

# MS<sup>®</sup> PROGRESS Report

## MS Society of Canada-funded study yields “a second chance at life.”

On her wedding day, Jennifer Molson walked down the aisle on her father’s arm and danced with her husband. Today, she lives a typical life, working full time and skiing on weekends.

What makes it noteworthy is that Jennifer was diagnosed with an aggressive form of MS at the age of 21, which left her unable to walk or work, and living in assisted care.

Then, she underwent an innovative procedure called immunoablation and autologous hematopoietic stem cell transplantation (IAHSCT). It uses a combination of chemotherapy and bone marrow transplantation (BMT), and gave Jennifer what she calls “a second chance at life.”

Commonly used to treat blood cancers, this procedure was studied as a treatment for MS for the first time in Canada by lead researchers, Dr. Harold Atkins and Dr. Mark S. Freedman of the Ottawa Hospital Research Institute. The Multiple Sclerosis Society of Canada and its affiliated Multiple Sclerosis Scientific Research Foundation (MSSRF) began funding their work in 2000, and has also supported additional follow up studies.

The latest results were published this past June in the prestigious medical journal *The Lancet*.

### Promising result

IAHSCT was done in 24 people with aggressive, highly



“A second chance at life.” IAHSCT trial participant Jennifer Molson.

inflammatory relapsing-remitting MS beginning in 2000. Of the patients who finished the trial, 70% had the progression of their MS completely halted. No new relapses or brain lesions were observed in 23 participants during the entire follow-up period. And 40% experienced a lasting reversal of symptoms.

### Significant risks

However, the use of a potent chemotherapy regimen in IAHSCT means that the treatment comes with serious risks. One participant died during the trial while another

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### The wonder of stem cells: How it works

In people living with MS, their body’s own immune system attacks the myelin sheath surrounding nerve cells, causing damage associated with many MS symptoms. IAHSCT uses chemotherapy to strip away the disease-causing immune system, followed by the introduction of stem cells to generate a new immune system that will function correctly. Drs. Atkins and Freedman used “autologous” hematopoietic stem cells in the trial, meaning they are derived from the patients themselves and are stem cells which give rise to cells of the blood and immune systems.



## A Message from the President

Yves Savoie

Welcome to the latest edition of Progress Report. It brings you up to date on major additions to our knowledge and treatment of MS.

The main article on IAHSCT describes an important milestone in stem cell therapy to treat MS. Additional research in this area is ongoing.

During this important time for MS research, the MS Society of Canada continues to fund both basic science and clinical studies. We recently announced nearly \$5.8 million in operating grants and student awards. And we continue to invest in ongoing projects with the Centre for Drug Research and Development, the Progressive MS Alliance and other promising programs.

As always, our ultimate goal is to end MS, while also working to improve quality of life for those living with this unpredictable disease.

Canada has the highest rate of MS in the world, so we are extremely proud that so much important research is conducted right here.

I hope you too are proud of the findings in this edition of Progress Report. I believe that we are achieving important breakthroughs in both the science and the treatment of MS. Your support helped make these accomplishments possible. I want to thank you for your support of the MS Society of Canada, and look forward to the day when we can finally report that we have discovered a cure for MS.

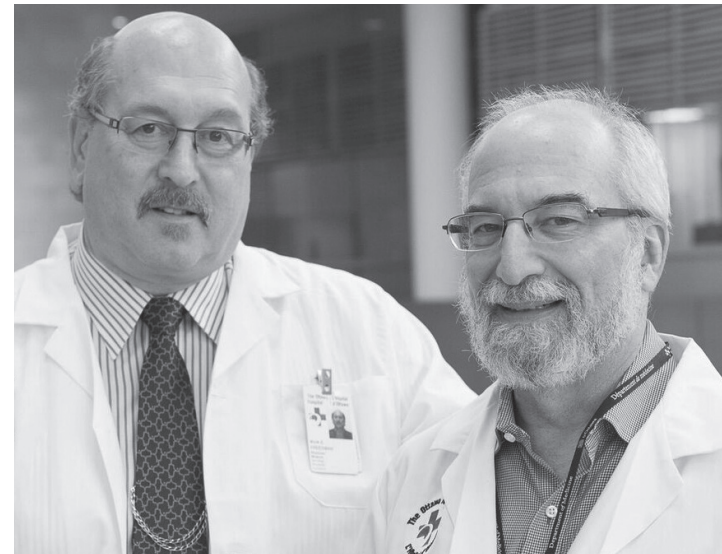
Warm regards,

Yves Savoie  
President and Chief Executive Officer  
Multiple Sclerosis Society of Canada

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became severely ill, both from the toxic effects of the chemotherapy. This degree of risk means that the procedure is only suitable for those living with aggressive, highly inflammatory MS. However, the results also pave the way for ongoing MS research involving stem cells.

## Other stem cell treatments being studied



*Dr. Mark S. Freedman and Dr. Harry Atkins have been studying stem cell treatments for MS for many years.*

Dr. Freedman is a true pioneer in the use of stem cells to treat MS. He is also co-leading another MS Society of Canada and MSSRF-funded stem cell clinical trial called MESCAMS (MEsenchymal Stem cell therapy for CANadian MS patients) along with Dr. James Marriott from the University of Manitoba. The study is examining a different kind of stem cell that has the potential to dampen harmful inflammation and repair damaged myelin.

The researchers anticipate that the procedure will carry a lower risk to participants since no chemotherapy is required.

More study is required, but for now, these procedures and recent results offer strong evidence that stem cells may have an important role to play in the future treatment of MS.

## Emerging knowledge: Comorbidity and MS

Many people living with MS are affected by other serious health issues. The simultaneous presence of two chronic diseases is called “comorbidity,” and it often creates additional challenges for the study and treatment of MS. Examples of comorbidities for people living with MS include heart conditions, depression and anxiety, diabetes, cancer and other autoimmune diseases.

Research indicates that treating these secondary ailments may impact the severity and progression of MS, and may even “improve the overall lifespan of survival of people living with MS,” according to leading MS Society-funded researcher and MS neurologist Dr. Ruth Ann Marrie of the University of Manitoba.

In March of 2015, Dr. Marrie led a comorbidities workshop in Toronto, Ontario that brought together experts from around the world. They discussed ways to better account for comorbidities in clinical trials, in order to improve our understanding of whether MS treatments are effective in those who are affected by other conditions. Ultimately they established a series of recommendations that will make trials more inclusive of people with comorbidities and lead to improved MS treatment and long-term monitoring.

In a separate study, Dr. Marrie surveyed nearly 1,000 adults living with MS in Alberta, British Columbia, Manitoba and Nova Scotia. She found that disability, depression, anxiety, fatigue and physical comorbidity were either directly or indirectly lowering the health-related quality of life for this population.



Dr. Marrie’s research demonstrates a greater need to consider how comorbidities can impact the overall health, wellbeing and treatment of people living with MS.

*Dr. Ruth Ann Marrie is studying comorbidity and MS, which affects a large percentage of the MS community*

**RESEARCH SPOTLIGHT:**

**Dr. Nadine Akbar**

Identifying and nurturing the ideas of young, talented researchers can lead to new thinking and novel ideas. That is why we are proud to support the work of Dr. Nadine Akbar.

Dr. Akbar received funding from the MS Society of Canada for her Master’s and Doctoral research, and also participated in the MS Society’s trainee programs. Now, for her Postdoctoral Fellowship, she will study strength training and fatigue in people living with MS, a group of people she enjoys working with. “Their enthusiasm is inspirational,” she says.

Research already suggests that exercise can reduce fatigue for people living with MS. Dr. Akbar believes her study will “allow us to determine more precisely how exercise exerts a positive effect and who may benefit most.”

## Physical Activity and MS

Recent studies show that the following activities often improve quality of life (both physical and cognitive) for people living with MS:



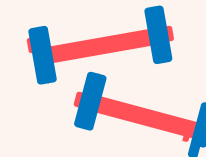
Walking and Running



Cycling



Aquatic Training



Strength Training



Yoga



# MS Society of Canada announces Operating Grants

This year, the MS Society of Canada has awarded \$4.5 million in operating grants to support 14 new research projects, including:

## B Cells and the Microbiome

B cells are white blood cells that may play a role in MS. Evidence suggests that a specific type of B cell may be influenced by the gut microbiome (bacteria in our intestines). This MS Society of Canada-funded study led by Dr. Jennifer Gommerman at the University of Toronto will investigate the roles of B cells and the gut microbiome, and look for a causal connection between the gut microbiome and inflammation associated with MS.

## Adderall and Cognition in MS

MS can affect a person's processing speed or PS, which can cause impairments in thinking and memory. Attention deficit (hyperactivity) disorder also affects PS, and is often treated with a medication called Adderall. Headed by Dr. Sarah Morrow at the London Health Sciences Centre, a new study funded by the Ms Society of Canada will determine if Adderall improves cognition as well as fatigue, mood changes and quality of life for people living with MS.

## Body Mass Index and MS

Researchers are trying to determine which environmental and lifestyle factors increase risk for developing MS. Observational studies linking certain factors like smoking, vitamin D, body mass index (BMI), and infection often have



## Research continues to expand the options for treatment of MS

limitations and cannot infer a causal relationship with MS. With a grant from the MS Society of Canada, Dr. Brent Richards from McGill University will use a power genetic technique that will help to determine with high certainty if obesity and infection with Epstein-Barr virus increase risk for MS and progression of the disease. Knowledge generated from this research will improve the management of MS through modification of these factors, and help identify high-risk individuals.

## YOUR MONTHLY GIFT HELPS SUPPORT ONGOING RESEARCH

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