well as Mitacs internships and NeuroDevNet practicum placements in industry and non-industry settings. Collaborative funding support for trainees was also proposed.

ADVOCACY: Several of the organizations participating in the Community for Brain Development have explicit advocacy roles, and explored ways to support this activity, including setting up a database that would compile trends, family-oriented facts and stories, and link with other databases to support policy engagement. The idea of approaching parliamentarians to propose research chairs in neurodevelopment came out of this committee and was carried into conversations with individual members of parliament and senators the following day.

KNOWLEDGE TRANSLATION: Using the Community for Brain Development as a collective mechanism for learning and promoting uptake of evidence was proposed, with the goal of informing member organizations, empowering parents, influencing decision makers and improving clinical practice in relation to neurodevelopmental disorders.

A keynote address was delivered by Jeff Latimer, Ph.D. Director of Strategic Initiatives at the Canadian Institutes of Health Research (CIHR), and a plenary session was given by Dr. Bryan Kolb, entitled, "Brain development: the good, the bad, and the ugly."

MP Mike Lake, C, (Edmonton, Mill Woods, Beaumont) an enduring ally of the Network and its engagement efforts, gave a guest lecture, highlighting the importance of mental health in autism spectrum disorder.

The following day, members of the Community for Brain Development accompanied NeuroDevNet administrators, researchers and staff on visits to 45 MPs and Senators. A successful day of political engagement concluded with a reception, hosted by Senator Jim Munson, a true friend to the Network, that saw MPs, Senators and their staff members mingle with the NeuroDevNet representatives and Community for Brain Development delegates.



Initial participants in the Community for Brain Development:

- Autism Speaks Canada
- Brain Canada
- CAN Child
- Canada FASD Research Network
- Canadian Association of Paediatric Health Centres
- Canadian Family Advisory Network
- Canadian Pediatric Epilepsy Network
- Canucks Autism Network
- Cerebral Palsy Association in Alberta
- CIHR Institute of Human Development, Child and Youth Health
- Down Syndrome Research Foundation
- Epilepsy Canada
- Holland Bloorview Kids Rehabilitation Hospital
- NeuroDevNet
- Paediatric Chairs of Canada
- The Abilities Centre
- THREE TO BE



EVENTS continued

Treatments with a technological twist showcased to stakeholders in Victoria B.C.

EVENT

The opportunity to touch, try and learn about interventions that address core symptoms of neurodisabilties attracted front-line professionals and health-oriented government departments to a January 2015 event hosted by NeuroDevNet in Victoria, B.C.

Researchers from six affiliated research initiatives across Canada came together at Victoria's Laurel Point Hotel to demonstrate and discuss the potential of eye tracking to detect FASD, headgear with special sensors that pick up seizure activity in children, and a customized gym-based approach that promotes physical and social development in children and youth with disabilities. The Liberi Exercycle, a customized stationary bike used to power multi-player video games that also promotes cardiovascular fitness and social interaction among youth with CP drew a number of engaged participants, who gamely tried out the bike and videogame interfaces.

NeuroDevNet's Sleep project and the Caribbean Quest video game that has shown promise in promoting emotional selfregulation, attention span, and other cognitive functions also fielded questions from representatives of community organizations, members of the BC Ministries of Health and of Child and Family Development, as well as the Vancouver Island Health Authority.

NeuroDevNet has proposed that the BC government fund BC-based pilot trials of the interventions, and held the event in order to reach out to decision makers as well as organizations working directly with families whose children may benefit from the treatments.

Eye Tracking technology The target applied to the young boy's forehead helps gather data on his eye movements as he watches a video. FASD produces a unique pattern of movements, making the eye tracker a potentially powerful, portable screening tool.







Attendees included representatives of:

- **ACT Autism Community Training**
- **Beacon Community Services**
- CanAssist •
- Canada FASD Research Network •
- **Club Aviva Gymnastics**
- Faculty from the University of Victoria, the University of British Columbia, Simon Fraser University and the University of the Fraser Valley
- **Greater Victoria School District**
- **Gymnastics BC**
- Island Métis Community Services
- **The Asante Centre**
- The BC Pediatric Society
- The Research Universities' Council of BC •
- Victoria Epilepsy and Parkinson's Centre
- Victoria Foundation



University of Victoria's Kim Kerns (in red) explains Caribbean Quest.

The Liberi Exercycle helps youths with CP get active and socialize via pedal-powered multiplayer videogames. **V**







EVENTS continued

Fifth Annual Brain Development Conference takes on an international flavour

EVENT

NeuroDevNet collaborated with the International Society for Developmental Neuroscience and Elsevier Publishing to produce Development, Functions and Disorders of the Nervous System Conference held 19-24 July 2014, in Montreal.

With a balance of topics on human and animal models of typical and atypical neural development, the event drew 302 delegates, representing a 30-50% increase in attendance over past conferences.

"Co-producing an international brain development conference was one of our objectives for the Network in our original application to the Networks of Centres of Excellence program," observed Scientific Director Daniel Goldowitz. "That we did so with partners of this caliber is indicative of the unique status of NeuroDevNet." Elsevier is a leading publisher of medical journals based in the UK, while the International Society is an organization of basic and clinical scientists with broad interests in the development of the nervous system. ISDN publishes a journal in cooperation with Elsevier called the International Journal of Developmental Neuroscience (IJDN).

The conference was preceded by a NeuroDevNet Day, an ingathering of the Network and its membership, featuring a foretaste of NeuroDevNet's proposed configuration and goals in its second 5-year funding cycle from Dr. Goldowitz. Dr. Herb Emery, lead of the Health Economics component of the Network's new Social Determinants of Health program, shared perspective on a return-on-investment type approach to evaluation of NeuroDevNet research. A lively NeuroDevNetspecific poster session was followed by "Diagnosing, Nurturing, and Facilitating Resilience Across Cultures and Contexts," a compelling talk by Director of the NCE Knowledge Mobilization Network in Children and Youth in Challenging Contexts, Michael Ungar.



Neuroinformatics Core Manager Elodie Portales-Casamar and Doctoral Student Corneliu Bolbocean discuss his research.



Sessions during the main conference focusing on NeuroDevNet research and/or topics included the Third Annual Fraser Mustard Lecture, delivered by Richard E. Tremblay, of the Université de Montréal, and a symposium, "Reversing neurodevelopmental disorders," chaired by Dr. Goldowitz. Dr. Darcy Fehlings, co-lead of the Network's Cerebral Palsy Research Group, presented NeuroDevNet findings in this session, while CP researcher Dr. Adam Kirton presented a plenary entitled "Modulation of developmental plasticity after perinatal stroke: Insights from neuroimaging."

"The joint conference provided an exceptional international experience for our trainees to present their data, receive feedback, and get a taste of the state of the science presented by the larger neurodevelopmental community," said Research and Training Manager Doug Swanson. Now an annual tradition, the Network's "Meet the Expert – Trainee Lunch" was so popular it was expanded to two sessions. The ISDN organizers plan to use this format in future conferences.

Approval ratings from conference attendees were very high - 95% - and NeuroDevNet presentations received specific appreciation in a number of comments that highlighted the value of integrative research as a platform for new knowledge in neurodevelopment.





PARTNERS

Network Members (24)

- 1. Dalhousie University
- 2. Holland Bloorview Kids Rehabilitation Hospital
- 3. Institut de recherches cliniques de Montréal (IRCM)
- 4. IWK Health Centre Foundation (Halifax)
- 5. McGill University
- 6. McMaster University
- 7. Montreal Heart Institute
- 8. Queen's University
- 9. Ryerson University
- 10. Simon Fraser University
- 11. The Hospital for Sick Children Research Institute
- 12. The University of Toronto
- 13. Université de Montréal
- 14. University Health Network (Ontario)
- 15. University of Alberta
- 16. University of British Columbia
- 17. University of Calgary
- University of Lethbridge (Canadian Centre for Behavioural Neuroscience)
- 19. University of Manitoba
- 20. University of Saskatchewan
- 21. University of the Fraser Valley
- 22. University of Victoria
- 23. University of Western Ontario
- 24. York University

Other Universities and Research Institutes (17)

- 1. Centre for Molecular Medicine and Therapeutics (CMMT)
- 2. Croatian Institute for Brain Research (CIBR)
- 3. Hôpital Sainte-Justine
- 4. Karolinska Institutet
- 5. Laval University
- 6. London Health Sciences Centre
- 7. Nipissing University Muskoka Campus
- 8. San Diego State University
- 9. The Hotchkiss Brain Institute University of Calgary
- 10. University of British Columbia MRI Research Centre
- 11. University of California
- 12. University of Iowa College of Medicine
- 13. University of Ottawa
- 14. University of Pittsburg
- 15. University of Zagreb
- 16. Vancouver Coastal Health Research Institute
- 17. Vanderbilt University

Industry (17)

- 1. Avertus
- 2. Bionetics
- 3. Cerner Corporation
- 4. Electronic Arts
- 5. GE Healthcare
- 6. Ideas for Independent Living
- 7. Kasian Architecture
- 8. NeuroChip
- 9. PeriGen (Canada) Inc.
- 10. Premier Technology Solutions
- 11. REDCap (Research Electronic Data Capture) Software
- 12. Squeezease Therapy Inc.
- 13. SR Research Eyelink
- 14. TELUS Communications Company
- 15. Vancouver Sun
- 16. Westcoast Child Development Group Inc.
- 17. Wood's Homes

Federal departments and agencies (7)

- 1. Canadian Institute of Health Research (CIHR)
- Institutes of Human Development, Child and Youth Health (IHDCYH)
- 3. US National Institutes of Health (NIH)
- 4. National Research Council (NRC)
- 5. National Research Council Institute for Biodiagnostics
- 6. Networks of Centres of Excellence
- 7. Public Health Agency of Canada

Provincial departments and agencies (12)

- 1. Alberta Innovates: Health Solutions
- 2. BC Ministry of Health
- 3. BC Ministry of Children and Family Development
- 4. BC Women's Hospital and Health Care Centre
- 5. Mount Sinai Hospital
- 6. Nova Scotia Department of Health & Wellness
- 7. Régie de l'assurance maladie du Québec
- 8. The Child & Family Research Institute
- 9. The Commission d'accès à l'information du Québec (CAI)
- 10. The Michael Smith Foundation for Health Research (MSFHR)
- 11. WCHRI Clinical Research Informatics Centre
- 12. Women's Health Research Institute

PARTNERS continued

Not-for-Profit Organizations (51)

- 1. Australia National Cerebral Palsy Register
- 2. Autism Community Training Society
- 3. Autism Speaks Canada
- 4. Baby Siblings Research Consortium
- 5. Brain Canada
- 6. Calgary Children's Hospital
- 7. Canada FASD Research Network (CanFASD)
- 8. Canada-Israel Fetal Alcohol Consortium
- 9. Canadian Autism Spectrum Disorders (ASD) Alliance
- 10. Canadian Child Health Clinician Scientist Program (CCHCSP)
- 11. Canadian Epigenetics, Environment and Health Research Consortium (CEEHRC)
- 12. Canadian Institute for Advanced Research (CIFAR)
- 13. Canadian Physiotherapy Association
- 14. CanAssist
- 15. Children's Hospital of Philadelphia (CHOP)
- 16. Commission d'accès à l'information
- 17. Computational Approaches in Neuroscience Action Control & Transformations (CAN-ACT)
- 18. CP International Research Foundation
- 19. CRME Montreal
- 20. Early Intervention Services of York Region
- 21. Enhancing the Scientific Study of Early Autism (ESSEA)
- 22. Foundation Père Favron
- 23. Graphics Animation and New Media (GRAND) NCE
- 24. Institute for Ethics, History and Theory of Medicine, University of Munich
- 25. Institute of Neurosciences, Mental Health and Addiction (INMHA)

- 26. International Neuroinformatics Coordinating Facility (INCF)
- 27. MAB Mackay Centre
- 28. Manitoba Cerebral Palsy Association
- 29. Maternal Infant Child and Youth Research Network (MICYRN)
- 30. Mitacs
- 31. Montreal Children's Hospital
- 32. MSSING Project (10K Genomes/Autism Speaks)
- National Institute of Mental Health and Neurosciences (NIMHANS)
- 34. Neurological Health Charities Canada (NHCC)
- 35. Ontario Brain Institute
- 36. Ontario Science Centre / Café Scientifique
- 37. Palix Foundation
- 38. Partners in Research (PIR) / Virtual Research on Call (VROC)
- 39. R. Howard Webster Foundation
- 40. Research Institute for the Cerebral Palsy Research Alliance in Australia
- 41. Shailah Interactive
- 42. SickKids Foundation
- 43. Simons Foundation Autism Research Initiative
- 44. Stem Cell Network
- 45. The Autism Research Training (ART) Program
- 46. The Canadian Association of Paediatric Health Centres (CAPHC)
- 47. The Sinneave Family Foundation
- 48. THREE TO BE
- 49. Tide BC
- 50. Union of Ontario Indians
- 51. Webster Foundation

NETWORK COMMUNITY

Network Investigators

Evdokia Anagnostou John C. Andersen Christian Beaulieu Jessica Brian Susan Bryson Marie-Pierre Dubé Mayada Elsabbagh Alan Evans Darcy Lynn Fehlings **Michael Fehlings** Victoria Galea Daniel Goldowitz Judy Illes Osman Ipsiroglu Sarah Macoun Kathy Keiver Adam Kirton Laurie Magee Annette Majnemer Steven Miller Pat Mirenda Tim Oberlander Paul Pavlidis **David Phipps** Éric Racine Carmen Rasmussen James Reynolds Bryan Richardson Wendy Roberts Stephen Scherer Michael Shevell Peter Szatmari Clara van Karnebeek Joanne Weinberg Ellen Wood Jerome Yager Lonnie Zwaigenbaum

Associate Investigators

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Network Trainees

Babak Alipanahi* John Aspler Vanessa Bao* Terry Bennett Tammy Bodnar Corneliu Bolbocean* Ainsley Boudreau Zachary Boychuck Tatiana Bregman Merike Bruen Priscilla Burnham-Riosa **Brittany Button** Zhang Chen Isabelle Chouinard Phil Chrapka **Colleen** Curtis Patrick Czchanski Sarah Dorsey Krissy Doyle-Thomas Colby Draney Eric Duku Stuart Faulkner Nicholas Foster Jesse Frender Emily Gardiner* Simone Griffin Jessie Guo Jacalyn Guy* Amy Hewitt Parker Holman Linda Horwood Monika Howse

Network Trainees

continued **Collier Jiang** Meaghan Jones Tim Jordison Andrea Kucyznski Katrina Kully-Martens Vivian Lam Ni Lan Vivian Lee Jonathan Leef Anath Lionel Graham Little Alexandre Lussier Jennifer MacMullin Jenny MacSween Jennifer Marshall Sabah Master* Andrea Maughan Lisa McEwen Kaitlyn McLachlan* Kara Murias Anne-Marie Nader* Antoinette Nguyen Kieran O'Donnell* Tia Ouimet Angelina Paolozza Carmela Paolozza Jennifer Poole Anne-Marie Przyslupski Nicole Racine Charlis Raineki Lisa Anne Rasmussen

*Trainees co-supported by NeuroDevNet Training Studentships and Postdoctoral Fellowships

NETWORK COMMUNITY

Network Trainees

continued Suzanne Robinson Crystal Ruff Prakasham Rumajogee Stephanie Ryan (Fung) Lori Sacrey Jenny Saunders Veronica Schiariti* John Sheehan Isabelle Sokolnicka Axin Taheri Karly Talbot Sukhpreet Tamana Kendra Thomson Victoria Ting Ami Tint Sarah Treit Shreejoy Tripathy Ana Tryfon Clara Van Ommen Michelle Viecili Alexandra Wagner Natalie Wagner Jessica Walesch Susan Walker Brad Watson **Odette Weiss** Katherine Wincentak Ryan Yeun Ephrem Zewdie Dongming Zhou Natalie Zizzo

Associate Trainees

Noor Al Dahhan Shawn Andrews **Kimberly Armstrong** Ashley Bahry Craig Bailey Janet Bang Omer Bar Yosef Esmot Begum **Hiwote Belay** Jeff Bennett **Britney Benoit** Marie Brossard-Racine Heather Brown Susanne Brummelte Derrick Matthew Buchanan Lucia Capano Stephanie Cheung Tricia da Silva Charles de Leeuw Dane de Silva Christine Dobson Lucien Daniel Durosier Stacey Espinet Gabrielle Freire Rosaria Furlano Joey Gareri Nurit Gazit Gurel Matthew Gazzellone Tamara Germani Mojgan Gitimoghaddam Sarah Goodman Allyson Graham Mohammed Habash Eva-Maria Hahler Layla Hall Gillian Hanley Atiq Hassan Nina Hedayati

Associate Trainees

continued **Kasey Hemington** Alicia Hilderley Kaia Hookenson Chloe Hudson Chai-Ting Hung Marnie Hutchison Carl Jackson Jessica Jarmasz Jessica Jeong lenni Karl Cassandra Kinch Shannon Knights Yavar Korkian Michelle Kwon Pauline Léveillé Johanna Lake Jonathan Lai Élizabel Leblanc Grace Lee Danielle Levac Damon Li Annie Li Jonathan Lipszyc Hailun Liu Vichithra R. B. Liyanage **Candace Marsters** Stacey McHenry David McVea Kirti Mittal Rae Mittin Corinne Montes-Rodriguez Marie Morimoto Liz Munn Catherine Nevin Chiara Nicolini Ramsha Noor Anna Patten

Associate Trainees

continued Francesco Pisani Vickie Plourde Magda Price Kathryn Rancourt Manon Ranger Anna Raphael Amber Rider Lisa Rivard Tara Rodas Sandra Salem-Guirgis Tal Savion-Lemieux Jean-Francois Schmouth Taimoor Sheikh Navid Shirzad **Ruslan Shuvalov** Tabrez Siddiqui Anna Sinova **Yvonne Sondy** Nick Stabler Katarzyna Stepien Alex Szubra Dina Tabatabei Aoi Taiiri Véronique D. Thérien Jenna Traynor **Bulmaro Valdés** Jilian Vinall Sarah Vinette **Glenys Webster** Julia Wei Hong Weng **Emily White** Jocelyne Whitehead Jennifer Wilking Katherine Wyper Robby Zachariah Farah Zahir Fabiola Zucchi

NETWORK COMUNITY

Highly Qualified Personnel (HQP)

Liliana Abruzzese Carly Albaum Kayla Albert Svetlana Altamentova Annika Anderson Vickie Armstrong Amina Barhdadi Sandra Bélanger Emily Bell Mai Berger Nadia Beyzaei Élodie Boudes Amélie Boudreau Julia Boyle Hugh Brown Elizabeth Burns Jonathan Burton Cristina Castro Mark Chalmers Jen Chepil Jordan Christianson Jordan Cleland Lorna Colli Wendy Comeau Isaac Coplan Natahalie Côté Elisabeth Coutu Danielle Dalziel Caroline Daoust Nancy Descôteaux Joshua Dewar Jaskiran Dhaliwal Nina Di Pietro Lise Doré Emma Duerden David Dufresne Elly Dyck Anna Ehsan Paula Flias Lara El-Khatib

Highly Qualified Personnel (HQP)

continued Linda Ellis Lucy Federico Yassamin Feroz Zada Lindsay Fleming Amalia Floer Chelsea Gagnon Natacha George Sean Goldbach Andrew Goodwin Kirsten Graham **Rachel Grant Micheline Gratton** Tiana Greenough Kevin Griffin Katelyn Gross **Emily Guertin Danielle Guimont** Jordana Hilderbrant Jacquie Hodge Jennifer Howe Michael Johnny Krista Elizabeth Jensen Myles Karpiuk Zehra Khoja Sue Kobus Paulina Kryiakopoulos Farrah Kufske Lisa-Marie Langaigne Justin Leong David Lin Alex MacIntosh Bonnie MacKinnon Stacey MacWilliam Véronique Martin Graham McAllister Terry McCormick Edel McGlanaghy Dianne McGrath Chase McKenzie

Highly Qualified Personnel (HQP)

continued Mary McNeil Layla Mohammed Mark Murdoch **Taylor Mutis** Monica Naber Najwa Najjar Kathleen O'Grady Anneliese Poetz Elodie Portales-Casamar **Kiya Posthumus** Sylvie Provost Mayank Rehani Kristi Rexhepi Souad Rhalmi Janet Rigney Jana Roberto Ellen Robertson **Christine Rogers** Sanja Rogic **Dianne Russell** Arashdeep Sandhu **Christopher Saunders** Natalie Saunders Susan Scott **Eleanor Seymour** Nancy Sharma Mackenzie Shopland **Rachelle Silver** Marlice Simon Jessica Soley Nicolas St-Georges Lauren Switzer Derek Terpstra Joey Waknin Danielle Walsh Jian Wang Carol Wilson Tim Woo Karsen Yolland James Zhang

Founding Investigators

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NETWORK COMUNITY

Corporate Information

Scientific Director, Daniel Goldowitz Associate Scientific Director, Michael Fehlings Executive Director, Jim Brookes (March 2014 – February 2015) Executive Director, Thomas Philpott (February 2015 – present)

Board of Directors

Margaret Clarke **Glenys Godlovitch** Dan Goldowitz Mark Jones Patrick Lafferty, Chair Sheila Laredo, Vice Chair Angus Livingstone Peter Morand John O'Neil Carol Richards Henri Rothschild Donna Thomson Kathleen Thurber David Ure Gary Wechsler Jerome Yager

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Staff

Bethany Becker, Communications Manager Jim Brookes, Chief Development Officer / Executive Director (March 2014 – February 2015) Kirsten Lawrie, Senior Administrator Tom Philpott, Executive Director (February 2015 – present) Anthony Santelices, Project Coordinator Anita Sham, Administrative Assistant Shum Sidhu, Finance Manager Doug Swanson, Research and Training Manager Denise Wong, Communications Assistant

Auditors

Hay & Watson, Chartered Accountants

Legal Counsel

Borden Ladner Gervais LLP, Vancouver, BC

NEURODEVELOPMENT NETWORK, INC. FOR THE YEARS ENDED MARCH 31, 2015 AND 2014



900 – 1450 Creekside Drive, Vancouver BC V6J 5B3 P 604 734 1690 F 604 336 8959 E creekinfo@hay-watson.bc.ca

INDEPENDENT AUDITOR'S REPORT

To the Directors of NeuroDevelopment Network, Inc.

We have audited the accompanying financial statements of NeuroDevelopment Network, Inc. (the "Network'), which comprise the statements of financial position as at March 31, 2015 and 2014, and statements of operations and changes in net assets and of cash flows for the years then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian Accounting Standards for Not-for-Profit Organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of the Network as at March 31, 2015 and 2014, and its financial performance and its cash flows for the years then ended in accordance with Canadian Accounting Standards for Not-for-Profit Organizations.

Hay + Watson

Chartered Professional Accountants Vancouver, British Columbia July 30, 2015

NEURODEVELOPMENT NETWORK, INC. FOR THE YEARS ENDED MARCH 31, 2015 AND 2014

Statements of Financial Position

As at March 31, 2015 and 2014

	Mar 31, 2015 \$	Mar 31, 2014 \$
Assets		
Current assets		
Cash – held in trust by University of British Columbia	1,070,930	1,789,247
Cash – held at bank	101,387	121,691
Accounts receivable	42,418	-
Contributions receivable	98,469	8,500
Unspent research grants paid to participating institutions (note 6)	633,857	629,464
Prepaid expenses	30,399	33,914
	1,977,460	2,582,816
Furniture and equipment (note 4)	4,262	967
	1,981,722	2,583,783
Liabilities		
Current liabilities		
Accounts payable and accrued liabilities	248,572	149,928
Deferred contributions (note 5)	1,580,864	2,311,197
Deferred capital contributions (note 5)	4,262	967
	1,833,698	2,462,092
Net assets	148,024	121,691
	1,981,722	2,583,783

The accompanying notes are an integral part of these financial statements.

APPROVED BY THE BOARD OF DIRECTORS

C. West

Patrick Lafferty, Chair, Board of Directors

Gary Wechsler, Chair, Finance and Audit

NEURODEVELOPMENT NETWORK, INC. FOR THE YEARS ENDED MARCH 31, 2015 AND 2014

Statements of Operations and Changes in Net Assets

Years Ended March 31, 2015 and 2014

	Mar 31, 2015 \$	Mar 31, 2014 \$
Receipts		
Grant from Networks of Centres of Excellence (note 5)	3,712,434	2,902,362
Grants from other agencies and organizations (note 5)	-	385,738
Conference registration fees and other support	66,887	100,776
Amortization of deferred capital contributions (note 5)	739	219
	3,780,060	3,389,095
Expenditures		
Communications	46,087	38,260
Amortization	739	219
Insurance	7,334	7,440
Professional and consulting fees	20,578	40,940
Research and training (note 6)	2,773,801	2,401,278
Salaries and benefits	581,777	577,872
Supplies and office costs	19,311	27,402
Travel, meetings and networking	304,100	284,778
	3,753,727	3,378,189
Excess of receipts over expenditures	26,333	10,906
Net assets, beginning of year	121,691	110,785
Net assets, end of year	148,024	121,691

The accompanying notes are an integral part of these financial statements.

NEURODEVELOPMENT NETWORK, INC. FOR THE YEARS ENDED MARCH 31, 2015 AND 2014

Statement of Cash Flows

Years Ended March 31, 2015 and 2014

	Mar 31, 2015 \$	Mar 31, 2014 \$
Cash flows from (used in) operating activities		
Excess of receipts over expenditures	26,333	10,906
Non-cash items		
Amortization	739	219
Changes in working capital items		
Accounts receivable and contributions receivable	(132,387)	(8,500)
Unspent research grants	(4,392)	171,971
Prepaid expenses	3,515	(27,436)
Accounts payable and accrued liabilities	98,644	(50,785)
Deferred contributions	(727,039)	870,081
	(734,587)	966,456
Cash flows from (used in) investing activities		
Purchase of furniture & equipment	(4,034)	(1,186)
Increase (decrease) in cash	(729 621)	065 270
Cash beginning of year	(756,021)	905,270
	1,510,538	943,008
Cash, end of year	1,172,317	1,910,238
Cash composed of:		4 700 047
Cash – restricted	1,070,930	1,789,247
Cash – unrestricted	101,387	121,691
	1,172,317	1,910,938

NEURODEVELOPMENT NETWORK, INC. FOR THE YEARS ENDED MARCH 31, 2015 AND 2014

1. OPERATIONS

Neurodevelopment Network ("NeuroDevNet" or the "Network") is a not-for-profit program established by the Government of Canada's Networks of Centres of Excellence ("NCE") program. The Network was established to promote research in disorders of brain development and the implementation of real life solutions to improve the lives of affected children and families. The Network pursues its mission by distributing awards to its principal investigators through their participating institutions for approved research projects.

Neurodevelopment Network, Inc., the manager of the Network, was formally incorporated under Part II of the Canada Corporations Act as a non-profit organization on December 9, 2009.

The Network received \$19,572,000 in funding from the NCE for the period from 2009 to 2015. In December 2014, the Network was awarded a second cycle of funding of \$19,572,000 from the NCE for the period from 2015 to 2020 (Note 7).

On January 22, 2010, NeuroDevNet entered into a Network Agreement with the University of British Columbia ("UBC") under which UBC will serve as the host institution for the Network, providing facilities and services for NeuroDevNet's administrative centre.

These financial statements include only the contributions received by NeuroDevNet from the NCE program, its host institution and others, and disbursed on its behalf. NeuroDevNet may not be able to maintain its current level of operations should this funding be significantly reduced or ended.

2. BASIS OF PRESENTATION

Statement of Compliance

These financial statements have been prepared in accordance with Canadian Accounting Standards for Not-for-Profit Organizations ("ASNPO"), using the deferral method of accounting for contributions.

Basis of Presentation

These financial statements have been prepared on the historical cost basis, except for certain financial instruments which are measured at fair value, as explained in the accounting policies set out in Note 3.

3. SIGNIFICANT ACCOUNTING POLICIES

Accounting Estimates and Judgments

The preparation of these financial statements requires management to make estimates and judgments and to form assumptions that affect the reported amounts and other disclosures in these financial statements. The estimates and associated assumptions are based on historical experience and various other factors that are believed to be reasonable under the circumstances. The results of these assumptions form the basis of making the judgments about carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions and conditions.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimate is revised if the revision affects only that period or in the period of the revision and further periods if the review affects both current and future periods.

Critical accounting estimates are estimates and assumptions made by management that may result in material adjustments to the carrying amount of assets and liabilities within the next financial year.

Critical accounting judgments are accounting policies that have been identified as being complex or involving subjective judgments or assessments. Critical accounting judgments used by the Network include the estimated useful life and future operating results from furniture and equipment and the recoverability of accounts receivable and contributions receivable.

NEURODEVELOPMENT NETWORK, INC. FOR THE YEARS ENDED MARCH 31, 2015 AND 2014

3. SIGNIFICANT ACCOUNTING POLICIES (continued)

Cash – Restricted and Unrestricted

Based on the funding agreement between NeuroDevNet and the NCE, grant funds from the NCE are considered restricted and are to be held in trust and administered by the University of British Columbia ("UBC"), the Network's host institution. Other funds are administered by the Network and are considered unrestricted cash. Unrestricted cash is held in a separate bank account.

Financial Assets and Liabilities

Financial assets and financial liabilities are initially measured at fair value adjusted by, in the case of a financial instrument that will not be measured subsequently at fair value, the amount of transaction costs directly attributable to the instrument. The Network subsequently measures its financial assets and financial liabilities at amortized cost. As at March 31, 2015, the recorded amounts of financial assets and financial liabilities approximate fair values.

Financial assets measured at amortized cost are tested for impairment when a significant adverse change has occurred during the period in the expected timing or amount of future cash flows. The amount of the write-down is recognized in net income and may be reversed in future periods if the assessment of impairment is revised.

Unspent Research Grants Paid to Participating Institutions

Research grants paid to the participating institutions are deferred on the statements of financial position until the participating institution incurs eligible research costs, at which time they are recognized as research and training expenditures.

Furniture and equipment

Furniture and equipment are recorded at cost and amortized on a declining balance basis over their respective estimated useful lives at the following annual rates:

Furniture	20%
Computers	30%

Recognition of Receipts

The Network follows the deferral method of accounting for contributions, which include government grants. Funds are received from the Canadian federal government, the host institution, and other private and public sector partners.

Contributions which have external restrictions governing the types of activities they can be used to fund are deferred and recognized when the eligible expenditures are incurred. Contributions approved but not yet received at the end of the reporting period are accrued.

Under the terms of the NCE agreement, the funding received from the NCE will be directed to the granting of awards to the Network's participating institutions and the payment of operating and capital expenditures. When received, NCE contributions are deferred and recognized as revenue in the period in which the related expenditures are incurred by the Network or a participating institution.

Restricted contributions applied toward the purchase of furniture and equipment are deferred and recorded as receipts at the rate corresponding to the amortization rate of the related equipment.

Unrestricted contributions, including conference registration fees and sponsorships, are recognized as receipts in the current period if the amount to be received can be reasonably estimated and collection is reasonably assured.

In-Kind Contributions

In-kind contributions from UBC (note 7) and other organizations are not included in these financial statements.

NEURODEVELOPMENT NETWORK, INC. FOR THE YEARS ENDED MARCH 31, 2015 AND 2014

3. SIGNIFICANT ACCOUNTING POLICIES (continued)

Employee Future Benefits

NeuroDevNet's staff are eligible to join the UBC staff pension plan. The UBC staff pension plan provides benefits based on 2% of the average best three years' basic salary multiplied by the number of years of contributory service, less an adjustment to Canada Pension Plan contributory earnings. NeuroDevNet's contribution for staff is approximately 9% of salary. In the event of funding deficiencies, NeuroDevNet's contributions remain fixed and benefits for members may be reduced. Accordingly, NeuroDevNet records contributions to this plan as expenditures in the year the contributions are made. Contributions to the plan made during the year amounted to \$23,539 (2014 - \$28,764).

Income Taxes

NeuroDevNet, as a non-profit organization, is not subject to Federal or Provincial income taxes.

4. FURNITURE AND EQUIPMENT

Computers, at cost		
Balance, March 31, 2013	\$ 13,495	
Additions	1,186	
· · · · · · · · · · · · · · · · · · ·		
Balance, March 31, 2014	14,681	
Additions	4,035	
Balance, March 31, 2015	\$ 18,716	
Accumulated amortization		
Balance, March 31, 2013	\$ 13,495	
Amortization	219	
Balance, March 31, 2014	13,714	
Amortization	739	
Balance, March 31, 2015	\$ 14,453	
Carrying amount		
Balance, March 31, 2014	\$ 967	
Balance, March 31, 2015	\$ 4,263	

NEURODEVELOPMENT NETWORK, INC. FOR THE YEARS ENDED MARCH 31, 2015 AND 2014

5. DEFERRED CONTRIBUTIONS

Deferred Contributions Relating to Expenditures of Future Periods

	Mar 31, 2015 \$	Mar 31, 2014 \$
NCE Funds		
Balance - Beginning of year	2,311,197	1,308,745
Grants from the NCE	2,963,135	3,826,000
Grants from Host Institution	20,000	80,000
Amounts recognized as receipts during the year	(3,712,434)	(2,902,362)
Amounts applied toward furniture and equipment purchased during the year	(4,034)	(1,186)
	1,577,864	2,311,197
Other restricted funds		
Balance - Beginning of year	-	133,338
Grants received during the year	23,250	252,400
Amounts recognized as receipts during the year	(20,250)	(385,738)
	3,000	-
Balance - End of year	1,580,864	2,311,197

Deferred Capital Contributions Relating to Furniture and Equipment

	Mar 31, 2015 \$	Mar 31, 2014 \$
Balance - Beginning of year	967	-
Allocation of deferred contributions	4,034	1,186
Amounts amortized to revenue	(739)	(219)
Balance - End of year	4,262	967

NEURODEVELOPMENT NETWORK, INC. FOR THE YEARS ENDED MARCH 31, 2015 AND 2014

6. RESEARCH AND TRAINING EXPENDITURES

NeuroDevNet disburses research grant funds to the host institution of the principal investigators of a research project following the approval of the project. Funds are held in trust by the host institutions and are recorded as unspent research grants by NeuroDevNet until eligible research expenses are incurred by the principal investigators.

	Balance - Mar 31, 2014 \$	Current year grant \$	Current year expenditures \$	Balance - Mar 31, 2015 \$
Institution - Master grants				
Holland Bloorview	47,919	172,618	(178,098)	42,439
Hospital for Sick Children	130,090	88,000	(18,390)	199,700
IWK Health Centre	56,936	93,178	(103,188)	46,926
McGill University	118,726	146,156	(207,420)	57,462
McMaster University	-	114,543	(80,005)	34,538
Montreal Heart Institute	-	20,000	(20,000)	-
Queen's University	5,794	196,497	(197,194)	5,097
University Health Network	-	93,500	(93,500)	-
University of Alberta	72,649	319,239	(311,329)	80,559
University of British Columbia	142,797	615,418	(683,767)	74,448
University of Calgary	-	19,800	(19,800)	-
University of Manitoba	24,212	-	(16,800)	7,412
University of Montreal	-	52,574	(52,574)	-
University of the Fraser Valley	10,000	23,753	(11,766)	21,987
University of Victoria	5,711	32,134	(2,361)	35,484
University of Western Ontario	-	25,000	(25,000)	-
York University	14,630	206,000	(192,825)	27,805
	629,464	2,218,410	(2,214,017)	633,857

Other	research	and	training
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(559,784)

Total research and training

(2,773,801)

NEURODEVELOPMENT NETWORK, INC. FOR THE YEARS ENDED MARCH 31, 2015 AND 2014

7. RELATED PARTY TRANSACTIONS AND ECONOMIC DEPENDENCE

Grants from the NCE

In 2009, the Natural Sciences and Engineering Research Council ("NSERC"), the Social Sciences and Humanities Research Council ("SSHRC"), and the Canadian Institutes of Health Research ("CIHR") agreed to contribute funding of \$19,572,000 to the Network over five years ending on December 23, 2015. The final instalment of \$1,917,135 of this amount was received during the current fiscal year.

In December 2014, the same agencies agreed to contribute \$19,572,000 for a second cycle of funding for the Network from 2015 to 2020 as follows:

Fiscal Year	NSERC \$	SSHRC \$	CIHR \$	Total \$	
2014 – 2015	513,000	70,000	463,000	1,046,000	received
2015 - 2016	2,774,000	-	1,429,000	4,203,000	
2016 - 2017	2,553,000	307,000	840,000	3,700,000	
2017 - 2018	2,000,000	672,000	1,138,000	3,810,000	
2018 - 2019	1,000,000	1,500,000	1,175,000	3,675,000	
2019 - 2020	-	-	3,138,000	3,138,000	
Total Funding	8,840,000	2,549,000	8,183,000	19,572,000	

The annual contributions will be released subject to:

- Parliamentary appropriation of the funds in each fiscal period;
- Satisfactory progress, as determined by the NCE Secretariat, towards predetermined milestones for the NCE Network;
- Continuing eligibility of the NCE Network Host and the NCE Network; and
- Compliance with the terms of the funding agreement.

Total funding from the NCE for the 2015 fiscal year of \$2,963,135 (2014 - \$3,826,000) has been included in these financial statements. Of this amount, \$70,000 was recorded as a contribution receivable on the statement of financial position and was received after the fiscal year end.

Grant from Host Institution

The Network Agreement between NeuroDevNet and UBC provides a cash grant of \$200,000 over 5 years to 2020 as well as in-kind support. Gifts in kind are not recorded in the financial statements and include legal service coordination, payroll, purchasing and grant management, management of intellectual property, information technology support and web hosting services.

NEURODEVELOPMENT NETWORK, INC. FOR THE YEARS ENDED MARCH 31, 2015 AND 2014

8. **RISK MANAGEMENT**

NeuroDevNet's activities expose it to financial risks, which include credit risk, interest rate risk and liquidity risk. The Network's risk management program focuses on the unpredictability of financial markets and seeks to maximize the Network's ability to meet its mandate.

Credit Risk

Credit risk is the risk of financial loss to NeuroDevNet if a counterparty to a financial instrument fails to meet its contractual obligations. The Network is exposed to credit risk from its cash and accounts receivable. The Network considers this risk to be minimal as cash as is on deposit at insured financial institutions and significant accounts receivable are due from major universities and government funding partners.

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will affect the fair value or future cash flows of NeuroDevNet's financial instruments. The Network's is not exposed to significant interest rate risk.

Liquidity Risk

Liquidity risk is the risk that the Network will not be able to meet its financial obligations as they come due. Accounts payable and accrued liabilities are due within the current operating period. NeuroDevNet's overall exposure to liquidity risk is minimal as the Network has sufficient assets to meet outstanding obligations.

9. CAPITAL MANAGEMENT

NeuroDevNet defines its capital as the amounts included in net assets, deferred contributions and deferred capital contributions.

NeuroDevNet's capital management objectives are to meet the requirements of the funders providing grants for research and to safeguard its ability to continue as a going concern in order to pursue the objectives of the Network.

NeuroDevNet has certain external restrictions on the use of deferred contributions and deferred capital contributions, as set out in Note 5. NeuroDevNet has internal control processes to ensure that the restrictions are met prior to utilization of these resources and has been in compliance with these restrictions throughout the period.









46













A CANADIAN NETWORK OF CENTRES OF EXCELLENCE



NeuroDevNet

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