



THE 2019-2020 SPRINTERS AND MENTORS

Our SPRINTers:
 Jessica Allanach
 Arthur R. Chaves
 Dr. John Farrell
 H el ene Jamann
 Miceline M esidor
 Nikki Ow
 Camille Simard
 Karin Rustad

and our mentors:
 Dr. Charity Evans
 Dr. Soheila Karimi
 Dr. George S. Robertson

sprint

(Scholar Program for Researchers IN Training)

We are delighted to present the ninth edition of the endMS National Training Program's *Spotlight on the Future Newsletter*. Within these pages, you'll find profiles of our graduating SPRINTers and their mentors, as well as news about this year's unique 2020 Summer School. We are also pleased to introduce the hosts of the 2021 Summer School.

Although Dr. Robert Carruthers and the UBC MS Connect Program at the University of British Columbia in Vancouver were set to host the 2020 endMS Summer School from May 19 to May 22, 2020, unfortunately, due to the COVID 19 pandemic, the in-person event had to be cancelled. However, after much brainstorming and collaboration, the hosts of the 2020 endMS Summer School and the endMS National Training Program, decided to offer virtual "endMS Summer School Bits and Bytes" sessions to provide a taste of the Summer School experience for those who were accepted to participate in 2020.

A big thank you to Dr. Robert Carruthers, and Michelle Eisner, the 2020 endMS Summer School Coordinator, for all their efforts in making the Summer School Bits and Bytes sessions a success!

The SPRINT orientation session for the incoming 2020-2021 SPRINTers and the introductory SPRINT team meetings were held via Zoom on May 19th.

The inaugural virtual Summer School Bits and Bytes session was held on May 26th, and featured Dr. Virginia Devonshire, who spoke about COVID 19 and Multiple Sclerosis.

To showcase some of the originally planned Summer School material and cutting-edge research, 7 additional sessions were held throughout the summer months, and future sessions are being planned.

On June 2nd 2020, graduating 2019-2020 SPRINTers presented their year-long interdisciplinary team projects, via videoconference. The 3 thought provoking and innovative interdisciplinary learning projects included: 1) *Current Status of Neuroprotective and Regenerative Strategies for Myelin Repair in Multiple Sclerosis, A Systematic Review*. 2) *Standardizing Outcome Measures of Disease Recovery in MS Animal and Human Drug Trials, and 3) Geographical Variations in Adherence to Disease Modifying Therapies for MS*.

We are very grateful to our three outgoing mentors whose resourcefulness and ingenuity allowed SPRINTers to continue to be supported and guided, despite the pandemic. We are appreciative of the time each mentor took from their intense workloads, to foster our SPRINTers throughout the evolution of their trainee projects.

For a preview of next year's 2021 endMS Summer School, please see page 10.

Additional information about the application process will be made available later in 2020.

We are hopeful about the future and eager to continue learning and working with you. We remain enthusiastic about the growing community of trainee researchers who will become experts and leaders in the field of MS research and clinical practice.

We are very pleased to learn that many former SPRINTers have continued to pursue MS research. To find out more about our SPRINT alumni, please turn to page 11.

To our graduating SPRINTers, we wish you continued success in your future endeavors, and to our current SPRINTers and mentors, we wish you a year of rewarding collaborations, fruitful research and noteworthy discoveries. We look forward to connecting with you at the 2021 endMS Summer School in Saskatchewan, where our hosts will be Drs. Charity Evans, Michael Levin and Valerie Verge.

DR. CHRISTINA WOLFSON
 DIRECTOR, NATIONAL TRAINING PROGRAM

ANIK SCHOENFELDT
 MANAGER, NATIONAL TRAINING PROGRAM

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- JESSICA ALLANACH

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Jessica Allanach

Jessica Allanach received her bachelor's degree in biochemistry (BSc) from Mount Allison University, in Sackville, New Brunswick. She is currently a PhD candidate in microbiology and immunology at the University of British Columbia in Vancouver. Originally from Moncton, New Brunswick, Jessica initially became interested in researching MS thanks to her first immunology course, taken during her undergraduate degree. According to Jessica, MS is particularly interesting to research because "it sits at the intersection of neurology, immunology and genetics."

"I found interest specifically in how autoimmunity is initiated and the cellular and molecular mechanisms that act to produce disease."

With an interest in the molecular biology and evolution of viruses and the effects of infection on the host, Jessica says, "Research in autoimmunity often highlighted the influence of viral infection in disease initiation and progression, which piqued my interest in researching the topic in graduate school."

Given the high prevalence of MS in Canada, Jessica believes that a better understanding of its basic mechanisms is necessary, "in order to more effectively design treatments for people living with MS."

"The severe and tangible impact the condition has on the lives of so many people provides perspective to my curiosity-driven scientific pursuits."

Under the supervision of Dr. Marc Horwitz, Jessica has been working toward constructing humanized mouse models of MS to assess the effects of Epstein-Barr Virus (EBV) infection on the immune system in disease.

"Studying the role of EBV in MS is challenging because it only infects humans and the lack of animal models that can be infected with EBV has further limited experimental investigation. By using humanized mouse models of MS that are susceptible to infection with EBV,

we are able to dissect and evaluate the role of the virus in autoimmune responses in a representative system of disease."

Jessica's long-term career goals are centered around producing basic scientific research that will have clinical relevance for understanding and treating autoimmune disease. She attributes her pursuit of a career in science to her undergraduate research supervisor, Dr. Amanda Cockshutt.

"Dr. Cockshutt was a consistent, knowledgeable and supportive mentor, all the while serving as the only female professor for our discipline at the time of my studies."

As a child, Jessica imagined having a career in ecological or veterinary sciences. In retrospect, she says, "It seems I haven't veered too far from that path."

Her first employment experience, however, was as a clerk and cashier in a clothing store.

"That first retail job taught me patience in working with people who communicated differently. The experience has allowed me to practice that patience with scientific ideas, concepts and data that are challenging to process and integrate into my current understanding."

SPRINT appealed to Jessica as a means of increasing her exposure to new lines of inquiry in MS research.

"I was also interested in working on a project with researchers of different backgrounds." Reflecting upon her SPRINT group project, *Current Status of Neuroprotective and Regenerative Strategies for Myelin Repair in Multiple Sclerosis: A Systematic Review*, Jessica reveals that it broadened her knowledge and understanding of the biology of MS. "It has also been refreshing to engage in a new type of research in a different sub-field of MS that complements my own."

Jessica adds that aside from allowing her to design and perform a systematic review for the first time, her SPRINT project also enabled her to collaborate with researchers at institutions across the country.

To unwind, Jessica spends time outdoors with her "adventurous" puppy. She also enjoys doing puzzles, going to yoga class and attending stand-up comedy shows.

"I have always been passionate about the benefits of exercise training and its different paradigms on the brain."



Arthur R. Chaves

Originally from Rio de Janeiro, Arthur R. Chaves completed his bachelor's degree in physical education kinesiology/human kinetics (BSc-Kin) at the Federal University of Rio de Janeiro, in Brazil. Arthur now lives in St. John's, Newfoundland where he is conducting research at Memorial University's Recovery and Performance Lab. Currently writing his PhD thesis, Arthur reveals that he is "moving towards a post-doctoral position, in which I am planning to learn a new technique (Optogenetics) in order to better investigate and understand brain connections in the lesion-disrupted brain."

At the age of ten, Arthur began training in Taekwondo, eventually becoming a

competitive athlete and fighter. He developed an interest in anatomy, rehabilitation and physical fitness, "from a scientific perspective," after suffering from an injury that, unfortunately, put an end to his athletic career.

Dealing with his own recovery led Arthur to pursue sports science and kinesiology. Arthur recalls that in his first year of studies, he took special interest in the work of Dr. Jean Christophe Houzel, a neuroscience researcher, from whom he learned about "research in general, neuroscience, and exercise."

Arthur is grateful to his former Taekwondo trainers, (also referred to as "masters") for having imparted valuable lessons that remain applicable to his life today.

"The lessons I subconsciously learned when I was 10 years-old somehow prepared me for the academic life I live now."

A quote favored by his Taekwondo masters, "Be a fighter inside and outside of the rings," now serves Arthur as a reminder that much like athletes, researchers must also "be resilient, learn, and overcome challenges, all the time."

Intrigued by the complexity of MS, Arthur uses transcranial magnetic stimulation to

probe brain excitability in MS. His research focuses on demonstrating that improving fitness may help fight the disease, repair and improve quality of life.

"I have always been passionate about the benefits of exercise training and its different paradigms on the brain."

The aim of Arthur's research is to understand the effects of exercise and fitness on the brain affected by MS, and to provide insight as to "whether people with MS should stand against MS and start exercising to improve brain health to better fight the disease."

Briefly outlining a few of the cross-sectional studies he published while working on his PhD, Arthur details how brain excitability asymmetry in MS predicted physical and cognitive symptoms. He explains that poor fitness was related to increased intra-cortical inhibition, which in turn related to greater fatigue in those with MS. Another one of his studies demonstrated that people with progressive MS can still undergo neuroplasticity. Arthur says that neuroplasticity was induced by one single session of exercise, whereas lower fitness levels may actually undermine neuroplasticity.

"This points to the importance of increasing fitness in MS to potentiate the effects of any neuroplasticity-inducing protocol."

Arthur also demonstrated that, "together with improvements in physical fitness, brain excitability was enhanced in progressive MS after three months of walking training."

Grateful to his current supervisor, Dr. Michelle Ploughman for everything he has achieved thus far in his academic career, Arthur hopes to eventually, "become a research leader in MS in a major Canadian university."

As an international student, Arthur appreciated that SPRINT provided him with valuable networking opportunities. SPRINT "helped me get involved with the MS Society of Canada... understanding its dimensions, where the MS field is and how and where it is moving."

Although he doesn't foresee a cure for MS in the immediate future, Arthur maintains that "the field is moving faster...ultimately it is going to happen."

When not researching, Arthur enjoys exercising, playing music, and spending time with his friends and loved ones.

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Dr. Charity Evans

Charity Evans received her bachelor's degree in pharmacy (BSP) and her PhD in pharmacy from the University of Saskatchewan. Currently living in Saskatoon, Saskatchewan, Dr. Evans is an associate professor in the College of Pharmacy and Nutrition.

Director of the Saskatchewan Continuing Education Program for Pharmacy Professionals, Dr. Evans is also director of the provincial medication information service, medSask. Charity's first introduction to MS research dates back to her Postdoctoral Fellowship when she joined Dr. Helen Tremlett's research group at the University of British Columbia.

Shortly thereafter, upon her return to Saskatchewan, Charity's interest in MS developed even further.

"We have one of the highest rates of MS in Canada and there was relatively little clinical or epidemiological research happening at the time."

The unfortunately high rates of MS in Saskatchewan has afforded Dr. Evans many opportunities to connect with individuals living with or affected by MS.

"As a researcher, these connections often provide the inspiration and motivation to keep going."

While on the topic of motivation, Charity reveals that one of her early work experiences was at a McDonald's, where she worked her way up to a managerial position.

"I loved that job, and the experience and skills I gained during that time have served me well. If you can manage a McDonald's restaurant during the Grey Cup in Saskatchewan, you can pretty much do anything!"

Focusing administrative health data, Charity focuses on the epidemiology and the pharmacoeconomics of MS. She has been involved in studies examining the impact of

disease-modifying drugs on healthcare utilization, as well as the safety and effectiveness of those medications. Recently, Charity has expanded the scope of her research by becoming involved in studies that examine physical activity in MS, "including one randomized controlled trial that showed the benefit of Pilates exercises in mobility."

A SPRINT mentor this year, Dr. Evans acknowledges that her own mentors have been instrumental in the trajectory of her career, most notably, Dr. Ruth Ann Marrie. Dr. Marrie "has always had time to answer my (endless) questions, provide guidance and advice, and support my efforts." Charity also cites Dr. Katherine Knox, one of Saskatchewan's first MS researchers, as having "played a huge role" in her decision to commit to MS research.

As one of SPRINT's very first participants, Dr. Evans still collaborates with people she met during her first endMS Summer School in Halifax, Nova Scotia back in 2010.

"I will never be able to say enough good things about the endMS Training Program!" In her role as a SPRINT mentor, Dr. Evans worked with three SPRINTers on

Geographical Variations in Adherence to Disease Modifying Therapies for MS — a project Dr. Evans admits she'd likely not have had the opportunity to complete otherwise, if not for SPRINT.

Charity's experience as a mentor enabled to explain her of the importance of being able to explain one's research and area of study to those unfamiliar with the field.

"Often, we get so wrapped up in our own work that we lose the ability to communicate effectively with others...whether it's patients, the public, or other researchers."

When asked if she believes a cure for MS is forthcoming, Dr. Evans replies "if a cure is found for one autoimmune disease, the others will be close behind. I think we will continue to identify strategies, including non-drug options such as exercise, that will continue to improve quality of life, and maybe even repair."

When not researching, Charity's life outside the lab remains busy.

"I have two small children, and especially during this time of COVID, I have found that running (alone) helps to clear my mind. Things seem less daunting or less stressful after a run."

"I will never be able to say enough good things about the endMS Training Program!"

