STEM CELL NETWORK

Tomorrow's health is here.

ACCELERATE

STRATEGIC PLAN 2019–2022

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Vision

To capitalize upon Canada's competitive advantage in stem cell research for the benefit of Canadians.

Mandate

SCN is a national not-for-profit corporation dedicated to enabling the translation of stem cell research into clinical applications, commercial products and public policy.

Values

The Stem Cell Network (SCN) was founded on a core set of organizational values that have shaped the way SCN has conducted itself over the past 18 years. The SCN community shares these common values and works to ensure they are expressed in all that it does:

- Requiring research excellence, integrity and a commitment to ethical practice;
- Fostering collaboration;
- Fostering equity, diversity and inclusion;
- Driving innovation; and
- Supporting continual learning and improvement.

Andrew McKee

Dr. Michael Rudnicki

Cate Murray

Dear Friends:

Everywhere we look today—in online, traditional and social media, and among researchers, health practitioners, patients and their families—stem cells are a hot topic of discussion. They have become synonymous with the promise of better health.

The Stem Cell Network (SCN) believes in this promise! SCN has been a Canadian leader for nearly two decades, producing outstanding scientific contributions that have not only been invaluable to our understanding of stem cells but have also led to novel therapies for the treatment of disease, illness and wounds.

Experience tells us the promise of regenerative medicine will only be realized through scientific excellence. SCN has achieved excellence by focusing on the strength of its national community of experts—researchers, clinicians and trainees, along with industry, policy and patient leaders—who have enabled Canada's competitive advantage in the field of regenerative medicine.

We at SCN are honoured to support and represent this community. With a recent (March 2019) investment in the network by the Government of Canada, SCN will continue to do so, building upon its foundation of discovery to accelerate the clinical translation of stem cell therapies for those who live with chronic disease and illness. That's why we have named our new strategic plan *ACCELERATE*.

It's an ambitious research, training, knowledge mobilization and end-user engagement plan that can only be achieved with the support of partners. Over the next three years, the network will develop robust partnerships that will generate greater momentum within Canada's stem cell research field and catalyze greater investment and collaboration across the country.

There is much to be proud of, and there is a promising future waiting to be realized. We look forward to leading Canadian stem cell research into this exciting next phase.

Sincerely,

Andrew McKee
Chair, Board of Directors

Dr. Michael Rudnicki, O.C.
Scientific Director & CEO

Cate Murray
Executive Director & COO

Executive Summary

Thanks in large part to 18 years of Stem Cell Network (SCN) support, Canadian researchers are on the cusp of important breakthroughs for a wide range of diseases associated with high morbidity and/or mortality—from type 1 diabetes to cancer to multiple sclerosis and more.

ACCELERATE provides the resources needed to drive translational stem cell research forward in Canada over the next three years, and is supported by a $18 million investment from the federal government. This strategic plan was informed by cross-country consultations, bilateral discussions, expectations of government, and a call for letters of intent (LOI) conducted in spring 2018. This call resulted in more than 100 submissions that prioritized key areas of research activity. The plan addresses three major program themes: research, training, and knowledge mobilization and outreach.

Research

Over the next three years SCN will be running two distinct funding competitions based on four translational research programs that will see $12 million invested into the stem cell field. Each program promotes collaboration, innovation and multidisciplinary science, and will drive translational research while integrating the ethical, legal and social (ELSI) questions that must be addressed when harnessing new and promising technologies.

The four research funding programs are:

ADVANCING CLINICAL TRIALS:

Focusing on novel cellular or stem cell-related therapeutic approaches to tissue repair and regeneration for specific diseases.

PROGRAM VALUE UP TO $4.0M

ACCELERATING CLINICAL TRANSLATION:

Supporting multidisciplinary research projects that are moving toward the clinic within five years, as well as translational research activities (including ELSI questions) associated with clinical trials.

PROGRAM VALUE UP TO $3.5M

FUELING BIOTECHNOLOGY PARTNERSHIPS:

Supporting academic partnerships with emerging Canadian regenerative medicine biotech companies working to drive an innovative stem cell-based technology or therapy into the market/clinic.

PROGRAM VALUE UP TO $3.0M

TRANSLATION & SOCIETY:

Supporting ELSI-led research that will address issues that impede the translation of innovative stem cell research.

PROGRAM VALUE UP TO $500K

It is expected that by the end of this strategic plan SCN will have supported approximately 27 new research projects and clinical trials with up to 200 investigators and trainees from across Canada engaged in these projects.

Training

The growth of Canada's stem cell and regenerative medicine sector is dependent on a skilled workforce able to adapt and grow with the sector. SCN has been a prominent national leader in providing specialized training to the next generation of talent. In the coming years SCN will continue to work with its partners to provide new and innovative trainee opportunities that will build Canadian strength and capacity. As such, training across three research streams will be offered. The themes are:

ADVANCED SCIENTIFIC AND CORE SKILLS:

Focusing on developing essential skills for working in a wet lab through advanced scientific and "soft-skills" training.

COMMERCIALIZATION AND INDUSTRY INTEGRATION:

Developing highly skilled scientists and technologists well versed in bioengineering and process development, as well as intellectual property laws, health economics, entrepreneurship and communications.

CLINICAL TRANSLATION:

Supporting trainees and researchers in efficient clinical trial execution.

By the conclusion of this three-year plan, SCN will have provided more than 800 trainee opportunities—ensuring Canada's regenerative medicine workforce is world class and well prepared to excel in the emerging, competitive regenerative medicine marketplace.

Knowledge Mobilization & Outreach

A key part of SCN's mandate is to deliver social benefits that can be derived through knowledge mobilization and public outreach. As such, the SCN plan is engineered to: accelerate outcomes developed via the network's research portfolio, and broaden awareness of the potential impact of stem cell research in Canadian society. The three-year plan is organized around two key focus areas:

KNOWLEDGE MOBILIZATION WITHIN THE NETWORK COMMUNITY:

- Connect SCN investigators and others to discuss research trends and needs required for successful clinical translation
- Continue Till & McCulloch Meetings that facilitate knowledge exchange and networking
- Link SCN's community members with Health Canada to share perspectives on regulations and policy

KNOWLEDGE MOBILIZATION AND OUTREACH WITH PATIENT ADVOCATES AND THE CANADIAN PUBLIC:

- Collaborate with partners to understand patient and public needs and to promote better understanding of how stem cells and clinical trials work
- Leverage communications to provide public education and patient engagement initiatives
- Require SCN investigators to implement knowledge mobilization strategies

When considering knowledge mobilization at the international level SCN will work with partners from the Regenerative Medicine Alliance of Canada (RMAC) to ensure the Canadian point of view is included in the development of international standards for stem cell technologies developed through the International Standards Organization (ISO). SCN will also reach out to national networks to discuss reconvening the *International Consortium of Stem Cell Networks* as a mechanism for addressing current global issues—specifically, stem cell tourism and how to effectively communicate with the public regarding the risks of undergoing unregulated and unproven treatment.

The Bottom Line

To effectively implement this three year strategy SCN must rally its existing partners and develop new partnerships that will help to accelerate the translation of stem cell research. We anticipate that partnerships on research and training will allow SCN to match the full federal contribution of $18 million at a one-to-one ratio. We at SCN believe that *ACCELERATE* sets the stage for a future that will see innovative stem cell-based research providing not only novel approaches for health care but also generating economic and social benefits that will be invaluable for our nation's well-being and prosperity.

Introduction

Investors around the world are calling regenerative medicine one of the key technology frontiers of our time, with the global market estimated to grow to $81 billion by 2023. Leading nations such as Japan, the UK and the United States are investing heavily in novel technologies and stem cell-based trials, spurred on by the potential for cell therapies to revolutionize healthcare outcomes and provide economic benefits at a national level.

Canadian researchers are on the cusp of important breakthroughs for a wide range of diseases associated with high morbidity and/or mortality—from type 1 diabetes to cancer to multiple sclerosis and more—and the Stem Cell Network (SCN) is ideally positioned to maintain a leadership role in driving translational stem cell research forward.

The SCN approach is collaborative, multidisciplinary and based on input from Canada's stem cell community, one that is comprised of world leading researchers, policy and regulatory experts, next-generation talent, industry leaders and health charities and foundations committed to improving health for all. This strategic plan was formulated via cross-country consultations, bilateral discussions and a call for letters of intent (LOI) conducted in spring 2018. This call resulted in more than 100 submissions that articulated key areas of research activity to be pursued in the coming years.

Canada's science system has evolved since 2016, with the federal government re-investing heavily in Canada's three federal funding agencies and the Canada Foundation for Innovation. Canada also boasts a new Chief Science Advisor, Dr. Mona Nemer, and benefits from the newly formed *Council on Science and Innovation*. In late 2018 the government introduced the *New Frontiers in Research Fund* and initiated the pending closure of the 30-year-old *Networks of Centres of Excellence* program.

Of note for stem cell research, in March 2019 the federal government committed to once again partner with SCN through an $18 million investment. SCN has developed a three-year strategic plan that aligns with the current funding system and allows the network to continue its strategic leadership

> "With this new strategic plan, SCN will lay a foundation that will accelerate clinical translation of regenerative medicine in Canada by providing the research community with the resources to effectively deliver therapies and technologies to the bedside."
>
> **– Dr. Michael Rudnicki, O.C.**
> **SCN's Scientific Director & CEO**

There is enormous potential for the use of stem cell therapies for treating 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

within Canada's growing stem cell and regenerative medicine sector. Over the next three years SCN will focus resources on accelerating the clinical translation of stem cell therapies and technologies.

Through 2022, this strategic plan will guide SCN in:

- Driving innovative clinical trial activity in regenerative medicine that incorporates patients' perspectives to maximize success;
- Realizing commercial value of discoveries and technology by working with emerging regenerative medicine biotech companies;
- Equipping a new generation of trainees and early career investigators to have the leading-edge skills and knowledge needed to catalyze growth of a national regenerative medicine sector;
- Working with Canada's national regulator, policy makers and regenerative medicine partners to develop a modern regulatory system that balances safety and access with scientific progress;
- Improving public knowledge about the state of stem cell research and clinical trial activity in Canada; and,
- Developing dynamic partnerships that will accelerate stem cell research in Canada.

About the Stem Cell Network

In just under two decades SCN has transformed stem cell research in Canada and established an outstanding international reputation. Today, SCN is Canada's premier research organization for stem cells and regenerative medicine.

When SCN was launched in 2001, the stem cell research community was scattered and siloed across the country. The science enterprise was in its infancy and knowledge was just starting to build. SCN's leaders knew that to be successful, partnerships and strong networks would be critical. SCN worked tirelessly to build a national research network through programs that stressed collaboration and a multidisciplinary approach for moving stem cell science forward. Since those early days the network has grown from 35 principal investigators and their teams (mostly stem cell biologists, engineers and ethical, legal and social implications [ELSI] experts) to 170 teams with 36 research institutions as members.

Today, expertise across our community is even more diverse with clinicians, bioengineers, health economists, industry and charity leaders and others joining in. SCN is an open network and any investigator may apply for network funds if they are eligible for Tri-Agency funding. To be an SCN investigator one must wish to collaborate and participate in multidisciplinary teams and be committed to training the next generation of highly qualified personnel (HQP).

During SCN's NCE period (2001–2015), the network received $83.3 million for developmental and innovative research and training. This funding was strategically targeted to scientific activity across the research pipeline. Following the NCE period (2016–2019), SCN was supported by the Government of Canada with a direct contribution. As a result, SCN was able to invest an additional $18 million into stem cell research and realized impressive partnership support of more than $30 million. Looking to the future, SCN is pleased to once again partner with the federal government and focus an investment of $18 million for 2019–2022 into accelerating the clinical translation of stem cell research.

SCN's national leadership in the regenerative medicine ecosystem has unquestionably enhanced the progress of research and the growth of the sector in Canada. No other national organization has the mandate, resources or expertise to meet the challenges of delivering novel stem cell therapies designed to treat and cure disease and illness for Canadians.

FIGURE 1: *SCN by the Numbers: 2001–2019*

SCN by the Numbers 2001–2019

$100M **for Research, Training & Outreach**

$116M **in Research Partnerships**

170 **Research Teams**

200 **Research Projects &** 19 **Clinical Trials**

115+ **Members & Partners,** 11 **Countries**

3,067 **Trainees & HQP Supported**

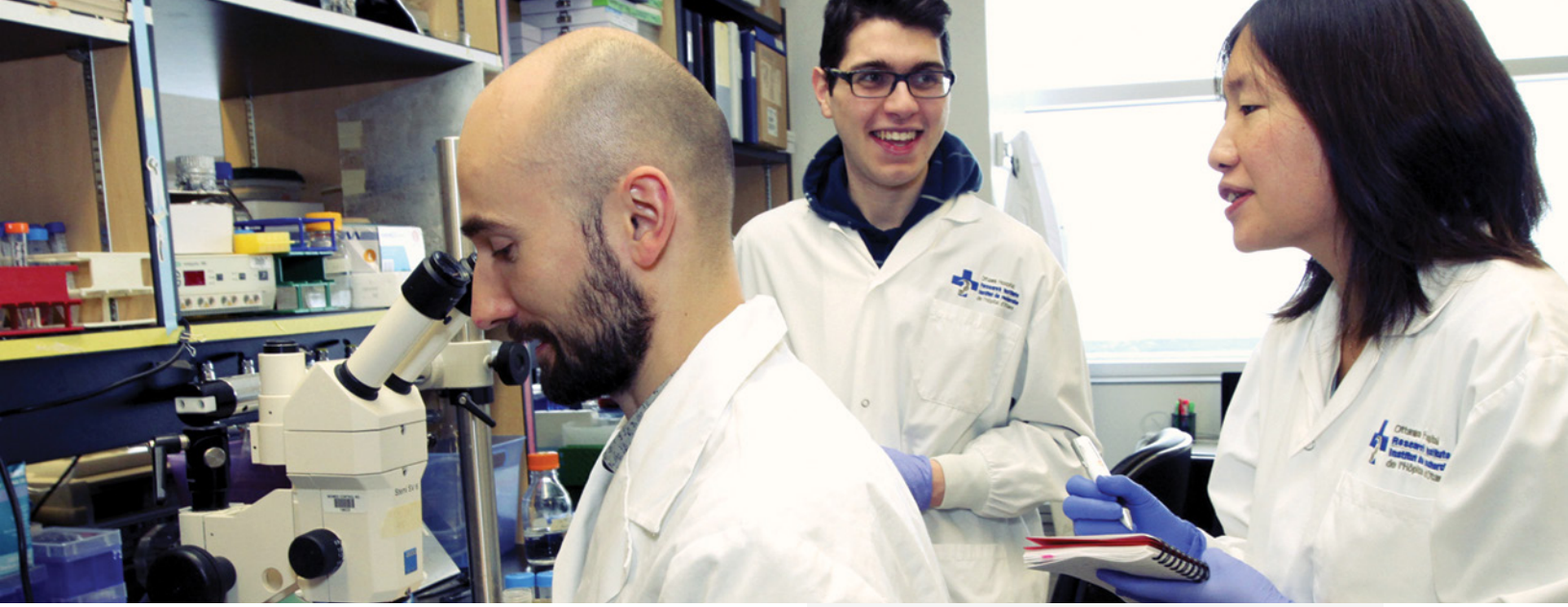
Governance

SCN is a focused, accountable and accomplished organization, with professional and management expertise capable of effectively delivering on its mandate and vision. SCN is an incorporated non-profit under Part II of the *Canada Not-for-Profit Corporations Act*. Governance of SCN is overseen by a 12-member board of directors and its supporting committees.

The board acts in accordance with the requirements laid out by the Treasury Board of Canada, applicable federal and provincial legislation and its own policies and by-laws. As a governance board, directors provide oversight for strategic planning, annual budgets, performance planning and measurement, risk mitigation and reporting. The board is also responsible for confirming the scientific funding recommendations made to it by SCN's Research Management Committee (RMC).

Membership on the board is confirmed annually by SCN's members. The majority of the network's directors are independent, with no material relationship to or direct benefit from network activities. Under this strategic plan, SCN will undertake a review of its governance practices to ensure that its activities are compliant with the *Canada Not-for-Profit Corporations Act* and will continue to adhere to best practices. SCN will also maintain efforts to refresh board membership, taking into account requirements for diversity and gender balance. In addition, directors will work with SCN management to develop a strategy for equity, diversity and inclusion (EDI) and will provide oversight for its implementation through a new EDI committee. SCN will also provide management, directors and RMC members with unconscious bias training to help reveal automatic patterns of thinking that may impede EDI practices.

> "SCN has developed a pan-Canadian collaborative spirit...which is unique on a global level and a major strength of the network."
>
> **– 2018 International Expert Panel Observation on SCN**



SCN's HQP hard at work

Research Program

SCN has fostered the growth of a multi-disciplinary community of stem cell and regenerative medicine researchers with a strong history of collaboration. This community is one of SCNs' greatest assets, enabling the development of an exciting and disruptive research program that is unlike any other in Canada. Moving forward, SCN will offer four research funding programs designed to accelerate stem cell research and technology development into the clinic and/or market (see Box 1).

SCN's research will focus on accelerating the clinical translation of research for the benefit of Canada. This will once again position SCN in an important capacity-building role and allow the network to accelerate the translation of discoveries initially funded through other federal, provincial or not-for-profit mechanisms. Over the next three years, SCN will run two distinct national funding competitions that will see at least $12 million invested in the clinical translation of stem cell research. It is expected that by the end of this strategic plan SCN will have supported 27 new research projects and clinical trials with up to 200 investigators and trainees from across Canada engaged in these projects.

To ensure efficient knowledge mobilization, all research funded by SCN is supported by a partnership model that embeds partners and/or end users in each project. This approach is critically important to facilitate uptake for research that is nearing or already in the clinic. The SCN team looks forward to applying this partnership approach to power Canada's regenerative medicine sector and the emerging set of biotech companies that are still in the early stages of development. A new offering by SCN will support an academic researcher and a biotech partner to successfully navigate the "valley of death" that often leads to intellectual property being lost or commercialized outside of Canada. In addition, SCN will also provide up to $800K to support national, multidisciplinary and partnered research that will bring forward high-impact ideas and approaches to enable innovative and transformative research that will seed subsequent translational activity in the coming decade. SCN's full suite of research programs, described in Box 1 and Box 2, provides high-level criteria relevant across all SCN research programs.

> "As an American (living in Canada) and talking to American reviewers, there is a sense of awe about what we do in Canada. Our latest project involved 15 labs across the country working together seamlessly and they ask, *'How can you get that done so readily and so easily?'* "
>
> **– Dr. David Kaplan, University of Toronto**

SCN is committed to supporting research excellence. Excellence is assessed through a rigorous peer review by national and international reviewers to ensure only the highest-quality science is supported. At the heart of SCN's research success is a collaborative team approach and continual review of research projects. Over the next three years, SCN will continue to require that funded projects are executed by dynamic, multi-disciplinary teams that are diverse and reflective of Canadian society and of all research career stages. SCN, through its RMC, will provide support to research teams by utilizing an ongoing oversight process that will track project progress and allow for research guidance to assist in achieving project success with strong translational outcomes.

A new and important component of SCN's clinical translation program will be a focus on patients. Funded clinical trials will be required to integrate the patient perspective into trial design, as well as engagement and retention strategies. Ultimately, stem cell therapies and medicines are for patients, and therefore including the patient in the research process is vital for success.

SCN has become a world leader in understanding the ethical, legal and social issues (ELSI) implications of stem cell research and regenerative medicine. The network's internationally respected ELSI community has led the way in articulating the implications of innovative research and providing necessary insights for the development of public policies relevant to stem cells. In the years to come, this work—along with research on reimbursement issues and developing health-economic tools that can guide decision-making—will be critical for the development of a robust regenerative medicine sector. Therefore, SCN will continue to empower this vital community to conduct research that will inform legislation, public policies and regulations that keep pace with scientific advancements. This is particularly important as the government proceeds with regulatory modernization and the development of pathways that will allow for the safe and efficient translation of cell and gene therapies into the clinic. Overall, SCN's new research programs are tailored to maximize health, economic and social benefits for Canadians. Investors in stem cell research, government and taxpayers expect to see benefits and value for their partnership with SCN, and the network is committed to delivering that value.

> "SCN support has been instrumental in helping our team build upon our world-first clinical trial using stem cells in the treatment of septic shock. Having this national network behind us is a key part of our plan to rollout additional Phase 2 trials across the country."
>
> **– Dr. Lauralyn McIntyre**
> **Ottawa Hospital**
> **Research Institute**

Commercialization Support: 2001–2019

21 **Regenerative Medicine Biotechs Catalyzed**

22+ **Industry Partners**

115 **Patents Issued**

94 **Licenses Signed**

BOX 1: *SCN Research Funding Programs*

1 ACCELERATING CLINICAL TRANSLATION

Supporting multidisciplinary research projects that are moving toward the clinic within five years. This program will also support translational research activities (including ELSI questions) associated with an ongoing clinical trial that will enable the trial's next phase of activity.

PROGRAM VALUE UP TO $3.5M

2 FUELING BIOTECHNOLOGY PARTNERSHIPS

Supporting academic partnerships with emerging Canadian regenerative medicine biotech companies* who are working to drive an innovative stem cell-based technology or therapy into the clinic or market, while looking to overcome the "valley of death." **

PROGRAM VALUE UP TO $3.0M

3 ADVANCING CLINICAL TRIALS

Focusing on novel cellular or stem cell-related therapeutic approaches to tissue repair and regeneration for specific diseases. The clinical trials will be led by academics working in leading Canadian research institutions and will bring forward innovative therapies or technologies of value to the Canadian health care system.

PROGRAM VALUE UP TO $4.0M

4 TRANSLATION & SOCIETY

Supporting ELSI-led research that will facilitate the translation of stem cell-based research for the benefit of society. It is expected that research projects will address issues that impede the translation of innovative stem cell research.

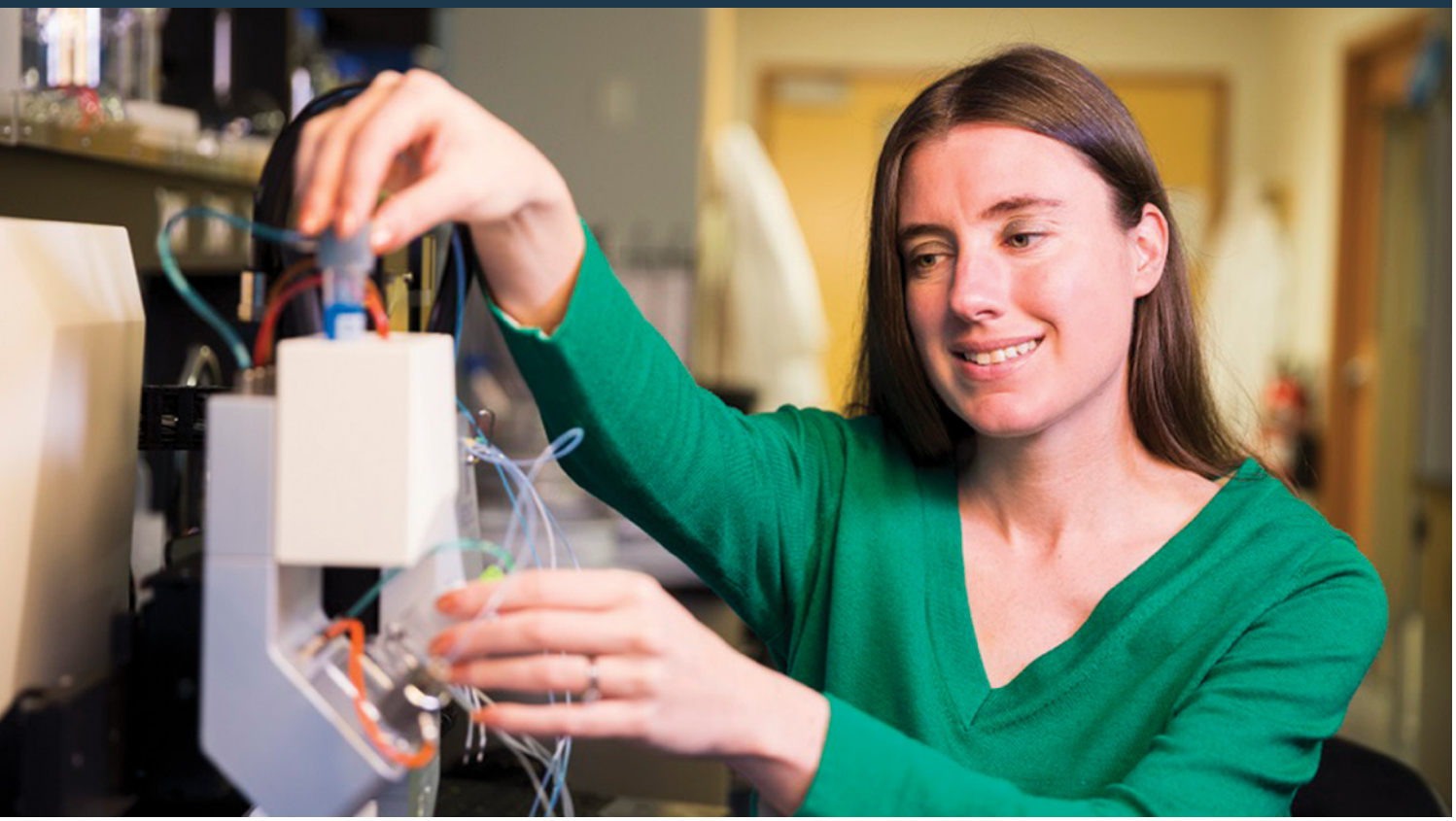
PROGRAM VALUE UP TO $500K

* A Canadian company is a commercial enterprise that is incorporated pursuant to the laws of Canada and has ongoing business activities in Canada. Eligible biotech companies have fewer than 250 employees, and are non-subsidiary, independent firms.

** Valley of Death: The gap between start-up capital and the funds needed to translate an idea into a real product. Ready for the market.

BOX 2: *High-Level Criteria for all SCN-Funded Research Projects*

- Projects must be translational and focus on a cellular or stem cell-related therapeutic approach to tissue repair and regeneration for a specific disease or illness.
- Projects relevant to cancer must be regenerative in nature and/or use stem cells for addressing the proposed problem.
- Projects must demonstrate research excellence and innovation, and be globally relevant.
- Projects must be collaborative in nature and supported by dynamic, multi-disciplinary teams that are diverse and reflective of Canadian society and of *all* research career stages.
- Projects must include partners beyond the federal government who can provide in-kind and financial support.
- Projects must include both a training and knowledge mobilization plan.
- Projects must be led by an academic based in Canada who is eligible to receive Tri-Council funding.
- Projects should include international collaborators where possible.



Dr. Stephanie Willerth, University of Victoria

Training Program

The growth and global leadership of Canada's knowledge economy hinges on access to a trained, knowledgeable workforce. The new generation of highly qualified, multidisciplinary stem cell scientists and technicians must be well versed in the art of translating science into clinical applications and commercial products. They will be the lifeblood of continued international competitiveness for regenerative medicine.

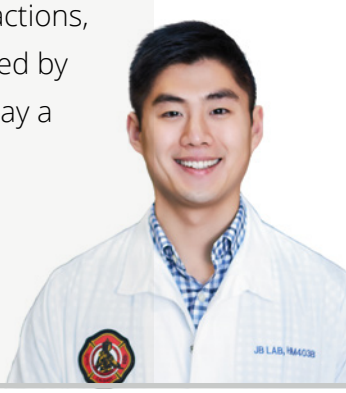
From the outset, SCN recognized the immense value of a highly skilled workforce in realizing the potential value of regenerative medicine to Canada's health and economy. SCN's mandate enabled the delivery of a robust and comprehensive training program, cutting across all areas of research and providing access to skills development across different stages of career progression.

Since 2001, SCN has provided more than 7,000 training opportunities to approximately 3,000 individual stem cell trainees across Canada. This training has been integral to launching the careers of thousands of HQP. To date, they have predominantly pursued careers in academia and industry, with a smaller contingent moving into government and other fields.

A shift is coming, however—as Canada's emerging regenerative medicine industry gathers momentum, more private-sector positions in the biotech and pharmaceutical industries will come online. Global competition for talent will be fierce. STEMCELL Technologies, Canada's largest biotech company, alone plans to triple its workforce to 3,000 employees in the coming years.

SCN will work with its partners to develop training programs that will position trainees for roles within Canada's regenerative medicine industry for successfully moving research from bench to bedside. To address this emerging need for talent, the network's new strategic training program focuses on three key areas: 1) Advanced Scientific and Core Skills; 2) Commercialization and Industry Integration; and 3) Clinical Translation.

> "My growth as a student and budding clinician-scientist is largely due to the professional interactions, networks and support provided by SCN. Canada needs SCN to stay a world-leader in regenerative medicine research."
>
> **– Wisoo Shin, MD/PhD Candidate, University of Calgary**



> As careers in Canada's emerging regenerative medicine industry come online, it is expected that SCN's HQP will enter industry jobs at an increasing rate. A recent study of 10,000 PhD graduates found that those in the life sciences are finding employment in the private sector and moving away from academia.

SCN Trainees at the 2018 Till & McCulloch Meetings

Advanced Scientific and Core Skills

- Focus on providing training in essential skills for working in a wet lab, featuring topics such as flow cytometry, lab automation techniques, RNA sequencing and gene editing of pluripotent cells
- New training in areas such as engineering synthetic cells, using AI for gene regulatory network identification, advanced computational techniques for experimental planning and statistical analysis for biology
- Advanced scientific training via workshops and conferences that allow investigators to engage with leaders from across Canada and around the world
- Provide lab exchanges and industry-based internships
- Offer workshops essential for career advancement such as project management, science communication and budgeting

Commercialization and Industry Integration

- Focus on developing the highly skilled scientists and technologists needed to work in the regenerative medicine industry, with an emphasis on specialized bioengineering and process development, as well as familiarity with intellectual property laws, health economics, entrepreneurship and science communication
- A new strategic training program for both HQP and established investigators delving into the business of regenerative medicine (including issues in intellectual property, financing, regulatory pathways, reimbursement and manufacturing)
- Support for investigators who are ready to launch a new venture to attend the Creative Destruction Lab program offered at the University of Toronto and the University of British Columbia, which supports innovators in the transition of their research to viable, high-growth companies

Clinical Translation

- Focus on supporting trainees and researchers interested in clinical translation so they understand what it takes to move a discovery through to clinical trials without adding undue time and resources to the process
- Training opportunities that address topics such as study design, manufacturing, patient recruitment, meeting regulatory requirements and assessing the health economic benefits and challenges for a potential technology or therapy
- New emphasis on when and how to begin thinking about cell manufacturing, including guidance on developing research practices required for reproducibility and the design of protocols that can be successfully transferred down the research pipeline

As the only national stem cell and regenerative medicine research network with a pan-Canadian training mandate, SCN and its partners will provide strategic support to leverage the high-quality talent that exists from coast to coast for the benefit of our country. By the conclusion of this three-year plan, SCN will have provided more than 800 trainee opportunities—ensuring Canada's regenerative medicine workforce is world class and well prepared to excel in the emerging regenerative medicine marketplace.

Dr. Bernard Thébaud, Ottawa Hospital Research Institute

Knowledge Mobilization & Outreach

SCN's knowledge mobilization and outreach plan through 2022 is engineered to accelerate outcomes developed via our research portfolio. At the same time, the network seeks to broaden awareness of the potential impact of stem cell research in Canadian society. SCN is therefore committed to conducting effective knowledge mobilization activities targeting key stakeholders, including network investigators and trainees, patient groups, public policy-makers and industry leaders. Our three-year plan is organized around two key focus areas:

Knowledge mobilization within the network community:

- Provide themed research and/or ELSI workshops that connect SCN investigators and others to discuss research trends and needs required for successful clinical translation
- Continue to support and build SCN's annual Till & McCulloch Meetings that facilitate both knowledge exchange and networking among Canada's best and brightest stem cell researchers and trainees
- Partnering with provincial and regional research networks to connect SCN investigators with business leaders, investors and IP specialists from the life sciences and biotech sectors
- Provide opportunities for the perspectives of SCN's community members to be shared with Canada's regulator, Health Canada, as they relate to regulations and policy that have an impact on stem cell therapies and technologies

Knowledge mobilization and outreach with patient advocates and the Canadian public:

- Collaborate with health charities and other partners, both in Canada and internationally, to better understand patient and public needs and to foster a better understanding of unproven treatments and how stem cells and clinical trials work

Patient advocates Jennifer Molson and Tyler Rabey at the 2018 Till & McCulloch Meetings

- Provide ongoing support for the high school outreach program *StemCellTalks* with SCN's partner Let's Talk Science
- Leverage social media and other communication vehicles to provide public education and patient engagement initiatives regarding the state of stem cell science as it relates to specific disease areas
- Require SCN investigators to implement knowledge mobilization strategies as outlined within their funding applications

Over its history, SCN has worked proactively to address critical knowledge gaps between stakeholder groups, establishing itself as a global leader in this regard. The network's future knowledge mobilization and outreach activities will re-affirm this leadership in alignment with its research, training and partnership platforms with a view to improving public knowledge about the state of stem cell research and clinical trial activity in Canada.

International Engagement & Outreach

SCN researchers are known globally for their high-quality science and their ability and desire to collaborate. Today, they work with partners around the world on projects of international relevance. Moving forward, SCN will continue to encourage international collaborations and exchanges through its research and training programs.

SCN has worked diligently to ensure that Canada's strength in stem cell science has been highly visible and well positioned to influence global research trends. This work began early on, with SCN's leadership creating the *International Consortium of Stem Cell Networks* in 2004. This consortium included members from 13 different countries, including Australia, the United States, the UK and Germany. While active it created an avenue for stem cell researchers to connect and discuss scientific advancements, funding practices and policy issues from an international perspective. Over the next three years SCN will re-convene the consortium as a mechanism for addressing current global issues—specifically, stem cell tourism and how to effectively communicate with the public regarding the risks of undergoing unregulated and unproven treatment.

SCN Online Activity

24,000+

followers on Twitter, Facebook, LinkedIn and YouTube

1,400+

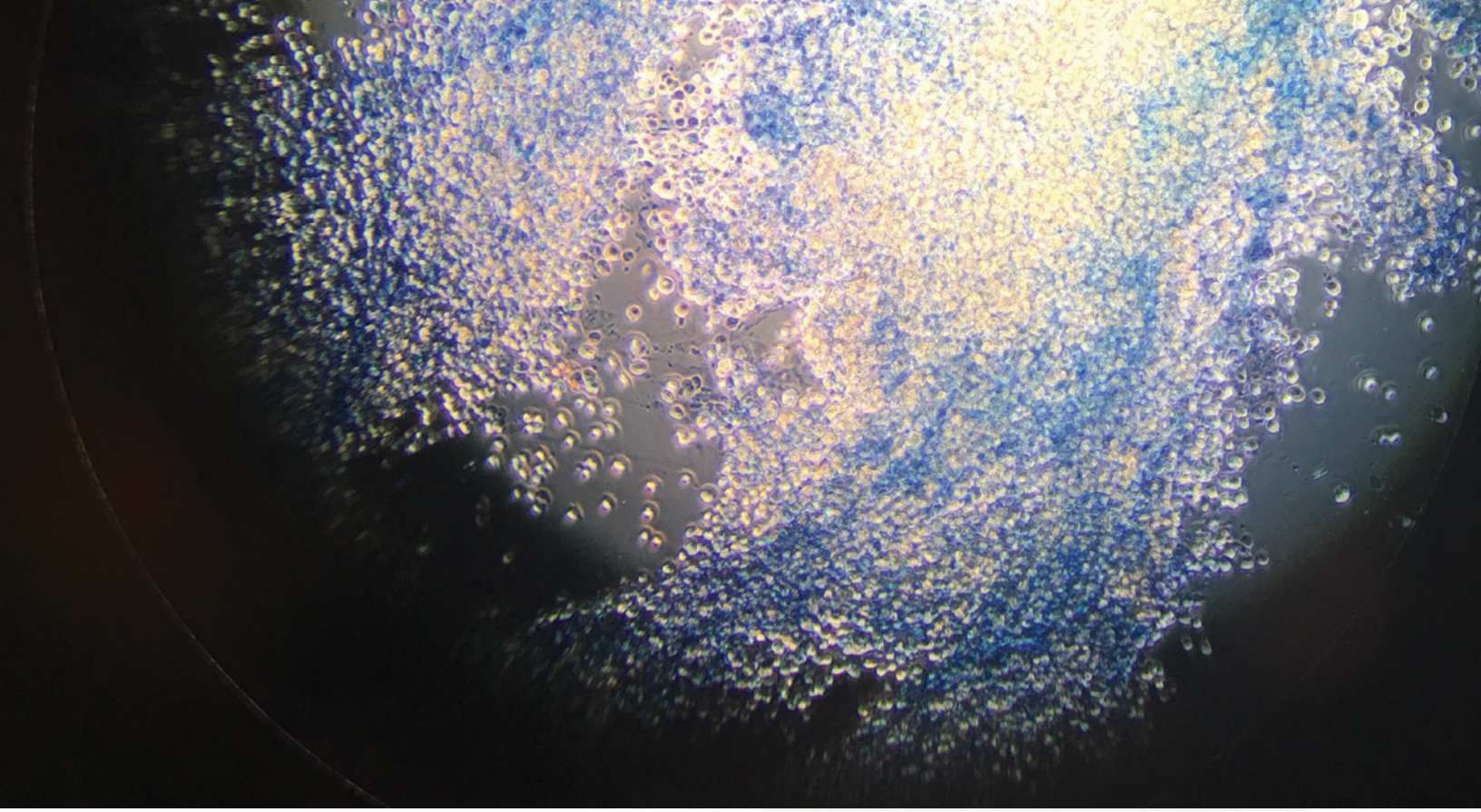
CellLines newsletter subscribers

3000+

views gained through six Twitter live interviews with a patient advocate and researchers

SPOTLIGHT ON THE TILL & MCCULLOCH MEETINGS

SCN's Till & McCulloch Meetings (TMM) were launched in 2012. TMM has now grown into Canada's premier stem cell research conference, attracting nearly 500 investigators and trainees from across Canada and around the world each year. This event—which features popular sessions such as patient talks, trainee poster and oral presentations, and outstanding achievement awards—exemplifies networking, training and knowledge exchange at its best. The format provides established Canadian investigators, HQP and international speakers the opportunity to present their work and respond to questions that inform the entire community about the state of research and leading-edge activities. Over the next three years, SCN will continue to host TMM in locations across Canada. SCN will also work with partners to introduce new initiatives that will aid in developing a culture that encourages diversity and inclusion.



A World for Stem Cells by Mary Tureez

As cell and gene therapies are entering the clinic at a growing pace worldwide, the need for international standards is well recognized. As such, SCN is providing leadership with its partners from the Regenerative Medicine Alliance of Canada (RMAC) to ensure the Canadian point of view is included in the development of international standards developed through the International Standards Organization (ISO). In December 2019, Canada will host ISO delegates representing approximately 30 different countries who will come together to develop leading-edge standards that will ultimately be adopted by national regulators. SCN's leadership through RMAC will enable these meetings to take place in Toronto, giving Canadian delegates the platform to voice Canada's preferred cell and gene therapy standards.

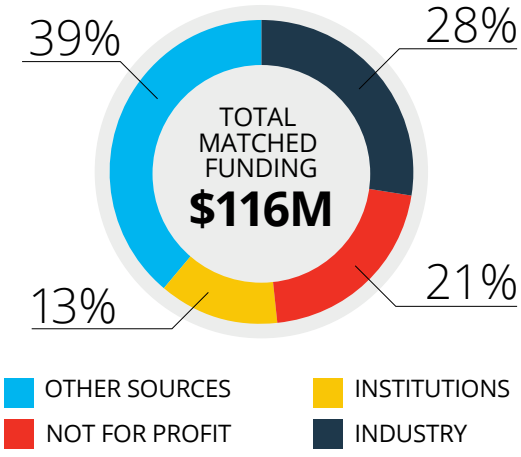
Promoting the strength of Canadian stem cell research across other scientific fields is becoming increasingly important for ensuring the success of multi-disciplinary research at the international level. As such, SCN will be working with members of its community to bring to Canada the 2020 annual meeting of the *Tissue Engineering and Regenerative Medicine International Society* (TERMIS). This meeting brings together up to 1,000 experts from across the Americas to discuss the latest trends, advances and challenges in bioengineering, regenerative medicine and stem cell biology. In another shining example of how Canadian researchers continue to lead the world, Dr. Molly Shoichet, one of SCN's bio-engineering investigators, will assume the presidency of TERMIS during this conference.

SCN researchers have published more than 1,200 articles and reviews since 2006, with roughly 240 appearing in journals with an impact factor over 10 and nearly 60 of which appearing in prestigious journals with an impact factor greater than 30.

Partner Engagement

From its inception, SCN has provided the leadership and vision to bring people and organizations together to collaborate in support of advancing stem cell research. The network has continued to surpass expectations for partnerships, with $116 million in partner funding leveraged between 2001 and 2019. This three-year plan focuses on creating greater synergies with stakeholder groups, the result of which will generate an anticipated $20 million or more in support for stem cell research.

FIGURE 2: *Partnership Breakdown 2001–2019*

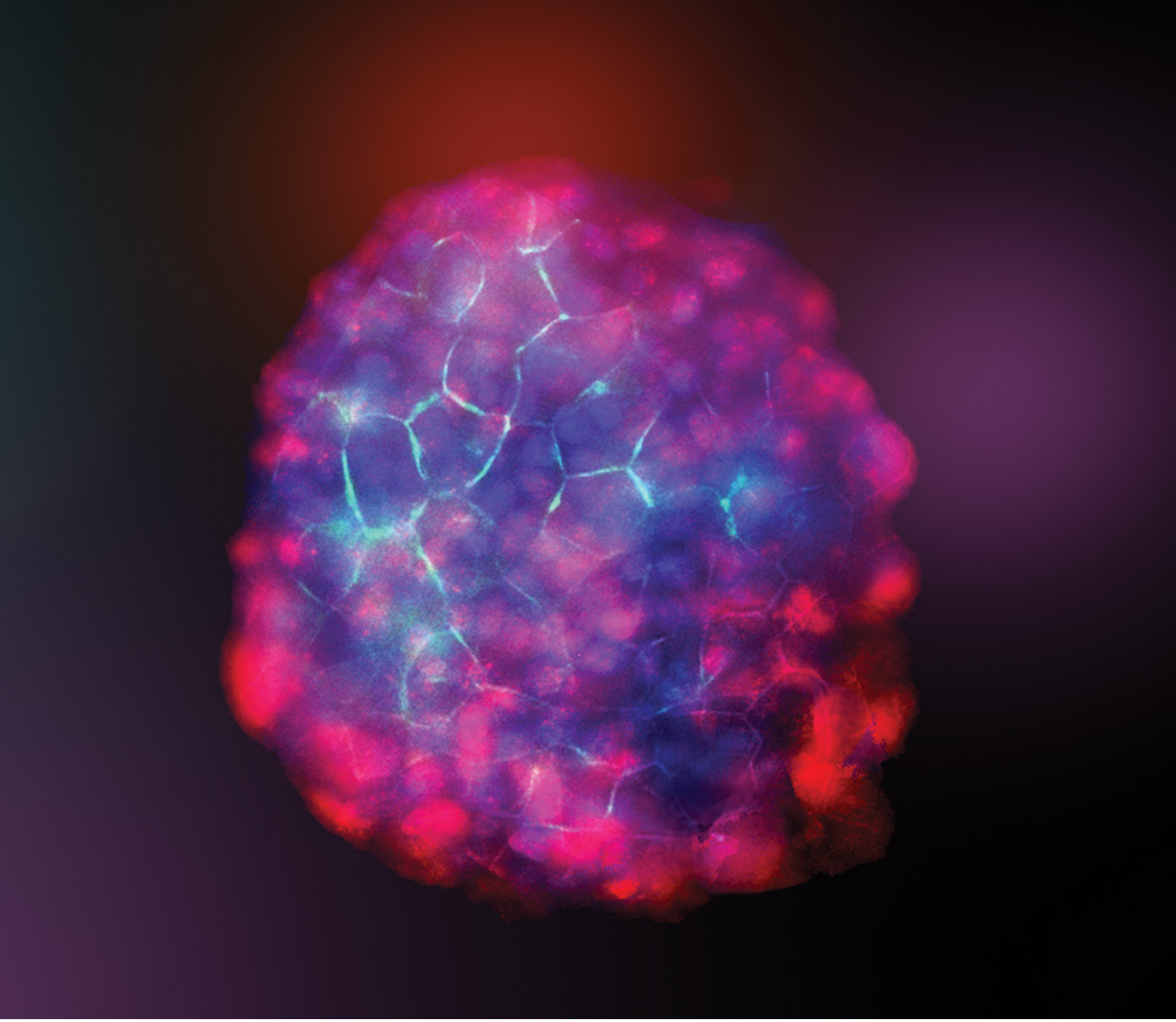


Research partnerships and networking: Over the past 18 years, SCN has had a profound impact on how stem cell research is conducted in Canada. Projects must be multidisciplinary and, for larger projects, multi-institutional. This has led to impressive networking and partnering outcomes that have driven and continue to drive research forward. For the next funding cycle, SCN will look to its principal investigators to identify key partners from industry, charities and the research sector who wish to partner and provide in-kind or financial support on specific projects. SCN management will also be proactively working to engage potential partners and make them aware of the opportunities that exist for working with the network and its investigator community.

> "ExCellThera has greatly benefitted from the leadership, research support and networking opportunities provided by the Stem Cell Network over the past decade... ExCellThera is poised to become Canada's leading cell therapy company and we are grateful to the support from the SCN in making our vision an emerging reality."
>
> **– Guy Sauvageau, Scientific founder & CEO, ExCellThera**

Industry partnerships: A recent scan conducted for SCN found that more than 40 Canadian biotech companies identify as being in the regenerative medicine field. Although these Canadian biotechs are at different stages of development, they are all important partners and receptors for SCN research. SCN's new research funding program, ***Fueling Biotechnology Partnerships***, is an opportunity for these emerging biotechs to partner with academic investigators in developing intellectual property and moving a stem cell therapy or technology closer to the clinic. It is anticipated that, over the long-term, this unique program will generate valuable partnerships that will add to the productivity and robustness of Canada's regenerative medicine sector.

Partnerships with patients: An exciting component of SCN's networking strategy is to build connections with patient groups and the charities that represent them in order to understand of the perspectives and needs of patients and inform future research activities. This will be done through outreach initiatives and by engaging patients when clinical research projects are being designed. The overall objective is to bring the patient voice into research so that all involved can benefit from an open exchange of knowledge.



Cell Core by Marie McCallum

Performance Measurement

Over the next three years, this strategic plan will serve as the driver for SCN's annual activities. These activities will be described yearly in both a corporate and annual report submitted to government. This systematic approach to planning and reporting enables SCN to function efficiently and effectively. In addition, SCN will maintain a performance measurement strategy (PMS) that will serve as a high-level framework for addressing key activities and programs that the organization has or will put in place to ensure accountability in the achievement of its objectives. As the PMS is a living document that is updated regularly, it will be maintained by SCN management and is not embedded within the strategic plan. The activities and metrics within the PMS will be designed and monitored to assist SCN in meeting the three-year and longer-term outcomes described in Table 1.

TABLE 1: *Overview: SCN Objectives and Outcomes*

Objective 1* **Support world class stem cell research and the translation of that research into applications that provide economic and social benefits for Canada**

3-YEAR OUTCOMES	LONG -TERM OUTCOMES*
Stem cell therapies and technologies being tested within a clinical setting; next generation therapies in development	Translation of stem cell research into clinical application and commercial products for the benefit of Canada

Objective 2* **Create national and international partnerships that bring together key individuals and organizations in the stem cell field**

3-YEAR OUTCOMES	LONG -TERM OUTCOMES*
Strong partnerships in place that allow SCN funded projects to successfully continue across the research and commercialization pipelines SCN partnership model is successfully used to support the Till & McCulloch Meetings that bring together people and organizations committed to furthering stem cell research SCN establishes partnerships with charities, industry and others that will seed future stem cell research and knowledge mobilization	Increased networking and collaboration among Canadian and international researchers

Objective 3* **Develop a pool of Highly Qualified Personnel trained to undertake future stem cell research**

3-YEAR OUTCOMES	LONG -TERM OUTCOMES*
A new generation of trainees with the skills needed to support clinical translation of stem cell research and entry into jobs within the stem cell field	Solid Canadian base of researchers trained to undertake future stem cell research

Objective 4* **Transform knowledge of the ethical, economic, legal and social challenges and opportunities related to stem cells into sound public policies and practices**

3-YEAR OUTCOMES	LONG -TERM OUTCOMES*
A generation of new ELSI knowledge needed to inform policy and regulatory modernization for cell and gene therapies; the acceleration of clinical translation	Increased breadth and depth of knowledge related to the ethical, economic, legal and social issues of stem cells

Objective 5* **Strengthen Canada's international leadership & reputation in the stem cell field**

3-YEAR OUTCOMES	LONG -TERM OUTCOMES*
Successfully funded internationally relevant research that will reaffirm Canada's reputation as a leading nation for the ethical and collaborative conduct of stem cell research	Canada's international profile in stem cell research enhanced

* (AS REQUIRED BY THE GOVERNMENT OF CANADA)

Dr. Penney Gilbert's Lab, University of Toronto

Conclusion

This strategic plan positions SCN to build national capacity and accelerate the clinical translation of stem cell-based therapies while training a new generation to take on the opportunities and challenges that exist within regenerative medicine. SCN's community is filled with passionate and dedicated people who are driven by scientific excellence and a desire to improve the health of all people. Over the next three years, SCN will provide the experienced leadership needed to bring this community together. In doing so, Canada will remain globally competitive and generate the knowledge, technologies and medicines that will make a difference in how disease and illness are treated. Finally, we at SCN believe that this plan sets the stage for a future that will see innovative stem cell-based research providing not only novel approaches for health care but also generating economic and social benefits that will be invaluable for our nation's well-being and prosperity.

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