

Spotlight on the Future

Fall 2021



We are delighted to present the 10th edition of the endMS National Training Program's *Spotlight on the Future* Newsletter. Inside the pages of this special anniversary newsletter, you will find profiles of our 10th graduating group of SPRINTers and their mentors, along with a welcome message from next year's Summer School hosts.

Firstly, we extend our heartfelt gratitude to Drs. Charity Evans, Michael Levin, Valerie Verge and The University of Saskatchewan for hosting the very successful, **Taking MS Research Off the Grid** endMS Summer School held June 7th through 9th 2021. This first ever virtual endMS Summer School highlighted the MS research currently underway in Saskatchewan. Showcasing the province's world-class infrastructure and unique research opportunities, it also underscored the endMS Training Program's ability to maintain momentum even during a pandemic.

Despite the challenging circumstances faced, due to the pandemic, the National Training Program remained committed to maintaining communication across the MS research community. To that end, the **endMS Bits and Pieces** newsletter was created. With the objectives of moving research forward by disseminating information about MS research and attracting and retaining trainees within the field, each edition of the **endMS Bits and Pieces** newsletter reports networking and career opportunities, NTP activities, trainee publications and presentations — as well as information about research, training and events related to MS. Thus far, 8 editions of the newsletter have been e-published.

Furthermore, throughout the past year, (ever since its inaugural session was created in response to the cancelled 2020 endMS Summer School), there have been seventeen joint **UBC MS Connect/endMS Bits and Bytes** virtual sessions.

Through a variety of on-line presentations and break-out virtual sessions, 2021 endMS Summer School participants spent full, intensive days enhancing their knowledge of novel

MS research and work related to the *mechanisms of disease, repair, recovery and resilience*. During breaks, magnificent photos of Saskatchewan ran in the background.

In 2021, nine new SPRINTers were welcomed to the program. The orientation session and the introductory SPRINT team meetings for the incoming 2021-2022 SPRINTers, were held virtually on June 3, 2021.

On June 9th 2021, graduating 2020-2021 SPRINTers presented their interdisciplinary team projects. These included: 1) CNS macrophages in progressive MS: characteristics, neurodegeneration, and therapeutics. 2) "ASK" about physical activity in MS: a toolkit for MS clinics.

This past year's two mentors, Drs. Sarah Donkers and Jason Plemel were faced with the challenge of engaging their SPRINT teams while navigating the ever-changing challenges of the pandemic. We are deeply grateful for their commitment, unwavering support, resourcefulness and ingenuity which allowed SPRINTers to continue to be supported and guided.

According to this year's feedback, graduating SPRINTers appreciated "learning about MS from an interdisciplinary perspective" and "establishing a network of peers". The experience expanded participants' knowledge of MS, and afforded them the opportunity to identify new strategies to enhance their own career success.

The positive outcome of each year's endMS Summer School is a reflection of the dedication, interest, effort, commitment and enthusiasm of everyone involved. The valuable time and expertise of all members of the program ensures that the endMS National Training Program will continue to engage upcoming generations of MS researchers, just as it has over the past decade.

We sincerely thank all committee members, faculty, presenters, facilitators, panel members, organizers and all those affected with MS who participated this year, despite the pandemic. Since all activities were performed virtually

sprint (Scholar Program for Researchers IN Training)

this year, it is worth noting that the efficient coordination of all logistics greatly contributed to the success of this year's program.

Hopeful about the future, we remain eager to work toward building a community of trainee researchers who, over time, will become experts and leaders in the field of MS research and clinical practice.

As we bid graduating SPRINTers continued success in their future endeavors, and incoming SPRINTers, all the best for a great year, we are pleased to share the news of the achievements of many of this past decade's SPRINTers. (For news about our SPRINT alumni, see page 11.)

We look forward to working with our incoming SPRINT mentors, Drs. Josef Buttigieg, Jodie Gawryluk, V. Wee Yong and their SPRINT teams.

Equally newsworthy, a (live!) 2022 endMS Summer School, to be held in Ottawa, is now being planned. Additional information and the application process will be available in December. (Scroll down to page 9 to read a message from next year's Summer School hosts.)

In closing, we are extremely grateful to the MS Society of Canada for their continued funding of the program. It is thanks to this sustained support that we will be launching the inaugural 2022-2023 **endMS SPRINT competition**. Stay tuned for more details coming this Fall!

We look forward to seeing you in 2022!

DR. CHRISTINA WOLFSON
DIRECTOR, NATIONAL TRAINING PROGRAM

ANIK SCHOENFELDT
MANAGER, NATIONAL TRAINING PROGRAM

THE 2020-2021 SPRINTERS AND MENTORS

- Our SPRINTers:**
Monique Marylin Alves de Almeida
Maria-Elizabeth Baeva
Emily Kamma
Wendy Lasisi
- and our mentors:**
Sarah Jean Donkers
Jason Plemel
Cole Libner
Brian Mark Lozinski
Huah Shin Ng
Simon Thebault

2020-2021 Sprinters and Mentors

Monique Marylin Alves de Almeida

Born in Feira de Santana-Bahia, Brazil, Monique Marylin Alves de Almeida currently lives in Edmonton, where she is pursuing postdoctoral research in neuro-immunology at the University of Alberta's Medical Genetics Department.

With a BSc in biomedicine from the Supporting Institute of Higher Education in Bahia, Monique received an MSc in pharmaceutical sciences from the State University of Feira de Santana (UEFS) in Brazil. Monique obtained her PhD in immunology from the Federal University of Bahia-Brazil, and completed part of her PhD studies at the University of Portsmouth in the UK.

As a child, Monique's proximity to a neighbor living with Alzheimer's (AD), offered her a glimpse into the devastating effects AD had on their quality of life — and on the long-term impact it had on their family members. Monique's observations eventually triggered her curiosity about neurodegenerative diseases.

"Later, I decided to pursue a career studying how to repair the brain with a focus on modulating brain immune cells."

Although Monique initially hoped to become a neurosurgeon, her first job was as a biochemist in a clinical analyses laboratory. There, she performed biological analyses of clinical samples, in addition to supervising a team of technologists.

It was during her PhD studies that Monique says she "fell in love with MS research."

Currently, her goal is "to become an independent investigator and make an important contribution that will have a positive impact" on the quality of life of individuals with MS.

Given her focus on the "cause" of MS, Monique is presently studying how a naturally brain-secreted molecule called fractalkine may enhance remyelination. She's also researching how a human mutation in fractalkine receptor, detected in individuals with progressive MS, may affect brain progenitors — and whether this mutation leads to poor recovery in MS-mouse models.

Monique admits that MS-mouse models initially presented a challenge for her during her postdoctoral work. She recalls how she had to "learn how to handle animals, perform injections and survival surgeries. I struggled to separate empathy from scientific perspective. Thankfully, with the help of my supervisor and team,

I became comfortable and proficient in most animal-related procedures. I also gained an enhanced appreciation for the power of pre-clinical mouse models as well as my responsibility as a scientist to perform ethical animal research."

Throughout her studies, Monique says she's been fortunate enough, to have met "strong and successful women scientists," all of whom have played an important role in her decision to pursue an academic career.

Among them are Monique's MSc mentor Dr. Mariana Borges Botura, Dr. Cleide dos Santos Souza (her PhD co-mentor), Dr. Silvia Lima Costa, (her PhD supervisor), Dr. Julia Edgar, (her mentor during her internship at the University of Glasgow) and her current postdoctoral supervisor, Dr. Anastassia Voronova.

"I am very grateful for their guidance and encouragement," Monique adds.

Monique's participation in SPRINT led her to realize the importance of translational research, and how she could contribute to helping improve the quality of life for those with MS, "by using tangible tools."

"SPRINT was one of the best experiences I have ever had! While the pandemic was an isolating experience for all of us, I truly feel

like during this past year I have gained a new virtual family of friends with a common goal to end MS."

When not researching, Monique enjoys spending time in nature, travelling and experiencing different cultures and cuisines. Having recently taken up painting, Monique aspires to become "the next Van Gogh," (although unlike Van Gogh, Monique hopes to sell all her paintings within her lifetime).



Maria-Elizabeth Baeva

Born in Maple Ridge, BC, Maria-Elizabeth Baeva received her BSc (Honours) in microbiology and immunology with a minor in French, prior to obtaining her MSc in microbiology and immunology at the University of British Columbia (UBC).

Now a University of Calgary medical student, Maria-Elizabeth excitedly shares the news that the manuscript of a study she recently performed that looked at changes in immune cell subpopulations during and after Tecfidera treatment in patients with MS, has just been accepted for publication!

Maria-Elizabeth attributes her initial interest in neurology to the time she spent working as a research assistant and disability resource coordinator at the Fraser Health Multiple Sclerosis Clinic in Burnaby, BC.

She recalls, "While my bachelor's project focused on multiple sclerosis, my master's thesis was focused on Alzheimer's (AD) disease. However, I continued to work at the MS clinic."

Elaborating on the connection between her studies of both AD and MS, Maria-Elizabeth states, "I think that neuroimmunology is a versatile field and that understanding different diseases is valuable."

Ever since she was a child, Maria-Elizabeth has wanted to become a doctor. More specifically, ever since she realized that "being a detective was a lot different from what I read in Sherlock Holmes or saw in Scooby-Doo."

Not long after coming to that realization, Maria-Elizabeth secured her first job. Working in the fast-food industry, at Kentucky Fried Chicken Maria-Elizabeth's first job was very transformative "because it made me 'grow up' very quickly and taught me about hard work and socializing with many different people."

When discussing her current areas of interest, Maria-Elizabeth explains that she is particularly intrigued by the mechanisms of both fatigue and healing. More precisely, "How to deal with fatigue. There is so little we know about the biology or mechanism

of action of fatigue." Secondly, "How do nerves repair themselves? What are the components necessary to successfully heal yourself? What goes wrong with this process during MS?"

Of her experience with SPRINT, Maria-Elizabeth claims that it reaffirmed her belief that she's on the right path.

Additionally, SPRINT provided Maria-Elizabeth with the opportunity to work on a project that was more focused on knowledge translation and implementation science. This, she says "was very different from my previous experience with benchtop or clinical research. I really appreciated learning more about this type of research... I think it's important to take any opportunity you are given and to take on new projects. You never know how it will influence your future."

When discussing inspiration and motivation, Maria-Elizabeth refers to Dr. Galina Vorobeychik as having been a "major inspiration and role model" in her life. "She has given me so many opportunities for success and a lot of advice."

Within her chosen field of research, Maria-Elizabeth says her greatest challenge thus far, has involved mouse models of MS.

"EAE (Experimental Autoimmune Encephalomyelitis) has been a fantastic model that is directly responsible for the development

of so many disease-modifying therapies that have significantly increased the quality of life of many people with MS. However, like all models, it is incomplete: while it captures the autoimmune nature of MS, I believe that we need to focus more on the neurodegenerative/neuroreparative aspects of MS."

Optimistic that a cure for MS will be found in her lifetime, Maria-Elizabeth's long-term career goal is to become a clinician scientist. This, she says, would be the "best of both worlds!"

When not in the lab, Maria-Elizabeth enjoys spending time socializing. Confessing her affinity for the arts, she states, "Whether it's an opera, symphony performance, film festival, art gallery, fashion show, library, ballet, if there's art, I'm there."

"I think that neuroimmunology is a versatile field and that understanding different diseases is valuable."

Sarah Jean Donkers

An avid traveller, with over 43 stamps from different countries on her passport, Sarah Jean Donkers studied psychology, physiotherapy, and neuroscience in Australia before moving to Saskatoon, Saskatchewan. With a PhD in neurorehabilitation from the University of Saskatchewan, Sarah is now assistant professor in the University's College of Medicine.

"I always knew I wanted to work in health care," Sarah affirms. Despite having always been curious about human movement, psychology, and first job was actually on her parents' dairy farm. She says the hard work coupled with the example of her parents' work ethic enabled her to get to where she is today.

"It taught me work-ethic, passion, a sense of humor, a desire to give back, the importance of community, value of commitment, staying grounded, gratitude, and the list goes on..."

Having worked as a neurorehabilitation physiotherapist for almost 10 years, Sarah felt that MS had long been an "underserved population," in terms of research and

clinical options. Consequently, she pursued her PhD in MS "to try and help improve rehab care for people living with MS."

Of the "hundreds of individuals living with MS that I have had the pleasure to work with and learn from through my clinical practice and research," Sarah says, "I just want to be able to do more, especially with individuals in the progressive stage of MS."

Sarah believes it is currently an "exciting and hopeful time" in her field. "There have been several advancements in our understanding of, and ability to investigate MS, how the brain responds to MS and the potential to promote neurorecovery and functional improvements," she says.

When asked what projects she's currently working on, Sarah erupts in laughter. "A lot!"

Her role list includes (but is not limited to): her role as the academic lead for the multi-stakeholder team working on the development and implementation of the *SK Provincial MS Care Pathway*. Sarah also runs *NeuroSask: Active and Connected* — a virtual program designed to support symptom management, quality of life, and a sense of community for individuals living with neurological conditions. She is

part of the leadership team for MSBEST — a North American initiative that creates comprehensive, systematic evidence-based reviews of the literature for rehab interventions for MS, to help healthcare professionals select evidence-based strategies for persons with MS. Further, Sarah and her colleagues have just finished data collection for an 18-month study that involved 120 participants with MS called "IPAC-MS - Individualized Physiotherapy and Activity Coaching in MS." Sarah adds that her "passions run deep" her recently funded grant titled, "Building towards a neuro recovery model of care in MS".

The SPRINT mentor, who happens to be a former SPRINTer herself, says she was inspired by the intense drive of the next generation of MS researchers.

"I have high expectations, but my SPRINTers blew me away!"

Although the mentors who have inspired and encouraged Sarah on her own journey, are "too many to name," she does thank Dr. Katherine Knox, former director of the Saskatchewan MS Clinic, for her mentorship, friendship and for being her main partner for several MS initiatives/projects (e.g. NeuroSask, IPAC-MS, MSBest).

When not working toward her ultimate goal of building a program of research that aims to enhance the access to and quality of clinical care promoting neurorecovery, Sarah unwinds by taking surf trips, going mountain biking, hiking, skateboarding, or snowboarding.

"Getting to the ocean or mountains with my husband all serve as processing time... I also love being creative dabbling with different craft projects and musical instruments."

"I always knew I wanted to work in health care."

Emily Kamma

With a Diploma in technology in biotechnology from the British Columbia Institute of Technology and a BSc (Honours) in biotechnology from the University of British Columbia, Emily Kamma is currently a PhD student in Dr. Jacqueline Quandt's Lab in the Department of Pathology & Laboratory Medicine at the University of British Columbia.

Reminiscing about the steps that led her to her chosen field, Emily recalls, "It was not until high school that my science teacher and university/career counsellor introduced me to scientific research as a career option, and I haven't looked back since!"

Attending a neuroscience seminar during her undergraduate studies, inspired Emily to register for neuroscience and immunology courses. Doing so, ultimately led her to develop a deeper interest in neurodegenerative diseases.

After completing a project that proposed new therapeutics to combat and repair central nervous system damage in demyelinating disease, Emily says she was particularly struck by both the young age at which most people are affected by MS, and by the high prevalence of MS in Canada. She reveals, "my desire to pursue these research interests motivated me to focus on MS in my graduate studies."

These days, Emily's research focuses on characterizing the clinical and immunopathological alterations that may drive risk and disease progression in a new mouse model of progressive multiple sclerosis.

"This mouse carries a mutation in the *Nr1h3* gene identified in Canadian families who developed severe and rapidly disabling primary progressive MS. We hope to use this model as a valuable tool to identify neurodegenerative mechanisms and new therapeutic targets for progressive MS."

Expanding on this, Emily says, "Even though my own research project may initially appear to be focused on basic research, it is a translational project that spans many disciplines and aims to bridge the gap between bedside and bench."

Emily's SPRINT group project enabled her to examine different aspects of multiple sclerosis outside of her own research, that she "would not have otherwise explored." She says the experience presented her with an opportunity to reach, "beyond animal models by working with people in fields I normally do not have exposure to."

The aforementioned SPRINT project, focused on central nervous system macrophages in progressive MS, and taught Emily "valuable skills in scientific writing, project planning, and most importantly, teamwork! The skills I learned are something I will bring to all my future collaborative relationships...as a result,



"The skills I learned are something I will bring to all my future collaborative relationships."

I am more interested in a career where I can work collaboratively with researchers in industry, the clinic, and academic laboratories."

Outside of academia, Emily's first job involved filming and editing events, including high school plays and graduation ceremonies. "Even though this had nothing to do with science, I learned extremely important skills that I apply to how I work today such as developing a strong independent work ethic, time management, and accounting for the tastes and opinions of many different people."

Hoping to "always keep people living with MS at the forefront" of her work, Emily's long-term goal is to work as a researcher in industry, or in academia, so she can "collaborate on projects involving new therapeutics or disease targets that can be translated from the bench to have a direct bedside benefit for patients."

Emily says she is hopeful that research will soon progress to the point where "MS can be treated so that symptoms no longer negatively impact the quality of life of people with MS."

When not working in the lab, Emily enjoys reading graphic novels, taking walks in nature and trying new restaurants.

Wendy Lasisi

Wendy Lasisi obtained her BSc (Honours) in neuroscience from the University of Leeds and her MSc in clinical neuroscience from the University of Roehampton, in London, England.

Hailing from Ogun, Nigeria, Wendy now studies at Memorial University in St. John's, Newfoundland where she currently resides.



When disclosing how she first developed an interest in MS research, Wendy remarks, "Almost everyone I know is related to, or knows someone who has MS."

This widespread prevalence of MS inspired Wendy to want to make a difference within that field of research. Wendy says she "saw the need for research in MS and the opportunity to be part of that came up."

With the goal of "halting the progression of MS, promoting repair and recovery, and increasing quality of life," Wendy says her focus is inspired by two factors. Firstly, the fact that "there is currently no cure for MS," and secondly, the fact that "MS presents itself so differently from person to person."

Currently, Wendy's research project, "examines the link between clinical measures of hand impairment in people with MS, and findings on structural and functional neuroimaging measures using magnetic resonance imaging and transcranial magnetic stimulation."

Prior to her pursuit of MS research, Wendy's first job was as a neuroscientist in a psychiatric hospital.

"I imagined I'd be a neurosurgeon when I was younger, but my first job confirmed how much I enjoyed research, interacting with and educating patients and clinical staff, more than surgery."

Since having discovered her niche, Wendy admits that one of the greatest challenges she's had to contend with, has been her inability to physically see patients. This unfortunate pandemic related issue has recently impeded her ability to carry out clinical research.

Despite these extenuating, difficult circumstances, Wendy's determination has remained strong, due in part to her recent participation in SPRINT.

"Being part of the endMS SPRINT program has been enlightening and amazing, even throughout the pandemic."

Regarding her initial interest in SPRINT, Wendy admits, "I decided to join the program to enhance my knowledge and skills related to MS research and get the opportunity to network and collaborate with other MS researchers."

Of her experience as a SPRINTer, Wendy says, "Being part of a team and working on a project gave me purpose even when I couldn't work on my project, and I learned so much from the Summer School." More specifically, she says, "I've learned the process of collaborating with other researchers for the project and the publication process."

Aside from practical skills, Wendy's experience as a SPRINTer led her to a significant realization. "If I continue to pursue a career in MS research, I have a lot more options than I could have imagined, so I'm willing to continue on that path."

"SPRINT has inspired me to continue to network and collaborate with other MS

researchers. There's so much we can learn from each other, and by coming together, we're able to accomplish more."

Wendy also credits her supervisor, Dr. Michelle Ploughman, Canada Research Chair (Tier II); Rehabilitation, Neuroplasticity and Brain Recovery, for having consistently encouraged her on her journey, both academically and career-wise.

When discussing whether or not a cure for MS will be found within her lifetime, Wendy replies that hopefully one day therapies and rehabilitation might eventually become "so good" that MS would "not be as debilitating anymore." Until that happens, however, Wendy plans "to continue to work in research, especially longitudinal studies, and clinical trials."

When not pursuing research, Wendy likes to "binge watch TV shows in Korean and French, go hiking or indulge in some photography and design."

"There's so much we can learn from each other, and by coming together, we're able to accomplish more."

Cole Libner

Originally from Saskatoon, Cole Libner graduated with a BSc in anatomy and cell biology from the University of Saskatchewan, where he is currently a PhD candidate in the Health Sciences Program.

"During my undergraduate studies, I took multiple courses related to the nervous system and developed a deep interest in studying it further as it relates to disease. As I was nearing completion of my undergraduate studies, an opportunity came up to join Dr. Michael Levin's MS research lab in Saskatoon. After a few months in the lab, I developed a strong passion for MS research and never looked back."

In addition to having presented his work at 13 local, national and international conferences spanning across Canada and the United States, Cole is a recent recipient of the CIHR Frederick Banting and Charles Best Canada Doctoral Scholarship. Upon completion of his PhD in August of 2022, Cole will begin medical school at the University of Saskatchewan.

Until then, Cole is focused on gaining a "better understanding of the mechanisms by which the nerve cells of the brain and spinal cord are dying in MS."

"More specifically," he says, "our lab has identified a protein present within nerve cells that is targeted by the overactive immune system in people with MS. The immune system creates "autoantibodies" that target a protein called A1, and cause this protein to become dysfunctional leading to nerve cell death and damage. Our next steps are to try and find a way to stop or reverse the damage that is occurring."

Cole explains that once neurodegeneration is better understood, he hopes "we will be able to slow down, attenuate or even reverse this damage and improve the lives of those living with MS."

Cole's participation in SPRINT marked his first opportunity to collaborate on a project with researchers outside the province of Saskatchewan. Of this experience, Cole says, "I learned a lot about how to work with others who have a diverse set of strengths towards a common goal."

Furthermore, SPRINT enabled Cole to expand his understanding of MS while also

allowing him to connect with other trainees — a situation which he says opened the door for "further potential collaborations and relationships that I will take with me throughout the rest of my career."

Additionally, through various events hosted by the endMS National Training Program, Cole has had "the opportunity to listen to the stories of people living with MS." Through hearing firsthand how MS has affected individual lives, Cole says he's been given a deeper motivation to continue his work.

Hopeful that "one day there will be an end to MS," Cole justifies his optimism.

"Considering the great strides that have been made in the last 20 years in understanding MS, including the development of many approved disease modifying therapies... I am optimistic that there will be a cure for MS in my lifetime."

The trajectory of Cole's academic career has been influenced by the involvement of one mentor in particular, his supervisor, Dr. Michael Levin. Cole says, Dr. Levin "has encouraged me on my current path..." and he "has been an extraordinary role model for me."

Grateful for Dr. Levin's inspiration, Cole reveals, "as someone whose career goal is to become a physician scientist in the field of MS, Dr. Levin has helped me to achieve this."

When not pursuing his research, Cole says he "loves to get out of the city and spend time at the lake enjoying outdoor activities such as fishing and golfing."

Brian Mark Lozinski

After receiving his BSc in cellular and molecular biology from Mount Royal University in Calgary, Brian Mark Lozinski joined Dr. Wee Yong's lab at the University of Calgary as a master's student. He has since been accepted as a PhD candidate at the University of Calgary.

Reflecting upon the impact of having to mow lawns as a child, Brian recalls, "At that time, I had no interest in science and really couldn't imagine that I would be where I am currently." The most important thing Brian says he learned from that very first job, "and every subsequent job, was that showing up and being present is 80% of battle."

Elaborating on how he developed an interest in MS research, Brian reveals, "I chose to focus on MS because of my experience with my late aunt who had MS for as long as I knew her." Brian's fondest memories of his aunt, also stem from his childhood. "When I was quite young, around 10 or 12 years old...I remember her helping me with my math homework at the time."

Now that his days of needing help with math homework are a distant, albeit cherished memory, Brian's studies are focused on the brain lesions which are characteristic of MS, and in looking for ways to improve remyelination. Underlying this research, is Brian's intention of improving functional recovery for those who live with MS.

"MS is intriguing because the relapsing remitting and progressive phases are so different from one another. Knowing that MS affects so many in Canada, and that it is a long-term diagnosis, makes me want to do what I can to advance our understanding of the disease with the hope of improving people's lives overall."

When discussing the instrumental mentors who have helped guide him throughout his studies, Brian mentions that Dr. Adrienne

Benediktsson introduced him to basic research when he was an undergraduate at Mount Royal University. "Since transitioning to graduate school, a few people who have really helped mentor me, include my supervisor Dr. Wee Yong, as well as Dr. Hedwich Kuipers and Dr. Keith Sharkey."

Brian's initial interest in SPRINT arose from his belief that it would be "an opportunity to network and work closely with researchers from other parts of the country from different backgrounds."

Now, Brian confirms that his participation in SPRINT also helped broaden his understanding of the different types of MS research. "My work is basic bench science," Brian explains, but through his SPRINT project, he was "able to learn more about what goes into more clinical and patient focused research."

"Knowing that MS affects so many in Canada... makes me want to do what I can to advance our understanding of the disease with the hope of improving people's lives overall."

Huah Shin Ng

Huah Shin Ng completed her BPharm (Honours) and PhD in pharmacy and medical sciences, at the University of South Australia.

Originally from Malaysia, Huah Shin now lives in Vancouver, where she is currently doing research at the University of British Columbia.



After four years of conducting cancer epidemiology studies and focusing on chronic disease, including cancer and related comorbidities for her PhD studies, Huah Shin's postdoctoral training now centers upon MS therapies.

"While my PhD research was focused on chronic disease, cancer and related comorbidities (co-existing diseases), my post-doctoral training is focused on an equally important but entirely different chronic disease — multiple sclerosis.

I became interested in MS research when I was approached by Professor Helen

Tremlett in 2018 to join the Pharmacoeconomics in Multiple Sclerosis (PIMS) research team at the University of British Columbia."

With a lead role in coordinating "the largest study of real-world MS drug safety and effectiveness ever conducted," Huah Shin has been examining the safety and effectiveness of medications used for the treatment of MS. This particular MS drug safety and effectiveness study spans British Columbia, Saskatchewan, Manitoba, and Nova Scotia.

Given that "chronic diseases such as MS place a heavy burden on the individual, families and the healthcare systems and more broadly on Canadian society," Huah Shin says she would like to leverage her research skills "to really make a difference to people with MS, locally, nationally and internationally."

Always passionate about "improving the prevention, treatment and management of chronic diseases," Huah Shin's first job was as a pharmacist. Reflecting upon how that job has influenced her current research, Huah Shin says, "MS is a highly complex

chronic disease and I relish the challenge of applying my pharmacy expertise to the field of MS through the investigation of the longer-term effects of the drugs used to treat MS."

When discussing the challenges inherent to her field of study, Huah Shin reveals, "One aspect which has been particularly interesting but also challenging relates to the extraction, cleaning and validation of our MS clinical data in preparation for linkage to other data sources and subsequent analysis. I have learned that data collected as part of routine clinical practice takes a lot of time and care to ensure it is a valid resource for research purposes..."

Although she initially joined SPRINT to establish collaborations with other trainees engaged in MS research across Canada, Huah Shin says SPRINT helped her gain a more thorough understanding of MS.

For her SPRINT group project, Huah Shin performed a review of the role of macrophages and microglia in progressive MS. Enabling her to acquire additional skills in conducting reviews in MS neuro-immunology within a multidisciplinary team,

Huah Shin credits this project with having helped "facilitate and broaden" her post-doctoral training.

When discussing her career aspirations, Huah Shin states, "I would like to be a highly effective independent researcher in translational pharmaco-epidemiology spanning a wide range of disciplines."

"I believe a cure for MS will be found in my lifetime with the advancement in research and technological development over time."

In her spare time, Huah Shin enjoys walking to clear her mind. "After moving to Vancouver, I started hiking as a great way to re-energize. I also enjoy traveling and exploring new places and cultures."

"I relish the challenge of applying my pharmacy expertise to the field of MS..."

Jason Plemel

With a PhD in neuroscience from the University of British Columbia, Jason Plemel is an assistant professor at the University of Calgary's Department of Medicine, in the Division of Neurology.

Originally from Fort St. John, BC, Jason currently resides in Edmonton.



Reflecting upon his recent role as a SPRINT mentor, Jason says, "I was a SPRINTer during my post-doctoral fellowship and I decided to join the program as a mentor to give back to it."

"Being a SPRINT mentor brought me full circle,"

Jason states, admitting, "I enjoyed working with talented trainees, and teaching them more about my own field. I find the level of talent in the trainees across Canada inspiring."

When asked what initially led him to the study of MS, Jason prefaced his response by confiding, "It was a long journey."

After the completion of his undergraduate degree, Jason volunteered at a care home. There, his interactions with the residents, including a very young, quadriplegic woman living with MS, sensitized him to the "awful injustice" inherent to MS.

Later, when pursuing his doctorate in the area of spinal cord injury, Jason studied myelin biology and became increasingly fascinated by the various issues within that particular field of research. "Most of my questions related more to MS than spinal cord injury, so for my postdoc, I knew I wanted to study MS."

Outside of academia, Jason's first job was as a short order cook. "From that job, I learned the importance of hard work, which has been essential for my career."

In addition to working hard over the years, Jason acknowledges that he has received valuable support and guidance from many "outstanding mentors." He declares, "If I have found success, it is because of the great people in my career helping me along."

During Jason's PhD studies, Dr. Wolfram Tetzlaff empowered him to take on his own research questions. Jason says Dr. Tetzlaff taught him how "to be critical like a scientist." Then, during his postdoctoral fellowship, when working and studying the contribution of microglia following myelin injury, Jason says Dr. Peter Stys, "a smart and insightful person who is always 10 steps ahead of the field," taught him how to "think more like a scientist."

Jason also attributes much of his early success in funding to "Dr. Wee Yong... an outstanding scientist and mentor who showed me important aspect of scientific professionalism and grant writing."

When discussing the trajectory of his career, Jason admits, "When I was a SPRINT

trainee, my goal was to get an academic position. Now, having gotten one, my goal is to grow my lab and push talented individuals to reach for the stars."

Currently, Jason's own lab is undertaking several exciting projects. Elaborating, he reveals, "We are interested in understanding and ultimately boosting remyelination... as people age, remyelination declines. We hope to understand the diversity of immune cells present during remyelination and understand how age alters this immune response. We are also interested in whether microglia, under different conditions, may actually promote myelin loss, or demyelination. Overall, we are thinking now that there are populations of pro-regenerative microglia and neurotoxic microglia."

While Jason's research focuses on finding new treatments to promote remyelination (repair) and mitigate damage, his hope for the future is to "identify a medication that will be translated to people with MS."

When asked if he has ever considered changing fields of study, Jason boldly affirms, "I cannot imagine doing anything else."

When not working in the lab or mentoring, Jason enjoys spending time outdoors, exploring parks and biking with his wife and son.



"I enjoyed working with talented trainees, and teaching them more about my own field. I find the level of talent in the trainees across Canada inspiring."

Simon Thebaut

Simon Thebaut received his MBBCh from Cardiff University in the UK, his MSc in neuroimmunology from Oxford University, and his home town of Jersey in the Channel Islands. Simon now resides in Ottawa, where he is completing the 5th year of his FRCPc neurology residency at the University of Ottawa.



Currently, Simon's research involves investigating, developing and establishing blood biomarkers that will help predict and monitor disease activity in MS.

Initially attracted to the "absolutely fascinating" basic science inherent to the field of neuro-immunology, Simon refers to MS as the "elephant in the room as far as neuro-immunology goes — both numerically, as the most common condition and in terms of the amount of existing research." He explains, "As we learn more about the fundamental role of the immune system in the brain, I believe that insights gleaned from MS research will be fundamental to unravelling many mysteries in neurology."

Simon admits to deriving "great satisfaction" from treating MS patients, as a clinician.

"I'm excited by how much more work there is to be done, in terms of better personalizing/individualising of therapies... through biomarkers, working towards a cure for MS and promoting repair so that patients might one day be able to regain function." He adds, "Treatments need to be personalized, effective, have minimal side effects, and be accessible."

To realize those objectives, Simon is focused on better understanding how highly efficacious therapies work in MS — specifically, haematopoietic stem cell transplantation. He is hopeful that insights gleaned from better understanding the immunophenotype and reconstitution before and after haematopoietic stem cell transplantation, "may allow for more targeted and therefore less toxic treatments that have the same amazing efficacy."

Regarding his recent work on blood-based biomarkers with Dr. Freedman, Simon notes, "We have made the most progress with a blood protein called neurofilament light chain. As a result of our research, this test is now approved in Canada for clinical

use and is now being routinely used in the clinic to monitor subclinical disease activity — a world first!"

Throughout his studies, Simon has been encouraged and inspired by "so many fantastic mentors!" Among them, he names Dr. Paul Morgan, Professor Angela Vincent, and Dr. Mark Freedman who generously gave Simon access to his biobank; "a treasure trove of samples kindly donated by consenting MS patients which have really been the substrate of my research into blood based biomarkers."

Readily admitting that "lab work is tough" Simon quips, "Nothing works the first 10 times" and everything "always takes 3 times longer than planned." As a goal-oriented person, Simon reveals that these challenges, although typical to all research, are nevertheless frustrating to deal with.

Courtesy of SPRINT, Simon was introduced to "a different kind of translational research." Working with SPRINT mentor Dr. Sarah Donkers, Simon gained a greater appreciation for the importance of non-pharmacological approaches to treating patients with MS.

"I have a much better appreciation in a whole different kind of research with the objective of promoting a behavioural change," he says.

Of his fellow SPRINT trainees, Simon maintains, "I have no doubt that I will meet them again in the future."

Until then, Simon's goal is to "contribute meaningfully to the international and collaborative effort" toward finding a cure for MS.

These days, the former waterski and wakeboard instructor, enjoys spending his free time doing anything that is "either fast or on water: cycling, sailing, kite surfing, kayaking, fishing." Humbly in Canada, "Although I was not born in Canada, skiing and skating are a work in progress that I enjoy but am not very good at yet."

"I believe that insights gleaned from MS research will be fundamental to unravelling many mysteries in neurology."

2021-2022 endMS SPRINTers

Nima Alaeilkhchi	University of British Columbia
Charbel Baaklini	University of Alberta
Alexandra Jackson	Queen's University
Yu Pu	University of Toronto
Nataliya Tokarska	University of Saskatchewan
Isabelle Tottenham	University of Calgary
Zitong Wang	University of Alberta
Sameera Zia	University of Alberta
Bettina Zierfuss	Centre de Recherche du Centre Hospitalier de l'Université de Montréal

2021-2022 endMS SPRINT Mentors

Dr. Josef Buttigieg	University of Regina
Dr. Jodie Gawryluk	University of Victoria
Dr. V. Wee Yong	University of Calgary

2021-2022 endMS Education and Training Committee Membership

Dr. Christina Wolfson (Chair)	Director, endMS National Training Program McGill University
Dr. Nathalie Arbour	Co-Director, endMS National Training Program Université de Montréal
Dr. Marcia Finlayson	Co-Director, endMS National Training Program Chair of the endMS SPRINT Committee Queen's University
Jessica Allanach Elisea De Somma Dr. George S. Robertson	SPRINT Alumni, University of British Columbia SPRINT Alumni, York University Chair of the endMS Peer Review Committee Dalhousie University
Dr. Jacqueline Quandt Dr. Penelope Smyth Anik Schoenfeldt	University of British Columbia University of Alberta Program Manager, endMS National Training Program Research Institute - McGill University Health Centre

2021 endMS Summer School Collaborators

Dr. Charity Evans	2021 endMS Summer School Co-Host University of Saskatchewan
Dr. Michael C. Levin	2021 endMS Summer School Co-Host University of Saskatchewan
Dr. Valerie M.K. Verge	2021 endMS Summer School Co-Host University of Saskatchewan

2022 endMS Summer School Collaborators

Dr. Mark S. Freedman	2022 endMS Summer School Co-Host University of Ottawa
Dr. Lisa A. S. Walker	2022 endMS Summer School Co-Host University of Ottawa

Message from the 2022 endMS Summer School Hosts

June 13-16

The MS Research Group of the University of Ottawa Brain and Mind Research Institute (uOBMRI) is excited to host the 2022 endMS Summer School in Ottawa, from June 13th to 16th, 2022. Our theme will be **The Therapeutics of MS**.

The membership of the uOBMRI MS Research Group, with its close ties to the Ottawa Hospital MS Clinic, includes basic science researchers working on new therapeutic targets and clinician investigators conducting research designed to better the lives of those living with MS.

Recognized internationally for our work on stem cell therapies and the success we've achieved through a ground-breaking clinical trial using hematopoietic stem cell transplantation to treat aggressive MS, the uOBMRI is also a center for pioneering research into mesenchymal stem cells — to repair or treat a number of conditions, including MS.

To better optimize treatment for people with MS, we have pursued

several potential biomarkers, most notably, that of neurofilament light chain. As Canada's leader in the routine use of this blood test to inform on treatment response, we continue to be involved in world-wide clinical trial collaborations designed to find new and innovative pharmacological treatments.

We are leaders in the field of exercise interventions for non-ambulatory people with MS. Our researchers have also performed clinically relevant studies on cognitive fatigability and on the inclusion of care partners in rehabilitative efforts.

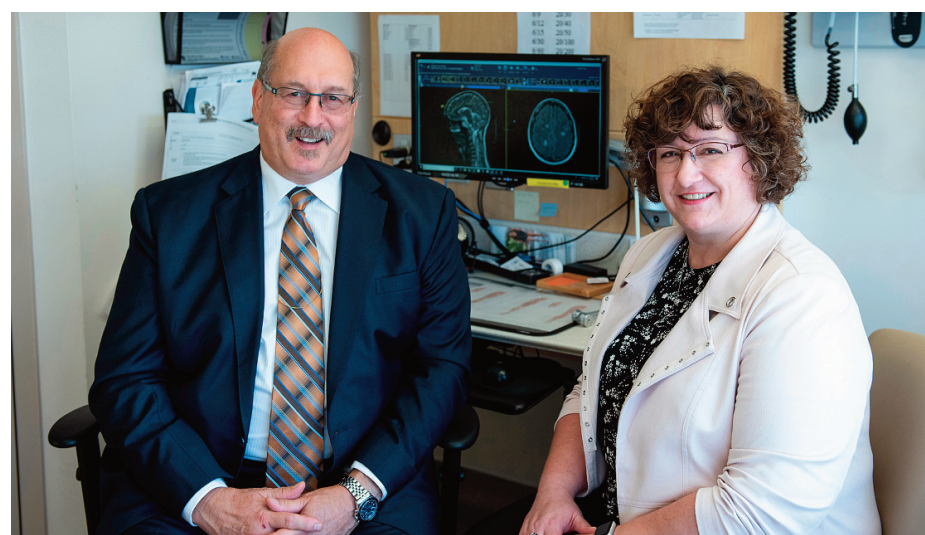
Given our location in Canada's capital, we are fortunate to have a number of federal granting and regulatory agencies as neighbors. Ottawa is also home to the Ottawa Methods Centre, with internationally recognized members known for their expertise in clinical trial design, as well as systematic review and meta-analyses guidelines.

When in Ottawa, trainees will benefit from seminars and workshops designed to enhance their knowledge of the research funding process.

With access to career opportunities for researchers outside of traditional academic appointments, there

will also be many opportunities for networking with fellow trainees, faculty, and with people living with MS.

We look forward to seeing you in Ottawa next year!



Mark S. Freedman, MD, FRCPC

Lisa A. S. Walker, Ph.D., C. Psych.

Alumni Updates

Dr. Vladimir Bamm is currently teaching at Wilfrid Laurier University and working as a research associate in the G. Magnotta Lyme Disease Research Lab at the University of Guelph. Vladimir studies the factors that predispose individuals to develop the persistence of symptoms following the treatment of Lyme disease. Additionally, as a scientific director of the Vovida Biotechnology and Diagnostic Solutions Inc., Vladimir is leading a project that focuses on the development of a semiconductor-based point-of-care diagnostic platform that allows quick, specific and inexpensive detection of different microbial or viral pathogens in the human body fluids or tissues.

Dr. Jenea Bin is continuing her postdoctoral research at the University of Edinburgh, where she is currently investigating myelinated axon development. She recently welcomed her second son, Alexander, into the world.

Dr. Arthur R. Chaves successfully completed his PhD in medicine-neuroscience at Memorial University (October 2020). Supervised by Dr. Michelle Ploughman, he published 6 first-author original research papers on investigating cortical mechanisms in MS, to identify biomarkers of symptom progression and investigate the impact of fitness and physical exercise training on the MS brain. He moved to Ottawa to pursue his postdoctorate training. Most recently, Arthur was awarded the uOttawa/CHEO Research Postdoctoral Fellowship and will start his postdoctorate training under the supervision of Dr. Lara Pilutti at the University of Ottawa. His primary project will focus on using non-invasive brain stimulation and neuromodulation methods to investigate and potentially prime, the effects of exercise on the MS brain. This project will be done in collaboration with Dr. Sara Tremblay, a neuropsychologist at The Royal's Institute, in Ottawa.

Dr. Pia Crone Christensen is working as a research scientist at Lundbeck, in Denmark. She is currently involved in two projects. One focuses on increasing penetration of exogenous antibodies over the blood-brain barrier via shuttle technology, for which Pia runs in vivo pharmacokinetic and dynamic studies. The other project focuses on mitochondrial function in neurodegenerative diseases, for which Pia images ex vivo (acute) slices from transgenic mice. Pia has recently moved

from Copenhagen to a small city with 5500 inhabitants with her 5-year old daughter, Sarah.

Dr. Miguel De Avila is currently working with Apotex Inc. as a Sourcing Specialist. He is leading sourcing activities for active pharmaceutical ingredients, key starting materials and excipients offered by suppliers based in Europe and North America.

Dr. John Farrell III completed his CHEO/uOttawa postdoctoral fellowship at the University of Ottawa with Dr. Lara Pilutti, before returning to the US where he began working as an assistant professor at Texas State University in the Fall of 2020. John's lab is focused on exploring the role of exercise training for the management of disability and symptoms in persons with MS. This includes the development and assessment of novel exercise training modalities and exercise testing procedures. John hopes to contribute to the training of the next generation of MS researchers and will continue to find ways for others to share his passion for exercise.

Negar Farzam-kia is completing her PhD in neuroscience at the University of Montreal under the supervision of Dr. Nathalie Arbour. Negar's research focuses on immunological mechanisms implicated in MS pathobiology.

Dr. Dylan Galloway successfully completed his PhD in neuroscience at Memorial University under the supervision of Dr. Craig Moore. Dylan is currently pursuing a postdoctoral fellowship in Dr. Timothy Miller's lab at Washington University in St. Louis, where he is investigating neurodegeneration in Amyotrophic Lateral Sclerosis.

Dr. Marjan Gharagozloo is currently a senior postdoctoral fellow in Dr. Peter Calabresi's lab at Johns Hopkins University. Marjan was awarded an FROQ (Fonds de recherche du Québec - santé), a postdoctoral grant for a multidisciplinary project to discover the molecular mechanisms underlying the inflammatory response of glia in Multiple Sclerosis. Marjan is also a member of the endMS SPRINT Committee.

Dr. Yohannes Haile is a senior scientific evaluator of clinical trials and new drug submissions of biologics-derived therapies, including cell and gene therapy products. Representing Health Canada in the Canadian Standards Association in the capacity of a member of the subcommittee on Lymphohematopoietic Cells Standards,

Yohannes also leads the "Science and Regulatory Preparedness" working group in Health Canada. He reports to Dr. Cara Tannenbaum, the Departmental Science Advisor for Health Canada. As adjunct professor at Carleton University in Ottawa, Yohannes recently received an ADM (Assistant Deputy Minister) Award for Excellence.

Hélène Jamann's PhD focused on Th17 lymphocytes-oligodendrocytes interaction in MS. After graduating this year, she will continue her medical studies at Strasbourg University, in France beginning this Fall.

Dr. Kaarina Kowalec is an assistant professor at the University of Manitoba and an affiliated researcher at the Karolinska Institute. Dr. Kowalec was on maternity leave for the past year, following the birth of her 2nd child, Sofia.

Dr. Hyunwoo Lee is continuing his postdoctoral fellowship with Dr. Robin Hsiung at the University of British Columbia. He is working on brain imaging studies associated with aging and dementia.

Dr. Citlali Marquez is a research associate at the BC Centre for Disease Control. Her work focuses on the serological response against SARS-CoV-2 and vaccine efficacy.

Dr. Chantel Mayo is relocating to Manitoba where she will be taking up an assistant professor/hospital neuropsychologist position with the University of Manitoba.

Dr. Miceline Mésidor defended her PhD in public health, with a specialization in epidemiology at the University of Montreal in March 2021, under the supervision of Drs. Marie-Pierre Sylvestre and Marie-Claude Rousseau. She recently began her postdoctoral fellowship at Laval University with Drs. Denis Talbot and Caroline Sirois. Miceline's research focuses on the effects of polypharmacy on health service utilization in people aged 65 years and older with diabetes and coronary heart disease.

Sarah Neil is working as a genetic counsellor in Vancouver while she completes a graduate certificate in genomic counselling and variant interpretation at UBC. After a very long engagement, she and her fiancé, "used the limits on gatherings during the pandemic as an excuse to elope" last September, 2020.

Dr. Nikki Ow is currently a postdoctoral fellow at the University of British Columbia. Presently, her research focuses on youths with mental health and substance use disorders and health services. She has recently published several articles.

Dr. Evelyn Peelen is currently working as senior scientist at the clinical-stage biopharmaceutical company, Immunic AG, in Munich, Germany.

Dr. Julie Petrin successfully completed her doctoral degree in rehabilitation sciences, from Queen's University in October. She has since begun a postdoctoral position with Dr. Sarah Donkers at the University of Saskatchewan. Julie's postdoctoral work, driven by the findings of her dissertation, aims to improve access to healthcare services to Canadians living with MS. Involved in the process of developing an MS Toolkit for healthcare providers, Julie has also been selected as the co-chair of the MS Society of Canada's Young Adult Committee, and has been working on three projects over the past year.

Dr. Jason Plemel is starting his fourth year as an assistant professor at the University of Alberta. He is currently running several research projects in the area of microglia and neuroinflammation as they relate to development, injury and remyelination. He is excited by the progress his SPRINT team made this year. Jason Lives in Edmonton with his wife and almost 2 year old son.

Karin Rustad completed her MSc and accepted a position as a lab instructor at the First Nations University of Canada. Continuing with her project at the University of Regina as a research associate, Karin's research focuses on the development of a novel immune modulating drug for MS.

Dr. Erin Stephenson graduated with a combined MD/PhD from the University of Calgary, in Spring 2021. She is now in her first year of residency training in the Neuropathology program at the University of Calgary.

www.mssociety.ca/trainingprogram

For Summer School and/or SPRINT application and program guidelines, please visit our website at 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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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 National Training Program is an initiative of the endMS Network. It is led by Dr. Christina Wolfson and funded by the MS Society of Canada through the MS Scientific Research Foundation.



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