

Capital Health Research Annual Report 2010-2011

Discovery and Innovation



Capital Health



**DALHOUSIE
UNIVERSITY**
Inspiring Minds



IWK Health Centre



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● Celebrating Our People

A message from Dr. Ray LeBlanc, Vice President of Learning, Research and Innovation

This year's research report is all about the people who make research possible.

There are hundreds of people throughout Capital Health who put their hearts and souls into the research that happens here. No matter what department they're in or what role they play, they're all motivated by the same fundamental desire: to make a positive impact on people's lives.

In these pages you will meet a number of our investigators, in different fields and at different stages of their careers. These busy professionals put in an effort nothing short of heroic to design research projects, prepare grant applications, oversee ongoing studies and write up results—on top of caring for patients, teaching medical students and residents, taking part in committees, and otherwise contributing to our vibrant academic community.

Investigators, however, could not succeed in their work without the dedicated backing of our research support staff. The 300+ members of our highly trained research staff work tirelessly to ensure that every task of every study is properly performed and recorded.

We also celebrate our patients and their willingness to take part in research. Point-of-care research would not be possible without them. For those of us who are familiar with the generosity of the Maritime character, it's no surprise to learn that we have some of the highest enrolment rates in Canada and even the world. People readily take part in our research studies, whether they will personally see a benefit or not—they simply want to help.

And then there are the volunteers who willingly offer their perspectives on the ethical integrity of proposed research projects. Our Research Ethics Boards are comprised of many volunteers from within the research community, joined by members of the broader community who give freely of their time and energy to help support research.

The generous people who give financial donations to research are also heroes in our world. Donors' contributions and careful stewardship add up to significant support for research. Last year alone, foundations within Capital Health transferred more than \$3 million to health research, with the QEII Foundation providing roughly \$1.5 million.

I want to give full marks and recognition to the enthusiastic and talented people who support those who do the research. Our staff in Research Services and Research Development, and the expert advisors in the Research Methods Unit, all play essential research-enabling roles.

Finally, I must emphasize that research at Capital Health is not Capital Health's alone. At every level, we work in partnership with our research colleagues at Dalhousie University, the IWK Health Centre, the National Research Council, and other collaborators and partners. Many of our researchers are co-investigators or principal investigators of multi-centre research projects that span national and international boundaries. We are proud of our collaborative model of research, which is inter-institutional, inter-professional and multidisciplinary. Our research initiatives are becoming increasingly integrated, as we strive to maximize the efficiency, creativity, and productivity of our collective research efforts. The strength of these partnerships, and their impact on people's health and wellbeing, is truly something to celebrate!



● *Researcher Profiles*



Ratika Parkash

Cardiologist, champion for better treatment of upper-chamber arrhythmia

Persistence paid off for Dr. Ratika Parkash, who secured \$585,000 from the Canadian Institutes of Health Research (CIHR) this year to lead a national study of blood-pressure control in people with atrial fibrillation. The funding, however, did not come easily. The first two times Dr. Parkash submitted her proposal, CIHR did not select it for funding.

“It was very difficult to receive those rejection notices, but I wasn’t about to give up,” Dr. Parkash recalls. “I kept working to strengthen my proposal, with lots of encouragement from CIHR and my mentors in Halifax and across Canada, until I succeeded.”

Her determination to launch this study stems from her absolute commitment to helping people with atrial fibrillation (AF), an irregular heartbeat in the left upper chamber of the heart. While not immediately life-threatening, AF can cause disabling heart palpitations and shortness of breath. If not controlled, it can lead to heart failure, stroke and premature death.

Until recently, little could be done for people with AF. Dr. Parkash is among a vanguard of clinician scientists who insist that tackling AF from several angles can lessen its impact on people’s lives. That’s why she has pulled together a cross-country team of investigators to see if aggressive blood pressure treatment can help control the arrhythmia to reduce the risk of heart failure and stroke. And, it’s why she traveled to France last year to immerse herself in the fine art of AF catheter ablation at the centre where the technique was first performed.

“While catheter ablation is a well-established way to fix the short circuits that cause arrhythmias in the ventricle, it has only recently become a reasonable option for atrial fibrillation,” notes Dr. Parkash. “It’s tricky to find the short circuits and manoeuvre a catheter inside the atrium... but we are working to make catheter ablation a mainstay for patients with AF.”

Most recently, Dr. Parkash received a \$15,000 grant from the Capital Health Research Fund to craft a new model of care for people with AF—one that puts a nurse at the point-of-care to provide the in-depth teaching patients need. Among other projects, she’s also setting up a registry to track the use of implantable defibrillators in people at risk of sudden cardiac arrest. She admits she has little time for herself, between her patients, her research, her students and her two young children, but she feels compelled to do what it takes to make life better, and longer, for people with AF.

Hometown:

Halifax, Nova Scotia

Education:

- Dalhousie University (undergraduate chemistry, medicine)
- University of Ottawa (internal medicine, cardiology residency)
- Harvard University (fellowship in cardiac electrophysiology, masters in clinical epidemiology)

Appointments:

- Staff cardiologist, Capital Health
- Associate professor, Division of Cardiology (Department of Medicine), Dalhousie Medical School

Primary research interest:

Can aggressive drug treatment lower blood pressure in patients with atrial fibrillation? Will this control the arrhythmia and reduce the risk of heart failure and stroke?

Other research projects:

- Impact of atrial fibrillation severity on lifespan and quality of life
- Role of catheter ablation in extending life in patients with atrial fibrillation
- Creating and testing a model of nurse-based, physician-supervised care for patients with atrial fibrillation

Key characteristics:

determined, persistent, passionate, ambitious

Jean-François Légaré

Cardiac surgeon, groundbreaking heart failure scientist

Hometown:
Montreal, Quebec

Education:

- McGill University (undergraduate science and medicine)
- Dalhousie University (residency in cardiac surgery, masters in pathology)
- University of Leipzig, Germany (clinical fellowship in minimally invasive cardiac surgery)

Appointments:

- Cardiac surgeon and director of the Cardiac Transplantation Program, Capital Health
- Associate professor and director of research, Division of Cardiac Surgery (Department of Surgery), Dalhousie Medical School

Primary research interest:
How do fibrocytes that migrate from the bone marrow to the heart contribute to collagen build-up in the heart?

Other research interests:

- Optimizing outcomes of mechanical heart transplants
- Facilitating informed surgical decision-making in frail elderly patients

Key characteristics:
original thinker, open-minded, unflappable, optimistic

Early in his medical training, Dr. Jean-François Légaré never imagined himself performing heart transplant surgeries and running a sophisticated research program. He saw himself working as a general surgeon, in a small community-type practice.

His worldview changed during general surgery training at Dalhousie Medical School, where he met a number of cardiac surgeons in the Capital Health Intensive Care Unit. “They were bursting with ideas and energy,” recalls Dr. Légaré. “I found them so inspiring, I jumped ship to cardiac surgery.”

Dr. Légaré’s move to cardiac surgery landed him in the middle of an active transplantation research program, which he embraced with enthusiasm. Several years later, when he joined Dalhousie and Capital Health as a clinician scientist, he shifted his research focus from heart transplantation to heart failure.

“I wanted to learn more about the root causes of the number one reason people end up needing a heart transplant—heart failure,” says Dr. Légaré, who has since shed light on a little-known mechanism of heart failure called fibrosis. He and his team of graduate students have found that even minor damage to the heart—such as that caused by high blood pressure—triggers the heart to send out signals that attract collagen-forming fixit cells from the bone marrow. “For reasons we’re trying to understand, these cells don’t just do the repairs and go away. They stick around and lay down more collagen. The result is scarring throughout the heart muscle, which impairs its pumping ability and leads to heart failure.”

Before Dr. Légaré’s findings, most experts believed heart failure was driven only by processes inside the heart. “Learning that the damaging cells come from the bloodstream opens the door to new possibilities for prevention,” he says. “We’re looking for molecules in the blood that could be targets for a new drug that could be delivered very simply via capsule or pill.”

While he and his team search for ways to prevent heart failure, Dr. Légaré continues to perform heart transplant surgeries on a regular basis. He frequently implants mechanical hearts and is studying how to decide who will benefit most from these devices.

“We’re benefiting now from research that took place in the 1970s and 80s,” notes Dr. Légaré. “Transplant recipients are far less likely to reject donor hearts in the short term, and we have mechanical hearts that don’t get rejected at all. In decades to come, we will see many advances based on work we’re doing today.”



Emergency



Stacy Ackroyd

Patient safety scientist, emergency medicine research leader

A former full-time occupational therapist turned full-time researcher, Dr. Stacy Ackroyd fell into research by accident. “I wasn’t even sure I would like it,” she recalls of her agreement to help out on a Dalhousie/Capital Health study of wheelchair safety. “To my surprise, I loved doing the research... especially when I saw how it leads directly to improved clinical practice and positive change in people’s lives.”

This was a turning point for Dr. Ackroyd. She decided to pursue a masters degree in epidemiology, which collects and analyzes data about health problems so policies and systems can be designed to address them. Degree in hand, she left her clinical practice and joined Dalhousie’s Department of Emergency Medicine as a research coordinator in the late 1990s. Interesting as this was, she soon realized her true ambition was to conduct research of her own.

“I wanted to know if prolonged stays in the emergency department, waiting for a hospital bed, increase patients’ risk of adverse events,” says Dr. Ackroyd. She embarked on PhD studies which revealed the answer to be a resounding YES—especially when those patients are older. The Canadian Patient Safety Institute then awarded her two years of funding for postdoctoral studies in medication safety.

Dr. Ackroyd is now looking for practical ways to protect patients from the negative effects of long stays in emergency, as Capital Health’s first patient safety scientist. “We are studying who is most at risk and for what kinds of problems, so we know where to focus our prevention resources,” she explains. For example, she is working with nurse educators Sheila Moffatt and Nancy Fox to identify how best to prevent elderly people from developing the beginnings of pressure ulcers while they’re waiting in emergency.

At the same time, as research director for Dalhousie Medical School’s Department of Emergency Medicine, Dr. Ackroyd is heavily involved in creating the new Acute Research Unit. “Acutely ill people coming through emergency and being enrolled in studies will be able to stay in this unit for monitoring and data collection after they are stabilized,” she says. “This will be a tremendous boost to our ability to conduct emergency research.”

Although she herself is no longer a clinician, Dr. Ackroyd’s practical approach to research is leading to better, safer patient care: “I want to find out what we can change to make the biggest difference to patients’ wellbeing.”

Hometown:

New Liskeard, Ontario

Education:

- University of Western Ontario (occupational therapy)
- Dalhousie University (masters in community health and epidemiology, PhD in interdisciplinary studies, postdoctoral fellowship in medication safety)

Appointments:

- Patient safety scientist, Performance Excellence Portfolio, Capital Health
- Assistant professor and director of research, Department of Emergency Medicine, Dalhousie Medical School

Current research interest:

How can we improve health care policies and practices to improve safety for older patients?

Other activities:

- Providing leadership to research efforts in the Department of Emergency Medicine
- Heading first-year medicine’s professional competencies unit

Key characteristics:

energetic, forward-thinking, compassionate, practical

David MacDonald

Hematologist, clinical trialist, problem solver

Hometown:
Kingston, Ontario

- Education:**
- Queen's University (masters in engineering, undergraduate medicine)
 - Dalhousie University (residency in internal medicine and hematology)
 - National Cancer Institute of Canada (fellowship in clinical trials methodology)
 - British Columbia Cancer Agency (clinical fellowship in lymphoma treatment)

- Appointments:**
- Hematologist, Capital Health
 - Assistant professor, Division of Hematology (Department of Medicine), Dalhousie Medical School

Current research interest:
How can we best utilize new and existing drugs and combinations of drugs to improve patient outcomes in leukemia and lymphoma?

- Other activities:**
- Participates on pharmaceutical company advisory boards to influence drug-development decisions
 - Helps residents in the Department of Medicine develop and conduct research projects

Key characteristics:
high energy, problem-solver, systematic, driven

A background in engineering shapes Dr. David MacDonald's approach to medical practice and clinical research. "I take a systematic problem-solving approach, whether I'm working with individual patients or addressing a larger-scale clinical problem," says the young hematologist, who completed graduate studies in engineering at Queen's before entering medical school. "I analyze the problem from the inside out and design a custom solution."

As a hematologist with specialized training in the design and conduct of clinical trials, Dr. MacDonald is keenly focused on finding more effective drug treatments for lymphomas and leukemias. His training and mindset lead him to dig deeper in his quest, to come up with previously unthought-of uses and combinations of drugs.

In a recent study, he researched the composition and action of two drugs to develop a hypothesis as to how they would work together to combat acute myelogenous leukemia (AML). "AML is so difficult to control and current treatments are so toxic, they can be deadly if patients are older or frail," Dr. MacDonald notes. "I designed and completed a trial to see if this new drug combination could offer a safer way to control AML in these patients."

Cancer captured Dr. MacDonald's interest when, as a medical student at Queen's, he completed a summer research project on the history of the nearby Kingston Regional Cancer Centre. He made his first forays into the world of clinical research a few years later, after coming to Dalhousie for his residency in internal medicine. Here he began looking at how osteoporosis is monitored in patients with bone marrow cancer, and designed a study to see if blood-borne markers of bone disease could be used as reliably as imaging techniques. When Capital Health awarded him a grant, he was euphoric.

In the course of this study, Dr. MacDonald and his mentor noticed early signs of spinal cord compression in some of the patients—something that had not been described in this kind of bone marrow cancer before. They were able to get the patients treated quickly enough to prevent permanent paralysis, and to publish their findings in a major journal. Dr. MacDonald presented the findings at an international conference in Spain, a thrilling experience he describes as a turning point. "I knew then that research would be a big part of my career, and that I would focus on better outcomes for patients with blood-related cancers," he says. "When I see something that could be fixed, I feel compelled to find a way."





John Hanly

Rheumatologist and leading international lupus researcher

Scientific research and clinical medicine go hand in hand for Dr. John Hanly, in his quest to bring relief and reassurance to patients with lupus (systemic lupus erythematosus).

An autoimmune disease that most often arises in younger women, lupus triggers the immune system to attack tissues throughout the body, including the skin, joints, kidneys, heart and brain. Causes remain mysterious and disease-altering treatments few—although Dr. Hanly and his colleagues around the world are slowly changing that.

“Research is essential to improving lupus patients’ health and quality of life,” says Dr. Hanly, who is a leading member of an international research collaboration that’s shedding light on lupus. “The disease can affect multiple parts of the body, including the nervous system, with varying short- and long-term effects.”

Dr. Hanly and 35 collaborators in 11 countries are studying the course of lupus in more than 1,700 patients over 10 years. “By collecting information in a systematic way and pooling our findings, we are better able to understand the illness and thereby improve the health of individuals with lupus.”

Because the researchers are analyzing blood samples from their patients, they are examining how abnormalities in the immune response and genetic markers may play a role in lupus. This work, in turn, is contributing to efforts to develop targeted biological therapies Dr. Hanly calls ‘smart bombs.’

The international study also aims to understand why lupus patients have a 50-fold increase in risk for heart disease. “As a consequence of this finding we now pay close attention to monitoring and treating risk factors for heart disease, such as smoking, high blood pressure and high cholesterol levels, in addition to treating lupus itself,” Dr. Hanly says.

Dr. Hanly leads the part of the international study that’s focused on the neurological and psychiatric (NP) effects of lupus. These range from seizures and strokes to mood disorders and problems with thinking and memory. But the news is not all bad. “We have been able to show that some forms of nervous system lupus improve over time,” explains Dr. Hanly. “This is an extremely reassuring finding for patients.”

Dr. Hanly credits his keen interest in research to great role models early in his medical training, from whom he learned that “the research helps you understand what’s happening with patients, while what’s happening with patients inspires and directs your research.” After more than 25 years in the practice of rheumatology, it is still exciting for him to apply the findings of his and his colleagues’ research to improving the care and wellbeing of patients.

Hometown:

Nenagh, County Tipperary, Ireland

Education:

- University College Cork (medical school, residency in internal medicine)
- University College Dublin (research fellowship in rheumatology)
- University of Toronto (immunology and rheumatology fellowship)
- McMaster University (immunology, basic science)

Appointments:

- Staff rheumatologist, Capital Health
- Professor, Division of Rheumatology (Department of Medicine) and Department of Pathology, Dalhousie Medical School

Primary research interest:

How does lupus affect the central nervous system, how can we predict nervous system events in individual patients, and how can we manage the impact of these problems over time?

Other research interests:

- The effect of lupus on the risk of cardiovascular disease, kidney disease and cancer
- Frequency and economic burden of lupus in Nova Scotia
- Genetic underpinnings and environmental triggers of lupus

Key characteristics:

collaborative, scientifically minded, meticulous, committed

Allan Purdy

Neurologist, global pioneer in understanding and treating migraine

Hometown:

Saint John, New Brunswick

Education:

- Dalhousie University (undergraduate science and medicine, residency in internal medicine and neurology, neurology and electrophysiology fellowships)
- University of Western Ontario (final two years of neurology residency)

Appointments:

- Neurologist and former chief of neurology, Capital Health
- Professor and former head of the Division of Neurology and the Department of Medicine, Dalhousie Medical School
- Carnegie and Rockefeller Chair in Medicine

Current research interest:

How can we best apply the knowledge we've gained over 20 years of clinical research to improve treatment of migraine?

Other activities:

- Travels the world teaching about migraine
 - Organizes international headache conferences
 - Plays leadership roles in many societies
- Writes and reviews articles and books
 - Plays golf poorly!
- Loves history and the music of the 1960's and 70's

Key characteristics:

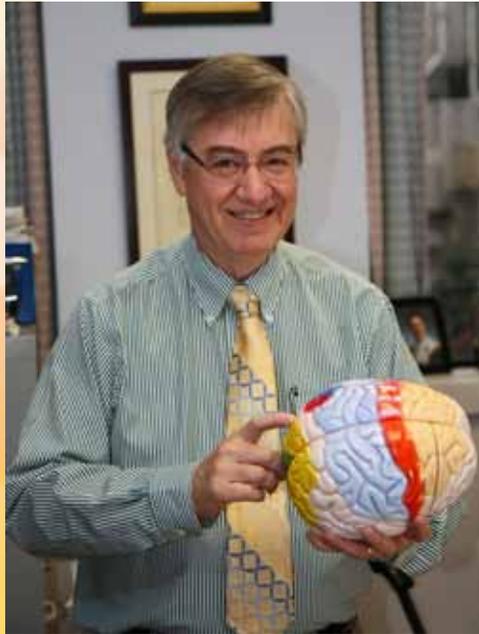
humorous, focused, caring, dedicated, organized

Even his peers in Grade 9 knew the human brain fascinated Allan Purdy, recognizing him as 'most likely to perform brain surgery on a teacher.' While he ultimately chose neurology over neurosurgery, Dr. Purdy has continued to be driven by his desire to understand Nature's most complex and delicate instrument. This includes his deep interest in migraine, one of the brain's most common and perplexing disorders.

"If we could understand migraine, we might start to understand the brain," insists Dr. Purdy, who was struck early in his career by just how many people suffered from this severe recurrent head pain. He also noticed that many physicians were reluctant to see people with headaches—perhaps because there were few effective treatments at the time.

In the 30 years since, Dr. Purdy has dedicated himself to advancing the understanding and treatment of migraine. "The breakthrough came with the emer-

gence of triptans, a class of drugs that selectively constrict blood vessels in the brain," recalls Dr. Purdy, explaining that these swell during a migraine, creating painful impulses to the brain. "This was a huge advance from other medications, which can actually cause chronic headaches by triggering rebound headaches."



Dr. Purdy and his research staff at the QEII Health Sciences Centre were key players in many clinical trials that brought triptans to the market. Over the years, they garnered international recognition for their high enrolment rates, strict adherence to study protocols, and airtight data. In fact, a leading pharmaceutical firm cited them as 'one of the best centres in the world' for clinical migraine research data collection.

"There is now such a weight of research evidence for treating migraine," Dr. Purdy says, "it will take years to apply what we've learned." That's why he's shifted his focus from generating evidence to disseminating it. "I've been from Europe to Brazil, Japan and everywhere in between," says Dr. Purdy, who's now busily organizing the next scientific meeting of the American Headache Society in Los Angeles in 2012, and the International Headache Society Congress, to take place in Boston in 2013. He's also enjoying his time with patients and students—his flair for this work has earned him more than 30 clinical and teaching excellence awards over the past 20 years.

For Dr. Purdy, his greatest achievement has been helping to put headache education on the medical map. "Migraine is now recognized as a real neurological disorder," he says, "and now there are real treatment options for people who would otherwise suffer."

Gord Gubitz

Stroke neurologist, research community volunteer

For Dr. Gord Gubitz, playing a part in multiple research committees is far more than a way to contribute to the local research community. For him, examining the scientific and ethical merit of research proposals is a whole lot of fun. In fact, his curious mind thrives on his bird's-eye view of the community's diverse and multi-faceted research activities.

"It's exciting and fascinating to see what investigators in other fields are pursuing," says Dr. Gubitz, adding that his ability to (almost) speed-read is a definite asset in his work as co-chair of the Capital Health Research Fund, member of the Dalhousie University Research Ethics Board, and member of the Dalhousie Medical Research Foundation Scientific Advisory Committee.

People like Dr. Gubitz, who give their time, expertise and effort to critically review dozens of research proposals each year, perform a function that is vital to the inner workings of the local research effort. Yet Dr. Gubitz feels he gains as much as he gives. "The more you look at other people's proposals and their approach to solving problems, the more you learn about how to frame powerful research questions and how to design effective studies yourself," he says.

Dr. Gubitz began his research career during his neurology residency at Dalhousie in the mid-1990s. He and his mentor, Dr. Stephen Phillips, wanted to know if they could safely avoid hospitalizing people who had suffered non-disabling strokes by improving an existing outpatient radiology service to determine each patient's risk of a subsequent stroke. He and Dr. Phillips and their colleagues in the International Stroke Trials Collaborative Group are also attempting to prove that clot-busting drugs can prevent brain damage and disability if given quickly enough after a stroke.

More recently, Dr. Gubitz has teamed up with a Dalhousie physiotherapist and researcher, Dr. Marilyn McKay-Lyons, to test the effect of a structured exercise and healthy eating program on stroke survivors. "We want to know if we can reduce cardiovascular risk factors such as high blood pressure, cholesterol levels and waist circumference," Dr. Gubitz says. "We also want to know how diet and exercise affects quality of life and the ability to stay motivated over the longer term."

For his own part, Dr. Gubitz says that early-morning swims and an adequate intake of espresso gives him the energy and clarity he needs to manage his busy clinical, research, teaching and volunteer schedule.



Hometown:
Calgary, Alberta

Education:

- McMaster University (undergraduate medicine)
- Dalhousie University (neurology residency)
- University of Edinburgh (fellowship in clinical trials methodology)

Appointments:

- Staff neurologist, Capital Health
- Director, Capital Health Outpatient Neurovascular Clinic
- Assistant professor, Division of Neurology (Department of Medicine), Dalhousie Medical School

Current research interest:
Can a program of diet and exercise favourably affect vascular risk factors in stroke survivors?

Other activities:

- Co-chair, Capital Health Research Fund
- Board chair, Heart and Stroke Foundation of Nova Scotia
- Acting chair, Dalhousie University Research Ethics Board
- Member, Dalhousie Medical Research Foundation Scientific Advisory Committee
- Board member, Canadian Stroke Consortium
- Past member, Capital Health Research Ethics Board

Key characteristics:
enthusiastic, curious, energetic, involved

Michael Johnston

Thoracic surgeon, lung cancer researcher and regional catalyst for cancer research

Hometown:

Lake Bluff, Illinois

Education:

- University of Dayton (chemistry)
- University of Illinois (medicine)
 - University of Washington (general surgery)
- University of Pennsylvania (cardiothoracic surgery)

Appointments:

- Thoracic surgeon, Capital Health
- Professor, Department of Surgery, Dalhousie Medical School

Current research interest:

What technologies work best for detecting early lung cancers and who should be targeted for lung-cancer screening programs?

Other activities:

- Atlantic Node leader, Terry Fox Research Institute
- Member, Dalhousie University senate and Lung Cancer Canada board of directors
- Co-founder and board member, ToLymph Inc., a Canadian company working to commercialize a device that delivers chemotherapy agents directly to the lymph nodes after cancer surgery

Key characteristics:

inquisitive, creative, tenacious, diplomatic, strategic

From his earliest days in med school, Dr. Michael Johnston was fascinated by the workings of the lungs. His interest led him to pursue training in thoracic surgery—which also involved heart surgery in his native United States, where heart and lung surgery are a combined specialty. It was while he was training in children’s heart surgery in the 1970s that his eyes were first opened to the power of research.

“I saw then just how gratifying research can be,” says Dr. Johnston, recalling the lifesaving technique he and his mentor developed to treat infants with a congenital airway condition. “To see a problem in the real world, re-create it in the lab, invent a solution, and find that it works! I was hooked.”

As a lung-cancer surgeon at the National Cancer Institute in Maryland in the 1980s, Dr. Johnston focused his research firmly on the lungs. There he launched some of the world’s first explorations of lung perfusion—a technique that aims chemotherapy directly into lung tissues via a liquid solution.

“This work deepened my interest in finding new ways to target drugs, so they kill malignant cells more effectively with fewer side effects in the rest of the body,” Dr. Johnston says. After coming to Canada in the 1990s, he began working with his University of Toronto graduate student, Jiang Liu, on a brand new concept in targeted drug delivery—chemotherapy-infused dissolvable sponges.

“Our goal is to see these sponges in every operating room in the world,” says Dr. Johnston, explaining that the sponges are placed near key lymph nodes after tumour-removal surgery. As they dissolve, the sponges release micro-particles containing an anti-cancer drug. These are picked up by lymphatic vessels and carried to nearby lymph nodes to intercept and kill metastasized cancer cells before they reach the bloodstream.

Dr. Johnston has continued to move this new technology toward commercialization since coming to Capital Health and Dalhousie in 2007. At the same time, he’s leading the Nova Scotia arm of a national trial that’s testing a multi-pronged approach to detecting early lung cancers. And, as leader of the Terry Fox Research Institute’s Atlantic Node, he’s traveling around Atlantic Canada to foster the region’s involvement in national cancer research initiatives. With his encouragement, investigators in the region are taking part in Terry Fox-sponsored projects in leukemia and oral, colorectal and ovarian cancer.

“My focus has expanded from my own work in lung cancer to the cancer research community as a whole,” says Dr. Johnston, reflecting on the evolution of his career. “I’m bringing people together, supporting others to pursue their research, and taking part in big-picture planning and decision-making. I’m finding I enjoy the statesman role!”



● *Research Staff*

The movers and shakers who make research happen

While clinical investigators design the studies, secure the funding and publish the results, it is the research staff members who perform the day-to-day tasks the research requires. Capital Health is home to more than 300 research support employees, including research managers, coordinators and assistants, and data management coordinators.

Among their many and varied roles, these dedicated people

- ensure that all aspects of the study protocol are completed properly
- approach potential research participants and tell them about the study
- walk participants through the informed consent and enrolment processes
- assess participants' health status and collect samples and data from them
- create databases and record data according to the study protocol
- complete and file all the necessary documents
- ensure all regulations and standards are met as the study proceeds.

Training and professional development ensure top-quality research

Capital Health has an international reputation for the quality of its clinical research and the reliability of its data. This is due in part to the structured clinical research training that new research staff members receive through the 'Sink or Swim' program. Research education manager Janet Gallant and research quality manager Mary Kate Needler were invited to present this and other aspects of Capital Health's education and quality programs at the Society for Clinical Research Associates (SOCRA) conference in California last year—and to publish articles about the programs in a number of widely read North American journals.

Members of the research staff share ideas and information at the research expo they organize each year and, with the recent re-opening of a SOCRA chapter in Halifax, can attend regular professional development sessions. Those outside Halifax can brush up their research skills in videoconference sessions offered through REACH (Research Education Across Atlantic Canada).

"We are constantly refining our approach to staff training and development," says Janet Gallant. "For example, we now conduct education needs assessments with new research staff, and line them up with customized learning opportunities. We're also looking at launching refresher courses for established members of our research staff."



Sharon Hebb, clinical research manager, Atlantic Clinical Cancer Research Unit (ACCRU)



Sue Pleasance (right), associate director, Hematology Research, with research assistant Joan Purcell (centre) and research coordinator Donna Mann (left)



Christine Macgillivray, coordinator, IGNITE project (Orphan Diseases: Identifying Genes and Novel Therapeutics to Enhance Treatment)



Sheila Yarn, research coordinator, Division of Cardiology



Laura Sills, clinical research coordinator, team lead, Multi-Organ Transplant Program



Karen Giddens, project manager, Heart Rhythm Research, Division of Cardiology



Jackie Whyte, data management coordinator, Fabry Disease, Division of Nephrology



Laura Hamilton, research assistant, Division of Geriatric Medicine



Scott Fulton, research coordinator, Division of Respiriology

What makes them tick?

“I really enjoy the relationships we establish with research participants and their families, especially when studies extend over a number of years. It feels good to know we may be providing an effective new treatment for patients with limited options. By taking part in research studies, participants may receive a treatment years before it receives official approval.”
Scott Fulton, research coordinator, Division of Respiriology

“My role as research coordinator permits me to engage with the research team as well as with the participants... a privilege I find most rewarding. It also allows me to grow and learn something new every day. This is especially true for the IGNITE project, as the field of genetics and the technologies around it are continually advancing.”
Christine Macgillivray, coordinator, IGNITE project (Orphan Diseases: Identifying Genes and Novel Therapeutics to Enhance Treatment)

“Data management is such an integral part of research; what the data reveals is the ultimate deciding factor on everything from funding to new drug development. It’s very satisfying to know that the work I do helps keep our research up and running.”
Jackie Whyte, data management coordinator, Fabry Disease, Division of Nephrology

Community Support

Community participants make research possible

While investigators drive the research and support staff pave the way, research would not be possible without the involvement of people from the broader community. These include patients who take part in clinical studies run by their physicians, as well as people who decide to take part in research studies they hear about or see advertised.

Capital Health is also fortunate to have community members who give generously of their time to take part in the Research Ethics Board (REB). Because these dedicated volunteers are not health care professionals, they bring the lay person's perspective to the ethical evaluation of research proposals. Theirs is a vital contribution to the process that makes people-based research possible.



Bob Smeltzer is one of 1055 people who've completed the Hearts in Motion program since it launched in 2006. Thanks to the participation of these people, the Hearts in Motion team is paving the way to community-based programs that will enable more people with a history of cardiovascular disease to reduce their risk of heart attack or stroke.

Bob Smeltzer

Stroke survivor, Hearts in Motion study graduate

Bob Smeltzer had just finished a round of golf and was about to get into his car when he was hit with head pain so severe it made him dizzy. He reached for the car-door handle, but couldn't grasp it; he tried calling for help, but his speech was slurred. Bob was having a stroke.

Fortunately, Bob was able to get medical help quickly and suffered no permanent disabilities from his stroke. Yet he was at high risk of having another, potentially devastating, stroke. "Even though I was playing basketball five or six times a week, I was overweight," says Bob, who admits he was eating a lot of bread and sugar.

One of Bob's colleagues at Public Works Canada—where Bob works as a structural draftsman—suggested he look into Community Cardiovascular Hearts in Motion. This research project is proving that community-based programs can help people with a history of cardiovascular disease reduce their risk of a future catastrophe.

Bob signed up for the 12-week program, which includes assessments and consultations with a nurse, dietitian and physiotherapist, as well as classroom and supervised group exercise sessions. "Being in a group really fired me up," says Bob. "I felt I could motivate others to keep going with the workout." Meanwhile, the nutrition education inspired him to cut the carbs and focus on fruits and vegetables.

By the time he completed the Hearts in Motion program, Bob had lost 34 pounds and his blood pressure had dropped from 179/95 to 114/65—substantially reducing his risk of a future stroke. Now he's back to playing basketball and enjoying life with his wife, his children and their families.



Carolyn Evans continues to practice qigong 45 minutes each day, after taking part in a Capital Health clinical trial of the ancient art as a treatment for fibromyalgia. A preliminary review of this study's results shows significant improvements in terms of pain, sleep and the overall impact of fibromyalgia on participants' lives.

Carolyn Evans

Chronic pain patient, qigong study participant

It was about three years ago that Carolyn Evans began suffering from mysterious stiffness and pain in her hips, knees and ankles. At the same time, she was exhausted but couldn't sleep. "At first I thought it was because I had recently quit smoking," remarks Carolyn. "I thought my symptoms might be caused by chemicals releasing back into my system."

But Carolyn's pain and fatigue persisted, making it difficult to focus, to work or to exercise. Her doctor referred her to an internist who concluded she must have fibromyalgia, a complex chronic pain syndrome that is common but not well understood. It can sometimes be treated with low doses of anti-depressants, but Carolyn hesitated to go that route. Instead, she responded to an ad in the paper looking for people to take part in a Capital Health study of qigong (chi kung) as a treatment for fibromyalgia.

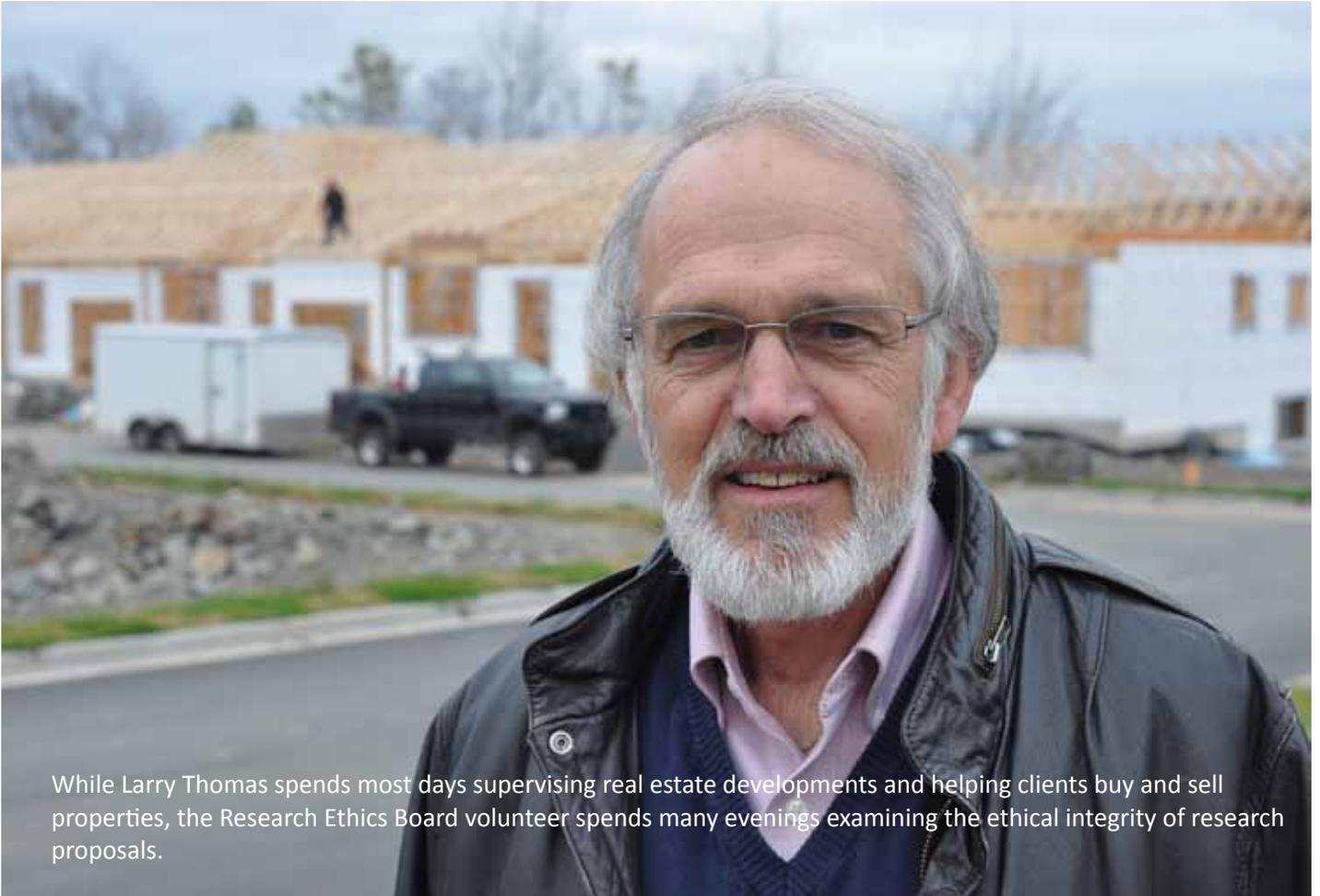
Carolyn didn't know what to expect when she arrived at her first qigong class. "At first I couldn't grasp what the teacher meant by qi, or energy, but then I started to feel the tingling in my fingertips and I understood," she recalls, adding that the movements were easy to perform and didn't aggravate her pain.

After three mornings of intensive training, Carolyn and 99 other participants continued the exercises at home—for 45 minutes a day—with the aid of a DVD. "Within a few weeks, I was pain free," Carolyn says. "I was sleeping soundly and feeling rested in the morning."

Friends now say that she glows and Carolyn feels a new lightness in her step. She has even started learning to meditate. "I'm able to relax and don't get so caught up in things that have no bearing on me," she observes. "I'm so happy I've found something that works for me."

Larry Thomas

Realtor, community planner and research ethics volunteer



While Larry Thomas spends most days supervising real estate developments and helping clients buy and sell properties, the Research Ethics Board volunteer spends many evenings examining the ethical integrity of research proposals.

Longtime real estate agent Larry Thomas of Hammonds Plains had never considered trying his hand at research ethics, until two years ago when he saw an ad looking for community volunteers for the Capital Health Research Ethics Board (REB).

“I was intrigued by the opportunity to explore that place where human rights meet science,” recalls Larry, who finds working with the REB to be inspiring and fulfilling. “Our most obvious role is to ensure no one is harmed by taking part in a research study... but it goes deeper than that. The science must be sound so the results will be meaningful and we can know that the human and financial resources going into the study are being put to good use.”

Larry spends eight to ten hours reviewing a research proposal, consulting a dictionary and the Internet to ensure he understands the science and the technical terms to his capacity. He pays especially close attention to the consent form that study participants will sign. “I often ask for changes to make the consent form more clear,” says Larry, who calls himself a ‘proxy for everyman.’ “I feel people need to really understand the risks, benefits and demands of the study before agreeing to take part.”

For Larry, who has long played volunteer roles in municipal planning and the local food movement, his work on the REB is a fascinating new way to contribute.

Greta Murtagh

Retired teacher, principal and school board administrator, research ethics volunteer

A former educator in charge of French immersion programs for the Halifax Regional School Board, Greta Murtagh enjoys the education she's receiving as a community member of the Capital Health Research Ethics Board (REB). After reviewing many research protocols and attending some 36 REB meetings and two ethics conferences over the past three years, she has gained a tremendous knowledge of health and science and the ethics of research involving humans.

“Working with the REB is an extremely interesting way to stay involved and keep my mind engaged,” says Greta, who is also a member of l'Université Sainte-Anne's board of governors. Her main motivation for joining the REB, however, was to help the people who might some day benefit from the research. “For some people, taking part in a clinical trial might be their last hope. Research is the only way we can make advances in treatment.”

As a layperson, Greta feels she offers a valuable perspective on such issues as protecting the privacy of research participants and ensuring the readability of the consent form—particularly for people whose first language is not English. “I feel I represent the point of view of the person on the street,” she says. “It's a big commitment but I plan to keep going with this important work!”



In addition to spending hours reviewing research proposals before the monthly REB meetings, and her work on l'Université Sainte-Anne's board of governors, Greta keeps busy, active and fit. She enjoys Tai Chi, qigong, walking her Portuguese water dog Minnie, and spending time with her friends, neighbours, children and grandchildren.

● *Donors Make All the Difference*

One man's generosity makes a lasting impact on research



Bryan Rapson is as keen on research as he is on bridge. He has donated nearly \$144,000 to the QEII Foundation over the years, specifically to support research initiatives.

People who contribute to research through gifts to the QEII Foundation play an enormously important role in the research.

Take, for example, Mr. Bryan Rapson. He may not be conducting the research, but he is helping to make it happen.

As a chemical engineer with the Nova Scotia Research Foundation (now InnovaCorp), Bryan saw first-hand the impact of research and the need for funding. That, along with the exceptional care his late father received as a resident of the Veterans' Memorial Building at the QEII Health Sciences Centre, inspired him to create the QEII Foundation Research Endowment Fund in 2000.

His contributions to date total almost \$144,000 and have been used to support everything from pancreatic cancer research to the investigation of vision loss. Most recently, his generosity helped create the new multi-media room in the Research Methods Unit. This room provides a space for researchers and research support teams to gather for meetings and training sessions, to brainstorm about research projects, to provide consultation services to investigators and staff, and to hold mini-conferences.

Bryan, whose passion besides research is playing bridge (he's participated in tournaments all over the world), says he's pleased the endowment has been able to support a variety of different research endeavours. "I chose not to give to a specific research project, because I figured the medical people would have a better idea of what's needed," he says. "I left it up to them, and I'm very pleased with what they've done."

Bryan is one of many QEII Foundation donors who support research at the QEII. In 2010-2011, the QEII Foundation disbursed \$1,575,207 for research, thanks to donors. To learn more about how you can support research at the QEII, visit www.qe2foundation.ca

Research Methods Unit Celebrates Official Opening

An innovative research support unit officially opened its doors in June 2011, with fanfare and an over-capacity crowd. In the works for the past year, the Research Methods Unit provides epidemiology, statistics, data-management, qualitative, and knowledge-synthesis research-methods support and training to individuals and teams who conduct clinical and health research at Capital Health, IWK Health Centre and Dalhousie University. This support can include help with study methods design, statistical design and analysis, database design and management, qualitative research design and analysis, literature reviews and synthesis, and linkage with other research supports across the health research community.

Since the official launch, Research Methods Unit consultants have been working with more than 30 clinical and health research teams in cardiac surgery, emergency medicine, anesthesia, hematology, medication prescribing patterns, and many others.



Thanks to the generosity of QEII Foundation donor Bryan Rapson (right), the Research Methods Unit is home to a sophisticated multi-media facility that can be used for such vital activities as research conferences and training. Bryan, shown here with Charles O'Neill (left) and Doralin Fredericks (centre) of the QEII Foundation, was pleased to attend the grand opening event.



The Research Methods Unit is a shared resource among the partners who came together to create the unit: Dalhousie University, Capital Health, and the IWK Health Centre. Many senior leaders from the partner institutions joined in the June festivities, including (left to right): Dr. Patrick McGrath, VP Research, IWK Health Centre; Chris Power, President and CEO, Capital Health; Dr. Ray LeBlanc, VP Learning, Research and Innovation, Capital Health; Dr. Adrian Levy, Interim Director, Research Methods Unit; Lisa Underwood, Director of Research Services, Capital Health; Anne McGuire, CEO, IWK Health Centre; Dr. Tom Marrie, Dean, Dalhousie Medical School; and Camille Angus, Project Coordinator/Analyst, Research Methods Unit.



Awards

Research Services encourages researchers planning to carry out original research to apply for Capital Health research funding. The competition for the Capital Health Research Fund is held twice a year.

September 2011 Research Fund Award Recipients			
Name	Department	Award	Research Description
Boe, Shaun	Department of Medicine (Physical Medicine and Rehabilitation)	\$50,000	Atlantic Canada modified constraint induced movement therapy trial: a pilot randomized controlled trial
Chauhan, Balwantray	Department of Ophthalmology and Visual Sciences	\$15,000	In-vivo imaging of Ca and CI during retinal ganglion cell death
Darvesh, Sultan	Department of Medicine (Neurology)	\$14,994	Saccharomyces cerevisiae as a model to develop more effective cholinesterase inhibitors for the treatment of Alzheimer's disease
Easton, Alexander	Department of Pathology and Laboratory Medicine	\$15,000	Bevacizumab (Avastin) as a therapy for multiple sclerosis
Hoskin, David	Department of Medicine (Hematology)	\$15,000	Cytolytic peptide modifications for enhanced killing of breast cancer cells
LeBlanc, Jason	Department of Microbiology	\$14,955	Inhibition of clostridium difficile toxins using peptide antagonists
Lehmann, Christian	Department of Anesthesiology	\$14,900	Microcirculation-directed fluid management
Newman, Aaron	Department of Psychiatry	\$15,000	Development of a patient friendly, multimodal neuroimaging protocol for the assessment of language abilities
Parker, Kim	Department of Medicine (Rehabilitation and Supportive Care)	\$14,004	Effects of an ankle-foot orthosis on gait while performing an attention demanding task in people with post-stroke hemiplegia
Robertson, George	Department of Psychiatry	\$15,000	Sleep regulation in rodent model of schizophrenia
Sherry, Dayna	Department of Psychology	\$15,000	Health anxiety and health care utilization: using the interpersonal model of health to understand patterns of frequent health care utilization

March 2011 Research Fund Award Recipients

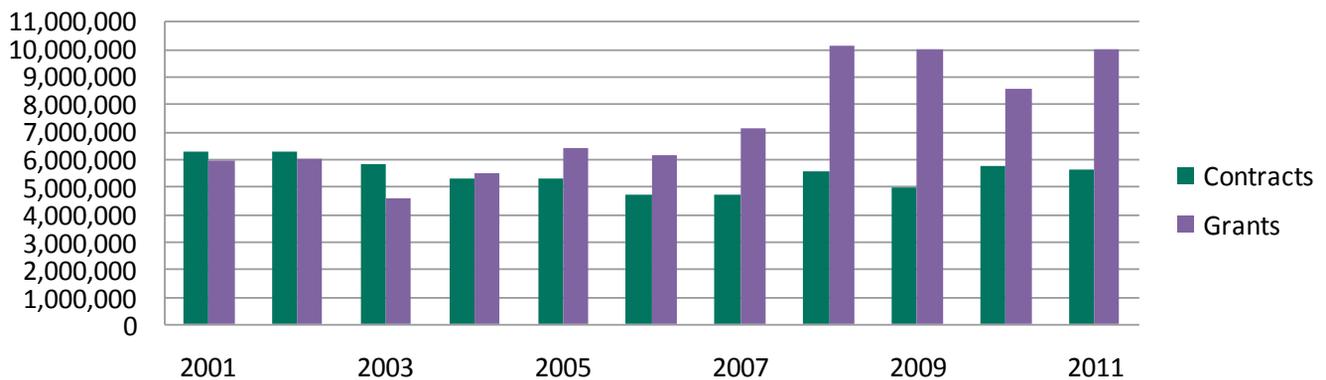
Name	Department	Award	Research Description
Bilski, Patricia	Division of Nursing	\$2,751	Nurses' and personal care workers' perceptions, experiences and beliefs about what constitutes a successful fall-prevention program in long-term care
Buduhan, Gordon	Department of Surgery (Thoracic Surgery)	\$15,000	Neoadjuvant chemotherapy vs. neoadjuvant chemoradiation followed by surgery for resectable esophageal carcinoma—a pilot randomized study
Campbell, Sam	Department of Emergency Medicine	\$14,100	Can we safely reduce diagnostic tests in patients presenting to the emergency department with chest pain?
Graham, Aislin	Department of Psychology, Dalhousie University	\$5,000	Testing the perfectionism model of binge eating in parent-daughter dyads: an experience sampling study of an at-risk sample
Green, Robert	Department of Critical Care Medicine	\$14,830	A survey of emergent endotracheal intubation in critically ill patients in Canada
Gruchy, Jeanette	Department of Pathology and Laboratory Medicine	\$4,978	Tissues exposed to cytolite fixation or formic acid treatment compared to formalin fixation—a quality assurance study
Hatchette, Todd	Department of Pathology and Laboratory Medicine	\$14,633	Emerging zoonotic infections in Nova Scotia: how many humans have been infected?
Imran, Ali	Department of Medicine (Endocrinology)	\$11,119	Transdermal thyroid hormone delivery—proof-of-principle study
Meier-Stephenson, Vanessa	Department of Medicine (Infectious Disease)	\$2,572	Vaccination of splenectomized adult patients in Capital Health, Nova Scotia—an audit of our results after implementation of a Peri-Splenectomy Program/Vaccine Kit
Ortiz, Abigail	Department of Psychiatry	\$11,181	Time-series analysis: an approach for quantifying abnormal mood regulation in bipolar disorder
Parkash, Ratika	Department of Medicine (Cardiology)	\$15,000	An innovative approach to atrial fibrillation
Robitaille, Johane	Department of Ophthalmology and Visual Sciences	\$15,000	Development of novel therapeutics for the treatment of rare ocular developmental vascular disorders

Financials

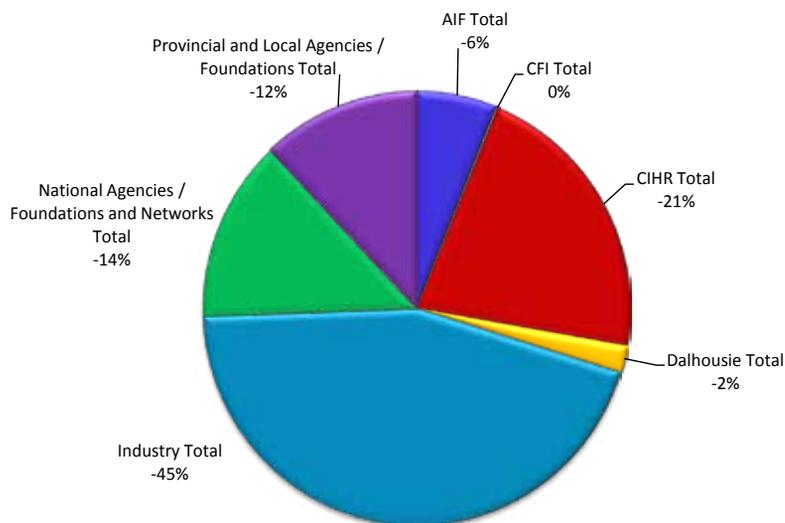
Capital Health Research Financial Statements (April 1, 2010— March 31, 2011)

	Actuals 10/11
Opening Balance April 1	\$ 20,332,810
Revenue	
Grants	10,025,227
Contracts	5,622,502
Indirect cost program	899,745
Interest on investments	685,851
Donations and other revenue	688,548
Unrealized gain on investments	658,302
Research overhead	634,662
Ethics review fee	354,565
Record retention fee	15,000
Total Revenue	\$ 18,926,100
Expenses	
Compensation	9,875,119
Supplies and services expenses	
Transfers offsite	2,589,104
Overhead	1,174,112
Other expenses	648,352
Travel/professional development	523,560
Clinical laboratory services	355,279
Purchased services/professional fees	309,245
Equipment	258,273
Diagnostic imaging services	245,797
Hospital departmental recoveries	(227,807)
Printing/office and computer supplies	227,225
Pharmacy services and drugs	199,746
Travel-patient	185,117
Maintenance	89,758
Communications	67,435
Medical/surgical supplies	57,289
	6,702,484
Total Expenses	\$ 16,577,603
Net Inflow/Outflow	2,348,496
Unrealized Gain on Investments	658,302
Ending Balance March 31, 2011	\$ 23,339,609
Contract Overhead Distribution	10/11
Capital Health Research Services	634,662
Faculty of Medicine, Dalhousie University	216,127
University departments	323,322
TOTALS	\$ 1,174,112

Research Project Revenue



Sources of Grant and Contract Revenue 2011



Managing Research Information with ROME0

ROME0 is a new research data management system which integrates data from research studies taking place at Dalhousie University, Capital Health and the IWK Health Centre. This web-enabled system facilitates collaboration and the sharing of information among the staff of these three institutions. Simultaneous access to information allows staff to track data and to produce accurate and timely reports. Not only is ROME0 proving to be an effective system to manage the documentation required to initiate and manage a research study, it also acts as a tool for research services and finance to access negotiated financial information. ROME0 has been in operation for a year and a half. In that time, it has helped streamline processes for the participating research ethics boards and contract/grant administration offices, resulting in the standardization of research study data entry. This has helped make the data more readily accessible and reportable. A positive consequence of the system has been a substantial connection in research among the three institutions and a streamlined reporting mechanism. ROME0 continues to be an all-round success story.

Research Committees and Staff

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Susan Martin, Executive Assistant

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Michelle Roden, Administrative Assistant
Janet Gallant, Program Manager, Research Education
Sheila MacLeod, Coordinator, Contract Facilitation and Support
Mary Kate Needler, Program Manager, Research Quality
Tammy Rayner, Research Administrator, Contracts/Grants
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Ken Jenkins, Manager
Starla Burns, Ethics Coordinator
Amanda Hennebery, Ethics Coordinator
Pamela Trenholm, Ethics Coordinator
Joan Morrison, Ethics Coordinator
Nadine Gillam, Administrative Coordinator
In addition to the Research Ethics Board executive and office staff, the board has an additional 72 volunteer members. These members are drawn from the community, from the legal profession, medical staff and hospital employees.

Research Financial Services

Denise Hatchette, Manager, Research Funds and Infrastructure
Jane MacLeod, Financial Analyst, Research
Hawley Murphy, Finance Officer, Research

Research Development & Planning

Julia Taylor, Director
Shane Grant, Product Development Coordinator

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