



FALL 2016

# RESEARCH IN MOTION

**New \$13.2-million bone and joint health research facility opens in the McCaig Institute**



*Researchers use the new CT scanner to assess bone and joint health.*

*Photo by Don Molyneaux*

The Centre for Mobility and Joint Health (MoJo) announced its official opening on September 8<sup>th</sup>. The new facility provides a collaborative environment for researchers to develop new technologies for the prevention, early diagnosis and treatment of bone and joint conditions.

The MoJo is located at the University of Calgary's Cumming School of Medicine and was established with support from the Canada Foundation for Innovation (\$4.7 million grant), the Province of Alberta (\$4.7 million grant), industry partners and private donors.

"We are proud to have invested in this facility, which will bring together researchers from fields as diverse as engineering and health to work on problems that have substantial impacts on quality of life," says Economic Development and Trade Minister Deron Bilous. "The province continues to invest in important health innovation to support better health outcomes while also working towards a more diverse economy."

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"The CFI is pleased to support such a visionary team in its efforts to create a world-class research environment that will improve the health of Canadians," says Gilles Patry, President and CEO of the CFI. "This is a new-to-Canada, interactive system that will connect basic science discoveries with clinical needs and will lead to effective health-care solutions for these debilitating diseases that affect so many."

The new facility, housed and operated by the McCaig Institute for Bone and Joint Health, features state-of-the-art imaging, movement assessment and diagnostic equipment that will be used by researchers to assess bone and joint health. MoJo researchers will be guided by the clinical needs identified by Alberta Health Services, with the goal of turning research evidence into health care solutions for Albertans.

**“We are a hub where physicians, basic scientists, biomedical engineers, patients and the Alberta health system, collaborate to keep Albertans moving.”**

"The MoJo is unique because we bring so many diverse groups together, all working to develop personalized care options for the individual through research," says Steven Boyd, PhD, Director of the McCaig Institute. "We are a hub where physicians, basic scientists, biomedical engineers, patients and the Alberta health system collaborate to keep Albertans moving."

## A number of research projects are already underway in the MoJo:

### PREVENTION

A research study taking place in the MoJo's Bone Imaging Laboratory is looking at the effects of vitamin D supplements on bone health. Using high resolution imaging equipment, scientists can look at the microstructure of bones and how they are affected by vitamin D levels.

Using a customized 3-D imaging system, the Clinical Movement Assessment Lab in the MoJo is among a small handful in the world with the capacity to take high speed images of joints while they are in motion. These motion patterns help researchers monitor changes in mobility, identifying risk factors early so that appropriate, patient-specific interventions can be developed before long term damage occurs.

### EARLY, ACCURATE DIAGNOSIS

A McCaig Institute research team has developed a series of blood tests that provide a specific immune fingerprint of autoimmune and rheumatic diseases, allowing physicians to diagnose lupus, rheumatoid arthritis and other inflammatory and autoimmune diseases much earlier in their development. Once the specific disease is identified, targeted treatment can begin to prevent or slow its progression.

### NOVEL TREATMENTS

Scientists and biomedical engineers in the MoJo are developing new treatments for arthritis that use a patient's own stem cells to repair their damaged cartilage. McCaig Institute researchers are working to determine which stem cells have the greatest repair potential, while also ensuring that these therapies pose no risks to patients suffering from arthritis.

### LOOKING AHEAD

Moving forward, the MoJo aims to expand their infrastructure to support new clinical trials and research studies related to bone and joint disease or injury. "We have recently announced funding opportunities to stimulate the development of new research projects that will maximize the use of the new motion analysis, imaging and biomarker equipment in the MoJo," says Boyd.



## MESSAGE FROM THE DIRECTOR

This month we announced the official opening of the Centre for Mobility and Joint Health, or “MoJo” as we call it. You will read all about the MoJo in this issue of the newsletter, but I’d like to add a few additional words.

The MoJo was a long time in the making. It began in 2011 with an idea to create a clinical research facility that would pull together basic scientists, physicians, patients and health system experts to create solutions that could be evaluated and implemented in the real world. Cy Frank was a pioneer of this integrated approach, and was instrumental in laying the foundation for the MoJo.

In 2012, we received the injection of money from the Canadian Centre for Innovation (CFI) and the Province of Alberta to turn the MoJo concept into reality. We’ve had a few ups and downs along the way, such as a booming economy in 2013/14 that led to a contractor shortage and high construction costs, but we are proud to announce the MoJo is now open for business and poised to be one of leading bone and joint clinical research facilities in the world.

As with all projects of this magnitude, there are many groups to acknowledge and thank. In addition to the support of the CFI and the Government of Alberta, private donors and industry partners continue to contribute significantly to the development of the MoJo. There are too many to acknowledge here, but please know that we appreciate your support. I also want to extend my heartfelt thanks to the faculty, trainees and staff of the McCaig Institute for their hours of work and dedication.

The next step is expanding the research being done in the MoJo. There is lots of room to grow, and we have no shortage of ideas and plans. Stay tuned, as we continue to work towards better diagnostics and treatments for bone and joint conditions so Albertans can enjoy *Mobility for Life*.



**MCCAIG INSTITUTE  
FOR BONE AND JOINT HEALTH**

### CONTACT US

For more information about bone and joint health research or to join our mailing list, contact us at:

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# Juggling Science and Surgery

**FROM SMALL TOWN SASKATCHEWAN TO THE OPERATING ROOM**

Orthopaedic trauma surgeon Prism Schneider learned to juggle priorities while growing up in rural Saskatchewan. In addition to school, she participated in a variety of sports - but she especially loved ski racing. "My dad would drive me seven hours one way from our home in Shaunavon, Saskatchewan to train in Banff on weekends," says Schneider. "It was busy, for sure - but I loved it."

Her love of sports inspired Schneider to take physiotherapy and then kinesiology at McGill University. But it was during her time as a summer student in the gait lab at the University of Calgary she truly discovered her passion. "We were doing some clinical trials, and I thought 'wouldn't it be amazing to be the surgeon that's doing the surgical intervention for these patients, and studying it before and after?' And then somehow I ended up in medical school!" In fact, Schneider obtained both her PhD and MD from the University of Calgary, and then went on to complete her orthopaedic residency training, followed by two fellowships in orthopaedic trauma.

*Researcher and orthopaedic trauma surgeon Prism Schneider*

*Photo by Don Molyneaux*

Today, Schneider spends half her time performing surgery and treating orthopaedic trauma cases, and the other half doing research on how inflammation affects fracture healing and an individual's risk of developing blood clots or excessive bleeding. Some of this work is done in a lab, using a pre-clinical model to study joint injury and inflammation. But most of her research involves leading clinical trials to find better medications and surgical treatments to control inflammation and optimize healing after injury. "My goal at the end of the day is just to provide the best possible care for patients, so that we can achieve uncomplicated fracture healing."

As both a clinician and a researcher, Schneider's days are very, very busy. "It's a challenge to juggle it all, but the environment in the McCaig Institute is really supportive," says Schneider. "Being both a scientist and a surgeon lets me answer questions that will not only take care of the patient right in front of me, but will hopefully help a lot of patients on a more global scale."



## Do you suffer from arthritis or know someone who does?

Join one of The Arthritis Society's community symposiums or our upcoming webinar in October.

Whether you are experiencing rheumatoid arthritis, osteoarthritis, or another form of arthritis, The Arthritis Society's upcoming events aim to increase awareness and a greater understanding of the disease. Participants will learn helpful tips to manage pain, enhance their health and generally improve their quality of life. In addition, through The Arthritis Society, you'll discover a network of support systems that provides a place where community members living with arthritis can feel cared for and encouraged in their daily lives.

These programs are offered free of charge, but pre-registration is required, as space is limited.

## Don't suffer alone!

Come out to one of the upcoming symposiums near you:

- Saskatoon, October 1
- Edmonton, October 15
- Calgary, October 22

Or you can participate in our 2-part webinar from the comfort of your home.

For more information on dates, times, and locations or to register, please visit:

[arthritis.ca/events](http://arthritis.ca/events)



BY CHRISTOPHER SMITH, CHIEF OPERATING OFFICER, ABJHI

ABJHI has established its first post-doctoral research fellowship – a two-year study that will cast new light across the field of risk for obese patients who need hip or knee replacement and will lead to new risk-reduction strategies and better outcomes.

It is ABJHI's first research fellowship. And it is the first fellowship funded with proceeds from the 2015 Encore gala. The work will be led by Dr. Behnam Sharif under the supervision of Dr. Deborah Marshall.

Dr. Sharif's research will have three components:

- 1) Determine the degree to which obesity plays a role in osteoarthritis (OA) progressing from early stage to severe requiring joint replacement;
- 2) Identify the risk of adverse events associated with joint replacement and the changes in quality of life that can be expected at different levels of obesity; and
- 3) Use the knowledge created by the first two components to quantify the effect that weight loss in the early stages of OA would have on the disease's progression and to design treatment pathways that would reduce the risk of adverse events.

This fellowship is highly significant for ABJHI. It signals our intent to expand ABJHI's research role, in partnership with the McCaig Institute and researchers across the globe, using assets and skills we have been steadily and successfully developing over the years. These include our solid analytics capability, which is becoming widely recognized both in and outside of Alberta, and the bone and joint data repository we have been effectively and securely building with stakeholders. This repository is unique in that it links administrative and clinical data, and collects information from point of referral through treatment and long-term follow-up. This gives researchers a valuable and complete end-to-end picture of patient experience and outcomes.

If you would like to know more, please give me a call at **403-670-0886** or email [csmith@abjhi.com](mailto:csmith@abjhi.com).

# The Promise of the Health Sciences in the 21<sup>st</sup> Century

LECTURE HONOURING THE VISION OF THE LATE CY FRANK  
FOCUSSES ON THE CHANGING HEALTH LANDSCAPE



*Dr. Alan Bernstein, the inaugural speaker at the Cy Frank Legacy Lectureship.*

**W**e are in the midst of a profound revolution in health research.

That was the message Dr. Alan Bernstein, the inaugural speaker at the Cy Frank Legacy Lectureship delivered to an audience in early September.

Bernstein, President and CEO of the Canadian Institute for Advanced Research, believes this revolution is fueled by the convergence of a variety of scientific and societal factors. "We have genomics, epigenetics, computational biology, artificial intelligence and big data, all converging within the context of an aging population, mixed with rising public expectations and a younger generation of researchers who are uniquely entrepreneurial and fearless," said Bernstein. "This is an important moment for the Canadian health research community to respond confidently and boldly to these exciting opportunities."

However, according to Bernstein, there are challenges. "Of course, we need more money," he said. "The solution is money, but it isn't the problem. In the short term, we need to engage with government about the importance of science. How can they support it if they don't understand it?" he said. "We also need to move away from the days of basic versus translational research and focus on how to achieve true impact with scarce resources and even scarcer talent. We need to fund the most creative investigators, especially early career investigators and provide them with the opportunity to advance science and our understanding of health and disease."

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He believes change is coming, as evidenced by the fact that the Canadian government has recently emerged as a champion of evidence based policy and innovation, and has launched its first review of support for fundamental science in over 20 years. He also sees an even greater trend towards collaboration and team research. "I think we're going to see a more integrated approach to health and health research that more closely combines the four pillars of CIHR – biomedical, clinical, population health and health systems research."

"Now is the right time to re-engineer the research landscape to enable the Canadian academic community, private sector and government to work effectively together – each assuming distinct and complementary roles in the research and innovation system," he said. "This is a time for leadership of the sort that Cy Frank showed in his time at CIHR as a Scientific director and subsequently as head of Alberta Innovates-Health Solutions."

## **The Cy Frank Legacy Lectureship**

*Cy Frank was an Orthopaedic surgeon, scientist, long-time faculty member in the Cumming School of Medicine and one of the founders of the McCaig Institute for Bone and Joint Health. At the time of his death in 2015, he was the Director and CEO of Alberta Innovates-Health Solutions. Cy Frank was internationally known and acclaimed for his visionary efforts to lead and champion the value of multidisciplinary clinical research and the application of this research to create innovative solutions for clinical care. The Cy Frank Legacy Lectureship showcases the work of individuals who reflect his passion and commitment to health innovation. The Cy Frank Legacy Lectureship will take place annually in multiple locations across Canada. This year's events took place in Calgary, Montreal, and Toronto.*

**The nomination form for next year's speaker is available on McCaig Institute website at [mccaiginstitute.com/cyfrank](http://mccaiginstitute.com/cyfrank)**

## **SAVE THE DATE**

**Please mark your calendars for these upcoming McCaig Institute events:**

### **THE EDMONTON WOOD FORUM SATURDAY, OCTOBER 22, 2016**

10:00 a.m. – 12:00 noon  
West Edmonton Mall

MULTIPLE PRESENTERS

**Topic: "Arthritis and You"**

*A free public forum on the latest research advances in personalized medicine.*

**[uab.ca/WoodForum](http://uab.ca/WoodForum)**

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### **THE CALGARY WOOD FORUM SATURDAY, NOVEMBER 5, 2016**

10:00 a.m. – 12:00 noon, Telus Spark  
220 St. Georges Drive NE

MULTIPLE PRESENTERS

**Topic: "Arthritis and You"**

*A free public forum on the latest research advances in personalized medicine.*

**[mccaiginstitute.com/woodforum2016](http://mccaiginstitute.com/woodforum2016)**

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### **SCIENCE IN THE CINEMA THURSDAY, MARCH 16, 2017**

6:30 p.m., Globe Cinema  
617 – 8<sup>th</sup> Avenue SW

**"HIP-HOP-ERATION"**

The remarkable story of the world's oldest hip-hop troupe

*Watch a film and listen to McCaig Institute researchers talk about the importance of staying active to avoid bone and joint conditions. An interactive question and answer period will follow the movie. Admission and popcorn is FREE!*



**“I was very involved in sports growing up, and had my fair share of sports injuries.**

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**I know how bone and cartilage injury and disease can affect someone's life.**

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Also, my grandmother had both her knees and hips replaced – twice. So I know how bone and cartilage injury and disease can affect someone's life,” says Tannin Schmidt, a McCaig Institute researcher.

Schmidt's interest in sports injuries led him to a career in biomedical engineering. Today, his work focusses on lubricin, a protein involved in lubricating joints and tissues throughout the body. Further research into lubricin could lead to a treatment to halt or reverse the progressive loss of cartilage due to sports injury or arthritis.



**McCAIG INSTITUTE  
FOR BONE AND JOINT HEALTH**

**Mobility for Life.**

*Photo by Don Molyneaux*