

SEPTEMBER 2012

### Message from Dr. Christina Wolfson, Director of the endMS National Education and Training Program



When I began my research in multiple sclerosis (MS), magnetic resonance imaging (MRI) had not yet been implemented and individuals with MS received only symptomatic treatment. Disease modifying therapies were being studied but were not yet available, and little was known about MS in Canada. Twenty-five years later the picture is completely different. We now know that on average, three people in Canada are diagnosed with multiple sclerosis each day, establishing the enormous burden of MS. Over the past several decades, however, significant progress has been made in understanding multiple sclerosis and developing treatments to improve the quality of life of individuals affected by the disease.

Even in light of the progress made to date, researchers are not complacent about what has been achieved and in Canada and around the world, researchers and trainees are striving to solve the puzzle that is MS. The endMS Research and Training Network was created with the specific goal of accelerating discovery in the field of MS research in Canada.

Currently, the Network comprises over 1000 researchers and trainees from more than 56 academic and health institutions across the country.

Focusing on trainees, in 2011 the Network introduced **SPRINT** – *Scholar Program for Researchers IN Training* – for graduate students and post-doctoral/clinical fellows. The aims of SPRINT are to enhance knowledge and skills in multiple sclerosis research. Through innovative initiatives offering networking, career development and interdisciplinary learning opportunities, SPRINT has already fostered collaboration among new and experienced researchers, and strengthened the research community nationwide.

SPRINTers are recognized for their passion for MS research, curiosity and profound commitment to making a difference. In this first edition of *SPRINT – Spotlight on the Future*, you will be introduced to five remarkable trainees and two enthusiastic faculty mentors tackling a wide range of issues affecting the MS community. Sharing their experiences as colleagues in SPRINT's

interdisciplinary learning projects, these individuals inspire an appreciation for the tremendous devotion and diversity of MS researchers in the field. Providing an environment that supports researchers in their career development and cultivates excellence is vital to the sustainability of SPRINT as a leader in MS education and training. The endMS Network is proud to support the talents of these dedicated SPRINT trainees and mentors who are playing a pivotal role in the building of knowledge for the future.

*This issue of SPRINT – Spotlight on the Future profiles seven MS researchers.*

#### **Our five tier 2 trainees**

- Dr. Charity Evans
- Dr. Yohannes Haile
- Dr. Heather Hanwell
- Michael Keough
- CJ MacMillan

#### **and our two mentors**

- Dr. Nathalie Arbour
- Dr. Helen Tremlett

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## DR. CHARITY EVANS

**D**r. Charity Evans graduated from the College of Pharmacy and Nutrition at the University of Saskatchewan in 2003. She practised community pharmacy for two years in rural Saskatchewan before returning to graduate school and completing a PhD (Pharmacy). Dr. Evans recently finished a postdoctoral research fellowship at the University of British Columbia in the area of pharmacoepidemiology in multiple sclerosis (MS). She currently holds a faculty position at the University of Saskatchewan.

"I am interested in the long-term effects of the drugs used to treat multiple sclerosis, as well as the impact of adherence to these drugs," she explains.

Dr. Evans first learned about SPRINT while attending the Halifax Summer School in 2010. "I applied (to the program) in the first year and really had no idea what to expect," she recalls.

An endMS trainee for the past two years, Dr. Evans welcomed the wealth of new information she received at the endMS Summer School and found the SPRINT sessions to be very useful.

"I think SPRINT is unique because trainees have the opportunity to work as part of an interdisciplinary team and gain an understanding into how different research fields think," she says. "It was interesting to see how each team member approached the same task differently based on their background and training."



Dr. Evans says SPRINT is an excellent learning ground that allows trainees to enhance their knowledge of multiple sclerosis through their work with talented researchers from across Canada.

"The program fosters collaborations that probably would not have happened otherwise," she says. "In some cases, it also allows trainees to participate in a project that is outside of their field of research."

Dr. Evans says she appreciated that the project she worked on had practical implications and could aid the MS community. Not to mention the key contacts she has made through SPRINT.

"The biggest benefit has been networking," she says. "Over the past couple of years, I have made several connections that have resulted in actual and potential collaborations as well as mentorship, which have been invaluable as I start my research career."

## DR. YOHANNES HAILE

**D**r. Yohannes Haile graduated with a Bachelor of Science in biology and a minor in chemistry from the University of Asmara, Eritrea in Africa. Upon graduation, he worked as a research assistant and later transferred to the Ministry of Health where he was employed as a biologist and an assistant program manager in the Division of Communicable Diseases Control (National TB Program). In 2002, he was awarded an international scholarship from the German Academic Exchange Service. He obtained a Master of Science in aquatic ecology and molecular microbiology from the University of Bremen in 2004, and a PhD in neuroscience from the Center for Systems Neuroscience at the University of Veterinary Medicine in Hannover in 2007. For the past four years, Dr. Haile has been in Canada pursuing a post-doctoral fellowship on neuro-inflammation at the University of Alberta in Edmonton.



"Inflammation plays a significant role in the pathogenesis of multiple sclerosis (MS)," says Dr. Haile, a SPRINT trainee. "My current research focuses on understanding how inflammatory cells induce neuronal injury in multiple sclerosis and how to mitigate this neurodegeneration."

Upon realizing that Alberta is one of the regions in the world with the highest prevalence of multiple sclerosis, Dr. Haile decided to take his research one step further. His strong desire

to learn more about MS and to alleviate this debilitating disease led him to participate in the first endMS Summer School held in Montreal in 2009.

He went on to be accepted into endMS SPRINT and was mentored by Dr. Helen Tremlett, whom he credits for teaching him leadership and management skills. Dr. Haile had the opportunity to collaborate with researchers from a variety of disciplines, in addition to experts in the field.

"It was an excellent experience for learning more about multiple sclerosis, and also set the stage for networking with other trainees and principal investigators," he recalls. "My relationship with some of the participants went beyond science to a personal level of friendship."

According to Dr. Haile, SPRINT allows trainees to work together, as well as to enhance their knowledge of MS and related disciplines outside of their labs.

"SPRINT is unique because it is trainee-centred," he explains. "It is actively engaged in attracting dynamic students, offering them multiple opportunities and shaping them to be experts in MS. It is also an excellent platform for determining whether collaboration in a multidisciplinary system can be maintained."

In the future, Dr. Haile hopes to see more hours allotted to SPRINT projects and further interaction with the principal investigators.

"Our experience revealed that 40 hours is too short," he says. "However, with excellent mentors and highly motivated trainees, I have no doubt that SPRINT will flourish."

**DR.  
HEATHER  
HANWELL**

**D**r. Heather Hanwell attended the University of Guelph and received a Bachelor of Science (Honours) in biology and nutrition in 2004, and a Master of Science in human health and nutritional sciences in 2007. Her interest in nutrigenomics – the study of interactions among nutrition, genetics and health – led to her PhD in nutritional sciences four years later at the University of Toronto. Dr. Hanwell's thesis focused on the assessment of Vitamin D status and its role in reducing the risk of pediatric multiple sclerosis (MS). She is presently a post-doctoral research fellow in the Neurosciences and Mental Health Program at the Hospital for Sick Children.



"We are interested in studying the determinants of vitamin D status – such as diet, supplements and sun exposure – and the potential mechanisms that may underlie the association between vitamin D insufficiency and increased risk of MS," Dr. Hanwell explains.

Dr. Hanwell was first introduced to SPRINT at the Whistler endMS conference in 2010. Having had a positive experience at the 2009 endMS Summer School in Montreal, she believed the program would be a great opportunity to not only expand her summer school learning experiences, but to also build new collaborations while enhancing her research skills.

"As a tier 2 participant, I had the opportunity to work with a multidisciplinary team across Canada and to learn how to resolve issues that crop up with research at a distance," she recalls. "SPRINT and Summer School help trainees to be better critics and to see beyond our limited research niche. This enables us to come up with new ideas and to see our work within a broader context."

Adding that all summer students would greatly benefit from the SPRINT sessions, Dr. Hanwell says that the professional and academic training offered by the program is exceptional.

"This program goes beyond MS-specific content to help equip trainees to be productive, collegial and rigorous researchers," she asserts.

While she recommends offering tier 2 trainees more input into project design from the onset and increasing the estimated time commitment for the project from its current 40 hours, Dr. Hanwell says she will always appreciate the valuable new research relationships she made with trainees and mentors across the country.

"The endMS Network has been such a core part of my training from early in my PhD until now, that it is hard to imagine where I would be without it," she remarks candidly. "I am incredibly grateful for the opportunity to have been a SPRINT participant. The Network has nurtured a sense of community amongst Canadian MS researchers, and has facilitated my learning and growth as a young researcher."

**MICHAEL  
KEOUGH**

**M**ichael Keough completed a joint Bachelor of Science in biochemistry and behavioural neuroscience at Memorial University in St. John's, Newfoundland. Following a research passion for neural regeneration and repair, he relocated to Alberta and was accepted into an MD/PhD program at the University of Calgary. He is currently studying the mechanisms underlying central nervous system demyelination (the loss of myelin, a substance in the white matter that insulates nerve cells and is the major underlying factor responsible for the symptoms of multiple sclerosis) and repair with an interest in the innate immune system and novel therapeutics.

"I first heard of SPRINT through my local Regional Research and Training Centre, and was intrigued by its unique design and philosophy," says Michael, a SPRINT tier 2 trainee.

Over the past year, he and his co-trainees worked diligently to review the literature regarding the Food and Drug Administration's first oral approved MS medication, Gilenya. Sharing their findings via monthly conference calls, the SPRINT team collaborated on a presentation that would be useful for MS patients seeking information regarding the new drug.

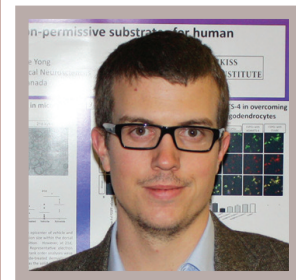
"Working on this SPRINT project allowed us to step outside of the box and see a world of research different from our own," Michael says. "We traveled to Montreal to give a test run of our presentation to a group of nurses at L'Hôpital Notre-Dame, and it was an enjoyable and productive experience. Attending the endMS Summer Schools in Calgary and Winnipeg as a SPRINT member

also meant participation in career training sessions, which was an excellent opportunity to learn important skills that are often not taught in traditional academic settings."

Another advantage, Michael adds, was the opportunity to meet and interact with people involved in direct MS care.

"Talking about the disease with a group of nurses who see patients every day opened my eyes to the types of problems these individuals have to overcome," he remarks candidly. "I now understand that routes of administration and side effect considerations can be just as important to patients as the therapeutic benefit of the medication."

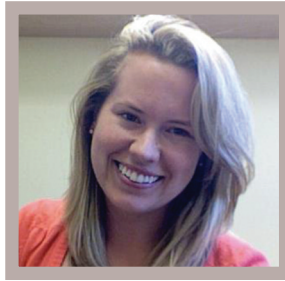
While Michael says SPRINT trainees should expect to work more than 40 hours, the program is highly rewarding and one he would definitely recommend.



"A mentor once told me that the best way to progress your research is to think "laterally", Michael says, "and my involvement in SPRINT has allowed me to do this. The most significant gain has been networking with MS researchers of all disciplines and at all stages of their careers. As my own research career progresses, I will treasure the contacts I made in the MS field during my graduate work while seeking future collaborative projects."

**CJ MacMillan** earned her Bachelor of Science (Honours) in Biology at Saint Francis Xavier University in Nova Scotia. Upon graduation she traveled to Rwanda to teach laboratory medicine at the Kigali Health Institute. CJ returned to Canada in early 2008 to become a PhD candidate in neuropathology. Her research explores the role of angiogenesis (the growth of new capillary blood vessels in the body) in the pathogenesis of multiple sclerosis (MS), and how it may serve as a potential therapeutic target.

"I have always been aware of the high prevalence of MS in my region (Atlantic Canada)," says CJ. "It was clear after many discussions with friends and family affected by this disease that this is an area where more research is needed to find novel and more efficacious therapies."



CJ decided to apply to SPRINT after it was introduced to trainees at her local Regional Research and Training Centre. Having previously attended endMS Summer School, she thought it would be an excellent opportunity to make interdisciplinary connections in the field and expand her knowledge base.

"I was eager to participate in the inaugural year of SPRINT when it was announced," she recalls. "The intensive and focused curriculums were always (and continue to be)

tremendously well organized and delivered. I found the material covered was directly translatable to my graduate research, and enhanced the quality of my work significantly."

The tier 2 projects encourage trainees to explore MS-related topics outside of their own field with an interdisciplinary group of colleagues. This interaction, says CJ, fosters the development of a variety of skills that are crucial to conducting meaningful research, and that can often not be obtained in individual academic programs.

"The endMS Network has provided me with a remarkable environment to grow as a trainee," she says. "By highlighting the importance of an interdisciplinary approach to research and providing me with the skill set necessary to effectively participate in these

collaborations, I am now able to confidently translate my basic science research findings into applicable bedside practices."

CJ says that SPRINT – through its career development workshops, intensive summer school curriculum, and mentorship from senior MS researchers – not only fills vital gaps in graduate training, but makes the transition from trainee to researcher seem less daunting.

"The support and guidance SPRINT provides each trainee in his/her development as a researcher and contributor to the MS field is outstanding, and is truly unique to this program," she says. "The only change I would recommend for this program is expansion so that it may be offered to more trainees on an annual basis."

### 2011-2012 endMS SPRINT Graduates

#### Tier 1:

Vladimir Bamm, University of Guelph  
Jenea Bin, McGill University  
Pia C. Christensen, Hotchkiss Brain  
Institute

Sarah Neil, University of British Columbia  
Scott Ryan, Ottawa Hospital Research  
Institute

#### Tier 2:

Charity Evans, University of Saskatchewan  
Yohannes Haile, University of Alberta  
Heather Hanwell, Hospital for  
Sick Children  
Michael Keough, University of Calgary  
CJ MacMillan, Dalhousie University

### 2012-2013 endMS SPRINT Trainees

#### Tier 1:

Miguel De Avila, University of Guelph  
Brietta Gerrard, University of Lethbridge  
Sébastien Lévesque, Université Laval

#### Tier 2:

Nadine Akbar, Hospital for Sick Children  
Lindsay Berrigan, Dalhousie University  
Kaarina Kowalec, University of British  
Columbia  
Sandra Magalhaes, McGill University  
Craig S. Moore, McGill University  
Jean-François Richard, Université Laval  
Karen Turpin, University of Alberta

### 2012-2013 SPRINT Mentors

Bradley Kerr,  
Assistant Professor,  
Department of Anesthesiology and  
Pain Medicine, University of Alberta

Marcia Finlayson,  
Vice Dean (Health Sciences), Professor  
and Director – School of Rehabilitation  
Therapy, Queen's University

Anthony Feinstein,  
Professor, Department of Psychiatry,  
University of Toronto

**D**r. Nathalie Arbour obtained a PhD in virology and immunology, and completed postdoctoral training in immuno-virology and neuro-immunology at the Scripps Research Institute in California and the Montreal Neurological Institute. A devoted SPRINT mentor, she is currently a research associate professor in the Department of Medicine at the Université de Montréal. Her research program – funded by the Multiple Sclerosis Society of Canada (2007-2012), the Natural Sciences and Engineering Research Council of Canada, the Canadian Institutes of Health Research and the Canada Foundation for Innovation – aims to elucidate the role of T-cells in central nervous system inflammation and their effect(s) on the pathological processes observed in multiple sclerosis (MS).

Dr. Arbour's interest in medical research dates back to her childhood when she witnessed the struggles of an aunt suffering from poliomyelitis, a chronic neurological disease that leads to paralysis.

"As a child, it impacted my life," she recalls. "I had regular contact with my aunt and the visits to the hospital made me realize what it means to have a chronic neurological disease."

Focusing her PhD on multiple sclerosis, Dr. Arbour set out to learn more about the causes of



the disease. While studying in the United States, she continued to collaborate with MS researchers and subsequently became involved in SPRINT after returning to Canada.

"I enjoy teaching students how to think outside the box, how to analyze, and how to be innovative," she says. "The better training they receive now, the better researchers we will have in the future to study the disease (multiple sclerosis)."

In 2009, Dr. Arbour and her colleagues, Dr. Prat and Dr. Ludwin, collaborated to put forward the first endMS Summer School in Montreal. Two years later, she led SPRINT's team study on Gilenya, a new oral drug made available to people with MS.

"The purpose of the study was to research the pros and cons of the medication, and to deliver a presentation summarizing key points about this new oral

therapy, including its restrictions," she explains. "We wanted to provide patients with a reference that would hopefully initiate or lead to discussions with their attending neurologist."

A labour-intensive project, the study had Dr. Arbour and SPRINT trainees from Vancouver, Calgary and Halifax spending long hours reviewing literature and conferring via monthly teleconferences.

"It was a wonderful opportunity," she says. "When my colleagues came to Montreal, we met with nurses who work with MS patients and research staff at the Centre hospitalier de l'Université de Montréal to ask for their input. It was a great success and our team received excellent feedback."

Dr. Arbour says the team's findings will now be presented to the MS Society of Canada.

"I often give conferences to MS patients and see first-hand their great appetite for knowledge," she says. "As a working professional, sharing my knowledge with people who can benefit is the least I can do."

According to Dr. Arbour, SPRINT not only offers a unique learning environment for trainees to explore all facets of multiple sclerosis, but also provides a network for life where different expertises can be shared.

"SPRINT is important to trainees because there is only so much research that can be done alone in our labs," she says. "We need more communication between scientists and clinicians so we can learn from one another. We also need to have a better understanding of what it means to be an MS patient."

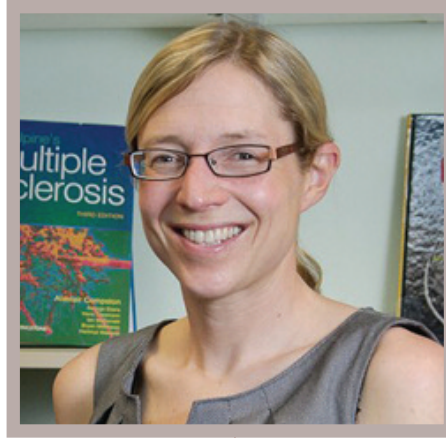
Dr. Arbour says she is grateful to the endMS Network for the new contacts she has made across Canada.

"The MS community is open, collegial, and pro-collaborative, and Canada is in a good position to make a real difference in the international health arena," she says. "My experience as a SPRINT mentor has been a very positive one and I am confident that these fantastic trainees will make great contributions to the MS research field down the road."

**DR.  
HELEN  
TREMLETT**

**D**r. Helen Tremlett trained in pharmacoepidemiology and multiple sclerosis (MS), earning her PhD at Cardiff University, Wales, UK. Her research interests include the natural history of MS, the prognosis and predictors of disease progression in MS, pregnancy outcomes in MS and the effectiveness of immunomodulatory drugs in MS. Dr. Tremlett has been a SPRINT mentor since 2011 and has received funding for her research from the MS Society of Canada, the Canadian Institutes of Health Research, the US National MS Society, the UK MS Trust, the Michael Smith Foundation for Health Research and the Canada Research Chairs Program. She is currently an associate professor in the Faculty of Medicine at the University of British Columbia, and the Canada Research Chair in Neuroepidemiology and Multiple Sclerosis.

"I became fascinated by multiple sclerosis while I was completing an undergraduate degree in pharmacy in England through one of the professors who was studying the disease," she recalls. "I remember thinking that if I became a pharmacist and was presented with a person with MS, unlike many other diseases, it would not be clear as to which drug would be appropriate to prescribe or how the disease should be monitored. It felt



frustrating, which is why I chose to do my PhD on MS drug treatments."

Over the years Dr. Tremlett has seen many people, including friends, diagnosed with multiple sclerosis. Upon accepting funding from the MS Society to pursue her research, she moved to Canada and was introduced to SPRINT.

"SPRINT seemed like a really novel and interesting program with many disease areas for trainees to get involved with," she says. "The opportunity to gain exposure in different areas was a real draw card."

Dr. Tremlett's SPRINT project saw her work with trainees from Edmonton and Toronto to determine what people living with MS think might be responsible for their disease and to establish whether there is any biological rationale behind these beliefs.

"I loved the passion and creativity of the trainees," she remarks candidly. "I also enjoyed watching them tackle the day-to-day challenges and problems of the project – seeing them give up their time in the lab to work on this initiative."

Having participated in two endMS Summer School sessions that combined lectures and practical workshops in a pro-collaborative environment, Dr. Tremlett says SPRINT is an excellent platform for bringing researchers together to share ideas.

"SPRINT is important to trainees because it allows them to team up with others across Canada and work one-on-one, as well as with a faculty member to further their career," she says. "It is also mixed in terms of disciplines so that trainees can collaborate with one another on different projects in different areas of research – a fun aspect of the program."

Citing better communication and leadership skills as two things she has gained from her involvement in SPRINT, Dr. Tremlett says her time spent with the trainees has proven invaluable.

"I learned that our trainees could adapt quickly to meet challenges," she says. "While 40 hours wasn't very long for the project, they were good at getting focused and maintaining enthusiasm."

In the future, Dr. Tremlett hopes SPRINT will also help trainees establish strong links with stakeholders, such as local chapters and divisions of the MS Society of Canada, perhaps enabling study findings to have a practical application.

"While trainees did give presentations, we need something more tangibly innovative at the end of the day," she says. "SPRINT is a wonderful learning experience and I think we should open the program to everyone interested in MS research across Canada."

# 2012 endMS Summer School and SPRINT Sessions Winnipeg, MB



*SPRINT's Career Paths Panel*



*Exploring Winnipeg*



*Lasting impressions at the MS Society's networking BBQ*



*Summer School Group Photo*

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# SPRINT

For Summer School and/or SPRINT application and program guidelines, please visit our website at [www.endmsnetwork.ca](http://www.endmsnetwork.ca). If you are interested in becoming a SPRINT mentor or would like more information on the program, please contact:

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The endMS Research and Training Network is a nationwide initiative formed to accelerate discovery in the field of multiple sclerosis in Canada. Through innovative education and funding programs, the endMS Network aims to attract, train and retain MS researchers and increase opportunities to conduct MS research in Canada.

The endMS Network is managed by the MS Society of Canada and funded through its related MS Scientific Research Foundation as the flagship investment of the \$60 million endMS capital campaign.

