



UNIVERSITY OF
CALGARY



Hotchkiss Brain Institute

2012-2013: A year of collaboration



HOTCHKISS
BRAIN INSTITUTE

hbi.ucalgary.ca



Our Mission

The mission of the Hotchkiss Brain Institute is to be a centre of excellence in neurological and mental health research and education, translating discoveries into innovative health care solutions. This mission will aim to support and conduct research on the healthy and diseased brain, spinal cord and peripheral nerves to assess, understand and educate the future leaders in neuroscience and mental health.

On the cover: Dr. Willem Meeuwisse and Carolyn Emery, PhD, co-chairs of the Sport Injury Prevention Research Centre, are working towards better prevention, assessment, diagnosis and prognosis for athletes suffering concussion. Read more about their research on page 10.

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Message from the Hotchkiss family

My father's vision for the Hotchkiss Brain Institute focused on the growth of a globally esteemed research and education facility, where the collaborative efforts of many would create an environment in which research in neurological and mental health translated into better patient care.

I think because he was an independent businessman for most of his life, he relied on forming and maintaining relationships with others who brought their own expertise to the table. He learned something from everyone he met, and was always open to sharing his own knowledge.

We see that spirit of collaboration in many of the accomplishments of the HBI over the past year. For example, an emerging priority of the institute is research into concussion. In a significant collaborative endeavour, HBI researchers are working with the Faculty of Kinesiology and the Alberta Children's Hospital Research Institute to better identify, prevent and treat concussion in sport. We know Dad would be fascinated by and fully supportive of this research. He would hope for better outcomes for the thousands of hockey players who suffer concussions every year.

Another collaboration that Dad would be extremely proud of is Campus Alberta Neuroscience (albertaneuro). Dad encouraged this partnership with the Universities of Calgary, Alberta and Lethbridge, and albertaneuro is a joint effort of neuroscience researchers, educators and clinicians from these three provincial institutions. Our family is excited to see this take shape and we applaud HBI Director Sam Weiss for being the driving force behind this initiative.

The HBI has continued to see overwhelming support from our community over the past year and this has resulted in the development of some exceptional research opportunities. Dr. Eric Smith, the first holder of the Katthy Taylor Chair in Vascular Dementia, is building partnerships with other universities and institutions, which will contribute to important advancements in dementia research. Our family is so grateful to Dad's good friend Don Taylor and his family for choosing to honour his late wife by providing funding for this important and timely research into a disease that affects so many in our aging population.

My mom and my brothers continue to be proud of this legacy of excellence at the Hotchkiss Brain Institute. We thank Sam and all the staff for their ongoing passion and tireless efforts to ensure that Dad's vision remains at the forefront of future endeavours. Our commitment to the sound stewardship of this vision remains strong and heartfelt.



Brenda Mackie

L to R: Richard Hotchkiss, Rebecca Hotchkiss, Jeff Hotchkiss and Brenda Mackie

Message from the Director

I am pleased to present to you our annual Report to the Community – a snapshot of the outstanding efforts of our scientists, physician scientists, fellows, students and technical support staff at the HBI.

When the HBI was launched in October 2004, it was supported by the overwhelming generosity of the Hotchkiss family. Harley's leadership, warmth and passion remain at the foundation of the HBI and have shaped the institute into what it is today. I want to thank the Hotchkiss family for their ongoing commitment and support.

We started off creating a centre of excellence for neurological and mental health and we are very proud of our well-established priority areas. Now, nine years later, we are carefully and thoughtfully expanding our focus to form new and meaningful partnerships with the University of Calgary and other institutes both nationally and internationally.

We are embarking on this new road and it's all about collaboration. This is especially meaningful, because both the exchange of knowledge and acquiring new approaches make our work better and ultimately increase our return to the community.

I am very excited to be leading a new priority research theme at UCalgary in Brain and Mental Health. This initiative joins the HBI and our Faculty of Medicine colleagues with the Faculties of Arts, Education, Engineering, Kinesiology, Nursing, Science, Social Work and Veterinary Medicine. For the first time, over 200 researchers from across the campus will work together to build on their respective expertise and find new ways to accelerate their research activities for maximum impact in the areas of brain and mental health.

This exciting initiative is sure to generate many new and exciting partnerships and outcomes, the benefits of which we are already beginning to see. Dr. Willem (Winne) Meeuwisse, for example, is the HBI member leading the University of Calgary's new Concussion and Brain Injury program, as a collaborative partnership between the HBI, Alberta Children's Hospital Research Institute and the Faculties of Arts, Kinesiology and Medicine. Research spearheaded by Carolyn Emery, PhD and Winne, has contributed to a Hockey Canada ban on body checking in peewee hockey that will prevent an estimated 500 concussions a year in 11-12 year old Alberta kids—and will prevent 3,500 such concussions per year across Canada. You can read more about their great work on page 10.

Our partnerships outside of the University continue to flourish as well. After almost three years of planning and discussion, Campus Alberta Neuroscience (albertaneuro) is on its way to establishing the province of Alberta as a centre of neuroscience excellence, impact and innovation on the international stage. An initiative championed by the HBI, albertaneuro brings together three partner institutions—the Universities of Alberta, Calgary and Lethbridge—into a province-wide network of over 250 research professionals from all areas of neuroscience.

Building on the strengths at these universities, albertaneuro is working to facilitate new collaborations and integrate neuroscience research and education activities across the province of Alberta. It will enhance our ability to attract the finest neuroscience researchers and trainees to Alberta, and network the neuroscience community and stakeholders to accelerate the development of new biomedical



technologies and effectively translate research discoveries into new neurological and mental health solutions. The first focus of albertaneuro is healthy brain aging and dementia, which you can read more about on page 20.

In closing, I want to take this opportunity to thank everyone who has contributed to the institute's achievements this past year and supported our many ambitious initiatives. Your support has allowed us to recruit new faculty from around the world and to attract and retain the best and brightest students and postdoctoral fellows - all of which has made us a nationally recognized force in neuroscience.

I look forward to what is sure to be another exciting year of growth, discovery and innovation, and return to our community. Thank you for your ongoing interest and support.

Sincerely,

Samuel Weiss, PhD, FRSC
Professor and Director
Hotchkiss Brain Institute

Research dream team is making sport safer

Athletes around the world and kids playing around the corner are safer because HBI researchers are discovering how to better identify, prevent and treat concussions in sport.

In Canada, as many as 50,000 young hockey players suffer a concussion on the ice every year. “We don’t know the longer-term effects of concussion or the best way to treat it, especially for kids,” says HBI researcher Carolyn Emery, PhD, who is also the Alberta Children’s Hospital Foundation Professor in Pediatric Rehabilitation and co-Chair of the Sport Injury Prevention Research Centre (SIPRC) in the Faculty of Kinesiology.

“That’s a frightening thought for parents and players, and makes prevention a key focus.”

Emery and HBI member Dr. Willem Meeuwisse, leader of the University of Calgary Concussion and Brain Injury Initiative and co-Chair of SIPRC, along with their colleagues in the Faculties of Kinesiology and Medicine, have been awarded a \$1.5 million Canadian Institutes of Health Research (CIHR) grant to follow young hockey players to find out the best ways to prevent, diagnose and rehabilitate following concussion.

The five-year study will start with baseline assessments of more than 1,000 11-12 year old Peewee hockey players in Calgary. If a player suffers a concussion, they will be referred immediately to a sport medicine doctor for evaluation.

“There is an urgent need to advance knowledge in the prevention, assessment, diagnosis, prognosis and management of children and adolescents who sustain this injury,” says Emery. “Our understanding comes largely from adult studies and anecdotal evidence. We don’t know the longer-term effects for children who are concussed.”

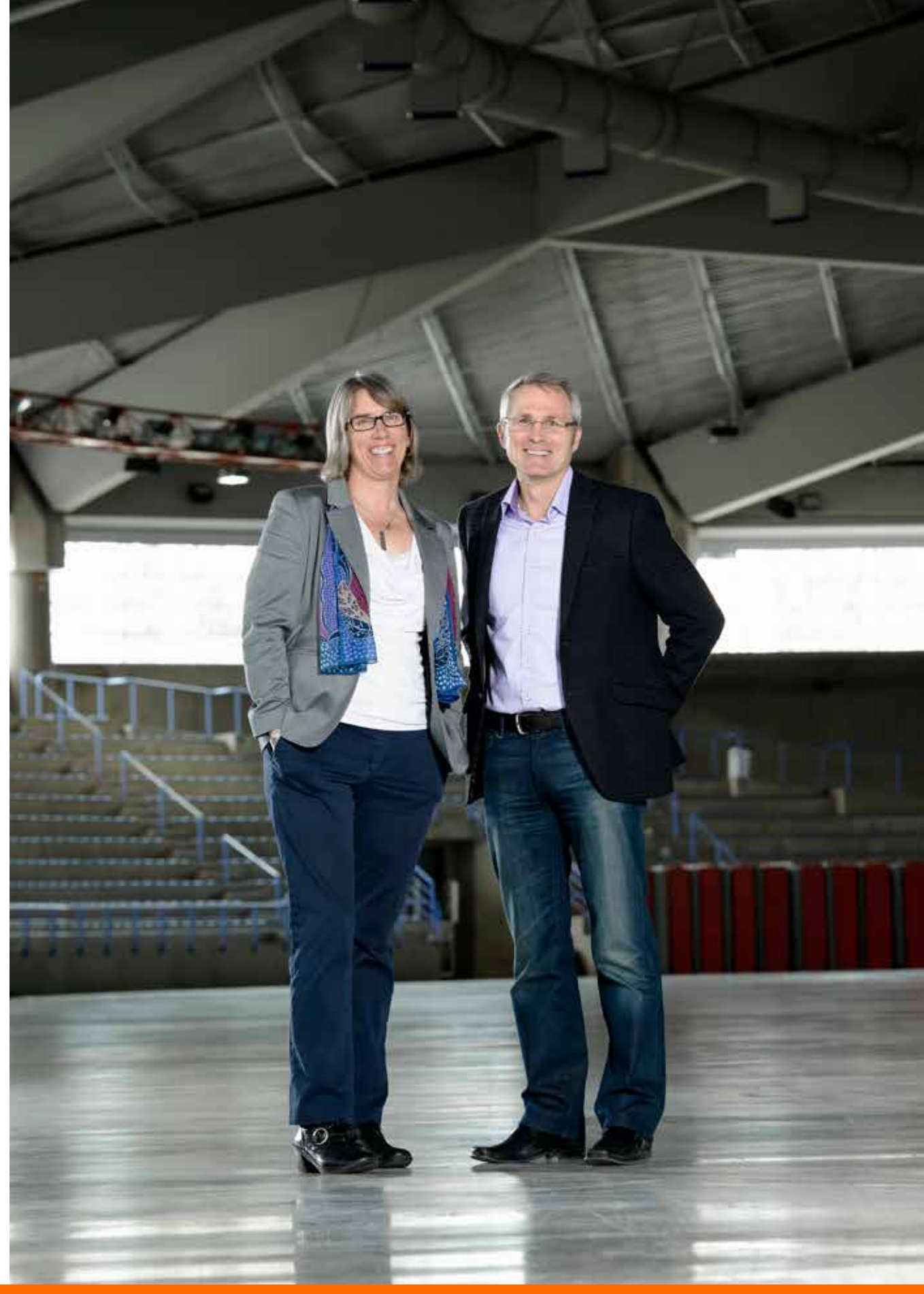
The team at the HBI is also helping adult athletes around the world, providing input through the SIPRC partnership with the International Olympic Committee. “Sometimes, the rules get in the way of being able to care for the injured athlete,” says Meeuwisse. “So sport organizations are looking at ways to change the rules in order to provide better care.”

Those kinds of changes wouldn’t be possible without partnerships between researchers, clinicians and governing bodies—a collaboration that culminates in the International Consensus Conference on Concussion in Sport; a meeting held every four years that Meeuwisse co-chaired in November 2012. The conference, the world’s foremost gathering on sport concussion, develops consensus on diagnosis, management and prevention of concussions.

Meeuwisse co-authored the international report that delivered guidelines on whether helmets and other sports equipment are preventing concussions, why some people respond better to rehabilitation than others and when an athlete should be allowed to return to play after suffering a concussion. The panel also created the first tool for parents and coaches and other non-medical people to use to “recognize if it might be a concussion and what they should do.”

Meeuwisse, Emery and many other HBI researchers, along with their collaborators at UCalgary and all over the world, are proving that when it comes to dealing with concussion in sport, the best offense is a good defense.

Carolyn Emery, PhD and Dr. Willem Meeuwisse at the Olympic Oval. Together with researchers from UCalgary and around the world, Emery and Meeuwisse are working to prevent, treat and rehabilitate athletes following concussion.



Leading research in the fight to treat brain cancer

Every year approximately 2,600 people in Canada are diagnosed with glioblastoma, the most common and deadly form of brain cancer. With few treatments available, patients with this devastating disease only have about 15 months to live.

But soon doctors will be able to deliver better news. A Canadian all-star team of scientists and clinician-scientists, led by neurologist and HBI member Dr. Gregory Cairncross, is working on promising new drugs to treat the brain cancer that comes “out of the blue, often to people who are previously healthy, just minding their own business.”

Cairncross, holder of the Alberta Cancer Foundation Chair in Brain Tumour Research, along with colleagues from Alberta and across Canada, have received an \$8.2-million grant from the Terry Fox Research Institute, the Terry Fox Foundation, Alberta Innovates-Health Solutions, the Alberta Cancer Foundation, Genome Canada, Genome BC and the BC Cancer Foundation.

Cairncross is hopeful the ground breaking collaborative research—which includes cancer biologists, neurologists and specialists—will produce new drugs that are ready for clinical trials in two to four years.

“Glioblastoma is a disease where survival is measured in months,” says the distinguished neurologist. “We’ve come together—integrating researchers and centres across the country with different and complementary strengths—to focus on the illness.”

In Alberta, the research team is growing brain tumour initiating cells in the laboratory that retain the genetic makeup of the cancer. These models will be the tools that researchers in British Columbia and Ontario

use to determine the genetic changes that are driving glioblastoma and to test in the lab new drugs to stop the cancer’s growth.

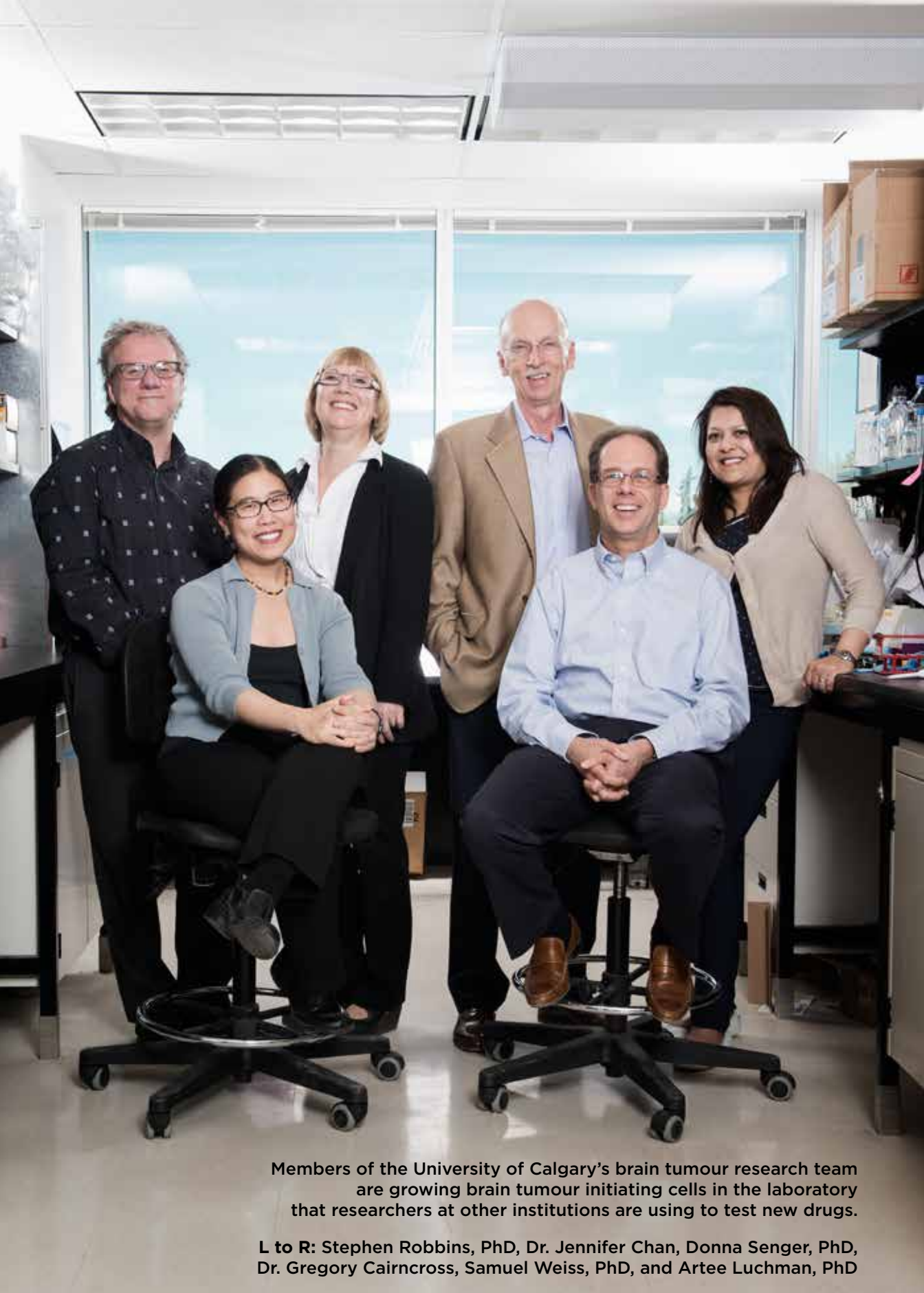
Cairncross, who was the head of the department of Clinical Neurosciences in the Faculty of Medicine at UCalgary for ten years and is currently the Director of the Southern Alberta Cancer Research Institute at the University of Calgary, is delighted to lead such a strong team—a large group that includes Samuel Weiss, PhD, co-lead of the Alberta team and Director of the HBI.

The two men share an interest in the cellular origins of brain cancer and, in the formation of the HBI. Cairncross remembers an early meeting with Weiss and philanthropist Harley N. Hotchkiss to start talking about what a brain institute might look like. “We discussed the concept of the HBI, the vision, how a partnership with the department of Clinical Neurosciences might look and how it might be solidified through the creation of the institute,” Cairncross recalls.

Since the HBI was created in October 2004, it has attracted new resources, new relationships and new recruits—talented neurosurgeons, neurologists and specialists in physical medicine and rehabilitation.

It has also paved the way for this new national collaboration to find new treatments for brain cancer.

“We don’t see any other way forward other than through research, because there seems to be no way to prevent glioblastoma,” says Cairncross. “We have a chance to make a difference and are confident that we will.”



Members of the University of Calgary’s brain tumour research team are growing brain tumour initiating cells in the laboratory that researchers at other institutions are using to test new drugs.

L to R: Stephen Robbins, PhD, Dr. Jennifer Chan, Donna Senger, PhD, Dr. Gregory Cairncross, Samuel Weiss, PhD, and Artee Luchman, PhD

Charting a new path for vascular dementia research

We all have moments when we wonder where our head has gone. Maybe you can't find your keys even though you just saw them on the counter. Perhaps you keep forgetting the name of your friend's husband even though you've met him seven times. Or maybe you go to the kitchen to get something only to forget what you were looking for.

For many of us, these are mere momentary lapses of memory. But for people with dementia it goes far beyond simple inconveniences. Their memory problems prevent them from driving, managing finances, grocery shopping and eventually, living on their own.

"Unfortunately, it's all too common," reports HBI member Dr. Eric Smith, an associate professor of neurology in the department of Clinical Neurosciences and the first holder of the Katthy Taylor Chair in Vascular Dementia. "The lifetime risk of getting dementia for a Canadian is one in four or five."

Smith says Alzheimer's is the main cause with vascular dementia as a close second, accounting for a third of all cases of dementia in Canada. Both nationally and internationally, it's presenting one of the biggest challenges we've faced as a society, especially as the age of our population shifts the focus of medicine towards elder care. Despite the growing need, dedicated research programs on the topic are scarce. In fact, the Katthy Taylor Chair in Vascular Dementia is the first of its kind in Canada.

"The scientific community is just now starting to put greater focus on research into this devastating disease, thanks to the vision of programs such as this," says Smith, who calls the Chair a chance for Calgary to establish itself as a hub of global collaboration for research in this important field. "There is fertile ground to build relationships. We've been doing that

both within the university and with other universities."

Smith says the Chair is allowing him to build research programs with colleagues in multiple disciplines. With colleagues in the Faculties of Nursing and Medicine, Smith is working on a research project that focuses on the intellectual, behavioural and social conditions that can arise in patients who have experienced stroke or who have dementia. The study will explore the support needs of patients with early onset dementia as well as the needs of their caregivers and compare those patients with a group of participants with late onset dementia. This project is an example of the kinds of cross-disciplinary partnerships the Chair is helping to establish.

"The Katthy Taylor Chair in Vascular Dementia is a chance for Calgary to establish itself as a hub of global collaboration for research in this important field. Our goal is to be a leader in the field and bring new understanding to an understudied but important area of neuroscience."

Support from the Chair is helping radiologists implement a program for using glucose PET (Positron Emission Tomography) scans as a new diagnostic



Dr. Eric Smith is looking for new ways to identify and treat silent strokes, which often go undetected and can lead to the development of vascular dementia.

tool for vascular dementia. The scans allow radiologists to see how glucose is used by the brain. Even before they exhibit symptoms, patients who develop dementia may show a decreased rate of glucose metabolism in the brain, giving clinicians a key indicator that the person is at risk of developing the disease.

The Chair is also providing researchers with opportunities to play a major role in collaborations with their counterparts at other universities and institutions. Dr. Smith has already fostered partnerships with experts across the country, at McMaster University. The joint project involves using magnetic resonance imaging (MRI) to study the patterns, causes and impact of silent strokes across Canada. Unlike overt strokes where the patient is in obvious distress, patients who experience silent, or covert, stroke often don't exhibit any symptoms. Instead, the damage is done over time, when

blockages in small blood vessels prevent brain tissue from getting the oxygen and nutrients it needs.

"Up to a third of people in their 80's may have had a stroke and not realized it," Smith explains. "So a big part of my research is trying to understand why people are at risk of having little strokes that they may not realize they've had but that can be detected with an MRI."

Through this visionary program, collaborative opportunities for our experts will grow, leading to a better understanding of this serious disease. In time, efforts hope to improve treatments and lead to better outcomes for families in our community and beyond.

Helping trainees REALISE their potential

Studying the inner workings of the body's most complex organ takes a particular kind of individual: curious, patient, driven and intelligent. With this impressive skill set, trainees at the HBI are poised to raise the bar in any profession they pursue, be it academia, commerce, or public service.

As she witnessed the incredible calibre of HBI trainees, Sarah McFarlane, PhD, was inspired to help develop a program to give them a jump-start on the competitive professional world. REALISE, or Research Education and Leadership in Neuroscience, is designed to give trainees experience and learning opportunities inside and outside the lab in six areas: knowledge translation, neuroscience knowledge, professional skills, teaching skills, technical skills and career opportunities.

"As leaders at the HBI, we have to carefully consider the future success of our trainees," explains McFarlane, the Director of REALISE and a professor in the department of Cell Biology and Anatomy. "The idea behind REALISE is to have our students consider all the other features of their training that would allow them to be competitive for jobs."

While many HBI trainees will go on to have careers as the next generation of brain and mental health researchers and clinicians, others will pursue opportunities outside the realm of academia. Through REALISE, trainees are given the tools to build upon their research knowledge and adapt into community roles such as future educators, industry professionals and policy makers.

The program draws on the HBI's partnerships across campus and throughout the community to offer students skill-specific modules that help improve both their scientific abilities and their professional prowess. Tailored to each trainee's individual needs and interests, the REALISE modules are driven by industry leaders. A trainee whose research focuses on multiple

sclerosis, for example, might take a module on immunology to better understand how a misdirected attack on the immune system could instigate the disease. On the professional skills side, a trainee could take a module on commercialization of research through the Innovate Calgary offices or a module about interview preparation or contract negotiation.

"When I first heard about the REALISE program, I was very excited because it is a great opportunity to improve some of my skills," says Cristiane de la Hoz, who participated in the program during a postdoctoral fellowship in neuroscience with the Faculty of Medicine. "I have always been inside an academic environment. Leaving such an environment in order to find a job at a company or in the government is scary because I don't know how the system works."

REALISE is helping students and faculty to appreciate the value that their academic and research skills bring to organizations outside a university setting.

McFarlane says students also need to be shown that academic positions aren't their only employment options, nor should they be. There are many career paths that could offer students the same kind of intellectual satisfaction. Through REALISE, their communication skills, the ability to think critically and the maturity to work independently will be honed, giving these students a competitive edge in any job market.

"With these workshops and the experience of the facilitators," says de la Hoz, "I have



L to R: Trainees Bhagat Singh (PhD student), Cristiane de la Hoz (postdoctoral fellow) and James (Jim) Rogers (PhD student) who participated in the first year of the REALISE program with REALISE Director Sarah McFarlane, PhD.

a better idea about the job opportunities outside academia and am able to pursue them with more confidence."

As businesses, governments and non-governmental organizations focus on issues like mental health and productivity, it's becoming increasingly more important for them to employ people who understand the inner workings of the human brain. Through the strength of partnerships and the innovation of the REALISE program, the HBI is preparing our future graduates to be valuable members of any sector they choose to explore.

While the program is still in its early days, McFarlane is hopeful it will soon expand beyond the borders of the University of Calgary through internships with government agencies and businesses in the community.

"We're not only showing our trainees how to apply the skills they learn in the lab to the outside world," says McFarlane. "We're also letting the outside world know that there are smart, hard-working people here who could be a benefit to their organization."

"I think that attending the REALISE modules is a fantastic opportunity for the trainees to improve not only their professional skills, but also their personal life. I've learned about my individual strengths, my ability to interact with other people, and how to better evaluate myself in my professional life."

Cristiane de la Hoz

Bridging the clinic and the lab to treat stress-related illness

We all experience stress, but too much of it can increase our risk of depression, anxiety and other disorders. HBI researcher Matthew Hill, PhD, is taking research from the clinic to the lab and back again to develop better treatments for people with stress-related mental illnesses.

Hill, who is appointed jointly in the departments of Cell Biology and Anatomy and Psychiatry and holds the Canada Research Chair in the Neurobiology of Stress, is at the forefront of research into the endocannabinoid system in the brain, which helps regulate stress and emotional behaviour.

“Our translational approach is to take clinical findings from human research, model them in rodents to understand the neurobiological mechanisms of the diseases and then take that knowledge back to the clinic with potential targets for novel drug development,” says Hill, who is also a member of The Mathison Centre for Mental Health Research & Education.

The endocannabinoid system regulates the release of endocannabinoids in our brains. When we're faced with a real or perceived threat, our brain sets off our fight-or-flight alarm system, triggering our adrenal glands to release a flood of hormones including adrenaline and cortisol, which increase our heart rate and blood pressure. After the threat has passed, the brain releases endocannabinoids to help us get back to a more normal, relaxed state.

Hill and his colleagues have found that under conditions of chronic stress, it appears the endocannabinoid system starts to fail. “It's

almost like turning a light switch off and on too many times and sooner or later the light burns out,” says Hill. “We think this may be one of the links between chronic stress and the development of mood and anxiety disorders because if this system is compromised, we may not be able to adapt appropriately or buffer the effects of stress.”

Through collaborations with colleagues here in Calgary and around the world, Hill is working to understand how endocannabinoids can lead to better treatments for individuals suffering from depression and stress-related mental illness.

At the HBI, Hill is collaborating with clinician and imaging expert Frank MacMaster, PhD and psychiatrist Dr. Glenda MacQueen to determine the best treatment for individuals with depression. By looking at biological markers, such as endocannabinoids, they are able to predict which individuals will respond best to drug therapy and which might respond better to an exercise regimen. “This is an important step forward,” says Hill. “It means that down the road, we might be able to run biological tests and develop a very customized treatment plan for individuals suffering from depression or other mental illnesses.”

He is also working with researchers in New York, examining whether the endocannabinoid system is impaired in people who were exposed to 9/11 and have post-traumatic stress disorder (PTSD). “This research has led to important partnerships with major pharmaceutical companies,” explains Hill. “It is stimulating the clinical



Matt Hill, PhD, models clinical findings in the lab in order to understand disease and develop potential therapeutic targets for stress-related mental health conditions such as depression.

investigation of drugs that enhance endocannabinoid signalling as a possible treatment for depression and PTSD.”

By modelling clinical findings in the lab, Hill and his collaborators are gaining important information that in turn will lead to better treatments for stress-related mental illness.

“Our research has the potential to drive the development of therapies and preventative measures,” says Hill. “Our hope is that our work will eventually help to ease the burden of mental illnesses on our society.”

Neuroscience excellence across Alberta

The brain holds some of the greatest mysteries of our time. Its inner workings are enormously complicated and the effects of brain disease are overwhelmingly destructive and devastating.

Solving these mysteries and eventually treating or preventing brain disease is an ambitious goal—one that no single institute or university can accomplish alone.

It is this realization that has driven the creation of a neuroscience community—Campus Alberta Neuroscience (albertaneuro)—a grassroots collaboration of researchers, educators, clinicians and translators that have come together to increase the impact of neuroscience excellence in Alberta.

Supported by \$5 million from Alberta Advanced Education and Technology, albertaneuro has brought together Alberta’s three neuroscience research-intensive universities. It is being led by a steering committee, which includes John Greer, PhD, Director of the Centre for Neuroscience at the University of Alberta, Robert Sutherland, PhD, Director of the Canadian Centre for Behavioural Neuroscience at the University of Lethbridge and Samuel Weiss, PhD, Director of the HBI.

“If we look across Alberta and treat the province as one large campus,” says Grant McIntyre, PhD, albertaneuro’s Executive Director, “we have the expertise required to tackle some really big health problems.”

One of these problems is healthy brain aging and dementia—the first focus area for albertaneuro.

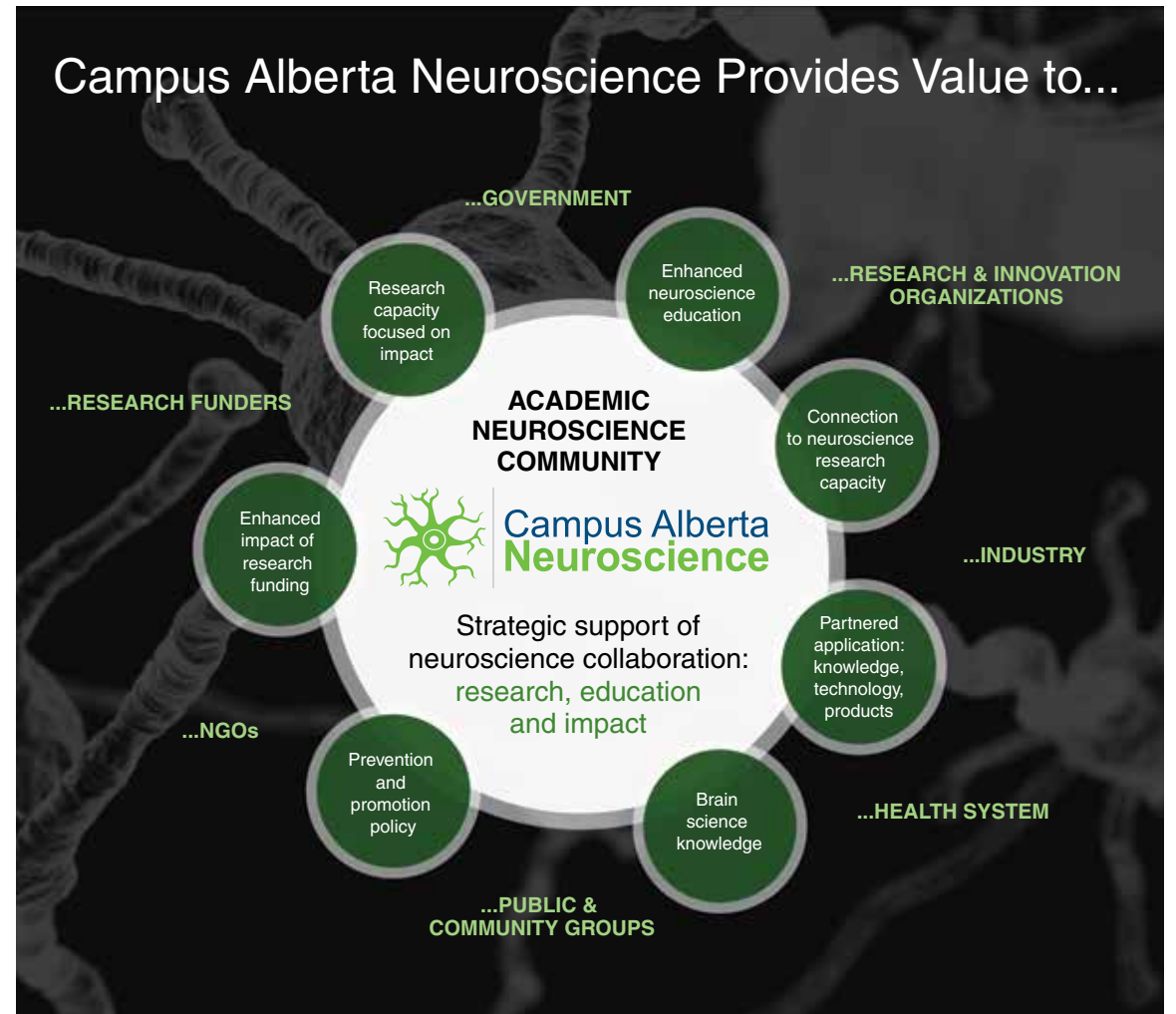
The increase in dementia as the population ages is a huge challenge in Canada and around the world. Addressing this challenge—either through delay of onset,

treatment, early diagnosis or cure—requires immense resources. Albertaneuro is working with its partners to bring people together across the continuum of research: from the front lines of treating patients all the way back to basic understanding of biology.

“Dementia caused by Alzheimer’s and other brain diseases is unfortunately an all too common problem,” says HBI member Dr. Eric Smith, Medical Director of the Cognitive Neurosciences Clinic, associate professor in the department of Clinical Neurosciences and Katthy Taylor Chair in Vascular Dementia. “We are strategizing on how to identify and diagnose diseases of the brain that cause dementia, how to improve them through nutrition and diet and also how to identify the markers of the disease in the research lab that might be the new targets for drugs or other therapies,” says Smith.

Another albertaneuro project, led by HBI member Marc Poulin, PhD, professor in the departments of Physiology and Biophysics and Clinical Neurosciences, will develop a clinical trial to determine the effects of exercise and/or nutritional supplementation on the development of age-associated cognitive decline and dementia in middle-aged and older adults at increased risk of Alzheimer’s disease and related disorders. “This research will identify and translate successful interventions into practice through ongoing partnerships with researchers, clinicians and networks across Alberta,” says Poulin.

Albertaneuro is also developing innovative ways to share its knowledge in neuroscience across the three partner institutions. For the first time, albertaneuro is using remote learning models to offer courses to students at all three partner institutions online, in real time and for credit.



Campus Alberta Neuroscience supports the academic neuroscience and mental health community’s efforts to create positive impacts through research, education and translation.

“Whether you’re a student in Lethbridge or you’re a student at U of A, you will have access to the educational resources and expertise at all three universities,” says McIntyre.

In addition, albertaneuro offers annual symposia, held at one of the Universities of Alberta, Calgary or Lethbridge. These events feature presentations by leading international and local researchers and serve to build a collaborative network—both within the province and with neuroscience leaders from around the world.

Furthermore, albertaneuro is working with the new Senior’s Health Strategic Clinical Network at Alberta Health Services (AHS)

and the Alzheimer’s Society of Alberta and Northwest Territories to identify how and where to focus research so that AHS and the Alberta community have access to the best information in neuroscience.

It’s part of a global shift in science and research—more and more, researchers are climbing out of silos and collaborating across disciplines, institutional and geographic borders. Albertaneuro is demonstrating that when it comes to making substantial progress in neuroscience research and education, collaboration is the key.

118 full members, consisting of faculty from 10 departments and 6 faculties across the university.

110 undergraduate students training with HBI members.

200 MSc and PhD students training with HBI members.

100 postdoctoral and clinical fellows training with HBI members.

150 research staff and associates.

\$38M of research funding in 2012. (Representing 13% of the university's total research income).

Over 250 new scholarly research articles and more than 3,500 citations of research work in 2012.

295 total donors. 101 donors have contributed > \$25,000; 63 donors have contributed > \$100,000.

\$2.5M in philanthropic support raised in 2012.

10 Rebecca Hotchkiss International Scholars in 2012.

19 modules created by REALISE and offered to 51 trainees in 2012.

\$1.56M spent in 2012 on research support for recruitment, infrastructure, core facilities and equipment.

\$400,000 spent in 2012 on educational support for scholarships and fellowships for trainees.



Stay connected

In addition to our annual *Report to the Community*, we have other ways in which you can keep up to date on HBI research and community events.

Email hbi@ucalgary.ca to request to receive newsletters or event notifications

Find us on **Facebook**, search Hotchkiss Brain Institute

Follow us on **Twitter** @HotchkissBrain

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The Hotchkiss Brain Institute at the University of Calgary consists of more than 100 physicians and scientists who are dedicated to advancing neurological and mental health research and education. The Institute's research strengths in foundational neuroscience are leading to new treatments for neurological and psychiatric disorders, aimed at improving quality of life and patient care.

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