

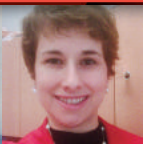
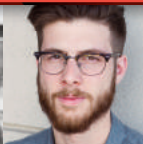
## Moving MS Research Forward Through Hard Work, Training and Opportunities

**W**e are delighted to present the sixth edition of the endMS National Training Program's *Spotlight on the Future* newsletter.

In this newsletter you will find articles on our graduating SPRINTers and their mentors, photos from the 2017 endMS Summer School, and a welcome message from next year's hosts. For a sneak peek at what the 2018 Summer School will offer, go to page 9. Stay tuned for more information on the application process coming in December.

We extend a special thank you to Dr. Michelle Ploughman and to Dr. Craig Moore for hosting the 2017 endMS Summer School (*Moving MS Research Forward through Clinical and Biomedical Partnerships*) from June 12th to 15th in St. John's, Newfoundland at Memorial University. Thirty-nine trainees from across Canada participated in plenary sessions, workshops and activities to help guide them through, and realize the significance of, bridging basic and clinical science in MS research.

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# SPOTLIGHT ON THE FUTURE



*(Scholar Program for  
Researchers IN Training)*

## INTRODUCING THE 2016-2017 SPRINTERS AND MENTORS

### **Our SPRINTers:**

**Stephanie Blandford**  
**Elisea De Somma**  
**Max Fiander**  
**Prenitha Mercy Ignatius**  
**Rajiv Jain**

**Dr. Samuel Jensen**  
**Julie Pétrin**  
**Dr. Kelvin Poon**  
**Dr. José Wijnands**

### **and our mentors:**

**Dr. Tania Bruno**  
**Dr. Nader Ghasemlou**  
**Dr. E. Ann Yeh**

### CONTINUED FROM FRONT PAGE

There were also facilitated sessions to help build communication skills and opportunities to network and to meet with people living with MS.

The 2017 Summer School was intense, but very rewarding thanks to the professionalism and enthusiasm of the presenters, the volunteers and the attendees. A particular highlight was the Three Minute Thesis (3MT) competition, which was stressful but a lot of fun.

Our graduating SPRINTers presented the results of their interdisciplinary projects at the Summer School. Nine new 2017-2018 SPRINTers were welcomed to the program and met with their SPRINT teams the day prior to the Summer School. See page 8 for a list of the current SPRINTers and mentors.

Beyond the program, many scholars continue to pursue MS research. Take a moment to see what our SPRINT alumni are up to on page 11.

Congratulations and good luck to the graduating SPRINTers; do keep in touch! Warm thanks to the outgoing mentors who – although very busy with their own research careers and responsibilities – devote many hours to develop trainee projects and to guide the SPRINTers through their time in the program (and beyond!).

A huge thank you to the committee members, faculty, presenters, facilitators, panel members, organizers and people affected by MS who have generously given of their time to help ensure that the National Training Program continues to move MS research forward by delivering high caliber programs through the endMS Summer School and endMS Scholar Program for Researchers IN Training (SPRINT). The success of the program truly is a tribute to everyone's efforts – it is a national collaboration in itself!

To our current SPRINTers and mentors, we wish you a great year and look forward to seeing you in Toronto for the 2018 endMS Summer School!

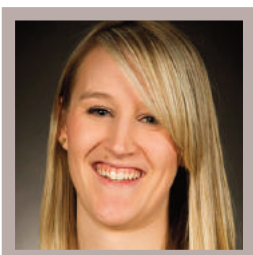
DR. CHRISTINA WOLFSON  
DIRECTOR, NATIONAL TRAINING PROGRAM

ANIK SCHOENFELDT  
MANAGER, NATIONAL TRAINING PROGRAM



## STEPHANIE BLANDFORD

While in high school, Stephanie Blandford worked as a barista and server in a busy café, which she says taught her how to work with others and prioritize for maximum efficiency. Formal training in ballet and jazz dance furthered her skills at working in sync with others. Through the discipline of dance, she came to realize that life is a never-ending learning curve and that both success and failure are highly subjective.



Originally from Winnipeg, Stephanie obtained her BSc (Hons) in neuroscience, and her MSc in anatomy, neurobiology and neuroscience, both from Dalhousie University. She presently lives in St. John's, Newfoundland, where she is a PhD student at Memorial University under the supervision of Dr. Craig Moore.

Like several others in the SPRINT program, Stephanie did not originally choose to focus on MS, but her interest in neuroimmunology naturally led her there. When she sought a PhD position and joined Dr. Moore's lab, MS became her official area of focus.

Stephanie is presently concentrating on identifying mechanisms of cellular communication between the immune and nervous systems; those that not only cause central nervous system damage, but are also useful as biomarkers to diagnose MS and differentiate among MS subtypes.

The SPRINT program provided her the opportunity to step from the lab and look at the condition as a whole, centering on patient care and wellbeing. Her SPRINT mentor, Dr. Tania Bruno, has also had a huge impact on her, by bringing the patient experience into sharper focus. Her PhD supervisor,

Dr. Moore, is actively involved in the local chapter of the MS Society, which further ensures that her research is always directly linked to individuals living with MS.

"MS is a complex condition involving multiple factors, and an interdisciplinary approach is key to overcoming the current obstacles in diagnosis and treatment," she says. "The connections we SPRINTers make with one another at this stage of our careers will likely lead to productive future collaborations. The SPRINT program provides a unique opportunity for diverse disciplines to interconnect and to better the lives of individuals living with MS. I'd like to remain in academic research, and I some day hope to operate my own lab."

What intrigues Stephanie most about MS is that nobody knows what causes it or how to stop it, nor why the disease expresses itself so differently in those affected. Thanks to the SPRINT program, she has had the welcome opportunity to interact with many individuals living with MS. Their determination to overcome the challenges of the disease continues to inspire her to make a difference in their lives.

Stephanie describes herself as "cautiously optimistic" that a cure may be found in her life, but is certain that, at the very least, more disease-modifying therapies will be discovered and better diagnostic tools developed. She hopes that identifying the biological mechanisms that advance MS, and also the bio-markers used for diagnosis, will lead to new treatment options.

Due to the complexity of the disease, Stephanie believes that any combination of medicinal or therapeutic treatments that provides relief and quality of life to those afflicted is the way to go. "If it works for the patient, it works for me," she says, "so long as such individuals aren't endangering themselves."

## ELISEA DE SOMMA

Elisea De Somma once worked the rodeo at the Calgary Stampede, with dreams of becoming a criminal defense lawyer. Instead, she steered her life in a completely different direction, studying at the University of Calgary and completing her undergraduate degree in neuroscience. She then

moved to Toronto, where she is currently completing her doctorate in clinical development psychology at York University.

Fascinated by the brain's capacity for adapting to illness, her focus is on how pediatric-onset MS patients experience central nervous system (CNS) injury while the brain is still developing, which has an enormous impact on their capacity for learning, attention and memory.



Elisea's master's research consisted of investigating how "white matter" (the fatty insulating layer that facilitates efficient communication between neurons) differed between healthy children and adults living with MS, specifically the effects of physical activity on their development of healthy white matter and improved cognition.

Dr. Christine Till, Dr. Brenda Banwell and Dr. Ann Yeh contributed greatly to guiding her research, says Elisea.

With a background in psychology, Elisea credits the SPRINT program with expanding her understanding of the various types of MS research presently being conducted across Canada, particularly in neuro-immunology and animal research, fields in which she'd had limited exposure. She credits Dr. Nader Ghasemlou for his expert guidance in their team project, which reviewed the circadian rhythm of the auto-immune response in MS, and the potential for using it to optimize treatment.

Elisea says she was particularly impressed by how the SPRINT program offered new multidisciplinary and collaborative methods, which strengthened her research.

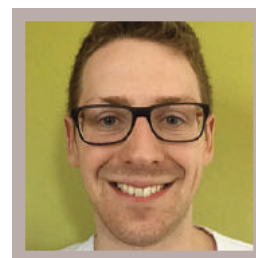
Her aim is to become a clinical psychologist working with children afflicted with psychiatric or neurologic illness and the consequent emotional impact of such diagnosis. She hopes to continue her research into how such illnesses affect brain structure, function and cognitive ability throughout her career, believing that we've only just scratched the surface in our understanding of MS.

"MS presents very differently for different people," she says. "It's a very heterogeneous illness when you consider the range of symptoms. Whether or not the brain successfully adapts to MS is what most intrigues me, and also how brain imaging doesn't necessarily reflect what we see when we look at the individual."

Elisea dearly hopes that a cure for MS might be found in her lifetime but, until then, is primarily interested in how we can improve quality of life for individuals presently living with MS.

## MAXIMILLIAN FIANDER

Born and raised in Halifax, Nova Scotia, Max Fiander's first job was toiling away as a dishwasher, which gave him ample opportunity to consider other more interesting professions.



He moved on to obtain his BSc in neuroscience with Honours, followed by his MSc in pharmacology, and is presently a second-year medical student, all at Dalhousie University.

While working on his undergraduate degree, Max became interested in studying neurodegenerative disorders. Searching for a lab to complete his master's degree, he was able to learn under Dr. George Robertson, whose work was closely aligned with his own research interests. Opportunities from the MS Society to continue his studies convinced him to focus on the disorder, and additional assistance provided by the endMS Summer Studentship launched his MS project. It was during this busy time that he met other researchers and people living with MS, and kept up to date with the latest relevant clinical research.

Max is currently working on two projects dedicated to examining the indicators and effects of MS. His endMS SPRINT project reviews modifiable lifestyle factors in pediatric MS, while the second project focuses on a mitochondrial protein in an animal model of MS. Both aim to more precisely describe how MS progresses and what solutions can be found to contain it.

The endMS SPRINT and Summer School have allowed him to obtain a nationwide overview of MS research and to meet other researchers he hopes to collaborate with in the future. The program also helped to steer him from the relative safety of the laboratory into the more challenging zone of clinical studies.

Max describes the SPRINT program as fostering trainees during the critical early stages of their career, to ensure their future pursuit of MS research. Although any eventual cure for MS is likely to be pharmaceutical, he believes that new therapies, counselling and lifestyle modifications are also vital for the wellbeing of people living with MS.

Being in his first years of medical school, Max admits to being unsure as to what his future holds, but knows that neuroscience is where his real passion lies, in addition to a keen interest in physics. He hopes to continue collaborating on research projects, and is also considering operating his own lab.

"The thing that has really intrigued me about MS is the complexity of the disease," Max says. "Although we've learned so much about it and treatment has improved drastically in recent years, there is still so much unknown about MS. The challenge of understanding the condition and making a positive impact on peoples' lives is tremendously exciting. It's difficult to predict where the science will go in the future. We could be a lot closer or a lot further than we think we are now."

### PRENITHA MERCY IGNATIUS

**P**renitha Mercy Ignatius completed her bachelor's degree in Technology and then her master's degree in biotechnology at the Vellore Institute of technology (VIT) in her native India.

She was born and raised in the very small village of Thiruppattur, in the southeast of the country, but has been living in Quebec City for the last four years to complete her PhD. At an early age, she says she became fascinated by the human brain and how it controls every other function of the human body.



Although MS had once seemed a relatively rare disease in India, there is now evidence that it is becoming more common, and one of the teachers in her school, whom she venerated, had a family member affected by MS. It was through her interactions with that teacher that Prenitha came to realize the devastation MS can cause which, combined with her established interest in brain function, inspired her to pursue a PhD so that she might better understand its mechanisms.

Prenitha is presently working on the role of pathogenic CD8+ T cells in progressive forms of MS, a mouse model referred to as EAE (Experimental Autoimmune Encephalomyelitis), which is an animal model of brain inflammation. Encouraged by her supervisor, Dr. Manu Ranganchari, cognitive neuroscientist Dr. Caroline Leaf and clinician Dr. Susan Richards, Prenitha says her resolve to advance her knowledge of the brain sciences has been further strengthened.

The SPRINT program has had the effect of exposing her to many other aspects of MS. Prenitha adds that Dr. Ann Yeh has been an excellent mentor and has both supported and encouraged her project, as well as giving her the chance to visit the Toronto Sick Kids' Hospital, which helped her gain further insight into paediatric MS and other demyelinating diseases.

As Prenitha describes it: "Our project was based on modifiable risk factors in paediatric MS. We investigated various factors such as diet, obesity, microbiomes, sleep, and fatigue, to learn more about how they can impact the disease. We hope to bring awareness to the parents of paediatric MS patients in order to make lifestyle modifications that will improve their quality of life."

"When I was young," Prenitha says, "I imagined I'd become a clinician, but my first 'real' job has been my present PhD studies."

Her long-term goal had always been to become a researcher and to establish a lab focused on the brain sciences, although before embarking on her PhD, Prenitha had been exposed to neither neuroscience nor immunology, both of which, ironically, have become her focus. She admits that the initial days of her PhD in neuro-immunology were difficult, because she had to consolidate her knowledge of that new branch of science which she hopes to maintain as her central area of concentration.

Prenitha relishes interactions with MS patients. She says it drives her to deepen her research so she can make a true difference in their lives. She's convinced that a cure for MS will be discovered within her lifetime and that her mouse model will be useful in studying possible therapeutic interventions in progressive MS.

To maintain focus, Prenitha says she relies on observing the natural world and its many mysteries. She re-energizes herself through her deep faith in a divine, caring presence.

### RAJIV JAIN

**R**ajiv Jain firmly believes that his very first job as a young lad delivering those notoriously heavy Sears catalogues door to door taught him one important lesson: "If you need to move heavy things, you should bring a trolley," he says, adding: "I feel as though this is still relevant today."



In other words, when facing a daunting challenge, don't hesitate to be well equipped. Be ready to do some major lifting. Do your research. Be prepared.

Years later, Rajiv still applies the trolley philosophy to just about every challenge he faces, including the PhD he is currently working on.

"When I was younger I wanted to become a doctor and to study microbiology and immunology, although I didn't know it by these terms but I loved the idea of defeating diseases and ending suffering," he says.

All of his degrees have come from the University of Western Ontario in London, Ontario -- a Bachelor of Medical Science, a Master of Science and his PhD, which includes a project that focuses on how the body converts particular cells in the immune system from a disease-irrelevant state to a disease-causing state.

His decision to focus on MS research is threefold:

"The first reason is that there are a lot of levels of complexity to this disease and from a purely scientific point of view it is quite fascinating," says Rajiv. "Secondly, the field of MS research is moving really quickly and a lot of really novel research and therapies are always being developed so it is exciting to be a part of what feels like a well-oiled machine. Lastly, I have met a lot of people living with MS over the years and their stories are more than enough motivation for me."

Pursuing a PhD can be a complicated and grueling exercise, Rajiv says, so it's good to have a reliable mentor on hand -- that person is Dr. Steven Kerfoot, whom he describes as his inspiration. "Steve is known for his motivational speeches and he definitely played a role in getting me to pursue my PhD."

Rajiv also credits the SPRINT program's interdisciplinary approach for taking him out of his comfort zone. "I love the idea of getting outside of my comfort zone and learning an entirely new discipline and being able to apply it to something useful," he says. "It reminded me what it was like to start from scratch on a subject and build up my expertise to the point where I could speak confidently on the subject matter."

Like a trolley, Rajiv says SPRINT offered the ability to learn skills that "will be useful, no matter where I go and what I do."

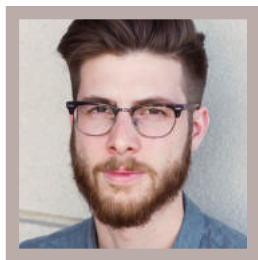
Moreover, Rajiv applauds SPRINT for bringing people together who normally would never interact to discuss MS-related issues.



"The reality is that we often develop tunnel vision when we are focused on our own work and the 'culture shock' associated with interacting with people from different disciplines can be quite refreshing," he says. "This program has helped me see MS from beginning to end, from benchtop to bedside. Overall, I feel as though this leads to unique collaborations that would otherwise never happen and programs like this spark novel research."

Rajiv's long-term goal is to become a physician scientist. But for now, his research is focusing on the early stages of the immune response in MS. Out of this research he is hoping to identify whether a particular stage in the immune response in MS is therapeutically targetable and whether the targeting of this stage can stop disease progression.

## DR. SAMUEL JENSEN



Calgary native Dr. Samuel Jensen is currently completing his medical degree at the University of Calgary -- an institution that he is very familiar with. He obtained a Bachelor of Health Sciences in biomedical sciences (first class honours) in 2013, followed by a Master of Science in neuroscience in 2014, and a Doctor of Philosophy in neuroscience this past June -- all from the University of Calgary.

While Sam is aiming to achieve great heights in his field, it's a long way from his first job as a mountain climbing instructor -- "a job that taught me leadership and teamwork skills that are critical throughout life," he says.

"I have always had an interest in biomedical sciences and imagined myself somewhere within that

field," he says, adding that his interest in MS "comes from an interest in the biology of oligodendrocytes."

Sam is involved in two major projects that he's currently wrapping up. One investigates the effect of physical exercise on the regeneration of oligodendrocytes following focal demyelination. The second involves the development of a new technique to label and follow individual oligodendrocytes as they progress from progenitors into mature oligodendrocytes (fate mapping) and then reconstruct the oligodendrocytes using cutting-edge three-dimensional imaging. Sam credits the inspiration for all of this work to his supervisor, Dr. Wee Yong.

Because Sam's background is primarily in basic sciences, he says SPRINT provided him with experiences that highlighted the broader relevance of his work and allowed him to see the human side of MS.

"SPRINT allows for researchers to view their research from a wider perspective," he says, "hopefully allowing for the tailoring of research projects to more relevant areas for persons with MS."

Sam adds that his long-term aim is to train as a neuropathologist and run a basic science research lab, likely remaining in the field of oligodendrocyte biology.

"In general, my perspective is that unless there is a specific personal connection to a disease most people find their field of interest out of the opportunities they were afforded," he says. "As an undergraduate, I was accepted for a summer studentship within Dr. Yong's lab, and I remained in this line of work as there were a number of opportunities, particularly around funding."

Compared to many aspects of the CNS, myelin remains relatively understudied. Further, oligodendrocytes display intricate interactions with their environment and a remyelination represents a great model to study fundamental cellular regenerative processes.

Sam believes that it is unlikely that MS, along with many other neurodegenerative disorders, "will ever have a formal 'cure' as you think of with, say, a bacterial infection as they represent the end result of wide-spread dysregulation of homeostasis."

"That said, it is quite likely that with appropriate therapeutic management the disease can

be maintained in an inactive state, as we currently can do with HIV. My work focuses on mechanisms to promote regeneration," he adds.

## JULIE PÉTRIN

Julie Pétrin clearly remembers the moment her path to MS research began. It was the day she was diagnosed with the disease while studying social sciences during her second year at John Abbott College.



"This diagnosis made me want to learn everything about how this disease worked so I could understand what was happening within me," says Julie. "I immediately registered for classes about the human brain, and although I said I would never go into sciences, I decided to pursue a degree in neuroscience and a master's degree in anatomical sciences."

Julie says MS has dramatically shaped her academic pursuits and long-term goals, and that "while this disease does take its toll, it keeps me motivated to keep working hard and strive to continue gaining and contributing knowledge to the field of MS research. I feel as though I can act as a researcher while providing some insider perspectives."

Julie did not let MS slow her down. She went on to receive a BSc (honours) in neuroscience from Bishop's University and a MSc in anatomical sciences from Queen's University in Kingston, Ontario. A native of the small rural town of Kazabazua, Quebec, she now lives in Kingston and is completing her PhD in rehabilitation sciences at Queen's University.

Her PhD dissertation aims to investigate access to healthcare from the perspective of persons with

MS and the healthcare professionals caring for them. The goal of this research will be to help guide the development of strategies to enhance existing strengths and reduce or overcome problems in accessing healthcare services that will be identified by persons with MS and healthcare professionals, thereby enhancing the relevance and quality of healthcare services in Canada for this population.

"I believe that it is the support and wisdom from many different individuals in my life that have gotten me this far and helped shape this project," she says, adding that SPRINT allowed her to broaden her MS research focus by exploring a different research avenue and even a different subpopulation of MS.

"SPRINT has also provided me with some key skills in developing and conducting interdisciplinary research," says Julie. "I was lucky to have the opportunity to work with a great team of individuals, headed by a mentor that was enthusiastic about our project and always available for support."

Julie is hopeful about the future of MS research because, she says, programs like SPRINT provide funding to train the next generation of young researchers to keep the momentum of scientific advances in this field. The result, she adds, is that students chosen for this program are driven and are committed to contributing to the fight against MS.

Although she is not sure about her long-term career endpoint, Julie believes it will be related to creating a better life for persons with MS.

"I am open to working in the community creating wellness programs for persons with MS. My pie-in-the-sky goal would be to open a wellness centre for people with MS that would employ a multidisciplinary team of healthcare professionals such as neurologists, nurses, occupational therapists, physical therapists, psychiatrists and dietician to provide holistic care and lifestyle recommendations and programs to persons living with this condition."

Julie is also considering the idea of going into medicine to train as an MS neurologist, or shifting her focus of MS research to something related to lifestyle, diet and gut health.

"MS is a fascinating disease that poses many unanswered questions in multiple fields of study, which makes it interesting to study. I also really enjoy working with this population. They are truly inspiring individuals and I am always trying to make a difference for them."

## DR. KELVIN POON



**S**o what does a typical work day look like for an atypical MS researcher? It involves corralling powerful industrial lasers around a pitch-black room in order to probe the basic biochemical principles of white matter degeneration. When the research sounds like something out of science fiction, how does one unwind at the end of the day? For Dr. Kelvin Poon, a great way to switch off is playing softball (and getting injured), working up a sweat in the gym (and getting injured), cooking up a storm or simply consuming vast amounts of multimedia in the form of music, sports and television.

Born in Kuala Lumpur, Malaysia and raised in Perth, Western Australia, Kelvin holds a Bachelor of Science (Honours), a Master of Forensic Science and a PhD in analytical chemistry (on tattooing and mummified bodies) -- all obtained from the University of Western Australia. He decided to spread his wings and moved to Dublin, Ireland for a Postdoctoral Research Fellow position at the FOCAS Research Institute, Dublin University of Technology, where he worked on cancer diagnostics and screening. Kelvin then found himself in Calgary undergoing a Postdoctoral Fellowship at the Hotchkiss Brain Institute under Professor Peter K. Stys, and is currently a Research Analyst within the Hotchkiss Brain Institute Advanced Microscopy Platform.

Not bad for a kid who recalls being "an unskilled teenager" who worked in fast food joints and stacked shelves at grocery stores. But while he was paying his dues, he still had his eyes set on better aspirations.

"Ever since I was young I imagined myself going into medicine and nothing else, which stalled my career prospects when I didn't get accepted into the program," says Kelvin. "Having chemistry as a backup and then taking it to where I am today was quite a long and winding road."

His path began when he was recruited by Peter Stys to investigate the basic biochemical principles of white matter degeneration with applications to MS using advanced microscopy and imaging techniques. Kelvin saw that the disease, with its intricate complexities, encompasses many aspects of neuroscience and through it was able to gain a better understanding of fields outside his expertise.

"The strong support of the MS Society of Canada exposed me to an even broader scope of the disease from the clinical setting all the way to interacting with individuals living with MS," he says. "The latter is an experience most basic research scientists never have."

Kelvin says that he is presently trying to combine several current imaging methodologies centered on a modular framework capable of providing advanced imaging as well as quantifiable analytical data. But his current work would not likely have been possible without the support of countless mentors who have helped him along the way -- and that includes his father.

"I've had many, many mentors over the years, from my PhD supervisors, to postdoctoral supervisors to colleagues and my SPRINT mentor," says Kelvin. "But a special mention goes to my dad, who is the ultimate jack of all trades and adept at just about everything he puts his mind to. I am not ashamed to say I absolutely take after him."

SPRINT also proved to be an invaluable way for him to connect with other researchers and to work with them on topics that were outside his realm of study.

"SPRINT gave me an opportunity to work closely with researchers on an aspect of MS outside of my field and network with various individuals who walked very different career paths," he says. "It was an interesting experience working on a project where all parties involved were in different institutions all over the country."

"I do believe a cure will be found sooner rather than later given the explosion of recent research into the disease," Kelvin says. "However, I think the current batch of treatments which mainly target the immune response, while proven effective for relapsing remitting MS, need to be paired better with neuro-protective medication along with other therapies that address different aspects of the disease."

## DR. JOSÉ WIJNANDS

**O**riginally from the Netherlands, Dr. José Wijnands obtained her Bachelor of Health Sciences, Master of Public Health, and PhD in epidemiology from Maastricht University. Relocating to Canada, she became a Postdoctoral Fellow in epidemiology in the neurology department of the University of British Columbia, Vancouver.

José began her career as part of a small team, setting up a large observational study into the causes and treatment of diabetes and cardiovascular diseases. Eventually, the project grew to consist of over 30 researchers and more than 7,000 patients.



When she first began her research in MS, José says she became inspired by the many researchers and neurologists she encountered. It also brought her into contact with many patients. This helped put a human face on the disease and confirmed her resolve to contribute to the understanding of MS.

"Every one of them was fully dedicated to end MS," says José.

Along with her supervisor, Professor Helen Tremlett (Canada Research Chair in Neuroepidemiology and Multiple Sclerosis), plus researchers in four Canadian provinces, she's presently working on a project to help identify the earliest symptoms of the disease before the onset of classic MS symptoms, using wide-ranging datasets gleaned from medical administrators, as well as clinical data.

José's inspiration also derives from the personal stories of people living with MS. As José describes it, SPRINT has helped her gain deeper insight into MS by allowing her to identify the unmet needs of those living with advanced MS. As well, SPRINT has provided her the opportunity to visit MS research institutions in Amsterdam and London.

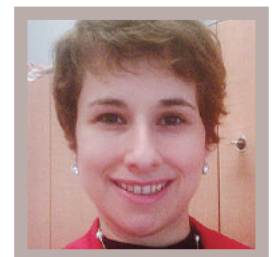
"SPRINT is a wonderful environment for researchers from across Canada to meet and collaborate," she says. "The program teaches you to think outside the box and prepares young researchers to become well-rounded scientists."

José's long-term goal is to identify the causes of chronic degenerative diseases with a view toward recognizing the subtlest early indicators of MS. She describes it as an exciting time to be researching the complex disease due to the significant progress that's being made.

## DR. TANIA BRUNO

**D**r. Tania Bruno is a lecturer at the University of Toronto's Department of Medicine and a neurophysiatrist and director of electromyography at Toronto Rehab's Rumsey Neuro Site -- but once upon a time she held down two jobs, as a receptionist at a walk-in clinic and as a hotel chambermaid.

"Although there is value to all honest work and there can always be satisfaction in a job well done, these jobs helped me value my time as a student having the privilege of learning new things every day," she says. "When I was younger, I never imagined I would be a medical doctor. I wanted to be a classics professor."



Instead, life took Tania in another direction -- a direction that saw her obtain a Bachelor of Science degree (Honours) from the University of Toronto, a medical degree from Queen's University, a degree in physical medicine and rehabilitation from Dalhousie University, and a Neuromuscular and MS Clinical Fellowship from McGill University with an expertise in



Electrodiagnosis and a Canadian Society of Clinical Neurophysiologists Diplomat in EMG.

It was at Dalhousie and McGill that she was first mentored and felt that she could make a difference in the lives of people with various MS-related impairments and limitations in activity and social participation.

"There have been many mentors along the way, both in Montreal, at the Montreal Neurological Institute, and in Toronto," she says. "Drs. Paul O'Connor, Jack Antel and Yves Lapierre, along with Mark Bayley have been instrumental in my career as it pertains directly to MS."

Tania is currently working on ways to better understand the psychosocial, cognitive and physical needs of people with MS. She says her field of study has always been focused on the clinical provision of care, and she sees the marriage of research and clinical care as a way to better meet the needs of the MS population at large through assisting in fine-tuning care delivery and enhancing medical and inter-professional educational goals.

"A strained fiscal environment and various demographic stresses on the health care system as a whole have made my job more challenging but, to this point, I have not been discouraged in my perseverance to improve the health of those living with MS," she says.

"I can say that the vast majority of my patients struggle with a plethora of symptoms and losses of typical functioning but remain optimistic and are often inspirational," she adds.

Tania credits SPRINT with helping her better understand the research landscape and for allowing her to connect with other MS researchers across Canada.

"It was a wonderful experience and I was inspired by the passion of my peers and colleagues who have been instrumental in making MS research in Canada something of substance," she says. "I believe the hope in finding a cure lies in the collaboration between disciplines and cross-pollination of ideas."

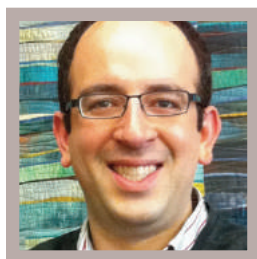
Tania says her long-term goal is to help make MS rehab mainstream and easily accessible, and to encourage and inspire young physiatrists and neurologists to take up the baton of MS rehab provision and research.

"I was privileged enough to have been invited by Dr. Marcia Finlayson to participate," she says. "It was most satisfying to better understand the

MS research landscape here in Canada and to meet, face to face, many of the potential leaders of tomorrow and many of the leaders of today."

"MS is a complex disease with many faces that strikes people typically during their most productive years. Keeping people with MS as independent as possible and feeling as well as possible is good for the individual patient, their families, communities and society at large," says Tania. "Working to target the highest possible quality of life while we still do not have a cure is a rewarding endeavor to me."

DR. NADER  
GHASEMLOU



After having had brain surgery as a teenager, Dr. Nader Ghasemlou became fascinated by the inner workings of the brain and spinal cord. Reading all that he could about it while in the hospital, he knew right away what he wanted to do for the rest of his life: help others with diseases and injuries of the nervous system. To get himself started, he joined Dr. Jack Antel's lab at the Montreal Neurological Institute as a summer research assistant after the first-year of his undergrad.

"I had no idea who he was, or the work he was doing, and applied out of the blue," recalls Nader. "It turned out to be a life-changing experience, where I met and worked alongside amazing scientists like Drs. Alex Prat, Burkhard Becher and Paul Giacomini, who worked hard and also knew how to have fun. They are all the reason why I'm continuing to do research today."

Born in Tehran, Iran, Nader now lives in Kingston, Ontario where he is an assistant professor at Queen's University and leads a research group studying the neuroimmune control of pain in MS.

He completed his BSc (Honours) in life sciences in 2000 and his MSc in anatomy & cell biology two years later at Queen's University. After completing a PhD in neuroscience at McGill University in 2008, Nader followed that up with a post-doctoral fellowship in Dr. Clifford J. Woolf's lab at Harvard Medical School/Boston Children's Hospital, which he concluded in 2015.

"As a PhD student in Dr. Samuel David's lab at McGill, I first learned of the devastating effects of MS on people's lives," says Nader. "While completing my postdoctoral fellowship, I became aware of the fact that more than 50% of people living with MS also suffer from chronic pain. Because of my expertise in both neuroimmunology and pain, I decided to focus on diseases where pain severely affects quality of life. MS is a prime example, with few labs focusing on this aspect of the disease."

Nader's lab is currently working to discover new therapeutic targets that control or mediate pain. The research has led him to discover that the body's own rhythms, like day/night cycles (circadian rhythms), play an important role in these outcomes. In fact, many patients with chronic neuropathic pain, like in MS, show increased pain at night as compared to during the day.

"We are working to harness these rhythms to identify potential factors that might be contributing to these pain outcomes," says Nader. "My inspiration bringing me to this point includes the people who have had the most lasting effect on my research - this includes my former supervisors, Drs. Michael Kawaja, Samuel David and Clifford Woolf, and my wife, Dr. Qingling Duan. My wife and I have always worked near each other -- across the hall, across the street -- but never together. We started collaborating together for the first time this year and it's been an amazing experience!"

Nader strongly believes that solutions can only be found if people work together as a team -- and that is why he applauds SPRINT's objective: to bring together trainees and scientists from various backgrounds to solve the problem of MS -- "That is the key to new discoveries," he says. Other fields are only now waking up to this fact, adds Nader, and both the MS Society of Canada and endMS SPRINT "have been ahead of the curve here. I've been inspired not only by the students taking part in the program, who are not only keen

to learn but vested in better understanding the disease, but also by the team running the program from behind the scenes. The tireless work put in by several key people, like Dr. Christina Wolfson and Anik Schoenfeldt, helps make this happen, and they consistently put the program and its trainees ahead of themselves."

Nader says his long-term goals are to help build the next generation of scientists in Canada, and bring new insight into the field of neuroimmunology. "Ultimately, like most scientists, I want to be an agent of change," he says. "I've been lucky to have great mentors myself, so this is my way of giving back."

DR. E. ANN  
YEH



When reading through Dr. Ann Yeh's impressive compilation of university degrees and scholastic accomplishments, it is easy to see that the determination she showed in the jobs she took on as a teenager continued on in her professional career.

"I worked all kinds of jobs when I was a teenager, including baby-sitting, at the library, and at a department store," she says. "These first jobs, and always being active outside of the home from the time I was young, taught me the importance of working in teams and of working hard, no matter what the job title is."

That is why Ann clearly remembers the moment that defined the direction she would eventually take in MS research. She was a paediatric neurology resident at SUNY Buffalo, and one day her supervisor pointed out that there was a need for more knowledge about children with MS.

"We were seeing many patients with inflammatory disorders, and it was just becoming clearer that a number of youth had MS and related conditions, but we did not know how to treat appropriately," Ann recalls. "It was also clear that these youth had distinct needs that could not be addressed in an adult MS center. There was clearly a need for more knowledge, so we set about creating a specialized center for the treatment of paediatric MS, which was supported by the National MS Society."

Before going to Buffalo, Ann obtained her bachelor's degree at Harvard University. She went on to McGill University, where she received an MA, and her MD at McMaster University in Hamilton. She completed paediatrics training at McMaster University and paediatric neurology training at SUNY Buffalo, where she developed and co-directed the Pediatric MS and Demyelinating Disorders Center of Excellence. She is currently an associate professor of paediatrics (neurology) at the University of Toronto, as well as the director of the MS and Demyelinating Disorders Program at The Hospital for Sick Children (SickKids). Ann is the education director in the Division of Neurology at SickKids, and the director of the Paediatric Neurology Training Program at SickKids and the University of Toronto. Her research interests are in visual and neuro-cognitive outcomes in paediatric demyelinating conditions, rehabilitative interventions for this population, as well as therapies for paediatric MS.

Born in Ann Arbor, Michigan, and now a resident of Grimsby, Ontario, Ann is currently working on many projects, most of which are related to outcomes in youth with MS. In addition to many studies related to visual outcomes in pediatric MS, she has focused most of her recent efforts on depression, fatigue, medication adherence and other psychosocial outcomes.

"Another very exciting project we are doing right now is related to an intervention to improve physical activity in youth with MS, which we have created with the support of the MS Society of Canada," she says. "We hope that improving

physical activity in these youth will lead to decreased disease activity, reduced fatigue, and lower rates of depression."

Ann says she is impressed with the team of SPRINTers she has mentored, adding: "They've produced a very solid review of literature related to lifestyle interventions in pediatric MS. All three SPRINTers that I had the privilege of supervising were outstanding collaborators and show great promise as future leaders in MS."

She is equally impressed with how SPRINT allows young, developing researchers to work together with others in completely unrelated areas of MS research on a project that may have nothing to do with their focused area of learning and investigation.

"By doing this, it allows those in training to experience first-hand the value of strong collaborations across fields," she says. "It sets the tone for future collaborative research in MS, which breaks down boundaries, and these collaborations will lead to significant progress in MS care and research."

Ann says her long-term goal is to improve the lives of youth with MS through research and teaching. She adds that she became a mentor because of her previous involvement with teaching and education efforts within the field of MS care and research, and her previous role as Director of the Ontario-Manitoba endMS Regional Research Training Centre.

"Since completing training, I have always focused on MS," she says. "Challenges have been related to balancing all of the various roles I play within my institution, but these are exciting challenges, and I feel lucky that I am faced with them. I have never considered changing my field of study. My environment has always been excellent and provided outstanding support for my staying in this field."

## 2017-2018 SPRINTers

**Marc Charabati**

*Centre de recherche du Centre hospitalier de l'Université de Montréal (CRCHUM)*

**Sarah Jean Donkers**

*University of Saskatchewan*

**Ben Ewanchuk**

*University of Calgary*

**Dylan Galloway**

*Memorial University of Newfoundland*

**Marjan Gharagozloo**

*University of Sherbrooke*

**Elizabeth Gowing**

*Centre de recherche du Centre hospitalier de l'Université de Montréal (CRCHUM)*

**Megan Kirkland**

*Memorial University of Newfoundland*

**Dr. Evelyn Peelen**

*Centre de recherche du Centre hospitalier de l'Université de Montréal (CRCHUM)*

**Dr. Solmaz Setayeshgar**

*University of British Columbia*

## 2017-2018 Mentors

**Dr. Rashmi Kothary**

*Ottawa Hospital Research Institute*

**Dr. Lisa Osborne**

*University of British Columbia*

**Dr. Lara Pilutti**

*University of Ottawa*

## 2017-2018 endMS Education and Training Committee Membership

**Dr. Christina Wolfson**  
(Chair)

*Director, endMS National Training Program  
McGill University*

**Dr. Marcia Finlayson**

*Chair of the endMS SPRINT Committee  
Queen's University*

**Dr. Sandra Magalhaes**

*SPRINT Alumni  
University of New Brunswick*

**Dr. Ruth Ann Marrie**

*University of Manitoba*

**Dr. George S. Robertson**

*Chair of the endMS Peer Review Committee  
Dalhousie University*

**Dr. Penelope Smyth**

*University of Alberta*

**Anik Schoenfeldt**

*Manager, endMS National Training Program  
Research Institute -  
McGill University Health Centre*

## 2018 endMS Summer School Collaborators

**Dr. Ann Yeh**

*2018 endMS Summer School Host  
University of Toronto*

**Renisha Iruthayanathan**

*2018 endMS Summer School Coordinator  
The Hospital for Sick Children*

**Stephanie Grover**

*The Hospital for Sick Children*



# Message from the Host of the **2018** endMS Summer School

**When:** June 11-14, 2018  
**Where:** Toronto, Ontario

**Applications:** Call for applications  
will be announced in December



**T**he 2018 endMS Summer School will be held from June 11 to 14, 2018 in Toronto at the Hospital for Sick Children's Peter Gilgan Centre for Research and Learning. The theme will be ***Environmental and Lifestyle Factors Associated With MS: Bench to Bedside.***

Growing evidence points to the importance of lifestyle factors in shaping biological and psychosocial outcomes in MS. During the 2018 endMS Summer School, we will bring researchers and trainees together to explore ways to bridge the gap between the "Bench" (basic science) and "Bedside" (clinical research and care) in this emerging area of investigation.

The transition from trainee to independent researcher and/or clinician will be a specific focus of the 2018 endMS Summer School. In addition to scientific sessions featuring MS researchers from fields relevant to our central theme, we will include seminars, workshops and activities addressing challenges associated with this compelling and sometimes daunting period of transition.

**I look forward to welcoming you  
in Toronto next year.**

**E. Ann Yeh, MD, FRCP(C)**



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**This was a great Summer School!  
I liked the focus on presentation skills,  
collaboration, patient involvement,  
and career development.**

*- 2017 endMS Summer School Participant*

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# 2017 ENDMS SUMMER SCHOOL



Effective Teamwork Exercise



Workshop on Corticospinal Excitability



SPRINT team meeting



# ALUMNI UPDATES

**Dr. Nadine Akbar** is currently a postdoctoral research fellow working with her former SPRINT mentor, Dr. Marcia Finlayson, at Queen's University. Both are investigators on a randomized controlled trial of a fatigue self-management website for persons with MS. This study is a continuation of Nadine's SPRINT project with Marcia from 2012 and was recently awarded operating grant funding from the MS Society of Canada.

**Dr. Lindsay Berrigan** is currently at St. Francis Xavier University where she continues to study how MS and comorbid disorders affect cognition and quality of life. Last year she received a grant from the Canada Foundation for Innovation that will allow her to incorporate neuroelectrophysiology techniques in her research. Lindsay also welcomed her third child, a baby girl named Rowan Patricia, on November 9, 2016.

**Dr. Jenea Bin** is continuing a postdoctoral fellowship in Professor David Lyons' laboratory at the University of Edinburgh. Her research focuses on understanding the cues that regulate myelination throughout life and following demyelination.

**Dr. Karissa Canning** successfully defended her PhD thesis on September 6, 2017. She is also culminating a book for publication, *A Comprehensive Guide to Exercise Training in Multiple Sclerosis*.

**Dr. Pia Crone Christensen** started an industry postdoc in mid September, a collaboration between the CNS pharmaceutical company, H. Lundbeck A/S and the Nedergaard laboratory at the University of Copenhagen, Center for Basic and Translational Neuroscience, Division of Glial Disease and Therapeutics. Her project will investigate monoclonal antibody (mAb) therapy for Alzheimers and uptake, distribution and clearance of the mAbs via the glymphatic system. Pia has, together with Maiken Nedergaard (UCPH) and Ross David Jeggo (Lundbeck), successfully applied for three years of funding from the Danish Innovation Foundation for the project. She will be employed by Lundbeck, but carrying out the project at both Lundbeck and UCPH.

**Miguel De Avila** is continuing to work with Apotex Pharmachem Inc as a Chemist (level 1) in the Research and Development Department. He was also recently approved for Canadian permanent residence.

**Dr. Charity Evans** was awarded tenure and promotion to Associate Professor and was also PI for a Hermes Canada / MS Society Wellness Research Innovation grant looking at the impact of pilates in MS. She also had another baby girl (Siigney Kateryna) in March.

**Dr. Yohannes Haile** recently moved to Ottawa and started working at Health Canada. He is working in the capacity of Biologist/Evaluator at the Blood, Cells, Tissue and Organ Division, Centre for Biologics Evaluation, Biologics and Genetic Therapies Directorate, Health Product and Foods Branch, Health Canada.

**Dr. Heather Hanwell** is continuing to work on her Master of Public Health program in epidemiology at the University of Toronto's Dalla Lana School of Public Health.

**Dr. Kaarina Kowalec** recently moved to Sweden to pursue postdoctoral training with Prof. Patrick Sullivan in the Department of Medical Epidemiology and Biostatistics at the Karolinska Institute in Stockholm. Her projects are focussed on understanding the epidemiology, genetics, and epigenetics of schizophrenia, bipolar disorder and major depressive disorder. She also remains active in pursuing MS research, including current projects on the gut microbiome in MS, and pharmacogenomics of adverse drug reactions.

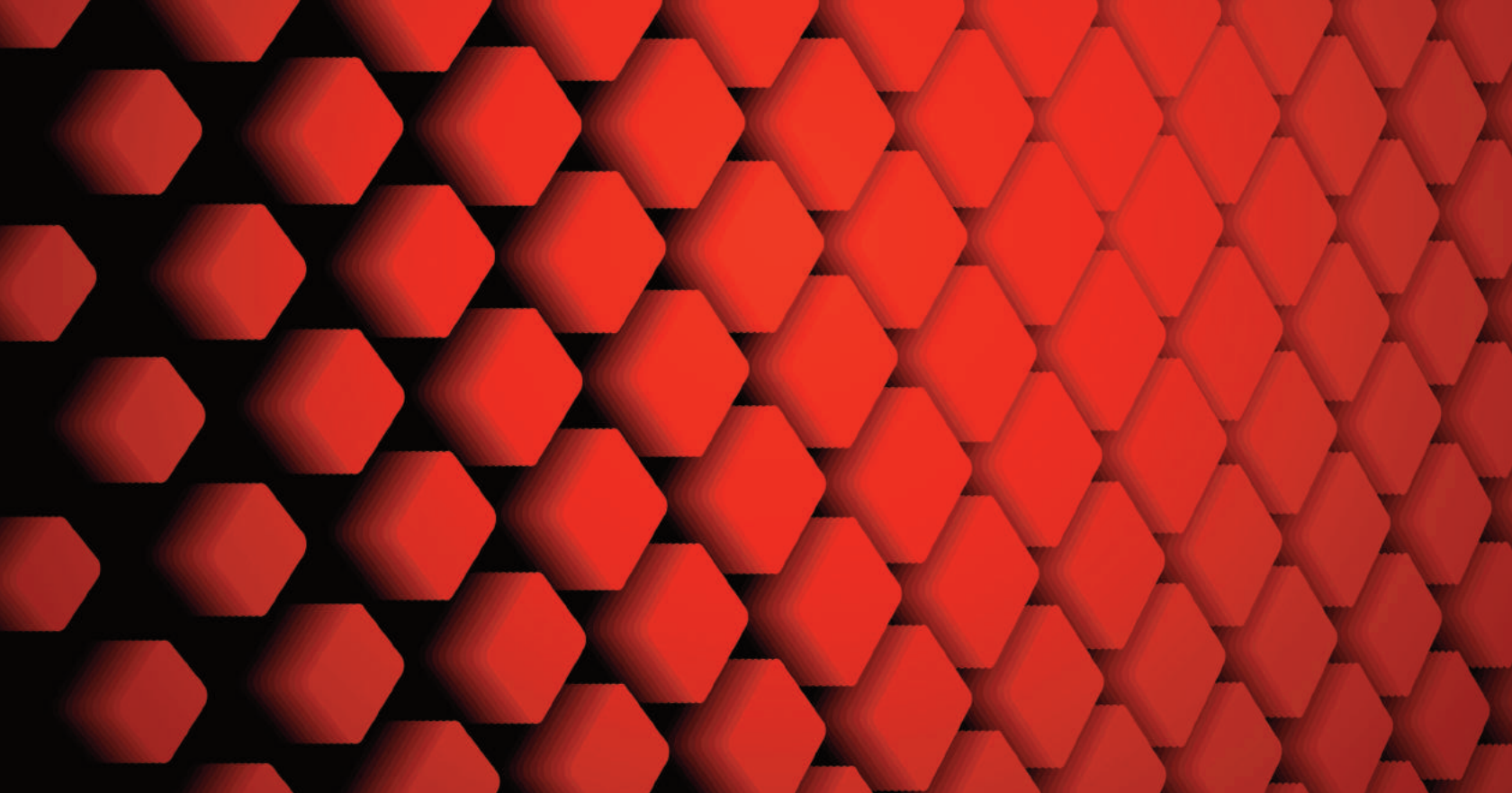
**Dr. Hyunwoo Lee** successfully defended his PhD in neuroscience at McGill University in August 2017.

**Dr. Sandra Magalhaes** successfully defended her PhD thesis on October 23, 2017. She is starting a two-year postdoctoral fellowship at the University of New Brunswick in Fredericton, and will be investigating the link between air pollution levels and the risk of MS, and MS hospitalizations.

**Dr. J. Keiko McCreary** is continuing her work as a postdoctoral fellow at the University of Lethbridge where she is conducting research while helping to establish the new 3T MRI facility. The positive impact and experiences of the SPRINT program have led her to continue her involvement with the MS community by joining the Board of Directors of the Multiple Sclerosis Society of Canada, Lethbridge & District Chapter as a member at large. Drs. Keiko McCreary, Susan Forwell and Jim Rogers' SPRINT interdisciplinary learning project has just been accepted for publication. The article is entitled *Upper Limb Intention Tremor in Multiple Sclerosis: An Evidence-Based Review of Assessment and Treatment*, and will be published in the International Journal of MS Care.

**Dr. Kyla McKay** is starting a postdoctoral fellowship at the Karolinska Institute in Stockholm, Sweden where she will study the causes and consequences of paediatric MS. She and her SPRINT group, under the mentorship of Dr. Manu Rangachari, have also published a comprehensive review on the relationship between cholesterol and MS disease outcomes.

**Sarah Neil** recently finished her MSc in Genetic Counselling at the University of Toronto, and is in the process of moving back to Vancouver for work.



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

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514-843-1442 | 1-877-288-2570  
[anik.schoenfeldt@mail.mcgill.ca](mailto:anik.schoenfeldt@mail.mcgill.ca)

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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 training 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.

