Partners in Progress

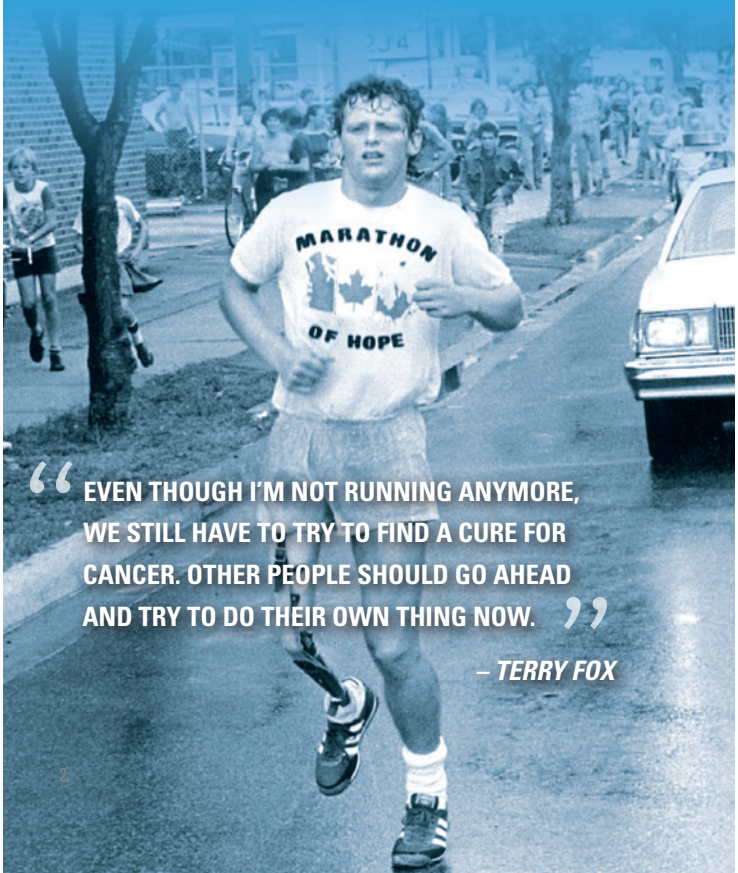
TFRI 2013-14 Annual Report

The Terry Fox Research Institute

tfri.ca

TFRI Mission and Vision

The Terry Fox Research Institute seeks to advance our understanding, diagnosis and treatment of cancer with the goal of improving significantly the outcomes of cancer research for the patient. TFRI supports research through a highly collaborative, team-oriented, milestone-based approach to attain this goal.



"EVEN THOUGH I'M NOT RUNNING ANYMORE, WE STILL HAVE TO TRY TO FIND A CURE FOR CANCER. OTHER PEOPLE SHOULD GO AHEAD AND TRY TO DO THEIR OWN THING NOW."

– TERRY FOX

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A year that was… remarkable!

We hope you enjoy these success stories appearing in our first annual report. *Partners in Progress* profiles our key achievements and investments for fiscal year 2013-14. Our report aims to inform all of our supporters about our work and how your dollars are making a difference, collectively enabling us to make progress in cancer research. In 2013-14, TFRI and its partners strategically invested a total of $29.5 million in discovery and translational cancer research and training.

Our funded teams have had a remarkable year. For this report, we highlight a few that have achieved significant results in lung cancer, brain cancer (in both adults and children), leukemia and lymphoma. Their study results have the real potential to save lives through early detection and to provide new and better treatments through personalized medicine.

Over the past year, TFRI has continued to build greater collaboration on all levels, with a concentration on increasing our opportunities to partner with other cancer research funding organizations. This is not only to continue the excellence of the current teams we support, but also to enable growth and investment in research areas where cancer diagnosis and/or treatment is extremely challenging and patients and doctors desperately need other options. Currently we have over 66 funding and research partners across Canada.

Some of our jointly funded teams are publishing significant new discoveries and insights into cancer biology and its treatments. Not surprisingly, there are far more excellent research programs in need of support than we could possibly fund. We are focused on making the BEST use of the research dollars we receive.

In 1980, Canadians coalesced around a young man and his dream of ending cancer, uniting for his cause and raising $24 million. Terry showed us what is possible. Like Terry, we remain steadfast in our mission and vision to bring our cancer researchers together to achieve better outcomes for patients. We believe that the best opportunity to make progress is through team science and collaboration. Together, we are better than the sum of our parts.

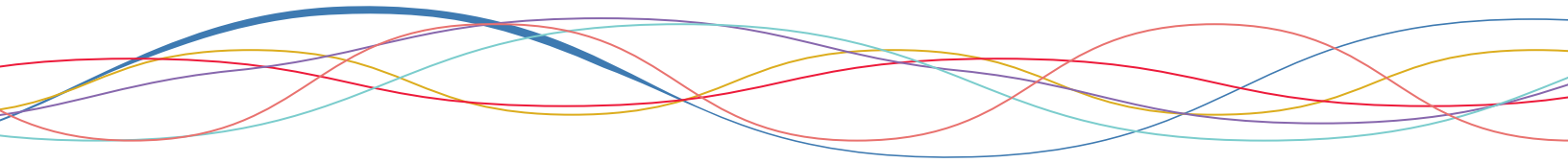
On behalf of the entire Terry Fox research community, I thank you for supporting the Terry Fox Research Institute and The Terry Fox Foundation. With your continued support, together we will realize Terry's dream.

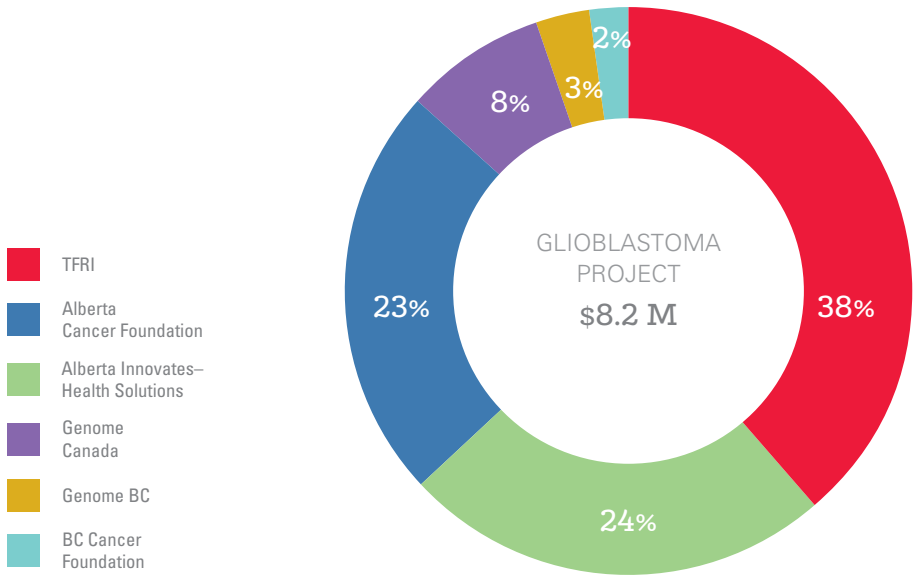
Dr. Victor Ling, O.C., O.B.C., PhD, F.R.S.C.
President and Scientific Director

Continuing Terry's legacy of collaboration

Terry Fox knew the best hope in the fight against cancer was to rally support from every Canadian. That is exactly what his Marathon of Hope did and what his legacy continues to do. The Terry Fox Research Institute (TFRI) exemplifies that culture of collaboration and we have partnered with other science and funding organizations that share Terry's goal of finding a cure for cancer.

TFRI president Dr. Victor Ling at the launch of the pan-Canadian glioblastoma project in Alberta





Partnering to accelerate research results for patients

The Alberta Cancer Foundation (ACF) is an important TFRI partner. The ACF invests in transformative research in Alberta through partnerships such as that with the TFRI.

Theresa Radwell, ACF's vice- president of program investment, remarks that their investment with TFRI is focused on Alberta-based research that enables them to "leverage investments that will together accelerate the translation of knowledge and scientific evidence gained from scientific discoveries into improvement of outcomes for Albertans." Advances from ACF-funded research are shared to benefit patients not only in Alberta but across Canada and beyond. TFRI's glioblastoma project (see pages 8-9) is one example of how partnerships with key funders of cancer research can make a difference.

Chart above shows the multiple founders for the glioblastoma project.

Partnering to attract creative research talent

STIHRs program members in Ottawa, 2013

The Strategic Training Initiative in Health Research (STIHR) is a program funded by TFRI, the Canadian Institutes of Health Research (CIHR), and others that funds training of new researchers to ensure international competitiveness in attracting young, creative research talent.

Dr. Gerald Johnston, a STIHR grant principal investigator and program co-chair, maintains that the ability to attract and support cancer research trainees has been the single most important factor in building a vibrant and broad-based cancer research community in Canada.

"The significant funding provided to our STIHR program by the partnership between the Terry Fox Research Institute and CIHR has not only provided long-term and stable funding for recruitment of highly qualified graduate students, postdoctoral fellows and research residents, but has been an incredibly effective resource to attract new cancer research faculty members to our region," says Dr. Johnston, based at Dalhousie University in Halifax, Nova Scotia. He adds, "The stature that comes from support by the Terry Fox Research Institute and CIHR has encouraged additional financial investment in our training program from several charitable foundations in the Atlantic region."

Partnering for global collaboration in research

TFRI partnerships go beyond Canada's borders and over oceans. TFRI recently partnered with the Taiwanese Ministry of Science and Technology (formerly the National Science Council of Taiwan) on four cancer research studies as part of an international scientific collaboration. The Canada-Taiwan partnership was continued by the Canada-Taiwan Parliamentary Friendship Group with its efforts to re-start the annual Terry Fox Run in Taiwan. (A new Terry Fox run was held in November 2014.)

John Weston, member of parliament, West Vancouver – Sunshine Coast – Sea-to-Sky Country, also chairs the Friendship Group. "Just when you think there's no more inspiration that could be drawn from Terry Fox's life, great new examples pop up of how Terry continues to inspire Canadians and people around the world," says Mr. Weston.

TFRI's expertise is also being leveraged to assist with research investments abroad. TFRI Board member Dr. Christopher Paige, vice-president research, University Health Network, travelled to Dubai, UAE in 2013 to serve on a cancer research scientific panel reviewing Terry Fox applications. Funds raised by the 30 countries abroad that have a Terry Fox run are invested in worthy research projects. The committee reviewed a total of 37 submissions and a total of $911,650 has awarded to 16 projects whose applications were successful.

High-quality samples, best industry practices are focus of biobanking partnership

Partnering with the Canadian Tumour Repository Network (CTRNet) is enabling TFRI to ensure its scientists and clinician-scientists have access to tissue samples and clinical data that is of the highest quality and standards, and meets best practices in the area of biobanking. This ensures that tissue used in studies is properly collected, stored, and maintained, that materials are provided properly and that all necessary documentation, including patient consent, is obtained.

"Our work with TFRI is helping CTRNet to meet its mission to foster studies into the determinants of cancer, the prediction of response and the identification of new therapies," says CTRNet's principal investigator Dr. Brent Schacter. Supporting translational research is a key network goal.

The Canadian Tumour Repository Network is developing an online pan-Canadian repository for storage of and access to tissue and clinical data by research partners like TFRI. In addition to ensuring the quality and integrity of tissues samples and clinical data collected and stored for use in research, the repository also safeguards the interests of tissue donors.

CTRNet has worked with investigators of TFRI's pan-Canadian ovarian study, called COEUR, to create a customized database. Dr. Anne-Marie Mes-Masson, principal investigator, explains the arrangement. "CTRNet is supporting the TFRI's COEUR study on ovarian cancer including the adoption of ATiM, a customized, unified database for cancer biobanking that stores relevant information on accrued samples. Together with CTRNet's ethical and standard operating procedures, this centralized database ensures there are high-quality samples available for the study and that study sites across Canada are following consistent practices resulting in top-level quality assurance. Our collaboration is pointing the way for future pan-Canadian projects and highlighting the benefits of an ethical, transparent, high-quality biobank structure that utilizes accessible online technology."

Brain cancer dream team tests new treatments

Hope. For nearly 35 years, Terry Fox and his Marathon of Hope have given cancer patients in Canada and around the world hope. Today, through research funded by The Terry Fox Foundation, the Terry Fox Research Institute and its partners, Terry's legacy continues to inspire patients as well as the investigators who are funded under his name.

Drs. Greg Cairncross, Artee Luchman and Samuel Weiss, members of TFRI's translational project in the targeting of new therapeutics for glioblastoma, in their laboratory in Calgary, Alberta.

Glioblastoma team provides new hope for patients with adult brain cancer

Perhaps nowhere is hope (and solutions) more needed than by patients diagnosed with glioblastoma, a deadly form of adult brain cancer with few treatment options. Fewer than five per cent of these patients survive beyond five years, with the average survival being around 15 months.

The work of researchers funded under TFRI's pan-Canadian translational project on glioblastoma is aimed at giving these patients a better chance to fight the disease with new treatments. Their work is showing early promise.

In September 2014, brain cancer researchers Drs. Samuel Weiss, Artee Luchman and Greg Cairncross, all clinical professors at the University of Calgary (U of C), discovered that when tested in the laboratory, the drug AZD8055 combined with Temozolomide, a drug already taken by most glioblastoma patients, extended life by 30 per cent. (Their work was published in *Clinical Cancer Research*, October 2014). The drug targets a key process in brain tumour growth, says the team. The clinical trial, undertaken by investigators at the NCIC Clinical Trials Group, another TFRI partner, may eventually involve patients with glioblastoma from across Canada.

While the discovery came too late for 23-year-old Andrew Szpecht, a student at U of C who died of the disease one year before the TFRI project was launched, hope exists that future patients will benefit from the latest research. Szpecht's story was shared on the Calgary campus in September by his parents, who spoke at the Terry's CAUSE on Campus event held there in support of cancer research.

"Currently, we are on target or ahead of our milestones and it is stories like Andrew's that give inspiration to our team," remarks Michael Blough, the pan-Canadian team's project manager.

The group has other reasons to be optimistic about their work. It currently has a total of nine compounds in the "pipeline" for investigation as potential new treatments. The team is using a special collection of brain tumour-initiating cells to test their cell lines against known and new drugs.

The recent discovery provides strong evidence of just what is possible when organizations partner for a great cause. While TFRI has provided the largest individual amount of funding for the project, five other partners have together provided the lion's share of the total project funding. The country's top scientists and clinicians are collaborating and sharing resources from their base laboratories and centres at Sick Kids and Princess Margaret Cancer Centre in Toronto; the BC Genome Sciences Centre in Vancouver; the NCIC-CTG at Queen's University in Kingston; and McMaster University in Hamilton.

Two of TFRI's New Investigators are also being mentored by this world-class team. (See pages 10-13.)

Funding partners: Alberta Cancer Foundation, Alberta Innovates—Health Solutions, Genome Canada, Genome BC, BC Cancer Foundation

New investigator awards

TFRI introduced a new feature to its Terry Fox New Investigator (NI) Awards program in 2009 whereby successful applicants are mentored by senior investigators linked to funded pan-Canadian and team-based institutional research teams. The shift is giving these promising new scientists – and their supporters – a clear competitive advantage on many levels.

Dr. Jennifer Chan

Listen to TFRI New Investigator Dr. Marianne Koritzinsky discuss the importance of her award and mentorship within the TFRI research community

IN 2013-2014, 19 EARLY CAREER SCIENTISTS WERE SUPPORTED THROUGH OUR NEW INVESTIGATOR AWARDS PROGRAM. EACH FUNDED RESEARCHER RECEIVES UP TO $450K OVER A THREE-YEAR PERIOD.

Promising scientists build careers, capacity and connections through a collaborative culture

Drs. Jennifer Chan and Sheila Singh are two funded NIs who are working on our glioblastoma project from two different Canadian partner institutions. The awards are helping to transform their research careers and at the same time aid TFRI in building a collaborative culture to improve outcomes for cancer patients.

TFRI-ACF partnership spells new connections for Alberta's Jennifer Chan

In 2012, the Alberta Cancer Foundation (ACF) formed a unique partnership with TFRI by wholly funding Alberta neuropathologist Jennifer Chan for three years as a Terry Fox New Investigator. Chan's work on brain cancer links her to TFRI's pan-Canadian dream team in glioblastoma (an aggressive form of brain cancer, see pages 8-9), based at the University of Calgary, and which is also co-funded by ACF. Chan's award helps to strengthen U of C's global leadership in brain cancer research, where the project's co-principal investigators, Drs. Greg Cairncross, Samuel Weiss and Stephen Robbins, are also based. Chan was recruited from Harvard and MIT's Broad Institute to join the elite group's expertise in neuroscience. She is creating animal tumour modelling systems for the team, with a goal to help the group develop new treatments, as well as overseeing its unique library of brain tumour samples that are now held there.

"With your project being connected to a bigger program, you immediately have a community of scientists around you. Your work contributes to their work; their work allows you many more opportunities," says Dr. Chan, assistant of pathology and laboratory medicine. "The Terry Fox Research Institute really has a culture of collaboration. There are several levels of community that I've experienced due to this New Investigator award."

TFRI brings credibility with its name, she adds, lending its scientists validation within the research community. "It's helpful to have the brand behind you. When you go to the annual meeting, other investigators see who you are. You have that platform to present your work and make those collaborations," she says. "It's having that Terry Fox family you can interface with in these very collaborative meetings."

Dr. Chan says the TFRI New Investigator designation has raised her profile. "I find the dual support from both – the ACF and the TFRI – has put me and my lab on a better footing, not just financially, but also in terms of placement within the scientific community. After my talk at the ACF meeting, I've had many people come up to me and say, "'Wow, that's really exciting. How can we collaborate?'"

She also credits the TFRI award for a recent career development. She's obtained a five-year open operating grant from the Canadian Institutes of Health Research to conduct work in another type of brain cancer, oligodendroglioma, and she says she believes her TFRI-funded work on developing a novel system of tumour models enabled her to propose the new project.

"I think this CIHR grant confirms TFRI can pick promising people to invest in. And the result is something akin to bringing a researcher out the 'baby phase' of funding to getting a 'grown-up grant.'"

This pan-Canadian translational team includes researchers from Alberta, British Columbia and Ontario, and is also co-led by Drs. Marco Marra (BC Cancer Agency) and David Kaplan (The Hospital for Sick Children).

(Funding partners are named on p. 9)

Award is a game-changer for Ontario neurosurgeon Sheila Singh

For pediatric neurosurgeon Sheila Singh at McMaster University, the award has been a game-changer.

"My New Investigator award was my very first operating grant and it was huge for my career. The award really jump-started my lab and things have been taking off ever since," she remarks. It helped to transform her research lab, enabling her to secure additional operating grants from other funders for other projects and boosting staff to 12 from a former three.

Dr. Singh received her three-year award in 2011 to study *Bmi1*, one of the key genes that drives brain tumours in adults. She developed a biological platform of cells that have different amounts of the *Bmi1* gene and monitored those cells for tumour development. She has since discovered that *Bmi1* needs different "partner genes" to drive tumour growth. TFRI-Ontario node leader Dr. Robert Rottapel with the Ontario Cancer Institute and the University of Toronto, is mentoring her work.

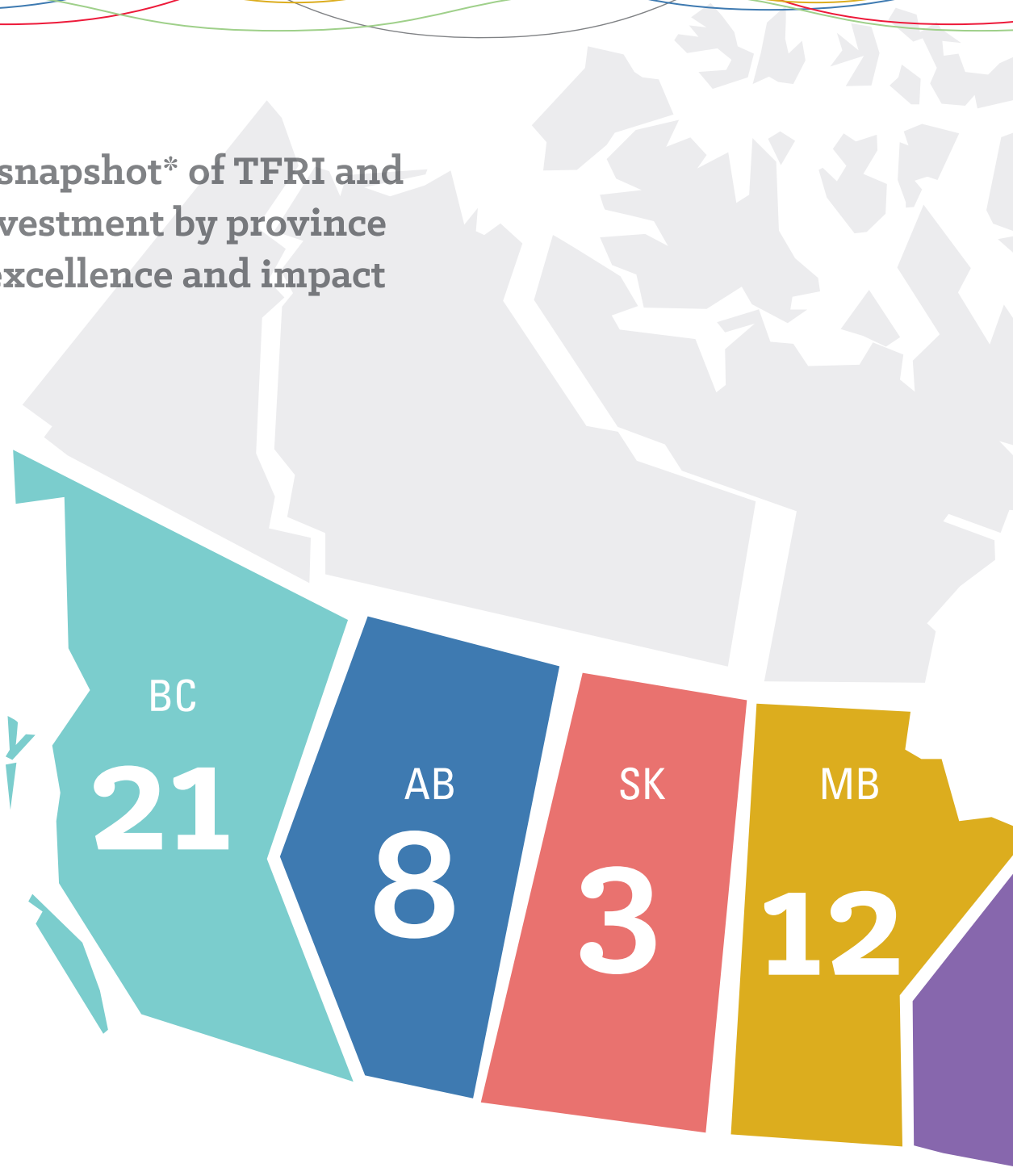
"Dr. Rottapel has connected me with other researchers and set up some critical collaborations. He saw potential in my biological platforms and connected me with (University of Toronto researchers) Drs. Jason Moffat and Dev Sidhu at the Donnelly Centre (in Toronto), who have some innovative technological platforms. Great technology needs to be partnered with clinically relevant biological platforms to generate truly transformative science," she says.

Dr. Sheila Singh

The collaborative opportunities are as important as the funds to set up a laboratory, she explains. "If the award had just been an operating grant without that mentorship, it wouldn't have worked in the same way and I wouldn't be on the path that I am on now. A scientist cannot take his or her work to the next level alone."

Five-year snapshot* of TFRI and partner investment by province based on excellence and impact

*2009-2014



INDEX:

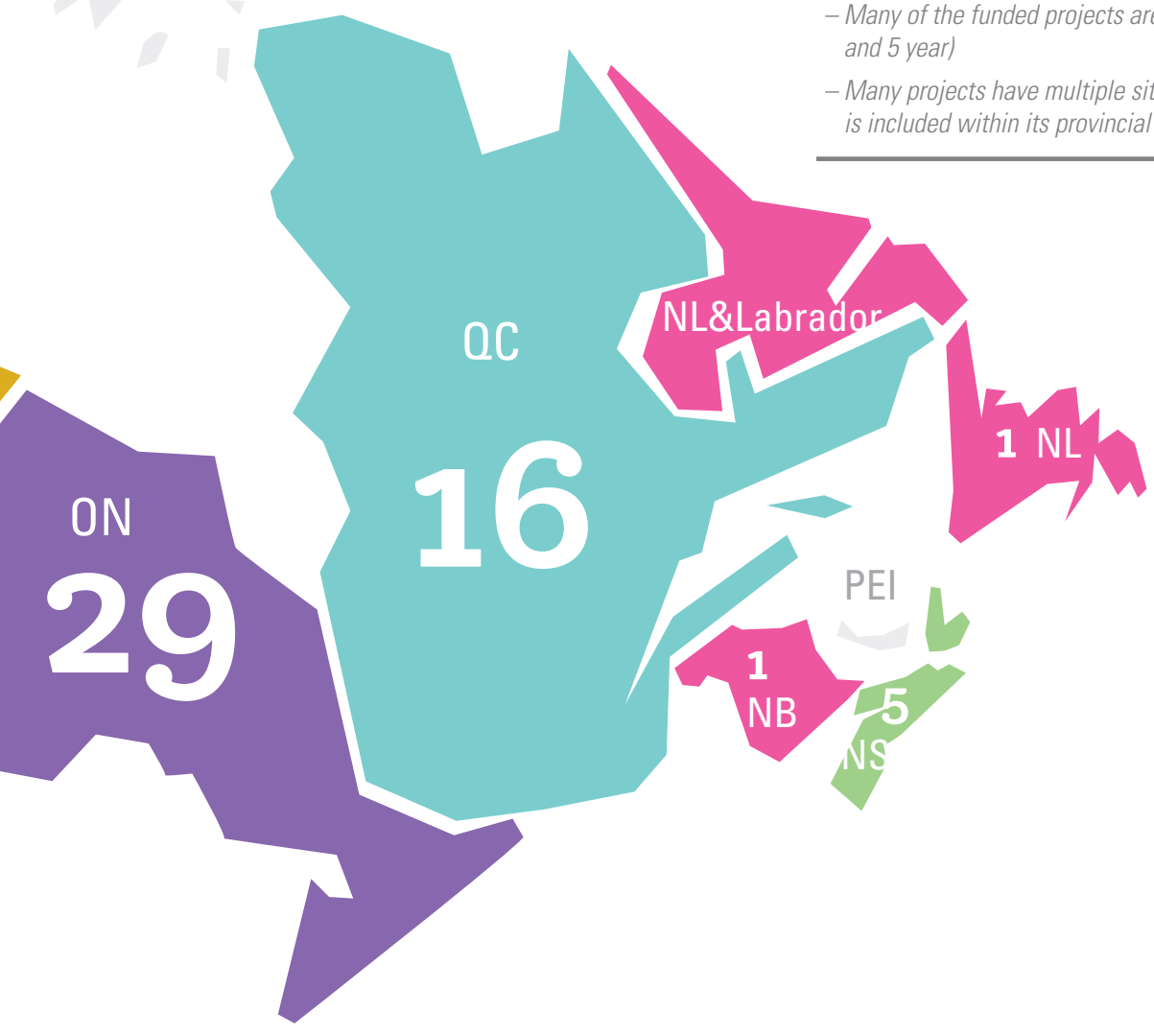
$ Invested (K=thousands, M-millions)

- Up to $100K
- $100K – $500K
- $500K – $1M
- $1M – $5M
- $5 – $10M
- Over $20M
- Over $70M
- No funding

– Large number indicates total projects funded (Includes discovery, translational, new investigators and training)

– Many of the funded projects are multiple year (e.g. 3 and 5 year)

– Many projects have multiple sites participating; each site is included within its provincial project investment total ($)



Dream team tackles cancer with innovative vaccines

The potent virus John Bell holds in a small vial is called Maraba. It's a new vaccine his research team has genetically engineered to attack cancer cells. The therapy is now being tested in patients as part of a new clinical trial that got under way in October 2014.

Dr. John Bell in the pharmaceutical grade manufacturing suite where the Maraba vaccine is produced.

It takes many partners and research dollars to bring a new therapy, such as a vaccine, to the clinic. Funding from The Terry Fox Foundation has helped this world-class research group, TFRI's oncolytic virus "dream team," conduct the pre-clinical work to move the vaccine forward to a clinical trial in humans.

"Our approach is to develop new biotherapeutics that use biology to attack the cancer instead of using chemotherapy or radiation," explains Dr. Bell, adding the potential benefits for patients are reduced side-effects and more potent and effective treatments.

The 24-month trial administered under the NCIC-CTG and funded by the Ontario Institute for Cancer Research, two important TFRI partners, is expected to enroll up to 70 people with solid tumours to further test its safety and effectiveness outside the laboratory.

"We'll start off opening it up to a wide variety of cancers and then, in the second part of the trial, we'll probably narrow it down to three types of cancer such as lung, melanoma and colon cancer, although this will need to be determined once we've seen the response from Phase I of the trial," he says.

The vaccine is named after the Maraba sand fly in Brazil, from which the virus was derived and subsequently engineered in the lab to its current form. Viruses are very small micro-organisms (parasites) that grow inside an animal or person.

The vaccine was made in Canada, in the pharmaceutical-grade manufacturing suite (pictured) at the Ottawa Hospital Research Institute (OHRI), where Bell and several of his co-investigators are based. The OHRI senior scientist leads TFRI's Program Project Grant on the Canadian Oncolytic Virus Consortium (COVCo). It has been funded by The Terry Fox Foundation for over 10 years, including a recent award of over $7 million to continue their work, being done today with a team of top investigators at research and clinical centres in Victoria, Vancouver, Hamilton, Toronto, Ottawa, Kingston, Montreal and Halifax.

Unlike chemotherapy, oncolytic viruses have the advantage of destroying only cancer cells rather than healthy ones; key to the development of this line of therapy is the goal of enabling a cancer patient's immune system to assist in eradicating the killer cells.

"When we started this project we had the simple-minded thought that we could make viruses that would infect cancers. We discovered they do much more than that. They also stimulate the patient's own immune system to recognize the cancer as foreign and therefore they attack the cancer." Bell says his research team hopes from the clinical trial they will see patients whose tumours have shrunk as a result of the therapy and patients who develop their own immunity against their own cancer.

Partnerships and team science are also key to this team's success in bringing innovative vaccine therapy to the clinic. "To us, team science is the best approach to really make this happen. We each bring different aspects (of expertise) and ways of looking at the problem to the PPG…and what we really want is to see this technology be developed and we know that by working together we'll be able to make it happen."

Bell says his team's longer-term vision for treating cancer is that there will be movement away from traditional kinds of therapy and toward a biotherapy approach. "In the last five years the changes have been so dramatic (in cancer research), that we now feel that people will get much better outcomes."

Bell and his team's work in biotherapeutics received a significant boost in December 2014 with the announcement of the first Network of Centres of Excellence devoted to cancer research. Called BioCanRx, it will be led by Bell and received $60 million from the federal government and research partners.

COVCo team investigators: : Tommy Alain, Harold Atkins, John Bell, Jonathon Bramson, Jean Simon Diallo, Shashi Gujar, Patrick Lee, Brian Lichty, Andrea McCart, Brad Nelson, Karen Mossman, Nahum Sonenberg, David Stojdl, Yonghong Wan.

Research Partner Centres and Cities: Ontario – Ottawa Hospital Research Institute, Ottawa · University Health Network, Toronto · Children's Hospital of Eastern Ontario, Ottawa · McMaster University, Hamilton
Quebec – McGill University, Montreal
British Columbia – BC Cancer Agency, Victoria and Vancouver
Nova Scotia – Dalhousie University, Halifax
Other Partners – Ontario Institute for Cancer Research, Toronto · NCIC-CTG, Queen's University · Jennerex, Ottawa

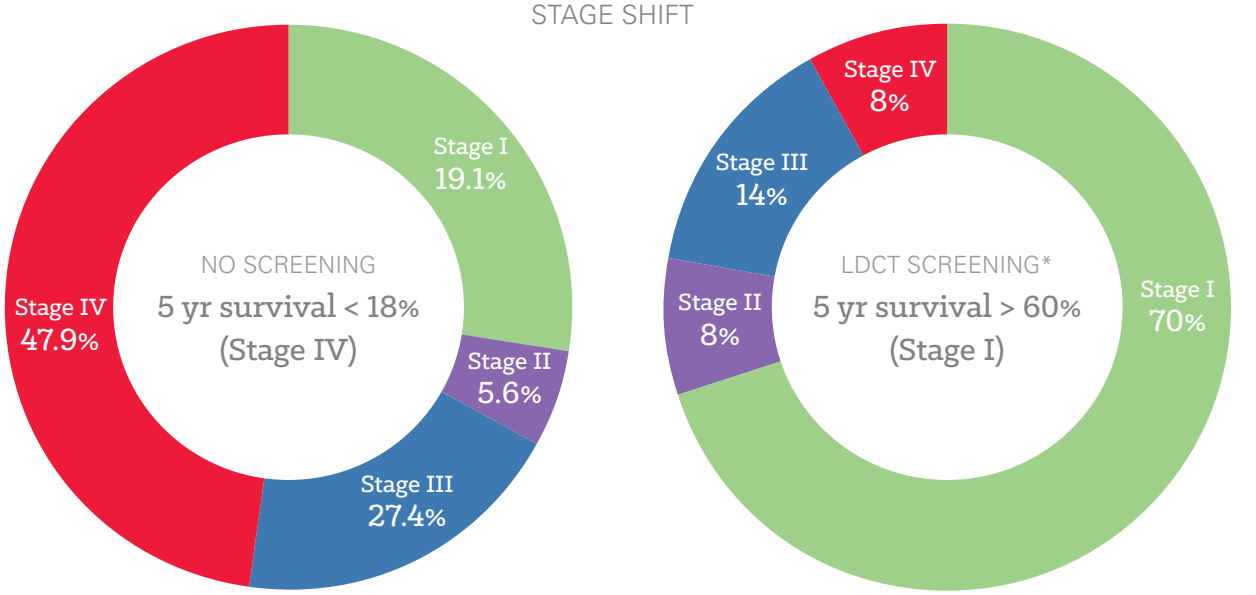
Dr. Stephen Lam and lung study participant Chris Douglas

In focus:

Breakthrough discoveries by four funded projects focus on early detection, personalized treatment

While all of our funded research teams are making important progress in their discovery and translational work, here we highlight the progress of four funded projects in 2013-14 which have the real potential to significantly change outcomes for Canadians diagnosed with lung cancer, leukemia, medulloblastoma (childhood brain cancer) and lymphoma. This work is made possible through key partnerships with leading cancer organizations across the country.

IMPLICATION OF STAGE SHIFT



*Low-dose computed tomography

LUNG CANCER: Early detection increases survival, lowers treatment costs

Two published studies by researchers funded by TFRI's Pan-Canadian Early Lung Cancer Detection Study are reinforcing the importance of early detection in saving the lives of patients diagnosed with lung cancer and also in lowering the cost of treatment. In September 2013, work by the team garnered national and international headlines with the creation of clinical risk software and findings that provide new evidence for developing and improving lung-cancer screening programs. Led by Dr. Stephen Lam (BC Cancer Agency, University of British Columbia), this study involves eight sites across Canada and 2,500 current and former smokers and is having an immediate impact on clinical practice. The work was published in the *New England Journal of Medicine* in September 2013. Currently six per cent of the study's participants have been diagnosed with lung cancer at an early stage, with few exhibiting symptoms. Nearly three-quarters of the lung cancers detected by the team were Stage I or II. This is significant since currently three out of four lung cancers are detected at Stage III or IV. A second study published in *September 2014* in the *Journal of Thoracic Oncology* by members of the team found that early detection of lung cancer also lowers treatment costs significantly. Treating a patient with late-stage disease can cost up to $14,000 more.

Charts above shows how CT screening improves survival for lung cancer patients.

Funding partners: The Canadian Partnership Against Cancer, Lung Cancer Canada, Princess Margaret Cancer Centre Foundation, BC Cancer Foundation
Study sites (by province): British Columbia, Alberta, Ontario, Quebec, Nova Scotia, Newfoundland & Labrador

MEDULLOBLASTOMA:
Genetic subtyping zeroes in on better treatments for childhood brain cancer

A team of researchers in Ontario and British Columbia are collaborating to develop new treatments for this most common form of brain cancer found in children. It occurs in the cerebellum, the part of the brain that lets kids ride bikes and play video games. The team has already successfully classified the disease into four subgroups or subtypes based on the genetic makeup of the tumours (*Nature*, 2012). Dr. Michael Taylor (Sick Kids Hospital) and colleagues at the Michael Smith Genome Sciences Centre in Vancouver have sequenced the genes expressed in over 1,500 medulloblastoma tumours that Dr. Taylor has collected from around the world as part of the Medulloblastoma Advanced Genomics International Consortium (MAGIC) work. Having discovered that different types have different outcomes – some good, some not so good – the group is now focused on developing treatments and therapies that match the tumours to provide the best therapy possible, reduce overtreatment where a lesser treatment may be best and, in cases where the prognosis is poor, move patients rapidly to an experimental therapy. Dr. Taylor is hopeful some treatments for these subtypes are already on the shelves. A secondary goal of the project is to involve parents in treatment discussions with regard to "dialing back" radiation therapy (at the risk of recurrence) for some patients so that into adulthood there are fewer side-effects from treatment. According to Dr. Taylor, TFRI's "stamp of approval" for the project enabled them to get others to participate.

Funding partners: Genome Canada, Genome BC
Research partners: Sick Kids, BC Cancer Agency, OICR

PRE-LEUKEMIC CANCER CELLS: Discovery presents new approach to detect and treat leukemia

The discovery of pre-leukemic cancer-initiating cells by Toronto scientist and long-time funded Terry Fox investigator Dr. John Dick (Princess Margaret Cancer Centre, University Health Network) has taken research into leukemia to a new level. The team made a breakthrough discovery in this type of blood cancer which was published in *Nature* (February 2014) that, in future, may enable early detection of leukemia before it develops. Funding from The Terry Fox Foundation for over 20 years has enabled the group to purify cancer cells to the highest extent possible, says the lead investigator of the TFRI's New Frontiers Program Project Grant in Molecular and Cellular Differentiation: New Targets and Treatments. The team found a mutation in the *DNMT3a* gene causes pre-leukemic cancer cells to develop in about 25 per cent of people (1 in 4) diagnosed with AML (acute myeloid leukemia), the most common form of adult leukemia. The finding opens the door to possible screening for those at risk for the disease. Further, it means that, in future, treatment may be personalized to target the mutation and eliminate cancer cells.

Research partners: Ontario Cancer Institute, University Health Network, Princess Margaret Cancer Centre

LYMPHOMA: Under the microscope: a promising finding for lymphoma patients

It's been discovered that two kinds of lymphoma have the same recurrent genetic mutation – an altered *PTPN1* gene. The finding, by Terry Fox Foundation-funded researchers at the BC Cancer Agency, was published in *Nature Genetics* in February 2014. The altered gene was found in both Hodgkin lymphoma and primary mediastinal B-cell lymphoma (*PMBCL*) and study investigator Dr. Christian Steidl (BC Cancer Agency, UBC) says it is a world first. For lymphoma patients who carry the mutation, the finding means that it's possible to develop potential new drugs for treating the disease, particularly for those who do not respond to standard treatment. PMBCL is a distinct subtype of aggressive B-cell lymphoma that affects predominantly young females, but may be found in children and adolescents. Funding from The Terry Fox Foundation (TFF) and invested by TFRI has enabled the lymphoma group at the agency to become one of the leading lymphoma genomics centres in the world. In 2013, TFRI and the BC Cancer Foundation partnered to continue the program project team's work under the leadership of Dr. Randy Gascoyne. It's the first time The Terry Fox Foundation has entered into a joint funding arrangement since the PPG program was created over three decades ago.

Funding partners: BC Cancer Foundation

2013-2014 Financial highlights

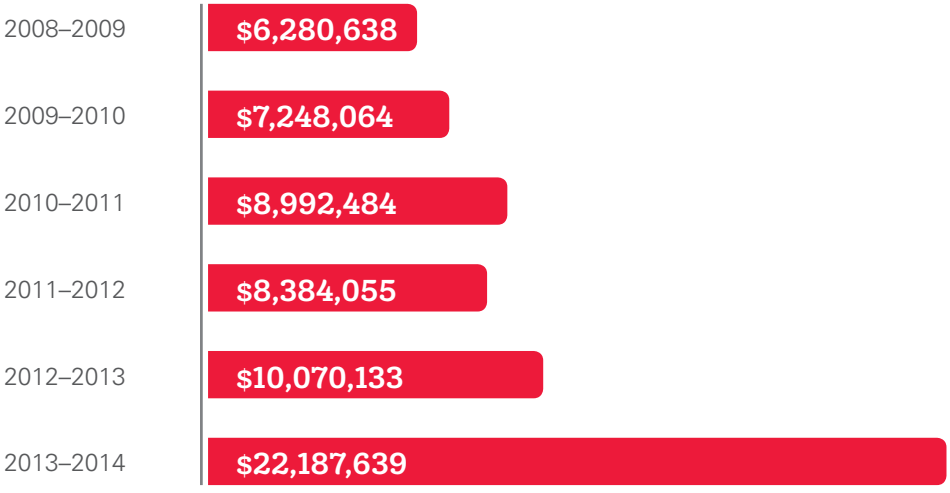
for the year ended March 31, 2014

In the financial year 2013-2014, the Terry Fox Research Institute's revenue growth increased by over 120% as it assumed full responsibility for the research programs funded by the Terry Fox Foundation which were previously administered by the Canadian Institutes of Health Research (CIHR) and the Canadian Cancer Society Research Institute (CCSRI).

TFRI is committed to the highest standards of accountability and transparency. To view our 2014 audited financial statements, please visit ***www.tfri.ca***

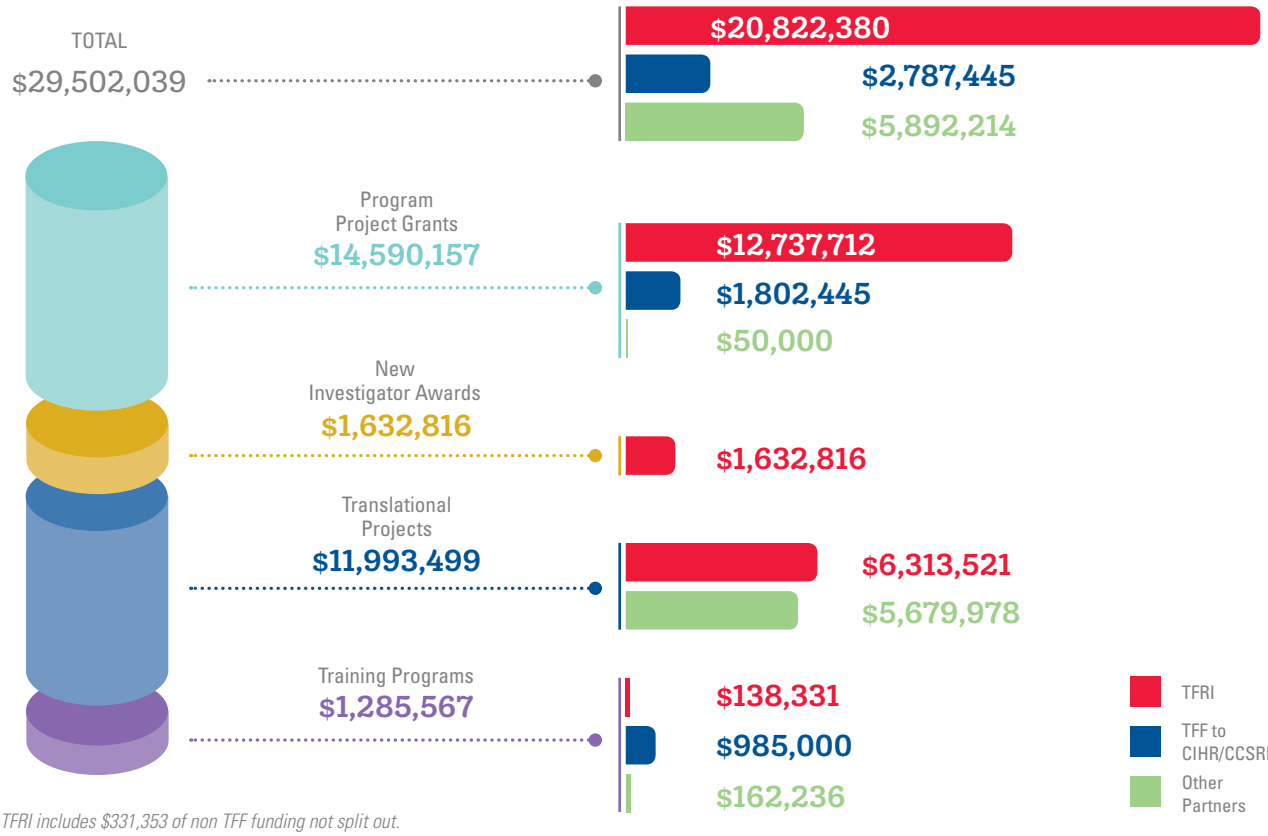
TFRI five-year revenue growth

2008–09 to 2013–14



Data from Audited Financial Statements

Total investment in programs by TFRI and partners

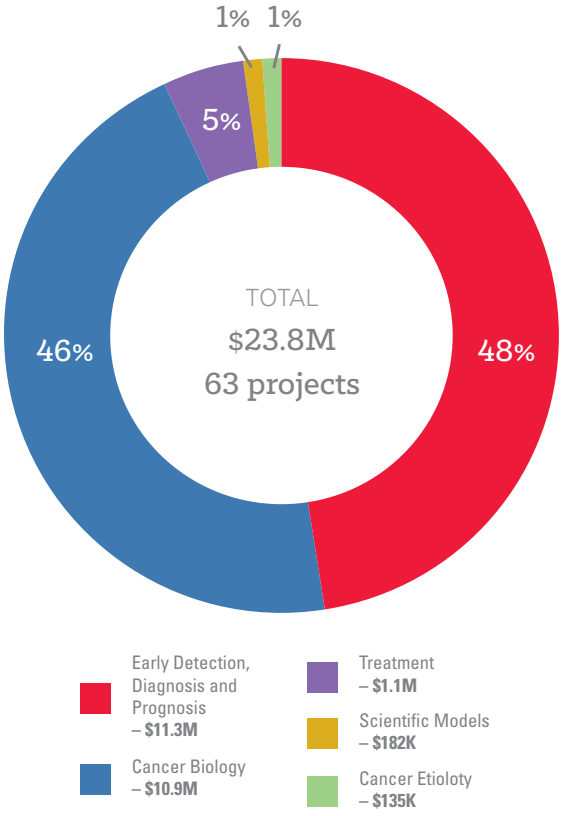


TFRI includes $331,353 of non TFF funding not split out.

TFRI was directly responsible for $20.8M of research program expenditures, including $331,353 of funds provided directly to TFRI by other research partners. In addition, the Terry Fox Foundation provided $2.8M to CIHR and CCSRI to fund research grants that ended during 2013-2014, and other partners provided $5.9M directly, as co-investment, to recipients of TFRI-led programs. The majority of this support was provided to the TFRI's pan-Canadian translational cancer research projects. Together this support amounted to $29.5M made available for cancer research by TFRI and its partners in 2013-2014 (as shown in the chart).

Almost one-half of TFRI's support is provided to the New Frontier's Program Project Grants initiative, with 41% supporting the Translational Cancer Research program, and the remaining 10% split between the New Investigator Awards and other TFRI cancer research training programs. The administrative expenses of the Institute were $1.2M (5.5%) of the total revenues for 2013-2014.

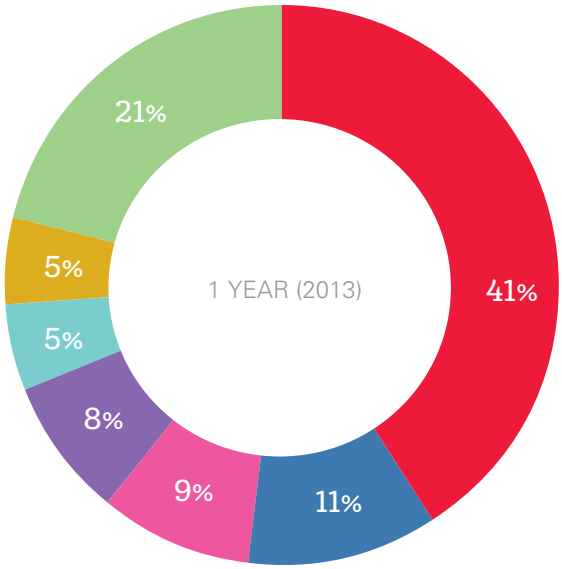
Allocation of TFRI research funding by area of scientific interest in cancer research



The chart at left reflects the investment of the Terry Fox Research Institute in research projects using a common scientific language or CSO (common scientific outline). The data is based on all grants active in 2013-14. The majority of funding from both TFRI and The Terry Fox Foundation supports research in **cancer biology** – examining cancer as a living organism, how it starts and progresses. **Etiology** involves the identification of the causes or origins of cancer; for example, through genetic and lifestyle factors. The **Early Detection, Diagnosis and Prognosis** classification involves identifying and testing cancer markers and imaging methods that may aid in the detection and/or diagnosis of cancer, as well as in the prediction of the possibility of cancer recurrence. **Treatment** relates to research involving the identification and testing of therapies – radiation, surgery, chemotherapy -- as well as alternative and complementary options. **Scientific model** systems applies to the development of new models, cell cultures and computer simulations and their application to other studies across the spectrum of cancer research.

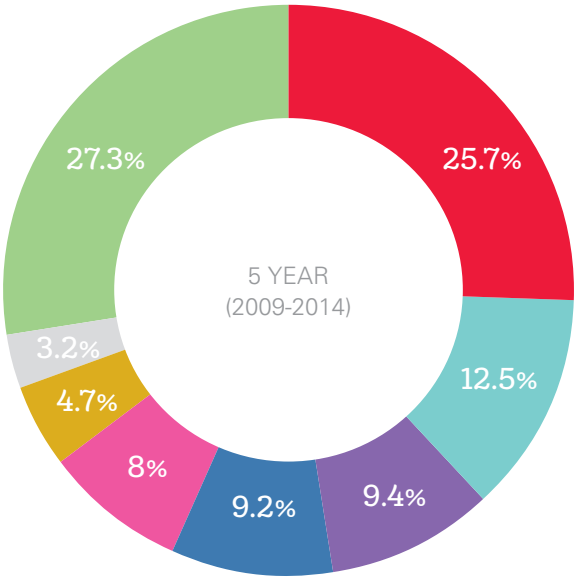
Data extracted from CRIS Database. Total investment for this period is $23.8M in 63 projects.

TFRI research investment by tumour site



Biology
Prostate
Oral
Leukemia
Breast
Ovarian
Other*

**Investment in each of these tumour types is under 5%. The percentage shown is cumulative total and includes the following types: brain, colorectal, pediatric, lung, lymphoma, cervix, liver*



Biology
Leukemia
Breast
Treatment
Prostate
Training
Other*
Brain

**Investment in each of these tumour types is under 5%. The percentage shown is cumulative total and includes the following types: lymphoma, lung, ovarian, colorectal, oral, imaging, cervical, bladder, pancreas, pediatric, myeloma, liver, eye, kidney, melanoma, osteosarcoma, and gastro-intestinal(stomach)*

By the numbers*

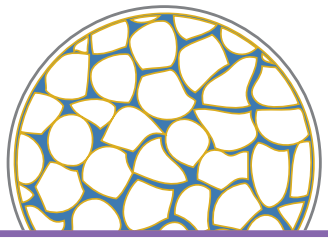
A snapshot of our research investment

308 principal and co-investigators

185 research staff**

180 trainees

17 project managers



3,195 biosamples (blood and tissue)

4,189 study participants and/or patients

190 published journal articles

**Numbers reported are based on data submitted/received in 2013. Numbers reported for biosamples and study participants are cumulative*

*** Includes study co-ordinators, laboratory technicians, computer programmers, statisticians, data analysts, who are fully or partially employed through funded programs and projects*

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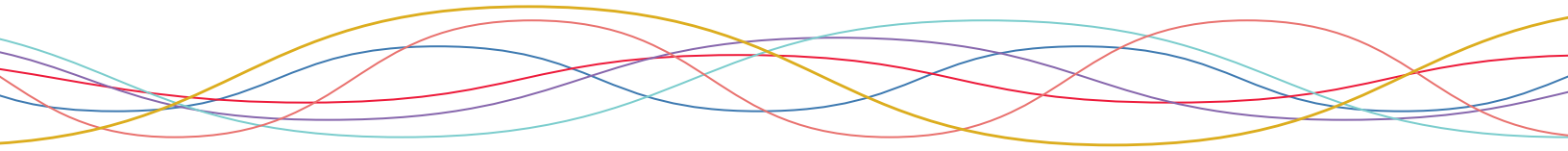
Send your comments and feedback to: ***info@tfri.ca***

Together, we are realizing Terry's dream through cancer research



NATIONAL PARTNERS

The Terry Fox Foundation
Canadian Institutes of Health Research
Canadian Partnership Against Cancer Corporation (CPAC)
Canadian Tumour Repository Network (CTRnet)
Genome Canada
Lung Cancer Canada

BRITISH COLUMBIA

BC Cancer Agency
BC Cancer Foundation
The Centre for Drug Research and Development
Genome British Columbia
Providence Health Care Society
St. Paul's Hospital (Providence Health)
Simon Fraser University
Team Finn Foundation
University of British Columbia
Vancouver Coastal Health Authority
Vancouver Coastal Health Research Institute

ALBERTA

Alberta Cancer Foundation
Alberta Health Services
Alberta Innovates – Health Solutions
Cross Cancer Institute
Tom Baker Cancer Centre
University of Alberta
University of Alberta Hospital
University of Calgary

PRAIRIES

Manitoba

Cancer Care Manitoba
Manitoba Health Research Council
Manitoba Institute of Child Health
University of Manitoba

Saskatchewan

Saskatchewan Cancer Agency
Saskatchewan Health Research Foundation
University of Saskatchewan

ONTARIO

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Hospital for Sick Children
Juravinski Cancer Centre
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McMaster University
Mount Sinai Hospital
Ontario Cancer Institute
Ontario Institute for Cancer Research
Ottawa Hospital Research Institute
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Centre universitaire de santé McGill (CUSM)
Hôpital Maisonneuve-Rosemont
Institut Universitaire de Cardiologie et de Pneumologie de Québec
Jewish General Hospital
L'Institut de Recherches Cliniques de Montréal
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McGill University Health Centre
McGill University
Université de Montréal
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ATLANTIC

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New Brunswick Cancer Network
New Brunswick Health Research Foundation
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Eastern Health
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Nova Scotia

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Prince Edward Island

The University of Prince Edward Island

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