In the Prairies
MAKING AN IMPACT
STEM CELL INNOVATION

Stem cell science is strong across Western Canada, thanks in part to the Stem Cell Network's (SCN) support. Since SCN came into being, $8.3M in funding has been allocated to 43 projects in two prairie provinces, including over $1.2M in 2016–18. Alberta and Saskatchewan are home to prominent legal scholars who are leading an international discussion about policy, legal, and ethical issues relevant to stem cell research. Alberta is also hosting one of two innovative clinical trials on type 1 diabetes.

Stem Cell Network Research in Alberta and Saskatchewan 2016–18

- **SCN in The Prairies: By the Numbers 2016–2018**
  - 26 Trainees
  - 7 Labs
  - 16 Investigators
  - 6 Funded Projects

- **$1.2M**
  - 6 High-potential Research Projects Funded

- **$3.1M**
  - Partner Support

- **$8.3M invested (2001–2018)**

- **6**
  - Type 1 Diabetes
  - Engineered Micro-Tissues
  - Policy and Marketing of Stem Cells\(^1\)
  - Other (graft versus host disease)\(^1\)

\(^1\)Research project active and funded in more than one province
\(^1\)In 2016–2018, SCN funded 25 research projects and 6 clinical trials nationwide

**DYK?**

40% of principal investigators (PIs) and co-investigators for Alberta and Saskatchewan projects are women.
Disrupting the Field: James Shapiro

People living with type 1 diabetes do not produce sufficient insulin, a hormone that helps our bodies turn food into energy by regulating the sugars we consume. Those with type 1 diabetes are at risk of kidney failure, blindness, coma and other complications when their blood sugar levels become too high or low.

At the University of Alberta, Dr. James Shapiro and his colleagues are striving to help people do away with these health risks — by eliminating their dependence on self-injected insulin and sparing them from constantly measuring their blood sugar. His clinical trial is doing this with the help of an ingenious implant created by ViaCyte, a regenerative medicine biotech firm. The therapy involves surgically implanting the ViaCyte packets, which are “tea bag” like devices, under the skin. Once implanted, the pancreatic cells contained in the packet are expected to mature into functional, insulin-producing islet cells that are absorbed into the bloodstream.

In a valuable clinical trial that began in 2017, Dr. Shapiro implanted the device in a small number of type 1 diabetes patients, who are being monitored to ensure the technology is both safe and effective. Positive results from this study will lead to a larger clinical trial in the near future. SCN is proud to have contributed $500,000 to this remarkable research.

“IT IS AN EXCITING TIME FOR DIABETES RESEARCH, AS WE ARE USING STEM CELL-BASED TECHNOLOGIES TO DELIVER PROMISING THERAPIES TO THOSE WHO ARE LIVING WITH TYPE 1 DIABETES. WE COULD NOT HAVE MOVED FORWARD WITH THIS CLINICAL TRIAL IF IT WERE NOT FOR THE CONSIDERABLE SUPPORT PROVIDED BY THE STEM CELL NETWORK.”

DYK?

Type 1 diabetes affects more than 300,000 people in Canada, with most developing the disease in childhood or in teenage years. The life expectancy for people with type 1 diabetes may be shortened by as many as 15 years.
Disrupting the Field: Ubaka Ogbogu & Amy Zarzeczny

Getting stem cell therapies to those who need them depends on policy as well as science. But policy takes both time and evidence in the dynamic field of stem cell research, where recent discoveries are changing health care. The Assisted Human Reproduction Act, a federal law that governs stem cell research in the lab and clinic, is expected to be updated in the coming years. Two legal scholars in Western Canada, Assistant Professor Ubaka Ogbogu (University of Alberta) and Professor Amy Zarzeczny (University of Regina), are contributing to that policy discussion through their research activities. Together they are focused on understanding what is needed to provide safe, effective and ethical policies on stem cell technologies.

“As a researcher exploring legal, ethical and policy issues associated with stem cell research, I believe Canada is well placed to demonstrate global leadership through informed, responsive policy development in this field.”

— Professor Amy Zarzeczny

Professor Ogbogu is one of a handful of legal scholars spearheading a much-needed national and international conversation about urgent issues in stem cell research — issues such as those surrounding embryo-based research and new technologies in the field. Equally dedicated to promoting scientific and clinical progress within an ethical framework, Professor Zarzeczny is focused on issues surrounding unproven stem cell therapies and stem cell tourism, thanks in part to SCN’s support. Both Professors are developing the evidence and insight needed by Canada’s policy-makers to ensure the evolving science is at the forefront.
There is enormous potential for stem cell therapies to treat chronic diseases and debilitating illnesses such as:

- Parkinson's disease
- Kidney disease
- Leukemia and other cancers
- Diabetes
- Crohn's disease
- Septic shock
- Respiratory diseases
- Heart disease
- Muscular dystrophy
- Multiple sclerosis
- Brain injury
- ALS
- Retinal degeneration

The Stem Cell Network is Canada's stem cell research organization. It is committed to working with researchers from coast to coast to get new therapies and medicines to market and to those who need them most.

**SCN’s 2016–18 Partners based in the Prairies**

- Alberta Innovates — Collaborative Research & Innovation Opportunities
- JDRF CCTN Clinical Trials
- University of Alberta
- University of Regina

SCN engages 28 partners to provide important support for stem cell research in the Prairies. Partnerships are critical for ensuring high-potential research is funded appropriately. Investigators in the Prairies have leveraged over $3.1M in partner contributions on the $1.2M provided by SCN. This investment will see new therapies move more rapidly towards the clinic in the coming years.

**Regenerative Medicine Companies across Canada**

Canada is home to a thriving regenerative medicine (RM) commercial sector — there are approximately 44 active RM biotech companies nationally, providing 2,000+ high-quality jobs. Some of these companies grew out of leading-edge scientific work conducted by Canada's academic researchers, and many are valuable SCN partners.