# Annual **Report**
## 2014 - 2015

women & children's health research institute

UNIVERSITY OF ALBERTA

Alberta Health Services

STOLLERY CHILDREN'S HOSPITAL FOUNDATION

Royal Alexandra HOSPITAL FOUNDATION

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# WCHRI overview

## Nurturing **women** and **children's** health **research**

The **Women and Children's Health Research Institute** (**WCHRI**) supports research excellence dedicated to improving the health and lives of women and children. Founded in 2006, we are the only research institute in Canada and one of the few in the world, to focus on women's, children's and perinatal health. These three critically important areas of health are closely interconnected, but have often not been well understood or studied in relationship with each other. Our studies span innovative, cutting-edge advances and basic discovery research, both of which are essential to finding cures and solutions, along with better treatment and care.

We began as a gleam in the eye of the **University of Alberta** and **Alberta Health Services**, with core funding from the **Stollery Children's Hospital Foundation** (**SCHF**) and the **Royal Alexandra Hospital Foundation** (**RAHF**). The generous contributions of the foundations have enabled us to support individual, collaborative and multidisciplinary research — including programs spanning cancer, brain, genetics, organs, chronic diseases, prenatal development, mental health and disabilities — through grant competitions, ongoing research funding, professional development and expert research services.

Our membership is made up of more than 400 leading researchers, clinicians, academics, and health care professionals and service providers from a diversity of clinical and academic disciplines. They share a passionate interest in and commitment to delivering the best possible health care to women and children, from earliest development through every stage of the life cycle and we are proud to support them as they continue to grow and thrive in their research programs.

### Vision

To harness the power of research innovation for a healthy future for children and women.

### Mission

WCHRI will foster the brightest minds to discover, innovate and ultimately transform the health of children and women through supporting research excellence.

### Values

The values of the institute include the following:

- **Collaboration** - the institute is based on a unique trans-disciplinary model that encompasses a broad range of disciplines, each of which adds value to the innovative nature of research.
- **Integrity** - the institute operates with full transparency following principles of fairness, mutual respect, accountability and trust among members, parties and clients.
- **Teamwork** - institute members work together to solve questions relevant to the needs of the community and to advance the goal of improved health outcomes.
- **Excellence** - the institute strives to achieve excellence in all its endeavors as a leader in conducting quality and meaningful women and children's health research.
- **Community focus** - the institute operates in large part to serve the needs of the community and aims to establish partnerships with health agencies and policy makers with the objective of achieving tangible results.
- **Accountable** - the financial resources of the institute will be managed efficiently, effectively and appropriately to achieve optimal benefits for its stakeholders.

**www.wchri.org**

**WCHRI** is the only institute in Canada to tackle all of the three closely related areas of **women's**, **children's** and **perinatal health**.

**Dr. Sandra Davidge**
Director

# Message from the **Director**

Women and Children's Health Research Institute (WCHRI)

## Many steps lead to **incremental improvements** that count

We took on a huge challenge when we set out to tackle women's, children's and perinatal health research back in 2006 but thanks to our strong partnerships, we have risen to the challenge. We invite you to read about our accomplishments.

As part of our long-term planning, the **Women and Children's Health Research Institute** (**WCHRI**) has focused on strategic goals, targeting four research areas:

- **Healthy development**. A healthy pregnancy dramatically impacts lifelong health for both mother and child. Unraveling the developmental origins of chronic diseases and identifying potential early interventions will have a tremendous impact on the considerable economic and emotional costs associated with these diseases later in life.

- **Complex pediatric diseases.** Many of the children's disorders treated at the **Stollery Children's Hospital** are complex and require coordinated care and collaborative research. **WCHRI** has targeted complex pediatric diseases as a key research focus. This work will lead to personalized, more precise therapies being developed for young patients through a better understanding of genetics and the mechanisms of disease.

- **Women's health.** Supporting the work done at the **Lois Hole Hospital for Women**, **WCHRI** resources will be squarely aimed at several specific areas of women's health including: perinatal and high-risk obstetrics, women's mental health issues, menopausal and post-menopausal conditions, and breast and ovarian cancers.

- **Integration of research into hospitals.** The best health care is provided in research intensive hospitals. Linking research and care ensures research knowledge reaches patients and their families through evidence-based treatment. **WCHRI**, under the leadership of our Associate Director, **Dr. Lawrence Richer**, has created several new programs to support and nurture clinical research within hospitals, which will lead to better patient care and improvements in current clinical procedures.

In this report, you will find a sampling of the diversity and breadth of the research that our members are undertaking. You will also find a brief overview of Research Day 2014, our highlight event of the year, which set a record for attendance and the number of research abstract submissions — a testimony to the accomplishments of our trainees and the continuing engagement of our members.

As we move forward, it is important to keep in mind that major changes in health outcomes are achieved over many years through thousands of small, focused steps on a complex path. The impact of those steps is not limited to the breakthrough at the end, but includes the incremental improvements that are made along the way, all of which impact the health of Alberta children, women and their families.

**Our heartfelt thanks to our funding partners, the Stollery Children's Hospital Foundation and the Royal Alexandra Hospital Foundation, which have generously supported our work every step of the way.**

STOLLERY CHILDREN'S HOSPITAL FOUNDATION

Our investment of **$30 million** over **ten years** represents close to **100,000 individual donors.**

**Mike House**
President & CEO

# Message from the **Stollery Children's Hospital Foundation**

## Growing research capacity improves our **health care** delivery

The **Stollery Children's Hospital Foundation** is always looking to the future. We strive to position our health care partners for continued success in children's health for generations to come, and one sure way to accomplish this is by supporting evidence-based pediatric research.

The foundation's vision to build the best children's health care delivery, research and teaching institution in the world is built on a foundation of supporting excellence. **As the primary funder to the Women and Children's Health Research Institute (WCHRI), our investment of $30 million over ten years represents close to 100,000 individual donors.** The foundation sees evidence-based practice as a worthwhile investment that has a meaningful impact on the outcomes of children at the **Stollery Children's Hospital**.

We know innovation and discovery changes lives as we witness the many positive impacts **WCHRI** has on children and their families who journey through the Stollery. By further integrating innovation and discovery into patient care, we are helping the hospital grow its critical mass of experts and research-based practice.

The foundation takes great pride in the many accolades awarded this past year to **WCHRI's** talented team of researchers. This is evidence to us that researchers and specialists in our community are continually testing and pushing the limits of modern science for the benefit of future generations of children and families.

Our province is extremely fortunate to have this level of talent and expertise to help shape how health care is delivered in our communities, impacting children across the country. The foundation is excited about what the future holds and we look forward to many more years of collaboration, integration and discovery.

STOLLERY CHILDREN'S HOSPITAL FOUNDATION

The **Stollery Children's Hospital Foundation** is dedicated to raising funds for specialized equipment, sub-specialty medical education to train the best of the best, research to pave the way to the discovery of new treatments or cures for child health issues and specialized programs that improve patient and family outcomes at the **Stollery Children's Hospital**.

The foundation recognizes the tremendous impact that research has on disease prevention, treatment and improved health outcomes, which is why it is providing **$30 million over 10 years** (2006 to 2016) to support WCHRI's mission to support leading-edge research on children's and women's health.


We believe that building
the best women's
hospital is rooted in
research.
LOIS HOLE
HOSPITAL
FOR WOMEN
Royal Alexandra
HOSPITAL FOUNDATION

**Andrew Otway**
President & CEO

# Message from the **Royal Alexandra Hospital Foundation**

## Integrating **women and children's health** makes sense

The **Royal Alexandra Hospital Foundation** is thrilled that the **Women and Children's Health Research Institute** (**WCHRI**) is the flagship research home of our **Lois Hole Hospital for Women.**

In fact, we consider this to be a major point of pride for our hospital.

We believe that building the best women's hospital in Canada is rooted in research and that there is inherently a progressive spirit and a culture of innovation present at a research hospital. The research being done today will shape and inform health care decisions and patient care in the future.

**WCHRI's** model of integration that brings together women and children's health — two areas that were once considered completely separate — is incredibly forward-thinking and just makes good sense.

The **Lois Hole Hospital for Women** is a national leader in treating women with high-risk pregnancies and is, in fact, the main site for high-risk labour and deliveries in northern Alberta. It's also one of the busiest hospitals with close to 7,000 births each year. **We fully appreciate the critical link between healthy moms and healthy babies!**

The **Lois Hole Hospital for Women** and **WCHRI** are both emerging as authorities and leaders in our respective fields, and together we will continue to work towards a healthier future for women in Alberta and across Canada.

On behalf of the **Royal Alexandra Hospital Foundation** and its board of directors, we offer our congratulations to **WCHRI** and especially to Director, Dr. Sandra Davidge, on a successful year. Our foundation is very proud to support **WCHRI** and we're grateful to our donors who are helping to fund this important investment in the health of our community.

Royal Alexandra HOSPITAL FOUNDATION

The **Royal Alexandra Hospital Foundation** inspires community support for their health-care facilities. The foundation empowers compassionate, leading-edge patient care through education, research, technology and facility enhancements. They provide support for the **Lois Hole Hospital for Women** and a growing number of specialized centres of health care located at the Royal Alexandra Campus. The foundation places a strong focus on research and innovation and is committed to supporting and promoting the ongoing work of researchers through WCHRI with a commitment of $11 million over 10 years (2006 to 2016).

UNIVERSITY OF ALBERTA

# Message from the **University of Alberta**

**Dr. Roger Epp**
Deputy Provost
University of Alberta

## **WCHRI** represents the **U of A at its best**

On behalf of the **University of Alberta**, I'm pleased to offer congratulations to the **Women and Children's Health Research Institute** (**WCHRI**), to its Director, Dr. Sandra Davidge, and to its dedicated staff for another outstanding year of work. I also want to express the university's continued appreciation for the strong and generous partnerships that **WCHRI** enjoys with **Alberta Health Services** and the two supporting hospital foundations, the **Stollery Children's Hospital Foundation** and the **Royal Alexandra Hospital Foundation**.

The university is home to many institutes that engage academic researchers from across faculties in addressing important questions. **WCHRI** is no exception. What makes it unusual is the way that its work is, and must be, embedded so intimately in relationships beyond the campus and directed so explicitly to the well-being of the larger community.

**WCHRI** connects donors and researchers, policymakers and practitioners, and ultimately patients and families. It answers to their high expectations. In doing all this, it represents the **University of Alberta** at its best. Well done.

UNIVERSITY OF ALBERTA
FACULTY OF MEDICINE & DENTISTRY

# Message from the **Faculty of Medicine & Dentistry**

**Dr. Richard Fedorak**
Interim Dean
Faculty of Medicine & Dentistry

## Partnerships fuel **groundbreaking research** that has a wide impact

We in the Faculty of Medicine & Dentistry are honoured to congratulate the **Women and Children's Health Research Institute** (**WCHRI**) on its ninth year of realized strategic areas of research.

Through diligence, commitment and resolve, **WCHRI** provides a continuum of innovative research that includes, but is not limited to, healthy pregnancies, complex childhood diseases and childhood origins of adult disease. **WCHRI** supports groundbreaking multidisciplinary and transdisciplinary research through grant competitions, ongoing research funding, professional development and expert resources.

The relationships that have been built between the **Faculty of Medicine & Dentistry**, **Alberta Health Services**, the **Stollery Children's Hospital Foundation** and the **Royal Alexandra Hospital Foundation** leading to the success of **WCHRI** cannot be overstated. The investments in **WCHRI** by the foundations are more than financial: they are reflective of the ongoing partnership that exists between the foundations and the faculty, as well as the researchers and the clinician scientists housed within, all of whom share the common goal of positively influencing their own and each other's strategic areas of research.

The collaborative and translational research supported by **WCHRI** radiates beyond its walls and into the community, touching industry and influencing national and international institutions to provide the best possible clinical care for perinatal, women's, children's and family health. We at the faculty are proud of **WCHRI's** enormous accomplishments of the last nine years and look forward to continued success and impact in the coming years.

Alberta Health Services

# Message from the **Stollery Children's Hospital**

**Tracy MacDonald**
Senior Operating Officer
Stollery Children's Hospital

## New programs exemplify our commitment to **first-rate health care** for **children**

Integrating research with patient care is one of our highest priorities at the **Stollery Children's Hospital**. By building a strong culture of research, we are able to provide the best possible treatment for the children and families that are referred to us for specialized pediatric care from all across Western Canada.

Over the past nine years, the partnership between the **Stollery Children's Hospital** and **WCHRI** has led to exciting advances in knowledge and treatment of numerous pediatric acute and chronic illnesses from complex genetic disorders to heart disease. The newly launched Clinical Research Capacity Building program exemplifies the high-level of commitment shared by the **Stollery** and **WCHRI** to integrate research and pediatric care. This new program supports research that will directly influence patient care. Four critical areas within the **Stollery** that impact children with acute care needs will be supported for the next two years: the pediatric intensive care unit; the pediatric emergency department; the single ventricle outcomes team and the pediatric inflammatory bowel disease centre. We look forward to seeing tremendous outcomes from this investment in research.

A second newly launched seed program funds smaller projects with the potential to provide short-term solutions to concrete clinical problems in the hospital.

As prior evidence has shown, putting highly skilled researchers to work alongside dedicated, frontline health care professionals is a winning formula for our children and their health care needs.

Alberta Health Services

# Message from the **Lois Hole Hospital for Women**

**Joanna Pawlyshyn**
Senior Operating Officer
Royal Alexandra Hospital/
Sturgeon Community Hospital

## High-level research expertise serves **women's unique health needs**

Innovative clinical research goes hand-in-hand with providing the best evidence-based patient care at **Alberta Health Services' Lois Hole Hospital for Women**. Our partnership with **WCHRI**, along with funding support from the **Royal Alexandra Hospital Foundation**, has generated a rich multitude of research studies that promote our mandate of meeting women's unique health care needs at all ages and stages of their life cycle.

**WCHRI** researchers have developed high-level expertise in a number of important areas related to women's health, including high risk pregnancies and neonatal care, mental health, metabolic and cardiovascular diseases, urogynecological complications, menopause, post menopause and ovarian cancer. **WCHRI's** focus on multi-disciplinary research has brought specialists together from diverse fields to tackle complex issues, such as the prenatal origins of health and disease. As we now know, the foundations for good health are laid long before birth.

It's been a truly rewarding experience to have had the opportunity, as a member of the Oversight Board, to have been closely involved with **WCHRI** during a period of time that coincided with the formative years of the **Lois Hole Hospital for Women**, which is housed within the **Royal Alexandra Hospital**.

In building our partnership, we've been able to combine the best of our two worlds. As a dedicated women's hospital with a strong research capacity, we can continue to improve health care for our patients and women everywhere — as well as for children, families and communities.

# Resveratrol (a compound found in grapes and other plants) may help to overcome fetal iron deficiency.

**Photo, full-page:** Pharmacologist Dr. Stephane Bourque and research technician Sareh Panahi perform lab tests as part of a study of the long-term impact of iron deficiency during pregnancy.

**Photo, top right:** Dr. Bourque shares notes with research colleague Dr. Ferrante Gragasin, associate clinical professor of Anesthesiology and Pain Medicine.

# Preventing iron deficiency during pregnancy reduces health risks for moms and babies

Healthy development
**Iron deficiency**
Dr. Stephane Bourque

It is commonly known that iron deficiency can pose a threat to our health. But new research by pharmacologist **Dr. Stephane Bourque** suggests we may be most vulnerable to iron deficiency before we are even born.

**Dr. Bourque** is studying the problem of iron deficiency during pregnancy — its effects on both the fetus as it develops and on that individual's long-term health. He's also exploring therapies to help prospective mothers avoid this risk to their unborn children.

Women already face higher rates of iron deficiency, thanks to menstruation. The demands of pregnancy boost that risk even higher. Iron deficiency can contribute to premature birth, low birth weight, and even an increased chance of maternal death, particularly in developing countries.

To make matters worse, pregnant women often have no idea their iron levels are low. "You can have a lot of cases where you have iron deficiency, but you don't have the signs of anemia," **Dr. Bourque** points out.

Even if a pregnant woman isn't visibly anemic, iron deficiency can slow the growth rate of her baby, with potential lifelong consequences. "Altered fetal growth trajectories can really impact the long-term health of the offspring," says **Dr. Bourque**. "We're talking about an increased risk for cardiovascular disease and metabolic dysfunction, such as a propensity towards obesity and type 2 diabetes. This can also increase the risk of cognitive and behavioural problems, areas that need to be explored much more fully."

According to the World Health Organization, nearly one in four women are anemic in Western countries. In the developing world, that number can rise to 50 or even 80 per cent. "**That's a huge, huge problem. Given what we're learning about anemia and its impact on long-term health, you've got a problem that could be contributing substantially to the burden of chronic diseases for the next generation**," says **Dr. Bourque**.

An alarming prospect, to be sure but, on the other hand, a bit of prevention could make an enormous difference. "Instead of somebody developing cardiovascular disease, where you need a whole lifetime of treatment, maybe the right nudge at the right time could shift them back onto course."

If the problem is iron deficiency, couldn't that "nudge" be a simple multivitamin? "Iron supplements sound like a simple solution," **Dr. Bourque** agrees. "The problem is, once iron deficiency develops, you're already behind the game. It takes a long time to develop, and it can take a long time to fix."

**Dr. Bourque's** team is looking at whether resveratrol — a compound found in grapes and other plants — may help to overcome fetal iron deficiency. The team is also studying the repercussions of iron deficiency in the womb in adulthood and old age.

**Dr. Bourque's** research is made possible through the **Stollery Children's Hospital Foundation** and the **Royal Alexandra Hospital Foundation**, which provided a much-needed start-up grant and a subsequent Innovation Grant through **WCHRI**.

**"Without this support, we couldn't do the work that we do," Dr. Bourque says simply.**

**The issue:** Iron deficiency during pregnancy can have lifelong consequences for a child's health, including an increased risk of heart disease, diabetes, obesity and cognitive and behavioural problems.

**The research:** Find a way to prevent and treat fetal iron deficiency.

Royal Alexandra HOSPITAL FOUNDATION

# Finding the cause for **serious pregnancy disorder** marks first step towards treatment

## Healthy development
## **Preeclampsia**
## Dr. Margie Davenport and Dr. Craig Steinback

The high blood pressure drugs that are currently prescribed to women suffering from preeclampsia act like a hammer aimed at a pinhead.

"The drugs knock out other things as well, with inevitable side effects," says **Dr. Margie Davenport**, who is co-leading a study of preeclampsia, a serious condition that affects about eight per cent of pregnant women in developed countries and puts both mothers and babies at risk.

Preeclampsia has increased by 25 per cent in the past two decades, partly as a result of increasing maternal age (in Canada, a third of first-time mothers are 35 or older) and obesity. It occurs after the 20th week of pregnancy, causing high blood pressure, stiffer arteries and decreased heart and kidney function. Women who develop the disorder are at high risk for future cardiovascular disease.

Despite the seriousness and growing incidence of preeclampsia, its causes are still unknown and there is no cure other than trying to control mom's high blood pressure and inducing delivery of the baby.

Research has shown that the sympathetic nervous system (which controls the body's fight or flight stress response) is hyperactive in women with preeclampsia. This is important because other research has demonstrated a close connection between sympathetic nervous system hyperactivity and high blood pressure and cardiovascular problems in other diseases.

**Dr. Davenport** and **Dr. Craig Steinback**, co-leaders of the study, aim to determine the reason for sympathetic hyperactivity in preeclampsia. They are specifically looking at the peripheral chemoreflex, which normally controls minute-by-minute breathing. This mechanism is also crucial for controlling the activity of the sympathetic nervous system and has been successfully targeted in treating hypertension in other diseases.

They suspect that this mechanism may be hyperactive in women with preeclampsia as well, causing blood vessels to contract and raising blood pressure.

"The initial data appears to support this hypothesis," says **Dr. Steinback**. If the findings are confirmed, this would be a prerequisite step in work on a specific therapy that targets the chemoreceptors in order to stabilize blood pressure. Identifying the cause will enable the researchers to develop a more directed, effective drug or other treatment, with fewer side effects than the broad-based approach now used that hammers the whole sympathetic nervous system.

**Drs. Davenport** and **Steinback** are pleased to be working together on what they see as "an essential first step" to developing an earlier diagnosis, better treatment and possible preventions for preeclampsia. The two researchers not only share professional interests, but parenting responsibilities for two young daughters, aged 2 ½ and six months. It's been something of a relay race for the husband-and-wife team: Dr. Davenport has just completed her maternity leave and is returning to the study, while her husband goes on paternity leave and picks up the child care.

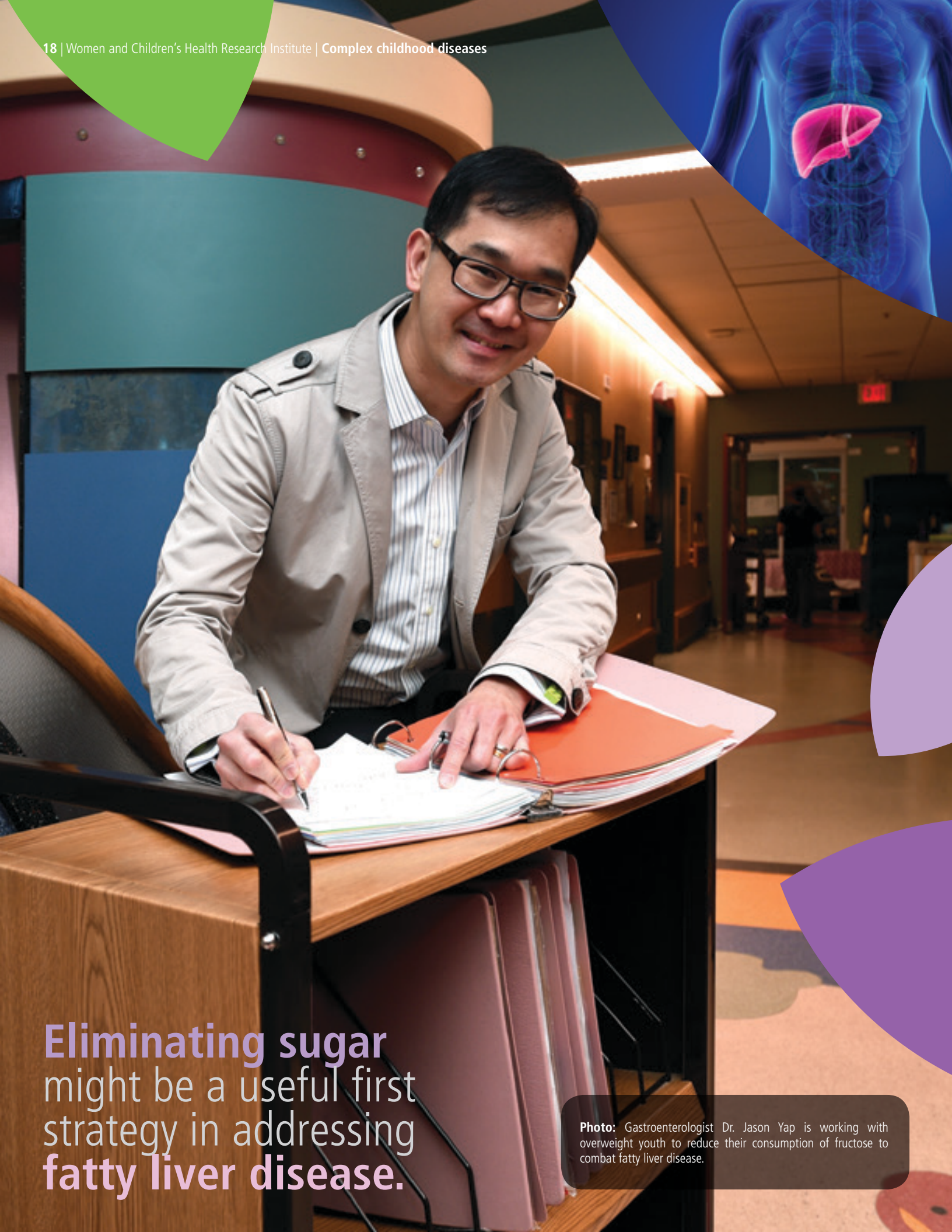
The two-year study is generously funded by the **Royal Alexandra Hospital Foundation** through a **WCHRI** Innovation Grant.

**The issue:** High blood pressure drugs prescribed to pregnant women with preeclampsia target the whole sympathetic nervous system and have adverse side effects.

**The research:** Identify the specific cause of dangerously high blood pressure levels in preeclampsia, so that it can be treated more effectively.

**Preeclampsia** is a serious condition that **affects about 8% of pregnant women** and puts both **mothers** and **babies at risk.**

**Photo:** Dr. Margie Davenport and Dr. Craig Steinback share child-care responsibilities for their young family, including baby Laura, during their study of preeclampsia.



# **Eliminating sugar** might be a useful first strategy in addressing **fatty liver disease.**

**Photo:** Gastroenterologist Dr. Jason Yap is working with overweight youth to reduce their consumption of fructose to combat fatty liver disease.

# Reducing fructose intake may **reverse fatty liver disease** in children

## Complex childhood diseases
## **Fatty liver disease**
## Dr. Jason Yap

Fatty liver is the most common liver disease in North America. It increases your risk of dying from a major cardiovascular event — or of developing diabetes — roughly tenfold. It also makes you five times more likely to die from liver disease. A quarter of Canadian adolescents are at risk.

Fatty liver disease is a particular concern when it begins early in life, says pediatric gastroenterologist **Dr. Jason Yap**. "The disease itself is cumulative. The longer you have it, the higher the risk that you will have issues." **Dr. Yap** and his colleagues are looking to improve strategies to help youngsters reverse the condition.

The disease — as the name suggests — is caused by the build-up of excessive fat in liver cells. Excessive alcohol consumption can cause fatty liver, but for adolescents the cause is almost always obesity.

**Dr. Yap's** young patients may not consume alcohol, but they do consume a great deal of fructose — a type of simple sugar that appears to be particularly important in the development of non-alcoholic fatty liver disease.

"In a previous experiment, when healthy people were given significant quantities of fructose they developed all the signs of fatty liver disease," says **Dr. Yap**. "Their blood pressure went up. They developed hyperlipidemia — so their cholesterol and triglycerides were high — even though they were previously healthy. "

Soft drinks are the most obvious culprits when it comes to fructose, but if you read food labels you'll discover they're just the tip of the iceberg, says **Dr. Yap**. "When you go to the supermarket, you can pick up something that you don't expect to have sweet stuff in it, for example, pre-manufactured sausage. You look at the labelling, and it actually contains high-fructose corn syrup."

**Dr. Yap** is currently working on what he calls a FLY study — fructose lowering in youths — to see if eliminating the sugar might be a useful first strategy in addressing fatty liver. "We put patients on a very specific low-fructose diet. Then we measure the energy utilization of the liver by p31 MRS [magnetic resonance spectroscopy]."

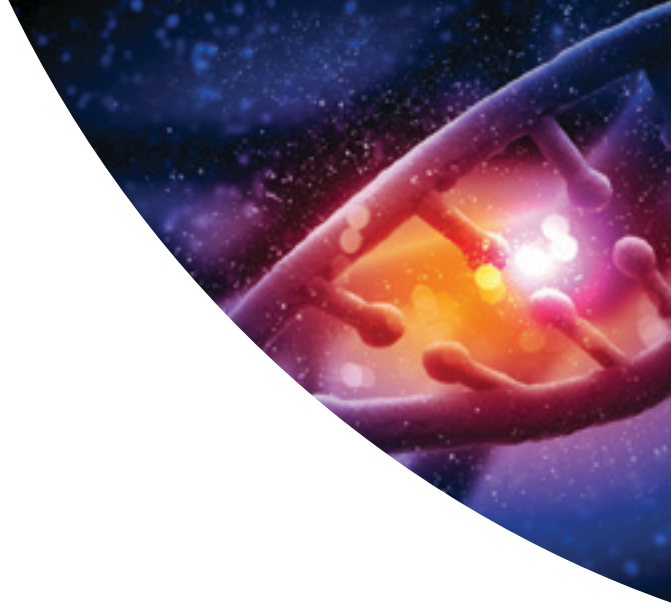
**"In the pilot study, the kids actually have improved blood pressure. They have changes in their body composition. They have improved liver function tests. Now that we've completed the pilot study, we want to do a larger study to confirm these findings."**

For patients who may feel overwhelmed with the challenge of losing weight, **Dr. Yap** hopes fructose reduction provides a realistic starting point. "If you tell a patient, 'for the moment, the only thing I want you to focus on is to reduce the amount of fructose in your diet,' it's a lot easier to achieve."

Through the generous support of the **Stollery Children's Hospital Foundation**, **WCHRI** was able to provide subsidized expert biostatistical resources to **Dr. Yap** to assist with his studies.

**The issue:** Growing obesity puts 25 per cent of Canadian adolescents at risk of fatty liver disease, but losing weight can be an overwhelming challenge.

**The research:** Study the impact of cutting back on soft drinks and other fructose consumption as an achievable first step in improving liver function in obese youth.



# Powerful next generation technology may lead to better genetic testing

## Complex childhood diseases
## Genetic disorders
## Dr. Oana Caluseriu

Imagine trying to decipher a Rubik's cube that has 20,000 components. That will give you some idea of the complexity involved in looking for the cause of rare genetic disorders.

"It's like trying to solve an enormously complicated puzzle," says **Dr. Oana Caluseriu**, a medical geneticist who is leading a pilot study of rare genetic disorders that aims to provide personalized diagnosis and care for children and their families.

Consider the challenges. There are at least 7,000 genetic disorders and the cause of about half of these has not been established yet. Even known genetic disorders can be difficult to diagnose because the symptoms and signs can vary from person to person for the same disorder and because there may be more than one gene involved in the cause. Conventional one-gene-at-a-time testing is often impractical and prohibitively expensive. Consequently, more than half of the 280,000 Albertans, most of them children, who suffer from rare genetic disorders are not diagnosed even though they account for about a third of pediatric hospital admissions.

But there's good news. Genetic technology has made tremendous advances in the past five years. In her study, which echoes national level studies, **Dr. Caluseriu** is piloting the use of a remarkable new tool called Next-Generation Sequencing (NGS) that has the potential to transform the testing and diagnosis of genetic disorders. NGS technology is able to rapidly read the 20,000 genes in the DNA that produce the proteins that code, or tell our bodies how to grow, develop and function. This coding function is sequenced and the variants — hundreds of thousands of them — are analyzed in the search for the mutated gene or genes that cause the problem. With its powerful capacity to produce and scan huge amounts of data, the new technology stands ready to pave the way for timely, cost-effective genetic testing.

**"Finding a diagnosis is no small thing for families who have been struggling for years to get help for their children," says Dr. Caluseriu.** "A diagnosis offers a resolution as to why their child is different and lessens the guilt."

By the time parents arrive at her clinic, most have already spent about seven years and on average seen eight doctors in trying to find a diagnosis for their child. The emotional and financial costs are high for both children and parents. Statistics show that a high percentage of children and caregivers suffer from anxiety, depression and isolation. Parents are often forced to seek charitable help or borrow money from their families and friends to make up for lost family income and cover additional costs.

In her pilot study with 12 families, **Dr. Caluseriu** aims to demonstrate the merits of combining state-of-the-art technology with individualized care management to provide children and families with accessible, quick genetic testing, genetic counselling to help parents make informed choices, appropriate support and referrals to services. It could prove to be the right combination to transform clinical care for children with rare genetic disorders — and make their lives and that of their families easier.

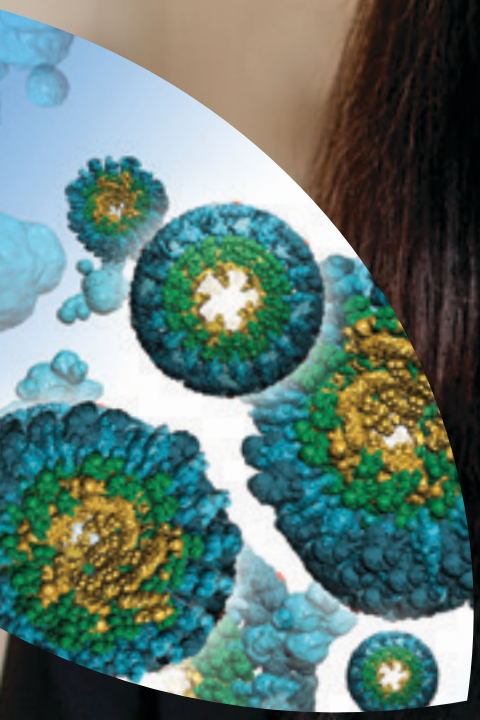
**Dr. Caluseriu's** study is funded by an Innovation Grant supported by the **Stollery Children's Hospital Foundation**.

**The issue:** Parents can spend years trying to find help for children who suffer from rare genetic disorders and nearly half of these children are never diagnosed.

**The research:** Combine the latest technology with individualized patient care in a clinical pilot program to improve genetic testing and support for children and families.

A pilot study of **rare genetic disorders** that combines state-of-the-art technology for quick genetic testing with personalized care can make the lives of children and their families easier.

**Photo, full-page:** Families that participate in Dr. Oana Caluseriu's study into rare genetic disorders receive individualized care management that provides appropriate referrals and support.



The **Nodal protein** has been identified as a culprit in a number of cancers, including **brain, prostate and breast cancer**. It appears to be connected to **ovarian cancer**, as well.

**Photo, full page:** Cell biologist Dr. Lynne-Marie Postovit's ovarian cancer research focuses on the delinquent activity of a protein called Nodal. **(Photo courtesy of the Royal Alexandra Hospital Foundation)**

Royal Alexandra HOSPITAL FOUNDATION

# Neutralizing 'delinquent' protein may be the key to **treating ovarian cancer**

## Women's health
## **Ovarian cancer**
## Dr. Lynne-Marie Postovit

Cell biologist **Dr. Lynne-Marie Postovit's** ovarian cancer research focuses on the delinquent activity of a protein called Nodal.

The Nodal protein has been identified as a culprit in a number of cancers, including brain, prostate and breast cancer. It appears to be connected to ovarian cancer, as well. Think of Nodal as an Energizer Bunny that just keeps on going, creating havoc in the human body.

The protein serves a critical function during early embryonic development. When the embryo is only four or five days old — before it's even had time to nestle in the uterus — the protein is already sending marching orders to stem cells, an undifferentiated mass of cells smaller than a pinhead. The stem cells respond to the messages by developing into different kinds of cells — blood, heart, bone, skin, muscle and heart cells, for example — and taking on specialized functions. Once this differentiation occurs, the Nodal protein's job is officially over.

"Nodal proteins are not normally active in adults, but for some reason they are reawakened in cancers," says **Dr. Postovit**. "They enable cancer cells to behave like stem cells, growing forever, surviving in hostile environments and evading treatment. We want to gain a better understanding of how and why the protein does this."

Thanks to the support of the **Royal Alexandra Hospital Foundation**, **Dr. Postovit** holds the Sawin-Baldwin Chair in Ovarian Cancer Research. She also holds the Dr. Anthony Noujaim Legacy Oncology Chair and recently received an Alberta Innovates - Health Solutions Translation Health Chair in Cancer Epigenetics.

**Dr. Postovit** favours a team approach in tackling the deadly cancer, which is difficult to detect in the early stages and to treat later on. Eighty per cent of ovarian cancers are not diagnosed until the later stages, however, when survival rates drop to around 30 per cent. **Dr. Postovit** has assembled a team that is made up of some of the top researchers in Alberta in oncology, pathology and gynecology to work together on detecting the cancer earlier and discovering new treatments.

She is already known for her trail blazing research in breast and prostate cancer, and has produced three patents, one of which is now in clinical trials for the treatment of prostate cancer. In turning her attention to ovarian cancer, **Dr. Postovit** acknowledges that she has taken on a big challenge.

"It's humbling to work with a cancer where the statistics have not improved that much," she says. **"I think that we'll make much faster progress now that researchers and the public are paying more attention to it (ovarian cancer). Advocacy can make a big difference in moving things along faster. Look at the tremendous progress that has been made in breast cancer over the past 30 years where the survival rate is now 90 per cent."**

**Dr. Postovit**, an Edmonton Woman of Vision in 2014, looks forward to seeing similar breakthroughs in ovarian cancer. Undoubtedly, she will be one of researchers leading the way.

"My goal is to improve the lives of the thousands of women who are cancer patients. I always keep that in the back of my mind."

**The issue:** Eighty per cent of ovarian cancers are not detected until the later stages when survival rates drop to 30 per cent.

**The research:** Gain a better understanding of how a particular protein that has been connected to the spread of cancer cells works in order to improve diagnosis and treatments.

# **Online screening for prenatal depression** tested for impact on children's and mothers' health

Women's health
**Prenatal depression**
Dr. Dawn Kingston

One in ten women suffers from depression or anxiety during pregnancy. The consequences can be devastating for both women and children, especially since prenatal depression and anxiety are largely undiagnosed and untreated. The focus has tended to be on post-partum depression.

"In terms of screening and treatment, it's too little, too late," says maternal and child health researcher **Dr. Dawn Kingston**. "We really need to be thinking of prenatal care."

Recent advances in early development research show that the prenatal period is a particularly critical, vulnerable time for neurobiological development. Maternal depression and anxiety affect the growth and development of the fetus, and are associated with social, emotional and attentional problems and chronic illnesses in childhood and adulthood. Depressed, stressed out moms are more likely to experience preterm labour and deliver low-birth weight babies. Their depression, if left untreated, can continue and worsen after the birth, undermining their ability to bond with and care for their children.

**Dr. Kingston**, an assistant professor of nursing at the University of Alberta, aims to shift that 10 per cent statistic. She is heading the first — long overdue — large-scale study to evaluate the effectiveness of online prenatal screening and treatment on children's development and long-term health and the health of their mothers. The four-year study will track 800 pregnant women and their children in Edmonton, Hamilton and Brantford for a year and perhaps longer, and test the performance and impact of an online screening and assessment system. The digital screening tool and therapy were developed for easy implementation in busy clinical settings.

Here's how it works. A patient walks into her doctor's office or into a hospital clinic. As part of her routine prenatal care, she fills out an online mental health questionnaire that includes symptoms and risk factors for depression and anxiety. Her responses are scored by a special software program. If the overall score indicates she may be at risk, a prompt is sent to her physician, along with recommendations for treatment options that are available in her community. Online therapy is also presented as an option — either alone or in combination with face-to-face counselling or medication.

The online tool was created by **WCHRI's** data management and informatics team as part of a two-year Innovation Grant study, supported by the **Royal Alexandra Hospital Foundation** (**RAHF**). Another study (also funded by **RAHF**) enabled **Dr. Kingston** and her team to survey 500 pregnant women regarding their attitudes towards prenatal mental health screening. The overwhelming majority supported routine screening. The finding is significant, notes **Dr. Kingston**, given that routine prenatal mental health screening is not done in any province in Canada, although it's standard practice in other countries such as the U.K. and Australia.

A minority of the respondents said they felt comfortable initiating discussions about mental health concerns, while 97 per cent preferred service-provider initiated screening. Surprisingly, most preferred online questionnaires rather than face-to-face interviews. The online screening tool was then developed in response to the women's stated preferences and needs.

**Dr. Kingston** has also piloted an e-therapy, based on a cognitive behavioural therapy approach, for prenatal depression and stress. The initial response has been highly positive, she says. The online treatment is easily accessible unlike many more traditional therapies that can be expensive, hard to find and have long wait times.

**Dr. Kingston anticipates that the full trial findings will improve prenatal mental health policies and care. "Alberta has the potential to become a leader in this regard,"** she says.

A pilot trial for this study was funded by the **Women and Children's Health Research Institute** and the Norlien Foundation.

**The issue:** Prenatal depression can affect the neurobiological development of the fetus and have a lifelong impact on the child and mother.

**The research:** Study the effectiveness of an online mental health screening and assessment tool that has been developed for use in busy clinics.

## E-tool implemented for high-risk pregnancies

Women admitted to the high-risk pregnancy unit at the **Lois Hole Hospital for Women** are currently being screened for depression and anxiety using the online tool. Women who are found to have symptoms or be at risk for anxiety or depression are offered appropriate care, including e-therapy, which is provided through bedside computer terminals.

The clinical and cost effectiveness of this online approach to hospital-based mental health care is being studied by following the women and their infants for six months post-partum.

Recent advances in early development research show that the **prenatal period** is a particularly critical, vulnerable time for **neurobiological development.**

**Photo, top left:** Dr. Dawn Kingston chats with a patient in the high-risk pregnancy unit at the Lois Hole Hospital for Women, which is participating in a trial study of prenatal mental health online screening and treatment.

**Photo, full-page:** Dr. Kingston is heading the first large-scale study into the effectiveness of online prenatal mental health screening and treatment on mother's and children's long-term health.

## Mindfulness training improves coping skills of high-risk youth

A recent **University of Alberta** study suggests high-risk youth can be given mental tools to help them help themselves.

**Dr. Sunita Vohra's** project worked with clients of CASA House, a facility for young people struggling with mental health and substance abuse issues. Alongside CASA's excellent program of treatment, clients in the study received training in mindfulness-based stress reduction (MBSR), a form of meditation that has been found useful in dealing with problems like anxiety and depression.

"The whole point of mindfulness is to create a gap between when you have a stimulus and when you have a response," **Dr. Vohra** explains. "You want to create an opportunity to pause and reflect, and respond in a way that you want to respond."

Although the study dealt with a relatively small sample group, **Dr. Vohra** says the results have been very exciting. "The youth speak about how it helped their coping, their self-esteem and their resiliency."

Neuroscientists in the study were even able to see these changes reflected in fMRI results. "These youth are actually able to be taught the skill in a way that you can measure the impact on how their brains are functioning," marvels Vohra. "Very exciting!"

This study was funded by a **WCHRI** Emerging Team grant and biostatistical support services through the generous support of the **Stollery Children's Hospital Foundation**.

Complementary therapies can include everything from **herbal remedies** to **naturopathy**, **acupressure**, **acupuncture**, **massage** and **Reiki**.

**Photo, full-page:** Pediatrician and researcher Dr. Sunita Vohra (an internationally recognized expert in complementary medicine), aims to bring balance into the field of complementary medicine, which often attracts polarized responses.

# Early findings suggest complementary therapies can help **young patients feel better**

## Research at work in hospitals
## **Complementary therapies**
## Dr. Sunita Vohra

When families ask questions about complementary medicine, most doctors don't have good answers to give them. "There's a tremendous gap between use and evidence," says **Dr. Sunita Vohra**, who is an internationally recognized expert in the field. **"When parents ask questions, such as 'Does it work? Is it safe?', we want to have better information than 'I don't know,' or 'I'm not sure,' which is not satisfying to anyone."**

Complementary therapies can include everything from herbal remedies to naturopathy, acupressure, acupuncture, massage and Reiki. Despite the lack of research, many families decide to use complementary therapies, often mixing them with prescription medicines without knowing how they will impact one another. According to **Dr. Vohra**, parents of 70 per cent of the patients with serious chronic or recurrent illnesses at the **Stollery Children's Hospital** are seeking complementary therapies. "Parents are looking for whatever they can do to try and help their children — and that's understandable."

As a start to addressing this research gap, **Dr. Vohra**, a pediatrician and clinician scientist, is currently heading Canada's first clinical trial into pediatric integrative medicine (PIM) for hospitalized children. For the past two years, she and her team have worked with three divisions at the **Stollery**: cardiology, oncology and general pediatrics. The team is exploring whether complementary therapies can help young patients cope with pain, anxiety, or nausea. Conventional medicines for these problems often cause drowsiness, says **Dr. Vohra**. "It is reasonable for patients to want to feel better — and to be awake while doing so!"

Along with their normal hospital care, children and their families have the option of adding acupuncture, acupressure, massage therapy, or Reiki. **Dr. Vohra** expects the study will eventually involve about 900 patients, ranging in age from newborns to teens.

**Dr. Vohra** is cautiously optimistic about the preliminary results. "Some of the early qualitative findings suggest that children and parents do find integrative therapies helpful — and they appreciate the choices they are offered, as well as the care they receive at the **Stollery**," she says.

**Dr. Vohra** hopes her study will bring some needed balance to a field, which tends to attract polarized responses. "At one end, you have some clinicians and health care practitioners who say, 'I don't need to know, because none of that stuff works,' " she says. "At the other end, some people say, 'Isn't it lovely, isn't it wonderful.' They embrace it without question. Both of these positions are, from my perspective, quite dangerous."

The subject is best approached from the middle, says **Dr. Vohra**. "We don't assume it's all good or all bad. We try to sort things out one therapy and one child at a time, so we can have a better idea of what's effective for whom."

**Dr. Vohra's** research study received research coordination and data management support services from **WCHRI** through the generous support of the **Stollery Children's Hospital Foundation**.

**The issue:** Many parents seek out complementary therapies for children who are suffering from serious or chronic illnesses without any good information about the safety or effectiveness of these treatments.

**The research:** Study the effectiveness of complementary therapies on the pain, anxiety and nausea experienced by young cardiology, oncology and general pediatrics hospital patients.

# **Reducing children's pain** during emergency treatment reduces distress, improves recovery

## Research at work in hospitals
## **Pain management**
## Dr. Samina Ali

**Dr. Samina Ali** would like to reduce the OUCH factor in children's emergency care treatment.

During the course of her research into pain management, the pediatric emergency physician has found that children's pain is undertreated in hospital emergency departments across Canada. Children are less likely to receive pain medication than adults for the same injuries and intensity of pain. And health care providers are less comfortable treating children than grownups.

**Dr. Ali** became interested in pediatric pain management in her early days as an emergency physician. About 80 per cent of the young patients she saw were in pain, and the tests and examinations they underwent, inflicted more discomfort.

"It seemed wrong to me not to do everything we could to reduce the children's pain," says **Dr. Ali**, who juggles her clinical practice at the **Stollery Children's Hospital** with teaching as an associate professor in pediatrics at the **University of Alberta**.

She undertook two major studies on pain management, one based on a national survey of pediatric emergency doctors and another based on a provincial survey of emergency department administrators. The studies showed that painful procedures, such as spinal taps, IV insertions, urinary catheterizations and even suturing are often performed on children without adequate pain treatment.

The studies also indicated that pain treatment in emergency departments varies considerably and that many doctors and other health care providers underuse simple, inexpensive pain remedies. Encouraging parents to hold their babies during painful procedures rather than holding them down on a hospital bed, for example; using freezing creams before inserting IVs; breastfeeding and swaddling.

**Dr. Ali** has embarked on a new study that is looking at the effectiveness of two common painkillers — ibuprofen and oral morphine — in managing the pain of children with suspected fractures in the emergency department. The study, appropriately titled OUCH, is a large clinical trial involving 500 youngsters that will test the use of the two pain relievers, both alone and in combination, specifically in children. The study marks a step in the right direction for pediatric drug research.

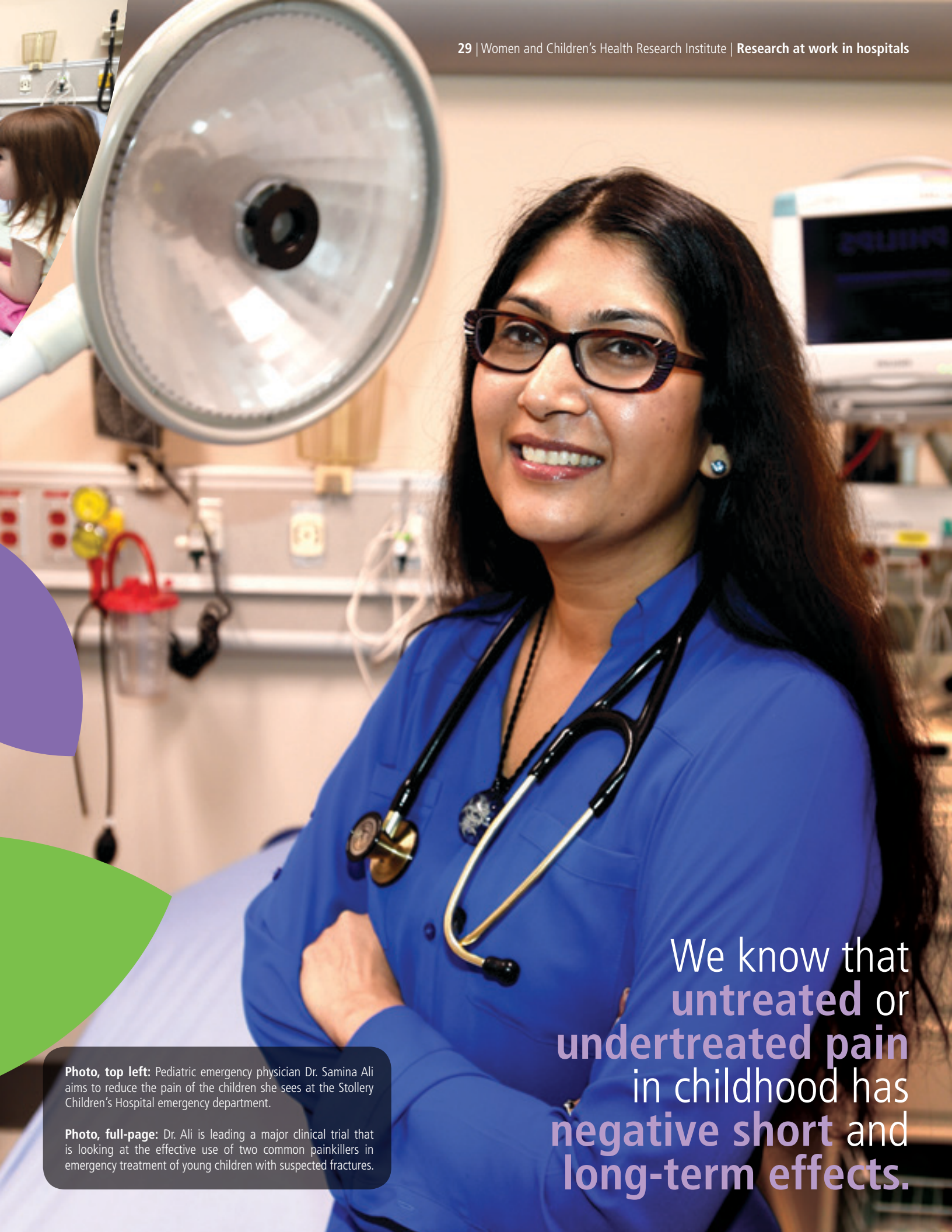
In Canada, few drugs given to children, including common prescription medications such as antibiotics and painkillers, have been tested or approved for children's use. An influential report recently commissioned by Health Canada *(Improving Medicines for Children in Canada)* points to the "unnecessary risk of harm" that this creates for children. Lacking reliable information on drug use for children, doctors have to guess at appropriate dosages and hope that the medications they are prescribing — which have been developed for and tested on adults — will work for their young patients.

Dr. Ali wants to ensure that children get safe, appropriate treatment and that their pain is minimized. **"We know that untreated or undertreated pain in childhood has negative short and long-term effects," she says. "It can slow down recovery and prolong hospitalization. It increases the distress of future medical procedures and can affect the pain threshold in adulthood. The preventative benefits of using therapies that are safe and effective are tremendous."**

Through the generous support of the **Stollery Children's Hospital Foundation**, **WCHRI** was able to provide subsidized expert data management and informatics resources to assist **Dr. Ali** in her research work.

**The issue:** Children are often not provided with adequate pain relief during visits to hospital emergency departments.

**Research:** Study the effectiveness of two common painkillers in managing pain in children with suspected fractures during hospital emergency treatment.



We know that **untreated** or **undertreated pain** in childhood has **negative short** and **long-term effects.**

**Photo, top left:** Pediatric emergency physician Dr. Samina Ali aims to reduce the pain of the children she sees at the Stollery Children's Hospital emergency department.

**Photo, full-page:** Dr. Ali is leading a major clinical trial that is looking at the effective use of two common painkillers in emergency treatment of young children with suspected fractures.

Trainees

# Investing in the **next generation of researchers**

Ensuring the best health care possible for women and children means investing not only in ongoing scientific research, but in the next generation of researchers. The **Women and Children's Health Research Institute** supports research trainees through research grants, graduate and summer studentship awards, and travel grants to allow our trainees to present their research at international conferences, as well as through more informal networking and mentoring opportunities. The following three research trainees exemplify the exceptional, diverse crop of up-and-coming researchers encouraged and nurtured by **WCHRI** over the past year. As you can see, fresh talent can — and does — emerge at different stages of life. We look forward to seeing the impact of these trainees in their chosen fields of research.

**Photos, above:** Research trainees share their work at WCHRI's annual Research Day.

# Art and story-telling combined to **promote health literacy**

## Mandy Archibald

**Mandy Archibald** has combined her love for art and story-telling with her academic interest in knowledge translation to meet the practical needs of health-care providers and parents for easy-to-understand medical information.

A PhD candidate at the **University of Alberta's Faculty of Nursing** and a visual artist, **Archibald** has created an interactive, electronic storybook that provides parents with basic information about managing their children's asthma.

Pediatric asthma is the most common chronic disease in children and places a high burden on parents who are largely responsible for their children's day-to-day care. Yet research shows that parents often feel inadequately equipped to provide care for their children's asthma.

As part of her PhD studies, **Archibald** interviewed parents of children with asthma at the **Stollery Children's Hospital** emergency department and at the Northeast Community Health Centre in Edmonton, which serves a large immigrant population. She discovered that many parents were having difficulty in managing their children's asthma and were not getting the hands-on knowledge they needed. They often did not know what questions to ask or how to seek information.

**Archibald** created a user-friendly graphic storybook about asthma using characters and real-life situations parents could easily relate to and with information that they would find useful and relevant. The e-book grew out of her dissertation, which explores the use of arts-based approaches to knowledge-translation. Her findings have important implications as interest continues to shift towards family-centred, community-based care, and improving public health education to serve diverse communities and literacy levels.

**Archibald** received **WCHRI** support for her studies through a graduate studentship and partial funding as a doctoral trainee in the Canadian Child Health Clinician Scientist Program supported by the **Stollery Children's Hospital Foundation**. Oxford is her next stop, where she will continue her studies as a post-doctoral fellow. Her goal as a researcher is to pursue her passion for "addressing health literacy, especially among hard-to-reach groups."

**Photo, top left:** Mandy Archibald has created an interactive, electronic storybook that provides parents with basic information about managing their children's asthma. **(Photo courtesy of the Faculty of Nursing, University of Alberta)**

# Love of children inspires young researcher to **tackle autism**

## Tamara Germani

As an occupational therapist, **Tamara Germani** builds on the strengths of the children with autism that she works with at the Glenrose Rehabilitation Hospital. **Germani**, who is also a PhD student in the department of pediatrics at the **University of Alberta**, focuses on children's strengths in her research on autism, as well.

As part of her thesis, she is developing a way of classifying the social participation of preschool children with autism. The five-level classification system aims to help health care professionals to determine what individual and community program supports are most appropriate for children.

"If you know what a child can actually do, then you have a better idea of what supports the child really needs," says **Germani**, whose doctoral research was funded by a **WCHRI** graduate studentship in 2014.

Her proposed system has already attracted attention. **Germani** recently presented the first part of her PhD project at the Paediatric Society Development Program in Newport Beach, California. In June 2015, she will take it to Berlin to the Ninth World Congress of the International Society of Physical and Rehabilitation Medicine.

Germani made her mark as an up-and-coming young researcher while working on a national study of infant siblings of children with autism led by her supervisor, Dr. Lonnie Zwaigenbaum, who holds the **Stollery Children's Hospital Foundation** Chair in Autism Research. Her task was to look at the sensory responses of younger siblings, and she found that, as the research team suspected, by 24 months, the children were much more likely to be hypersensitive. She presented these findings to the Canadian Pediatric Society in 2013, the only Canadian trainee invited to present, and her results have been published in the prestigious, peer-reviewed *Journal of Autism and Developmental Disorders*.

As a researcher and occupational therapist specializing in autism, **Germani** is taking on a complicated disorder that currently affects about 67,000 children in Canada. The potential to make these children's lives better is partly what motivates her. They make her life a whole lot better, too, **Germani** notes.

**"Working with these kids makes me really happy," she says. "I love how they call me out and tell it like it is."**

**Photo, top left:** PhD student and occupational therapist Tamara Germani focuses on children's strengths in her research on autism.

# Personal loss fuels quest to find **treatment for deadly cancer**

## Powel Crosley

At 57 years of age, **Powel Crosley** returned to university as an undergraduate student and began slogging his way through introductory courses in biology and biochemistry.

He had already worked towards a PhD in geography and enjoyed a successful career in information technology, but he was ready to start at the bottom again in order to learn everything he could about cancer. He was specifically interested in a rare and deadly form of ovarian cancer called Granulosa Cell Tumor (GCT). Eighty per cent of the women — and young girls — who suffer a recurrence of GCT die from it. The grim statistic has a particular resonance for **Crosley** who lost his beloved wife Sladjana to the disease six years ago.

While battling her cancer, his wife had pored over all the scientific literature related to GCT and established the Granulosa Cell Tumour Research Foundation. After her death, **Crosley** felt impelled to carry on her work. The mature student with an endless stream of questions caught the attention of oncology professor Dr. Mary Hitt, who invited him to work in her lab alongside her postgraduate and doctoral students.

**Crosley** became intrigued by a drug developed at the University of Illinois that has shown promise in the treatment of other cancers. The drug activates the protein that signals abnormal cells to self-destruct. In cancer, inhibitor and activator proteins can mutate, causing uncontrolled cell growth.

With the encouragement of his mentor who helped him pull together a research team, **Crosley** applied for a two-year $50,000 Innovation Grant from **WCHRI** (funded by the **Royal Alexandra Hospital Foundation**) to study the drug. He is looking at the drug's effectiveness in targeting the protein that signals cell destruction. He is also testing the drug in conjunction with embelin, a Japanese herb extract that can slow tumour growth, to see if it increases the drug's effectiveness.

"I feel that I have a personal responsibility to move this work forward to give hope to women who are suffering from this disease," **Crosley** says. The research has been integral to his personal healing as well.

**Photo top left:** Powel Crosley is studying a drug therapy for an ovarian cancer that claimed his wife's life.

"I am so glad that my trainees had this opportunity to present and share their research ideas with other students and researchers. This improves their communication skills and allows them to compare the quality of their work with others and improve through this learning process."

*Senior researcher*

"My approach to my research and my degree has changed after attending the career options workshop."

*Research trainee*

**Photo, top left:** WCHRI Associate Director Dr. Lawrence Richer presents an award to Carissa Samoluk for best poster presentation in the undergraduate student category.

**Photo, bottom left:** Dr. Sandra Davidge, WCHRI Director, welcomes participants to Research Day 2014.

# Research Day 2014:
## Trainees make the most of their big chance to shine

Research Day 2014 attracted a record number of participants. Nearly 450 researchers, students and stakeholders attended workshops and presentations and networked informally, learning more about each other's work in women and children's health research in the process.

Research Day focuses on our trainees — undergraduate and graduate students, post-doctoral fellows, residents and subspecialty residents — who have a wonderful opportunity to present their projects and receive feedback from top researchers in the field. Trainees also gain invaluable information that can help them to make informed choices about their studies and careers.

The event, which was held on November 12 at the Westin Hotel, not only set a record for attendance, but for the highest number of abstract submissions — nearly 150. The high quality of the submissions made the judges' task more challenging in choosing the winning entries in the poster and oral presentation competitions.

Poster judges were "shadowed" once again this year by representatives from **WCHRI's** funding partners: the **Stollery Children's Hospital Foundation** and the **Royal Alexandra Hospital Foundation**. Again, this proved to be a fun and mutually beneficial experience. The fundraisers for the foundations were able to see first-hand the exciting, innovative work done by the next generation of researchers that they are helping to nurture and to ask them directly about the work that they are doing. Trainees were thrilled to be able to demonstrate their projects and ideas to the people who raise the money that supports their training and early research.

A number of special guests were in attendance, including key representatives from **Alberta Health Services**, the **University of Alberta**, our partner foundations and the Strategic Clinical Network for Maternal, Newborn, Child and Youth. Dr. Martin Offringa, senior scientist and head of the Child Health Evaluative Science Program at The Hospital for Sick Children in Toronto gave the keynote speech, "Medicines for Children – How to Make It Work." His speech focused on a national issue critical to children's health — the importance of developing safe, effective medicines for children in Canada.

Throughout the day, participants had the opportunity to meet colleagues, students, community members, academics, funders and fellow **WCHRI** members who all share a passionate interest in promoting and furthering excellence in women and children's health research.

We thank every one of you for making the day such a great success and look forward to seeing you on October 28, 2015.

**Photo, right:** Research Day highlights the work of young research trainees who receive invaluable feedback from senior researchers on their projects.

| | |
|---|---|
| Number of researchers | **403** |
| Total awards | **$3.2 million** |
| Total grants awarded | **155** |
| Number of trainee and student awards | **92** |
| Stollery Children's Hospital Foundation funding | **$4.05 million** |
| Royal Alexandra Hospital Foundation funding | **$1.09 million** |

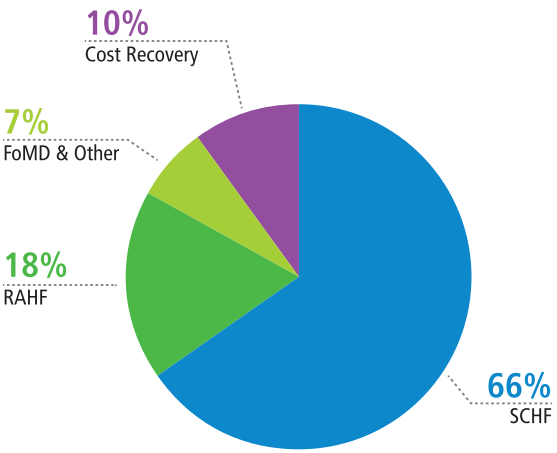
* All figures are based on the 2014-2015 fiscal year.

# Income statement for year end March 31, **2015**

| | |
|---|---|
| **Revenue** | |
| Stollery Children's Hospital Foundation* | 4,055,450 |
| Royal Alexandra Hospital Foundation* | 1,087,431 |
| Faculty of Medicine & Dentistry, U of A and Other | 434,573 |
| Cost Recovery | 604,659 |
| **Total Revenue** | $6,182,113 |
| | |
| **Expenditures** | |
| Research Grants | 1,908,710 |
| Research Catalysts | 1,479,124 |
| Research Support | 1,828,585 |
| Administrative Support | 652,589 |
| **Total Expenditures** | $5,869,007 |
| | |
| Surplus (carry-forward to next fiscal year) | $313,106 |

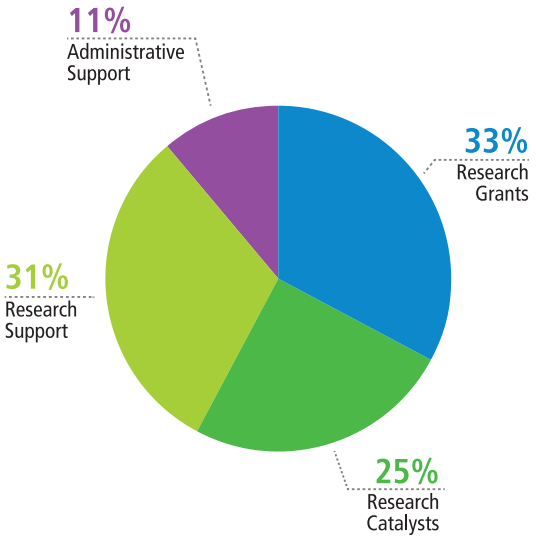
*Includes surplus carry-forward from prior year, transfers from closed projects and other donations

## Revenue




The revenue percentages reflect the ratio of researchers who align with child health compared to women's health, which is approximately 4:1.

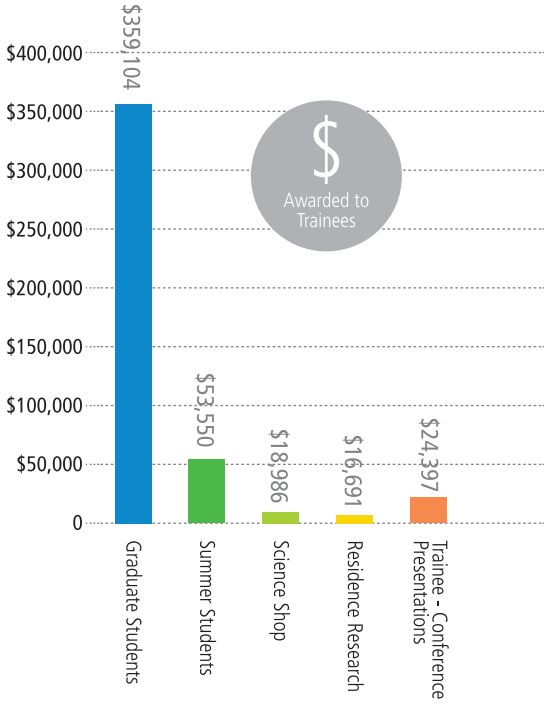
## Expenditure

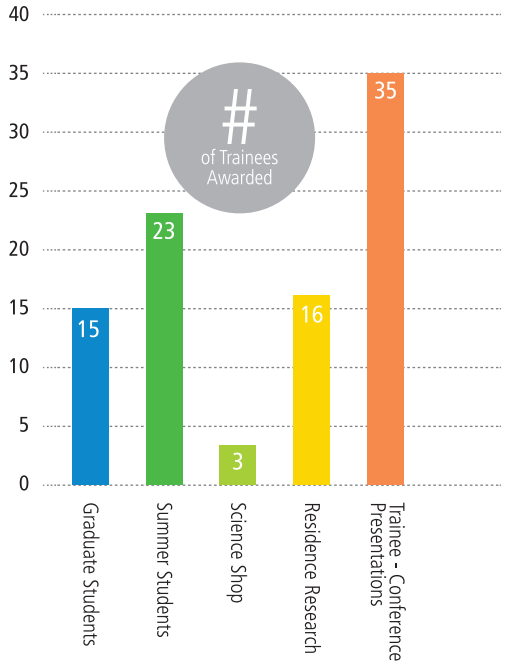


# Capacity building

**WCHRI** has numerous trainee members who have been supported by **WCHRI** funding and educational programs. These trainees include undergraduate and graduate students, postdoctoral fellows and residents, many of whom have completed their training and are now working in academic and other roles supporting women and children's research around the world.

In 2014/2015, **WCHRI** grant programs supported 26 summer and Science Shop students, 15 graduate students and 16 resident researchers. In addition, our Trainee Travel program award enabled 35 of our trainees to attend national and international conferences in order to present their original research results.

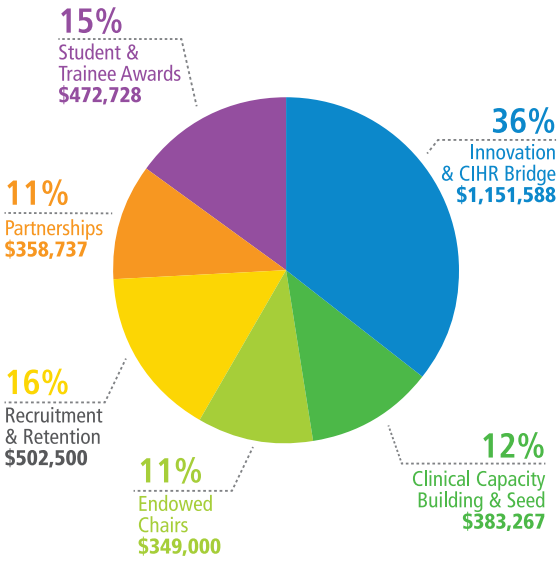



# WCHRI grants awarded

One of the key ways that **WCHRI** supports research excellence is through competitive grant funding. Our programs include: operating grants, bridge funding, resident trainee research projects, graduate studentships, summer and science shop studentships, trainee travel funds and Scientific Knowledge Exchange Programs (SKEP). All of these programs are competitive with only excellent research proposals receiving funding.

While some of the **WCHRI** operating grants support projects that have the potential to target a challenging clinical health problem, others generate preliminary data for applications to larger funding institutions. Our competitive grant programs and partnership strategies facilitate the use of our resources in a way that maximizes impact and leverages funds from other partners and agencies.



# Governance
(as of March 31, 2015)

## Oversight Board Members

| | |
|---|---|
| **Glen Baker** | Vice-President (Research), University of Alberta (U of A) (Delegate) |
| **Roger Epp** | Deputy Provost, U of A |
| **David Evans** | Vice-Dean of Research, Faculty of Medicine & Dentistry (FoMD), U of A |
| **Richard Fedorak** | Interim Dean, FoMD, U of A |
| **Bob Haennel** | Health Sciences Council Representative, U of A |
| **Mike House** | President/CEO, Stollery Children's Hospital Foundation (SCHF) |
| **Tracy MacDonald** | Senior Operating Officer, Stollery Children's Hospital, Alberta Health Services (AHS) |
| **Andrew Otway** | President/CEO, Royal Alexandra Hospital Foundation (RAHF) |
| **Joanna Pawlyshyn** | Senior Operating Officer, Royal Alexandra Hospital/Sturgeon Community Hospital, AHS |
| **Kathryn Todd** | Senior Vice-President Research, AHS |
| **Michael Walter** | Senior Representative, U of A |
| **Sandra Davidge** | Director, WCHRI (non-voting) |

## Steering Committee Members

| | |
|---|---|
| **Glen Baker** | Associate Vice-President (Research), U of A |
| **Radha Chari** | Department Chair, Obstetrics and Gynecology, U of A |
| **Karen Faulkner** | Vice-President, SCHF |
| **Susan Gilmour** | Department Chair, Pediatrics, U of A |
| **Tom Hobman** | Associate Dean, Research Facilities, FoMD, U of A (Designate) |
| **Selikke Janes-Kelley** | Executive Director, Women's Health, Royal Alexandra Hospital, AHS |
| **Lawrence Richer** | Associate Dean, Clinical and Translational Research |
| **Sharlene Rutherford** | Vice-President, RAHF |
| **Christine Westerlund** | Director, Site Lead & Operative Services/Surgical Programs, Stollery Children's Hospital, AHS |
| **Sandra Davidge** | Director, WCHRI (non-voting) |

## Scientific Advisory Committee Members (all U of A faculty)

| | |
|---|---|
| **Sandra Davidge** | WCHRI Director |
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