I am delighted once again to provide an introduction to the SPRINT newsletter. This year four team projects were completed by our SPRINTers guided by their dedicated mentors. Centrally, through the National Education and Training Office (NETO) and under the leadership of Dr. Marcia Finlayson, we have implemented regular contacts with the mentors and trainees to provide ongoing feedback on the program. This has been very successful in offering a venue for discussions among the mentors and opportunities to consider ways to modify aspects of the program in real time. In this third issue of SPRINT – Spotlight on the Future, you will be introduced to the 2013-2014 SPRINTers and their mentors.

Our graduating SPRINTers presented the results of the interdisciplinary learning projects at the Summer School in Halifax through a brief oral presentation and a poster. Ten new SPRINTers were welcomed and joined the graduating SPRINTers in the Career Development Sessions held the day prior to the formal Summer School.

I attended the endMS Summer School in Halifax and was impressed by the novelty of the program, and by the professionalism and enthusiasm of the presenters and the attendees. It was a very intense, but enjoyable week!

Every year I am struck by the passion of our SPRINTers, and the commitment from emerging and established researchers and trainees. The MS research community in Canada is relatively small, but is growing, and I am very optimistic about the future of MS research.

It is already that time again when planning is underway for the 7th annual endMS Summer School to be held in Montreal, May 11-15, 2015.

Congratulations and good luck to the graduating SPRINTers, and please keep in touch! A big thank you to the outgoing mentors as well. To our incoming SPRINTers and mentors, I wish you a great year and look forward to seeing you in Montreal!

Dr. Christina Wolfson,
Director of the endMS National Education and Training Program
Marc-André Bellavance obtained a Master of Science in pharmacology from Université de Sherbrooke in 2009. For the past few years, he has been studying the early degenerative and immune events involved in the pathogenesis and progression of multiple sclerosis (MS). Marc-André is currently in the final stages of his doctoral research in neuro-immunology at Université Laval and will be starting medical school in the fall.

“My passion for neuroscience deepened during my undergraduate studies in pharmacology,” says Marc-André, a SPRINT trainee. “Upon joining a neuro-oncology lab, I was responsible for developing nanocarriers to improve the delivery of chemotherapy to primary malignant brain tumours. This edifying experience introduced me to the field of neuro-immunology and the numerous breakthroughs achieved at the time captivated me.”

As part of their multidisciplinary project, Marc-André and his co-trainees had the opportunity to meet people living with multiple sclerosis while working on the production of an educational newsletter for the MS community.

“My experience as a SPRINTer went well beyond all my expectations,” he says. “The career development sessions were extremely valuable since they beautifully complement the ‘default toolset’ usually acquired by trainees in academia. I also expanded my knowledge of multiple sclerosis, met MS experts in the field and gained skills that are pivotal to conducting leading-edge research.”

According to Marc-André, SPRINT is uniquely positioned to shape the future of MS research in Canada. “By bringing together students, scientists and clinicians from different disciplines, SPRINT fosters the development of multi-talented MS researchers and provides opportunities for successful collaborations,” he asserts.

“I applied to the program because I thought it would be interesting to be mentored by a senior MS researcher while working on a project outside of my field of study with new people,” he says. Curtis and his co-trainees conducted an evidence-based review of the benefits of an antioxidant rich diet for people living with multiple sclerosis.

“I enjoyed the experience because we learned how to translate our research findings into meaningful health information for the MS community,” he states.

Having attended several Summer Schools, Curtis says that the professional and academic training offered by SPRINT can play a vital role in the future of MS research.

“SPRINT is unique because it allows trainees to participate in a cross-Canada, multi-institutional project in MS, and acquire skillsets and contacts that would otherwise not have been possible.”

Dr. Dunn became interested in MS research because her mother was diagnosed with the disease. She subsequently became a SPRINT mentor and participated in Summer Schools.

“I enjoyed meeting my trainees and our planned get-togethers,” she recounts. “Our project was to write a book chapter on sex differences in MS incidence and progression. During this process, I was able to get up to date on the literature, while the students had a chance to learn something new about multiple sclerosis.”

While Dr. Dunn concides the interdisciplinary project requires a great investment of time on the part of trainees, she acknowledges that the mentorship component of SPRINT can be very advantageous to the future of MS research in Canada.

“SPRINT helps trainees connect with new potential mentors other than their graduate supervisors,” relates Dr. Dunn. “If this opportunity gets them engaged in long-term MS research when they would otherwise not, the program will be extremely valuable.”
Eva Gunde came to Halifax from Hungary in 2001. She pursued undergraduate studies in neuroscience and has been involved in multiple sclerosis (MS) research for the past three years. A PhD student, she is testing whether functional imaging of the brain using neuro-psychological tasks such as the Symbol Digit Modalities Test (SDMT) and basic brain function (resting state) can be developed into reliable and sensitive methods to monitor disease activity in individuals living with multiple sclerosis.

“My background is primarily in structural and functional neuroimaging,” says Eva, “and my previous research focused on brain changes in mental disorders.”

As a SPRINTer, Eva collaborated on an interdisciplinary project that explored the biology of sex-based differences of multiple sclerosis incidence and progression.

“Through our team’s research we learned that there is not only a higher prevalence of multiple sclerosis in women than in men, but also an increasing ratio between the two sexes,” she explains. “Based on our findings, we were able to contribute a book chapter on the increased female risk of multiple sclerosis post puberty.”

Having participated in the Summer School held in Vancouver, Eva credits SPRINT with exposing her to useful time management and resume writing tools, and introducing her to people living with multiple sclerosis.

“By arranging collaborations with researchers from different backgrounds, SPRINT allows trainees to gain new perspectives on multiple sclerosis,” she says. “It is a wonderful opportunity to expand your knowledge and build relationships.”

Camille Juzwik received a Bachelor of Science in biochemistry at the University of Ottawa. While working as a research assistant, she developed a strong interest in neurodegenerative diseases. Currently a PhD candidate in molecular biology at McGill University, she is investigating neuronal microRNA (miRNA) dysregulation in multiple sclerosis (MS) with the goal of identifying novel therapeutic targets and biomarkers for the disease.

“MicroRNAs modify the expression of approximately 60% of all human genes and are involved in many different physiological pathways,” explains Camille, a SPRINT trainee. “Recent studies have revealed that miRNA profiles in blood cells become altered in multiple sclerosis, and that active and inactive MS lesions have distinct miRNA patterns.”

Camille says SPRINT was a wonderful learning experience.

“I gained a better understanding of multiple sclerosis by engaging with researchers from different backgrounds,” she recounts, “and met people living with the disease, which was empowering.”

Through travel grants, Camille and co-trainee, Curtis Benson, also had the chance to attend ACTRIMS, a clinical conference in Dallas, where they participated in the poster session and were able to solicit feedback on the systematic review and pamphlet.

“The networking component is extremely helpful,” she says of SPRINT. “By bringing researchers together, you are exposed to work and research opportunities across Canada that you would have never known about.”

As a SPRINT participant, Camille collaborated on a multidisciplinary project titled The Effects of Antioxidant Supplements on Progression of MS: A Systematic Review of Human and Animal Studies for Clinicians and Patients.

“We wanted to do something that could assist people living with multiple sclerosis,” she relates. “After examining literature on antioxidant diets associated with the alleviation of MS symptoms, we designed a pamphlet that summarized our research findings and provided a list of foods with potential health benefits.”

“B cells are tasked with targeting and regulating immune responses,” says Dr. Kerfoot. “When something goes wrong, an autoimmune disease such as multiple sclerosis can result.”

As a SPRINT mentor, Dr. Kerfoot oversaw a team of two trainees (Sandra Meyers and Julia O’Mahony) working on a project that reviewed the animal model, EAE.

“Our goal was to do something that could benefit the MS community,” he explains. “Through our own initial discussions, we learned that there was a need for a practical manual to translate the animal model for non-immunologists. The aim is to improve communication between researchers who study MS in humans and those who study MS in animals.”

Dr. Kerfoot cites SPRINT as an excellent opportunity for researchers in training.

“The program makes a deliberate effort to take trainees working in MS and expose them to other aspects of the disease, allowing them to broaden their research scope,” he says. “Global research is very multidisciplinary and I believe SPRINT will be the driving force of the future.”

Dr. Steven Kerfoot earned his Bachelor of Science in zoology at the University of Calgary, where he also obtained his PhD investigating the mechanisms of immune cell invasion of the central nervous system in an animal model of multiple sclerosis (MS) called experimental autoimmune encephalomyelitis (EAE). He then spent six years at Yale University School of Medicine in two separate postdoctoral positions studying the biology of B cells. Dr. Kerfoot subsequently returned to Canada and joined the Department of Microbiology and Immunology at Western University in London, Ontario. His research focuses on identifying how B cells drive chronic inflammation of the brain and spinal cord.
**Dr. Lisa Koski** completed her undergraduate studies in psychology and linguistics at the University of Toronto. She earned her PhD in clinical psychology at McGill University in 2002 and pursued post-doctoral training at the University of California, Los Angeles. Dr. Koski is currently the director of the Transcranial Magnetic Stimulation (TMS) Lab at the Royal Victoria Hospital in Montreal, and assistant professor in the Departments of Psychology and of Neurology and Neurosurgery at McGill University. Her research aims to advance knowledge of how human brain systems control behaviour and to apply these insights to the development of new rehabilitative interventions.

“My mentoring experience was very enlightening,” she relates. “I had considered myself proficient in communicating my research ideas and methods for a lay audience, but I soon learned I had to acquire further skills in linking concepts from disparate areas of research within the MS field.”

According to Dr. Koski, SPRINT is important to trainees because it prepares them in two key areas of career development: collaborative teamwork and effective communication. “SPRINT is a great model,” she says. “The opportunity to expand the trainees’ understanding of their role in MS research in a larger context is a major contributor to their growth as scientists. SPRINT could also help to strengthen their commitment to research in Canada where multi-site team investigations into critical diseases is the newly emerging norm.”

“I have always been interested in understanding how the brain adapts to support continued mental functioning in the presence of disease,” says Dr. Koski. “After collaborating on the development of cognitive assessment tools as part of a team investigating health outcomes among people living with multiple sclerosis (MS), I was able to appreciate the impact of MS on those who are affected during their peak productive years, yet who often manage to sustain an impressive level of functioning and productivity despite the challenges.”

While serving as a SPRINT mentor, Dr. Koski says she welcomed the opportunity to train the next cohort of MS researchers and give back to the programs that had contributed to her own MS research.

**Hyunwoo Lee** was born in Korea and raised in Vancouver, British Columbia. He pursued his undergraduate studies in biophysics at the University of California, Los Angeles and is currently working on his PhD in neuroscience at McGill University in Montreal. His research employs conventional magnetic resonance imaging (MRI) to examine brain atrophy in multiple sclerosis (MS) patients treated with immuno-ablation – destruction of patient immune resistance – and bone marrow transplants.

“My research measures longitudinal brain volume changes before and after bone marrow transplants in patients with advanced multiple sclerosis,” says Hyunwoo, a SPRINT trainee. “Specifically, I am interested in the effects of the pre-treatment MS white matter lesions and the chemotherapy-associated brain toxicity on whole-brain and gray/white matter atrophy following treatment.”

Along with fellow SPRINTer and team member Eva Gunde, Hyunwoo contributed a book chapter on sex-based differences in multiple sclerosis incidence and progression.

“I am glad that I had the opportunity to work on a multidisciplinary project because I was introduced to a topic of which I had no prior knowledge, and gained a detailed overview of the biology and potential mechanisms for it,” Hyunwoo states.

As a participant in two Summer Schools, Hyunwoo says the workshops he attended were extremely helpful in further defining his career path and goals. He also commends SPRINT for facilitating a multidisciplinary approach to research. “During the course of the team project, I realized that there are still many areas of MS research where answers to critical questions remain undefined,” he relates. “SPRINT can play a significant role in the future because it not only exposes trainees to a variety of disciplines in the MS field, but also offers proper guidance.”

**Sandra Meyers** completed her undergraduate studies in physics at the University of British Columbia. She is pursuing a PhD in medical physics at the University of British Columbia, and is currently working on an interdisciplinary project that focuses on animal models of MS called experimental autoimmune encephalomyelitis (EAE).

“I have always been interested in understanding how the brain adapts to support continued mental functioning in the presence of disease,” says Sandra. “After collaborating on the development of cognitive assessment tools as part of a team investigating health outcomes among people living with multiple sclerosis (MS), I was able to appreciate the impact of MS on those who are affected during their peak productive years, yet who often manage to sustain an impressive level of functioning and productivity despite the challenges.”

While serving as a SPRINT mentor, Dr. Koski says she welcomed the opportunity to train the next cohort of MS researchers and give back to the programs that had contributed to her own MS research.
Julia O’Mahony earned her undergraduate degree in science at McMaster University in Hamilton. Upon completion of her studies she moved to Toronto where she began working at the Multiple Sclerosis (MS) Clinic at The Hospital for Sick Children. Julia is currently a PhD student in Health Economics at the Institute of Health Policy, Management, and Evaluation at the University of Toronto. The objective of her research is to identify informal caregivers – family members and friends who provide care without pay to people living with MS in Canada – who are at risk for health decline and interventions that may help to curtail such decline. “Through my work, I had the privilege of getting to know children who are living with MS and their families,” Julia says. “The enormous contribution that family and friends make to the care of these children in the form of physical, emotional, and financial support, as well as advocacy, guidance, and surrogate decision-making, is not without cost; it can take a great toll on the health and labor force participation of these individuals.”

As a SPRINT trainee, Julia collaborated on a manual with the goal of helping researchers who study MS in humans to better communicate with those who study MS in animals. She also participated in endMS-Summer schools where she received valuable feedback regarding presentation and public speaking skills. “We were counseled on how to communicate our research using various platforms, such as Twitter,” relates Julia, “and the importance of tailoring our talks to match the interests and backgrounds of our audiences.”

Julia credits SPRINT with playing a crucial role in enabling her to remain in the field of MS research. “SPRINT is a long-term investment in trainees and their association with the MS research community in Canada,” asserts Julia. “The program provides MS graduate students with some of the key tools they need to obtain academic appointments, while fostering critical inter-generational relationships between mentors and students that are imperative for imparting knowledge and vital skills.”

“I have a long history of working with people with multiple sclerosis,” says Dr. Ploughman. “During my graduate studies, I approached the MS Society to collect data on elderly patients living with the disease, and built a sense of community throughout my research.”

Dr. Michelle Ploughman is an expert in neuroplasticity and neurorehabilitation in stroke and multiple sclerosis. Her research focuses on the effects of aerobic exercise, intensive training paradigms and lifestyle habits on the brain challenged by injury, disease and aging. She is currently the principal investigator for the Canadian Survey of Health, Lifestyle and Aging with Multiple Sclerosis – the largest study of aging with MS in Canada with over 740 participants from 10 study sites. Dr. Ploughman continues to practice as a neurological physiotherapist and is an assistant professor in the Department of Medicine at Memorial University in St. John’s, Newfoundland.

“By looking at the mechanisms involved in myelin and axonal injury, we hope to better understand a fundamental player in progressive MS and the key pathways driving it,” explains Dr. Plemel.

As a SPRINT trainee, Dr. Plemel collaborated on an interdisciplinary project where he and his fellow researchers created a pamphlet on over-the-counter antioxidant therapies (vitamins, fatty acids and polyphenols) for people living with multiple sclerosis. “It was an amazing experience to meet people from across the country and a phenomenal opportunity to be mentored,” relates Dr. Plemel. “Participating in Summer School also allowed me to enhance my knowledge and skills related to multiple sclerosis.”

Dr. Plemel credits SPRINT for the guidance and different perspectives imparted by expert investigators in the field. “The program is categorically excellent and I have gained so much from my involvement,” says Dr. Plemel. “I think SPRINT is a great way to build bridges and it can be tremendously valuable for researchers working on their PhDs or postdoctoral studies in Canada.”

Dr. Ploughman became a SPRINT mentor in 2013. In this role, she oversaw a team of three trainees exploring the benefits of an antioxidant diet for people living with multiple sclerosis. “I felt it was my turn to give back,” she explains of her decision to become a mentor. “The rewards were great as I met remarkable trainees from different backgrounds with whom I really enjoyed working – especially during their first-time visit to Newfoundland and Labrador.”

According to Dr. Ploughman, SPRINT is an excellent platform for uniting MS researchers and trainees from across the country. “Large impact studies – such as the patient-oriented project we worked on – require collaboration with researchers from different universities who can bring new skills to the table,” Dr. Ploughman states. “I believe SPRINT is a wonderful growth opportunity that keeps trainees on task while encouraging them to think outside the box.”
Neda Razaz graduated with a Bachelor of Economics from Simon Fraser University in 2006. Through her work at Human Early Learning Partnership at the University of British Columbia, she developed a strong interest in child health and epidemiology, and went on to pursue her Masters in Public Health. In 2011, Neda began her PhD and received a grant from the Canadian Institutes of Health Research to investigate how the development of young children may be impacted by a parent living with multiple sclerosis (MS).

“As a SPRINTer, Neda was grateful for the opportunity to visit the University of Copenhagen in Denmark and the Karolinska Institute in Stockholm, Sweden for a week in 2014 where she received considerable feedback on her PhD thesis research from world-renowned experts in the MS field.”

“Not only was I privy to their extensive national MS database registries, which would have not been possible to obtain in Canada,” she recounts, “but I was also able to observe the differences in clinical practice between Canada and Europe through in-depth discussions on the use of disease-modifying drugs in pregnancy.”

Having attended two Summer Schools, Neda credits SPRINT for its exceptional career development advice, and the contacts she made in both Canada and abroad.

“Working with researchers outside my field of study on a year-long project was interesting because the networking was invaluable,” relates Neda. “SPRINT helps students build bridges and connections for life.”

J ordan Warford pursued undergraduate studies in cognitive neuroscience at Saint Mary’s University in Halifax, followed by a Master of Science in pharmacology and neuroscience at Dalhousie University. He is currently working on his PhD in neuropsychology where he is exploring new strategies for remyelination – the phenomenon by which new myelin sheaths are generated around axons in the adult central nervous system – in parts of the brain damaged by multiple sclerosis (MS).

“Remyelination can restore neurological function to axons,” Jordan explains, “and my research focuses on how immune cells migrate to areas of tissue damage.”

A participant in the first Summer School held five years ago in Halifax, Jordan confides that working on a multidisciplinary project as a SPRINT trainee has been a remarkable learning experience.

“Drafting a functional newsletter whose primary purpose is to empower people living with multiple sclerosis with practical information taught our team the importance of defining our take-home message and refining our vocabulary when communicating to a non-scientific audience,” he relates.

According to Jordan, SPRINT is a wonderful initiative because it not only facilitates a career in MS research, but also instills a renewed sense of passion in the field.

“The program really inspired confidence and changed my perspective on the ability to secure an academic post in the future,” says Jordan.

“To me, SPRINT is like a family because it’s all about the people,” he adds. “By making MS research less isolating through opportunities to work with other researchers from across Canada, the program allows trainees to bond and develop deep relationships, which in turn, produce fruitful collaborations.”
2014 endMS Summer School and SPRINT

SPRINT Project Meeting in St. John’s, Newfoundland

Summer School Session

SPRINT Project Posters

Networking

Summer School Teamwork

https://www.endmsnetwork.ca/SPRINT
For Summer School and/or SPRINT application and program guidelines, please visit our website at 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.