



Canadian  
Cancer  
Society

# Canadian Cancer Society Research Institute Research Impact Report **2016**







**Cover:** Dr Peter Black, researcher at the University of British Columbia, examines experimental results with post-doctoral fellow Dr Morgan Roberts.

Photo credit: Brian Smith, PHC Media Services, Vancouver Coastal Health.

## Acknowledgements

This report was prepared by a team of staff at CCSRI including Dr Siân Bevan, Vice-President, Research; Lisa Carney, Research Analyst; Dr Kelly Fathers, Senior Manager, Research Communications; Dr Carolyn Goard, Research Communications Specialist; Rudy Valentim, Senior Advisor, Research Monitoring and Evaluation; and Dr Michael Wortzman, Assistant Director, Research Programs. The report benefited from valuable inputs, comments and feedback from Canadian Cancer Society staff and researchers. It was designed by Michael Carter, Senior Graphic Designer, Creative and Production.

Additional members of the CCSRI team who are instrumental in ensuring CCSRI's high standards of expert peer review, research monitoring, evaluation and strategic impact include Jessica Balmer, Carol Bishop, Monika Dixon, Sherri Huys, Natasha Kolos, Cate Mennega, Lori Moser, Sheila Porter, Dr Leah Smith, Roberta Varga and Dr Christine Williams.

An electronic version of the report is available on the Canadian Cancer Society website.

For inquiries please contact CCSRI at [research@cancer.ca](mailto:research@cancer.ca)

Dr Gang Zheng is developing new ways to visualize tumour tissue at the University Health Network, Princess Margaret Cancer Centre.

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## Welcome Message

Cancer affects us all in some way. Most of us have experienced the impact cancer has in the lives of family members and friends or in our own lives.

Canadians have come together for almost 80 years to support the Canadian Cancer Society's mission to create a world where no Canadian fears cancer – by donating, volunteering, participating in events and advocating for change. Funding world-class research is a critical piece of the puzzle.

### Our donors make research possible.

Thanks to the support of our generous donors and funding partners, we remain the largest national charitable funder of cancer research in the country. The research arm of our organization – the Canadian Cancer Society Research Institute (CCSRI) – ensures that donations are used wisely to make the most impact on cancer.

### We've made great progress.

Today, about 60% of Canadians with cancer will survive at least 5 years after their diagnosis. In the 1940s, survival was only about 25%. This shift has been made possible in large part by advances in cancer research.

In this year's CCSRI Research Impact Report, we celebrate the diverse impacts of research funded through our donors' support. For example, in 2016 this research changed how brain and lung cancers are diagnosed around the world, influenced international tobacco control policies and changed the standard of care so that fewer breast cancers come back. The "research impact stories" section of this report highlights how these and other discoveries will help prevent cancer and ensure that people with cancer lead not only longer lives, but also better quality lives.

### But we need to do more.

We are proud to fund the best cancer research projects across the country. In 2016 we invested in 101 new research grants and awards, representing a total value of \$24.4 million over the next 5 years. We thank the scientists and community representatives who offer their invaluable service in our expert review process, widely recognized as a gold standard to ensure that the most promising projects move forward.

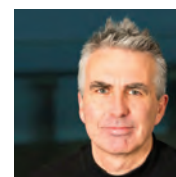
We also thank our donors and partners for their continued support. You can learn more about some of these champions of our mission in the "research investment" section. Our generous donors enable us to fund research that has the greatest potential to make a positive impact on the lives of people in communities all across Canada.

We hope that you enjoy this report and that it will serve as a valuable resource to showcase the excellent research we are supporting together.



**Dr Siân Bevan**

Vice-President, Research  
Canadian Cancer Society



**Dr Calvin Roskelley**

Scientific Chair  
Advisory Council on Research



## Executive Summary

The mission of the Canadian Cancer Society is to eradicate cancer and enhance the quality of life of people living with and beyond cancer. CCSRI is the Society's research arm, which supports the mission by funding research aimed at reducing cancer incidence, reducing cancer mortality and enhancing the quality of life for those living with and beyond cancer. The Society is the largest national charitable funder of cancer research in Canada. Since 1947, our donors have supported thousands of Canadian researchers with more than \$1.4 billion in cancer research funding. Through research grants, awards and 3 major research centres, CCSRI supports work across the research spectrum.

This report provides an overview of CCSRI's investments in 2016<sup>1</sup> and highlights the impact of the research funded. We provide an analysis of CCSRI's investment portfolio, give a summary of selected research outcomes, tell stories about the impact that our researchers are making across the country, and explain CCSRI's expert review and evaluation processes.

<sup>1</sup> This report covers the Society's fiscal year February 1, 2016 to January 31, 2017.

<sup>2</sup> Investigators may be assigned to more than one research project and may have more than one designation. Principal investigators who were also co-applicants were counted only once as principal investigators.

## Thanks to our donors, CCSRI made significant investments in cancer research in 2016

**\$37.4M** in cancer research across the country

**\$28.1M** in basic, biomedical and translational research

**\$5.8M** in prevention research

**\$3.5M** in quality of life research

**\$22.9M** in research relating to specific cancer types

**\$14.5M** applicable to multiple or all cancer types

**287** principal investigators, **558** co-applicants<sup>2</sup> supported

**294** grants and **48** career awards in **8** provinces across

**36** research institutions

**72** new grants & **29** new career awards

## CCSRI researchers made significant progress in the fight against cancer in 2016

**15** healthcare and program delivery impacts

**6** policy impacts

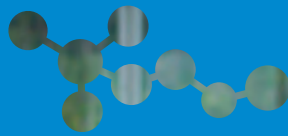
**9** commercialization impacts

**994** publications, **2,006** presentations,

**321** consultations and briefings







# Fighting for Life Preventing Cancer

**Who:** Samantha Hansford, family member, researcher (pictured)

**What:** Thanks to funding by the Canadian Cancer Society, Samantha, along with her academic supervisor, Dr David Huntsman, identified genetic mutations involved in the development of hereditary stomach cancer.

**Why:** Understanding the genetic basis of hereditary stomach cancer can lead to better screening and prevention of this disease.



## Helping families like hers

Samantha Hansford has seen 2 generations of her family devastated by a rare form of hereditary stomach cancer. With hereditary cancers, a person inherits a particular gene mutation that makes them more susceptible or predisposed to developing cancer.

As a teenager growing up in St John's, Samantha lost her aunt to the disease. Her grandmother, who had already survived breast cancer and lost 7 siblings to either breast or stomach cancer, was diagnosed with stomach cancer the same year.

"My aunt was first diagnosed in 1997 and only got part of her stomach removed. What we did not know then was that her cancer was hereditary so, in 2001, the cancer returned and this time it was fatal. Before dying, she gave permission for genetic research because she wanted to put an end to this disease in our family once and for all," says Samantha.

With funding in part from the Canadian Cancer Society, Dr Huntsman was able to study more than 80 families in Newfoundland with the disease, including Samantha's family. He discovered specific mutations in a gene called CDH1 that greatly increase the risk of developing hereditary stomach cancer.

Using a genetic test devised by Dr Huntsman, Samantha's mother and her uncle decided to get tested. Both were found to carry the genetic mutation and underwent surgery to remove their stomachs, which is currently the only way to prevent this cancer. Samantha and her sister were tested and do not have the mutation.

Upon completing her undergraduate degree in biochemistry, Samantha contacted Dr Huntsman to see if she could work in his lab at the BC Cancer Agency in Vancouver. Samantha and her lab mates studied families from around the world who carry this genetic mutation and were able to more accurately predict the risk of developing hereditary stomach cancer. Through their

research, they also fine-tuned the risk of developing breast cancer in people with the CDH1 mutation, explaining why so many of Samantha's relatives developed the disease.

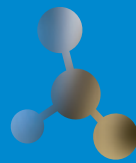
Samantha's reason for working with Dr Huntsman is simple.

**"I have Dr Huntsman's research to thank for not only saving my mother's life but also for removing our family's burden of uncertainty off me and my sister. Now, we don't have to live the rest of our lives wondering if we will get stomach cancer,"** says Samantha.

Looking to save more lives, she turned her focus to helping other families who have a strong family history of stomach cancer but do not carry the CDH1 genetic mutation. "Approximately half of families with hereditary stomach cancer carry the CDH1 genetic mutation, but what do you tell the other families who test negative for it? To find out what causes those cancers, we analyzed the families who do not carry the CDH1 genetic mutation," says Samantha. She identified mutations in several other genes and hopes that her work may eventually lead to genetic tests that can help prevent cases of stomach cancer.

"My mother, uncle, grandmother are alive thanks to the research! This work saves lives every day, and it is thanks to Canadian Cancer Society donors and alike that it has made such a huge impact around the world."





# A History of Progress

## Funding the best research with the greatest impact on cancer

Today, about 60% of Canadians diagnosed with cancer will survive at least 5 years after their diagnosis. In the 1940s, when we began funding research, survival was about 25%.

### 1950s

The Canadian Cancer Society funds research leading to the discovery of vinblastine in 1958 by **Drs Robert Noble** and **Charles Beer**. Vinblastine is still used to treat many cancers.

**Dr Harold Johns** develops the Cobalt-60 Unit or “Cobalt Bomb”. It becomes the most effective cancer treatment and begins the modern era of radiation therapy.

### 1960s

**Drs James Till** and **Ernest McCulloch** discover stem cells in bone marrow, which leads to the development of bone marrow transplantation as a life-saving treatment for many cancers.

In 1965, **Drs Phil Gold** and **Samuel Freedman** discover carcinoembryonic antigen (CEA). Because of this, a blood test can be used to help detect cancer early or monitor the effectiveness of treatment.

### 1970s

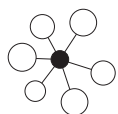
**Dr Anthony Miller** evaluates the effectiveness of Pap test screening as a way to reduce the number of Canadian women dying from cancer of the cervix.

In 1976, **Dr Victor Ling** finds that P-glycoprotein causes cancer cells to become resistant to chemotherapy drugs.

### 1980s

**Dr Tak Mak** clones a white blood cell gene known as a T-cell receptor gene, helping to shape the field of immunotherapy and cancer vaccines.

**Dr Anthony Pawson** discovers that a specific protein molecule can be used to transmit signals within cancer cells. Understanding how cells ‘talk’ to each other helps establish a new research area in targeted therapies.





## 1990s

**Drs Helen Chan** and **Robert Phillips** discover that retinoblastoma, a cancer of the eye, arises in children when the RB1 gene is mutated. Doctors can now test for RB1 to diagnose and treat cancer earlier.

**Dr Steven Narod** shows that women who inherit specific mutations in the BRCA1 gene have increased risks of breast and ovarian cancer.

In 1995, **Dr Patrick Lee** discovers that the reovirus can seek out, infect, and attack cancer cells without harming normal cells. **Dr Peter Forsyth** and others build on this discovery to study how oncolytic viruses can be used to kill or shrink tumour cells.

## 2000s

A clinical trial led by the **Canadian Cancer Trials Group** finds that women who took letrozole after tamoxifen therapy had a greatly reduced risk of the cancer returning, changing the way breast cancer is treated worldwide.

**Dr Mick Bhatia** discovers how stem cells can be triggered to become blood cells, paving the way for new therapies for leukemia.

**Dr Eduardo Franco** and several international scientists pinpoint human papilloma virus (HPV) as the cause of cervical cancer. The HPV vaccine, approved in 2006, is helping prevent HPV cancers for thousands of people worldwide.

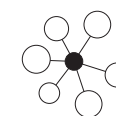
## 2010s

**Dr David Malkin** develops a method to catch cancers early in people with Li-Fraumeni syndrome, a rare inherited disorder that increases cancer susceptibility. The screening method has been adopted around the world, and people who participate have dramatically higher cancer survival rates.

**Dr Michael Taylor** discovers that medulloblastoma, the most common form of childhood brain cancer, is not one disease but rather 4 different subtypes with distinct molecular features and clinical outcomes. This is helping to refine treatment and spare young patients from unnecessary side effects.

**Dr Steve Manske** finds that many youth tobacco users choose flavoured products, evidence that influences several provinces to ban them.

**Dr Camilla Zimmermann** finds that offering palliative care earlier gives patients a better quality of life, improving experiences for both people living with cancer and their families.





# Fighting for Life Preventing Cancer

**Who:** Melinda Laboucan, cancer coordinator; Dr Sangita Sharma, researcher (pictured)

**What:** With Canadian Cancer Society funding, Dr Sharma is working to develop a culturally appropriate education program to promote cancer awareness and increase screening for Indigenous communities, which have significantly lower screening rates than the rest of the country.

**Why:** Addressing the barriers that Indigenous communities face in getting checked for cancer will make a huge difference in preventing cancer in the population.





## Addressing the cancer burden in Indigenous communities

Forty years ago, a cancer diagnosis for someone living in a northern Canadian community meant the likelihood of a dismal outcome, explains Melinda Laboucan, a cancer coordinator in a small Indigenous community in Arctic Canada.

Melinda works to educate members of her community about cancer and how it can be prevented. Many of Canada's Indigenous population don't get screened as a routine checkup. This may be due to a fear of cancer or limited medical facilities, such as mammogram machines, in smaller communities.

"We're just starting to move out of that phase where cancer is a death sentence," says Melinda. She attributes this change in mindset to the research being done by people like Society-funded researcher, Dr Sangita Sharma, a professor at the University of Alberta.

In her previous research, Dr Sharma's team spent time in the community interviewing people about knowledge, attitude and behaviours toward cancer and cancer screening. Community members who participated in the study, in turn, suggested various approaches to improving the use of cancer screening services, such as the creation of a culturally relevant health promotion program.

With funding from the Canadian Cancer Society in partnership with the Canadian Institute of Health Research, Dr Sharma is now moving forward with this valuable feedback and is working with the northern communities to develop and implement a culturally appropriate education program around cancer and cancer screening. Once these are developed, in the form of community workshops, pamphlets, posters and videos, Dr Sharma's team and the community members will refine the materials based on feedback from many groups, including health professionals and government stakeholders.

"The Indigenous population in Canada has up to a 13-year lower life expectancy. This is unacceptable,"

says Dr Sharma. "Often, people in remote Arctic communities don't fully recognize the benefits of cancer screening, or they don't recognize symptoms and how some cancers can be prevented."

Dr Sharma noted that the word for cancer differs greatly among northern communities and emphasizes the need for all program materials to be available in the appropriate language for each community.

Melinda, who lost her mother to cancer in 2011, became a cancer coordinator to understand more about the disease that shook her entire world. Since working with Dr Sharma and her team, Melinda is already seeing the impact of the research. "Dr Sharma's team has made a good connection with our community. Now people are more willing to get screened."

Dr Sharma knows that her research is a good start, but that there's a long way to go. "Indigenous people often don't have a voice at the table, and when you come from a small community, it can take longer to receive medical attention given the long travel distances. I want to thank the Canadian Cancer Society donors for supporting some of Canada's most vulnerable people get the information and screening everyone deserves."

Melinda agrees. "I would like to thank the Society and its donors for funding research that reaches out and helps us. It shows just how much people care and it really means a lot."



# Research Outcomes and Impacts in 2016



A moderated panel discussion with recipients of the Canadian Cancer Society's 2016 Awards for Excellence in cancer research at the awards ceremony held in Toronto.

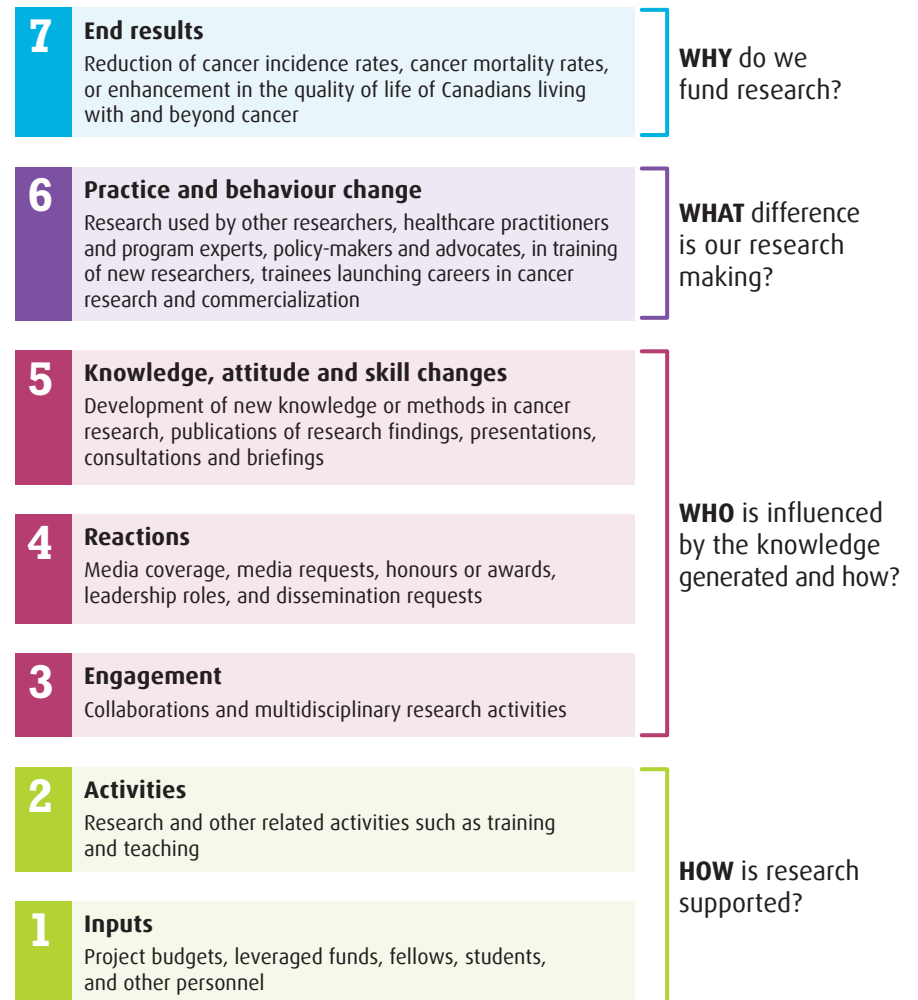


# Tracking research progress

Scientific and financial progress reports are submitted by principal investigators of all research grants and awards at multiple stages during the term of funding. CCSRI requires annual scientific and financial reports and post-grant reports (submitted 2 years after completion of a grant). Progress reports allow CCSRI to monitor grants and awards by collecting a variety of quantitative and qualitative information regarding research findings, outcomes and impacts.<sup>3</sup>

CCSRI carefully tracks and monitors the progress, outcomes and impacts of every research program. CCSRI has adapted the results chain framework<sup>4</sup> to demonstrate the many ways in which research activities impact the Society's mission. It provides CCSRI with a systematic and consistent way of monitoring and evaluating research over time and along the research spectrum. The results chain hierarchy provides a simplified description of a program and is organized according to 7 levels of results. It shows the logical relationships between the resources that are invested, the activities that take place and the sequence of changes that result. The ultimate goals of CCSRI's research programs are often ambitious and long term. As such, it is imperative to develop strong program descriptions providing details not only on the intended long-term outcomes but also the short-term and intermediate outcomes and the sequence in which they are likely to take place.

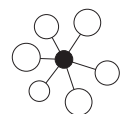
In adapting the framework, CCSRI classifies research performance measures according to the 7 levels of results.



Sources: Adapted from Claude Bennett 1979. Taken from Michael Quinn Patton, Utilization-Focused Evaluation: The New Century Text, Thousand Oaks, California, 1997, p 235. Steve Montague and Rodolfo Valentim. Research Evaluation, 19(4), October 2010, pages 251-261.

<sup>3</sup> Progress reports collect short-term outcomes and impacts on an annual basis. Long-term impacts related to level 7 of the results chain framework are generally uncovered through in-depth evaluation studies and are beyond the scope of this report.

<sup>4</sup> This framework was introduced and adapted for the Society by Steve Montague (PMN).





## Outcomes and impacts

This section of the report provides a summary of selected research outcomes and impacts drawn from 414 progress reports submitted in 2016. Outcomes and impacts are summarized and mapped according to the results chain framework.

### WHAT difference is our research making?

#### 15 Impacts on healthcare and program delivery

Research findings cited in clinical and service guidelines, in health professional education material, used in program development, etc.

#### 6 Impacts on policy

Research findings cited in public policy documents, advocacy publications, etc.

#### 36 Impacts on work of other researchers

Research findings cited in relevant scientific literature, scientific methods used by other researchers, etc.

#### 4 Impacts on training of new researchers

Research findings cited in textbooks, reading lists, etc.

#### 9 Impacts on commercialization

• 4 patents licensed • 3 patents granted • 2 industry investments





## WHO is influenced by the knowledge generated and how?

Researchers, healthcare practitioners, policy-makers, public and other stakeholders

### 994 Publications

- 816 peer-reviewed publications
- 178 non-peer-reviewed publications

### 2,006 Presentations

### 321 Consultations and briefings

### 250 Honours and awards

### 624 Media mentions

### 118 Press releases

### 1,719 Advisory committee memberships, leadership roles, etc.

### 2,184 Collaborations

- 1,130 with researchers
- 188 with policy-makers
- 670 with healthcare practitioners
- 196 with other stakeholders

## HOW is research supported?

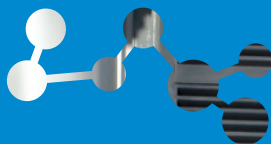
### 413 Investments

- 388 grants
- 25 career development awards

### 2,205 Personnel

- 413 principal investigators
- 663 co-applicants
- 172 fellows
- 415 students
- 542 other highly qualified personnel





# Fighting for Life Saving Lives

**Who:** Dr James Perry, neuro-oncologist;  
Dr Chris O'Callaghan, senior investigator  
(pictured here with Dr Janet Dancey,  
Director, Canadian Cancer Trials Group)

**What:** A clinical trial supported by the  
Canadian Cancer Society found that older  
patients with brain cancer who received  
chemotherapy in addition to radiation  
lived longer than patients who only  
received radiation.

**Why:** The trial is changing how brain cancer  
is treated in older patients around the world.





## Brain cancer treatment gets much-needed boost

Dr Christopher O'Callaghan knows the impact that glioblastoma, an aggressive form of brain cancer, can have on families. His father was diagnosed at a time when the only available treatment was radiation. But now, thanks to Dr O'Callaghan's research with the Canadian Cancer Trials Group (CCTG), there are better treatment options for patients with glioblastoma.

The CCTG, located at Queen's University, is funded by the Canadian Cancer Society to carry out clinical trials across Canada and worldwide for all types of cancer. "Thanks to the Society, we can advance and improve treatment in a way that allows Canadian cancer patients to benefit right now by participating in a clinical trial and for future generations of Canadians to benefit from the results of those trials," says Dr O'Callaghan.

Over the last decade, clinical trials supported by the Society have improved treatment options for brain cancer. One of these trials changed the course of glioblastoma treatment worldwide and was the first significant change in treatment in 30 years. The trial found that adding the chemotherapy drug temozolomide to radiation therapy led to a longer life for patients compared with radiation alone, the previous standard of care.

One limitation of the trial was its focus on younger patients, so it was unclear whether older patients would also benefit. More than half of patients with glioblastoma are over 65, and they don't do as well as younger patients. To address this unmet need, Dr O'Callaghan collaborated with Dr Normand Laperriere and Dr James Perry, the lead investigator of a recent CCTG clinical trial, to determine whether this treatment strategy could also benefit older adults. "For half of our patients, we had no evidence to base treatment on," says Dr Perry, a neuro-oncologist at Sunnybrook Health Sciences Centre.

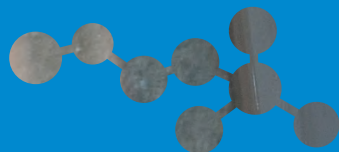
This was Canada's first time leading an international brain tumour study, and the results were astonishing. Older patients who received temozolomide as well as a short course of radiation lived on average twice as long as those who only got radiation. Not only did they survive longer, but they experienced very few side effects during treatment. "They felt fine. They were up and walking, feeling good," says Dr Perry.

News of the trial results has been extremely well received by oncologists around the world. This treatment strategy is expected to become the new standard of care for older patients with glioblastoma.

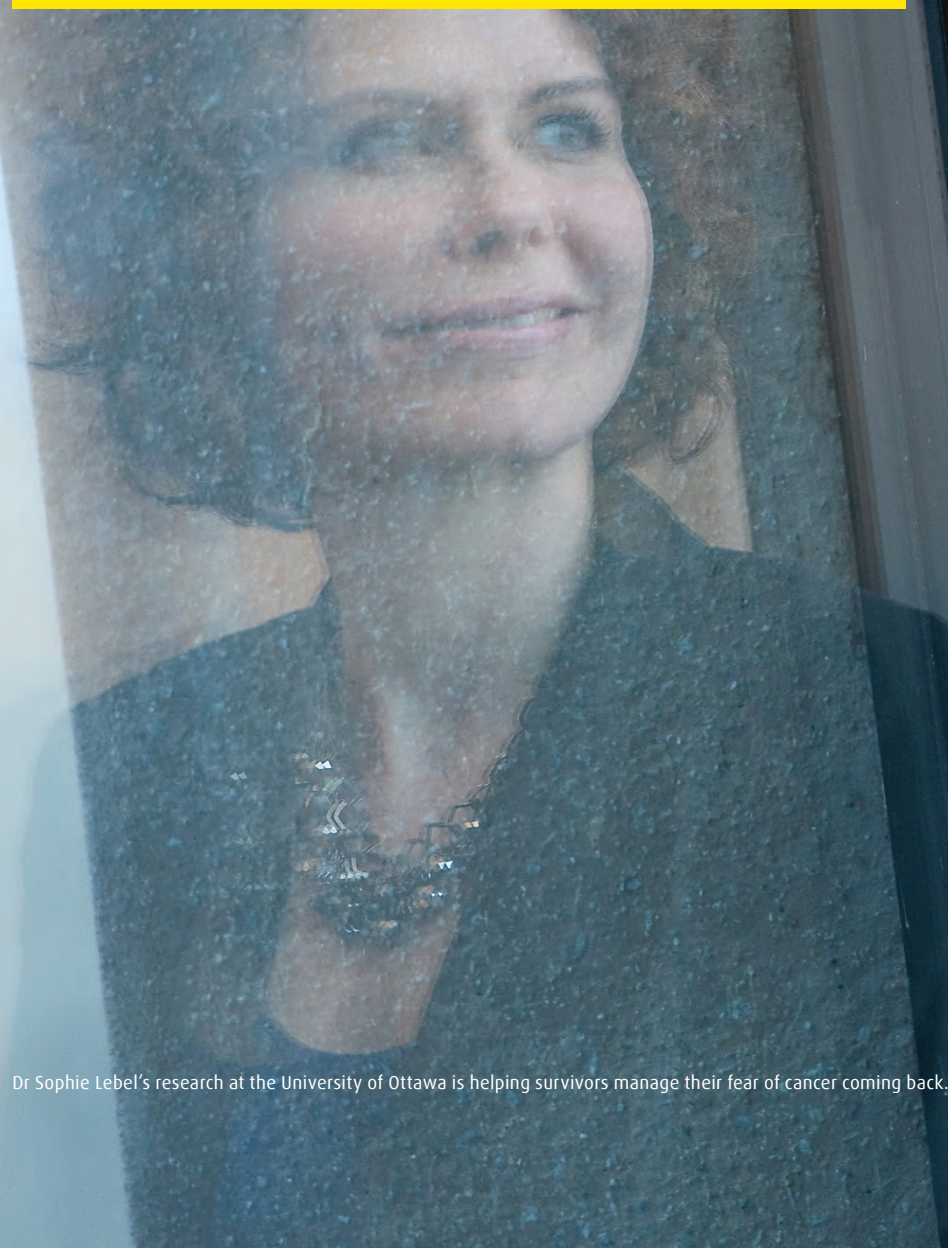
While the combination treatment is not a cure, adding months of good quality life is important. "It could mean one more summer at the cottage or seeing a new grandchild," says Dr Perry.

Dr O'Callaghan is grateful to Society donors. [“Thank you for funding treatments today that will also benefit future generations. This trial is a step forward in the treatment of a very bad disease. Through your continued support of the Society and the CCTG, we will continue to make strides forward in the treatment of this disease.”](#)





# Research Impact Stories



Dr Sophie Lebel's research at the University of Ottawa is helping survivors manage their fear of cancer coming back.



Research funded by Canadian Cancer Society donors is making a difference. These stories highlight some of the year's high-impact research findings. They demonstrate the breadth of our research across the cancer spectrum and its reach all across Canada. We thank our donors for making these important discoveries possible.

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Dr Ryan Rhodes, University of Victoria	
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Dr Nahum Sonenberg, McGill University	
<b>New tools to image tumours in the lab</b>	<b>25</b>
Dr Roger Zemp, University of Alberta	

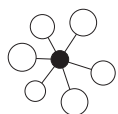
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## A biomarker to personalize colorectal cancer treatment 35

**Dr Derek Jonker**, Canadian Cancer Trials Group,  
The Ottawa Hospital Research Institute

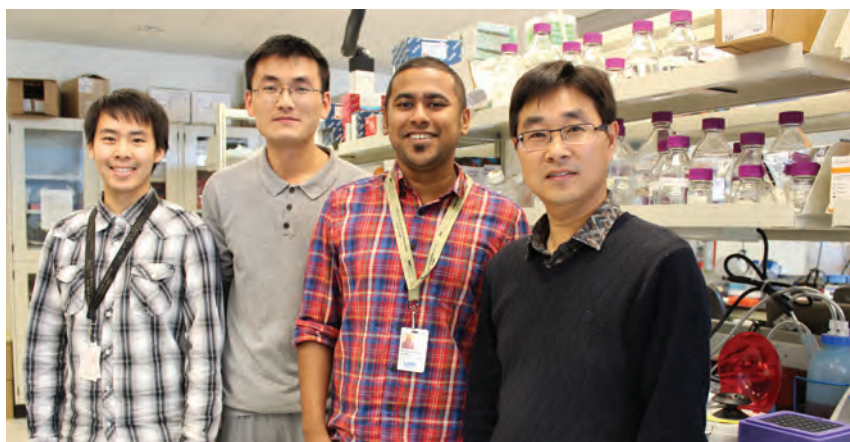
**Dr Geoffrey Liu**, Canadian Cancer Trials Group,  
University Health Network, Princess Margaret Cancer Centre

**Dr Christopher O'Callaghan**, Canadian Cancer Trials Group,  
Queen's University

## Guiding lung cancer diagnosis around the world 35

**Dr Lesley Seymour**, Canadian Cancer Trials Group,  
Queen's University

**Dr Ming-Sound Tsao**, Canadian Cancer Trials Group,  
University Health Network, Princess Margaret Cancer Centre



Dr Housheng Hansen He (right) and his team at the University Health Network, Princess Margaret Cancer Centre.



Dr Philipp Lange (back row, centre) and his team at the University of British Columbia.



Dr David Stojdl (front row, centre) and his team at the Children's Hospital of Eastern Ontario.





## Advances in tobacco control

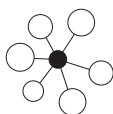
Tobacco use is the leading cause of preventable disease and death in Canada. It causes about 30% of all cancer deaths and about 85% of lung cancer deaths in the country.

Reducing tobacco use is essential for cancer prevention. Our researchers are studying why people – including youth – start smoking or using other tobacco-containing products, how tobacco affects them and how hard it can be to quit. This evidence is used to encourage Canadians not to smoke, improve support for smokers trying to quit and advocate for tobacco control laws that protect the health of Canadians. In 2016, the Canadian Cancer Society joined forces with other leading health organizations to reduce tobacco use in Canada to less than 5% by 2035. This goal is ambitious, but achievable.

In the last 10 years:



Some of our research achievements include:



## Teaming up to prevent cancer with a targeted quit-smoking program

**Dr Joan Bottorff**, University of British Columbia



Preventing cancer takes teamwork. Dr Joan Bottorff is leading a team of partners from the Canadian Cancer Society, the BC Cancer Agency and Northern Health (NH) to implement the Stop Smoking Before Surgery program to encourage smokers to quit before undergoing surgery.

NH has already adopted aspects of the program as standard practices. Continuing to encourage more patients to quit smoking could both improve surgical outcomes and prevent more smoking-related cancers.

## Understanding how many tries it takes to quit smoking to improve support

**Dr Michael Chaiton**, University of Toronto



It can be very hard to quit smoking. Dr Michael Chaiton and his team studied over a thousand smokers in Ontario. They found that, on average, it took smokers 30 tries or more to successfully quit smoking – much higher than previous estimates. This figure is now quoted in Ontario's

Smoking Cessation Action Plan. This research provides valuable information to help healthcare providers manage expectations and improve support services for smokers trying to quit.

## Improving worldwide tobacco control policies

**Dr Geoffrey Fong**, University of Waterloo



Dr Geoffrey Fong leads the International Tobacco Control Policy Evaluation (ITC) Project, a large-scale study of tobacco control around the world. In 2015 ITC data were used in policy briefs calling for stronger tobacco control laws in China. That year, Dr Fong also served as an expert consultant for the governments of Australia and Uruguay in defending their policies against challenges by the tobacco industry. ITC research is helping Canada and other countries prevent cancer through stronger evidence-based tobacco control policies.

## More quit support for smokers with cancer

**Dr Robert Reid**, University of Ottawa Heart Institute



Support to help smokers with cancer quit isn't always integrated into our cancer care system. To help more cancer patients, Dr Robert Reid and his team adapted an award-winning quit-smoking program for use in the cancer care setting. The program has been implemented in Ontario and New Brunswick, with other provinces on the horizon. Improving quit rates could speed up patients' recovery after treatment, improve their overall health and enhance their quality of life.







## Advances in cancer prevention beyond tobacco control


While tobacco control is one important way to prevent cancer, it is only one piece of the puzzle. We must also make sure that fewer Canadians are exposed to cancer-causing substances in their daily life and in their workplaces, and encourage them to adopt a healthy lifestyle.


Our research into cancer prevention beyond tobacco control includes a wide range of projects that study fundamental aspects of what causes cancer, workplace and environmental risk factors, and the impact of obesity, healthy eating and physical activity on cancer risk. This work will give us the tools to lead healthier lives and stop cancer before it starts.

In the last 10 years:

 **\$27M** invested

 **71** principal investigators supported

 **145** grants and career awards

 **37** institutions

Some of our research achievements include:

**1990s**

**Dr Steven Narod** shows that women who inherit mutations in the BRCA1 gene are at increased risk for breast and ovarian cancers.

**2000s**

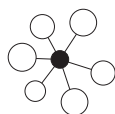
- **Dr Eduardo Franco** and international scientists pinpoint human papillomavirus (HPV) as the cause of cervical cancer, leading to the development of the HPV vaccine, first approved in 2006.

**2013**

- **Dr David Hammond** shows that displaying calorie counts on restaurant menus helps people make healthier food choices, which could help prevent cancer.

**2015**

- **Dr David Huntsman** identified genetic characteristics of people at high risk for a rare aggressive form of stomach cancer that affects several Newfoundland families.



## Local adoption of a new program to get kids more active

**Dr Jason Gilliland**, Western University



Regular physical activity may lower cancer risk. Dr Jason Gilliland and his team are studying the impact of the ACT-i-Pass program, which offers Grade 5 students a free recreational pass to encourage them to get active. So far, the program has increased children's physical activity levels.

Partners at the City of London, local recreational facilities and the public health unit now plan to run the program on a continual basis, which could help prevent more cancers.

This work was funded in partnership with the Canadian Institutes of Health Research.

## A map of cancer risk in Nova Scotia

**Dr Louise Parker**, Dalhousie University



Nova Scotians have a higher risk for bladder and kidney cancers compared to other Canadians. Dr Louise Parker and her team mapped the distribution of bladder and kidney cancers across Nova Scotia and identified high-risk areas.

Further research will reveal what factors could be contributing to these cancer rates and how to plan public health initiatives to prevent more cancers in the province.

## Making exercise fun for kids to prevent future cancers

**Dr Ryan Rhodes**, University of Victoria



Dr Ryan Rhodes is searching for the best way to increase physical activity in families to reduce the future burden of cancer and other diseases on Canadians. He and his team showed that an interactive "exergame" that pairs an online video game with a stationary exercise bicycle increased children's physical activity. Following more research into how to keep kids playing, these games could help children form healthy lifelong habits to protect them against cancer. Dr Rhodes' work has also been cited in a physical activity strategy for British Columbia.

Dr Rhodes is the recipient of the GIVETOLIVE Research Scientist Award in Prevention Research of the Canadian Cancer Society.

## Healthier meals offered at schools

**Dr Jennifer Yessis**, Propel Centre for Population Health Impact, University of Waterloo



The Lunch Lady is a catering service that provides hot lunches to students at hundreds of schools in Canada. The Society-supported Propel Centre for Population Health Impact evaluated the success of the Lunch Lady's Smarter Meals, meal options that meet several criteria for healthy eating, as part of the Nourishing School Communities Coalition Linking Action and Science for Prevention. As a result of their analysis, the Lunch Lady expanded their offerings of Smarter Meals. Encouraging healthy eating habits in children may help prevent cancer and other chronic diseases later on in life.







## Advances in cancer biology


Normally, cells follow strict rules about when to grow, divide and die in order to keep us healthy. In cancer, somehow these instructions change, and cancer cells grow out of control.


Researchers are working together to solve the mysteries of what goes wrong in the biology of cancer cells by studying them in the lab. Understanding the fundamentals of how normal cells behave, how this changes in cancer and the molecular abnormalities that allow this to happen is giving us clues on how to stop cancer in its tracks.

In the last 10 years:

 **\$84M** invested

 **319** principal investigators supported

 **572** grants and career awards

 **43** institutions

Some of our research achievements include:

**1971**

**Dr Peter Ottensmeyer** becomes one of the first scientists to see individual atoms, leading to the development of a new electron microscope now used around the world to study cells and other structures.

**1992**

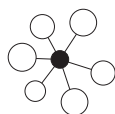
**Dr Arnold Greenberg** purifies a protein that leads to a greater understanding of how the body stimulates tumour cells to commit suicide.

**2000s**

**Dr Michel Tremblay's** research on understanding a family of genes that can act as cancer initiators or cancer suppressors sparks worldwide interest in developing drugs to target these genes.

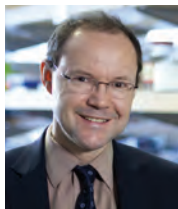
**2015**

**Dr Connie Eaves** develops a new way to track how breast cancer cells grow in mice over time and shows how quickly breast tumours can evolve.



## New insights into how ovarian and uterine cancers spread

**Dr David Huntsman**, BC Cancer Agency



Some women with ovarian cancer also have cancer in the lining of their uterus (the endometrium). Most people thought these were 2 separate tumours that grew at the same time in the ovary and uterus. However, Dr David Huntsman and his team used genetics to show that these women usually have one cancer that has spread between the 2 organs. These findings help us understand how ovarian and uterine cancers spread, which could help us treat them more effectively.

## Pinpointing a drug target in lung cancer

**Dr Roger Moorehead**, University of Guelph



New drugs that block a protein called AKT are being tested in clinical trials in lung cancer. AKT exists in 3 forms. Dr Roger Moorehead and his team found that one form had a pro-cancer effect in mice, but a second form had the opposite effect. A drug that specifically blocked the pro-cancer form of AKT worked better on human lung cancer cells than one that blocked all 3 forms. This knowledge could help researchers develop better AKT-blocking drugs to improve cancer treatment.

Dr Moorehead is the recipient of a Canadian Cancer Society (Ontario Division) Lung Cancer Research Grant.

## Predicting tumour response to drugs that block protein production to personalize treatment

**Dr Nahum Sonenberg**, McGill University



If the cell's genetic material – the DNA – can be thought of as a blueprint, its proteins are the workers that carry out these instructions. Drugs that block protein production are being used or studied as treatments in several cancer types. Dr Nahum Sonenberg and his team discovered a specific protein that plays an important role in the anticancer effect of these drugs that could help predict which tumours will respond best. This could improve personalized cancer treatment.

## New tools to image tumours in the lab

**Dr Roger Zemp**, University of Alberta



Researchers often “light up” proteins with fluorescent tags to study how cancer grows in the lab. However, this only works for tumours near the skin's surface. Dr Roger Zemp and his team created 2 new tags that don't rely on fluorescence called “dark” tags. These imaging tools could help scientists study how cancer starts and grows much deeper in tissues.





## Advances in stem cell research

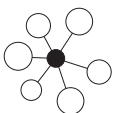
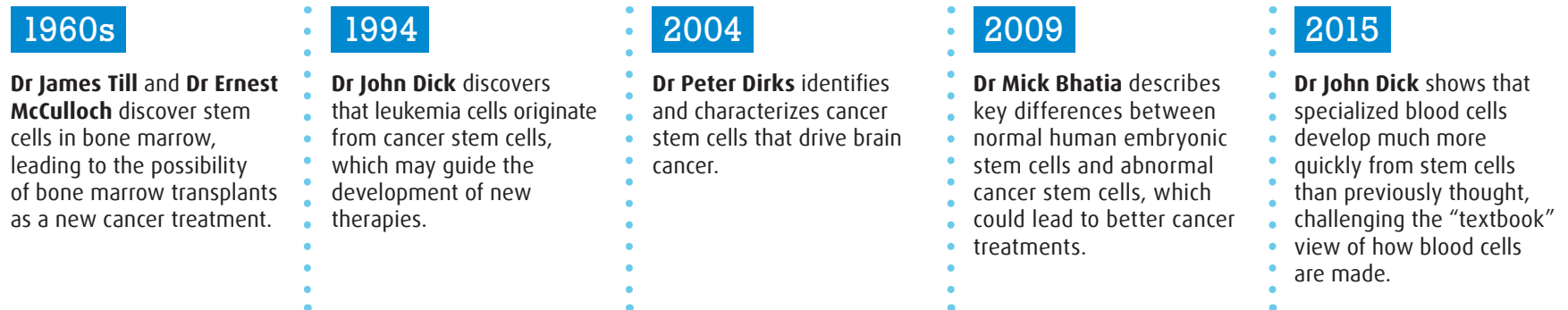
In the 1960s, Dr James Till and Dr Ernest McCulloch discovered that all of the blood cells in our body are formed from rare stem cells found in the bone marrow. Years later, researchers discovered that cancers might also grow from rare, abnormal stem cells. Cancer stem cells may act as the “root” of cancer, slowly generating new cancer cells, allowing it to grow and escape treatment or come back afterwards.

Our researchers’ discoveries in stem cell research have transformed how scientists around the world think about how cancer starts and grows. They have also revealed that new treatments are needed to destroy cancer stem cells to ensure the cancer does not come back.

In the last 10 years:



Some of our research achievements include:



## Predicting who will get aggressive leukemia to guide treatment

**Dr Mick Bhatia**, McMaster University



Acute myelogenous leukemia (AML) is the most common type of leukemia in adults, and it can also affect children. Some people begin with less aggressive diseases called myelodysplastic syndromes (MDS) and later develop AML. By studying abnormal blood stem cells, Dr Mick

Bhatia and his team developed a new way of predicting who will progress from MDS to AML, which could help guide treatment to fend off this aggressive cancer.

## A molecule that helps leukemia escape treatment

**Dr John Dick**, University Health Network, Princess Margaret Cancer Centre



All of the blood cells in our body come from stem cells found in our bone marrow. Abnormal blood stem cells can lead to an aggressive form of blood cancer called acute myelogenous leukemia (AML). Dr John Dick and his team found a molecule that helps leukemic stem cells avoid the effects

of chemotherapy. This could help researchers develop new treatments for AMLs that don't respond to current therapies.

## A new way to stop aggressive brain cancer

**Dr Peter Dirks**, The Hospital for Sick Children



Glioblastoma is the most common type of brain cancer in adults. It is hard to treat, fueled by a powerhouse of special cells that allow it to grow and resist treatment. Dr Peter Dirks and his team studied how hundreds of different brain chemicals affect the cells that drive glioblastoma. They found a new way to stop glioblastoma, identifying a completely new avenue for possible drug development for this brain cancer.

## A drug to target the cells that drive relapses in childhood leukemia

**Dr Trang Hoang**, Université de Montréal



Acute lymphoblastic leukemia (ALL) is the most common cancer diagnosed in children. Dr Trang Hoang and her team showed that the abnormal stem cells at the root of ALL growth were 10 to 20 times more resistant to chemotherapy than other leukemic cells, which could explain why some children relapse despite treatment. They also identified a chemical that could wipe out these stem cells, offering promise as a new treatment approach.



## Advances in screening, detection, diagnosis and treatment

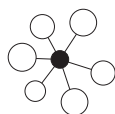
In addition to reducing the number of Canadians who get cancer, we are committed to prolonging and improving the lives of those living with cancer. Our funded researchers are making progress every day toward detecting cancers earlier, catching more cancers with improved screening, refining how cancer is diagnosed and developing more effective treatments.

In the last 10 years:



Some of our research achievements include:

- |   |   |   |   |  |   |
|---|---|---|---|--|---|
| <b>1951</b><br><b>Dr Harold Johns</b> develops the Cobalt-60 Unit or "Cobalt Bomb," which begins the modern era of radiation therapy. | <b>1958</b><br><b>Dr Robert Noble</b> and <b>Dr Charles Beer</b> discover vinblastine, a chemotherapeutic still used to treat many cancers. | <b>1965</b><br><b>Dr Phil Gold</b> and <b>Dr Samuel Freedman</b> discover a protein that can be measured in a blood test to help detect cancer early and monitor treatment effects. | <b>1980</b><br><b>Dr Anthony Miller</b> and <b>Dr Cornelia Baines</b> launch the National Breast Screening Study, which influenced public policy in Canada and other countries. | <b>2013</b><br><b>Dr David Perrin</b> tests a new compound that improves the quality of positron emission tomography (PET) imaging, making it faster and more accurate at detecting cancers. | <b>2015</b><br><b>Dr Shana Kelley</b> develops an extremely sensitive blood test that uses sensors of a chip to detect cancer mutations as a non-invasive alternative to tissue biopsies. |
|---|---|---|---|--|---|





## Approval of a new standard in leukemia testing

**Dr Sonya Cressman**, Canadian Centre for Applied Research in Cancer Control, BC Cancer Agency

**Dr Stuart Peacock**, Canadian Centre for Applied Research in Cancer Control, BC Cancer Agency



Diagnosing and treating acute myelogenous leukemia (AML) can be very costly. Dr Stuart Peacock, Dr Sonya Cressman and the team at the Society-supported Canadian Centre for Applied Research in Cancer Control defined whether a new genetic test to help guide AML treatment was cost effective in British Columbia. This led to provincial approval of the test as a new standard of care for AML.



## A new form of childhood brain cancer defined

**Dr Cynthia Hawkins**, The Hospital for Sick Children



Dr Cynthia Hawkins and her team are searching for better ways to diagnose and treat childhood cancers of the central nervous system (CNS) – the brain and spinal cord. Dr Hawkins met with international experts to update the World Health Organization (WHO)'s classification system for CNS tumours. Based on her research, an entirely new diagnostic category was created, which is changing tumour testing around the world.

## Survival boosted in Li-Fraumeni syndrome due to screening

**Dr David Malkin**, The Hospital for Sick Children



People with a rare genetic condition called Li-Fraumeni syndrome have a high risk of developing cancer. Dr David Malkin and his team developed a method of regular screening to catch cancers early in these people. They showed that patients who participate have dramatically higher 5-year survival rates compared to those who don't, solidifying the continued adoption of this screening method for people with Li-Fraumeni syndrome around the world.

## Mapping the genetics of childhood brain cancer to design better clinical trials

**Dr Michael Taylor**, The Hospital for Sick Children



Medulloblastomas are the most common brain cancers in children. If these cancers come back after treatment, they are often fatal. Dr Michael Taylor and an international team discovered that the genetic maps of medulloblastomas change dramatically when they come back. This will help researchers design better clinical trials to test new drugs to help children if their cancers recur.

Dr Taylor is the recipient of the Brain Tumour Foundation of Canada Impact Grant of the Canadian Cancer Society and Brain Canada.





## Advances in immunotherapy


Our immune system has the ability to find and destroy cancer cells. But cancer cells can sometimes learn to hide from the immune system or stop it from working properly. Immunotherapy helps to strengthen or restore the immune system's ability to fight cancer.


Our researchers are pushing the boundaries of immunotherapy by gaining deeper insights into how cancer evades the army of cancer-fighting immune cells and how to harness the power of the immune system to better attack cancer. We're making exciting progress in this emerging field, especially in the development of cancer vaccines and cancer-fighting viruses.

In the last 10 years:

 **\$19M** invested

 **56** principal investigators supported

 **83** grants and career awards

 **22** institutions

Some of our research achievements include:

**1984**

**Dr Tak Mak** clones the T-cell receptor gene, helping to shape the field of immunotherapy.

**1995**

**Dr Patrick Lee** discovers that a type of virus can kill cancer cells, while sparing normal cells.  
**Dr Peter Forsyth** and others build on this to advance the field of oncolytic virus therapy.

**2013**

**Dr John Bell** and **Dr Jean-Simon Diallo** design new cancer-fighting viruses to attack cancer cells.

**2014**

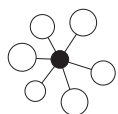
**Dr Rebecca Auer** shows that a flu vaccine can be used in mice to reduce cancer spread after cancer surgery, an approach being tested in clinical trials.

**2014**

**Dr Claude Perreault** reveals a new approach to identify molecules that attract T cells, which could help increase the number of people who could benefit from immunotherapies.

**2015**

**The Society-supported Canadian Cancer Trials Group** begins a world-first clinical trial of 2 cancer-fighting viruses developed by Society-funded researchers.



## Tailoring viral therapy to fight hard-to-treat cancers

**Dr John Bell**, The Ottawa Hospital Research Institute

Photo credit: The Ottawa Hospital



Cancer-fighting viruses are some of the most promising emerging therapies currently in clinical trials. Dr John Bell and his team were the first to discover that the way tumour cells and other surrounding cells talk to each other makes them especially vulnerable to viral attack. They also created a new “designer” virus tailored to fight pancreatic cancer, which has one of the lowest survival rates of all cancers.

## A new gel to improve immunotherapy

**Dr Réjean Lapointe**, Centre de recherche du CHUM



Cancer immunotherapy teaches immune cells to attack tumours, but it only works if enough immune cells are delivered to the cancer site. Dr Réjean Lapointe and his team developed a new gel to target and release cancer-fighting immune cells into just the right spot. Further developing this creative immunotherapy could greatly benefit people with cancer.

## A new strategy to block breast cancer

**Dr Jean Marshall**, Dalhousie University



Many people with cancer take an over-the-counter drug like ranitidine (Zantac) to relieve heartburn as a side effect of chemotherapy. But little is known about how this drug directly affects cancer. Dr Jean Marshall showed that ranitidine can block breast cancer in mice through its effects on immune cells. If proven to work in people, it could be rapidly repurposed as a safe and affordable new breast cancer treatment and prevention tool for some women.

Dr Marshall is building on this work with the support of the Lotte & John Hecht Memorial Innovation to Impact Grant of the Canadian Cancer Society.

## Understanding how immune cells fight ovarian cancer to develop new immunotherapies

**Dr Brad Nelson**, BC Cancer Agency



The changes that cells undergo to become cancerous can trigger the body’s immune system to mount an attack against the tumour. Dr Brad Nelson and his team studied how different types of immune cells work together to fight ovarian tumours. They determined that a combination of 2 types of immune cells is needed to have the most beneficial impact on patient survival. Dr Nelson’s research is now guiding the design of a clinical trial for a new ovarian cancer immunotherapy.



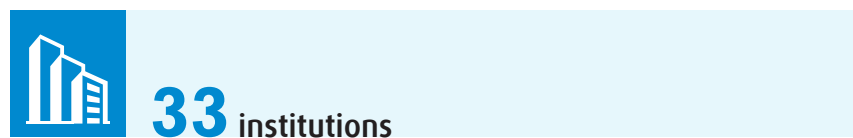
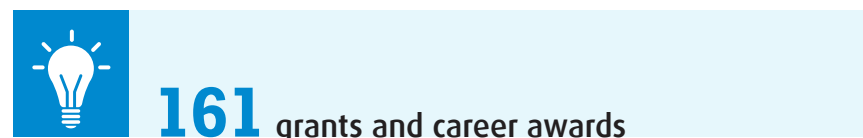
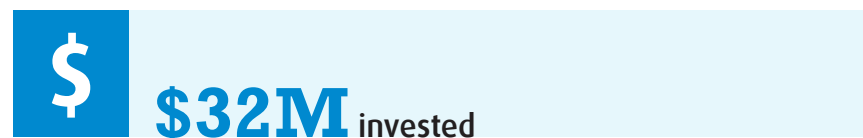


## Advances in quality of life

Along with preventing cancer and increasing cancer survival, we strive to enhance the quality of life of people living with cancer, survivors, and their families and caregivers. Just as we make progress toward saving and extending lives, we need to make sure these lives are as full and comfortable as possible.

Our research in this area includes projects focused on survivorship, supportive care to manage the symptoms that accompany cancer or side effects of its treatment, end-of-life care and understanding the overall experience of living with and beyond a cancer diagnosis. This knowledge will become increasingly important as the number of cancer survivors continues to grow.

In the last 10 years:



Some of our research achievements include:

**2005**

**Dr Harvey Chochinov** shows that a new form of psychotherapy focused on patient dignity can reduce suffering among people with cancer nearing the end of life.

**2010**

**Mary McBride** shows that childhood cancer survivors have higher odds of hospitalization and longer hospital stays, findings that are being used to help improve childhood cancer survivor care.

**2014**

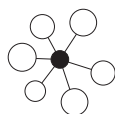
**Dr Camilla Zimmermann** finds that offering palliative care earlier gives patients a better quality of life.

**2015**

**Dr Joanne Stephen's** research on online support for breast cancer survivors encourages several Canadian psychosocial oncology programs to participate in "CancerChatCanada," a national program of online cancer support groups.

**2015**

**Dr Lisa Barbera** defines Canadian benchmarks for quality of end-of-life care in cancer, which will help regions and provinces evaluate and improve their services.



## A secure social network to connect patients and their healthcare teams

**Dr Amna Husain**, Mount Sinai Hospital



People living with chronic conditions like cancer interact with many healthcare professionals. New ways of communicating effectively with their healthcare teams are needed. Dr Amna Husain and her team developed a web-based tool called Loop that links a patient, their caregivers and their healthcare providers in a secure social network. Following more real-world testing, Loop could improve the coordination of care for people living with cancer.

Dr Husain is the recipient of the Ramona Rull Karson Innovation Grant of the Canadian Cancer Society.

## Protecting bone health in men with prostate cancer

**Dr Jennifer Jones**, University Health Network, Princess Margaret Cancer Centre



Many men with prostate cancer are treated with hormone therapies, which can lead to bone loss as a side effect. Often, bone health is not considered in routine prostate cancer care. Dr Jennifer Jones and her team created BoneRx, a tool created to improve care for bone health and to help inform men about bone loss. It has been implemented at the Princess Margaret Cancer Centre. This tool could help avoid fractures and other complications of bone loss, improving the quality of survivors' lives.

## Improving lives with better cancer home care

**Dr Dawn Stacey**, The Ottawa Hospital Research Institute

Photo credit: Simon Fox, Melbourne Photography



Home care for people living with cancer is important to manage their symptoms outside of the clinic. Dr Dawn Stacey and her team updated nursing guidelines on managing 13 cancer symptoms in home care and created 2 new guidelines for pain and sleep problems. These 15 guides are based on the best available evidence and are formatted for use in nursing practice. They are being implemented in several communities in Eastern Ontario to ensure that Canadians living with cancer consistently receive the best care.

## A need to change the stigma of palliative care

**Dr Camilla Zimmermann**, University Health Network, Princess Margaret Cancer Centre



Many people link palliative care to end of life and hopelessness. In reality, it is designed to help patients living with serious illnesses by addressing symptoms, side effects and psychological and spiritual issues. Dr Camilla Zimmermann and her team found that people with advanced cancer who received early palliative care described a great benefit but felt that it carried a negative stigma. This work highlights the need to reframe how palliative care is perceived to successfully integrate it into routine care.

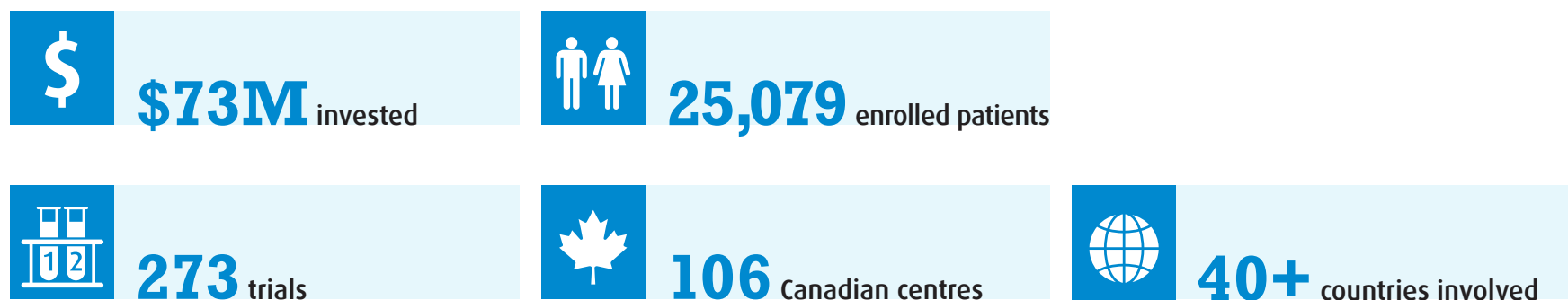


## Advances in clinical trials

Clinical trials are research studies in humans that test new ways to prevent, detect, treat or manage cancer or other diseases. Clinical trials provide information about the safety and effectiveness of new approaches to see if they should become widely available. Most of the standard cancer treatments used today were first shown to be effective through clinical trials.

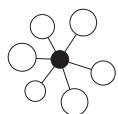
With our donors' support, we invest in clinical trials mainly by providing core funding to the Canadian Cancer Trials Group (CCTG). We also support other clinical trials through our competitive grant programs. Thanks to this research, many people with cancer are now living longer, fuller lives.

In the last 10 years:



Some of our research achievements include:

- |   |   |  |   |
|---|---|--|---|
| <b>1980</b><br>Canadian Cancer Society establishes the Clinical Trials Group at Queen's University.               | <b>2003</b><br>MA.17 trial shows that letrozole reduces breast cancer recurrence, changing care worldwide.                        | <b>2011</b><br>MAP.3 trial shows that exemestane prevents breast cancer in high-risk women.  | <b>2015</b><br>SC.23 trial defines a new standard of care for treating cancer that has spread to the bone to prevent flare-ups of pain following radiation therapy. |
| <b>2001</b><br>BR.10 trial reveals that 2 chemotherapies work best for lung cancer, changing clinical guidelines. | <b>2011</b><br>PR.7 trial demonstrates that people with prostate cancer benefit from a drug "holiday" to improve quality of life. | <b>2014</b><br>LY.12 trial identifies a less toxic chemotherapy regimen for Hodgkin lymphoma that gives patients a better quality of life. | <b>2015</b><br>MA.20 trial shows that additional radiation reduces breast cancer recurrence in some women.  |





## Guiding lung cancer diagnosis around the world

**Dr Lesley Seymour**, Canadian Cancer Trials Group, Queen's University

**Dr Ming-Sound Tsao**, Canadian Cancer Trials Group, University Health Network, Princess Margaret Cancer Centre

Lung cancers called adenocarcinomas can be classified into 5 different subtypes based on how they look under a microscope. Dr Lesley Seymour, Dr Ming-Sound Tsao and collaborators showed that these subtypes could help predict the risk of cancer recurrence and guide treatment decisions. This work was cited in the latest version of the World Health Organization's classification system for lung cancers (released in 2015), which will guide how lung cancer is diagnosed around the world.

Dr Tsao is the recipient of the Rachelle Archambault Innovation Grant of the Canadian Cancer Society.

## A new treatment strategy to improve glioblastoma survival in the elderly

**Dr Normand Laperriere**, Canadian Cancer Trials Group, University Health Network, Princess Margaret Cancer Centre

**Dr Christopher O'Callaghan**, Canadian Cancer Trials Group, Queen's University

**Dr James Perry**, Canadian Cancer Trials Group, Sunnybrook Health Sciences Centre

A pivotal clinical trial led by the Society-supported Canadian Cancer Trials Group found that adding chemotherapy to a shortened course of radiation therapy (followed by monthly maintenance therapy) reduced the risk of death in elderly patients with glioblastoma – a currently incurable form of brain cancer. This research will change how glioblastoma is treated in elderly patients around the world.

## A biomarker to personalize colorectal cancer treatment

**Dr Derek Jonker**, Canadian Cancer Trials Group, The Ottawa Hospital Research Institute

**Dr Geoffrey Liu**, Canadian Cancer Trials Group, University Health Network, Princess Margaret Cancer Centre

**Dr Christopher O'Callaghan**, Canadian Cancer Trials Group, Queen's University

Cetuximab (Erbix) is a drug used to treat colorectal cancer that has spread, but it doesn't work for everyone. Dr Geoffrey Liu and the team at the Canadian Cancer Trials Group examined tissues from patients enrolled in a Society-supported Canadian Cancer Trials Group study of cetuximab. Patients who responded very well to cetuximab had a specific variation in the FCGR2A gene. Testing for this red flag, or biomarker, could eventually help doctors make treatment decisions to improve colorectal cancer survival.

## Extending hormone therapy to keep breast cancer at bay

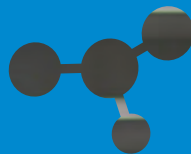
**Dr Karen Gelmon**, Canadian Cancer Trials Group, BC Cancer Agency

**Dr Wendy Parulekar**, Canadian Cancer Trials Group, Queen's University

**Dr Kathleen Pritchard**, Canadian Cancer Trials Group, Sunnybrook Odette Cancer Centre

Many post-menopausal women with early breast cancer are treated with a type of hormone therapy called an aromatase inhibitor for 5 years to prevent the cancer from coming back. A clinical trial by the Society-supported Canadian Cancer Trials Group showed that extending this treatment to 10 years reduced the risk of recurrence even more. This research will help women and their doctors make more informed long-term treatment choices.





# Fighting for Life Enhancing Quality of Life

**Who:** Diana Merino, childhood cancer survivor (pictured);  
Dr David Hodgson, radiation oncologist

**What:** Dr David Hodgson was funded by the Canadian Cancer Society to determine the best screening practices for secondary cancers that may arise in childhood cancer survivors.

**Why:** Preventing and finding secondary cancers at early stages in childhood cancer survivors will allow them to lead longer, healthier lives.



## Preventing secondary cancers in childhood cancer survivors

Diana Merino, 29, knows all too well that the cancer journey doesn't end after treatment. As a 3-time cancer survivor, she is continually monitored for long-term side effects as a result of her childhood cancer experience.

In 2000, Diana was diagnosed with Hodgkin lymphoma at age 12. She underwent 6 months of treatment that involved chemotherapy and radiation. The cancer returned 2 years later. In late 2002, she was declared cancer-free. Diana remained healthy until 2013, when she was diagnosed with sarcoma. The following year, she underwent surgery and has been cancer-free since.

"Cancer is not something you forget when you are cleared. As a survivor of childhood cancer, you need to be constantly monitored. It is a lifelong continuum of care, and it's very important to be aware of that," says Diana.

Dr David Hodgson, a researcher at the Princess Margaret Cancer Centre, understands the plight of survivors like Diana. He was funded by the Canadian Cancer Society, through a partnership with the Pediatric Oncology Group of Ontario (POGO), to find new ways to prevent and manage secondary cancers in childhood cancer survivors.

Radiation therapy, although a very effective treatment for Hodgkin lymphoma, increases the risk of getting cancer later in life. Twenty or 30 years ago, almost every young girl with Hodgkin lymphoma received chest radiation as treatment for their disease. As a result, approximately 20% of these survivors developed breast cancer within 30 years of completing treatment. Thanks to research advances over the years, treatments have improved immensely, and this risk is expected to be significantly less with modern treatment.

In the world's largest clinical study to assess breast screening in this population, Dr Hodgson discovered that magnetic resonance imaging (MRI) detects invasive breast tumours earlier than other methods, making them easier to treat. Dr Hodgson then collaborated with Dr Celicia Cotton, a researcher from the University of Waterloo, to show that MRI-based screening reduces the risk of death related to breast cancer in female survivors of Hodgkin lymphoma.

"As cure rates continue to improve, the issues faced by long-term survivors will keep growing. Survivors are focused more now than ever on the impact of treatments on their long-term health and quality of life," says Dr Hodgson. "I'm very grateful to the Canadian Cancer Society for recognizing the challenges faced by childhood cancer survivors. Funding this type of research is necessary to help them live a longer, healthier life."

Diana Merino, who has already started to undergo regular breast cancer screening, agrees. ["Dr Hodgson's research is so relevant, not only to me but to other survivors like me. If you can help prevent a full-blown cancer from happening in people who have already experienced cancer – it is a great stride in improving their quality of life."](#)

Diana's cancer journey inspired her career path. She is now a cancer researcher herself, working on understanding the risks that some childhood cancer survivors face later in life.

"As a childhood cancer survivor and a researcher, I understand that the life-saving therapy that keeps us alive can also impact our health for the rest of our lives. I want to thank Society donors for addressing this issue by funding research that benefits the well-being of survivors."





# Research Investment in 2016



Dr Rebecca Auer (left), Dr John Bell (centre) and Dr Jean-Simon Diallo (right) are advancing the field of cancer-fighting viruses at The Ottawa Hospital Research Institute.

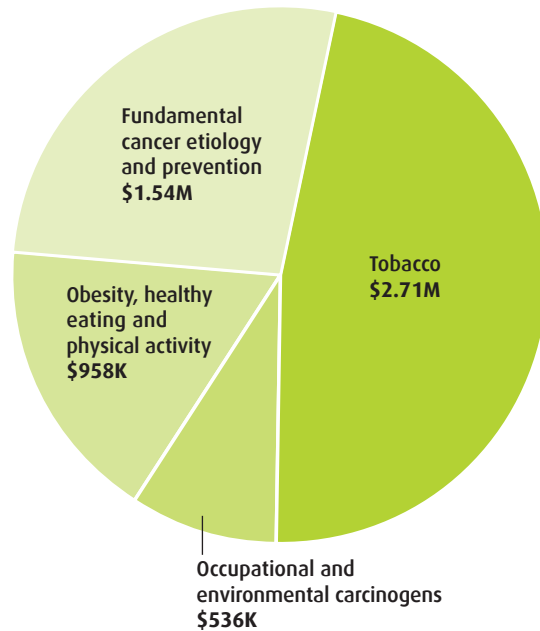
## Investment by research area

Through CCSRI, our donors support research that spans the cancer trajectory from prevention, to diagnosis and treatment, to survivorship. In 2016 we invested \$37.4 million in research.

### Prevention

**\$5.8M**

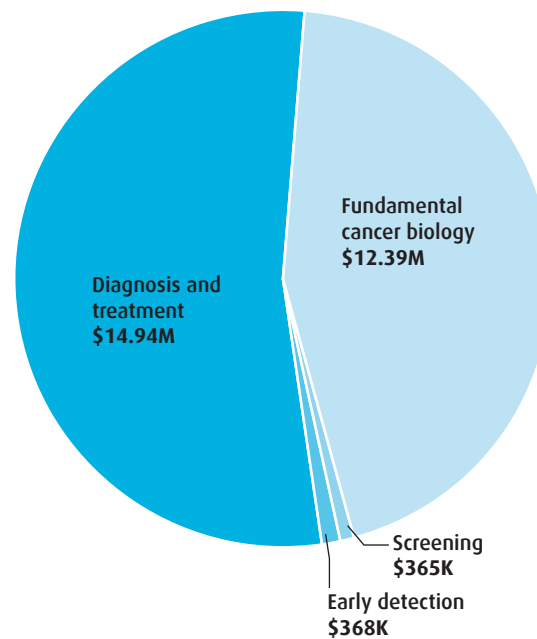
**16%**



### Basic, biomedical and translational

**\$28.1M**

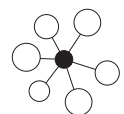
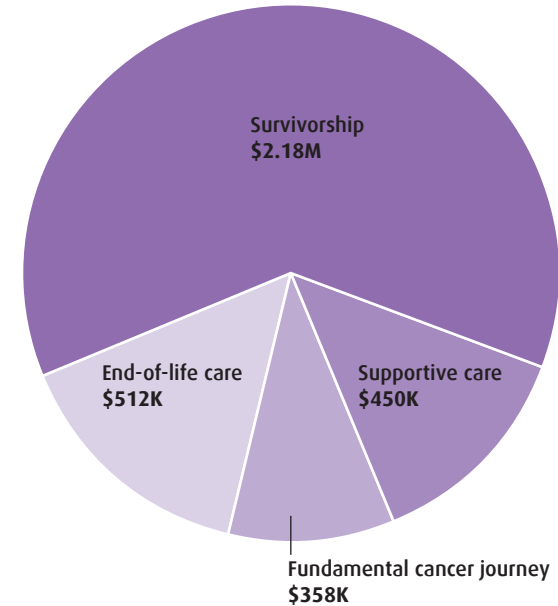
**75%**



### Quality of life

**\$3.5M**

**9%**



## Investment by funding program

Thanks to our donors, CCSRI supports the best cancer research in Canada through open grant competitions and strategic research centres. Our grants and awards support researchers across the country who are studying how to reduce the number of cancers diagnosed, improve survival rates and enhance the quality of life of people affected by cancer. Our support of research centres establishes collaborative networks spanning the cancer research spectrum.

### Grants and awards<sup>5</sup>

<b>Prevention Research Grants</b> to accelerate risk reduction research – up to <b>\$600K</b> over <b>4 years</b>	<b>Canadian Cancer Society-Partner Prevention Research Grants</b> to promote collaboration and reduce cancer incidence – up to <b>\$800K</b> over <b>4 years</b>	<b>Career Development Awards in Prevention</b> (for post-doctoral and clinical fellows and junior faculty) to provide salary and research support – up to <b>\$225K</b> over <b>3 years</b>
<b>Innovation Grants</b> to support high-risk/high-reward creative solutions in cancer research and feed the scientific idea pipeline – up to <b>\$200K</b> over <b>2-3 years</b>	<b>Innovation to Impact (i2i) Grants</b> to support development of successful findings from a funded Innovation Grant – up to <b>\$450K</b> over <b>3 years</b>	<b>Impact Grants</b> to support well-developed cancer research programs to significantly advance the scientific understanding of cancer – up to <b>\$1.25M</b> over <b>5 years</b>
<b>Quality of Life Research Grants</b> to support research aimed at reducing the burden of disease for patients, survivors and their families – up to <b>\$300K</b> over <b>2-3 years</b>	<b>Knowledge to Action Grants</b> to close the gap between research evidence and practice, to improve outcomes across the cancer trajectory – up to <b>\$100K</b> over <b>2 years</b>	
<b>Travel Awards</b> for trainees attending conferences – up to <b>\$2K</b>		

### Research centres

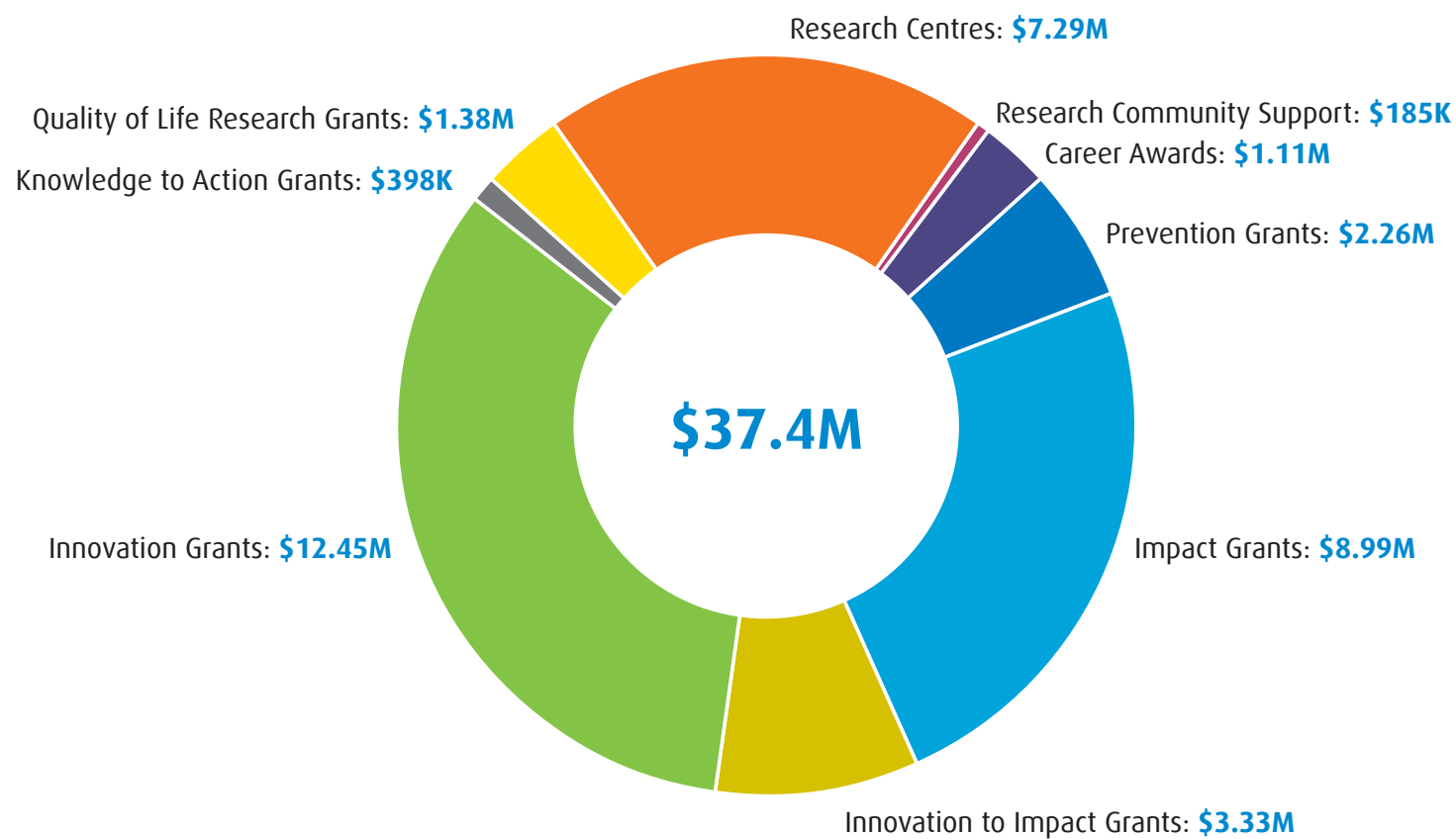
<p><b>Canadian Centre for Applied Research in Cancer Control (ARCC)</b> is a pan-Canadian research network whose mission is to improve cancer control and the delivery of care through interdisciplinary leadership in health economics, services, policy and ethics research, education and knowledge translation.</p> <p><b>Canadian Cancer Trials Group (CCTG)</b> is a cooperative oncology group involving more than 80 member institutions across Canada. It carries out national and international multicentre trials in cancer prevention, therapy and supportive care.</p> <p><b>Propel Centre for Population Health Impact</b> is a pan-Canadian, collaborative enterprise that conducts research, evaluation and knowledge exchange to accelerate improvements in the health of populations to help prevent cancer and other chronic diseases, particularly in the areas of tobacco control and youth health.</p>
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<sup>5</sup> Funding programs as of December 2016. For full program details, visit [cancer.ca/research](http://cancer.ca/research)





In 2016 our donors' investments were spread across several unique funding programs. Innovation Grants accounted for the largest proportion of CCSRI's portfolio (\$12.45 million) followed by Impact Grants (\$8.99 million) and research centres (\$7.29 million).

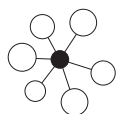
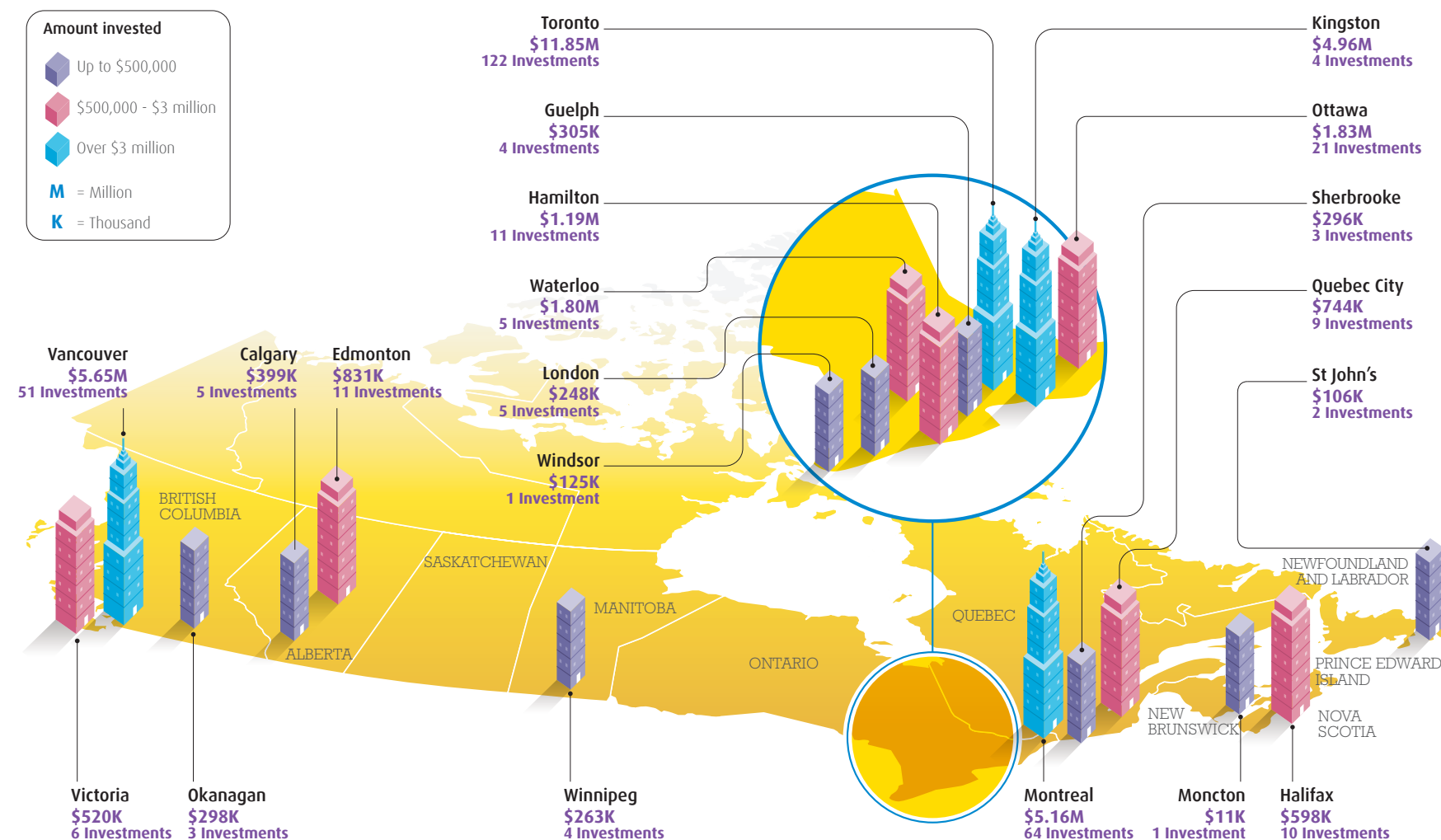


Research Community Support includes Canadian Cancer Society Awards for Excellence, prevention network, and Canadian Cancer Research Conference.



## Investment by region

The Society is proud to support excellent cancer research across Canada. Our researchers exemplify how research crosses geographical borders through their national and international collaborations and far-reaching impacts on fundamental knowledge, policy, practice and programs. In 2016 CCSRI supported 287 lead scientists through 342 investments in 20 cities across Canada. Their work is making a difference both at home and abroad.

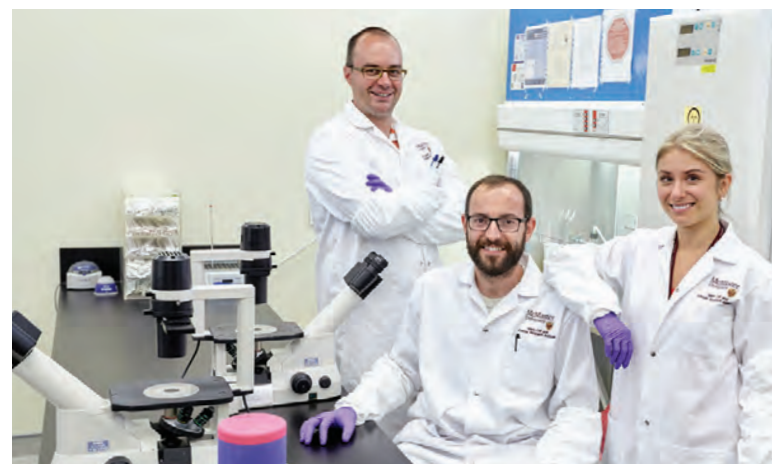


## Investment by institution

CCSRI supports researchers at Canada's top universities, hospitals and research centres. In 2016 CCSRI supported 342 grants and career awards across 8 provinces and 36 research institutions.<sup>6</sup>

Province	Research Institution	Total \$
Alberta	Alberta Health Services	\$274K
	University of Alberta	\$557K
	University of Calgary	\$399K
	<b>Alberta Total</b>	<b>\$1.2M</b>
British Columbia	BC Cancer Agency	\$3M
	University of British Columbia	\$3.2M
	University of Victoria	\$270K
	<b>British Columbia Total</b>	<b>\$6.5M</b>
Manitoba	University of Manitoba	\$263K
	<b>Manitoba Total</b>	<b>\$263K</b>
New Brunswick	University of Moncton	\$11K
	<b>New Brunswick Total</b>	<b>\$11K</b>
Newfoundland and Labrador	Memorial University of Newfoundland	\$106K
	<b>Newfoundland and Labrador Total</b>	<b>\$106K</b>
Nova Scotia	Dalhousie University	\$448K
	IWK-Grace Health Centre	\$149K
	<b>Nova Scotia Total</b>	<b>\$598K</b>
Ontario	Cancer Care Ontario	\$621K
	Centre for Addiction and Mental Health	\$386K
	Children's Hospital of Eastern Ontario	\$244K
	McMaster University	\$947K
	Mount Sinai Hospital	\$1.5M
	The Ottawa Hospital Research Institute	\$976K
	Queen's University	\$4.9M
	Ryerson University	\$4K
	St. Michael's Hospital	\$100K
	Sunnybrook Research Institute	\$592K
	The Hospital for Sick Children	\$1.7M
	University Health Network (Princess Margaret Cancer Centre, Toronto General Hospital, Toronto Western Hospital)	\$5.1M
	University of Guelph	\$305K
	University of Ottawa	\$609K
	University of Toronto	\$1.8M
	University of Waterloo	\$1.8M
	University of Windsor	\$125K
	Western University	\$248K
	Women's College Hospital	\$150K
	York University	\$100
	<b>Ontario Total</b>	<b>\$22.3M</b>
Quebec	Institut national de recherche scientifique	\$76K
	McGill University and its affiliate institutions	\$2.5M
	Université Laval and its affiliate institutions	\$668K
	Université de Montréal and its affiliate institutions	\$2.7M
	Université de Sherbrooke	\$296K
	<b>Quebec Total</b>	<b>\$6.2M</b>

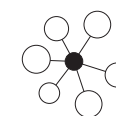
<sup>6</sup> Excludes non-geographic-specific research community support.



Members of Dr Mick Bhatia's team at McMaster University.



Dr Claude Perreault (front row, centre) and his team at the Université de Montréal.





# Spotlight: Canadian Cancer Trials Group (CCTG)

## What is CCTG?

Established in 1980, the world-renowned CCTG is the only group in Canada that carries out all types of clinical trials for all types of cancer.

### CCTG trials:



Study new cancer therapies, supportive care and prevention strategies



Involve more than **80 Canadian hospitals** and cancer centres from coast to coast



Involve collaborations with researchers in more than **40 countries** across **6 continents**

## How do we support CCTG?

Thanks to Canadian Cancer Society donors, we provide the core funding for CCTG to operate out of its headquarters at Queen's University in Kingston and support trial activities at centres across the country. Without this funding, CCTG trials would not be possible.



We currently invest about **\$5M** in CCTG each year – our largest single research investment



Every **\$1** invested in CCTG by the Canadian Cancer Society allows CCTG to raise another **\$4** to cover the costs of running about 100 trials at any given time

## How is CCTG changing cancer?

CCTG trials have shaped how people living with and beyond cancer are treated across Canada. Canadian Cancer Society donors help ensure that CCTG continues to set the bar for the safest, most effective cancer care in Canada and around the world.

### Since 1980:



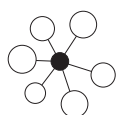
Over **200** new drugs tested as potential life-saving treatments



Cutting-edge care provided to about **80,000** patients



Worldwide standards of care improved for patients with many different types of cancer, including breast, prostate, brain and lung



In 2016 our donors provided \$4.81 million to support the Canadian Cancer Trials Group (CCTG), which is the only Canadian cancer trials group that conducts the entire range of clinical trials across all cancer types. These trials involve coordinated efforts across Canada and beyond to test new ways to prevent cancer, improve survival and enhance quality of life of those living with cancer worldwide.



In 2016 CCTG led or was involved in 113 active trials<sup>7</sup> (shown below) relating to more than 20 different cancer types.



Trials involved 24 countries outside of Canada.



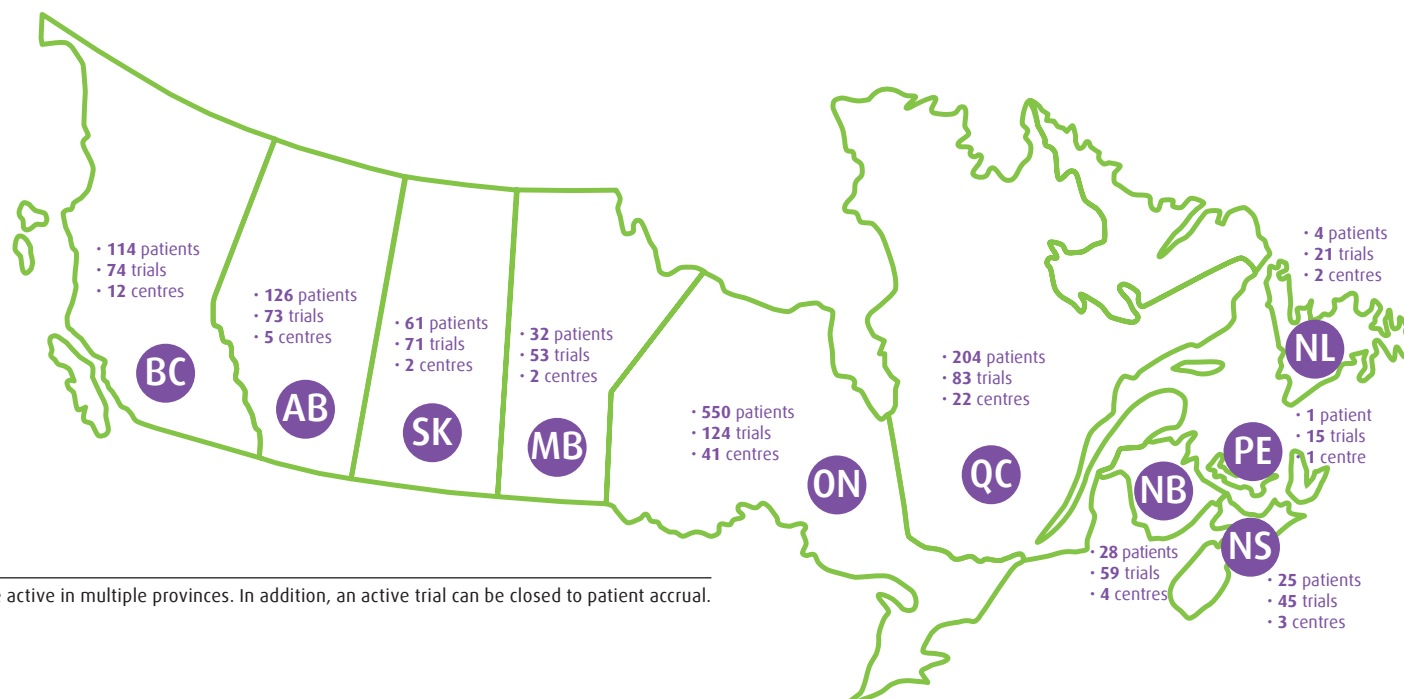
16,682 Canadian patients and 12,584 patients outside of Canada have participated in these trials since they began.



1,145 Canadians were newly enrolled in trials in 2016 (shown below).



Trials took place in 94 centres in communities all across Canada (shown below).



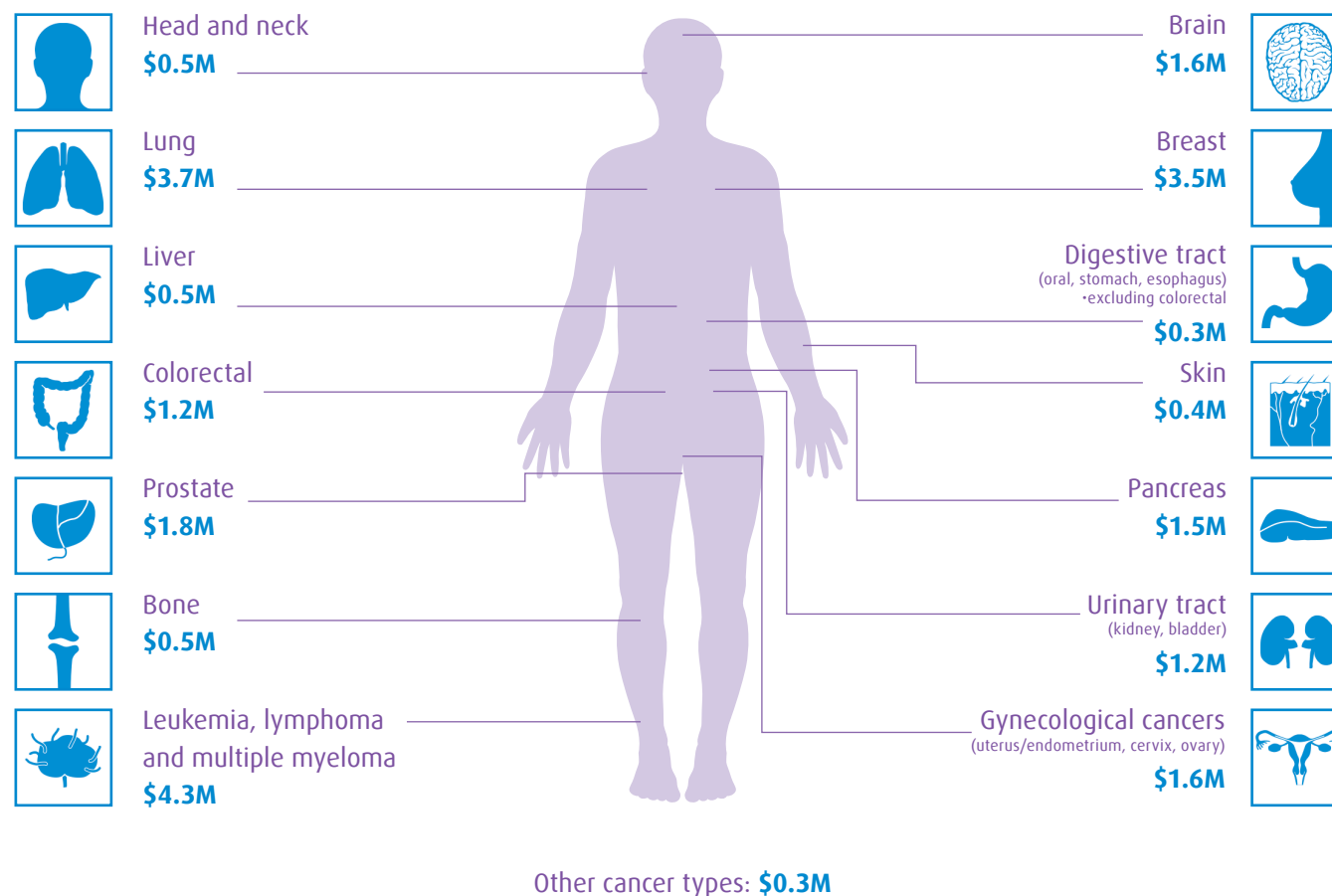
<sup>7</sup> A trial can be active in multiple provinces. In addition, an active trial can be closed to patient accrual.



## Investment by cancer type

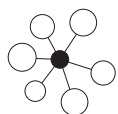
CCSRI supports research across all cancer types. In 2016, 61% of CCSRI's portfolio targeted specific types of cancer. The other 39% was invested in research that has implications for multiple or all cancer types.

### Research targeting specific cancers: **\$22.9M**



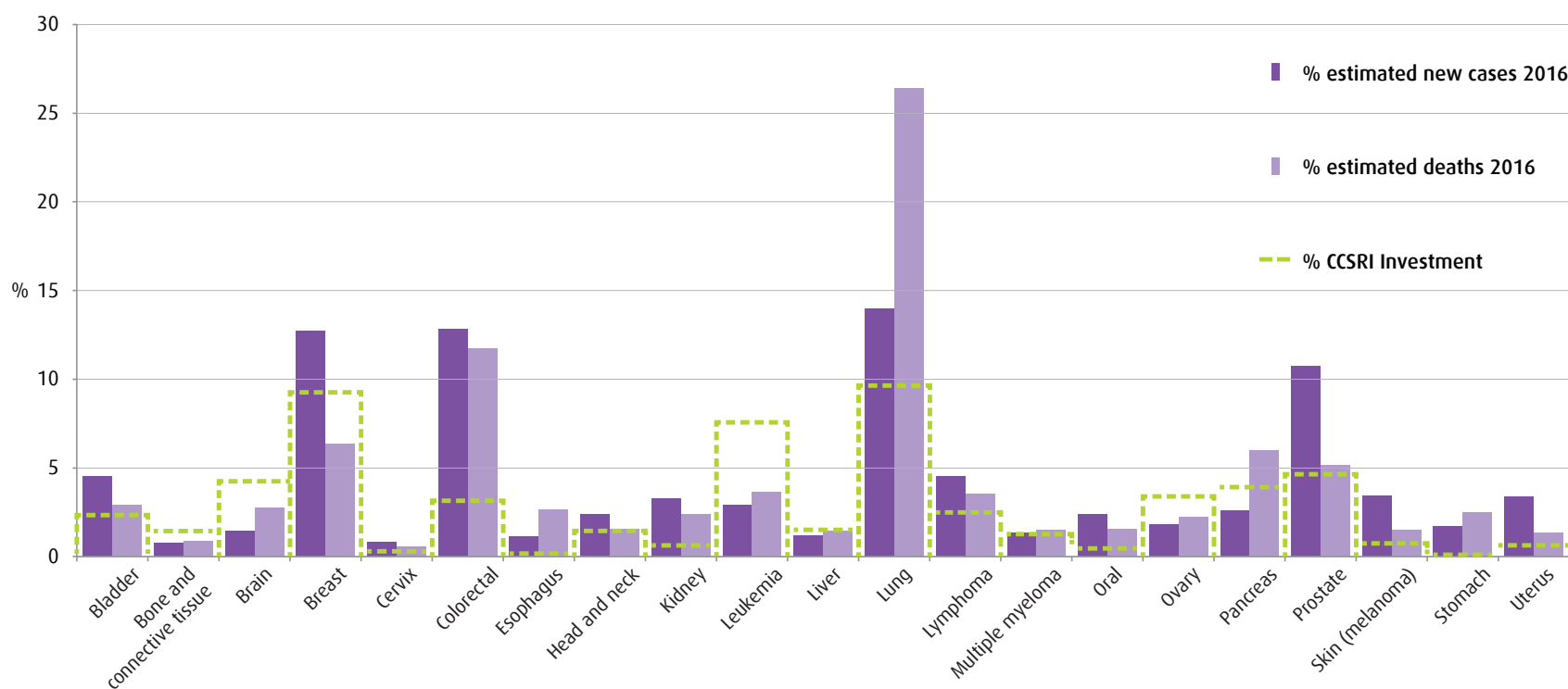
### + Research applicable to multiple/all cancers: **\$14.5M**

**= \$37.4M**

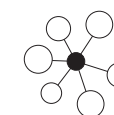




The CCSRI research portfolio covers a diverse range of cancers, including those that impose a high burden on Canadians and those that are particularly challenging to treat. Below, our 2016 investment in specific cancer types is displayed by percentage and compared to the percentage of estimated new cancer cases and deaths in 2016.<sup>8</sup>

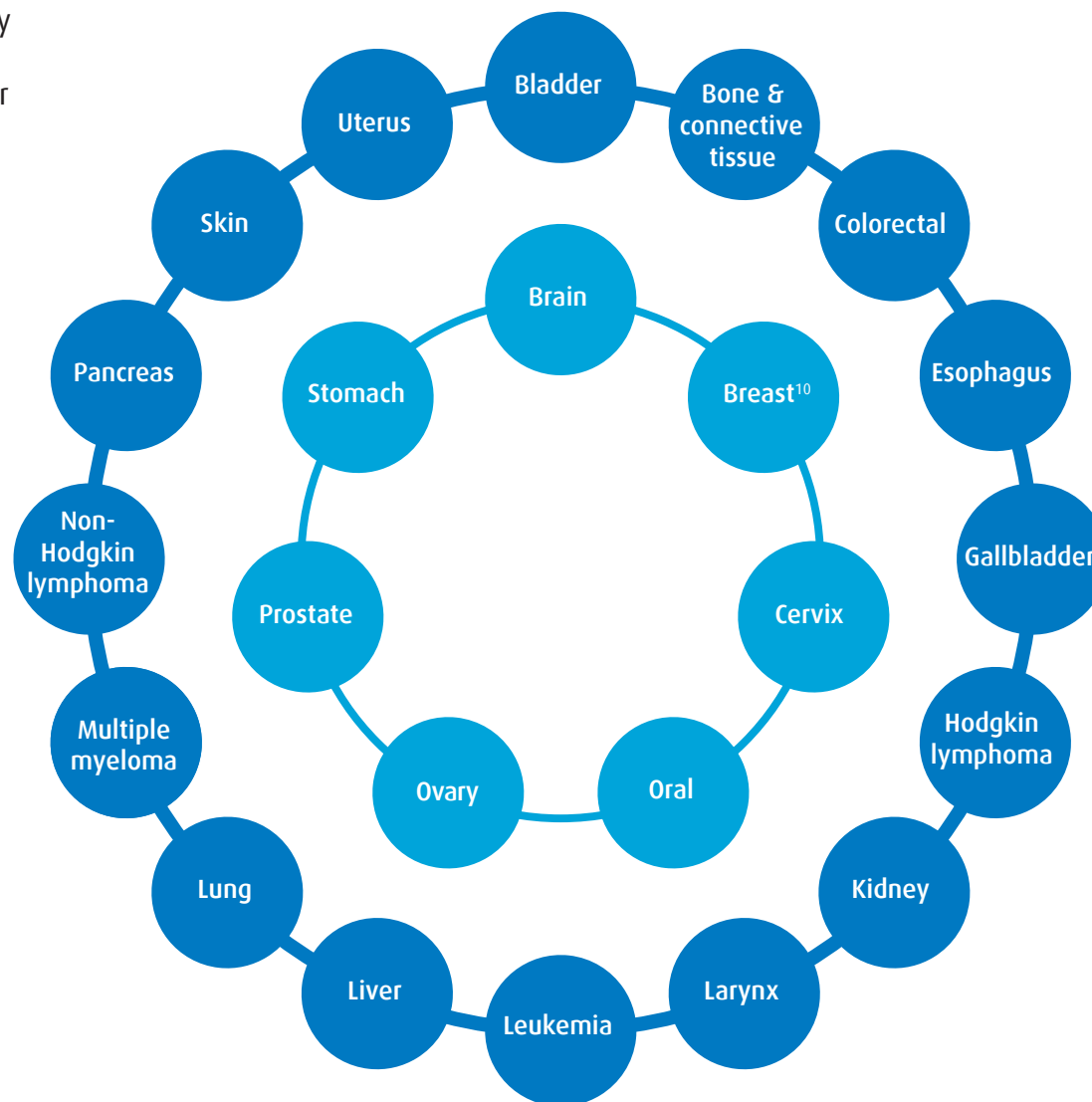


<sup>8</sup> Canadian Cancer Society's Advisory Committee on Cancer Statistics. Canadian Cancer Statistics 2016. Toronto, ON: Canadian Cancer Society, 2016.



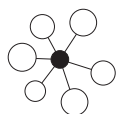
Thanks to our donors, the Canadian Cancer Society is the largest national charitable funder of cancer research in Canada, accounting for about a quarter of the country's charitable investment in cancer research. We are committed to helping Canadians through the entire cancer journey – focusing our research on prevention, detection, diagnosis, treatment and the quality of life of those affected by this disease.

Through CCSRI, we invest more than any other national charity in childhood cancer research, in cancer prevention research and in research in 16 specific cancer types including some with the lowest survival rates in Canada – like pancreatic, esophageal, liver and lung cancers.<sup>9</sup>



<sup>9</sup> Based on the most recent Canadian Cancer Research Alliance survey of government and voluntary sector investment in cancer research in 2014, published in March 2017.

<sup>10</sup> As of February 1, 2017, the Canadian Cancer Society and the Canadian Breast Cancer Foundation merged, making the Society the largest national charitable funder of breast cancer research.



## Strength through partnerships

The Canadian Cancer Society collaborates with organizations across Canada to set strategies that shape cancer research and have even more impact with every donor dollar.

### Collaborative investment

Funding partnerships extend the impact of Canadian Cancer Society donors and promote coordinated action against cancer.

#### Brain Canada

- The Canadian Cancer Society was pleased to expand a partnership with **Brain Canada** to support 1 new Impact Grant in 2016 representing a joint investment of \$1.2M. This brings our collaborative investment that also includes contributions from the **Brain Tumour Foundation of Canada** to over \$6M.

#### Lotte & John Hecht Memorial Foundation

- A partnership with the **Lotte & John Hecht Memorial Foundation** in support of innovative research also grew in 2016. This partnership supported 4 new grants representing a joint commitment of over \$1M. Together we have supported 23 research projects since 2012, representing a collaborative investment of \$5.4M.

#### Canadian Institutes of Health Research – Institute of Cancer Research

- A new investment with the **Canadian Institutes of Health Research – Institute of Cancer Research** supported a new \$100K Knowledge to Action Grant focused on improving cancer screening in northern Indigenous communities. This builds on years of productive collaboration that has supported \$4.7M in prevention and knowledge translation research in Canada.

We are proud of our continued partnerships that support excellent Canadian cancer research. In particular:

- The **Princess Margaret Cancer Centre** to support a significant project to understand the underlying biology of mutations in cancers.
- The **Canadian Breast Cancer Foundation** to support 2 young scientists focused on breast cancer prevention.
- The **New Brunswick Health Research Foundation, Craig's Cause Pancreatic Cancer Society** and the **QEII Foundation** to support an Innovation Grant to improve the detection of pancreatic cancer.
- The **National Pancreatic Cancer Foundation of Canada, Craig's Cause Pancreatic Cancer Society** and the **QEII Foundation** to support an Innovation to Impact Grant testing an oncolytic virus to stop cancer spread.
- **Prostate Cancer Canada** to support an innovative project to find a better biomarker for prostate cancer.





# Our visionary donors

## Named research grants, programs and funds

The Canadian Cancer Society Research Institute and its research programs are funded through donations to the Canadian Cancer Society. We would like to express our gratitude to all the visionary donors who contributed to our research impact in 2016.

## Research grants and awards

Gifts from the following donors enabled the funding of an entire research project. Their vision and generosity have been recognized with the naming of a grant. Thank you for making a difference in the lives of Canadians.

The Bernard and Francine Dorval Prize Award for Excellence

The Brain Tumour Foundation of Canada Impact Grant of the Canadian Cancer Society and Brain Canada in support of Dr Michael Taylor, brain cancer, 2015-2020

GIVETOLIVE Research Scientist Award in Prevention Research in support of Dr Ryan Rhodes, exercise and prevention, 2011-2016

The Great Canadian Innovation Grant in support of Dr Angela Brooks-Wilson, cancer genetics, 2015-2017

The Great Canadian Innovation Grant in support of Dr Philipp Lange, childhood cancer, 2016-2018

The Great Canadian Innovation Grant in support of Dr Marco Magalhaes, oral cancer, 2016-2018

The John Murphy Innovation Grant of the Canadian Cancer Society in support of Dr Jennifer Stinson, adolescent cancer care, 2015-2017

Lotte & John Hecht Memorial Foundation Innovation, Innovation to Impact, and Impact Grants of the Canadian Cancer Society in support of innovative cancer research, 2013-2018

Louisa Gale Scholars in support of several cancer researchers, 2013-2016

Mary Burleigh Stewart Cancer Research Scholarship, 2015-2016

The Pedal for Hope Impact Grant of the Canadian Cancer Society in support of Dr Lillian Sung, childhood cancer, 2014-2019

A Quality of Life Grant of the Canadian Cancer Society in memory of James Tyrrell in support of Dr Kim Edelstein, young adult cancer survivorship, 2013-2017

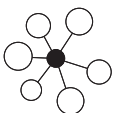
Ride2Survive Brain Cancer Impact Grant of the Canadian Cancer Society and Brain Canada in support of Dr Poul Sorensen, brain cancer, 2015-2020

The W. Gary Rowe Innovation Grants of the Canadian Cancer Society in support of Dr Mani Larijani, leukemia and lymphoma, 2013-2016 and Dr Ken Hirasawa, novel cancer therapy, 2014-2017

The WICC Alberta Innovation Grant of the Canadian Cancer Society in support of Dr Mark Glover, cancer biology, 2015-2017

The WICC Ontario 20th Anniversary Prostate Cancer Innovation Grant of the Canadian Cancer Society, in support of Dr Housheng Hansen He, prostate cancer, 2015-2017

The WICC Ontario Innovation Grant of the Canadian Cancer Society in support of Dr Luc Sabourin, breast cancer, 2015-2018



## Funds

Thank you to the following donors for their commitment to funding excellence in cancer research.

7 Days in May Foundation in support of pancreatic cancer research

Bill Barley Innovation Fund in support of non-Hodgkin lymphoma research

Birdsell Family and Friends Brain Cancer Research Fund

Cardone Family Cancer Fund in support of brain cancer research

Circles of Friends Pancreatic Cancer Research Fund

Cleans for Cleavage Breast Cancer Research Fund

Comda Conquering Cancer Fund in support of cancer research

Craig's Cause Pancreatic Cancer Research Fund

The Diller Project Catalyst Fund in support of brain cancer research

Ed Kozystko and Frances Kozystko Fund for Cancer Research

Ernie Westergaard Travel Fund

Face Off Against Cancer Fund for Cancer Research

Fonds Catalyst de la Caisse Desjardins de Nicolet pour la recherche sur les sarcomes in support of sarcoma cancer research

Fonds Sylvain Poissant pour le cancer du peau in support of skin cancer research

Fung and Duen Au-Yeung Foundation Fund in support of cancer prevention research

Ginty Jocius Brain Cancer Research Fund

The Gord Downie Brain Cancer Research Fund

Haladner Memorial Foundation Research Fund in Memory of Gertrude Green in support of ovarian, breast and prostate cancer research

Helen Mary Storey Ovarian Cancer Research Fund

The Hodgson Family Ovarian Cancer Research Fund

Jack Dell'Accio Fund in honour of Vito Dell'Accio for research into hard-to-treat cancers, prevention awareness and survivorship

Junk Rangers Fund for Cancer Research in support of liver cancer research

The Kate Linder and Friends Fund for Women's Cancer Research in support of breast and ovarian cancer research

Love for Lizzie Fund in support of childhood cancer research

The Lusomé Cancer Research Fund in support of breast cancer research

The Marion Dorothy Pauderis Innovation Fund in support of Innovation Grants

Michael Albert Garron Foundation Synovial Sarcoma Research Fund in support of musculoskeletal cancer research

Norris Family Pediatric Brain Cancer Research Fund

Mauro Family Pediatric Brain Cancer Research Fund

Peter Nikkel Fund in support of prostate cancer research

The Prairie Women on Snowmobiles Breast Cancer Research Impact Fund

Red Lipstick Warriors Catalyst Fund in support of colon cancer research

Renfrew Collegiate Institute Research Fund in honour of Paige Dillabough

Robert Michaud (BA 64) and Carol-Lynn Burnett-Michaud (Law 90) Fund, supporting CCTG projects at Queens University

Sarcoma Steps Fund in support of sarcoma research

Sir John A. MacDonald Secondary School Cancer Research Fund

TELUS Catalyst Fund in support of brain cancer research

Tets Haya Memorial Fund in support of colon cancer research

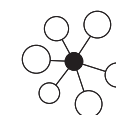
W.G. Stephens Cancer Research Fund

Walk the Talk Lymphoma Research Catalyst Fund

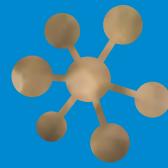
WICC Alberta Brain Cancer Research Fund

WICC BC Fund in support of cancer prevention research

Winnipeg Police Services Fund







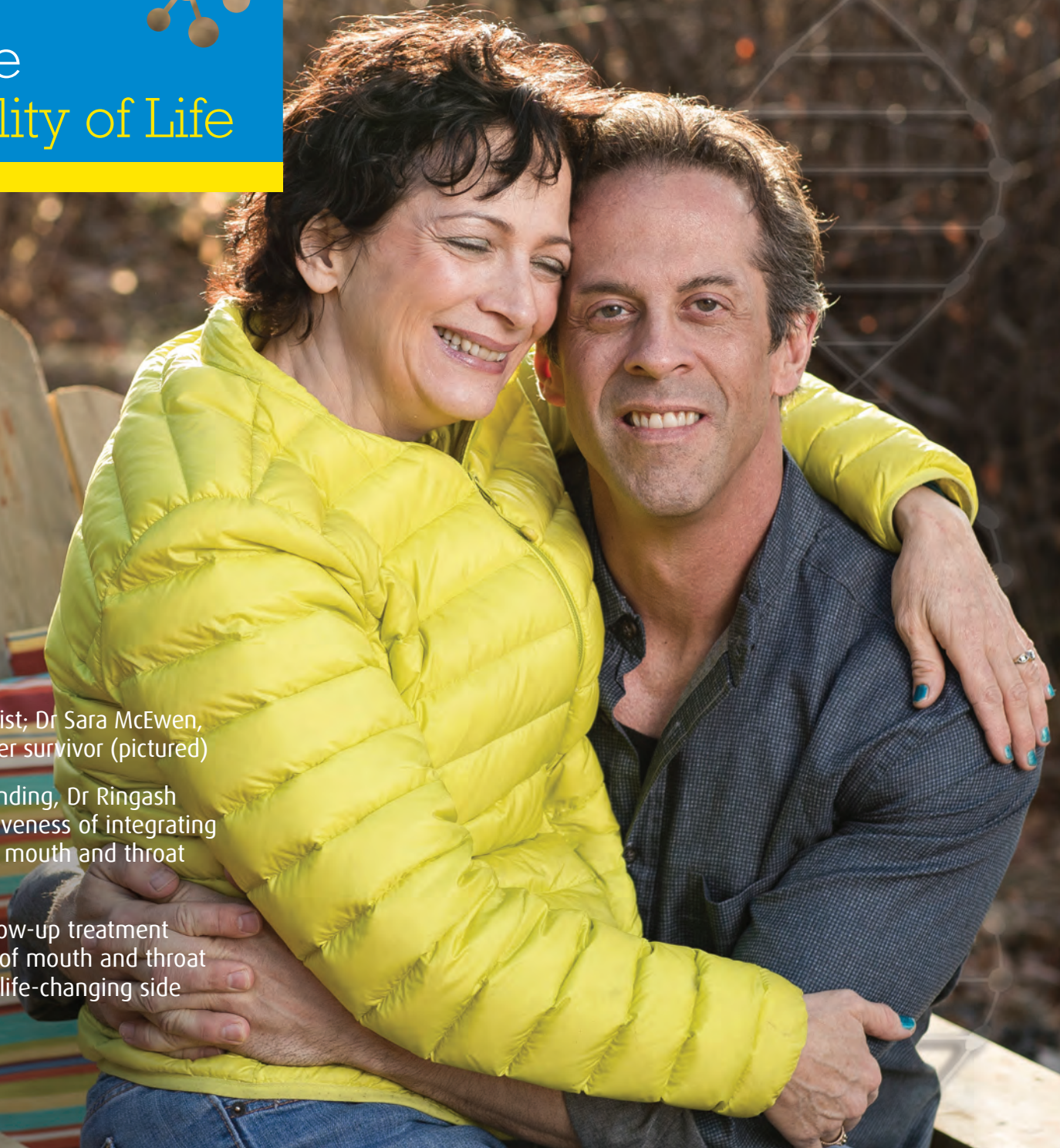
# Fighting for Life

## Enhancing Quality of Life

**Who:** Dr Jolie Ringash, radiation oncologist; Dr Sara McEwen, research scientist; Will Dove, throat cancer survivor (pictured)

**What:** With Canadian Cancer Society funding, Dr Ringash and Dr McEwen are studying the effectiveness of integrating rehabilitation into the follow-up care of mouth and throat cancer survivors.

**Why:** Integrating rehabilitation into follow-up treatment may help to improve the quality of life of mouth and throat cancer survivors, who often face many life-changing side effects from treatment.





## Helping survivors live the life they had before cancer

Will Dove loves to cook for his family. But since his cancer treatment, cooking has lost some of its joy.

After treatment for stage 4 throat cancer, including intense chemotherapy and radiation that left him with burns down his throat, Will is no longer able to taste the food he is preparing. He's also constantly parched as the treatment for his cancer damaged his salivary glands.

"There are a number of devastating side effects that survivors of mouth and throat cancer have to live with," says Will, a web developer in Calgary. "I have dry mouth and can't taste most foods. My teeth are also extremely sensitive, and I had mouth sores for months after my treatment ended."

Mouth and throat cancer survivors can experience side effects ranging from dry mouth to fatigue to shoulder pain and issues with their speech. With support from the Canadian Cancer Society, Dr Sara McEwen and Dr Jolie Ringash are aiming to make these side effects more bearable by studying the effectiveness of incorporating rehabilitation therapy into follow-up care after cancer treatment.

Dr McEwen and Dr Ringash explained that rehabilitation services do exist but are not offered consistently to patients and many survivors aren't aware of them.

"Rehab and oncology have been living on 2 different planets for a long time. Dr McEwen and I want to bring these 2 areas of expertise together to improve survivors' quality of life," says Dr Ringash, a radiation oncologist at Princess Margaret Cancer Centre.

Dr McEwen, a researcher at Sunnybrook Health Sciences Centre and former physiotherapist, adds, "Cancer and its treatment impacts people's lives in a very significant way. We want to help them live the life they were living before they had cancer."

Together, the researchers developed a rehabilitation consultation process done post-cancer treatment. A rehab expert meets with a patient during routine cancer clinic follow-up. Together, they identify the specific concerns the patient wants help with, and they create a personalized rehabilitation plan that includes services to address the problems.

"This brief consult is something that is achievable in most cancer clinics. Our long-term vision is for every mouth and throat cancer survivor to have a rehabilitation consult integrated into their follow-up care," says Dr McEwen.

**"As the number of mouth and throat cancer cases increases in the upcoming years, the number of survivors will increase as well. We need to address this survivorship issue today so patients can continue to live the lives they had before cancer,"** adds Dr Ringash, who credits the Society and its donors for investing in this type of survivorship research.

Will agrees that this research is extremely important for mouth and throat cancer survivors. "It would have been amazing to have met with someone who could have helped me work through these side effects after my treatment was over."







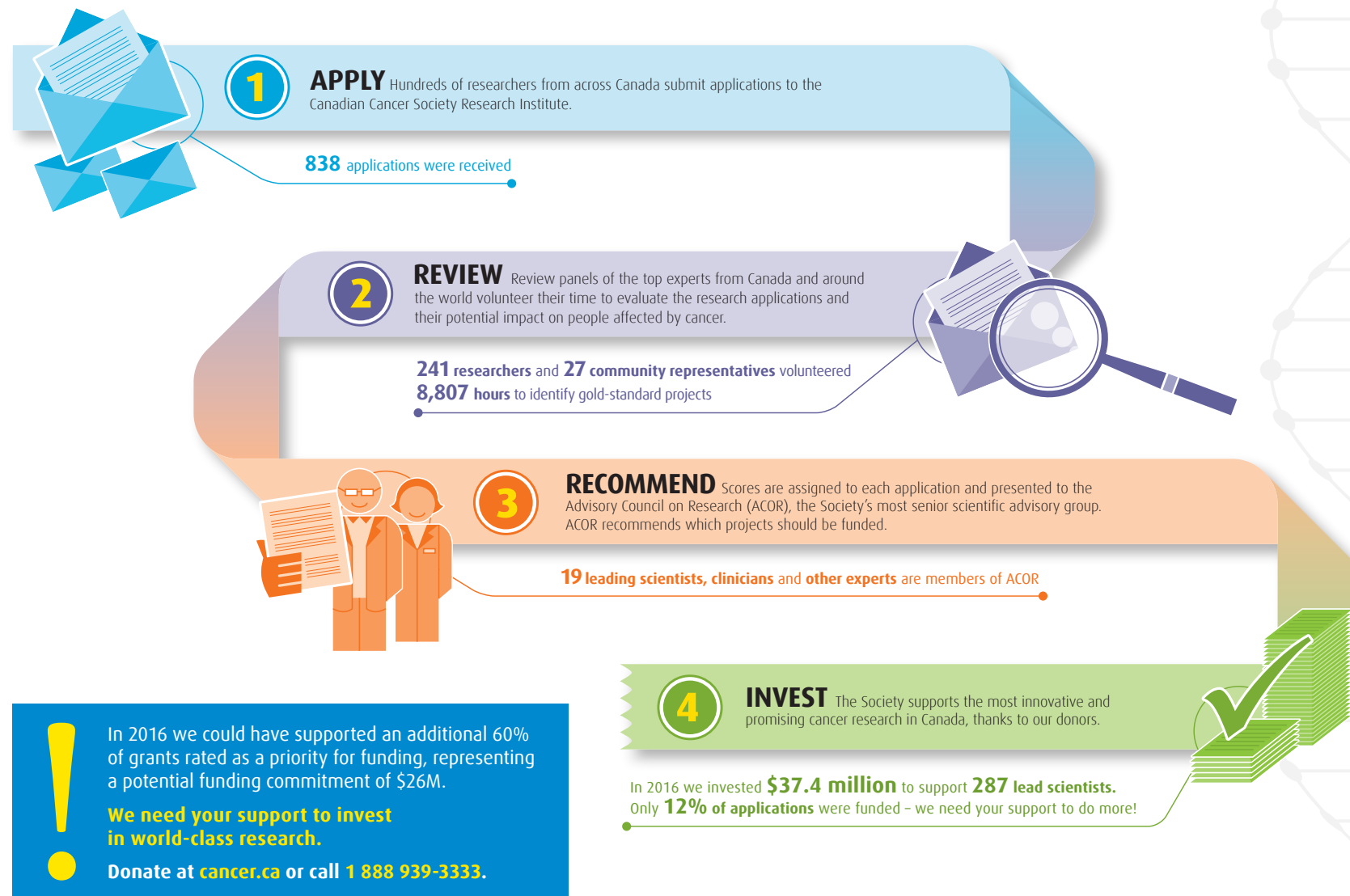
# How CCSRI Selects the Best Research

Dr Jennifer Jones' research at the University Health Network,  
Princess Margaret Cancer Centre is helping improve cancer survivors' quality of life.



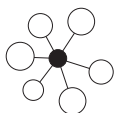
# Expert review process

## 4 steps to funding our gold-standard research



## Newly awarded grants and awards in 2016

In 2016 CCSRI awarded 101 new research grants and awards, representing new commitments of \$24.4 million over the next 5 years.



## Advisory Council on Research

As the Society's most senior scientific advisory group, the Advisory Council on Research (ACOR) provides strategic advice related to CCSRI's research programs and ultimately ensures that we fund the best cancer research in Canada. ACOR is made up of national experts who have a superior understanding of cancer research and its relevance to cancer control. ACOR members also have strong ties to CCSRI, having served as expert peer reviewers or panel chairs in the past. Members help evaluate the review process, provide advice to senior leadership on research funding strategies, recommend support for particular grants and programs, and help monitor the overall direction and focus of the research institute. ACOR members volunteer hours of their time to help the Society achieve its mission.

**Dr Siân Bevan**, Canadian Cancer Society, Toronto (Ex-officio)

**Dr Robert Bristow**, University Health Network,  
Princess Margaret Cancer Centre, Toronto

**Dr Paul Demers**, Cancer Care Ontario, Toronto

**Dr Carolyn Gotay**, University of British Columbia,  
Vancouver (Term Complete)

**Dr Eva Grunfeld**, University of Toronto, Toronto (Term Complete)

**Dr David Huntsman**, BC Cancer Agency, Vancouver

**Mark Hierlihy**, Canadian Cancer Society – Ontario Division, Toronto

**Martin Kabat**, Canadian Cancer Society – Ontario Division,  
Toronto (Term Complete)

**Dr Jon Kerner**, Canadian Partnership Against Cancer, Toronto

**Dr Michael Moran**, The Hospital for Sick Children, Toronto

**Dr Hanne Ostergaard**, University of Alberta, Edmonton

**Dr Morag Park**, McGill University, Montreal

**Dr Jolie Ringash**, University Health Network,  
Princess Margaret Cancer Centre, Toronto

**Dr Stephen Robbins**, University of Calgary, Calgary (Ex-officio)

**Dr Gary Rodin**, University Health Network,  
Princess Margaret Cancer Centre, Toronto (Term Complete)

**Dr Calvin Roskelley**, University of British Columbia,  
Vancouver (Scientific Chair)

**Dr Peter Siegel**, McGill University, Montreal

**Dr Ming-Sound Tsao**, University Health Network,  
Princess Margaret Cancer Centre, Toronto

**Anne Vézina**, Canadian Cancer Society, Toronto  
(Ex-officio, Term Complete)







## Canadian Cancer Society Research Institute

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knowledge / gold standard peer review

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quality of life / patients and families



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