women & children's
health research institute

2016 SUMMER STUDENTSHIP PROGRAM BOOKLET

WE THANK...

The Women and Children's Health Research Institute (WCHRI) is a partnership between the University of Alberta and Alberta Health Services and is generously supported by the Stollery Children's Hospital Foundation and supporters of the Lois Hole Hospital for Women. In addition to this, the Faculty of Medicine & Dentistry provides operating and in-kind support.

THE UNIVERSITY OF ALBERTA AND THE FACULTY OF MEDICINE & DENTISTRY

The University of Alberta strives to create and support an environment of research excellence across the university to fuel knowledge advancement, discovery and innovation; all of which provide significant contributions to society provincially, nationally and globally. It is through the continued support of the University of Alberta's Faculty of Medicine & Dentistry (FoMD), that the training of our future scientists and physicians is made possible. FoMD support includes office and lab space for many of WCHRI's core groups and its administrative staff. FoMD also provides partial funding for WCHRI's operating expenses, without which WCHRI would not be able to manage its many grants programs and research support initiatives.

UNIVERSITY OF ALBERTA

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FACULTY OF MEDICINE & DENTISTRY

ALBERTA HEALTH SERVICES

Alberta Health Services (AHS) is a strong and active supporter of WCHRI. Their guidance has been invaluable in ensuring that women and children's health and AHS standards in the delivery of clinical care, wellness and prevention remain a focus of WCHRI's mandate.

Alberta Health Services

THE STOLLERY CHILDREN'S HOSPITAL FOUNDATION

The Stollery Children's Hospital Foundation (SCHF) raises funds in support of advancing excellence and transforming children's health at the Stollery Children's Hospital. As part of this goal, the Foundation supports evidence-based pediatric research by funding research programs and initiatives through WCHRI. In 2016, the Foundation committed to the largest gift in the University of Alberta's history – $40 million to WCHRI over ten years to continue furthering discoveries and innovations in children's health. The Foundation congratulates the students who have participated in the summer studentship program, and is grateful to its generous donors who contribute to growing a new generation of researchers.

STOLLERY CHILDREN'S HOSPITAL FOUNDATION

STOLLERY CHILDREN'S HOSPITAL

THE ROYAL ALEXANDRA HOSPITAL FOUNDATION

The Royal Alexandra Hospital Foundation (RAHF) inspires community support in its aim to make the Lois Hole Hospital for Women (LHHW) into the best women's hospital in Canada. The research funded by supporters of the LHHW through WCHRI ensures patients and their families receive the best, most up-to-date care that is available and maintains research excellence in women's health. On June 22, the RAHF committed $14.5 million to WCHRI over the next ten years, ensuring that research advances in women's health will continue.

Royal Alexandra HOSPITAL FOUNDATION

LOIS HOLE HOSPITAL FOR WOMEN

MESSAGE FROM THE DIRECTOR

WCHRI is proud to introduce the following students who have completed the 2016 WCHRI Summer Studentship Program. This program provides academically gifted students with a competitive opportunity to participate in women and/or children's health research during the summer months.

In the following pages, you will see the work of these remarkable students, who are already making strides in women and children's health research. I'm pleased to announce that many of these students also received external awards, allowing them to leverage their summer studentship grant even further. At WCHRI, we are very proud of these students' achievements and look forward to seeing the ongoing results of their work.

We would like to thank the Stollery Children's Hospital Foundation and supporters of the Lois Hole Hospital for Women for their financial commitment to this program. Their funding helps us to ensure that this invaluable research opportunity continues to be available to the next generation of researchers at the University of Alberta.

I have no doubt that we will continue to see great things from these scholars.

To the students featured in the following pages: congratulations on your incredible achievements and thank you for your commitment to women and children's health research!

Sincerely,

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

women & children's health research institute

THE SUMMER STUDENTSHIP PROGRAM

The WCHRI Summer Studentship Program provides students with an incredible opportunity to work on specific projects, under the supervision of an experienced WCHRI researcher.

These projects span disciplines, research pillars and methodologies, but all contribute toward the advancement of research excellence in women and children's health.

SUMMER STUDENTSHIP ADVISORY COMMITTEE

WCHRI would like to acknowledge the outstanding contributions made by the Summer Studentship Advisory Committee and commend their dedication to the development of the trainee and research environment as evidenced in their service to this panel.

MEMBERS OF THE 2016 SUMMER STUDENTSHIP ADVISORY COMMITTEE

Dr. Ing Swie Goping (Chair)
Medicine & Dentistry — Biochemistry

Dr. Carmen Rasmussen
Medicine & Dentistry — Pediatrics

Dr. Christina Rinaldi
Education — Education Psychology

Dr. Emmanuelle Cordat
Medicine & Dentistry — Physiology

Dr. Craig Steinback
Physical Education and Recreation

Dr. Elaine Leslie
Medicine & Dentistry — Physiology

Dr. Gina Higginbottom
Nursing

Dr. Katerina Maximova
School of Public Health

Dr. Lesley Mitchell
Medicine & Dentistry — Pediatrics

Dr. Lesley Wiart
Rehabilitation Medicine — Physical Therapy

Dr. Shairaz Baksh
Medicine & Dentistry — Pediatrics

Dr. Stephane Bourque
Medicine & Dentistry — Anesthesiology & Pain Medicine

Dr. Sarah Hughes
Medicine & Dentistry — Medical Genetics

Dr. Silvia Pagliardini
Medicine & Dentistry — Physiology

Dr. Sujata Persad
Medicine & Dentistry — Pediatrics

Dr. Yangxin Fu
Medicine & Dentistry — Obstetrics & Gynecology

2016 SUCCESSFUL AWARDEES
SUMMER STUDENTSHIP PROGRAM

STUDENT	SUPERVISOR	PROJECT TITLE	FACULTY DEPARTMENT
Agrawal, Ambika	Madsen, Karen	Effects of breast milk from mothers with Inflammatory Bowel Disease (IBD) on epithelial and microbial interactions	Medicine & Dentistry Medicine
Bain, Alexandra	Schulz, Jane A.	A survey of patient comfort and familiarity with health information provided through different sources in a urogynecology clinic population	Medicine & Dentistry Obstetrics & Gynecology
Cao, Amanda T.	Kozyrskyj, Anita	Infant gut short-chain fatty acid biomarkers of preschool asthma	Medicine & Dentistry Pediatrics
Choi, Maria	Waskiewicz, Andrew J.	Investigating the genetic and cellular factors underlying superior coloboma	Science Biological Sciences
Danesh, Ghazal	Wine, Eytan	Inflammasome activation by bacteria isolated from pediatric Inflammatory Bowel Disease (IBD) patients	Medicine & Dentistry Pediatrics
Do, Victor	Hornberger, Lisa K.	Fetal cardiovascular programming in maternal diabetes: cardiovascular structure and function in infancy and early childhood and its relationship to maternal glycemic control during pregnancy	Medicine & Dentistry Pediatrics
Fagan, Kelly	Wevrick, Rachel	The effect of MAGEL2 on intercellular protein interactions	Medicine & Dentistry Medical Genetics
Gyenes, Dora	Jain, Venu	Exploring Doppler-based predictors of maternal diabetes-induced pathology through first trimester fetal echocardiography	Medicine & Dentistry Obstetrics & Gynecology
Kassam, Shehzad	Salvalaggio, Ginetta	Evaluating the implementation of a managed alcohol program in an acute care setting	Medicine & Dentistry Family Medicine
Katzell, Alexis	Funk, Gregory	Finding the ion channel via which astrocyte-derived ATP excites inspiratory rhythm generating networks during hypoxia	Medicine & Dentistry Physiology

STUDENT	SUPERVISOR	PROJECT TITLE	FACULTY DEPARTMENT
Le, Andy	MacLean, Joanna E.	The impact of cardio-respiratory function on quality of life in children with a history of extreme preterm birth	Medicine & Dentistry Pediatrics
Madsen, Mette	Bell, Rhonda C.	Be Healthy in Pregnancy (BeHIP) — recruiting a passive control group	Agriculture, Life & Environmental Sciences Agricultural, Food & Nutritional Science
Matenchuk, Brittany	Davenport, Margie	No time to wait for the wake-up call: sleep, physical activity, diet and weight retention in the postpartum period	Physical Education and Recreation
Narvacan, Karl	Beaulieu, Christian	Susceptibility-weighted magnetic resonance imaging of white matter tracts and subcortical grey matter in children with Fetal Alcohol Spectrum Disorder (FASD)	Engineering Biomedical Engineering
Powley Unrau, Stephanie	Carson, Valerie	Update of the *Canadian Physical Activity Guidelines for the Early Years (Aged 0-4 Years)*	Physical Education and Recreation
Purdy, Graeme	Steinback, Craig D.	There and back again: cardiovascular adaptations to exercise in pregnancy	Physical Education and Recreation
Rycroft, Jordan	Chari, Radha S.	The impact of premature rupture of membranes on infant gut microbiota at three months	Medicine & Dentistry Obstetrics & Gynecology
Soo, Jeremy	Hawkes, Michael	Biomarkers of inflammation and endothelial activation in vertically HIV-1 infected children	Medicine & Dentistry Pediatrics
Stewart, Catherine	Curtis, Sarah J.	Does Breed-Specific Legislation (BSL) protect children from dog bites and associated trauma? Chart reviews from a Sentinel Site as the first step in a “Natural Experiment”	Medicine & Dentistry Pediatrics
Walton, Sarah	Scott, Shannon D.	Usability evaluation for arts-based, digital knowledge translation tools for parents with acutely ill children	Nursing

AMBIKA AGRAWAL

SUPERVISORS

Dr. Karen Madsen
Dr. Vivian Huang

PROJECT TITLE

Effects of breast milk from mothers with Inflammatory Bowel Disease on epithelial and microbial interactions

MOTIVATION

I am deeply fascinated by nutrition, the human microbiome and immunity. My interest in health science led me to previously pursue research through the Heritage Youth Researcher Summer Program (HYRS), volunteer summer positions, Edmonton Regional Science Fair projects, and the Sanofi Biogenius Canada Competition. The WCHRI summer studentship presented me with an excellent opportunity to enhance my knowledge and research skills in the captivating fields of the microbiome and gastroenterology, as well as reinforce concepts that I previously learned. I was further motivated to partake in this research by the opportunity to build on my practical understanding of immunology, which I can apply to my future academic career.

CAREER ASPIRATIONS

This studentship has given me invaluable exposure to and experience in the fascinating health science field of gastroenterology. My research experience this summer will help me work towards my aspiration of becoming a clinician-scientist and help me decide the direction of my career. I am incredibly grateful to WCHRI's Summer Studentship Program for the opportunity to pursue my research interests.

Inflammatory Bowel Disease (IBD) is a group of incurable diseases of the intestines, affecting one in every 150 Canadians, the highest rate worldwide (*Crohn's and Colitis Foundation of Canada,* 2014). People who have IBD have changes in the bacterial ecosystem inhabiting their gut, which may be responsible for the gut inflammation and associated debilitating symptoms, including diarrhea, pain and bleeding. Children who are diagnosed with IBD at an early age have significant changes to their gut microbiomes. The initial colonization of the infant gut begins at delivery and is then influenced by environmental exposures and diet. Human breast milk contains many bioactive factors (e.g. cytokines, immune cells, immunoglobulins, oligosaccharides, proteins) as well as bacteria that influence gut colonization and immune development of the neonate. A mother with IBD may transfer her abnormal microbial profile to her infant at delivery, and breast-feeding may continue to drive the growth of "abnormal" bacteria in her infant's gut. I hypothesized that breast milk from mothers with IBD may contain less-than-beneficial bacteria and immune active components, which may lead to early intestinal inflammation in their infants.

To test this hypothesis, I studied the breast milk composition of mothers with IBD and compared it to breast milk from healthy mothers. I examined functional interactions between the bioactive components in human breast milk and cultured human epithelial cells. The goal of this research is to advance understanding of the effects maternal IBD has on breast milk composition, and how this may influence the development of the neonatal gut microbiome and intestinal immune responses.

HOW I LEARNED OF THIS OPPORTUNITY

I learned of this research opportunity through the Undergraduate Research Initiative at the University of Alberta. My supervisor, Dr. Madsen, is also a WCHRI researcher, and I applied for this studentship under her guidance.

FUNDING PARTNERS

This project was funded by the Stollery Children's Hospital Foundation and by generous supporters of the Lois Hole Hospital for Women.

ALEXANDRA BAIN

SUPERVISORS

Dr. Jane Schulz
Dr. Momoe Hyakutake

PROJECT TITLE

A survey of patient comfort and familiarity with health information provided through different sources in a urogynecology clinic population

MOTIVATION

I have always had a keen interest in Obstetrics & Gynecology, but I was looking for more exposure into gynecology subspecialties and the surgical components. This research project has allowed me to gain better insight into urogynecological health concerns. I have increased my knowledge and understanding of the social stigmas patients face dealing with pelvic floor disorders, and the surgical and non-surgical methods used to manage and treat pelvic floor disorders.

CAREER ASPIRATIONS

This studentship has allowed me to gain more insight into surgical specialties within the Department of Obstetrics & Gynecology and I have come out of this with a better focus and understanding of my desire to pursue this area of medicine as a future physician.

Urogynecology is a rapidly growing field that clinically manages women with pelvic floor disorders including urinary and fecal incontinence and pelvic organ prolapse. Approximately one in four women over the age of 20 will experience at least one pelvic floor disorder, and one in two women over the age of 50. However, many women do not seek help due to embarrassment, myths regarding cause, and uncertainty regarding treatment options. The multidisciplinary urogynecology team at the Lois Hole Hospital for Women feels it would be helpful to provide more online educational tools to women who have these health concerns or are accessing care at our clinic. The goals of our study are to: determine how comfortable women are using different media, and to ascertain the sources of health information that women have accessed regarding their incontinence or pelvic floor problems prior to coming to our clinic. By determining how women prefer to obtain their health information, we can then tailor our patient education methods to better serve our patient needs. All women attending the urogynecology clinic at the Lois Hole Hospital for Women will be approached about completing a simple survey regarding health information access and different technologies. The information collected will be correlated with different patient demographics to determine whether there are certain patient groups that would benefit most from innovative health education tools.

HOW I LEARNED OF THIS OPPORTUNITY

I contacted Dr. Schulz and Dr. Hyakutake and discussed with them my interest in learning more about urogynecology, as there is little exposure to this surgical subspecialty in the Obstetrics & Gynecology medicine block. We discussed the possibility for a summer studentship constructing and distributing this survey, which would then be used to determine the development of online educational tools.

FUNDING PARTNER

This project was funded by generous supporters of the Lois Hole Hospital for Women.

LOIS HOLE HOSPITAL FOR WOMEN

AMANDA CAO

SUPERVISOR

Dr. Anita Kozyrskyj

PROJECT TITLE

Infant gut short-chain fatty acid biomarkers of preschool asthma

MOTIVATION

Throughout my undergraduate career, I was fortunate enough to be supervised by several influential mentors in basic science labs. My interest this summer was to explore an epidemiological/population based research setting.

CAREER ASPIRATIONS

I am entering my first year of pharmacy this fall. In the future, I would like to practice in a hospital setting, while maintaining an interest in research.

FUNDING PARTNER

This project was funded by the Stollery Children's Hospital Foundation.

Asthma is a major cause of hospitalization and emergency room visits of children in Canada, considerably affecting the quality of life of children and their families. Although asthma can develop at any age, it often starts during infancy. Infancy is a critical time period in which the gut microbiota develops. Immediately after birth, a human infant is colonized by microbes from the mother. These microbes are essential for the regulation of metabolism and support the infant's immune system, through the production of short-chain fatty acid (SCFA). We aimed to study the production of SCFAs made from the amino acid, histidine. I completed a literature review of two biochemical reactions, or pathways, of histidine metabolism: 1) the histidine-histamine pathway, driven by histidine decarboxylase, an enzyme produced by lactic acid bacterium and 2) the histidine-SCFA pathway, through the production of the amino acid, glutamate. Histamine is a well known mediator of allergic reactions, whereas SCFAs are well known regulators and suppressors of inflammation. Emerging research demonstrates that many immune system or metabolic diseases are linked to an abnormal gut microbiota in infants, including asthma. I also completed Nuclear Magnetic Resonance (NMR) output assessments at The Metabolomics Innovation Centre to identify the presence of the metabolite histidine in fecal samples from three-month old infants from the Canadian Healthy Infant Longitudinal Development (CHILD) birth cohort study. These fecal histidine results will be correlated with fecal short-chain fatty acid levels and assessed against the development of asthma at age five in these infants. We hypothesize that an altered balance of gut microbial SCFA is associated with the development of asthma in young children. Under Dr. Kozyrskyj's mentorship and guidance, I was given the opportunity to present my work at the Synergy in Microbiota Research (SyMBIOTA) Workshop in Toronto, as well as at weekly lab seminars. Our research has clinical relevance in that if we are able to determine the link between gut microbiota and the development of persistent asthma in children, necessary precautions can be taken before the condition worsens or even begins. A deeper understanding of the metabolites that microbiota produce during infancy will create novel strategies for the prevention of asthma.

MARIA CHOI

SUPERVISOR

Dr. Andrew Waskiewicz

PROJECT TITLE

Investigating the genetic and cellular factors underlying superior coloboma

MOTIVATION

My passion for developing a solution to blindness motivated me to perform research on ocular coloboma - the second leading cause of pediatric blindness.

CAREER ASPIRATIONS

This research experience has reinforced my love for learning and problem solving. I hope to continue research in graduate school.

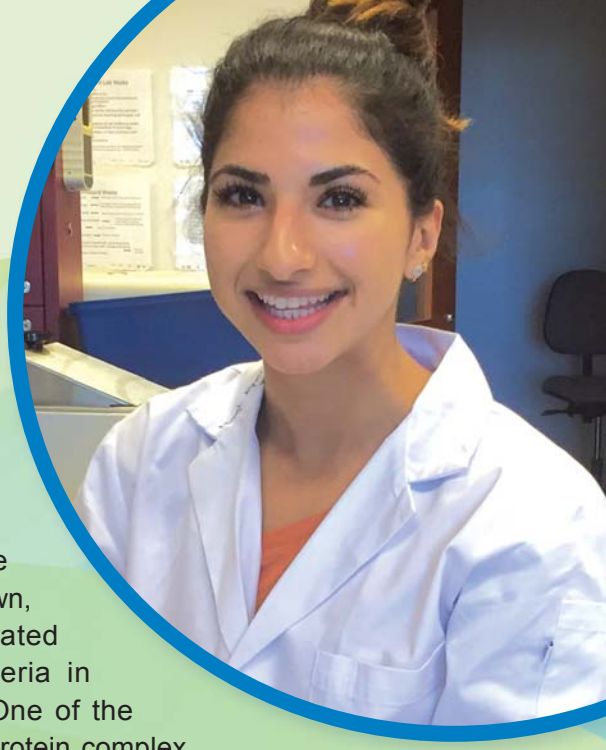
Ocular coloboma is a congenital disorder in which the eye fails to form properly during early development. This birth defect is the second leading cause of pediatric blindness. Ocular coloboma is observed in the bottom part of the eye, where a transient gap known as the choroid fissure fails to close, leaving a portion of the retina or iris open. Recently, patients have been identified with a novel form of ocular coloboma that occurs in the upper part of the eye. Following the identification of this new disorder, referred to as superior coloboma, a novel structure was discovered: a superior fissure whose location aligns with the position of the superior coloboma identified in patients. In these patients, alterations have been found in genes that are known to play a role in eye development, such as T-box 2 (TBX2). The goal of my research project is to investigate if variations in TBX2 contribute to the formation of superior coloboma. I am currently examining the consequences of a partial or total loss of TBX2 on superior fissure closure. Preliminary data suggests that such a loss may delay superior fissure closure. I will also analyze the biological effects of the TBX2 variant found in patient DNA and of TBX2 overexpression.

I became involved in Dr. Waskiewicz's lab because his lab's research on ocular disorders strongly aligned with my interest in conducting research on blinding disorders. I am grateful to WCHRI and Alberta Innovates - Health Solutions (AIHS) for supporting my research.

FUNDING PARTNER

This project was funded by the Stollery Children's Hospital Foundation.

GHAZAL DANESH



SUPERVISORS

Dr. Eytan Wine

PROJECT TITLE

Inflammasome activation by bacteria isolated from pediatric Inflammatory Bowel Disease (IBD) patients

MOTIVATION

I enjoyed completing a studentship in the Wine lab last summer and wanted to expand my work on host-microbe interactions to include bacteria isolated from patients. I have an interest in scientific research and wanted to acquire new laboratory skills.

CAREER ASPIRATIONS

I am currently in medical school and plan to specialize in pediatrics in the future. Working in the Wine lab has exposed me to the challenges of managing chronic illnesses in the pediatric population, in addition to exposing me to the possibility of being a clinician-scientist.

Inflammasome activation by bacteria isolated from pediatric Crohn's disease patients' inflammatory bowel diseases (IBD, including Crohn's disease and ulcerative colitis) are debilitating intestinal disorders that affect children. The highest increase in IBD incidence is observed in this population. The cause of these diseases is unknown, but likely involves an exaggerated immune response to gut bacteria in genetically susceptible hosts. One of the genes linked to IBD is the multiprotein complex called the inflammasome. The nod-like receptor protein-3 (NLRP3) inflammasome leads to inflammation through interleukin (IL)-1B. We hypothesize that this pathway contributes to IBD through affects on bacterial killing, based on genetic association of NLRP3 and previous work in our lab.

To study the effect of bacteria isolated from patients on inflammasome activation, we devised a method to culture patient bacteria and human immune cells, that allows the survival of both organisms. We then measured IL-1B secretion and Reactive Oxygen Species (ROS) production by these immune cells. Bacteria isolated from pediatric patients with Crohn's disease resulted in greater IL-1B secretion and ROS production, which suggests greater inflammasome activity compared to patients without IBD.

FUNDING PARTNER

This project was funded by the Stollery Children's Hospital Foundation.

VICTOR DO

SUPERVISOR

Dr. Lisa Hornberger

PROJECT TITLE

Fetal cardiovascular programming in maternal diabetes: cardiovascular structure and function in infancy and early childhood and its relationship to maternal glycemic control during pregnancy

MOTIVATION

After experiences in basic research, I wanted to gain some insight in clinical research and further pursue my interest in cardiac sciences. This opportunity also enabled me to build my clinical exposure through shadowing and observing patient consults.

CAREER ASPIRATIONS

I would like to serve the public and the Canadian healthcare system as a clinician-scientist. Aside from working with patients I also want to pursue research on topics I am passionate about and that will improve clinical care for patients. This opportunity was a wonderful learning experience in that I am able to be submersed in a fast-paced healthcare environment while also participating in clinical research, bridging both clinical and basic research interests together.

FUNDING PARTNERS

This project was funded by the Stollery Children's Hospital Foundation and by generous supporters of the Lois Hole Hospital for Women.

Adults born to mothers with diabetes (DMs) have an increased risk of Cardiovascular Disease (CVD) long-term. The pathogenic mechanisms responsible and course of evolution have, to date, not been reported. My work this summer involved offline analysis of prospectively and longitudinally performed echocardiograms (myocardial ultrasound) which were done during fetal stages and postnatally in infants of mothers with preconception diabetes. From these studies, I evaluated left ventricular (LV) wall thickness, LV systolic and diastolic function, and aortic stiffness (postnatal only). Values measured in fetuses and infants of DMs were compared to those from age-matched healthy controls. I examined correlations between LV wall thickness and aortic stiffness in early and late infancy with maternal HbA1c (indicator of glycemic control) at different time points in the pregnancy. Although statistical analysis is currently underway, what we have discovered thus far is that fetuses of DMs develop LV hypertrophy late in gestation as well as altered global function. Although in late gestation and early infancy the LV hypertrophy predominantly involves the ventricular septum; by late infancy, both the LV free wall and ventricular septal thickness are increased compared to controls. Aortic stiffness is also increased in later infancy compared to babies of healthy mothers, and aortic stiffness correlates with ventricular septal thickness — which could suggest that the LV remodels in response to changes in the aortic architecture. Finally, maternal HbA1C late in gestation correlates positively with aortic stiffness, suggesting worse glycemic control impacts blood vessel health. These findings could be early precursors or facilitators of CVD. We will be re-examining these children at three to five years to see whether there is evidence of progression. In addition to studying maternal diabetes, I also performed aortic stiffness measures from echos performed in a fetal hypoxia model longitudinally from day one through week eight to determine whether exposure to chronic hypoxia before birth impacts aortic architecture, which could contribute to long-term CVD.

HOW I LEARNED OF THIS OPPORTUNITY

I looked through some of the principal investigators who had been successful in previous WCHRI studentship competitions and saw that Dr. Hornberger did clinical research but was also a world renowned pediatric cardiologist. I thought this was a perfect opportunity and reached out to her.

KELLY FAGAN

SUPERVISOR

Dr. Rachel Wevrick

PROJECT TITLE

The effect of MAGEL2 on intracellular protein interactions

MOTIVATION

I am very interested in genetics and plan to continue my education in grad school after I complete my undergraduate degree. The opportunity to explore research in the field of medical genetics was an excellent opportunity and this experience provided insight into the type of research I hope to continue doing.

CAREER ASPIRATIONS

I plan to pursue a career in research, so this summer studentship was an invaluable opportunity for me to learn techniques and to take part in the scientific process, which will help me achieve my future goals.

Prader Willi Syndrome (PWS) is a genetic disorder that results in feeding difficulties in infancy, excessive appetite and developmental delay. One gene that may be involved in PWS is MAGEL2. MAGEL2 is necessary in neurons that detect leptin, a hormone created by fat cells to regulate energy balance by inhibiting hunger. Individuals with PWS show insensitivity to leptin, potentially due to the availability of cell surface leptin receptors. MAGEL2 may interact with and subsequently control the activity of various proteins that are involved in PWS. Two such proteins are RNF41 and USP8, which have been previously shown to interact and are responsible for either targeting leptin receptors to the cell surface to be used or to be destroyed. This project aimed at elucidating some of the intracellular protein interactions and how MAGEL2 was involved in the changing expression of these proteins. We used various molecular techniques to examine protein levels and interactions in multiple conditions.

FUNDING PARTNER

This project was funded by the Stollery Children's Hospital Foundation.

DORA GYENES

SUPERVISORS

Dr. Venu Jain
Dr. Lisa Hornberger

PROJECT TITLE

Exploring Doppler-based predictors of maternal diabetes-induced pathology through first trimester fetal echo-cardiography

MOTIVATION

I wanted to participate in this research because I find fetal cardiac pathology so interesting and complex and because I see the importance in advancing the field and contributing new knowledge to the literature.

CAREER ASPIRATIONS

These last two summers have been a fantastic way to get involved in fascinating, innovative research and have sparked my interest to learn more about the intricacies of the human heart and of medical research. I would like to continue with research in my future career and am grateful to be able to get these experiences so early on in my education.

I was interested in the effect of maternal diabetes on the function of the heart in a very early human fetus. My project, "Exploring Doppler-based predictors of maternal diabetes-induced pathology through first trimester fetal echo-cardiography", aimed to determine if there are functional differences in the heart of an eight to 15-week fetus if the mother has either type I, type II or type III gestational diabetes. Patients were prospectively re-cruited. Each diabetic pregnancy was compared to gestational age-matched controls using Doppler-derived measures of early heart function. I reviewed studies from over 100 pregnancies for this study. Previous work in this area is limited, so I was looking to repeat the findings of one of very few studies done on early heart function and diabetes, and to add data from earlier pregnancies. I also worked on two manuscripts from research I did last summer with Dr. Hornberger, which has allowed me to participate in the research process in its entirety and gain an appreciation for the time and effort involved in sharing new findings with the research community.

HOW I LEARNED OF THIS OPPORTUNITY

This is my second summer in this program. I learned about the WCHRI Summer Studentship Program from Dr. Hornberger when we worked together last summer and she encouraged me to apply. I was very happy to be able to participate and have this wonderful learning opportunity for a second time!

FUNDING PARTNERS

This project was funded by the Stollery Children's Hospital Foundation and by generous supporters of the Lois Hole Hospital for Women.

SHEZ KASSAM

SUPERVISOR

Dr. Ginetta Salvalaggio

PROJECT TITLE

Evaluating the implementation of a managed alcohol program in an acute care setting

MOTIVATION

Having worked with the Inner City Health and Wellness Program (ICHWP) and Addiction Recovery and Community Health (ARCH) teams last year, I was inspired to continue engaging with marginalized populations to support their needs in health and social services. As a medical student, it is critical to establish a strong sense of empathy with and understanding of our inner city community members to serve them with respect and dignity throughout our professional careers. Being part of this research team for another summer has helped me develop these skills and continue to be an advocate for this population.

CAREER ASPIRATIONS

My goal is to specialize in family medicine or public health as a physician to work in inner city communities in the future. This opportunity has connected me with excellent mentors and allowed me learn from their resilient patients, as well as given me the tools that have invoked curiosity and motivated me to integrate research into my future practice.

My research project, titled "Evaluating the implementation of a managed alcohol program in an acute care setting", is based on a scoping review of existing research on services that provide alcohol to severely dependent patients unable to quit — in order to prevent them from going into withdrawal. I will also be analyzing qualitative interview transcripts from a process evaluation to which I contributed last summer, specifically exploring potential barriers and facilitators to implementing alcohol-specific programming in the hospital. I will pay specific attention to any gender considerations for program implementation, whether biological or social. These data sources will inform our own managed alcohol program development at the Royal Alexandra Hospital.

FUNDING PARTNER

This project was funded by generous supporters of the Lois Hole Hospital for Women.

Lois Hole Hospital for Women

ALEXIS KATZELL

SUPERVISOR

Dr. Greg Funk

PROJECT TITLE

Finding the ion channel via which astrocyte-derived Adenosine Tri-phosphate (ATP) excites inspiratory rhythm generating networks during hypoxia

MOTIVATION

I first became involved in research the summer following my first year of university. I was motivated by an interest to understand and gain hands-on experience with scientific methods and the process through which advances in biomedical science and medicine arise.

CAREER ASPIRATIONS

Summer research support from WCHRI throughout my degree allowed me to expand my research experience and motivated me to focus on children's health issues as I continue my undergraduate medical education at the University of Calgary — Cumming School of Medicine.

FUNDING PARTNER

This project was funded by the Stollery Children's Hospital Foundation.

My summer research project explored how the brain controls breathing responses to periods of low oxygen, or hypoxia, during early development. (Project title: "Finding the ion channel via which astrocyte-derived Adenosine Triphosphate (ATP) excites inspiratory rhythm generating networks during hypoxia".) The activity of the network in the brain that generates breathing is controlled via homeostatic (automatic) reflexes that maintain blood oxygen (O2) and carbon dioxide (CO2) at constant levels. In infants suffering from apnea of prematurity, reductions in oxygen levels can be life-threatening because when hypoxia occurs, there is an increase in breathing followed by a depression in breathing (or oxygenation) below resting levels. A major goal of our research is to define mechanisms that control breathing during this life-threatening depression to inform therapies and prevent the breathing depression. Our research has revealed that nonneuronal cells in the brain, called astrocytes, release ATP (an energy carrier) in response to hypoxia. ATP then excites neurons in the region of the brainstem that generates breathing. When ATP excites breathing, this reduces the degree to which breathing is depressed. Furthermore, we have identified the type of receptor to which ATP binds on neurons to bring about this excitation.

My project began with the goal of identifying the signaling pathways inside the neurons through which ATP acts. My initial experiments were designed to determine if a specific membrane protein (M-channel) underlies the ATP-dependent frequency increase. The M-channel is one of the major targets of ATP in other brain regions. Blockers of the M-channel did not affect the response of the respiratory network to ATP, thereby narrowing our list of potential targets. Surprisingly, M-channel blockers caused a significant increase in inspiratory burst duration while the activator, "retigabene", reduced burst duration and then blocked breathing altogether. Our data suggested that the M-channel may be involved in inspiratory burst termination, a poorly understood process that is one of the major questions in respiratory control. Moreover, retigabene is an antiepileptic drug. Thus, understanding its effect on breathing is very important, especially in the context of pediatric and adult SUDEP (Sudden Unexplained Death in Epilepsy), where death occurs immediately post seizure because (in some cases) breathing stops. I therefore performed a series of experiments using various pharmacological and electrophysiological methods to characterize the influence of the M-channel on respiratory control and define underlying mechanisms.

ANDY LE

SUPERVISOR

Dr. Joanna MacLean

PROJECT TITLE

The impact of cardio-respiratory function on quality of life in children with a history of extreme preterm birth

MOTIVATION

Research is a strong interest of mine that I want to incorporate in my future career as a clinician. Although I have experience in basic science research, this is my first experience conducting clinical research. This project provided a wonderful opportunity to learn about clinical research and practice my scientific writing. I was particularly excited because of my interest in pediatrics.

CAREER ASPIRATIONS

Having this exposure early in my medical career is crucial to my education as I pursue a career as a clinician-scientist.

Children who are born early (also called "preterm birth") have more problems with their lungs and hearts after birth compared with children born on time (also called "term birth"). A study recently completed by our group determined that children born extremely preterm have lower lung function than children born at term, and that children born extremely preterm who had a lung disease called "bronchopulmonary dysplasia" had even lower lung function. They also have a lower capacity for exercise. The goal of this project is to determine whether lower lung function and exercise capacity lowers the quality of life for these children. We collected lung function, exercise capacity and quality of life data from 103 children born extremely preterm and 64 children born at term. By analyzing this information, we hope to understand the factors that affect quality of life in children with a history of extreme preterm birth.

HOW I LEARNED OF THIS OPPORTUNITY

Dr. MacLean works as a clinician-scientist in the Department of Pediatrics in the WCHRI laboratory space of the Katz building. She encouraged me to apply for the WCHRI Summer Studentship Grant to support my research.

FUNDING PARTNER

This project was funded by the Stollery Children's Hospital Foundation.

METTE MADSEN

SUPERVISOR

Dr. Rhonda Bell

PROJECT TITLE

Be Healthy in Pregnancy (BeHIP) — recruiting a passive control group

MOTIVATION

I am very interested in women's health so this project, along with many others in Dr. Bell's lab, is really interesting to me. Dr. Bell's lab group is very supportive with grad students, postdocs and staff from different backgrounds, all of whom have interests similar to mine. Working with women, medical charts, and many different types of data has been fascinating.

CAREER ASPIRATIONS

I hope to be either an RD or MD. Analyzing the data I've collected has allowed me to better understand how women perceive the care they receive and will allow me to provide better care to my future patients. Working closely with an RD, medical student, and post doc has provided me with valuable experience and has helped me build a network for my future career.

Poor nutritional intake and excess weight gain in pregnancy can negatively affect the future health of a mother and her child. Improving a mother's health during pregnancy can lead to better health outcomes for mother and child in the short and long-term period. Currently, there is little known about how best to support women to achieve healthy weights in pregnancy. I was part of a study designed to assess if discussions about healthy eating and physical activity with a Registered Dietitian (RD) could help women gain weight within gestational weight gain recommendations.
The study originally had an "intervention group" (that met with an RD during pregnancy, who provided additional lifestyle support), and an "active control group" (that met with an RD to complete questionnaires, but were not provided additional lifestyle support). I recruited postpartum women to a "passive control group" (that had no interaction with an RD during pregnancy). I collected information about their gestational weight gain from self-report and medical charts and about their overall satisfaction with their prenatal care. These outcomes were compared between groups.

FUNDING PARTNER

This project was funded by generous supporters of the Lois Hole Hospital for Women.

Lois Hole Hospital for Women

BRITTANY MATENCHUK

SUPERVISOR

Dr. Margie Davenport

PROJECT TITLE

No time to wait for the wake-up call: sleep, physical activity, diet and weight retention in the postpartum period

MOTIVATION

I am interested in working in observational maternal-fetal research and statistical analyses to improve our understanding of health and disease.

CAREER ASPIRATIONS

My work with Dr. Davenport has motivated me to pursue a master's degree at the University of Alberta.

FUNDING PARTNER

This project was funded by generous supporters of the Lois Hole Hospital for Women.

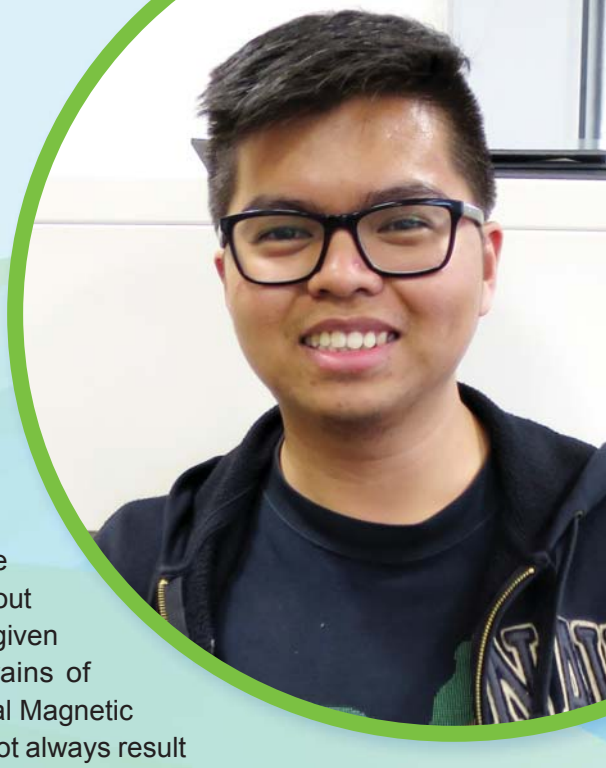
Lois Hole Hospital for Women

Despite common knowledge that sleep quality is decreased in the postpartum period, few studies have measured sleep in the postpartum period and its effect on physical activity, diet and weight. In the general population, sleep quality has been associated with changes in metabolism and gene expression, fat deposition, calorie consumption and eating patterns, hormone balance, physical activity levels, mood, gut microbiome composition and function, inflammation, chronic disease and weight management. Although sleep quality is known to affect dietary intake and physical activity habits, the interaction between these three factors in the postpartum period and their impact on weight change are not well understood.

Inability to lose excess weight in the postpartum period can have serious implications for future risk of obesity, cardiovascular and metabolic diseases. One factor which contributes to weight retention is excessive weight gain during pregnancy. Studies have shown that women who gained excessive weight during pregnancy and failed to lose it during the first six months postpartum were found to be 8.3 kg heavier ten years later. The health status of women has been shown to have implications for their entire family.

This summer working with Dr. Davenport, I have been directly involved in all aspects of research including recruiting participants, collecting data, and analyzing data. We collected information using questionnaires, food logs, and activity and sleep trackers from over 120 postpartum women. This study aims to clarify the relationship between sleep quality, physical activity and diet in the postpartum period. This study will shed light on the various factors which contribute to or impede successful weight loss in the postpartum period. This information can inform individuals and clinicians on potential strategies to reduce weight retention and prevent future obesity and cardio-metabolic disorders in women after baby.

KARL NARVACAN



SUPERVISOR

Christian Beaulieu, PhD

PROJECT TITLE

Susceptibility-weighted magnetic resonance imaging of white matter tracts and subcortical grey matter in children with Fetal Alcohol Spectrum Disorder (FASD)

MOTIVATION

My summer project combines several elements of my personal research and clinical interests in neuroscience, medical imaging and pediatrics.

CAREER ASPIRATIONS

As an incoming second year medical student in the MD with Special Training in Research (STIR) program, I am leaning towards a career as a physician-scientist in medical imaging and neuroscience. Ultimately, with the paradigm shift in medicine towards non-invasive tests and treatments, conducting research in MRI early in my education prepares me for a career that will hopefully be of maximum benefit to my patients.

FUNDING PARTNER

This project was funded by the Stollery Children's Hospital Foundation.

Fetal Alcohol Spectrum Disorder (FASD) describes a set of lifelong physical, cognitive and behavioral deficits as a result of alcohol consumption by the mother during pregnancy. Currently, FASD is the leading preventable cause of neurodevelopmental and cognitive disorders in children, affecting nine of every 1000 babies born or about one per cent of Canadians at any given time. However, scanning the brains of children of FASD with conventional Magnetic Resonance Imaging (MRI) does not always result in an appreciably diagnostic image, even though several neurological deficits are observed in these children — suggesting a need for more advanced methods that are capable of examining the brains of children with FASD.

Brain iron, which is essential in the formation of white matter (i.e. brain '"wirings") that bridge areas of the human brain, has been gaining traction as a potential measurable marker that is reduced in FASD. Our research uses novel imaging technologies to measure changes in iron levels in specific parts of the brain in children with and without FASD. Our project is measuring iron levels in these brain wirings, as well as deep grey matter structures, which are known to be involved in cognition, memory, movement and behavior — key aspects of development that are often impaired in children with FASD. Measuring iron levels in the brain using MRI would allow us to non-invasively further our understanding of the events that occur as a result of prenatal alcohol exposure, and ultimately lead to targeted therapies for children with FASD.

HOW I LEARNED OF THIS OPPORTUNITY

I have been working with Dr. Beaulieu in neuroimaging research since September 2014. Once it was time to apply for summer research work, it was almost an easy decision to work again in their lab on another (but more clinical) neuroimaging research project focusing on FASD. Working in neuroimaging research has been greatly rewarding, and having the support of institutions like WCHRI enables us to pursue a clinical career that highlights the importance of research in unraveling the future of healthcare.

STEPHANIE POWLEY UNRAU

SUPERVISOR

Dr. Valerie Carson

PROJECT TITLE

Update of the *Canadian Physical Activity Guidelines for the Early Years (Aged 0-4 Years)*

MOTIVATION

My primary motivation for participating in behavioural epidemiology research is to invest my summer in improving the holistic health of Canadians, while gaining experience in the healthcare field. Behavioural epidemiology research allows me to do this to the best of my current abilities: its population-wide focus on the relationships between behaviours/determinants of health, and associated health outcomes, is applied directly into reshaping population behaviours for mass health benefits. This is very exciting to me, because it means that the research I am involved in has the opportunity to be communicated with and acted upon by the vast majority of Canadians in a preventative manner. In particular, I am excited that our summer project is able to benefit early years children, as the wellness of this population is entirely dependent on the decision-making of their caregivers and the health knowledge at their disposal. It is my hope that this project will improve the access of caregivers to the most relevant knowledge that is currently available in the literature.

CAREER ASPIRATIONS

I am interested in becoming a family physician with a focus on early child development (including health research). This summer's research opportunity is such a privilege, as I am able to invest these four months into helping develop standards that can be used in the formation of life-long healthy habits in youngsters across our beautiful country and beyond.

RESEARCH GOALS

1. Conduct a systematic review of published journal articles on the relationship between physical activity and health indicators for early years children (0-4 years old), using established methodological and evaluation criteria.

2. Update the *2012 Canadian Physical Activity Guidelines for the Early Years (Aged 0-4 Years)* to reflect the current knowledge on the health indicators related to physical activity frequency, type, time, and intensity; as captured by our systematic review for this age group and from the input from knowledge users and our interdisciplinary guideline team.

HOW I LEARNED OF THIS OPPORTUNITY

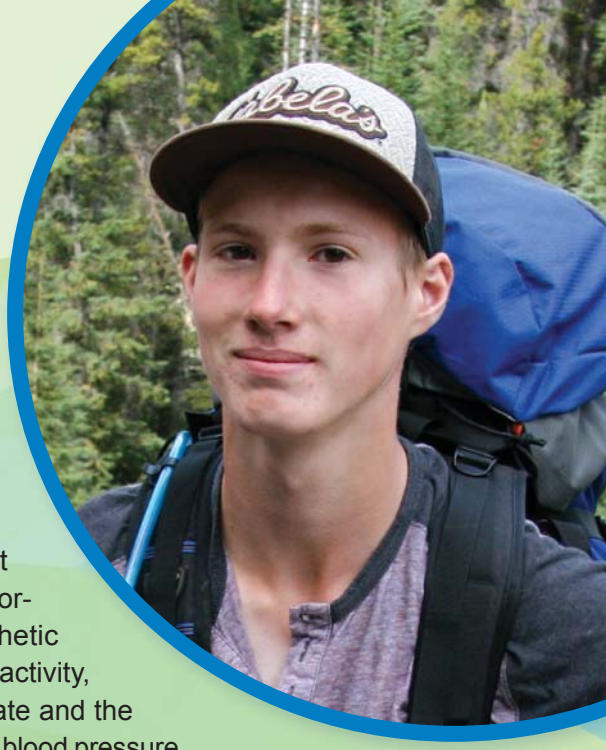
My supervisor taught one of my classes and mentioned the research that her lab does, prompting me to investigate and inquire further about getting involved.

FUNDING PARTNER

This project was funded by generous supporters of the Stollery Children's Hospital Foundation.

STOLLERY CHILDREN'S HOSPITAL FOUNDATION

GRAEME PURDY



SUPERVISOR

Dr. Craig Steinback

PROJECT TITLE

There and back again: cardiovascular adaptations to exercise in pregnancy

MOTIVATION

I started volunteering in Dr. Steinback's lab last fall, and what started as an interest in exercise physiology has since morphed into a passion studying the many cardiovascular changes that the human body undergoes during exercise, specifically during periods of extreme stress, like pregnancy.

CAREER ASPIRATIONS

I hope to go on to complete a master's degree, where I see myself continuing to work with research from both a knowledge generation and application standpoint.

It is known that blood pressure tends to decrease during healthy pregnancy, but blood pressure regulation during pregnancy is still not well understood. In order to maintain a healthy blood pressure, vascular stretch receptors known as baroreceptors detect fluctuations in pressure. These fluctuations are then met by changes in sympathetic (flight-or-fight response) and parasympathetic (rest-and-digest) nervous system activity, which by way of changing heart rate and the diameter of blood vessels, maintain blood pressure. During pregnancy, this reflex is reset and may be blunted. Similarly, heart rate variability is known to decrease during pregnancy. Heart rate variability is a measure of the cardiovascular system's ability to balance sympathetic and parasympathetic control by using changes in heart rate to keep the body in homeostasis.

All pregnant women (without identified contraindications) are recommended to exercise during pregnancy. Since blood pressure is often already lower than normal during pregnancy, the hypotensive (low blood pressure) state sometimes experienced after exercise is a concern due to the health risks associated with fainting. However, it has yet to be established how heart rate and blood pressure are controlled during and following exercise in pregnancy. Furthermore, we were interested in how these responses may adapt between trimesters. By pairing these analyses with an in-depth analysis of the intrinsic changes the heart undergoes during pregnancy and with exercise, we hope to gain a better understanding of the cardiovascular adaptations the body undergoes during exercise in pregnancy, and how effective the cardiovascular system is at recovering following exercise. The outcomes from this study will be useful for informing exercise prescription, and in particular the cool-down phase, during pregnancy.

FUNDING PARTNER

This project was funded by generous supporters of the Lois Hole Hospital for Women.

LOIS HOLE HOSPITAL FOR WOMEN

JORDAN RYCROFT

SUPERVISOR

Dr. Radha Chari

PROJECT TITLE

The impact of premature rupture of membranes on infant gut microbiota at three months

MOTIVATION

Research into the human microbiota and its association with disease has recently exploded. I wanted to pursue a project which would give me the chance to integrate knowledge gained in the lab into clinical practice.

CAREER ASPIRATIONS

After completing my medical education, I plan to pursue my passion for women's health in the field of obstetrics and gynecology. My research has made me particularly interested in maternal fetal medicine which is a branch I would like to further explore.

Intestinal microbial communities, known as the microbiome, are critical for host health. Colonization of the infant gut initiates the development of their mucosal immune system. Abnormal colonization, or dysbiosis, has been associated with asthma, obesity, and other atopic diseases. Recent research endeavors have found that various obstetrical and neonatal practices can have significant effects on the infant gut microbiome; modes of delivery, intrapartum antibiotic prophylaxis, and infant breastfeeding have all been found to modulate the infant gut microbiome. To date, the impact of other pre-birth and birth characteristics on the infant gut microbiome have not been thoroughly analyzed.

During development, the fetus is enclosed in an amniotic sac which normally ruptures during the onset of labour. In eight to ten per cent of pregnancies, the time of rupture is greater than one hour before the onset of labour and is referred to as the Premature Rupture of Membranes (PROM). PROM is an important birth characteristic to consider as this increased duration of exposure to the extra-uterine environment allows a longer period in which bacteria may colonize the infant gut microbiome and potentially cause a dysbiosis.

My research uses gut microbiota profiles of fecal samples at age three months and metadata from full-term infants enrolled in the Canadian Healthy Infant Longitudinal Development (CHILD) birth cohort. The association between PROM and the infant gut microbial composition, as measured by taxon relative abundance and overall diversity, will be determined using statistical analysis while stratifying for confounding factors. The knowledge gained from this project could potentially help shape future obstetrical practices.

FUNDING PARTNERS

This project was funded by the Stollery Children's Hospital Foundation and by generous supporters of the Lois Hole Hospital for Women.

JEREMY SOO

SUPERVISOR

Dr. Michael Hawkes

PROJECT TITLE

Biomarkers of inflammation and endothelial activation in vertically HIV-1 infected children

MOTIVATION

HIV infection is one of the most life-altering diseases. Although medicine has advanced greatly with the development of antiretrovirals, there are still many complications that may arise. My hope is to contribute to HIV research in order to help the 36.7 million people that are currently living with HIV.

CAREER ASPIRATIONS

As a medical student, I am constantly looking to advance the medical field. Research provides me that opportunity to contribute something meaningful so perhaps one day, I may incorporate in my practice to best help my patients, especially considering HIV is ubiquitous in the world.

The spread of human immunodeficiency virus 1 (HIV-1) from a mother to her child during pregnancy is the most common manner by which children get HIV. Although there is currently no cure for HIV, the use of HIV drugs has significantly prolonged the life of infected individuals and decreased the spread of the virus. However, long term complications are emerging even after taking HIV drugs. Molecules that are expressed during infection still persist in HIV infected individuals despite being on these drugs. These factors are thought to contribute to heart disease; yet there is still much about HIV infection that remains unclear. While many research studies have been published on these molecules and their link with HIV disease activity in adults, data on HIV-infected children is limited. If we can measure and detect these molecules, we can learn more about additional health complications that may arise in HIV-infected infants and children despite suppression of the infection by HIV drugs.

It was exciting to examine blood samples from children collected by Canadian Institute of Health Research (CIHR) funded Early Pediatric Initiation - Canadian Child Cure Cohort study (EPIC), principal investigator Hugo Soudeyns. This experience provided me with invaluable insight and understanding on HIV. I have recognized the complexity of a new field and even gathered useful data that may suggest that, despite taking antiretrovirals, HIV infected children may experience persistent inflammation and activation of other pathological markers. I was granted the opportunity to do a poster presentation, and some of the data was also presented at the AIDS 2016 Durban South Africa international peer-reviewed abstract.

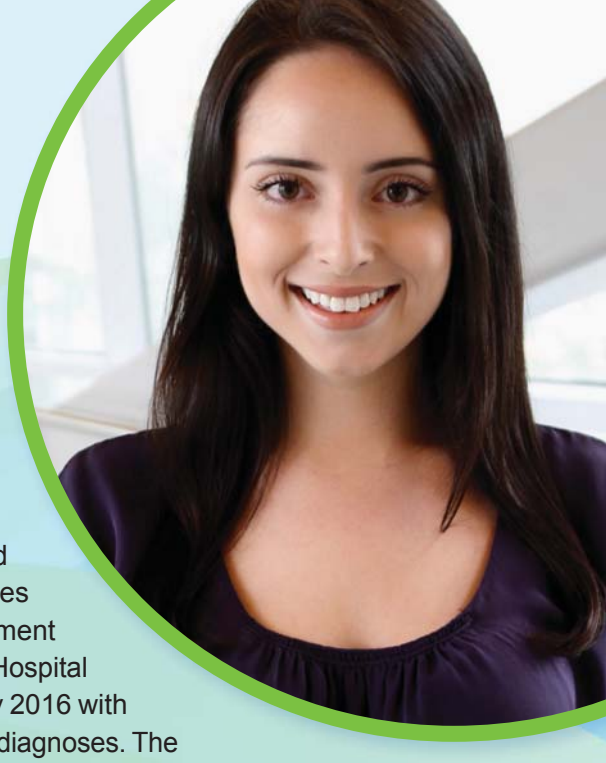
HOW I LEARNED OF THIS OPPORTUNITY

I am honored and thrilled that WCHRI has funded my research. I was referred to the WCHRI summer studentship from my supervisor and my fellow classmates who have greatly appreciated WCHRI's passion for training new researchers. Thank you for this opportunity.

FUNDING PARTNER

This project was funded by the Stollery Children's Hospital Foundation.

CATHERINE STEWART



SUPERVISOR

Dr. Sarah Curtis

PROJECT TITLE

Does Breed-Specific Legislation (BSL) protect children from dog bites and associated trauma? Chart reviews from a Sentinel Site as the first step in a "Natural Experiment"

MOTIVATION

My motivation to participate in this research project was driven by my interest in pediatric clinical research, I was able to gain invaluable insight into the research process while exploring the fields of both pediatric and emergency medicine.

CAREER ASPIRATIONS

Following my completion of a BSc degree this upcoming year, I am hoping to pursue a career as a physician, possibly specializing in pediatrics or neonatology.

FUNDING PARTNER

This project was funded by the Stollery Children's Hospital Foundation.

Previous research has identified pediatric dog bites as a significant type of injury seen in emergency departments, but a neglected consideration during development of policy and practice of municipal legislation and health services. My project involves reviewing 732 emergency department charts from the Stollery Children's Hospital for visits from January 2002 to July 2016 with dog bite related chief complaints or diagnoses. The project aims to evaluate incidence and management of dog bites, as well as compare our studied variables before, during and after the City of Edmonton's to Breed-Specific Legislation (BSL) changes (implementation 1997; removal 2012).

Relevant data is extracted and entered into a REDCap database, covering six broad domains: (1) Visit details (including length of stay, time to clinician, disposition) (2) Demographics and medical history of the child (3) Dog characteristics and circumstances of the incident (including breed, relationship of dog to the child, vaccination status of the dog, circumstances of bite) (4) Characteristics of injury (5) Management of injury in the ED (including analgesia, antibiotics, vaccines, lab tests, debridement, sutures, amputations, sedations) (6) Consultations within/outside AHS (including Animal Care and Control, Public Health Office and EPS). Analysis will be performed with the assistance of a statistician; we will use descriptive statistics to describe categorical variables as proportions and continuous variables as means or medians.

HOW I LEARNED OF THIS OPPORTUNITY

While considering the numerous summer research opportunities promoted through the Faculty of Medicine & Dentistry website, Dr. Curtis' project stood out as the most intriguing clinical research opportunity due to the unique circumstances requiring an Emergency Department (ED) visit. My first exposure to clinical research was such a positive experience thanks to the incredibly supportive team I have had the privilege to work with; it has opened my eyes to the vast opportunities within research and has inspired me to pursue more clinical research endeavors in the future.

SARAH WALTON

SUPERVISOR

Dr. Shannon Scott

PROJECT TITLE

Usability evaluation of arts-based digital knowledge translation tools for parents with acutely ill children

MOTIVATION

Child health and education are two areas I am passionate about. This, in combination with finding a supervisor who offered both a supportive and challenging environment with opportunities to get exposure in many different areas within her health research team, motivated me to participate in this particular research.

CAREER ASPIRATIONS

After completing my BScN (Hon) degree, I hope to continue on with further education in the health sciences field. Areas of interest include medical doctor, nurse practitioner, and clinical nurse specialist. This studentship has given me valuable skills within the realm of research that will better prepare me for future education.

Traditional modes for communicating health information (i.e. standardized written instruction sheets) are increasingly ineffective at reaching our diverse population within Canada. Digital arts-based Knowledge Translation (KT) tools bridge this gap by providing consumer friendly and easily accessible information to people with varying literacy levels and language skills. Examples of digital arts-based tools include eBooks and RSA Animation Whiteboards. (Whiteboards are short video clips of "in progress" graphic drawings with an accompanying voiced narrative). Evidence in Child Health to improve Outcomes (ECHO), the research team I am a part of, created three such tools: a gastroenteritis eBook, gastroenteritis whiteboard and croup whiteboard to better equip parents with the knowledge to maximize their child's heath.

My project involves conducting usability evaluation on these tools to test their capacity to be used easily, efficiently, and satisfactorily by their target audience. In order to do this, I surveyed a number of parents waiting in an Emergency Department (ED) and got their opinions on the effectiveness of the tools after they viewed one of the three. Afterward, I cleaned and analyzed the data from the survey (both quantitative and qualitative) to find differences between the tools and areas for improvement before the tools are disseminated to the public.

A second part to the survey included asking parents about their experience of participating in research in an emergency department waiting room. Because the parent population is so difficult to access for research studies, there was a need to evaluate whether or not the ED waiting rooms are viable settings to do more research with this population in the future. This area of parental engagement in child health research will be further expanded upon in my upcoming honours project.

FUNDING PARTNER

This project was funded by the Stollery Children's Hospital Foundation.

Thank you to all the participants, supervisors, mentors and community partners who participated in this year's program!

To find out more about the WCHRI Summer Studentship Program, visit:
http://www.wchri.org/summer-studentships

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