

MS[®]

Research

March 2014

FEATURE STORY

*Studying MS
risk factors*

Dr. Shannon Dunn

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@Dr_KarenLee

I'm proud to be witnessing such an exciting and hopeful time for research in multiple sclerosis. Now more than ever, we are discovering more about the underlying causes of MS, ways to treat symptoms and better methods to detect the disease at an earlier stage.

Global research successes are largely due to the Canadian MS research community, with the support of a robust research program at the MS Society of Canada. What began as a small grant of \$10,000 in 1949 has now grown into a multifaceted platform that funds awards, grants and educational programs totalling more than \$9 million annually. This investment has cultivated a vast network of talented

scientists and has led to significant advancements in the understanding and treatment of MS.

In 2012 I travelled across the country for seven **research priorities discussions** between people affected by MS, researchers, clinicians and donors. What became evident from these conversations is that accelerating the pace of research is critical to the development of therapies that will make a difference *today* in the lives of people with MS. Our new commitment to **translational research** looks to push discoveries in basic science through the necessary steps to create treatments for people with MS. Read more about this on page 6.

To ensure that important research stories are communicated to you, our valued donors, we have **refreshed the MS Research Updates** publication to create what is now *MS Research*. This new approach will deliver exciting updates on MS research, stories from the MS research community and profiles on world-leading MS researchers such as **Dr. Shannon Dunn**, featured in this issue.

With your support, we are creating more opportunities to ultimately find a cure for the 100,000 Canadians affected by MS. Thank you for your commitment to MS research and care.

For more stories on MS research, visit my blog at DrKarenLee.ca or follow me on Twitter [@Dr_KarenLee](https://twitter.com/Dr_KarenLee)

Sincerely,

Dr. Karen Lee, vice-president, research



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Studying MS risk factors

Dr. Shannon Dunn



“ I witnessed my mom’s journey with MS since I was two years old. She was very sick, and my family visited her in the hospital every day. ”

Dr. Shannon Dunn’s relationship with multiple sclerosis began as a personal one—her mother lived with a severe form of relapsing-remitting MS. “I witnessed my mom’s journey with MS since I was two years old. She was very sick, and my family visited her in the hospital every day. MS was such a dominating part of my life that, at first, I did not want to study it.”

Initially a kinesiology student, Dr. Dunn realized upon completion of her PhD that she was not as interested in skeletal muscles as she had thought. It was then she decided to face multiple sclerosis and pursue what turned out to be her true passion. She started by landing a position as a postdoctoral fellow in an MS lab

at Stanford University, where she worked for seven years.

Now an established MS researcher leading her own group of young scientists at the University Health Network in Toronto, Dr. Dunn’s research focuses on how **lifestyle factors such as gender and diet influence the development and progression of autoimmunity**. More specifically, she observes the activity of molecules in the body that play a role in MS, which also happen to be regulated by hormones and obesity.

“There is a lot of important information out there on risk factors for MS, but no one really knows the mechanisms by which these factors affect the development of the disease,”



Dr. Shannon Dunn leads a team of passionate young graduate students at the University Health Network in Toronto.

Dr. Dunn says, “These risk factors can potentially be modified to prevent disease. This is especially important in Canada, where the risk of MS is high.”

Available treatments for MS only modify the disease after it has developed, slowing progression but not halting MS altogether. Through her research, Dr. Dunn hopes to identify what causes MS so that she can detect early

signs of the disease before it progresses, and eventually help stop MS before symptoms begin.

Dr. Dunn says, “If you can identify who is at risk for MS, you may be able to stop it in its tracks—which is really the ultimate goal.”

Dr. Dunn is the recipient of an MS Society operating grant and the Dr. Donald Paty Career Development Award. To learn more about the research we fund, visit mssociety.ca/research

**“ Without grants, we can’t do research.
The money doesn’t come from anywhere else.”
– Dr. Shannon Dunn**

Award feature: Dr. Donald Paty Career Development Award

Named in honour of a pioneering Canadian MS researcher, the Dr. Donald Paty Career Development Award supports the salaries of young faculty members who conduct research in MS. The award ensures that Dr. Shannon Dunn will continue to work in Canada and collaborate with other Canadian MS researchers.

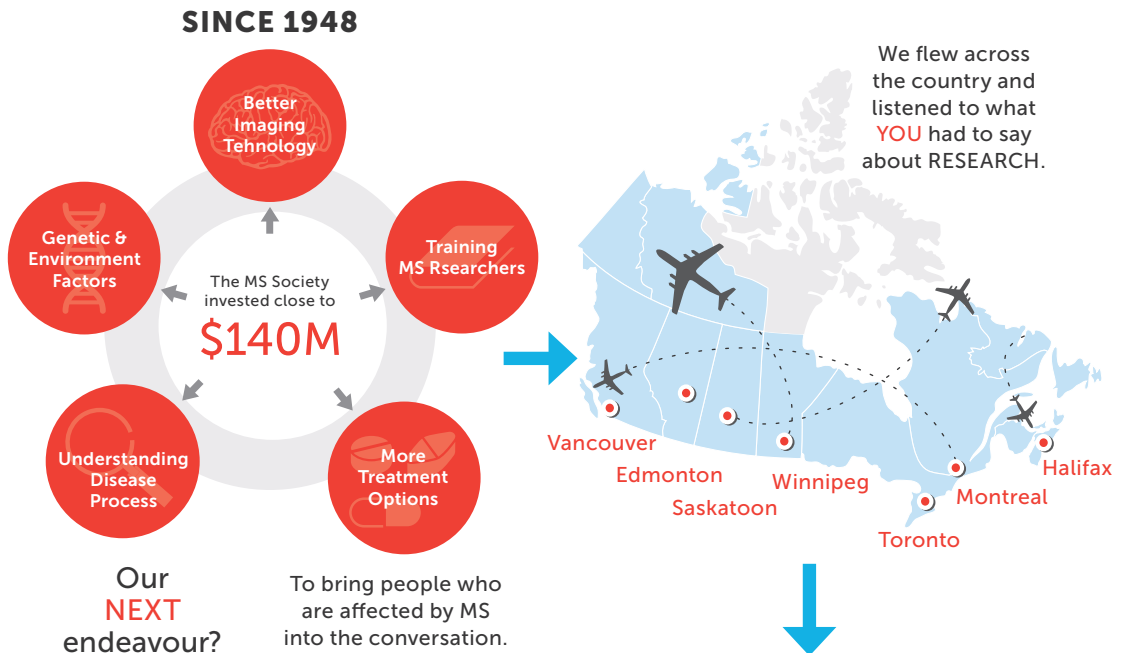
Researchers’ positions are evaluated by their institutions on a yearly basis—grants and awards allow researchers like Dr. Dunn to operate in a competitive job market and continue doing groundbreaking work year after year.

[➤ See back page to find out more about the MS Society’s Named Awards program.](#)

Reshaping the research agenda

People affected by MS and researchers collaborate to define the future of MS research

Since 1948 the MS Society of Canada has contributed \$140 million towards research in multiple sclerosis. This investment has enabled Canada to become a world leader in the field of MS research. Still, significant questions remain unanswered about the cause, prevention and cure of MS. To help us map out research priorities for the next 10 years, we brought together people affected by MS and the research community to discuss important issues in MS research. From these conversations, identified research priorities will help shape the MS research program going forward.

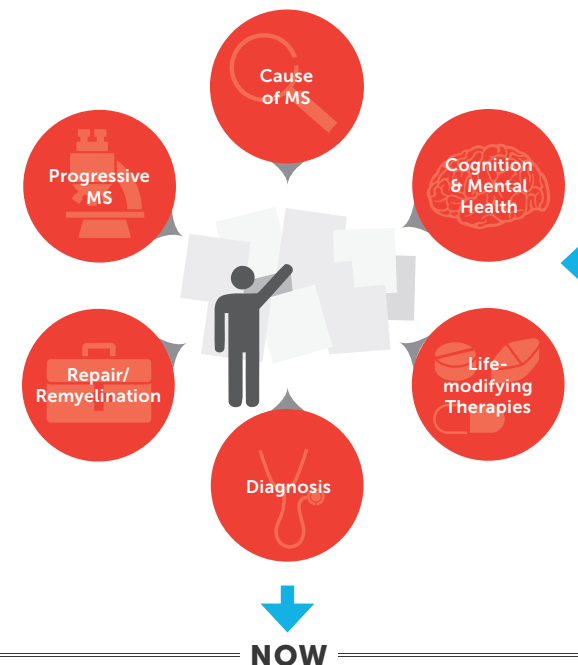


7 Regions | **200** Participants

IDENTIFYING RESEARCH PRIORITIES

Each person shared their view on MS research and identified areas of top priority for the future.

WE ASKED
"What does MS research mean to you?"



Accelerating the pace of research is just as critical to the hope of people living with MS as the research itself.

Faster Paths for MS Research

Translational research

During the research priorities discussions, we heard loud and clear that accelerating the pace of research is just as important as research itself—so that answers about MS may be provided today.

For decades the MS Society of Canada has funded basic science, which has generated many important insights about the nature of MS. With these building blocks in place, we are accelerating the translation of these critical research findings into effective therapies and ultimately a cure for MS.

What is translational research?

We often celebrate scientific breakthroughs that further our understanding of disease and set the stage for the development of better treatments. These breakthroughs are a result of “basic science”, a term that refers to experiments that reveal biological processes in the body. Many of these discoveries have the potential to become treatments for diseases like MS—but they sometimes do not move outside the laboratory for various reasons, such as lack of funding and resources.

While basic science produces the correct ingredients for treatments, translational research is the recipe that generates therapies and proves they can work (i.e., clinical development).

How can translational research benefit people with MS?

The MS Society continues to invest in basic science, but we recognize that research needs to be taken a step further to ensure that treatments are being developed for people with all types of MS.

Translational research opens doors for advanced scientific innovation that would otherwise be turned away due to lack of resources. A commitment to translational research transforms questions and doubts about multiple sclerosis into **tangible benefits that impact a person’s life.**

The MS Society of Canada is establishing a fund with the Centre for Drug Research and Development (CDRD), a not-for-profit drug development centre based in Vancouver, British Columbia. With state-of-the-art scientific facilities and project management expertise, the CDRD has the means to take promising research discoveries in MS and develop them into therapies that will improve the lives of people affected by the disease.

The Research Continuum



Snapshot of MS research

2013 highlights

Research gives hope—hope that people living with MS will get the answers they need, and hope that one day we will end MS. The MS Society supports many promising avenues of research, such as nerve repair, cause, symptom management, progression and therapies. For more details on these and other MS Society funded studies, visit mssociety.ca/msupdates

Nerve
damage &
repair

Study yields new information on remyelination

This study led by **Dr. Jack Antel** from McGill University demonstrates that younger oligodendrocytes—called oligodendrocyte precursor cells (OPCs)—are critical to myelin repair following an MS relapse. Researchers propose that damage to OPCs contributes to limited remyelination in MS, resulting in disease progression. If further research confirms these findings, there is strong potential for the development of MS therapies to stimulate activity of OPCs with the goal of boosting remyelination. Discoveries in this area may lead to treatments that can reverse the damage caused by MS.

Symptom
management

Canadian researchers develop guidelines that will help boost physical activity in adults with MS

The MS Society played an important role in the development of the Canadian Physical Activity Guidelines for Adults with MS. The evidence-based guidelines were generated by a research team led by **Dr. Amy Latimer-Cheung** of Queen's University and **Dr. Kathleen Martin Ginis** of McMaster University. The guidelines illustrate how adults with MS can include safe and effective physical activity into their daily routine for improved fitness and quality of life.

Nerve
damage &
repair

New insights that may prevent or reverse nerve damage in MS

Two studies led by postdoctoral students **Ryan O'Meara** and **John-Paul Michalski** at the Ottawa Hospital Research Institute and **Dr. Veronique Miron** at the Medical Research Council Centre for Regenerative Medicine at the University of Edinburgh reveal new proteins and cells that, when targeted therapeutically, could enhance myelin regeneration following an MS attack. New therapies developed from this work may slow down or halt progression of disability, ultimately preventing conversion from relapsing-remitting to progressive MS.

Progression
& therapies

Research group identifies antipsychotic drug as potential therapy for progressive MS

Dr. Simon Zhornitsky and colleagues from the University of Calgary published a review in the journal *CNS Neuroscience & Therapeutics* on an antipsychotic drug that has the potential to treat progressive MS. The drug, quetiapine fumarate, has previously shown benefits in conditions such as mood disorders, pain and anxiety. Growing evidence shows that quetiapine fumarate also has remyelinating and nerve-protecting capabilities in mice with MS-like disease, making it an attractive candidate for progressive MS treatment. The MS Society is currently funding Dr. Zhornitsky's work in trying to further understand the mechanism of the drug in MS.

Named Awards

Supporting the next generation of MS researchers

We are grateful to our donors for supporting the next generation of MS researchers through our Named Awards program. We are pleased to highlight the recipients of the 2013/2014 Named Awards, and we would like to extend a special thank you to those donors who made them possible.

Award	Recipient(s)
Alistair Fraser MS Society of Canada MSc Studentship	Kyla McKay, <i>University of British Columbia</i>
Asad Wali MS Society of Canada Postdoctoral Fellowship	Chao Wang, <i>Brigham and Women's Hospital</i>
Brandt Group of Companies MS Society of Canada PhD Studentship	Karissa Lee Canning, <i>York University</i> Magdalena Lysenko, <i>York University</i> Lindsay Petley-Ragan, <i>University of British Columbia</i>
Donna Joan Oxford MS Society of Canada Postdoctoral Fellowship	Jason Plemel, <i>University of Calgary</i>
Dr. William J. McIlroy MS Society of Canada PhD Studentship	Jenea Maria Bin, <i>McGill University</i>
Jordan Pickell MS Society of Canada Postdoctoral Fellowship	Hilda De Jong, <i>University of British Columbia</i>
National Bank Financial Group MS Society of Canada PhD Studentship	Mohammad Karim, <i>University of British Columbia</i>
Sherritt International Corporation MS Society of Canada PhD Studentship	Nabeela Nathoo, <i>University of Calgary</i>
The Co-operators MS Society of Canada PhD Studentship	Fei Zhao, <i>University of Toronto</i>
Waugh Family MS Society of Canada PhD Studentship	Omar de Faria, <i>McGill University</i> Curtis Benson, <i>University of Alberta</i> Michael Keough, <i>University of Calgary</i> Alexandre Paré, <i>Université Laval</i> Liam E. Potter, <i>University of Alberta</i> Khalil Sherali Rawji, <i>University of Calgary</i> Hanane Touil, <i>Montréal Neurological Institute and Hospital</i> Megan Whaley, <i>University of Calgary</i>

To find out how you can support the next generation of MS researchers through the MS Society's Named Awards program, please contact Corinne Shannon at corinne.shannon@mssociety.ca or 1-866-922-6065x3019.