women & children's health research institute

10 years

Growing: 10 Years of Research Excellence in Women and Children's Health

The Power of Partnership

UNIVERSITY OF ALBERTA

Alberta Health Services

STOLLERY CHILDREN'S HOSPITAL FOUNDATION

LOIS HOLE HOSPITAL FOR WOMEN

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The Power of Partnership

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Alberta Health Services

STOLLERY CHILDREN'S HOSPITAL FOUNDATION

LOIS HOLE HOSPITAL FOR WOMEN

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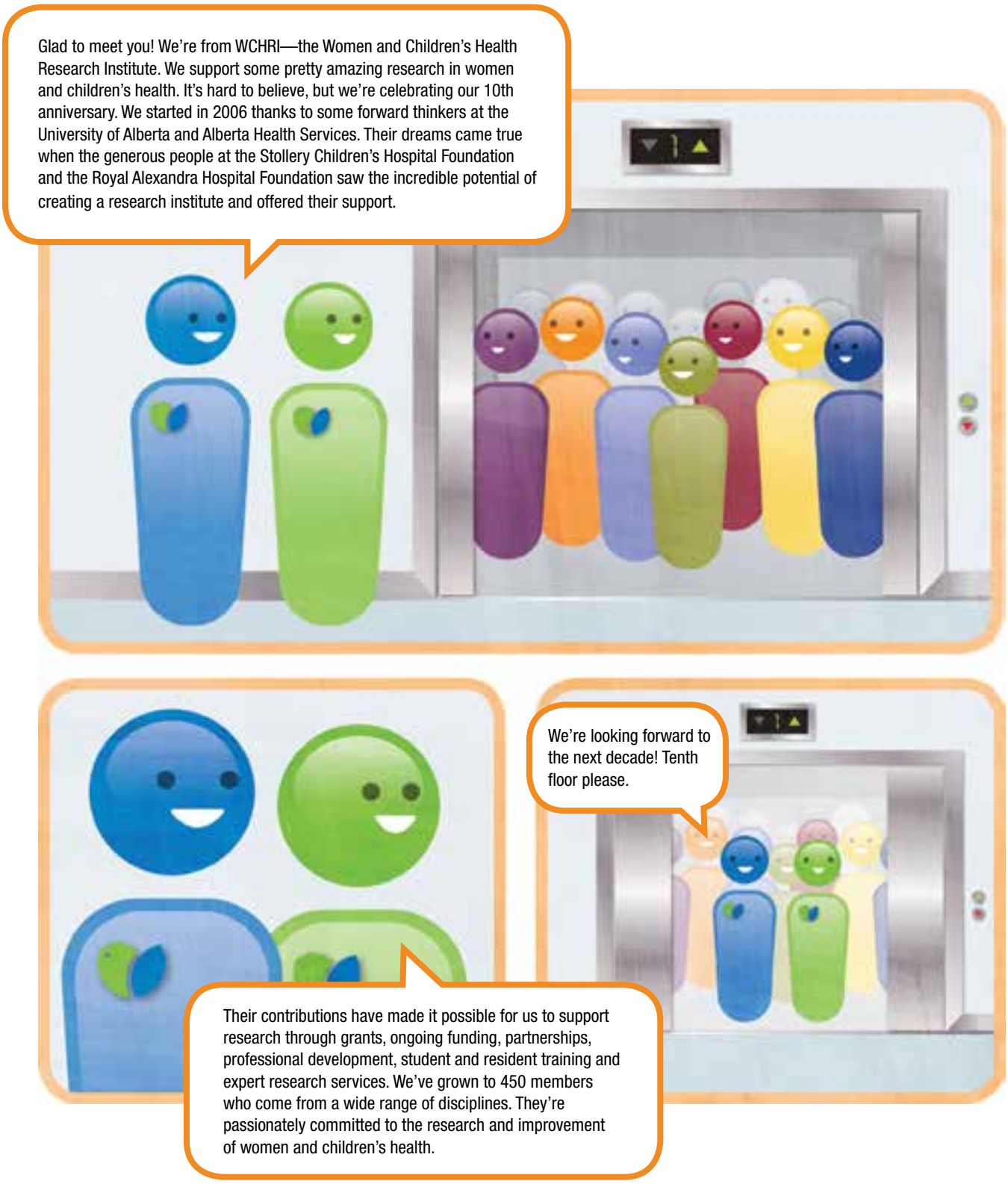
Our Institute

What is WCHRI?

The one-minute elevator speech



By the numbers

WCHRI 2006-2016

$45.5 MILLION

Total budget: $41 million commitment through the 10-year memorandum of understanding plus $4.5 million in additional donations

900 GRANTS

Total number of research grants: 900

- innovation operating grants: **140**
- research capacity building grants: **4**
- seed operating grants: **29**
- recruitment and retention operating grants: **53**
- student and trainee grants: **554**
- partnership grants: **37**
- bridge grants: **27**
- scientific knowledge and exchange program grants: **46**

550 PROJECTS

Total number of research projects supported by WCHRI's expert services: 550

450 MEMBERS

Total number of members: 450

Principles

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.

Operating principles

We support our mission with the following operating principles (FACTTS):

- **Facilitate** research activities, build capacity, catalyze research innovation and excellence;
- **Advocate** for women and children's health research platforms, programs and policy in Alberta, across Canada and beyond;
- **Communicate** research outcomes to stakeholders, patients, community and government;
- **Train** the next generation of researchers;
- **Translate** knowledge to support evidence informed practice and policy; and
- **Sustain** operations through effective accountability reporting and stakeholder engagement.

Message from the **director**

Growth: It's about more than just numbers

Dr. Sandy Davidge
Director

It has been an honour and a privilege to have participated in the building of WCHRI from the ground up and to have served as the Women and Children's Health Research Institute director since 2012.

WCHRI was established in 2006 as the result of the forward-looking vision of our founders and partners, who recognized the importance of research addressing the unique health needs of women and children. Over the past ten years, scientific evidence has further established the impact of early, prenatal origins of lifelong health and many chronic diseases. The complexities of women and children's health issues and the close interrelationship between the two for a healthy population are beginning to be better understood. We, at WCHRI, take pride in knowing that we have contributed, through our continued support of research excellence in women and children's health, to advances that have been made in the field over the past decade that will continue to positively impact the lives of women and children in Alberta and beyond.

The institute has grown tremendously in 10 years. Our membership currently stands at nearly 450 leading researchers, clinicians, academics and health-care professionals from a diversity of clinical and academic disciplines. We are proud to support our membership as they continue to grow and thrive in research programs focused on a wide array of women and children's health issues. Between 2006 and 2016, WCHRI has funded hundreds of basic science and clinical studies, and has supported and facilitated the training of the next generation of researchers. All of these successes are made possible due to the continuing generosity of our funders, the Stollery Children's Hospital Foundation and the supporters of the Lois Hole Hospital for Women.

The growth that we celebrate during this milestone anniversary goes far beyond numbers, however. As you will find in the pages of this report, WCHRI has grown in many ways that are essential to helping us reach our goal of healthier futures for all women and children. Most importantly, we have developed ever stronger ties with our partners and funders—Alberta Health Services, the University of Alberta, the Stollery Children's Hospital Foundation and the Royal Alexandra Hospital Foundation. Without the power of these partnerships, the accomplishments of the last 10 years would not have been possible. We anticipate building on this strong foundation to advance scientific knowledge and health practices in the next decade.

I would like to thank my predecessors, Dr. Thierry Lacaze, WCHRI's first director (2006 to 2010), for his inspired leadership in making the institute a reality and Dr. Po-Yin Cheung for his service as interim director (2010 to 2012). Today, I am very fortunate to work with an outstanding team, including Dr. Lawrence Richer who has worked tirelessly as associate director of WCHRI since 2013. We would not be where we are today without him and the WCHRI team who are passionate in realizing our vision: "To harness the power of research innovation for a healthy future for children and women."

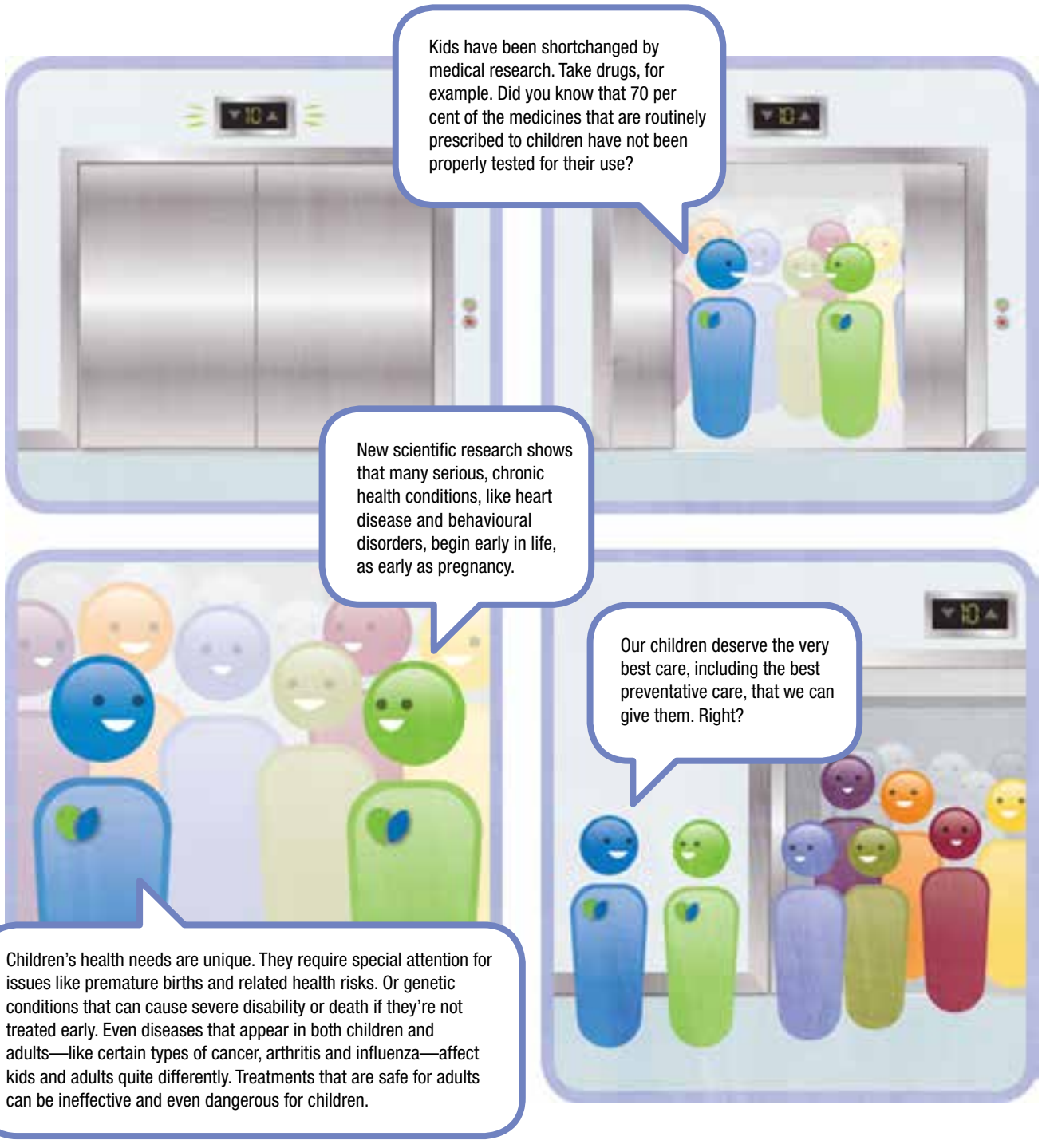
Dr. Sandy Davidge
Director, Women and Children's Health Research Institute

Our Partners

Supporting children's health research

Why is children's health research important?

The 1½-minute elevator speech



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

Congratulations on a decade of discovery

Mike House
President and CEO

The importance of research in our lives cannot be overstated.

That's why for the last 10 years, the Stollery Children's Hospital Foundation—with help from our generous donors—has invested in nearly 780 pediatric research projects to help the Stollery Children's Hospital in growing its critical mass of experts and research-based practice.

As the primary funder of the Women and Children's Health Research Institute (WCHRI), our investment of more than $34 million since 2006 represents about 100,000 individual donors. Through WCHRI, the foundation proudly supports 12 University of Alberta faculties and the many award-winning research programs that originate from the Faculty of Medicine & Dentistry, mainly the department of pediatrics. In the last year alone, we funded 150 research grants totalling $4.7 million, including 81 trainee and student awards.

We are extremely proud of WCHRI's many successes over the past 10 years. Evidence-based, pediatric research not only addresses the unique health-care needs of kids, it makes sure families and patients benefit from the latest advances in care.

Congratulations to everyone at WCHRI for an amazing decade of discovery. We look forward to working with you over the next 10 years to transform children's health to help kids in our community and beyond live longer and healthier lives.

Mike House
President and CEO
Stollery Children's Hospital Foundation

Overview: **Stollery Children's Hospital Foundation**

Established in 2001, the Stollery Children's Hospital Foundation raises money in support of the pursuit of excellence in children's health care at the Stollery Children's Hospital. Excellence comes in many forms: specialized equipment; sub-specialty education to train the brightest medical minds; research to discover new treatments and cures for child health issues; and specialized pediatric programs that improve family-centred care and patient and family outcomes at the Stollery.

The foundation recognizes the tremendous impact that research has on disease prevention, treatment and improved health outcomes, and the importance of integrating clinical research into the Stollery Children's Hospital, so that young patients may benefit from the latest advances in care. That commitment to children's research is reflected in the foundation's continual support of the Women and Children's Health Research Institute since 2006.

For more information, please go to: stollerykids.com.

By the numbers

Stollery Children's Hospital Foundation

2006-2016

$34.5 MILLION
Total funding provided to WCHRI: $34.5 million

780 GRANTS
Total research grants: 780

44 GRANTS
Recruitment and retention grants: 44

485 GRANTS
Student and trainee grants: 485

23 GRANTS
Hospital-based "seed" grants: 23

42 GRANTS
Scientific knowledge and exchange program grants: 42

480 PROJECTS
Total number of research projects supported by WCHRI's expert services: 480

**Please note: Some grants, programs and expert services are supported by both the Stollery Children's Hospital Foundation (SCHF) and Royal Alexandra Hospital Foundation (RAHF). This means that SCHF and RAHF numbers may not add up to the totals provided in the WCHRI fact box on page 4.*

Where did the funding go?

- supported research into asthma, muscular dystrophy, cancer, diabetes, allergies, respiratory diseases, congenital heart disease, organ transplants, obesity, autism spectrum disorder, sickle cell disease, fetal alcohol spectrum disorder, mental health disorders, perinatal strokes, kidney disease, Crohn's, inflammatory bowel disease (IBD), fatty liver disease, complex genetic disorders, pediatric pain management, complementary medicines and therapies, as well as other health conditions and issues
- encouraged clinical research at the Stollery Children's Hospital through the hospital research capacity building program; four teams funded to date (the pediatric emergency research department, pediatric critical care research team in the pediatric intensive care unit, the Stollery single ventricle outcomes team and the Edmonton Pediatric Inflammatory Bowel Disease Centre)
- fostered areas of expertise, such as pediatric transplant services, respiratory health, obesity, neonatology, pediatric ultrasonography, neurodevelopment, IBD, pediatric pain management and pediatric emergency care

Supporting women's health research

Why is women's health research important?

The 1½-minute elevator speech

Did you know that there are big differences in how men and women experience many health conditions? There are differences in the prevalence of many diseases and in their severity, causes and treatment. Certain illnesses are more common in women, like osteoporosis and mental health disabilities. Women experience many illnesses, including cardiovascular disease and lung cancer, differently from men and may require different treatment. Women also respond differently to drugs and they suffer more side effects. Women have unique health needs, but these needs have not been well served in the past by medical science.

Fortunately, that's beginning to change. Research that focuses on women's health is growing and closing some of these gaps. Maternal and perinatal health research has also emerged with an exciting new focus on the early origins of health and disease. This new perspective and the research that supports it have helped us to better understand the critical link between healthy moms and healthy pregnancies and lifelong health.

By supporting women's health and perinatal health research, WCHRI aims to ensure that women's health needs are addressed appropriately throughout their life cycle—from before birth through puberty to maturity, menopause and post-menopause. Embedding that research in hospitals, like the Lois Hole Hospital for Women, improves patient treatment and care. The end result is better health and better futures for women, their families and communities.

Message from the **Royal Alexandra Hospital Foundation/Lois Hole Hospital for Women**

Celebrating a decade of collaboration

Andrew Otway
President and CEO

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.

The Lois Hole Hospital for Women offers comprehensive, high-risk obstetrical and maternal care and provides surgical treatment of ovarian, cervical and other gynecological cancers. We are a Canadian leader in new treatments for urogynecologic and pelvic floor disorders and we focus on the needs of maturing women. The hospital also conducts innovative clinical-based research in mental health that is setting new standards in the treatment and care of women with anxiety and depression.

The Lois Hole Hospital for Women is a national leader in treating women with high-risk pregnancies and is the main site for high-risk labour and deliveries in northern Alberta. It's also the busiest with more than 7,000 births each year. We fully appreciate the critical link between healthy moms and healthy babies! We endorse WCHRI's model of integration that brings together women and children's health to inform and shape health-care decisions and patient care.

On behalf of the Royal Alexandra Hospital Foundation and its board of directors, we offer our congratulations to WCHRI and especially to Director Dr. Sandy Davidge on your 10th anniversary. Our foundation is very proud to support you and we're grateful to our donors who are helping to fund this important investment in the health of our community. It has been an incredible decade of collaboration and we look forward to the future.

Andrew Otway
President and CEO
Royal Alexandra Hospital Foundation

Royal Alexandra HOSPITAL FOUNDATION

LOIS HOLE HOSPITAL FOR WOMEN

Overview: **The Royal Alexandra Hospital Foundation**

The Royal Alexandra Hospital Foundation (RAHF) inspires community support for the Royal Alexandra Hospital, the Lois Hole Hospital for Women and other health-care facilities, as well as for its number one priority—building better health care.

The RAHF supports the Lois Hole Hospital for Women through the training of our next generation of clinicians, funding for cutting-edge research, support for innovative technology and exciting facility enhancements.

The Royal Alexandra Hospital Foundation strongly believes that building the best women's hospital in Canada is rooted in research and that research-integrated hospitals provide the best patient care. To that end, the foundation has supported the ongoing work of women and children's research through WCHRI with a commitment of approximately $11 million over the past 10 years (2006 to 2016).

For further information, please go to: www.royalalex.org.

By the numbers

Royal Alexandra Hospital Foundation

2006-2016

$11 MILLION — **Total funding provided to WCHRI: approximately $11 million**

175 GRANTS — **Total research grants: 175**

12 GRANTS — **Recruitment and retention grants: 12**

95 GRANTS — **Student and trainee grants: 95**

17 GRANTS — **Scientific knowledge and exchange program grants: 17**

8 GRANTS — **Hospital-based "seed" grants: 8**

90 PROJECTS — **Total number of research projects supported by WCHRI's expert services: 90**

**Please note: Some grants, programs and expert services are supported by both the Royal Alexandra Hospital Foundation (RAHF) and the Stollery Children's Hospital Foundation (SCHF). This means that RAHF and SCHF numbers may not add up to the totals provided in the WCHRI fact box on page 4.*

Where did the funding go?

- supported research into preeclampsia, preterm birth and other high-risk pregnancies, iron deficiency in pregnancy, mental health (including pre- and postnatal depression and violence against women), metabolic and cardiovascular diseases, urogynecological complications, pelvic floor disorders, menopause, post-menopause, breast cancer and ovarian cancer

- funded three endowed chairs: the Sawin-Baldwin Chair in Ovarian Cancer Research, the Cavarzan Chair in Mature Women's Health Research and the Lois Hole Hospital for Women Chair in Women's Health Research

- built areas of nationally recognized expertise in high-risk pregnancies, prenatal depression, ovarian and gynecological cancers, and urogynecologic and pelvic floor disorders

University of Alberta

UNIVERSITY OF ALBERTA

Message from the **University of Alberta**

Building our research reputation

Dr. Lorne Babiuk
Vice President, Research

Congratulations to the Women and Children's Health Research Institute (WCHRI) on a key achievement—10 years of outstanding research support. On behalf of the university, I would also like to acknowledge the strong and continued support of the Stollery Children's Hospital Foundation, the Royal Alexandra Hospital Foundation and Alberta Health Services—all of who have enabled this partnership to thrive over the past decade.

The University of Alberta is one Canada's top five research universities. WCHRI's reputation and achievements have contributed to the university's research excellence, its outcomes and its reputation. The university provides WCHRI with approximately $2.5 million worth of in-kind contributions for space and operating costs, as well as human resource systems and other support every year. The return on that investment to the university, hospitals and the community is immeasurable.

WCHRI has helped to create a supportive environment and opportunities, which have allowed university faculty, staff and students to make tremendous contributions to improving the lives of women and children through research that fuels discovery, advances knowledge and improves patient care. The institute's accomplishments over its first decade have helped the university, and our city, become a leader in women and children's health research.

We eagerly anticipate the next 10 years.

Dr. Lorne Babiuk
Vice President, Research
University of Alberta

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

Forging a high-performing alliance

UNIVERSITY OF ALBERTA
FACULTY OF MEDICINE & DENTISTRY

Dr. Richard Fedorak
Interim Dean

On behalf of the Faculty of Medicine & Dentistry at the University of Alberta, I congratulate the Women and Children's Health Research Institute (WCHRI) on the occasion of its 10th anniversary.

WCHRI embodies excellence and collaboration in health research, which aligns with the values of our faculty. The institute's focus on women's, children's and perinatal health under one research umbrella is unique in Canada and makes WCHRI a leader in our country and beyond.

As an innovative partnership between the University of Alberta, Alberta Health Services, the Stollery Children's Hospital Foundation and the Royal Alexandra Hospital Foundation, WCHRI represents the kind of alliance that can build a high-performing academic health sciences centre in the 21st century. Our faculty's own partnership with WCHRI is an example of how we believe institutes can connect their strengths and research operations, so that the sum of the whole becomes greater than the individual efforts.

WCHRI is also providing an impetus for integrating research into hospitals and expanding connections with the Strategic Clinical Networks and other funding partners; its strong support systems, service and communications along with a solid and effective governance can be held up as a model for other organizations.

WCHRI has many reasons to be proud. We deeply appreciate these 10 years of relentless work to change women's and children's lives, and we look forward to continuing our fruitful partnership to celebrate future accomplishments together over the decade to come.

Dr. Richard Fedorak
Interim Dean
Faculty of Medicine & Dentistry

Alberta Health Services

Message from **AHS: Verna Yiu**

Living up to its early promise

Dr. Verna Yiu
President and CEO

On behalf of Alberta Health Services, I wish to congratulate the Women and Children's Health Research Institute on its 10th anniversary.

I was with the University of Alberta when WCHRI was launched and, at that time, I knew that this research institute would be a game changer. I have not been disappointed as it has been just that. During its first decade, the institute has made a difference for AHS patients and families, and has become a recognized global leader in the area of women and children's health research.

WCHRI represents the power of partnerships, as the institute has worked in collaboration with AHS, the U of A, the Stollery Children's Hospital Foundation and the Royal Alexandra Hospital Foundation to improve the lives of countless women and children.

The hard part in launching a new institute like WCHRI is maintaining momentum during its early years. So I'm pleased that, by celebrating 10 years, WCHRI has proven its work is not only important—it's sustainable, too.

I look forward to seeing what we can achieve together over the next 10 years—and beyond.

Dr. Verna Yiu
President and CEO

Message from **AHS: Kathryn Todd**

Delivering better patient care, improving lives

Dr. Kathryn Todd
Vice President for Research, Innovation and Analytics

On the 10th anniversary of the Women and Children's Health Research Institute, it is important to reflect on the impressive amount of growth and success the institute has accomplished. WCHRI has successfully brought together the University of Alberta, Alberta Health Services and two foundations, the Stollery Children's Hospital Foundation and the Royal Alexandra Hospital Foundation to catalyze research and innovations that positively impact the citizens we serve. The mission of Alberta Health Services —"Healthy Albertans. Healthy Communities. Together."— is exemplified by this integrated model and it has proven successful for WCHRI.

Evidence shows that when we embed research and innovation directly into health care our patients have better outcomes. Albertans are fortunate to have Canada's only research institute dedicated to women's, children's and perinatal health. Our patients and families are living longer, healthier lives because of the advances made right here at WCHRI. I look forward to watching the institute continue to grow and deliver cutting-edge discoveries.

Dr. Kathryn Todd
Vice President for Research, Innovation and Analytics

Our Work

Growing collaboration

Overview

The Women and Children's Health Research Institute fosters collaboration in many different essential ways. At the most tangible level, collaboration involves sharing costly lab space and equipment. Collaboration is critical to much of the research supported by WCHRI, which requires a multidisciplinary approach to tackle complex health issues. Collaboration also characterizes the culture that WCHRI aims to create by bringing top-notch researchers together to share ideas, inspire each other and make new discoveries in medical knowledge and health care for women and children.

Learning by trial

Emerging team grant paved the way for national study on pediatric obesity

As a rookie scientist, Dr. Geoff Ball had some pretty big shoes to fill as the principal investigator—or PI—of an emerging team research grant for pediatric weight management.

The three-year, $300,000 grant was awarded by the Women and Children's Health Research Institute and the Faculty of Medicine & Dentistry to high-calibre, new research teams with the potential to advance important women and children's health issues and succeed in larger-scale funding competitions. His team was one of the first recipients of the award. Winning it was a big and, as Ball puts it, "lucky" catch for the young academic and researcher. He was able to eventually leverage the funding into a national study on child obesity with collaborators from six major Canadian universities.

"I had a steep learning curve," says Ball, who is the director of the Pediatric Centre for Weight and Health at the Stollery Children's Hospital and a professor in pediatrics at the University of Alberta. "The team grant was a really important stepping stone. It allowed me to gain the necessary skills and experience to succeed in building research collaborations on a national level."

The 2009-2012 WCHRI grant enabled Ball and his team of 12 researchers to evaluate weight management interventions for parents of children with obesity, which are now used at the Stollery Children's Hospital and several other centres in Canada. Parents as Agents of Change©, or PAC, was designed to help parents and families to establish healthier living habits. The program is based on cognitive behavioural therapy and up-to-date research in children's nutrition and physical activity. With additional WCHRI innovation grant funding, Ball and his team also developed Conversation Cards©, a tool that families and health care professionals can use to talk about weight management in a constructive, non-judgmental way.

"The [WCHRI] team grant was a really important stepping stone. It allowed me to gain the necessary skills and experience to succeed in building research collaborations on a national level."

Dr. Geoff Ball, director of the Pediatric Centre for Weight and Health at the Stollery Children's Hospital and a professor of pediatrics, U of A

"The stigma related to mental health has diminished in recent years, but negative attitudes regarding obesity remain pervasive," says Ball.

Dr. Geoff Ball is leading a national team of researchers who are looking to develop better interventions for pediatric obesity.

"We know a great deal about the prevalence of obesity and weight-related risk factors for chronic diseases," says Ball. "But more research is needed to develop effective interventions, especially for children and youth with severe obesity," he notes. Ball is currently leading a $1.6 million, five-year team grant in six Canadian cities on severe pediatric obesity, which has proven to be resistant to most conventional therapies. The study is funded by the Canadian Institutes for Health Research, Alberta Innovates – Health Solutions, the Canadian Obesity Network and the Ontario Ministry of Health and Long-term Care.

"Our national team grant is an incredible opportunity to advance the science in understanding and managing severe obesity in Canadian children," he says. "We'll learn a number of things over the coming years that will help us to prioritize health services for those children with obesity who are at highest health risk and in greatest need for support from their families and health-care professionals."

Ball's research has been funded by the generous support of the Stollery Children's Hospital Foundation through WCHRI.

Building credibility

Early results attract collaborators to study the risks of older age pregnancy

As a new Women and Children's Health Research Institute recruit, Dr. Christy-Lynn Cooke started out with a modest basic science study into the impact of later pregnancy on mothers and babies. Three years later, Cooke—a clinician at the Lois Hole Hospital for Women (LHHW)—is working with a number of colleagues to collaboratively explore a growing trend that has significant health-care implications.

The age at which women give birth has been steadily increasing in Canada over the past 20 years. Nearly one in five babies is born to mothers who are 35 or older, and the numbers are growing. Older age pregnancies come with risks and the increased likelihood of complications, including preeclampsia. Mothers and children are also at more risk of experiencing chronic diseases later in life. Not enough research has been done into what contributes to these increased risks, however, notes Cooke, who is a clinical assistant professor of obstetrics and gynecology at the University of Alberta.

In her own study, she found evidence that the offspring of older mothers carry an increased risk for cardiovascular disease. Cooke's initial work has allowed her to build the momentum and experience needed for larger, collaborative projects. "WCHRI's recruitment funding helps researchers like me who don't have an established track record," she observes. "Once you start getting some interesting study results, it becomes easier to forge collaborations with colleagues."

She looks forward to working more closely with other maternal-fetal clinician-researchers at the LHHW, including Drs. Sue Chandra, Venu Jain, and Radha Chari, LHHW Chair in Women's Health Research, as well as with Dr. Lisa Hornberger, a renowned pediatric cardiologist and Dr. Sandy Davidge, an international expert in preeclampsia, both at the U of A.

> "As a member of WCHRI, you end up meeting people in very diverse fields, and you realize, 'What you do would align really well with what I do.' It's very cool."
>
> *Dr. Christy-Lynn Cooke, clinician-researcher at the Lois Hole Hospital for Women*

WCHRI-supported recruit Dr. Christy-Lynn Cooke is studying the increased cardiovascular risks faced by children born to older mothers.

Cooke is particularly interested in studying the cardiovascular systems of older expectant moms, including utero-placental blood flow. “Is there something else going on in the intrauterine environment that potentially programs the children of these moms to have a higher risk of cardiovascular disease?” she wonders. “That’s what we’re seeing in our lab model right now.”

The critical early funding she received, along with the vibrant and supportive community provided by WCHRI, have laid a solid foundation for the growth of her research, says Cooke. “As a member of WCHRI, you end up meeting people in very diverse fields, and you realize, ‘What you do would align really well with what I do.’ It’s very cool.”

She anticipates making new discoveries in a vitally important area of women and children’s health research, and improving patient care at the LHHW, which already has a national reputation for treating high-risk pregnancies.

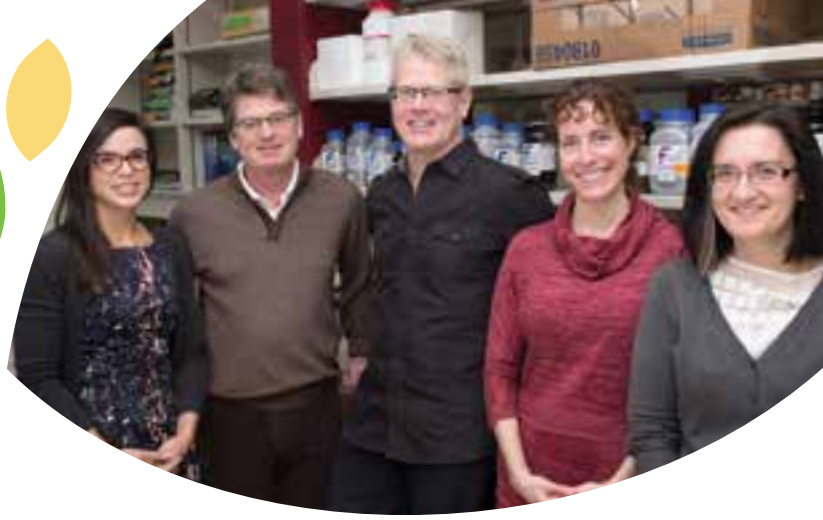
Cooke’s research has been funded by generous supporters of the Lois Hole Hospital for Women through WCHRI.

LOIS HOLE HOSPITAL FOR WOMEN

Researchers at the Lois Hole Hospital for Women take a collaborative approach to maternal-fetal health issues. Left to right: Drs. Venu Jain, Radha Chari, Christy-Lynn Cooke and Sue Chandra.

In a good space

Communal lab facility allows innovative team approach to research



Researchers sharing WCHRI lab space at the U of A pool their expertise, equipment and staff resources. Left to right: Drs. Megan O'Reilly (post-doctoral fellow of physiology), John Greer (professor of physiology), Gregory Funk (professor of physiology), Joanna MacLean (assistant professor of pediatrics) and Silvia Pagliardini (assistant professor of physiology). Missing: Simon Gosgnach (associate professor of physiology).

It was the summer of 2011. Construction workers were still putting the finishing touches on the labs, when the new occupants began moving in with their packing boxes. They were excited about the prospect of moving into the gleaming, state-of-the-art Women and Children's Health Research Institute lab facilities on the third floor of the Katz building.

Five years later, their enthusiasm is unabated.

"It is very rare for investigators like us to be able to work so closely with others who share common interests and goals," notes physiologist Dr. Gregory Funk. "I think it's fair to say that the group is so much greater than the sum of its 'individual investigator' parts. It's an incredible environment for trainees who are surrounded by people at all levels of training with a wide range of expertise and perspectives."

> "Having this kind of access to ideas, expertise, staff and equipment creates the enriched environment and capacity that granting agencies like to see."
>
> *Dr. John Greer, professor of physiology, U of A*

Funk is one of six researchers whose primary focus is neuromuscular control of perinatal and pediatric breathing. He, along with about 20 students, post-doctoral fellows, and research technicians and associates, is housed in the north side of the WCHRI lab in the Katz Group Centre for Pharmacy and Health Research. The south side is occupied by WCHRI researchers focused on pediatric cancer and perinatal research. The 22,600-square-foot lab represents a $5 million investment by the University of Alberta to WCHRI.

Senior researcher and physiologist Dr. John Greer, who is described as the driving force that brought this collaborative team together, lists the advantages of working in close proximity with his peers.

"It gives us communal access to millions of dollars' worth of equipment, which we would not have been able to acquire on our own," he says. "It's tremendously helpful in the development and critical appraisal of projects and ideas. Collectively we have a wide range of high-level expertise that we can tap and share." Having a clinician on board, such as Dr. Joanna MacLean, who treats children with sleep apnea at the Stollery Children's Hospital, provides an important reality check: "Is this research clinically relevant?" Answering that question helps to determine the applicability of research to patient care.

The collaborative atmosphere has proven to be very useful to Greer in his work, including his research into ampakine therapy in treating breathing problems in young children for which he is perhaps best known. Ampakine, a stimulant, counters the effects of opiate painkillers which can suppress breathing. Thanks to his groundbreaking studies, the U of A was able to patent the drug, which is being tested in adult clinical trials in the U.S. Greer is now studying the drug to see if it can also be safely administered to premature babies who often suffer from sleep apnea, and if it can be combined with pain killing opiates in babies after surgery to prevent breathing disruptions.

Working in a communal lab space has proved to be an advantage for Greer and his colleagues in an increasingly competitive funding environment that emphasizes collaborative research. "Having this kind of access to ideas, expertise, staff and equipment creates the enriched environment and capacity that granting agencies like to see," says Greer.

Enriching knowledge

Overview

Many scientific discoveries happen through serendipity when researchers stumble on answers to puzzling questions or accidentally find new cures. Most advances in medical science are based, however, on critical foundational knowledge acquired over years of systematic, vigorous research. Basic science–or discovery–research deepens our understanding of the mechanisms that control the human body and underlie illness and disease. The Women and Children's Health Research Institute supports basic science research as a prerequisite step to expanding medical knowledge and improving treatment. We are proud of our members' accomplishments in this fundamental area of research.

Reducing the burden of chronic disease

Davidge lab makes breakthroughs in high-risk pregnancies

On any given day, the Davidge laboratory is a beehive of activity with undergraduate and graduate students, postdoctoral fellows and lab technicians busily working on their research studies.

The second floor lab in the Heritage Medical Research Centre at the University of Alberta has been the site of cutting-edge studies on cardiovascular complications in pregnancy and the impact on the long-term health of mothers and babies. The lab is driven by the inspired, exacting leadership of Dr. Sandy Davidge, an internationally recognized expert in her field, a long-term holder (2007-2021) of a prestigious tier one Canada Research Chair in maternal and perinatal cardiovascular health and the director of the Women and Children's Health Research Institute.

"Improving treatment for cardiovascular dysfunction during pregnancy is not only important for the health outcomes of mothers and their babies," says Davidge, "but it has far-reaching implications for population health and reducing the burden of chronic diseases."

Cardiovascular disease is the number one cause of death in Canada and worldwide. Preventing and treating cardiovascular problems early on would greatly decrease the risk—and related costs—of developing the disease later in life. Prevention and treatment could begin in pregnancy, says Davidge, who notes that up to 20 per cent of pregnancies are affected by complications, such as preeclampsia or poor fetal growth. These complications often lead to lifelong cardiovascular problems for both mothers and children, and the complications are increasing as more women opt to have their babies at a later age.

The Davidge lab is known for its pioneering research on high-risk pregnancies. Left to right; front: Subhadeep Chakrabarti, research associate; middle: Jasmine Plows, visiting PhD student; Jude Morton, research associate; Floortje Spaans, post-doctoral student; Sandy Davidge; Alison Care, post-doc; Mais Aljunaidy, PhD student; Esha Ganguly, PhD student; back: Amin Shah, post-doc; Jamie Hudson, undergraduate student.

Davidge and her team have made a number of breakthrough discoveries in cardiovascular function during pregnancy. They discovered, for example, that the placenta of women who are suffering from preeclampsia sloughs off micro-particles, activating a complex chain of reactions that impair the function of cells in blood vessels. This could lead to dangerously high blood pressure in pregnant moms and decreased blood flow to their babies, impeding their cardiovascular development.

> “Improving treatment for cardiovascular dysfunction during pregnancy is not only important for the health outcomes of mothers and their babies, but it has far-reaching implications for population health and reducing the burden of chronic diseases.”
>
> *Dr. Sandy Davidge, WCHRI director*

Her pioneering work in cardiovascular disease has influenced the understanding and research of leading scientists in the field and has led to partnerships between Davidge and other renowned investigators, including at the Universities of Oxford and Bristol. “Each new discovery brings us closer to a therapeutic treatment and to better health outcomes for mothers and children, and overall population health,” says Davidge. “I can’t think of anything more exciting than being able to contribute to that.”

Davidge’s research is supported by generous supporters of the Lois Hole Hospital for Women and the Stollery Children’s Hospital Foundation through WCHRI.

STOLLERY CHILDREN’S HOSPITAL FOUNDATION

LOIS HOLE HOSPITAL FOR WOMEN

Dr. Sandy Davidge, shown here with research associate Jude Morton, holds a prestigious tier one Canada Research Chair in maternal and perinatal cardiovascular health.

Quick facts

The Davidge lab studies:

- preeclampsia, a potentially lethal condition that affects up to eight per cent of pregnancies,
- the impact of maternal aging on cardiovascular function in mothers and babies,
- the impact of pregnancy complications on long-term cardiovascular health, and
- the effect of reduced oxygen delivery to the fetus, a common pregnancy complication, on long-term health.

Understanding heart metabolism

Researcher aims to jump-start energy-starved infant hearts

Dr. Gary Lopaschuk's research may help children with heart abnormalities lead a better quality life.

At birth, the human heart—a high energy guzzler—undergoes a remarkable change. It switches from metabolizing mostly sugars, which powered it in the womb, to metabolizing mostly fatty acids.

"It's one of the most dramatic physiological changes in your entire life, and it all happens within hours of birth," marvels Dr. Gary Lopaschuk, distinguished professor and associate chair of research in the department of pediatrics at the University of Alberta.

With the help of a two-year Women and Children's Health Research Institute innovation grant, Lopaschuk and his research team hope to better understand the molecular mechanisms underlying this switch in fuel consumption. The study builds on Lopaschuk's earlier research and allows him to work with patients and families in the Stollery Children's Hospital's renowned pediatric heart surgical program.

The study may prove crucial for infants born with congenital heart defects, particularly when those defects cause the heart to become enlarged—a condition called cardiac hypertrophy. This condition also causes a delay in the metabolic shift from sugars to fats, making a bad situation worse. Not only are the hearts defective, but they can't effectively process the energy they need to keep beating. Between two and three per cent of infants born in Alberta have some form of congenital heart defect and a significant number of these must undergo surgery. Hearts that have not matured metabolically tend to be starved of energy during and after surgery, notes Lopaschuk, who has received national and international achievement awards for his research.

> "We have some of the world's best pediatric heart surgeons here. There's great work being done, and we hope to make it that much better."
>
> *Dr. Gary Lopaschuk, associate chair of research, department of pediatrics, U of A*

If his study can reveal new information about what triggers the metabolic shift, researchers may then find a way to jump-start the process. "That's our goal—not only to protect hearts during cardiac surgery, but to improve long-term heart function," says Lopaschuk. "The children can have a more normal life because their hearts aren't energetically starved."

"We have some of the world's best pediatric heart surgeons here. There's great work being done, and we hope to make it that much better."

Lopaschuk's research has been funded by the generous support of the Stollery Children's Hospital Foundation through WCHRI.

The issue

At birth, the heart switches fuel sources from mostly sugars to mostly fatty acids. In congenital heart defects, this changeover can be delayed.

The research

Researchers aim to better understand the switching process in order to develop a treatment to improve heart function.

Extending expertise

Overview

Through its funded chairs and recruitment and retention program, the Women and Children's Health Research Institute has helped to attract world-class researchers and strengthen research capacity at the University of Alberta, the Stollery Children's Hospital and the Lois Hole Hospital for Women in a number of important areas related to women and children's health. The areas of expertise range from pediatric cardiac surgery and heart transplants (the Stollery has a national reputation for both) to high risk pregnancies and deliveries (the Lois Hole Hospital is a national leader in these two areas). Other examples of expertise include pediatric respirology, neurology, cancer research and obesity.

In its first ten years, five chairs have been supported by WCHRI:

- Stollery Children's Hospital Foundation Chair in Autism Research – Dr. Lonnie Zwaigenbaum,
- WCHRI Chair in Maternal-Child Health and the Environment – Dr. Anita Kozyrskyj,
- Lois Hole Hospital for Women (LHHW) Chair in Women's Health Research – Dr. Radha Chari,
- Sawin-Baldwin Chair in Ovarian Cancer – Dr. Lynne Postovit, and
- Cavarzan Chair in Mature Women's Health Research – Dr. Sue Ross.

WCHRI chairs provide the long-term stability that is essential to building research with far-reaching impacts in women and children's health.

The chairs held by Zwaigenbaum and Kozyrskyj were funded by the generous support of the Stollery Children's Hospital Foundation through WCHRI. The chairs held by Chari, Postovit and Ross are funded by generous supporters of the Lois Hole Hospital for Women through WCHRI.

Funding world-class research

Infant gut bacteria has profound implications on long-term health

Time is essential to good research, but it can be a scarce commodity for many investigators who also have busy schedules as academics and clinicians.

"You're juggling teaching, research and administrative responsibilities, and often a clinical practice," says Dr. Anita Kozyrskyj, a renowned epidemiologist and a professor in the department of pediatrics at the University of Alberta.

A five-year (2008-2013) Women and Children's Health Research Institute chair in maternal-child health and the environment enabled Kozyrskyj to focus on her research in infant gut microbiota and become one of the world's leading experts in the field. Her studies have found that the establishment of gut bacteria during infancy and in some cases pregnancy can have profound implications on long-term health. Her latest publication, featured online in *Time* magazine, has challenged traditional thinking that a baby's first exposure to bacteria begins at birth and showed that bacterial growth begins earlier, in the womb, and is influenced by maternal health.

Gut microbiota are essential to our health and well-being, explains Kozyrskyj. Our bodies acquire a rich environment of bacteria—a microbiota—in our digestive systems early in life. These microbes help to digest our food, produce vitamins and protect against infections. They also

Dr. Anita Kozyrskyj, shown here with some of her students, is a leading world expert in infant gut bacteria.

stimulate the development of the immune system during infancy. The disruption of this normal gut bacterial colonization in infants has been linked to many health conditions from asthma and allergies to diabetes, obesity, inflammatory bowel disease and cancer.

A five-year WCHRI chair enabled epidemiologist Dr. Anita Kozyrskyj to focus on her research in infant gut microbiota and become one of the world's leading experts in the field.

Kozyrskyj became interested in studying microbiota early in her term as WCHRI chair. In August 2008, Kozyrskyj, along with key colleagues at the University of Toronto, submitted a proposal for a pilot study and then a team grant, eventually receiving $2.5 million to study the impact of antibiotic treatment on infant gut microbiota from the Canadian Institutes of Health Research (CIHR). The national funding agency was looking to fund microbiome studies in what was then an emerging new field. Kozyrskyj was keen to tackle the topic after conducting several studies on the consequences of antibiotic treatment in infants.

Kozyrskyj and her SyMBIOTA (Synergy in Microbiota) team began their study with 24 infants in the Canadian Healthy Infant Longitudinal Development (CHILD) cohort. That led to a 2013 paper, which eventually received an award as the *Canadian Medical Journal's* most relevant and impactful paper of the year. The study has steadily expanded, generating subsequent papers, and now includes 2,000 infants, whose health is monitored at regular intervals as they age.

As the sample size grows, Kozyrskyj and her colleagues are able to dig deeper and make new discoveries about how maternal health, including diet, weight and even stress, can affect gut bacterial composition and children's health and development. The rich data set may ultimately influence many health practices, from elective caesarean delivery to antibiotic use during labour and breastfeeding. "This is a very valuable Canadian resource that will make a difference to the future health of pregnant women and their newborns," Kozyrskyj says.

Kozyrskyj's research has been funded by the generous support of the Stollery Children's Hospital Foundation through WCHRI.

STOLLERY CHILDREN'S HOSPITAL FOUNDATION

Improving health, two patients at a time

Endowment expands maternal-fetal research capacity at the Lois Hole Hospital for Women

Dr. Radha Chari holds an endowed research chair at the Lois Hole Hospital for Women.

Maternal-fetal health was a relatively new specialty when it first drew the interest of Dr. Radha Chari as she was completing her residency at the University of Alberta. More than two decades later, Edmonton is becoming known as a centre for this discipline, due in no small part to the efforts of Chari herself.

Chari, who has been both a clinician and a researcher in Edmonton for more than 20 years, holds the current Lois Hole Hospital for Women (LHHW) Chair in Women's Health Research. "We're looking at the big picture," she says of her plans. "What we do in the area of maternal-fetal health impacts two patients—the mother, for the next 40 to 50 years of her life, and the newborn, for the next 80 or so years of life. That's what motivates me."

> "Endowments are critical to providing opportunities to address important research questions and give us the answers to improve health-care delivery."
>
> *Dr. Radha Chari, the Lois Hole Hospital for Women (LHHW) Chair in Women's Health Research*

Her vision is part of a relatively new and still growing concept of health as a continuum that starts before conception and continues through the newborn stage into childhood and adulthood. It's the model on which Chari bases her clinical and research work, from developing a unit serving northern and central Alberta for at-risk pregnancies to studying the effects of prenatal exercise on fetal growth and working on policy for managing preterm labour. These are just a few of her projects.

With the support of the endowment, Chari plans to continue to grow maternal and perinatal health research expertise at the LHHW by recruiting an epidemiologist and other maternal-fetal health research specialists. Chari has already helped recruit Dr. Christy-Lynn Cooke, an expert in intrauterine growth restriction, with the help of a Women and Children's Health Research Institute recruitment and retention grant.

"Endowments are critical to providing opportunities to address important research questions and give us the answers to improve health-care delivery," says Chari, who is also the chair of the U of A's department of obstetrics and gynecology.

The chair in women's health research is funded by generous supporters of the Lois Hole Hospital for Women through WCHRI.

LOIS HOLE HOSPITAL FOR WOMEN

By the numbers

- Approximately 22,000 patient encounters occur each year through the LHHW's Northern and Central Alberta Maternal-Fetal Medicine Unit, which serves high-risk pregnancies in central and northern Alberta, N.W.T., Nunavut and parts of Saskatchewan and B.C.
- 7,000 babies are delivered each year at the LHHW.
- About one in 12 babies are born preterm in Alberta—one of the highest rates in Canada.
- Caring for preterm infants costs the Alberta health system about $35 million a year.

Seeding research

Overview

Breaking new ground in medical knowledge and treatment takes fresh, bold ideas and lots of risks. Getting support for trying out untested ideas can be a challenge. The Women and Children's Health Research Institute has encouraged promising new research through various grant programs, including clinical research seed grants, innovation grants, bridge grants and the research capacity building program. This early-stage support has enabled WCHRI members to develop their research ideas and obtain preliminary results, which increases their chances of success in large-scale, external funding competitions. Seeding new research has brought a substantial return on investment in attracting subsequent major funding grants.

Baby steps

Intensive therapy gets young stroke patients back on their feet

Nine months seems a bit young to reach a turning point in one's life. But, that's when the future changed for Eloise, according to her mom Catherine Bangel. Newly diagnosed with cerebral palsy, the result of a perinatal stroke, Eloise was enrolled in a groundbreaking Women and Children's Health Research Institute study led by Dr. Jaynie Yang, a professor of physical therapy in rehabilitation medicine at the University of Alberta.

At nine months, Eloise was not able to sit up. After three months of intensive physical therapy with Yang's novel treatment four times a week, with lots of crawling and then walking, the sturdy toddler was catching up to other children her age.

Roughly one in every thousand babies suffers a stroke before or shortly after birth, says Yang, who is a world leader in the study of early walking development. Some of the children become hemiplegic—weakened on one side of the body. Normally, in Alberta, children with this condition are not treated until two years of age or older to improve their walking. They then might expect to see a therapist once or twice a month, for relatively low-intensity treatment for years. Yang and her team wanted to explore the potential of intensive physical therapy at an earlier age, which is a critical period for brain development. They wanted to see if the brain's plasticity during this period could help to dramatically improve the babies' gross motor skills, particularly their walking.

In 2012, Yang and her colleagues had narrowly failed in their bid for national-level funding for their study. A WCHRI bridge grant enabled the team to run a pilot study. Armed with preliminary results, Yang's team resubmitted the proposal—successfully this time and received funding from both the Canadian Institutes of Health Research and Alberta Innovates - Health Solutions. "The WCHRI bridge grant was critical," Yang declares.

> "The intense daily treatment that Eloise received has allowed our little girl to reach the same milestones as other children her age."
>
> *Catherine Bangel, mother of young stroke victim*

Results of the study have been strongly encouraging, with better outcomes for babies who start the therapy earlier, as young as eight months. "Young brains can adapt, sometimes hugely," Yang points out. The therapy, which costs roughly $2,400 per child, could prevent much more costly and long-term interventions later in a child's development, she says.

Young stroke patient Eloise Bangel is ready to take her first running steps after participating in Dr. Jaynie Yang's intensive physical therapy research study.

Most importantly, early treatment should help children affected by early strokes live healthier, happier lives. You'll get no argument from Bangel, who is overwhelmed by the improvement she has seen in her daughter. "When Eloise joined the study, she was unable to sit," Bangel recalls. "By the time she turned one, she was starting to take steps on her own. And now, at 14 months, she's happily on the verge of running. The intense daily treatment that she received has allowed our little girl to reach the same milestones as other children her age. We cannot thank Dr. Yang and her team enough for giving her such a tremendous head start."

Yang's research has been funded by the generous support of the Stollery Children's Hospital Foundation through WCHRI.

STOLLERY CHILDREN'S HOSPITAL FOUNDATION

The issue

Children who suffer strokes before or shortly after birth fall behind in their gross motor and other development.

The research

Intense, daily therapy offered to these children early on can help build gross motor skills, including walking.

Empowering storybooks

Storytelling developed as a user-friendly knowledge tool for anxious parents

Dr. Shannon Scott has a story to tell about how an early Women and Children's Health Research Institute grant paved the way for her nationally recognized research in knowledge translation. Call it *The Little Grant That Could*.

Scott began exploring the potential of storytelling as a tool to help families deal with childhood illness in 2008 with an innovation grant from WCHRI. She was part of a team (led by Dr. Lisa Hartling, an associate professor of pediatrics) that developed a series of storybooks about croup and conducted a randomized trial in which some families, seeking emergency care for their children, received the books, while others were given standard information sheets.

> "It [WCHRI innovation grant] has been absolutely foundational. It enabled us to move forward in our work. I can't say enough about it."
>
> *Dr. Shannon Scott, Canadian Research Chair for Knowledge Translation in Child Health*

"This was essentially armchair theorizing that we were doing right at the start," says Scott, a nursing professor at the University of Alberta and a Canadian Research Chair for Knowledge Translation in Child Health. "We just thought stories would work."

She already knew from other studies that the information sheets routinely handed out to parents in most clinics were not particularly useful and that a lack of easily digestible information contributed a great deal to the anxiety parents with sick children experienced, particularly in hospital emergency settings.

Armed with promising results from the first trial, Scott and Hartling expanded their research to explore other childhood medical conditions and other media such as interactive whiteboard videos. They have also contributed to the development of a web platform (trekk.ca) to put essential pediatric medical information into the hands of caregivers who have taken their children to hospital emergency rooms across Canada. The web platform was developed with partnership funding support from WCHRI.

"The initial 2008 grant allowed us to leverage other opportunities, funding, publications, presentations and trainees," says Scott. "It has been absolutely foundational. It enabled us to move forward in our work. I can't say enough about it."

Scott's contribution to the field of knowledge translation was recently acknowledged by her appointment to the prestigious Royal Society of Canada.

Scott's research has been funded by the generous support of the Stollery Children's Hospital Foundation through WCHRI.

STOLLERY CHILDREN'S HOSPITAL FOUNDATION

Dr. Shannon Scott has been nationally recognized for her work in knowledge translation, which has been supported by WCHRI.

Mystery protein

Identifying the signal that starts labour may be key to diagnosing preterm risk

Dr. David Olson's goal is to develop an inexpensive diagnostic kit that can identify women at risk of preterm labour through his basic science research study.

A protein secreted by the fetus weeks before birth may be critical to predicting and preventing preterm labour. Dr. David Olson and his lab team are working to identify the protein that they think—on the basis of their earlier research—signals the earliest stages of labour.

If their hypothesis is correct, this will bring researchers a big step closer to understanding the factors involved in preterm delivery and to detecting and treating women who are at risk. Preterm birth is the leading cause of death in newborns. It can also contribute to behavioural and cognitive difficulties, and lifelong health problems. In Canada, lifetime costs have been estimated at $676,800 for each preterm infant, or $20 billion annually. At 8.8 per cent, Alberta has the country's highest rate of preterm births. Despite its prevalence, doctors still don't know what causes most preterm labour, how to diagnose risk or how to prolong pregnancy to improve maternal and child outcomes.

> "Once we identify the protein, we're going to be moving ahead very quickly with this [developing a diagnostic tool for identifying risk of preterm labour]."
>
> *Dr. David Olson, professor in obstetrics and gynecology, U of A*

Olson explains the significance of the protein that may provide crucial answers to the onset of labour. The 'mystery' protein acts as a homing signal, drawing white blood cells (leukocytes) into the uterus. As labour becomes more imminent, the leukocytes become more and more active, setting into motion a chain reaction that initiates the birth process.

"The protein primes the pump," says Olson. "It gets things started."

If his team can isolate the protein, then they will be able to identify the beginning of labour four or five weeks before delivery, long before any overt symptoms appear. This would pave the way for preterm diagnosis and treatment. The project has yielded some promising early data, thanks to a 2014-2015 innovation grant from the Women and Children's Health Research Institute. Additional WCHRI funding made it possible for researcher Dr. Nanlin Yin, an MD graduate from Chongqing Medical University in China, to join the team. Yin has been instrumental in advancing the work to this point.

Finding support for new ideas can be difficult even for senior researchers such as Olson, who is a professor of obstetrics and gynecology at the University of Alberta and who has headed several research bodies. Major funders tend to invest in projects that have had considerable work already done on them and are going to be successful, says Olson. "So the problem becomes how do we obtain enough data or information about an idea to get major funding?"

Olson is now looking to leverage the seed funding he received from WCHRI into a large-scale national grant that will enable his team to continue their work.

His goal is to develop a diagnostic kit that can quickly and easily identify women at risk of preterm labour—and do it inexpensively for a few dollars. "Once we identify the protein, we're going to be moving ahead very quickly with this," he says.

Olson's research has been funded by generous supporters of the Lois Hole Hospital for Women through WCHRI.

LOIS HOLE HOSPITAL FOR WOMEN

The issue

Preterm birth is the leading cause of death and serious health problems in newborns, including in Alberta which has the highest rate in Canada.

The research

Identify the signalling mechanism that starts labour in order to develop a diagnostic tool for women who are at risk of preterm delivery.

Increasing impact

Overview

Research supported by the Women and Children's Health Research Institute has impacted women and children's health-care policies, standards and treatment at the local, provincial and national levels. WCHRI's promotion of research integration in hospitals, particularly at the Stollery Children's Hospital and the Lois Hole Hospital for Women, has helped to improve care for patients and their families. WCHRI has also encouraged—and looks forward to expanding—community-based, participatory research that reflects the values, needs and priorities of the diverse communities that we serve.

Looking beyond survival

Research team builds Stollery's enviable reputation for pediatric cardiology

The survival rate for children treated for single ventricle heart defects at the Stollery Children's Hospital is among the highest in North America.

Pediatric cardiologist Dr. Andrew Mackie is proud of his team's record and its contribution to the enviable reputation of the Stollery's pediatric cardiac program. The hospital has one of the highest survival rates for complex pediatric cardiac surgeries, and a shorter than average hospital stay compared to other North American centres. Better survival rates mean more patients who live past the teen years.

"We are seeing more children with severe forms of congenital heart disease survive to adolescence and adulthood because of improvements in care over the past 10 to 15 years," notes Mackie, an associate professor of pediatrics at the University of Alberta. "We need to look beyond survival now."

Mackie's Stollery Single Ventricle Outcomes team is one of four research teams, which have each received $200,000 in support over two years as part of the Women and Children's Health Research Institute's research

Dr. Andrew Mackie is building research capacity at the Stollery Children's Hospital with WCHRI funding support for his single ventricle outcomes team.

Mackie and research coordinator Basmina Aminzadah work with 3D imaging technology of young patients' hearts

capacity building award. The program helps to support research programs that are directly relevant to treatment and care at the Stollery and are likely to attract large-scale future funding.

> "We are seeing more children with severe forms of congenital heart disease survive to adolescence and adulthood because of improvements in care over the past 10 to 15 years. We need to look beyond survival now."
>
> *Dr. Andrew Mackie, associate professor of pediatrics, U of A*

Mackie's award brought the diverse team (of six cardiologists, two cardiac surgeons, a nursing PhD and a physiologist) together to come up with a comprehensive approach to studying single ventricle heart disease and outcomes at the Stollery. "It motivated us to sit down and brainstorm research projects that would address the most relevant challenges facing these children," says Mackie. Less than a year into the program, the team has already identified its research priorities and begun work on a number of projects with the help of a full-time research coordinator. These include a number of studies into the exercise capabilities of children with single ventricle heart disease in order to develop a physical rehabilitation program at the Stollery.

Treatment for these heart defects has advanced tremendously over the past 30 years when children had no hope of survival. The lives of the survivors are far from easy, however, as they struggle with developmental and other health difficulties, the stress of uncertain futures and the need for ongoing care. "Our ultimate goal is to move the research forward to make a real difference in the quality of life and overall functioning of the children and families in our care," explains Dr. Jennifer Conway, a member of Mackie's team and a pediatric cardiologist at the Stollery.

The research of the Stollery Single Ventricle Outcomes team has been funded by the generous support of the Stollery Children's Hospital Foundation through WCHRI.

Convincing policy-makers

Study results make a strong case for incontinence clinic

Hard data generated by research can make all the difference in persuading policy-makers to approve crucial programs and treatments.

Dr. Jane Schulz learned that from personal experience when she used her research stats to convince Alberta Health Services to fund a much-needed perineal care clinic at the Lois Hole Hospital for Women.

“We were able to go to AHS and say, ‘Look at these numbers. Twenty-seven per cent of women are suffering from significant bowel incontinence issues as a result of obstetrical injuries. There is no support for them now. We believe that an early intervention clinic would be very worthwhile,” says Schulz, who is the director of the urogynecology clinic at the LHHW.

Her team got their clinic, which is now part of the comprehensive, multi-disciplinary model of urogynecological care offered at the Lois Hole Hospital. The program—which includes urogynecologists, urologists, a colorectal surgeon, a family physician, nurse practitioners, nurse incontinence advisors, pelvic floor physiotherapists, a dietician, pharmacists and an exercise therapist—is unique in North America and the model has since been adopted elsewhere.

Research is integral to her clinical work and impacts every aspect of patient care, says Schulz. “Research drives our clinical care and improves the care that we provide our patients; research is relevant to everything we do,” she says.

Schulz joined the University of Alberta’s department of obstetrics and gynecology and the hospital in 1999. Since that time she has seen the number of patient visits to the clinic quadruple to 12,000 per year. The geographical area served by the clinic is huge, extending from Red Deer to

Dr. Jane Schulz helps patients at the urogynecology clinic at the Lois Hole Hospital return to normal activities after years of quietly suffering from incontinence issues.

the Northwest Territories and the Yukon, the northern and interior parts of B.C., and parts of Saskatchewan, as well as the Greater Edmonton Area. Schulz, who is known internationally as an urogynecologist and pelvic floor reconstructive surgeon, is determined to see advances

> “I get enormous satisfaction from seeing women return to normal lives—be able to play with their kids, exercise, go out for dinner and travel—after wearing 10 pads a day for years thinking there is nothing that can be done for them.”
>
> *Dr. Jane Schulz, director of the urogynecology clinic at the Lois Hole Hospital for Women*

continue in what has traditionally been a “neglected” field of women’s health. Urinary and bowel incontinence and pelvic floor disorders are still regarded with embarrassment. Patients to the Lois Hole clinic suffer silently with their condition for seven years on average before getting care, she notes.

Practical and plain spoken, Schulz explains what keeps her motivated during her 80+ hour weeks: “I get enormous satisfaction from seeing women return to normal lives—be able to play with their kids, exercise, go out for dinner and travel—after wearing 10 pads a day for years thinking there is nothing that can be done for them. That keeps me going.”

Schulz’s research has been funded by generous supporters of the Lois Hole Hospital for Women through WCHRI.

LOIS HOLE HOSPITAL FOR WOMEN

Quick facts

- About 10 per cent of Canadians suffer from some form of incontinence.
- The prevalence is much higher among women than men.
- Incontinence is underreported and undertreated because of continuing social stigma.
- The direct and indirect cost of urinary incontinence in Canada: $5.13 billion a year

Cultivating the next generation

Overview

Investing in the next generation of research talent ensures continued progress in medical science and treatment. Over the past ten years, the Women and Children's Health Research Institute has awarded nearly 555 grants to undergraduate and graduate students, post-doctoral fellows and residents. Many of these trainees and students have completed their training and are now pursuing careers in women and children's health care and research across Canada and around the world. WCHRI provides competitive funding opportunities for gifted students and trainees through:

- graduate and summer studentships,
- resident/clinical fellow trainee research grants, and
- travel grants to national and international conferences.

Training and networking opportunities are also offered through educational workshops scheduled throughout the year.

Best days, worst days

Neonatologist supports families through life-and-death choices

Neonatologist Dr. Michael van Manen sees families on the best and worst days of their lives.

Van Manen and his highly trained colleagues provide care for about 1,800 children and their families at the neonatal intensive care units (NICUs) of the Stollery Children's Hospital and the Royal Alexandra Hospital every year. Their stories are mostly happy ones. "We get to be with families on some of the best days of their lives as they welcome a new child into the world," says van Manen. "But we are also with families on some of the worst days of their lives when they are faced with a serious diagnosis and have to make decisions about medical treatment for a child they may not have named, or even held yet."

Van Manen is a neonatologist at the Stollery, an assistant professor at the University of Alberta's department of pediatrics and a member of the John Dossetor Health Ethics Centre.

The opportunity to work with parents and newborns at a pivotal moment in their lives and help families make the best—sometimes life-and-death—decisions about care drew van Manen to neonatology after completing his residency in general pediatrics. A 2010 resident research grant from the Women and Children's Health Research Institute gave him early support along his career path. In his residency project, he studied the development of babies with gastroschisis—a birth defect in which the baby's intestines protrude from the abdomen.

> "All of my research questions come from the central issue of what should we do for children who need medical care."
>
> *Dr. Michael van Manen, neonatologist, Stollery Children's Hospital*

After he completed his studies, a WCHRI recruitment award was instrumental to his joining the department of pediatrics in 2013. An innovation grant in 2014 funded an ongoing study to better understand the experiences of children and adolescents with ventricular assist devices (mechanical pumps that support function in weakened hearts). WCHRI support during critical moments in his career has helped him to build his body of research in pediatrics, and to specialize in ethics and medical technologies.

"All of my research questions come from the central issue of what should we do for children who need medical care," says van Manen. "These are always ethical questions because at the end of the day, making decisions for someone other than yourself is the nature of ethics."

Van Manen's research and training has been funded by the generous support of the Stollery Children's Hospital Foundation through WCHRI.

Quick facts

- The NICU at the U of A hospital sees approximately 500 admissions per year.
- The NICU at the Royal Alexandra Hospital has approximately 1,300 per year.
- Both NICUs are part of the Stollery Children's Hospital.

Neonatologist Dr. Michael van Manen checks in on a young patient at the neonatal intensive care unit at the Stollery Children's Hospital.

Exercising for two

Trainee explores benefits of physical activity during pregnancy

Rachel Skow is intrigued by the potential use of exercise to improve and maintain cardiovascular health during pregnancy.

A first-year PhD student in exercise physiology, Skow is studying the impact of physical activity, from high to low levels, on blood pressure control and overall cardiovascular health during pregnancy. Exercise has been shown to have a positive influence on adult cardiovascular health, but not enough is known about its impact on pregnant women. Maintaining good cardiovascular health is enormously important during pregnancy when the body pumps up to 50 per cent more blood by 20 to 28 weeks to provide essential nutrients and oxygen for the rapidly developing fetus.

Skow's two-year study is supported by a graduate studentship from the Women and Children's Health Research Institute and is overseen by her PhD supervisors, physiologists Drs. Craig Steinback and Margie Davenport. Skow is happy to be working back in the lab—the Program for Pregnancy and Postpartum Health at the University of Alberta—where she completed her first graduate degree as Steinback's first master's student. The lab offers a unique, multidisciplinary research environment that brings together experts in cardiovascular and neurovascular function, maternal/fetal physiology, obstetrics, gynecology and kinesiology, including from other universities in the U.S. and Canada.

Skow is excited about the prospect of a research and academic career in a rapidly growing field.

"Physical activity and pregnancy have become a hot topic," she notes. "A lot of research has been emerging in this area in the past 10 to 15 years, but most of it has focused on gestational weight gain. Researchers are now beginning to look at how exercise during pregnancy affects other aspects of women and children's health, including their long-term cardiovascular health."

> **"Researchers are now beginning to look at how exercise during pregnancy affects other aspects [besides weight gain] of women and children's health, including their long-term cardiovascular health."**
>
> *Rachel Skow, PhD student in exercise physiology, U of A*

Skow's research is funded by generous supporters of the Lois Hole Hospital for Women through WCHRI.

LOIS HOLE HOSPITAL FOR WOMEN

PhD student Rachel Skow hopes to make her mark in the rapidly developing field of pregnancy and exercise physiology.

Propagating partnerships

Overview

The Women and Children's Health Research Institute is engaged in a rich network of partnerships, which support other important research initiatives; share knowledge, resources and the benefits of our infrastructure; and together impact policy, treatment and care in women and children's health. Our partnerships include University of Alberta programs and services, national research networks, health and research institutions and government programs. Our partnering ranges from providing matching grants and other funding to advisory input and strategic direction.

WCHRI partners

- **Alberta Children's Hospital Research Institute (ACHRI):** a partnership between Alberta Health Services, the University of Calgary and the Alberta Children's Hospital Foundation that supports children's health research
- **Alberta Centre for Child, Family and Community Research (ACCFCR):** a partnership between Alberta universities, the community and the Alberta government that aims to improve child well-being through research that informs social policy and practice
- **Bridge Funding: The University of Alberta's Grant Assist Program:** offers bridge funding for the Canadian Institutes of Health Research (CIHR) grants
- **Canadian Child Health Clinician Scientist Program (CCHCSP):** a national network of Canadian child and youth health research centres that provides a transdisciplinary training program for aspiring clinician-scientists in child and youth health
- **Community-University Partnership for the Study of Children, Youth and Families (CUP):** a collaboration between the Faculty of Extension at the University of Alberta, and community agencies and organizations to collaborate on research projects that advance knowledge and improve policies and practices relating to child and family development
- **Council of Canadian Child Health Research (CCCHR):** represents academic health science centres across Canada in advocating for child health research
- **Graduate Program in Maternal and Child Health (MatCH), University of Alberta:** a multidisciplinary program that involves the departments of medical genetics, pediatrics and obstetrics and gynecology and offers graduate students research training
- **Lipid Analysis:** a pay-per-use facility that provides assistance to basic science and clinical researchers at the U of A and affiliated institutions in measuring lipid-related compounds
- **Maternal, Infant Child Youth Research Network (MICYRN):** a national network of maternal and child health research organizations that promotes high-quality, applied health research and partnerships
- **Maternal, Newborn, Child and Youth Strategic Clinical Network (MNCY SCN):** created by Alberta Health Services to bring together health-care professionals, patients, researchers, educators and policy-makers to improve health outcomes for expectant mothers and children
- **Networks of Centres of Excellence: NeuroDevNet:** supports research in autism spectrum disorders, cerebral palsy and fetal alcohol spectrum disorder to help children and their families overcome the challenges of neurodevelopmental problems
- **Networks of Centres of Excellence: Translating Emergency Knowledge for Kids (TREKK):** a network of researchers, clinicians, national organizations and health consumers that aim to improve emergency care for children across Canada

Expanding the culture of research

Partnership bridges the worlds of statistics and human experience

As her patient load tripled over three years, Dr. Aisha Bruce decided that she needed to find out if the care provided at the pediatric sickle cell clinic at the Stollery Children's Hospital was meeting patient needs.

Most of the new families coming to the clinic were immigrants from continental Africa, where sickle cell is most prevalent. They were not only dealing with an unfamiliar health care system, but many felt stigmatized for carrying the inherited disease that is lethal back home.

"I wanted to find out if we were delivering care in a culturally appropriate and sensitive manner," says Bruce, a pediatric hematologist and an assistant professor at the University of Alberta. "But I knew that the quantitative research training I had received in medical school would not answer my questions."

She got the support that she needed from research coordinator Tatjana Alvadj, who has expertise in qualitative research. Alvadj is funded by the Women and Children's Health Research Institute through its partnership with CUP (the Community-University Partnership for the Study of Children, Youth and Families). Alvadj guided Bruce through the process of designing and carrying out a qualitative research study. The study found that the clinic was providing good patient care, but that some improvements could be made.

The research support provided to Bruce and her sickle cell study (also funded by WCHRI) is just one example of the research expertise that WCHRI has been able to add to its complement of services through its partnership with CUP. CUP's expertise in qualitative research, knowledge translation and community and patient engagement has greatly expanded the research supports that WCHRI is able to offer through its programs and member services.

> "Today, we expect health research evidence to have an impact sooner on our lives and what better way to achieve that than by involving the people who will be affected most by the research, and the health-care practices and policies that emerge."
>
> *Tatjana Alvadj, research coordinator, CUP*

Perhaps even more importantly, the WCHRI-CUP partnership has expanded the perspectives of both partners. It has brought together the traditional statistical methodology of medical research with the complex exploration of human experience and culture used by the social sciences. WCHRI was ahead of its time when, in 2008, it bridged the two worlds through its partnership with CUP, says Dr. Maria Mayan, an assistant director of CUP, a WCHRI academic lead and a member of WCHRI's scientific advisory committee.

"It was really innovative thinking because there was a different medical research culture at the time," adds Alvadj. "Today, we expect health research evidence to have an impact sooner on our lives and what better way to achieve that than by involving the people who will be affected most by the research, and the health-care practices and policies that emerge."

The WCHRI-CUP partnership and expert research services offered through CUP are funded by the generosity of the Stollery Children's Hospital Foundation and supporters of the Lois Hole Hospital for Women through WCHRI.

CUP: Quick facts

- based in the Faculty of Extension at the U of A
- initiated WCHRI's Patient and Community Engagement Training (PaCET) Program (formerly Science Shop Program)
- integrated into WCHRI's Support Platform for Integrated Research
- has supported 34 studies, including developing a neonatal palliative care protocol (the Royal Alexandra Hospital), promoting healthy weight among pregnant women and using complementary medicine to help children cope with pain, anxiety and nausea (Stollery Children's Hospital)

CUP assistant director Dr. Maria Mayan (right) and research coordinator Tatjana Alvadj have enriched WCHRI's research approach, programs and services.

CCHCSP spells success

Trainees get a head start on their research careers

As a post-doctoral fellow, Dr. Sandra Hodgetts was keen to get the best possible training and credentials to kick-start her research career.

She was able to achieve this goal after applying for and winning a coveted Canadian Child Health Clinician Scientist Program (CCHCSP) post-doctoral award. The CCHCSP provides research training, career development and financial support for promising, aspiring child health clinician scientists across Canada. The Women and Children's Health Research Institute has been a CCHCSP funding partner since its inception in 2006.

Hodgetts has nothing but praise for the rigorous, demanding program that has launched the careers of a number of leading Alberta researchers. "The program catapulted me into a successful career," she says. "It taught me the nuts and bolts of being a clinician scientist. It enabled me to network and establish mentorships and transdisciplinary collaborations, which can be hard to come by as a trainee."

As a CCHCSP trainee, Hodgetts was able to expand her post-doctoral research from the small study she had initially planned into a province-wide look at how families of children with autism navigate supports and services that are available to them. The result was a much more in-depth study with clinical and policy implications that was widely circulated, published and presented to government. The study laid the foundation for Hodgetts' current research interests, which focus on supports and services that can improve the lives of children with autism and for their families and better integrate them into the community.

> "The program catapulted me into a successful career. It taught me the nuts and bolts of being a clinician scientist."
>
> *Dr. Sandra Hodgetts, U of A co-lead, Canadian Child Health Clinician Scientist Program*

Hodgetts, who is an assistant professor of occupational therapy in the University of Alberta's Faculty of Rehabilitation Medicine and a co-director of the Support Kids Inclusion and Participation Lab (SKIP), has continued her involvement with CCHCSP as a program co-lead at the U of A. "I am a big champion of the program. It made me a stronger investigator and a bigger picture thinker. I would like to see other young trainees have the opportunity to receive these benefits."

The CCHCSP program and awards are funded by the generous support of the Stollery Children's Hospital Foundation through WCHRI.

STOLLERY CHILDREN'S HOSPITAL FOUNDATION

Dr. Sandra Hodgetts co-leads the Canadian Child Health Clinical Scientist Program at the U of A, which got her started on her research career.

Developing expert research support

Overview

The Women and Children's Health Research Institute offers researchers a broad complement of expert research support services that helps them to succeed in their studies and that they otherwise might not be able to access or afford. Over the past ten years, WCHRI services have supported 554 research projects. The services—provided through the Support Platforms for Integrated Research (SPIR)—guide researchers through the increasingly complex and rigorous process of submitting grant applications, setting up clinical trials, meeting ethical and other regulatory approvals, using advanced technology and multiple datasets, incorporating various research methodologies and recruiting study participants. Services are tailored to meet specific needs and offered at subsidized rates. Well-designed and executed studies produce meaningful results that drive medical knowledge, policy and treatment forward.

Record recruitment

Healthy family members shed light into Crohn's disease

Recruiting participants—especially healthy ones—for a large-scale, long-term medical research study can be a big challenge.

Dr. Hien Huynh, who is co-leading a multi-site research project on Crohn's disease, has been able to tackle that challenge with the help of the expert assistance provided by the Women and Children's Health Research Institute's research coordinators.

Huynh, who is the director of the pediatric gastroenterology and nutrition division at the Stollery Children's Hospital, is working on an international study into the environmental factors that trigger the development of Crohn's disease, a serious, chronic inflammation of the digestive tract.

Close relatives of people with Crohn's have a genetically higher risk of developing the disease. About 30 per cent of children with Crohn's have a close family member with the disease. Huynh's study—the Genetics, Environmental and Microbial (GEM) Project—monitors parents, children and siblings of Crohn's patients, in order to find out what causes some family members to get the disease but not others.

> "Without WCHRI, this study would not have taken off in Edmonton."
>
> *Dr. Hien Huynh, co-lead of an international research study into Crohn's disease*

To find answers, Huynh and his team need a lot of recruits. Much of the legwork at the Stollery study site has been done by WCHRI research coordinators, such as Ronda Danchak, who has worked with the GEM Project since its outset in 2008. It takes creativity and flexibility to recruit and retain volunteer subjects, who are followed over a number of years, says Danchak. She conducts

Gastroenterologist Dr. Hien Huynh's research into Crohn's disease will involve 5,000 study recruits in 25 sites, including the Stollery Children's Hospital.

many of her follow-up visits in outside clinics and even subjects' homes. "My feeling is, these families already spend enough time at the hospital," she explains.

The extra effort has paid off. To date, the recruitment numbers at the Stollery GEM Project site are second only to Toronto's Hospital for Sick Children, which draws from a much larger population base. "Without WCHRI, this study would not have taken off in Edmonton," says Huynh.

The GEM Project began as a national initiative, but has expanded to include more than 25 sites in North America, Europe and Israel, providing the kind of large-scale population sample that is necessary to produce meaningful data and findings. Huynh confidently anticipates meeting his goal of 5,000 study recruits by next year.

Huynh's research has been facilitated by WCHRI through the generous support of the Stollery Children's Hospital Foundation.

Data that counts

WCHRI's data team ensures breast cancer trial meets stringent standards

A study is only as good as its data. Clinical trials in particular must meet stringent requirements for data collection and management.

Breast cancer researcher Dr. Judith Hugh wanted to make sure that her clinical trial would yield reliable, high-quality results and comply with regulatory requirements. She got off to the right start by enlisting the data management team at the Women and Children's Health Research Institute to set up a sound database system for her study.

"The team came up with a secure, easy-to-use system that is tailored to our needs and will provide us with meaningful data while meeting all of Health Canada's compliance regulations," says Hugh, who is a professor in the department of laboratory medicine and pathology at the University of Alberta and the first recipient of the Lilian McCullough Research Chair. Her study is among the nearly 550 research projects that have used WCHRI's data management services over the past 10 years.

> **"[WCHRI's data management] team came up with a secure, easy-to-use system that is tailored to our needs and will provide us with meaningful data while meeting all of Health Canada's compliance regulations."**
>
> *Dr. Judith Hugh, professor and director, division of anatomical pathology, U of A*

In her study, Hugh is challenging the standard treatment that is used for the most common form of breast cancer—estrogen receptor positive, or ER+, cancer. Estrogen has been blamed as the culprit in ER+ cancer. Hugh thinks that the opposite may be true and if she's right, then the treatment received by about half of all breast cancer patients will change dramatically.

"The standard practice is to treat all women with ER+ breast cancer with anti-estrogenic drugs," says Hugh. "There are two types of ER+ breast cancers, and it is commonly thought that estrogen feeds both ER+ cancers. That's why women are told not to take hormones after menopause. But we think that estrogen actually kills one type of ER+ cancer, the most common type. If this is case, then about half of all breast cancers can be treated with estrogen."

Hugh is testing her hypothesis in the first clinical pilot study in Canada of post-menopausal women who have the type of ER+ cancer that she thinks can be controlled by estrogen therapy. Her goal is to improve current treatment and care for thousands of Alberta women. About 2,500 new cases of breast cancer are diagnosed every year in the province, she notes. Her research may also result in better preventative care for post-menopausal women, who face an eight-fold increased risk of getting breast cancer.

Having a reliable, rigorous system to collect and analyze her clinical trial data will produce the hard evidence that Hugh needs to test her hypothesis.

Hugh's research has been facilitated by WCHRI through generous supporters of the Lois Hole Hospital for Women.

LOIS HOLE HOSPITAL FOR WOMEN

Dr. Judith Hugh is testing estrogen therapy in a clinical trial of post-menopausal women who suffer from the most common breast cancer.

Nurturing our members

Overview

The growth in our membership reflects the contribution made by the Women and Children's Health Research Institute in fostering research related to women and children's health. It also reflects the rapid growth in this field of research over the past decade. WCHRI supports its 450 members with research grants, which include early-stage funding for promising, new ideas; recruitment and retention support; partnerships and matching fund programs. Subsidized, expert services are available to our members to assist them at every step of their research projects. Professional development training is offered through regular workshops, lunch and learn seminars and an annual research day. Above all, WCHRI promotes a sense of community among like-minded researchers by bringing them together to share expertise and ideas, and explore the possibilities for cross-disciplinary studies that will have a far-reaching impact on women and children's—and overall population—health.

Research Day

Annual event gets rave reviews from researchers, trainees and funders

Research Day is the highlight of the year for the Women and Children's Health Research Institute. Attendance figures, evaluations and feedback certainly make this clear.

WCHRI's eighth annual Research Day, which was held on October 28, 2015 at Edmonton's Westin Hotel, attracted 432 participants. Ninety per cent of the participants who filled out evaluation surveys gave the event top marks, rating the overall day as excellent or very good.

Research Day has been a highly popular event since its beginnings in 2008, when 280 people attended. After its first year, the event had already outgrown the University of Alberta's conference facilities at Lister Centre and had to be moved to a bigger venue.

The day provides trainees and students with a wonderful opportunity to demonstrate their research projects to top researchers, their own peers and WCHRI's funders and partners—the Stollery Children's Hospital Foundation, the Royal Alexandra Hospital Foundation, Alberta Health Services and the University of Alberta. WCHRI senior researchers are also able to present their work. For their part, funders and partners get to see first-hand the innovative work being done by members and the next generation of researchers, especially during poster competitions when they are invited to "shadow" the judges.

During Research Day 2015, 124 poster presentations were exhibited and 47 oral presentations were made. Eighteen awards in eight oral and poster judging categories were presented to students and trainees during the closing reception.

Research Day also features well-attended workshops on research and professional development topics that are of interest to our researchers, students and trainees. The biggest crowd draw is the lunch keynote address, which is delivered by an internationally known researcher in women's and/or children's health. Throughout the day,

A student gets ready to present her work through her research poster submission during Research Day 2015.

participants have ample opportunities to network, share research ideas, learn more about training and career options and forge new research partnerships.

We thank our members, including those who have so generously volunteered their time as judges, moderators and workshop panelists, as well as our engaged, enthusiastic students and trainees for making this such a wildly successful event every year. And we thank our funders and partners for their interest, attendance and continuing support. We anticipate our best ever Research Day on November 16, 2016!

Mike House, president and CEO and Anita Klassen, vice president, finance, the Stollery Children's Hospital Foundation, were among the special guests who attended the eighth annual event.

Director Dr. Sandy Davidge presents Matthew Benesch with an award for his oral presentation in the graduate student category.

Morning and afternoon research poster presentations sparked lively exchanges in the ballroom at the Westin Hotel.

Lindsay Peddle, director of communications at the Royal Alexandra Hospital Foundation (centre) shadows researcher/judge Dr. Christy-Lynn Cooke (right) as she evaluates student Sydney Schmidt's work during the research poster competition.

"It's critical for trainees to get a feel for how research questions are put forward and explored, and to gain first-hand experience in this kind of supportive environment."

senior children's health researcher

"I really enjoyed the great conversations that I had when people stopped by and asked about my poster. Their questions and feedback got me thinking more deeply about my research. I learned a lot."

undergraduate science student

"As a non-researcher, the insight that I was able to gain by shadowing a prestigious researcher was incredibly eye-opening."

foundation member

"Research Day provides an incredible opportunity for researchers from a wide spectrum of disciplines from molecular science to population health to speak to each other. It opens possibilities for future multi-disciplinary partnerships."

senior women's health researcher

‘Why am I a WCHRI member?’

Scientific Advisory Committee (SAC) members share their insights

Dr. Lisa Hornberger

Lisa Hornberger: “The Women and Children’s Health Research Institute has been an excellent resource and support for my research since I joined the Faculty of Medicine & Dentistry at the University of Alberta in 2008. Prior to joining the U of A, I had worked in three large academic centers: the Boston Children’s Hospital, the Hospital for Sick Children in Toronto and the University of California, San Francisco. To my knowledge, the access to resources that is provided through WCHRI, particularly with its focus on women, fetal and children’s health, is unmatched in North America.

It has enabled me as a very busy clinician in an understaffed clinical division to accomplish my research and to network and collaborate with others within the fields of fetal/perinatal, neonatal and pediatric research at the U of A. Given my unique area that is integrated within both maternal-fetal and pediatric medicine, having a research institute dedicated to clinical, basic, population health and health-care studies in women and children’s health is invaluable.

Becoming a scientific advisory committee member was an easy decision for me to make. It has been an opportunity for me to give back to WCHRI and to ensure WCHRI continues to be strong and maintains strategic directions that provide ongoing research support for junior and senior faculty, trainees and students long into the future.”

Dr. Lisa Hornberger, director of the fetal and neonatal cardiology program and professor of pediatrics (division of cardiology) and obstetrics and gynecology, U of A

Dr. David Eisenstat

David Eisenstat: “I am indebted to WCHRI for start-up funds so that I could relocate my research laboratory to the U of A. Through its annual research day, WCHRI provides an outstanding forum for trainees and faculty to network with their peers and showcase research relevant to children and/or women’s health to the Faculty of Medicine & Dentistry, as well as other faculties, the university, the supporting foundations and the community. Congratulations on your first 10 years and much success in the future!”

Dr. David Eisenstat, professor of pediatrics, medical genetics and oncology, U of A; division director of pediatric immunology, hemotology/oncology, palliative and environmental health (iHOPE); the Muriel and Ada Hole Kids with Cancer Society Chair in Pediatric Oncology; and co-director of the Cancer Research Institute of Northern Alberta (CRINA)

Dr. Lonnie Zwaigenbaum

Lonnie Zwaigenbaum: “It is wonderful working with WCHRI. The institute has fostered a great sense of community among a diverse group of researchers working in women and children’s health. WCHRI invests in the future, helping to build research capacity, through its support of trainees, new faculty and even established faculty by providing access to broad areas of methodological expertise to support the development of new research, such as the qualitative research and statistical expert research services. WCHRI has strongly supported my research program through scholarships to my graduate students and in the provision of partner funding for me and my team to take on leadership roles in major national initiatives, including NeuroDevNet.”

Dr. Lonnie Zwaigenbaum, Stollery Children’s Hospital Foundation Chair in Autism Research; associate professor, department of pediatrics, U of A

Dr. Sue Ross

Sue Ross: "WCHRI is a wonderful organization! It provides a research 'home' for so many research and clinical disciplines—facilitating and promoting collaboration and understanding, and increasing inter-disciplinary appreciation. WCHRI's research day, a lively and interactive event, provides the best illustration of the values of the institute."

Dr. Sue Ross, professor in the department of obstetrics and gynecology, U of A and Cavarzan Chair in Mature Women's Health Research

Dr. Maria Mayan

Maria Mayan: "As academics, we are afforded the privilege of creating knowledge or 'truth' about the human condition. Yet the only way to respect the complexity of the human condition is to invite numerous ways of knowing, methodologies and interpretations. To do this, we need to commit to working with others, beyond the academy, to influence systems that impede our ability to be healthy. WCHRI, over the past 10 years, has started to invite this kind of academic work into the institute for the benefit of women and children's health."

Dr. Maria Mayan, assistant director of the Community-University Partnership for the Study of Children, Youth and Families, U of A

Dr. Gary Lopaschuk

Gary Lopaschuk: "As a researcher in children's health, I believe it is very important to be associated with WCHRI. The institute represents women and children's health research interests at the University of Alberta. It does a first-rate job at enabling research and providing programs that help support that research."

Dr. Gary Lopaschuk, distinguished professor and associate chair of research, department of pediatrics, U of A

Financial Information

Income statement for the 2015-2016 fiscal year

April 1, 2015 to March 31, 2016

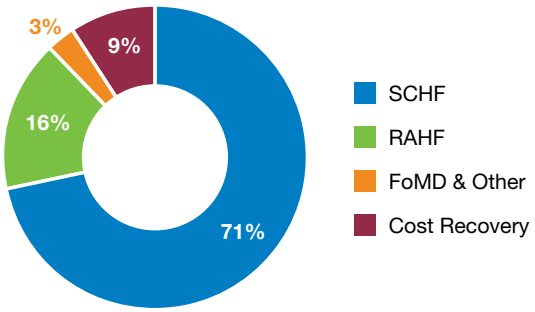
Revenue		
Stollery Children's Hospital Foundation*		5,446,909
Royal Alexandra Hospital Foundation*		1,262,853
Faculty of Medicine & Dentistry, U of A and Other		262,282
Cost Recovery		698,510
Total Revenue	**$**	**7,670,554**

Expenditures		
Research Grants		2,286,247
Research Catalysts		1,746,585
Research Support		1,966,609
Donor Designated Initiatives		331,450
Administrative Support		618,307
Total Expenditures	**$**	**6,949,198**

Surplus (carry-forward to next fiscal year)	**$**	**721,356**

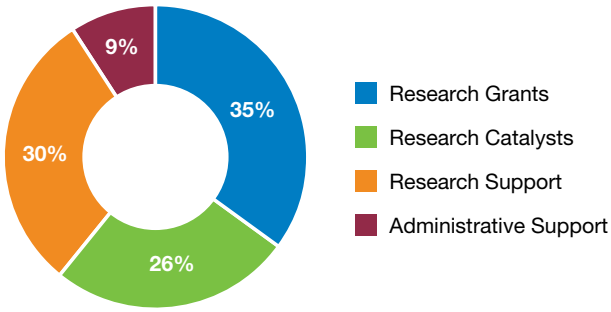
*Includes surplus carry-forward from prior year, transfers from closed projects & other donations

Revenue percentage



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

Expenditure percentage



Expenditure percentages do not include donor designated initiatives.

Our Staff

Staff members have contributed an enormous amount of hard work, knowledge, dedication and expertise to the Women and Children's Health Research Institute over the past 10 years. Their contributions have enabled WCHRI to maintain high standards of accountability with funders, create a supportive research community for members and promote the kind of innovative and relevant research that will make a lasting difference to the health and lives of women and children. **A big thank you to all our staff!**

Our Governing Bodies

(as of May 2016)

Oversight Board Members

Lorne Babiuk	Vice-President (Research), University of Alberta
(Glen Baker, Delegate)	
Sandra Davidge	Director, WCHRI
Steve Dew	Provost and Vice-President Academic, University of Alberta
(Randy Goebel, Designate)	
David Evans	Vice-Dean, Research, Faculty of Medicine & Dentistry (FoMD), U of A
Richard Fedorak	(Interim) Dean, FoMD, U of A
Bob Haennel	Health Sciences Council Representative
Judith Hockney	Senior Operating Officer, Royal Alexandra Hospital and Sturgeon Community Hospital, Alberta Health Services AHS
Mike House	President/CEO, Stollery Children's Hospital Foundation (SCHF)
Andrew Otway	President/CEO, Royal Alexandra Hospital Foundation (RAHF)
Kathryn Todd	Vice-President Research, Innovation and Analytics, AHS
Michael Walter	Department Chair, Medical Genetics, FoMD, U of A
Christine Westerlund	(Interim) Senior Operating Officer, Stollery Children's Hospital, AHS

Ex Officio Members

Richard Balan	Board Representative, SCHF
Dale Sheard	Board Representative, RAHF

Steering Committee Members

Glen Baker	Associate Vice-President (Research), U of A
Radha Chari	Department Chair, Obstetrics and Gynecology, FoMD, U of A
Sandra Davidge	Director, WCHRI
David Evans	Vice-Dean Research, FoMD, U of A
(Tom Hobman, Designate)	
Karen Faulkner	Vice-President, SCHF
Susan Gilmour	Department Chair, Pediatrics, FoMD, U of A
Lawrence Richer	Associate Director, WCHRI
Sharlene Rutherford	Vice-President, RAHF
Janie Tyrrell	Executive Director, Women's Health, Royal Alexandra Hospital, AHS
Christine Westerlund	Director Operative/Surgical Program and Site Lead, Stollery Children's Hospital, AHS

Scientific Advisory Committee Members
(all U of A faculty)

Sandra Davidge	Director, WCHRI
David Eisenstat	Division Director, Pediatric Hematology/Oncology/Palliative Care
Lisa Hornberger	Professor, Pediatrics
Gary Lopaschuk	Professor, Pediatrics and Pharmacology
Maria Mayan	Assistant Director, Community-University Partnership
Lawrence Richer	Associate Director, WCHRI; Associate Professor, Pediatric Neurology
Sue Ross	Cavarzan Chair; Professor, Obstetrics and Gynecology
Shannon Scott	Professor, Nursing
Lonnie Zwaigenbaum	Director Autism Research, Professor, Pediatrics

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women & children's health research institute 10 years

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