Thunder Bay Regional Health Research Institute

2016 -2017 Annual Report Summary

Thunder Bay Regional Health Research Institute

Bringing Discovery to Life

Donner vie à la découverte

Contents

Thunder Bay Regional Health Research Institute

Incorporated as the Thunder Bay Regional Research Institute in September 2007 and renamed the Thunder Bay Regional Health Research Institute in November 2016, the program is the research arm of the Thunder Bay Regional Health Sciences Centre. Its mandate is to facilitate clinical research –particularly in the area of imaging and related fields – strategic to regional health care needs. Current research areas include but are not limited to cancer, cardiac disease, stroke, orthopaedics, Indigenous health, and lung disease. The Institute also supports clinical trials at the Health Sciences Centre, which has been in Canada's Top 40 Research Hospitals since 2010 thanks in large part to the activities of the Institute.

The Institute aims to develop innovative health care techniques from concept to clinical trials to commercialization, supporting scientists and clinicians at every step. As of 2016, the Institute has spun off two companies, XLV Diagnostics Inc. and Radialis Inc., with others to follow.

As part of the 23 research hospitals in Ontario, the Institute follows the tenets of Healthier, Wealthier, and Smarter.

2020 STRATEGIC PLAN

Healthier

Enhance research to improve the health outcomes of the people of NWO and beyond.

Wealthier

Enhance philanthropic and other support and generate revenue through science and partnerships.

Smarter

Enhance the academic environment.

Healthier Wealthier Smarter

With acknowledgment of the Council of Academic Hospitals of Ontario

www.healthierwealthiersmarter.ca

VISION

Bringing Discovery to Life

MISSION

To be an international leader in health technology research and other strategic health innovation, that improves the health of the people of Northwestern Ontario (NWO) and others.

VALUES

Excellence, Collaboration, Innovation, Integrity, Respect, Accountability

PHILOSOPHY

Patients and Families are at the centre of everything we do.

To read our full Annual Report 2016/2017, please view it online at:

www.TBRHRI.ca/2016-2017AnnualReport

Board of Directors

Dr. Gary Polonsky, DEd

Chair of the Board, Thunder Bay Regional Health Research Institute

Founding President, University of Ontario Institute of Technology, Former President, Red River College and Durham College

Robert Paterson, OStJ, KLJ, LLD (Hon)

Vice-Chair of the Board (June 2016 – December 2016), Thunder Bay Regional Health Research Institute and Chair of Governance & Nominating Committee

Clint Harris

Publisher and General Manager, Thunder Bay Chronicle-Journal, Vice-Chair of the Board (effective December, 2016), Thunder Bay Regional Health Research Institute

Christine Napierala, CPA, CA

Manager – Financial Services at Hydro One Remote Communities Inc., Treasurer of the Board, Thunder Bay Regional Health Research Institute and Chair of the Finance, Audit and Risk Management Committee

Jean Bartkowiak, CEO

Thunder Bay Regional Health Research Institute and President & CEO, Thunder Bay Regional Health Sciences Centre.

Keith Jobbitt, BA, LLB

Lawyer, Shaffer Jobbitt Law Firm Former Chair of the Board, Thunder Bay Regional Hospital

Dr. Lou Siminovitch, PhD, DSc, CC, FRSC, FRS

Former Director, Biological Research, Ontario Cancer Institute Former Department Head, Medical Genetics, University of Toronto Former Chief of Genetics, Hospital for Sick Children, Former Director of Research, Samuel Lunenfeld Research Institute

Dr. Michael Julius, PhD

Vice President of Research, Sunnybrook Health Sciences Centre Senior Scientist, Sunnybrook Research Institute Immunology and Medical Biophysics Professor, University of Toronto, Chair of Science & Research Committee

Dr. Andrew Dean, PhD

Vice-President, Research & Innovation, Lakehead University

Tom Kehoe, MBA, CFA

Chair, Abiwin Ventures Limited, former Director Institutional Trading, GMP Securities, Chair of the Commercialization Committee of the Board

Dr. Penny Moody-Corbett

Associate Dean of Research, Northern Ontario School of Medicine.

Former Associate Dean of Research and Graduate Studies for the Faculty of Medicine at Memorial University and senior member of the Canadian Institutes of Health Research

Aldéa Landry, CM, PC, QC,

President, Landal Inc.

Former Cabinet Minister and Deputy Premier, New Brunswick, Vice-President, Diversis Inc.

Dr. Gordon Porter

Chief of Staff – Thunder Bay Regional Health Sciences Centre

Dr. Jim Madder

President – Confederation College

Stan Beardy

Computer Tech – Muskrat Dam First Nation and former Ontario Regional Chief

Thank you to the following who also served on the Board in 2016-2017:

Steven Chackowicz

Executive Vice-President, Aspect Imaging

Past Members:

Dr. Bill McCready (former Interim CEO)

Andrée Robichaud (former Acting CEO)

Don Caddo

Dr. Moira McPherson

Dr. Roxanne Deslauriers (former Acting CEO)

Dr. Michael Wood (former CEO)

Michael Power (former CEO)

Dr. Stewart Kennedy

Dr. Roger Strasser

Dr. Rui Wang

Dr. Brian Stevenson

Lyn McLeod

Dr. Wayne Schnarr

Dr. Fred Gilbert

Dr. Gordon Porter

Ron Saddington

Michael Gourley

Dr. Rod Hanley

Message from the Chair

LEADING THE WAY IN PATIENT-CENTRED RESEARCH

Looking back on my years as Board Chair, I'm both amazed and proud of the changes we've seen. We continue to focus our efforts on an area of research you don't hear too much about in the Canadian Medical Association Journal or Scientific American: patient-centred research that addresses the immediate needs of the local and regional population.

This may sound too specialized to have a global impact, but the fact is that some of the new equipment and health care pathways being developed in Thunder Bay will have applications around the world. XLV Diagnostics Inc. and the relatively new Radialis Medical Inc. are two high-profile examples.

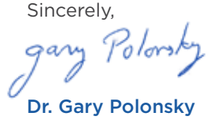
But there are other examples too, as you'll read in this Annual Report. Our scientists are finding new ways of using High Intensity Focused Ultrasound as a safe and minimally invasive treatment option for many conditions and patients including newborns. Other research projects are helping us overcome barriers to Indigenous health in Northwestern Ontario, which will have applications across Canada and around the world. We are pushing the boundaries of distance health care thanks to our research into ways of providing effective health care to the 250,000 people who live in Northwestern Ontario – an area the size of France. We are also blazing the way for hospital-based cyclotrons, and our efforts installing our own cyclotron over the last several years have helped develop the blueprint for other hospitals in Canada to follow.

I am pleased to be joined this year by two new leaders who will take us through our 2020 Strategic Plan. Jean Bartkowiak became the new CEO for both the Institute and the Thunder Bay Regional Health Sciences Centre last year. He, too, is eager to align the priorities of both organizations as we continue to integrate more closely. Dr. Abraham (Rami) Rudnick will be another strong ally, bringing with him a wealth of knowledge and experience in both distance health care and Indigenous health.

As we enter this new era, we also end another. Today we say farewell to some of our Board Directors. Each has been part of this Board of Directors since its inception, and that is an exceptional commitment. To Keith Jobbitt, Michael Julius, Robert Paterson and Lou Siminovitch, thank you for building our Institute into the success we celebrate today. It has been an extraordinary nine years, and I hope that, as your terms conclude, you look back on all we have accomplished with a great sense of pride. Your role in developing this organization from the ground up cannot be understated, and will continue to have an impact well into our bright future. It is fitting, then, that we have contributed $500 in honour of each of you to the student bursary fund at the Northern Ontario School of Medicine. Thank you for all you have done.

I would like to also take this opportunity to thank the entire Board and everyone at the Institute and the Hospital for their support during my tenure. I know I leave the Board – and the Institute itself – in good hands.

Sincerely,



Dr. Gary Polonsky

Chair

Message from the CEO

A NEW VISION, A NEW PLAN

From the start, the Thunder Bay Regional Health Research Institute focused on health challenges that affect us most in Northwestern Ontario. We have sharpened that focus through collaborations between our scientists, clinicians at the Thunder Bay Regional Health Sciences Centre and elsewhere, and by understanding the shared priorities of the Institute and the Hospital. Today, we are developing new and innovative techniques for universal health care challenges such as cancer care. But just as importantly, we are also investigating Northwestern Ontario solutions to our own unique health challenges including Indigenous health disparities and providing distance health care for patients across our large region.

To help us achieve our Vision, I am pleased to welcome our new VP Research and Chief Scientist, Dr. Abraham (Rami) Rudnick, who formally joined our Senior Leadership Team on January 3, 2017. His focus on Indigenous health challenges, belief in aligning research and Hospital priorities, and his ability to engage stakeholders in the Hospital, the Institute, as well as at every level of government are exactly the qualities we need moving forward. Already his experience with Indigenous health and distance health are having an impact on the way we conduct research and deliver health care.

Rami contributed to a focused revised Institute 2020 Strategic Plan. Our nine goals fall under three pillars: Healthier, Wealthier, and Smarter. These goals align closely with the Hospital's own 2020 Strategic Plan and Directions: Indigenous Health, Seniors' Health, Acute Mental Health, and Comprehensive Clinical Care. To reflect our alliance with the Hospital, we added the word "Health" to the Thunder Bay Regional Health Research Institute name in the fall, 2016.

As we are reaching our 10th year of operation, we will be embarking on an external review in the fall. The review will focus on scientific and administrative issues in order to optimize operations in support of the Institute's Vision, Mission and Strategic Plan.

Finally, I would like to recognize our esteemed colleague and Chair of the Institute's Board of Directors, Dr. Gary Polonsky, who is completing his term this year. His guidance and insights over the last several years of evoluation for our Institute have been invaluable. Gary leaves us well-positioned to successfully tackle our new Strategic Plan and to take the next step in our development. Thank you, Gary, for helping us make patient-centred research the success it is today.

Jean Bartkowiak

CEO

Scientists

Naana Afua Jumah, MD, BASc, DPhil, FRCSC

Obstetrician Gynaecologist, Thunder Bay Regional Health Sciences Centre

Clinician Scientist, Thunder Bay Regional Health Research Institute

Assistant Professor, Northern Ontario School of Medicine

Alla Reznik, Ph.D.

Professor and Canada Research Chair in Physics of Medical Imaging, Physics Department, Lakehead University

Senior Scientist, TBRHRI

New materials and technologies, for x-ray and PET detectors in medical imaging.

Ingeborg Zehbe, PhD, DSc

Lakehead University/ TBRHRI Research Chair

Senior Scientist TBRHRI

Associate Professor, Northern Ontario School of Medicine

Aspects of virus-induced cancer: basic research, anti-cancer therapeutics and prevention & screening.

Jane Lawrence-Dewar, Ph.D.

Adjunct Professor, Lakehead University

Applies imaging to understand changes in the brain following injury or disease

Laura Curiel, Ph.D., P.Eng

Lakehead University/ TBRHRI Research Chair

Assistant Professor, Lakehead University

Development of guidance technology for non-invasive treatment of uterine fibroids, cervical cancer, and prostate cancer with high intensity focused ultrasound (HIFU).

Samuel Pichardo, Ph.D.

Adjunct Professor, Lakehead University

Clinical trials and development of guidance technology for high intensity focused ultrasound (HIFU) treatment of uterine fibroids, combination of HIFU with radiotherapy, new applications of HIFU for pediatrics and ultrasound transducer technology, software tools for MRI-guided HIFU and characterization of transcranial ultrasound.

Mitchell Albert, Ph.D.

Lakehead University/ TBRHRI Research Chair in Molecular Imaging and Advanced Diagnostics

Professor of Chemistry, Lakehead University

Adjunct Professor of Biology, Biotechnology, Health Sciences and Physics, Lakehead University

Adjunct Professor, Northern Ontario School of Medicine

Hyperpolarized Xenon Functional MRI of the brain in patients with Alzheimer's Disease

Hyperpolarized Xenon Biosensor MR Molecular Imaging in animals models of Alzheimer's Disease

Hyperpolarized Gas and Inert Fluorinated Gas MR imaging of the lungs in patients with pulmonary disease.

Michael Campbell, Ph.D.

Lakehead University/ TBRHRI Research Chair

Assistant Professor, Department of Chemistry, Lakehead University

Researching new imaging agents for CNS disorders and developing new systems for the production, purification and distribution of radionuclides and radio-tracers.

Affiliated Scientists

Christopher Phenix, Ph.D.

Development of probes to image enzymatic biomarker activity and molecular imaging of enzymes important for human health.

Affiliated Scientist located at University of Saskatchewan

Boguslaw Tomanek, Ph.D.

Associate Professor, Radiation Therapy Degree Program, Department of Oncology, University of Alberta

Multi-modal molecular imaging and gradient-free MRI.

Affiliated Scientist located at University of Alberta

Oleg Rubel, Ph.D.

Investigation of material properties of selenium and development of new piezoelectric material for HIFU.

Affiliated Scientist located at McMaster University

Healthier

Enhance research to improve the health outcomes of the people of NWO and beyond.

GOALS

1. Partner with Indigenous researchers & communities to advance their health priorities.

2. Investigate & apply assessment and intervention solutions that are responsive to our geographic challenges.

3. Strengthen local clinical research.

Success Stories

Exploring Respiratory Disease in Canada's Indigenous Population: Health Research Institute Partners with Fort William First Nation

The prevalence of asthma and chronic obstructive pulmonary disease has increased amongst Indigenous populations. To figure out why and what to do about it, the Thunder Bay Regional Health Research Institute has partnered with Fort William First Nation.

MORE ONLINE

Targeted treatments for cancer caused by human papillomavirus (HPV)

Our scientists are developing new, less invasive treatment options for patients with HPV-related cancer. Dr. Ingeborg Zehbe and her team are researching drugs which specifically target the virus to stop cancerous changes in the infected cells.

MORE ONLINE

Dr. Naana Jumah Receives CIHR Grant to Create New Care Models during Pregnancy in Rural Northwestern Ontario

Dr. Naana Jumah received a research grant of almost $500,000 from the Canadian Institutes of Health Research (CIHR) to develop a standard of care in rural areas for opioid-dependent mothers during pregnancy to help mother and baby.

Up to 30% of pregnancies in Northwestern Ontario are to mothers with opioid addiction. Dr. Naana Jumah, an obstetrician at the Thunder Bay Regional Health Sciences Centre and a Clinician Scientist at the Thunder Bay Regional Health Research Institute, said that despite the high rate, it's not unexpected.

"It is a shocking number, yes, but given the overall rates of opioid use in our region both within Indigenous communities and non-Indigenous communities, I don't think we should be surprised that it is that high," she said.

Newborns of opioid-dependent mothers may suffer from withdrawal symptoms after birth. Part of the problem is that there isn't a standard of care that takes into account all of the combined challenges. In 2016, Dr. Jumah received a research grant of almost $500,000 from the Canadian Institutes of Health Research (CIHR) to help mother and baby.

"Right now we don't have guidelines that address the needs of women in rural and remote communities who have substance use and mental health issues during pregnancy," Dr. Jumah said. Her research to this point has included investigating substance use – particularly opioids – among pregnant women in rural areas to find out exactly what the challenges are.

The CHIR grant will help create an evidence-based model of care that addresses the complex and connected challenges including distance barriers, cultural barriers, and other social determinants of health, as well as the medical issues surrounding substance use in pregnancy.

One area of research is the continuation of a grassroots project already launched by the Shibogama First Nations Council. This group of five fly-in First Nations was developing an integrated care pathway for pregnant women who have to travel to Thunder Bay due to the complications that arise from opioid use. Unfortunately, funding ran out before the project was completed.

"It's a really good piece of work that they did, and it would benefit not just the women from their Tribal Council, but so many women from the North who have to travel to deliver," Dr. Jumah said.

Another area of Dr. Jumah's research is to find ways to help Indigenous women get care in their own communities rather than travel for every appointment.

"Right now expectant mothers have to fly out, sometimes for three or four days, every time they have an appointment. That's very disruptive to their lives. We want to find ways to help women stay in their communities more during pregnancy," Dr. Jumah said.

Telemedicine services may provide one of the answers. Dr. Jumah will explore a variety of possible uses for videoconferencing technology from prenatal appointments to group information sessions and mental health and addictions support.

"The overall approach to this grant and to my research in general is to use a more Indigenous-based worldview to the research – respecting the foundational ideas that are inherent to many Indigenous communities."

Wealthier

Enhance philanthropic and other support and generate revenue through science and partnerships.

GOALS

4. Engage stakeholders in philanthropy and other support of research.

5. Develop health technology products and assets.

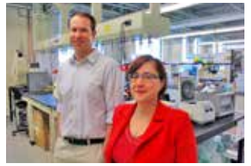
6. Secure a robust clinical trials program.

Success Stories

Health Research Institute/Sunnybrook Collaboration Investigates New HIFU Treatment Option for Aggressive Cancer

Dr. Samuel Pichardo is helping oncologists at Sunnybrook Health Sciences Centre to explore new methods of using high-intensity focused ultrasound (HIFU) to help treat cancer tumours in patients.

MORE ONLINE



Pre-Clinical Research in Thunder Bay into Combination Cancer Treatments Possibly a World First

A multi-institution research collaboration in Thunder Bay is looking at new ways of boosting cancer treatment effectiveness.

MORE ONLINE

Cyclotron Produces First FDG – but Program Development is the Real Story

Stephen Exley (right), Interim Director of Cyclotron Operations, said that the real accomplishment is the homegrown program – one of the few hospital-based cyclotron programs in Canada. Dr. Jesse Walker (left) and Terry Fodë are part of the team that built the program essentially from the ground up.

In 2016, the cyclotron passed another major milestone delivering its first radioactive isotope fluorine-18 for research and calibration purposes. As of now, an application is pending with Health Canada to produce the radiopharmaceutical fluorodeoxyglucose or FDG for patient use.

Stephen Exley, Interim Director of Cyclotron Operations at the Thunder Bay Regional Health Research Institute, emphasized that the real achievement is the homegrown cyclotron program itself. "It's the seven years of preparation including constructing the bunker and developing the program – that's what people don't always see. For this team to acquire all that knowledge and put it together is incredible," Exley said.

FDG is used to detect cancer cells during positron emission tomography (PET) imaging for diagnosis, treatment planning, and treatment monitoring. Having a steady supply of FDG across the Hospital parking lot rather than across the province will reduce delays to patient care.

Ours is one of the first hospitals in Canada to build its own cyclotron program for patient care and research. It's for that reason that there was no real blueprint for creating such a program. Terry Fodë, Project Support Officer, said that the public engagement piece of the Thunder Bay experience – which she spearheaded – will be used for current and future programs nationwide.

"The Canadian Nuclear Safety Commission (CNSC) deemed our public information program as a 'gold standard' and requested to use it as a template for the rest of the cyclotron facilities across Canada," Fodë said.

What is perhaps most remarkable is the fact that many of the staff running the complex facility are from Thunder Bay. Given the technical expertise and knowledge needed, it is a testament to how far the program has come, Exley said. "You can see the growth and evolution of the people here to develop the program and facility," he said.

One of those local people is Dr. Jesse Walker, a Cyclotron Associate and recent PhD graduate in Chemistry from Lakehead University. "When I started in the PhD program, I knew it would be challenging to find a position in Thunder Bay," Dr. Walker said. "I wanted to pursue a career that involved medicinal chemistry, so this really was a great fit for me."

Cyclotron Associate Melissa Quance is also from Thunder Bay. Dr. Michael Campbell, who oversaw the cyclotron's construction, is now the Lakehead University – Thunder Bay Regional Health Research Institute Research Chair in Radiochemistry and remains the program's Radiation Safety Officer. In fact, only three staff members are not from the area: Fodë (though she has been in Thunder Bay for eight years), Sonja Desjardins, a Cyclotron Associate and the Deputy Radiation Safety Officer who is from Sudbury, and Bozin Nedanovski, the Cyclotron Equipment and Safety Systems Manager who is from Italy and came to Thunder Bay initially as part of the installation team. Most have science backgrounds including chemistry, physics, and biology, and each member of the team specializes in important areas of the cyclotron operation.

As production increases, more technicians will be needed, and there's every expectation that these specialized jobs will be filled by local residents. "All the knowledge that goes into producing radioisotopes was learned by local people," Exley said.

Smarter

Enhance the academic environment.

GOALS

7. Participate in development of academic programs relevant to our health research priorities.

8. Facilitate a research culture.

9. Grow strategic research partnerships and networks to expand research capacity and impact.

Success Stories

PhD Candidate Researcher Pioneers "Agentless" Contrast Technique for Identifying Prostate Cancer

Chris Abraham, a PhD candidate working with Dr. Laura Curiel and Dr. Samuel Pichardo at the Thunder Bay Regional Health Research Institute, presented research in Vienna, Austria in 2016 that represents early steps to a whole new way of diagnosing and treating prostate cancer.

MORE ONLINE

Researching How Technology Can Bring Health Care Closer to Home

Dr. Abraham (Rami) Rudnick, Chief Scientist at TBRHRI and Vice President of Research at TBRHSC wants to find even more ways of bringing health care to the patient through the use of technology.

MORE ONLINE

New Imaging Technique May Detect Alzheimer's Disease Earlier

Dr. Mitchell Albert received a Weston Brain Institute grant of $709,650 to study new ways of using HP xenon gas functional MRI for the diagnosis of Alzheimer's disease and treatment monitoring. The research could lead to earlier detection of this devastating disease when it is more manageable.

Dr. Mitchell Albert of the Thunder Bay Regional Health Research Institute and Lakehead University is heading up a team of researchers investigating a new method that could lead to earlier diagnosis of Alzheimer's disease. The groundbreaking research, which comes thanks to a prestigious Weston Brain Institute grant of $709,650, will take three years to complete.

The method uses hyperpolarized (HP) xenon gas, a technique that Dr. Albert co-invented. When breathed in by the patient, the HP xenon gas travels through the bloodstream and provides up to 10 times more signal enhancement than traditional fMRI.

"It's the first time we're directly imaging the function of the brain in patients with Alzheimer's disease. This will perhaps allow us to detect the Alzheimer's disease biomarkers that are crucial for identifying this disease at its early stage – much earlier than is currently possible," Dr. Albert said.

As of February 2017, 18 individuals – a mix of healthy participants and those diagnosed with Alzheimer's disease – had been scanned.

Signal enhancement is the key for early Alzheimer's disease diagnosis using fMRI. Researchers will be able to see the brain function much more clearly and potentially spot the telltale signs of Alzheimer's disease in its earlier stages. Although the research is far from complete, the results so far have been promising.

"What we found was that there were longer washout times in participants with Alzheimer's suggesting there is a slower blood flow in those individuals," Dr. Albert said.

"The Weston Brain Institute is pleased to support this kind of critical high-risk, high-reward work," said Alexandra Stewart, Executive Director at the Weston Brain Institute. "If successful, Dr. Albert's imaging tools will be of great impact in developing effective treatments for Alzheimer's disease."

How HP Xenon fMRI Works in Alzheimer's Disease Diagnosis

During an fMRI scan, participants are asked to complete a specific task. In the case of Alzheimer's disease, that's often a memory game. Different areas of the brain "light up" in the scan at different times as the participant does the task, and slight differences in these patterns can indicate the onset of Alzheimer's.

These patterns are much harder to detect in the earliest stages of Alzheimer's disease. It's sort of like looking up at the stars. In Toronto, only the brightest stars can be seen so you don't get a clear picture of the night sky. But in Thunder Bay, you can see whole constellations and even the Milky Way.

Similarly, HP xenon gas boosts the signal by up to 10 times, enhancing the image. This technique may lead to earlier diagnosis of Alzheimer's disease – and therefore earlier treatment.

The following scorecard was applied to track progress in 2016/17

GOAL 1: IMPACT THROUGH EXCELLENCE IN SCIENCE

1.1 Focus on detectors, specialized MRI technology, molecular probes and imaging guidance.

	TARGET	ACTUAL
1.1A Research Grant Multiplier Research funding multiplier (cumulative this fiscal). The financial ratio measures the amount of times the scientists' salaries are paid by the grant funding they have earned. This is operating funding, not capital. (cumulative as per MP)	x 1.5	1.05
1.1B HQP Total number of TBRHRI Post Doctoral Fellows PDF's working for a TBRHRI Scientist. Cumulative. (Total Trainees)	1/number of Scientists (7)	2
1.1C HQP Total number of TBRHRI Graduate Students Master Students and PhD Students working for a TBRHRI scientist. Cumulative. (Total Trainees)	2-3/number of Scientists (7)	25
1.1D HQP Total number of TBRHRI Undergrads/Volunteers Undergrands and volunteers, working for a TBRHRI scientist. Cumulative.	3/number of Scientists (7)	51
1.1E Number of publications in journals (includes any authors) Publication date must be in the time period being reported. Target of 3/per scientist/year.	3/number of Scientists (7)	12

1.2 Recruit and develop critical mass of internationally excellent scientists and trainees

	TARGET	ACTUAL
1.2A Implement 1 more TBRHRI-LU Research Chair TBRHRI-LU Research Chair contract in place.	1	1

1.3 Facilitate collaborations to increase success in scientific discovery, leading to first-in-patient trials and ultimately widespread distribution

	TARGET	ACTUAL
1.3A Industry Contribution to Science This includes revenue from commercialization activities, contract research, other industry science contributions to science accrued during period in question. This does not include clinical trials revenue nor does it include fundraising.	$100,000	$13,372

GOAL 2: ENABLING OF RESEARCH STRATEGIC TO TBRHSC

2.1 Facilitate clinical research through an accessible, well managed, and sustainable infrastructure

	TARGET	ACTUAL
2.1A Number of participants accrued in clinical trials (Number of subjects enrolled in Clinical Trials) Number of participants accrued to any clinical trial. This includes TBRHSC as well as outpatient studies (i.e. TBRHSC privileged physicians are the principle investigator, but the patients are not necessarily active patients of TBRHSC. The count excludes patient accruals to clinical research studies not run through the Clinical Trials Department (e.g. patients enrolled in a study with Big Thunder Orthopedics).	268	167
2.1B Growth in patient accruals to clinical trials Report cumulative growth in patient accruals as of quarter in question, compared to previous fiscal. Patient accrual growth target 10 % as per TBRHSC briefing note and TBRHSC scorecard reporting.	10%	62%

2.2 Encourage emergence of research champions to grow culture of research

	TARGET	ACTUAL
2.2A NEW: Total number of Researchers who conducted research at TBRHRI and TBRHSC (Number of faculty engaged in Research) A PhD or MD, who has over $500 in funding, is either a PI, QI, or SubI, cumulative throughout the year, (+TBRHRI Scientists)	In Development	90
2.2B NEW: Total number of all Other Research Staff Any other person conducting research at TBRHSC, that is a SubI or PI with money. Included are CRA's, CRC's, CRS Physician Research Assistants, TBRHRI Research Associates/ Assistants that are directly related to the research of a Scientist. Cumulative throughout the year	In Development	199
Total Research Staff (1.1B + 1.1C + 2.2A + 2.2B)	301	316

2.3 Enable clinical trials and clinical research in TBRHSC priority areas (Chronic Disease Prevention & Management, Comprehensive Clinical Services, Indigenous Health, and Mental Health & Addictions).

	TARGET	ACTUAL
2.3A Regulated Investigator initiated trials Active trials, e.g. HIFU for uterine fibroids and Skin Prep Solution Study (SPS), within the quarter. This count includes all active open and accruing Investigator Initiated Trials - Regulated only	4	2

GOAL 3: ECONOMIC GROWTH & SUSTAINABILITY

3.1 Develop clinical trials, cyclotron, and other business ventures to reinvest in research

	TARGET	ACTUAL
3.1A Fully Implement Scientific Research and Experimental Development credits and leverage NW Medical Research Inc. SR&ED Net Revenue collected during period in question	$180,000	$0
3.1B Revenue from Clinical Trials / Clinical Research (Clinical Research Gross Margin) Gross Revenue from Clinical Trials/CR (including ICP revs etc) Earned during period in question. Actual	$1,300,000	$1,066,236
3.1C Year-over-year growth of external research funding Research $ accrued in a quarter (i.e. not awarded). This would be funding from the private sector, external peer-reviewed granting bodies (including NOAMA), and peer-reviewed grants from charitable organizations (e.g. the Weston Brain Institute). Quarter to prior year quarter comparison.	5%	7.30%

3.2 Partner with TBRHS Foundation in research fundraising

	TARGET	ACTUAL
3.2A Amount of research revenue received from donors (Total Exernal Grants Contract & Funding) Report amount of operating revenue earned from donors during period in question ($300k from Foundation). This does not include funding for equipment.	$300,000	$210,000

3.3 Create value from intellectual property through spin-off companies and licenses

	TARGET	ACTUAL
3.3A Number of new patents issued (Number of Patents Awarded) Number of new patents awarded - by quarter (full / PCT patents only, not provisional)	1	0
3.3B Number of provisional patents issued Number of provisional patents awarded by quarter	2	2

In the 2016/17 fiscal year, a great deal of focus was placed on engagement with stakeholders to refine the Strategic Plan, which resulted in the development of new measures to gauge our progress. We look forward to reporting with new Strategic Indicators in our 2017/18 annual report.

Dr. Jesse Walker, Cyclotron Associate

A message from the Thunder Bay Regional Health Sciences Foundation

CLOSER-TO-HOME RESEARCH FOR CLOSER-TO-HOME CARE

Research drives better patient care. In turn, local research drives better local patient care. That's why the Thunder Bay Regional Health Sciences Foundation invests so much in local research. By supporting the Thunder Bay Regional Health Research Institute, our donors help improve the level of healthcare in Northwestern Ontario right now and in the future through research breakthroughs, better equipment, and attracting the high-calibre healthcare professionals that make such a difference in our lives.

Recently the Health Sciences Foundation has partnered with the Board of Directors of the Thunder Bay Regional Health Research Institute to host events that have introduced the revolutionary research happening in Northwestern Ontario to an audience outside our geographical area. These events have sparked discussion about how we can tackle the specific health care issues facing our geographic area. Specifically, how can research improve the health of our Indigenous population? There is a tremendous opportunity to work together to re-examine how research partnerships can exist to transform care.

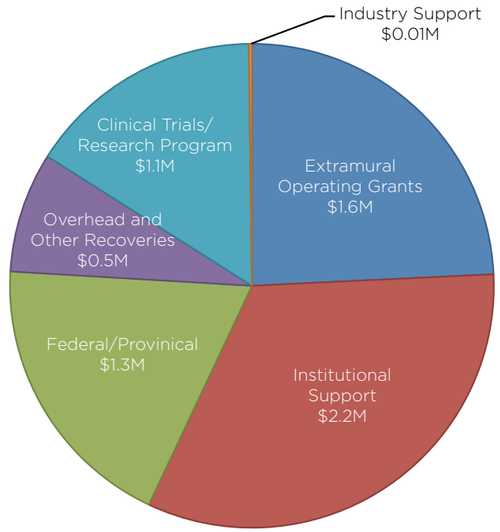
Our focus is always on closer-to-home patient care. Supporting local research is yet another way of realizing that vision.

Health Sciences Discovery Fund

2016-2017 Financials

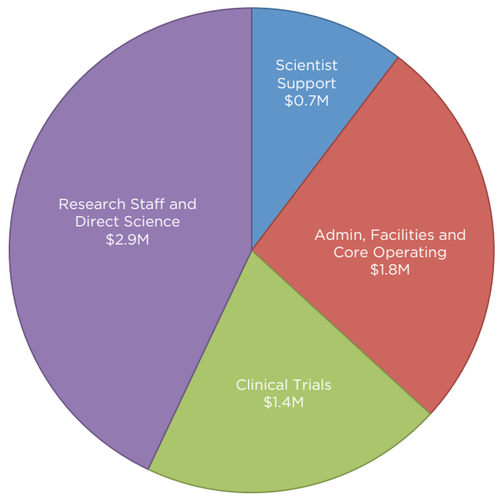
REVENUE SOURCES

Total = $6.7M



EXPENSES

Total = $6.7M



Funders and Partners

GOVERNMENT

Canada
Ontario
FedNor
Ontario
Northern Ontario Heritage Fund Corporation
Société de gestion du Fonds du patrimoine du Nord de l'Ontario
Thunder Bay CEDC Community Economic Development Commission
City of Thunder Bay Superior By Nature

AHSCS

Thunder Bay Regional Health Sciences Centre
Thunder Bay Regional Health Sciences Foundation
Sunnybrook Health Sciences Centre

ACADEMICS

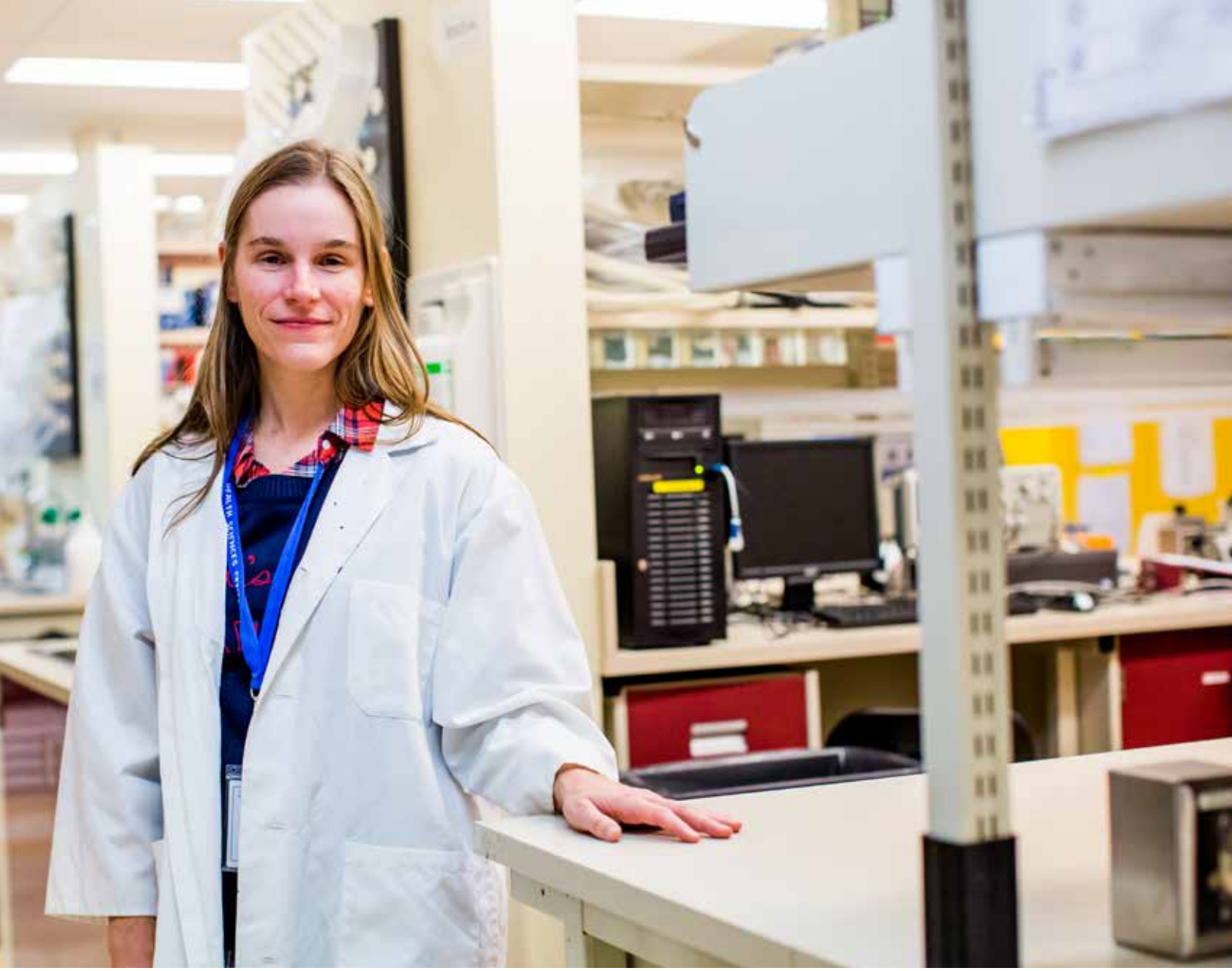
Lakehead University
Northern Ontario School of Medicine
Confederation College

NOT FOR PROFIT

MaRS Innovation
Ontario Cancer Care Ontario Action Cancer Ontario
OICR Ontario Institute for Cancer Research
Ontario Brain Institute
Northwestern Ontario Innovation Centre

INDUSTRY

PHILIPS sense and simplicity
Radialis Medical
SOFIEBIOSCIENCES
analogic
XLV Diagnostics Inc.



Dr. Jane Lawrence-Dewar, Scientist, TBRHRI

To read our full Annual Report 2016/2017, please view it online at:

www.TBRHRI.ca/2016-2017AnnualReport

Thunder Bay Regional Health Research Institute

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Bringing Discovery to Life

Donner vie à la découverte

Thunder Bay Regional Health Research Institute is the research arm of the Thunder Bay Regional Health Sciences Centre, a leader in Patient and Family Centred Care and a research and teaching hospital proudly affiliated with **Lakehead University, the Northern Ontario School of Medicine and Confederation College.**

Institut régional de recherche en santé de Thunder Bay assure la mission de recherche du Centre régional des sciences de la santé de Thunder Bay, un hôpital d'enseignement et de recherche affilié à **l'université Lakehead, à l'École de médecine du Nord de l'Ontario et au collège Confédération,** et un leader dans la prestation de soins et de services centrés sur les patients et leurs familles.