



ANNUAL REPORT

2015-16

SickKids[®]

THE HOSPITAL FOR
SICK CHILDREN

Department of
Paediatrics

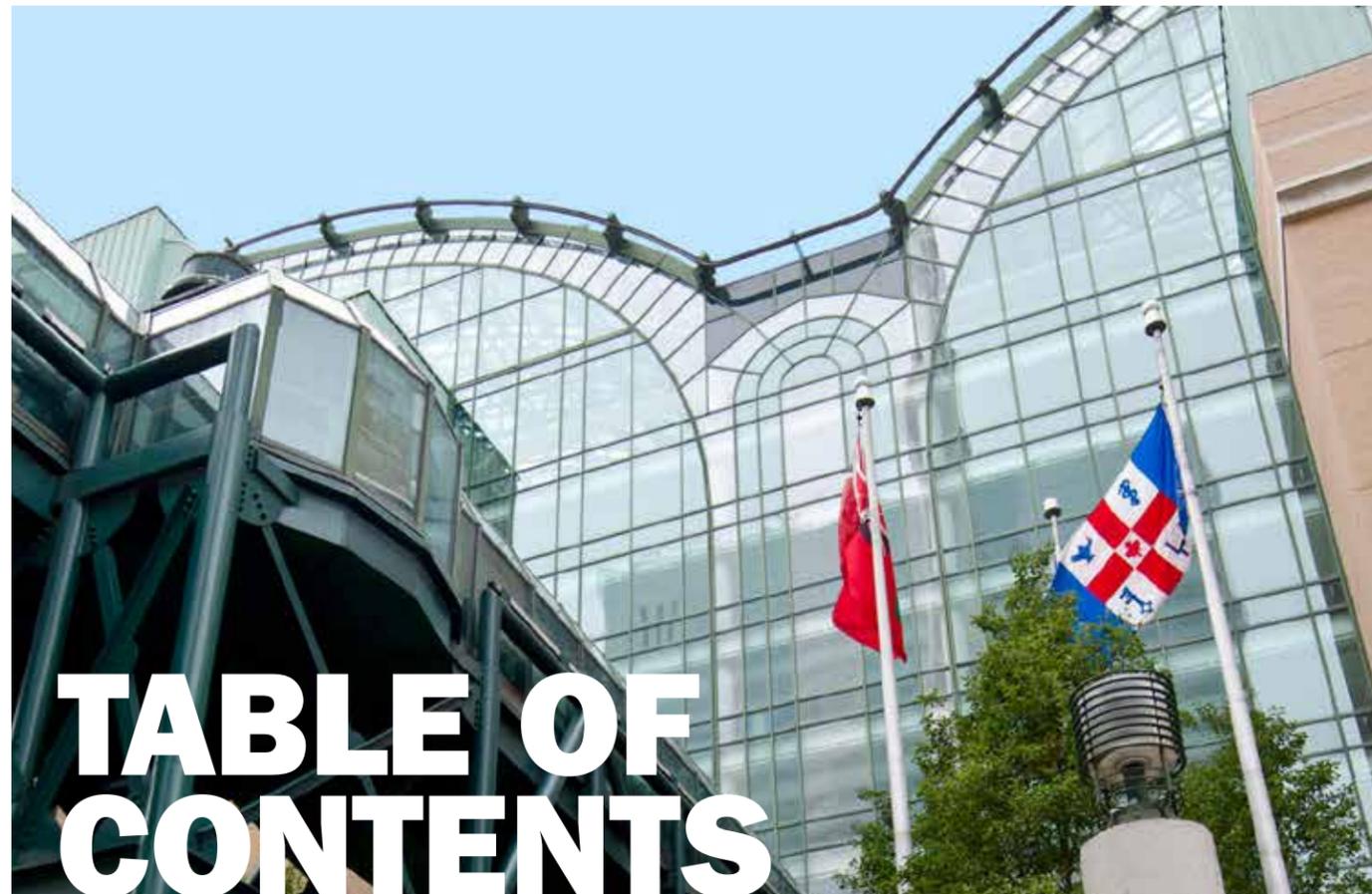


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CHAIR/CHIEF'S REPORT



At the end of June 2016, my ten year term as Chair of the Department of Paediatrics at the University of Toronto and Paediatrician-in-Chief at SickKids came to an end, ten years being the rule at these two great institutions. And completely appropriately too, since all institutions need periods of renewal and reflection in order to steam ahead. I have no doubt that Ronald Cohn who has assumed these roles is an outstanding choice and will move the department ever forwards.

I would personally wish to thank all members of the department, whether at SickKids or in other UofT-affiliated institutions, for their enormous contributions. It is because of all of you that our department ranks among the best in the world.

There are some very simple metrics that I have kept repeating; let me summarize them briefly here:

1. our education programs have never been in such good shape: thanks to the leaders of all the components of this portfolio;
2. our research funding has never been at the current level: we continue to recruit scientists and investigators who are leaders in their areas; and

3. clinical care is enriched by the patient safety and quality strategies; choosing wisely initiatives; greater accountability and more.

And now some direct thanks:

- to the members of the Paediatrics Executive for their unwavering support and effort: Rayfel Schneider (education), Meredith Irwin (research), Jeremy Friedman (clinical), Marilyn Monk (hospital operations) and Ben Vozzolo (departmental operations);
- to the division chiefs and their training program directors for keeping us heading forward;
- to the Dean, Vice-Deans, Associate Deans of the Medical School, so ably led by Dean Trevor Young; SickKids Senior Executive team, led first Mary Jo Haddad and now Mike Apkon.

In the past 10 years we recruited over 100 new faculty, promoted to Full or Associate Professor 154 members of the faculty. I believe our commitment to excellence has served us very well indeed and will continue to do so.

It has been a joy and a privilege to have been in these roles the past 10 years. There are no doubt bumps in the road ahead, especially with faculty and research funding. Nonetheless the department is well positioned to meet these challenges.

...the torch; be yours to hold it high!
John McCrae; In Flanders Field

Denis Daneman MBBCh FRCPC DSc(Med)

A NEW ERA...DR. RONALD COHN APPOINTED CHIEF OF PAEDIATRICS AT THE HOSPITAL FOR SICK CHILDREN



Following an extensive international search, The Hospital for Sick Children (SickKids) Board of Trustees and The University of Toronto's Governing Council are pleased to announce the appointment of Dr. Ronald Cohn to the position of Chief of Paediatrics, SickKids and Chair of Paediatrics at The University of Toronto. Dr. Cohn will assume his responsibilities on July 1, 2016 following Dr. Denis Daneman's completion of his ten-year term.

Dr. Cohn is an outstanding clinician, scientist, and educator recruited to SickKids in 2012 to be the Chief of the Division of Clinical and Metabolic Genetics, Co-Director of the Centre for Genetic Medicine and Senior Scientist. He also became the Inaugural Women's Auxiliary Chair in Clinical and Metabolic Genetics in April of 2013, and is an Associate Professor in the Departments of Paediatrics and Molecular Genetics at the University of Toronto (U of T).

"I am excited to have Dr. Cohn join the SickKids executive team as Chief of Paediatrics. I am certain that he will be an exceptional leader within the hospital and across the university's paediatric community," says Dr. Michael Apkon, SickKids President and CEO. "His excellent clinical, scientific and people leadership skills and strong commitment to innovation will continue to inspire our Department of Paediatrics in world-class care and integration with our research enterprise, resulting in greater health outcomes for our children and families."

Dr. Cohn has combined his clinical and research interests working to develop programs and influence policies that will bring the power of genomics to individualized approaches to care. In July of 2013, under his leadership, the Centre for Genetic Medicine launched the first paediatric focused Genome clinic at SickKids, which is devoted to discovering new diagnostic and treatment options for paediatric disease. Dr. Cohn is also an accomplished scientist, focusing on the genetics of muscular dystrophies. Most recently, his laboratory has started to investigate the application of a new genome

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editing technology, CRISPR/Cas9 that holds the promise of correcting genetic abnormalities that lead to disease.

"Dr. Cohn has helped establish Toronto as a centre in the emerging field of Genetic Medicine since joining the University of Toronto and SickKids in 2012. He is a talented physician and a sterling researcher. We look forward to the energy and vision he'll bring to supporting children's health in his new roles," says Professor Trevor Young, U of T's Dean of the Faculty of Medicine and Vice Provost, Relations with Health-Care Institutions.

Dr. Cohn holds a medical degree from the University of Essen, Germany, and did his postdoctoral fellowship at the Howard Hughes Medical Institute. Before joining SickKids he was at the McKusick-Nathans Institute of Genetic Medicine at Johns Hopkins where he became

the Director of the worlds' first multidisciplinary centre for Hypotonia. Dr. Cohn has received numerous awards including the David M. Kamsler Award for outstanding compassionate and expert care of paediatric patients, 2004; the First Annual Harvard-Partners Center for Genetics and Genomics Award in Medical, 2006; and, the NIH Young Innovator Award, 2008.

Dr. Michael Apkon
President and CEO,
The Hospital for Sick Children

Trevor Young, MD, PhD, FRCPC, FCAHS
Dean, Faculty of Medicine and Vice Provost,
Relations with Health- Care Institutions,
University of Toronto



ADOLESCENT MEDICINE

The Substance Abuse Team working together – outpatient, day treatment & outreach

From Left to Right: John Gibson, Julie Birrell, Paul Pereira, Dr. Karen Leslie Carolyn Williams and John Westland

DIVISION OF ADOLESCENT MEDICINE

The Division of Adolescent Medicine at The Hospital for Sick Children is an interprofessional group committed to promoting and providing excellence in adolescent health care, and collaborating with local, national and international communities in the areas of patient care, training, education and research. Some of the exciting events of the year included: a Strategic Planning process; our work with CAPHC on transition guidelines; and the explosive growth of the Transgender Youth Clinic.

The Young Families' Program continues to offer interprofessional education and experience to trainees from a variety of disciplines including medicine, nursing, social work and psychiatry with a particular focus on social paediatrics to its clinical, research and educational programs. Research and Quality Improvement projects include work in the areas of maternal and child outcomes, infant mental health, developmental screening and evidence-based health services for adolescent parents. The program continues its progress towards the

Transgender Program is growing quickly, with 20 referrals a month. The team is doing extensive education in outlying areas so that adolescents can get this expert care in their own communities.

development of evidence based adolescent parenting interventions, with a particular emphasis on maternal and infant mental health. Outreach to Community networks and affiliations remain an active focus.

The Substance Abuse Program provides a continuum of care from outpatient to day treatment, incorporating best practices in clinical care, while providing learning for a variety of health professional trainees. The program also provides outreach to schools, group homes and youth-serving agencies across the GTA. The program has introduced enhanced services for parents and is also one of the lead agencies involved in a pilot project aimed at enhancing program evaluation of youth addiction programs in Ontario. The program is also launching a new education resource for teens about the health risks of cannabis use entitled 'Just Weed'.

The Good 2 Go Transition Program (Good 2 Go) continues to support SickKids staff and members of the paediatric and adult healthcare community in serving the needs of youth in healthcare transitions. Highlights from the past year include supporting novel initiatives via a transition

navigator in the sickle cell program, transfer clinics in aftercare oncology and transition education events in neurosurgery outreach program. We continue to serve as consultants/experts at the local hospital community level and nationally, with our work with the Epilepsy Transition Working group and efforts to develop clinical practice guidelines for transitions with the Canadian Association of Paediatric Health Centres, respectively. We published research in the area of youth-focused interventions for

PILOT STUDY: BENEFITS OF A TRANSFER CLINIC IN ADOLESCENT AND YOUNG ADULT KIDNEY TRANSPLANT PATIENTS.
 The purpose of this study was to investigate whether a kidney transplant transfer clinic for adolescent and young adult kidney transplant recipients transitioning from pediatric to adult care improves adherence post-transfer. We found that attendance at a single transfer clinic was associated with improved adherence and renal function in the year following transfer to adult care. If these changes are sustained, they may improve long-term graft outcomes for adolescent kidney transplant recipients.

transition to adult healthcare and continue our research in palliative care, inflammatory bowel disease, and transition-specific initiatives (i.e., Transfer Clinics).

The Eating Disorders Program provides integrated clinical services (Inpatient, Day Hospital, Outpatient and Consultation) to adolescents and their families. All aspects of the program are interdisciplinary and family-based, as fits with best evidence based practice. Our newest program, the Children's Outpatient Program for Eating Disorders (COPE), provides care specifically designed for those under 12 years old who struggle with eating issues and co-morbid illnesses. Educating current and new providers on best practices in eating disorders care remains a core mission of the program. Current research is in the areas of transition to adult care, bone health, and the treatment of young children with eating disorders. We continue to participate in the Ontario Community Outreach Program for Eating Disorders which strengthens and promotes access to care for people with eating disorders throughout the province.

SickKids Interprofessional Team for Youth continues to provide adolescent health care for young people with chronic illness or disability through regular attendance in subspecialty clinics (solid organ transplant, rheumatology, haematology, STOMP, sleep and spina bifida) and through our weekly SITY clinics. The Transgender Youth Clinic (TYC), operated jointly by Adolescent Medicine and Endocrinology, has seen over 200 patients in the past year and receives 20-30 referrals per month. TYC team members are actively involved in education and outreach to increase capacity in the community and continue to partner with community agencies to optimize the care of gender independent youth and their families. SITY is an important educational resource, providing

continuity clinics for fellows and subspecialty residents and teaching about a broad range of adolescent issues. SITY continues to optimize the involvement of practitioners and trainees in a number of disciplines to role-model and deliver care in an integrated and interprofessional manner.

PUBLICATIONS

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A Novel Family Based Intervention for Transition Age Youth and their Families: A Two Phase Feasibility Study. Dimitropoulos G, Colton P, Olmsted M, Kovacs A, Woodside B, Steinegger C, Kaufman M, Toulany A. **Ontario Mental Health Foundation**. \$110,000 CAD. 2013 -2016

Assessment and Treatment of Oppositional Behaviour, Conduct Problems and Aggression in Children with Attention Deficit Hyperactivity Disorder, Oppositional Defiant Disorder and Conduct Disorder: Bringing Knowledge to Action Among Family Physicians and Pediatricians. Pringsheim T, Johnson D, Gorman D, Cooke L, Doja A, Andrade B, Millette J, Ng V, Thomas R, Mousmanis P, Handanos D, Goldade R, Belanger S, Wong S, Carrey N, Leverette J, Katzman DK, Murphy A, Brehaut J. **Shire, Canada**. \$100,000CDN 2015- no end date

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Design and initial testing of a wearable sleep sensor and mHealth intervention to promote sleep for adolescents. Stremmler R, Cafazzo J, Katzman DK, Keilty K, Maser C, Pullyenayegam E. **Canadian Institutes of Health Research** \$267, 442. 2014-2016

Introducing a Health Platform to Improve Patient Engagement. Kaufman M., Whitehouse S. **Ontario Centers of Excellence**. \$350,000 CAD. 2015 -2017

Improving Outcomes for Youth with Type 1 Diabetes in Transition to Adult Care Through Strengthening integration with Primary Care: An Exploratory, Cross-Provincial Study. Chaf R, Gatto A, Guttman A, Aubrey-Bassler, F. Bridger K, Tracey L; Knight J; Newhook, Leigh Anne; Shah, Baiju R; Shulman R; Toulany A. **Canadian Institutes of Health Research**: SPOR Network in Primary & Integrated Health Care Innovations - Quick Strikes. \$75,000. 2015 – 2016.

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STAFF LISTING

Division Head

Dr. Miriam Kaufman

Full-Time

Dr. Katherine Hick

Dr. Debra Katzman

Dr. Cathleen Steinegger

Dr. Alene Toulany

Part-Time

Dr. Joey Bonifacio

Dr. Ian Chen

Dr. Chana Korenblum

Dr. Eudice Goldberg

Dr. Ashley Vandermorris

Clinical Fellows

Dr. Alanoud Al Ansari

Dr. Zahra Alebraheem

Dr. Mariano Macias

Dr. Robert Loung

Subspecialty Residents

Dr. Nicholas Chadi

Dr. Megan Cooney

Dr. Mariel Heller

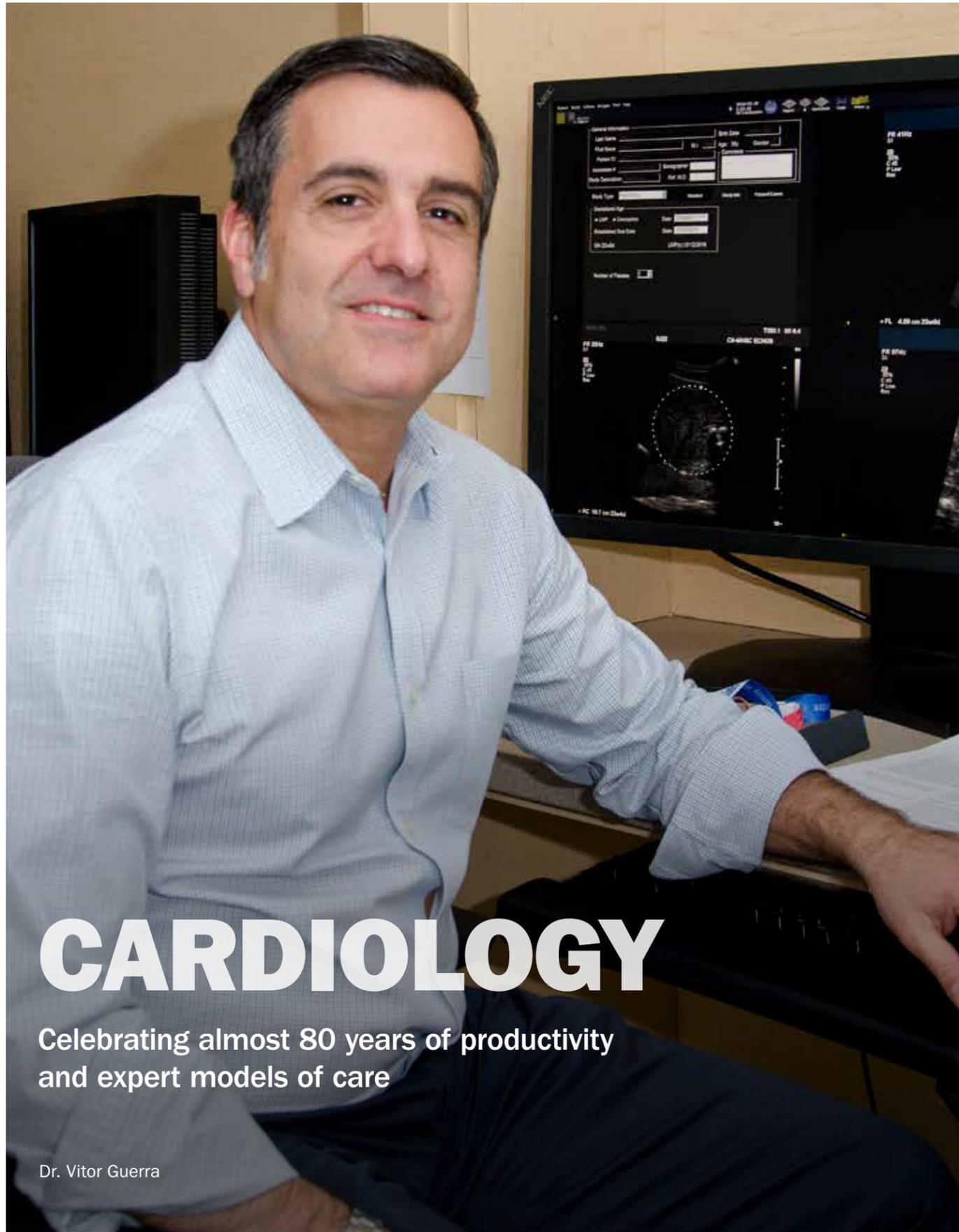
Dr. Allison Rodrigues

Administrative Staff

Noreen Akhtar

Joy Gouldbourne

Victoria Snell



CARDIOLOGY

Celebrating almost 80 years of productivity and expert models of care

Dr. Vitor Guerra

DIVISION OF CARDIOLOGY

The Division of Cardiology at The Hospital for Sick Children was established in 1938, as one of the first dedicated units treating children with congenital heart disease. Almost 80 years later, the Division remains one of the most prestigious and productive in the world. As an integral partner in the Labatt Family Heart Centre, it forms an important part of a multi-disciplinary and “expert model of care” team, with dedicated cardiac intensive care facilities, world-leading imaging teams, internationally renowned interventional cardiology and electrophysiology

services, and one of the largest heart function and transplant groups. The fellowship program attracts high caliber candidates from North America and around the world. Research and development has always been at the forefront of the activities of the Division, and the current Faculty continues to perform at the highest level with over \$3 million in new research funding acquired in the past year and very high productivity. The Heart Centre is a long-standing member of the Paediatric Heart Network (an NIH funded network of centres of excellence), is the lead

The Heart Centre recently launched the Cardiac Precision Medicine program as part of SickKids leadership in the newly formed Ted Rogers Centre for Heart Research that is paving the way for genomics-driven medicine.

for a Canada-wide pediatric transplant research network, houses the Congenital Heart Surgeons Society database, and is an international leader in clinical epidemiology and outcomes research in congenital heart disease. The Heart Centre has made major investments in translational and basic research including acquiring the latest cardiac imaging technologies, advances in fetal interventions, continued growth of the Biobank which is one of the largest in the world, and cuttingedge genomics and stem cell research. The Heart Centre recently launched the Cardiac Precision Medicine program as part of SickKids leadership in the newly formed Ted Rogers Centre for Heart Research that is paving the way for genomics-driven medicine. Working closely with our surgical colleagues, the interventional cardiology program has been at the leading edge of the field for well over 20 years, and continues to develop novel interventions and hybrid procedures. Our multi-disciplinary imaging faculty is unsurpassed in the area of cardiovascular functional research particularly as it relates to the fetal circulation and the relationship to neurodevelopment. The division has established a long-awaited cardiology specific information technology system.

This is now used clinically for echocardiography, fetal echocardiography, diagnostic coding, and outpatient clinic including an electronic medication reconciliation system. We look forward to expanding the system to the heart station, cardiac imaging, interventional cardiology, and heart function and transplantation over the coming months. In summary, the Division, working in close collaboration with colleagues from surgery, anesthesia, intensive care, and the many specialties involved in the care of children with heart disease, goes from strength to strength in the clinical, educational, and research domains.

Research and development has always been at the forefront of the activities of the Division, and the current Faculty continues to perform at the highest level with over \$3 million in new research funding acquired in the past year and very high productivity.

HONORS AND AWARDS

Friedberg, MK: The American Society of Echocardiography. Designated Fellow, Toronto, Ontario, Canada 2016

Hamilton, R: The Paul C. Gillette Pediatric and Congenital Electrophysiology Society (PACES) Research Grant to trainee Tamara Koopmann. \$10,000 US. 2015 – 2017

Kirsh, JA: Elected President of College of Physicians and Surgeons of Ontario, Toronto, Ontario, Canada June 2015

Kirsh, JA: Master's in Healthcare Management, Harvard University, Boston, MA, USA. May 2015.

Mital, S: (Supervisor) AK Manickaraj (Postdoctoral Fellow) Heart and Stroke Foundation of Canada Research Fellowship, Exome sequencing for RV remodeling after tetralogy of Fallot repair. \$83,000

Mital, S: (Supervisor) George Manase. Global Cardio-oncology Meeting. Outstanding abstract 2015

Mital, S: (Supervisor) Allison Ouellette. IMS SURP Joint-Funding Award 2015

Mital, S: (Supervisor) SickKids Summer Research Program Poster Presentation Award, University of Toronto, Allison Ouellette 2015

Mital, S: Appointed Vice-Chair, American Heart Association Council on Cardiovascular Disease in the Young 2015

Mital, S: Appointed Scientific Co-Lead, Cardiac Precision Medicine Program, Ted Rogers Centre for Heart Research 2015

Seed, M: Senior Author. International Society of Ultrasound in Obstetrics and Gynecology. Best Abstract 2015

Seed, M: Senior Author. Society of Cardiovascular Magnetic Resonance. Best oral presentation 2015

Seed, M: Co-author. International Society of Magnetic Resonance in Medicine. Summa cum Laude 2015

Seed, M: Supervisor - Ted Rogers Centre for Heart Research. Education Award (\$2500) 2015

PUBLICATIONS

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An International cohort study on DISCOrdant Atrio-ventricular connection. Multicenter retrospective case series. Baruteau A, Nield L, Parker R, Munk N. **Association of European Paediatric Cardiologist**. 30,000 Euros. Jan 1-2014-December 1-2017

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Cardiovascular Biomarker Discovery in Disease and Development through Predictive Precision Proteomics (CBD3P3). Keller G, Liu P, Mital S. **Ministry of Research and Innovation Ontario Research Fund - Global Leadership Round in Genomics & Life Sciences Competition (GL2 Competition)**. \$6,641,774 CAD. Jan 1-2012-December 31-2015

Cardiovascular physiology and brain development in neonates with congenital heart disease. Miller SP, Seed M, Blaser SI, Brant RF, Chau V, Hickey EJ, Kingdom JC, Ly LG, MacGowan CK, Schwartz SM, Sled JG. **Canadian Institutes of Health Research (CIHR)**. \$1,000,800 CAD. Jul 1-2015-June 30-2021

Clinical Assessment of Thrombosis in Children and Heart surgery: The CATCH study. McCrindle B, Mital S. **CIHR Operating Grant**. \$1,514,330 CAD. Oct 1-2010-September 9-2015

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Creating a fetal lamb model of hypoplastic left heart syndrome. Chaturvedi RR, Jaeggi ET, Keunen J, De Vrijer B. **The Oakville Community Foundation, Donor: Andrew & Susan Cockwell**. \$57,800 CAD. Jun 1-2011-May 31-2016

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Does myocardial scarring identify patients at risk in childhood hypertrophic cardiomyopathy? A multicenter study. Grosse-Wortmann L, Maron M, Benson L. **Labatt Family Heart Center Innovation Funds, Toronto, ON, Canada**. \$24,500 CAD. Feb 1-2015-February 28-2016

Early detection and neurodevelopmental outcome in late onset intrauterine growth restriction Seed M, Jaeggi E, Miller S, Kingdom J, Macgowan C, Yoo SJ, Kelly E, Blaser S, McCrindle B. **SickKids Foundation and CIHR new investigator**. \$298,390 CAD. Oct 1-2013-March 31-2016

EARLY: Early Assessment of Risk: Lipids in Youth Study. Khoury M, McCrindle BW, Manlhiot C, Gibson D, Stearne K, Chahal N, Dobbin S, Hamilton J, Birken C. **The Labatt Family Heart Centre Innovation Fund**. \$22,615 CAD. Jul 1-2015-June 30-2017

Echocardiography teaching module development and research. Golding F, Bennett S, McCrindle BW, Manlhiot C. **The Labatt Family Heart Centre Innovation Fund**. \$20,310 CAD. Jul 1-2015-June 30-2017

Education Award. Mike Seed, Rachel Wald, Matthew Sermer. **Ted Rogers Centre for Heart Research** \$2,500 CAD. Jun 1-2015-July 30-2016

EMPOWER: Enhancing Breast Milk Production with Domperidone in Mothers of Preterm Neonates. Assessment of infant electrocardiograms to determine the presence of Q-Tc interval prolongation and cardiac arrhythmias for the EMPOWER Trial. Asztalos E, Campbell-Yeo, M, Da O, Nield, LE. **Sunnybrook Research Institute Funding, Canadian Institute for Health Research**. \$999,454 CAD. Jan 1-2013-December 1-2016

Evaluation of knowledge translation and retention using an interactive echocardiography training module. Golding F, McCrindle BW, Bennett S, Manlhiot C. **Labatt Family Heart Centre Innovation Funds**. \$20,310.00 CAD. Nov 1-2014-November 1-2016

Exome sequencing for RV remodeling after tetralogy of Fallot repair. Manickaraj AK, Mital S. **Heart and Stroke Foundation of Canada Research Fellowship Award**. \$83,000 CAD. Jul 1-2013- June 30-2015

Fetal Atrial Flutter & Supraventricular Tachycardia (FAST) Therapy Trial. Jaeggi E, Blom NA, Carvalho JS, Cuneo B, Gembruch U, Kelly E, Moon-Grady A, McCrindle B, Offringa M, Ryan G, Saul P, Golding F. **Canadian Institutes of Health Research**. \$1,844,945 CAD PI (expected \$1.35 M). Oct 1-2014-September 1-2019

Gene discovery in a large family with congenital JET. Hamilton RM. **The Rare Disease Foundation**. \$3,500 CAD. Jan 1-2015-December 31-2016

Immunogenetic markers of extreme clinical phenotypes of post-transplant lymphoproliferative disorder: A pilot project. Allen U, Dipchand AI, Grunebaum E, Beyene J, Preiksaitis J, Levings M, Hu P, Ng V. **Enduring Hearts Foundation Inc**. \$43,729 CAD. Jul 1-2015-June 1-2016

Introducing an mHealth Platform (TickiT) to improve patient engagement. Kaufman M, Whitehouse S, Golding F. Funded by **Ontario Centres of Excellence** (AdvancingHealth Program). \$625,610.00 CAD. May 1-2015-February 1-2017

iPS cells to model vascular disease in patients with Williams-Beuren syndrome. Ellis J, Mital S. **CIHR Operating Grant** (MOP 126146). \$640,182 CAD. Apr 1-2013-March 31-2018

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Maternal hyperoxygenation in congenital heart disease. Porayette P, Seed M, Hickey E, Miller S, Jaeggi E. **Labatt Innovation Fund**. \$25,000 CAD. Jul 1-2015-June 30-2016

Mechanistic interrogation of bicuspid aortic valve associated aortopathy. Dietz H, Loeys B, Mertens L, Mital S. **Leducq Foundation Transatlantic Network of Excellence**. \$5,998,895 CAD. Jan 1-2013-December 31-2017

MRI assessment of the impact of fetal brain oxygenation on brain development in congenital heart disease. Seed M, Jaeggi E, Miller S, Kingdom J, Macgowan C, Yoo SJ, Kelly E, Blaser S, McCrindle B. **Pediatric Heart Network Scholar Awards Funding For Mentored Research**. \$75,000 CAD. Jul 1-2013-June 30-2015

Neural and peripheral approaches linking circuitry and circulation in adolescent bipolar disorder. Goldstein B, Andreazza A, Macintosh B, Young L, Feinstein A, McCrindle B, Youngstrom E, Levitt A, Sassi R. **Canadian Institutes of Health Research**. \$945,525 CAD. Jul 1-2014-June 30-2016

Non-invasive monitoring of pediatric kidney allograft injury to improve diagnosis and patient outcome. Hansen T-B, Mital S. **CIHR Operating Grant**. \$984,717 CAD. Oct 1-2012-September 30-2017

Novel approaches to the prediction, diagnosis and treatment of cardiac late effects in survivors of childhood cancer. Mital S, Nathan P. **Canadian Institutes for Health Research Team Grant**. \$2,797,749 CAD. Jun 1-2011-June 1-2016

Pediatric Echo Z-score & ECG Database Project for the Pediatric Heart Network. The Hospital for Sick Children, Toronto. Dragulescu A, Schwartz S, Mital S, McCrindle B. Funded by the **NIH NHLBI**, amount annually \$7,518,965 USD. Jun 1-2015-December 1-2016

Pediatric Heart Network – The Hospital for Sick Children, Toronto. McCrindle BW, Schwartz S, Mital S. Benson L, Brandao L, Caldarone C, Chan A, Gruenwald C, Holtby H, Manlhiot C, Mertens L, Russell J, Sivarajan B, Arsdell GV, Sananes R. **NIH NHLBI** (1U10HL109777-1). \$7,518,965 USD. Jun 1-2015-December 1-2016

Placental Insufficiency and Aortic isthmus Flow (PIAF Study). Jaeggi E, Fouron JC, Pasquier JC, Audibert F, Bujold E, Chetaille P, Morin L, Takser L, Weiss-Lambrou R. **Canadian Institutes of Health Research**. \$907,333 CAD. Oct 1-2009-September 30-2015

Prevalence and evolution of late gadolinium enhancement and myocardial hypertrophy in childhood hypertrophic cardiomyopathy. Grosse-Wortmann L, Maron M, Benson L, Chan R. **Children's Cardiomyopathy Foundation (CCF)**. \$46,917.61 USD. Feb 1-2015-February 28-2016

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Septal insertion injury mediates adverse ventricular-ventricular interaction in right ventricular pressure and volume loading. Friedberg MK., Hunter K, Hinek A, Macgowan C, Gross-Wortman L, Connelly K. **Grant-In-Aid Heart & Stroke Foundation of Canada**. \$246,082.00 CAD. Jul 1-2016-June 30-2019

Stenting of the fetal venous duct. Jaeggi E, Chaturvedi R, DeVrijer B. **Labatt Family Heart Center Innovation Grant**. \$21,850 CAD. Oct 1-2013-September 30-2015

Ted Rogers Personalized Genomic Medicine Program. SickKids Scientific Co-Lead, Mital S, Cohn, R. **Ted Rogers Centre for Heart Research**. \$40,000,000 CAD. Dec 1-2014-December 1-2021

The Canadian Arrhythmia Network Cascade Screening and Risk Assessment Initiative (CANet CSI). Krahn A, Hamilton RM. **Networks of Centres of Excellence (NCE) and Canadian Arrhythmia Network (CANet)**. \$249,165 CAD. Aug 1-2015-Jul 31-2017

The Chapter Study: Congenital Heart Adolescents Participating in Transition Evaluation Research. Mackie A, Sananes R, Khush A, McCrindle BW, Kovacs A, Rempel G, Nichols D. **Heart and Stroke Foundation of Canada**. \$206,173 CAD. Jul 1-2016-June 30-2019

The CHAPTER Study: Congenital Heart Adolescents Participating in Transition Evaluation Research. Mackie A, McCrindle BW, Kaufman M, Anthony S, Oeschlin E, Sananes R, Kovacs A, Rempel G, Magill-Evans J, Nicholas D, Yasui U, Robert C, Rankin K, Manlhiot C. **Heart and Stroke Foundation** as a Multi-Provincial Grant-in-Aid. \$358,115 CAD. Jul 1-2012-June 30-2015

The CORRELATE Study: Canadian Outcomes Registry Late After Tetralogy of Fallor Repair. Wald R, McCrindle BW, Farkouh M, Caldarone C, Cavaller-Garrido T, Grewal T, Hancock-Friesen C, Human D, Kovacs A, Lebovic G, Nadeem S, Redington A, Silversides C, Tham E, Therrien J, Vonder Muhl I, Wintersperger B. **Canadian Institutes of Health Research**. \$533,085 CAD. Jul 1-2012-June 30-2015

The Kid Connection Project: A feasibility study of solution-focused coaching to foster heart-healthy habits in children and young people with spina bifida. McPherson A, Maltais DB, Moffet H, Schweltnus H, Biddiss E, Merette C, Swift JA, Lemay M, Church P, McCrindle BW, de Groot J, Keenan S, Chen L. **Heart and Stroke Foundation of Ontario**. \$150,184 CAD. Apr 1-2016-March 30-2018

Thromboprophylaxis before Fontan for neonates and infants with single ventricle physiology. McCrindle B, Schwartz S, Mital S, Benson L, Brandao L, Caldarone C, Chan A, Gruenwald C, Holtby H, Manlhiot C, Mertens L, Russell R, Sivarajan B, Van Arsdell G, Sananes R. Paediatric Heart Network – The Hospital for Sick Children, Toronto. **NIH NHLBI**. \$7,518,965 USD. Sept 1-2011-August 31-2016

Towards a better understanding of Kawasaki disease. Yeung R. McCrindle BW, Siminovitch K. Canadian Institutes of Health Research. \$792,717 CAD. Jul 1-2012-June 30-2017

Understanding the risk of sudden death in families: cascade screening in CPVT. Sanatani S, Hamilton RM. **Heart and Stroke Foundation**. \$258,977 CAD. Jun 1-2016-May 31-2019.

Ventricular function in children with aortic stenosis. Mertens L, Nield L, Dragulescu A, Golding F, Manlhiot C, Van Arsdell G. **Labatt Family Heart Centre Innovation Funds**. \$23,050.00 CAD. Dec 1-2014-June 1-2016

Whole exome sequencing to identify gene-elusive, severe, hereditary dilated cardiomyopathy. **The Rare Disease Foundation**. Hamilton RM. \$3,500 CAD. Jan 1-2015-December 31-2016

STAFF LISTING

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(Interim November 2014 – Present)

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CLINICAL GENETICS & METABOLICS

Leaders in genomic discovery and clinical care

From left to right: Riyana Babul-Hirji, Dr. Neil Sondheimer, Amanda Carnevale, Dr. Raymond Kim

DIVISION OF CLINICAL GENETICS & METABOLICS

2015-16 has been an exciting year for genomic medicine at SickKids and the Division of Clinical and Metabolic Genetics continued to focus efforts on our understanding of disease mechanisms including diagnosis and enhancement of individualized clinical therapeutics. Specifically, the Division in partnership with DPLM and the Centre for Genetic Medicine commenced a two-year pilot project to offer exome sequencing. This pilot was targeted to leverage the required infrastructure and continued development of technical clinical expertise and disease management to influence genomic medicine

outcomes. Divisional leadership through Drs. Bowdin, Meyn and Cohn resulted in the creation of genomic clinical champions across multiple medical specialties that has resulted in a primary diagnosis for 16% of the exomes completed in DPLM's Genome Diagnostics laboratory with a yield rate of 0.23.

While precision medicine initiatives is in its infancy, the Division of Clinical and Metabolic Genetics has been very active in planning efforts with a lens to evaluate the diagnostic utility and health implications of Whole

While precision medicine initiatives is in its infancy, the Division of Clinical and Metabolic Genetics has been very active in planning efforts with a lens to evaluate the diagnostic utility and health implications of Whole Genome Sequencing (WGS) in paediatric care.

Genome Sequencing (WGS) in paediatric care. In January 2016, npj Genomic Medicine published the Genome Clinic's research findings demonstrating WGS to expand diagnostic utility and improve clinical management. The Division is participating in ongoing Genome Clinic research activity to help assess and determine the impact of our findings on medical management aiming to publish additional findings in fiscal 2016-17. Clinical outcomes identified and shared by the Division of Clinical and Metabolic Genetics have influenced the clinical planning and design study in preparation to launch a complimentary Cardiac Genome Research Clinic funded by the Ted Rogers Centre for Heart Research initiative which will commence in the summer of 2016.

Divisional leadership and planning included a fall Genetics symposium, "Individualized Medicine through Genetic Testing – Today, Tomorrow and Beyond", with over 300 delegates in attendance. With a goal to advance genomic literacy to improve access, awareness and responsiveness to evidence-based genomic information across the hospital for both care givers and families, the Division has also led content development for a number of online education tools that were also successfully launched in 2015. Specifically, Nasim Monfared, a genetic counsellor and Adel Gilbert, a genetic counsellor and education advisor, working within the Centre for Genetic Medicine have developed educational resources to help patients and families make informed decisions about whole exome

To address the education needs identified through a hospital wide Needs Assessment, the Division participated with the Centre for Genetic Medicine and led a number of educational initiatives including a 7-part lecture series, "Conversations with Genetics: Your day to day practice", with over 1400 participants. Additionally,

Divisional leadership through Drs. Bowdin, Meyn and Cohn resulted in the creation of genomic clinical champions across multiple medical specialties that has resulted in a primary diagnosis for 16% of the exomes completed in DPLM's Genome Diagnostics laboratory with a yield rate of 0.23.

and whole genome testing. Health care providers across SickKids who offer this testing can have their patients view one or more of these resources to support the consent process - one step towards enhancing efficient and effective patient care in the era of genomic medicine.

To further strengthen SickKids ability to lead in genomic discovery and clinical care, the Division has been very active to influence and inform targeted stakeholders to the many genomic policy issues that continue to attract attention. These include but are not limited to social and ethical challenges, policies to influence future funding and service delivery in the province, and new technologies such as the new gene-editing CRISPR-Cas9. Specific activities supported this year include; Dr. R. Cohn's advocacy efforts to support adoption of Federal genetic discrimination legislation through his expert testimony to the National Senate on multiple occasions (it is expected that the Bill S-201 will be passed in late spring 2016 by the House of Commons); and secondly Dr. Cohn's participation at a world research policy summit on gene-editing with a lens to lead to the future development of a clinical trial at SickKids.

This past year, one of the major work efforts extended from the Division of Clinical and Metabolic Genetics has been to serve as the clinical advisors for the hospital Genome Clinic. Specifically, an area of focus remains the secondary/ predictive medically actionable variants whose pathogenic variants in medically actionable genes that predict risk of a disease (for which the patient may not be symptomatic) remained a targeted work effort extended by all the clinical and metabolic geneticists in addition to serving as clinical genomic champions to all other medical specialties. Published outcomes from this work effort will occur following the return of results to participating patients and families.

Dr. Peter Kannu received the Centre for Genetic Medicine's first Catalyst Grant research competition for his grant, 'The molecular pathobiology of auto inflammatory disease', of which he received an award of \$50,000.

Division Chief, Dr. Ronald Cohn was promoted to Professor and was also awarded the Dr. George Karpati Award in fundraising, public relations, services and/ or advocacy work, and neuromuscular research. Staff Physician, Dr. Saadet Mahmutoglu was promoted to Associate Professor and was also the winner of 10th ILAE Epilepsia Prize for The Best Clinical Research published in Epilepsia in 2015. Dr. Andreas Schulze was the Student's Choice Award Winner of Arts & Science Co-op Programs - Sciences category, University of Toronto Scarborough. And Dr. David Chitayat was the winner of the Margaret W. Thompson Award for excellence in teaching by the Division of Clinical and Metabolic Genetics, The Hospital for Sick Children.

Three genetic counsellors, Stacy Hewson, Nada Quercia and Eriskay Liston, organized the 3rd annual evening event for families and health care professionals in recognition of International Rare Disease Day 2016 on February 29th. Notably, Mayor John Tory declared the day as "Rare Disease Day" in the city of Toronto. This was a very successful function and included several talks from SickKids staff and from parents as well as opportunities for networking. A rare disease is defined as a condition affecting fewer than 1 in 2000 people. With more than 7000 diagnosed rare diseases, there are nearly three million, or 1/12, Canadians affected with a rare disease. Each month, the genetic counsellors organize evening information and support meetings for families with the goal of fostering empowerment and networking.

Families and staff from the SickKids 22q11 Deletion Syndrome (22q11 DS) Clinic gathered at the Toronto Zoo to celebrate International 22q11 DS Awareness Day on Sunday, June 7. Also in attendance were staff and patients from UHN's Dalglish Family Hearts & Minds Clinic for adults with the syndrome. There were 147 people in attendance, and for some, this was their first opportunity to connect with other families affected by the syndrome. This is an annual event hosted by SickKids to

increase awareness about 22q11 DS and provide much needed support to patients and their families. 22q11 DS is a genetic condition that involves missing genetic information on chromosome number 22, and can lead to both medical and developmental problems including congenital heart malformation, immune deficiency, cleft palate, and communication and learning challenges.

The 22q11 DS Clinic continues to offer its transition to adult care program, with 19 patients having participated and seamlessly transferred to the Dalglish Family 22q Clinic for Adults at the UHN. The SickKids 22q Clinic team will be in Sirmione Italy this July at an International 22q Conference, to present their data on their transition program. The Clinic has also continued its collaboration with a parent-led committee to offer a Fall Educational Conference for families and professionals, to be held Nov 12 and 13 at SickKids.

An international team led by Genetics researcher, Rosanna Weksberg and including genetic counsellor Cheryl Cytrynbaum, has identified a specific DNA methylation signature associated with pathogenic mutations in the NSD1 gene (associated with Sotos syndrome). This signature can be used to help classify NSD1 gene variants of unknown significance as pathogenic or benign. This research was published in Nature Communications this past December. Future steps towards utilizing DNA methylation signatures as a diagnostic tool for patient care will be undertaken by the Genome Diagnosis Lab in DPLM.

HONOURS AND AWARDS

Chitayat, D: Winner of the Margaret W. Thompson Award [excellence in teaching], Division of Clinical and Metabolic Genetics, The Hospital for Sick Children, Toronto, ON, Canada. May 2015.

Cohn, RD: Winner of the Dr. George Karpati Award, Muscular Dystrophy Canada, 2015.

Mahmutoglu, S.M-M: Winner of 10th ILAE Epilepsia Prize for The Best Clinical Research published in Epilepsia in 2015.

Schulze, A: Winner of Arts & Science Co-op Programs STUDENT CHOICE AWARD - Sciences category, University of Toronto Scarborough, Toronto, Ontario, Canada. June 2015.

BOOK CHAPTERS

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Almuqbil M, Go C, Nagy LL, Pai N, Mamak E, Mercimek-Mahmutoglu S. New Paradigm for the Treatment of Glucose Transporter 1 Deficiency Syndrome: Low Glycemic Index Diet and Modified High Amylopectin Cornstarch Pediatric Neurology. 2015: 53(3):243-6.

Anderson JA, Hayeems RZ, Shuman C, Szego MJ, Monfared N, Bowdin S, Zlotnik Shaul R, Meyn MS. Predictive genetic testing for adult-onset disorders in minors: a critical analysis of the arguments for and against the 2013 ACMG guidelines. Clinical Genetics 2015:87(4):301-310.

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GRANTS AND FUNDING

Application of a Novel Reduced Representation Bisulfite Sequencing Technology for the Epigenetic Study of Autism. Weksberg R, Yuen R, Choufani S, Anagnostou A. **McLaughlin Centre**. \$65,000 CAD. January 1-2015 – January 1-2016

Autism Spectrum Disorders: Genomes to Outcomes. Scherer SW, Szatmari P, **Genome Canada/Canadian Institutes of Health Research (CIHR)/ Ontario Ministry of Economic Development and Innovation**. \$10,000,000 CAD. January 1-2013 – December 31-2017

Autism Spectrum Disorders Research Program - Optimizing Development and Outcomes in Children and Youth with ASD. Zwaigenbaum L, Weksberg R. **NeuroDevNet** \$59, 000 CAD. January 1-2015 – January 1-2016

Canadian Rare Diseases: Models & Mechanism. Cohn, R D. **CIHR**. \$230 000 CAD over four years. October 1-2014 – April 30-2018

Cellular and molecular mechanisms of skeletal muscle homeostasis during hibernation. Cohn, R D. **NSERC**. \$53,000 CAD over five years. 04/03/14-04/04/2019

Characterization and treatment of the novel TCIRG1 splice site mutation. Mendoza-Londono, R., Voronov, I., Krueger, J., Cohn R. **Bone Health Seed Grant**. \$10,000 CAD. January 1-2015 – December 31-2015

Co-clinical Trials in Mice and Humans in Autism. Anagnostou A, Lerch J, Foster J, Greenberg B, Weksberg R, Scherer S, Bennett T, Nicolson R. **Azrieli Foundation/Brain Canada**. \$2,497,761 CAD. January 1-2014 – December 31-2019

CRISPR-mediated Therapies for Duchenne Muscular Dystrophy. Cohn, R D. **Duchenne Children's Trust**. \$150,000 £ over two years. July 1-2015 – June 30-2018

Delivery mechanisms of CRISPR-mediated Therapies for Duchenne Muscular Dystrophy. Cohn, R D. **SOLID-GT**. \$540,000 USD over three years. August 1-2015 – July 31-2018

Determination of Molecular Subgroups in Wilms Tumors. Weksberg R, Goldenberg A, Lorenzo A, Grant R. A Collaborative Pediatric Cancer Research Awards Program. **The Rally Foundation, Bear Necessities, The Truth 365, Arms Wide Open**. \$50,000 CAD. January 1-2015 – January 1-2016

Developing and evaluating clinical uses of Whole Genome Sequencing. Ray Peter, Meyn S., Shuman C, Bowdin S, Monfared N. **The Hospital for Sick Children Genome Clinic: Research Fund, Centre for Genetic Medicine, Division of Clinical and Metabolic Genetics**. \$750,000 CAD. May 1-2013 – May 1-2018
Development of a tissue-engineered skin model derived from NF1 patients to study tumor genesis and to predict response to therapy. Kannu, P., Gros-Louis, F., Dupre, N. **Chase-an-Idea in Paediatric Neuroscience - Neurofibromatosis Type I Small Grant Award**. \$50,000 CAD. January 1-2015 – December 31-2015

EGFR mutations in neonatal progeria. Schulze, A. **Foerderer Foundation**. \$45,000 USD. July 2014 - June 2015

Elucidating the role of nFATc1 in a disorder of osteogenesis. Kannu, P. **Sickkids Foundation**. \$25,000 CAD. January 1-2015 – December 31-2015

Emerging Team in Rare Diseases: Achieving the “triple aim” for inborn errors of metabolism. Potter E, Chakraborty P, Kronick J, Coyle D, Wilson K. **Canadian Institutes of Health Research**. \$1,490,492 CAD. January 1-2012- December 31-2017

Emerging Team to identify and characterize novel and existing Hereditary Spastic Paraplegia (HSP) disease genes. Rouleau GA. Co-Applicants: Bolduc FV, Boycott KM, Drapeau P, Dupré N, Parboosingh J, Parker A, Ray PN, Suchowersky O, Vande Velde C, Yoon G. **Canadian Institutes of Health Research**. \$499,744 CAD. January 1-2012 – December 31-2017

Evaluation of non-invasive CGH microarray technology for prenatal diagnosis of chromosomal fetal abnormalities. Chitayat, D, Kolomietz E. **MSH UHN AMO Innovation Funding**. \$142,567 CAD. January 1-2015 – December 31-2016

Genetic and Epigenetic Determinants of Syndromic Intellectual Disability. Weksberg R, Chitayat D, Ray P. **Canadian Institutes of Health Research**. \$750,400 CAD. 2013-2018

Genomic screening as a window on the developing fetus, newborn and beyond. Bassett A, Chitayat D, Keating S, Kingdom J, Lye S, Silversides C, Marshall C, Costain G, Bulman D, Chakraborty. Accelerator Grant, **McLaughlin Centre, University of Toronto**. \$97,500 CAD. January 1-2015 – December 31-2016

Identification of New Human Imprinted Genes: A Novel Approach. Weksberg R. **National Sciences and Engineering Research Council of Canada**. \$140,000 CAD. 2012-2017

Implementation and Commercialization of a Novel DNA Methylation-Based Diagnostic Tool. Weksberg R. Basran R, Cytrynbaum C, Choufani S, Brudno M. **Canadian Institutes of Health Research**. \$160,000 CAD. January 1-2015 – January 1-2016

Investigating the “Two-Hit” Hypothesis for Neurodevelopmental Disorders Associated with Recurrent Copy Number Variants. **Physicians' Services Incorporated Foundation**. Carter, M. \$102,500 CAD. January 1-2014 – December 31-2016

Investigation of Copy Number Variation in the Placentas of Pregnancies with Intrauterine Growth Restriction. Yuen R, Scherer S, Weksberg R. **Thrasher Research Fund**. \$26,750. January 1-2015 – January 1-2016

Modifying the Biological Late Effects of Pediatric and Adolescent Cancer Treatments: Prevention and Mitigation. Ito S, Guger S, Hitzler J, O'Connor D, Schachar R, Spiegler B, Weksberg R, Carleton B. **Canadian Institutes of Health Research Team Grant.** \$2,109,312 CAD. January 1-2011 – December 31-2016

Molecular and Epigenetic Mitochondriomics of Air Particles, Lead and Cognition. Schulze, A. Baccarelli, A. **National Institutes of Health (NIH)/ National Institute of Environmental Health Sciences (NIEHS).** \$53,215 USD. Sept 2012-June 2015

Neonatal encephalopathy in term newborns: identification of underlying genetic defects using whole exome sequencing. Mahmutoglu, Saadet. Collaborators: DesRoches C, Marshall C. Funding. **Starbucks Summer Studentship Research Program.** \$4,800 CAD. January 1-2015 – December 31-2015

Next Generation Sequencing a Cohort of Unique and Unclassified Lethal Skeletal Dysplasias. Kannu, P, Chitayat D, Chong K, Marshall C. **McLaughlin Centre, University of Toronto** \$25,000 CAD. January 1-2015 – December 31-2016

Parathyroid-Vitamin D Axis Dysregulation in Early-Onset Infant Stunting in Resource-Poor Settings. Roth D, Zlotkin S, Weksberg R, Willan A, Mahmud A, Ahmed T, Baqui A, Shah R. **Bill and Melinda Gates Foundation.** \$1,999,992 USD. 2012-2016

Pre-clinical gene editing for Arginase-1 deficiency. Funk C. Schulze, A. **Urea Cycle Disorder Consortium.** \$50,000 USD. 2015 – 2016

Province of Ontario Neurodevelopmental Disorders Network (POND). Anagnostou E, Scherer S, Arnold P, Schacher R, Szatmari P, Marshall C, Nicolson R, Weksberg R, Lerch J, Beyene J, Reitzel J, Soreni N, Edwards A, Bountra C, Manassis K, Brian J, Roberts W, Mendlowitz S, Gorman D, Charach A, Woodbury Smith M, Thorpe K, Ellis J, Foster J, Henkelman M, Taylor M. **Ontario Brain Institute.** \$4,713,758 CAD. 2013-2018

Quantitative in vivo magnetic resonance (MR) spectroscopy of the brain in children as standard of care at SickKids. Schulze, A. **Starbucks Clinical Genetics Research Studentship Award 2015.** \$4,880 CAD. 2015 - 2016

Rare Diseases Clinical Research Consortia (RDCRC) for the RDCR Network. - Urea Cycle Disorder Consortium Batshaw ML., Schulze, A. **National Institute of Child Health and Human Development and National Centre for Advancing Translational Sciences.** \$8,000,000 USD. 2014 - 2019

Regulation of erythropoiesis by the miR-144/451 microRNA locus. Weiss, M., Schulze, A. **National Institutes of Health (NIH).** \$250,000 USD. Dec 2012-Aug 2015

Rewriting the genome: Exploration of CRISPR/Cas9 technology in MDC1A. Cohn, R D. **Cure-CMD.** \$52,600.00 DKK over two years. September 1-2015 – September 1-2017

The Genetic Epidemiology of Autism; Family and Molecular Studies. Szatmari P, Scherer SW. **Canadian Institutes for Health Research (CIHR).** January 1-2013 – December 31-2018

Transdisciplinary Research Center for Preterm Birth. Driscoll, D., Schulze, A. **March of Dimes.** \$2,000,000 USD/ annual direct costs. October 2014 – October 2018

Whole Exome Sequencing in the NICU; Developing a rapid, specific and sensitive pipeline for the diagnosis of genetic disease in the newborn. Cohn R., Bowdin S., Moore A. **McLaughlin Centre, University of Toronto.** \$20,000 CAD. May 1-2016 – April 30-2017

Whole Genome Sequencing for Pediatric Patients. Cohn, RD., Scherer S. **Complete Genomics.** \$200,000 USD over three years. September 1-2013 – August 31-2016

STAFF LISTING

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Full-Time

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Dr. Melissa Carter

Dr. David Chitayat

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Dr. Saadet Mahmutoglu

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Dr. Neal Sondheimer

Dr. Julian Raiman

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CLINICAL PHARMACOLOGY

Making strides in pharmacogenetics research

Dr. Iris Cohn

DIVISION OF CLINICAL PHARMACOLOGY

The Division of Clinical Pharmacology & Toxicology was established in 1979. Since then, it has been leading research, education and various new clinical initiatives of the discipline at national and international levels. Our two major clinical programs, the Ontario/Manitoba Poison Information Centre and the Motherisk reproductive toxicology program, provide information and advice to professionals, patients and care givers on poisonings and drug safety during pregnancy and lactation. In 2015, each of the programs received about 65,000 and 30,000 initial inquiries, respectively. These and other clinical programs of the division continue to be the training platforms for the subspecialty residents for the Royal College certification,

clinical fellows, and trainees from other disciplines.

Our trainees are actively involved in research, enriching the quality of the learning environment. Ongoing research projects include knowledge syntheses on drug safety in pregnancy, mechanisms of drug transfer into breast milk, discovery of susceptible genes of adverse drug reactions, and long-term outcomes of intense drug therapy for childhood leukemia. As part of the key components of the discipline's practice scope, pharmacogenomics-based personalized medicine approach will soon be tested in a clinical environment, which will provide a powerful tool for patient safety and quality improvement.

Pharmacogenetics-based patient care allows us to select the best medications for the patient while avoiding severe drug reactions. Iris Cohn is driving this exciting new field forward.

HONORS AND AWARDS

Nulman I. Long-Term Outcomes and Corresponding Vulnerability and Protective Factors in Adolescents with Fetal Alcohol Spectrum Disorder. Canadian Institutes of Health Research Doctoral Research Award. \$70,000 CAD total. January 2013 – December 2015

PUBLICATIONS

Aminkeng F, Bhavsar AP, Visscher H, Rassekh SR, Li Y, Lee JW, Bruham LR, Caron HN, van Dalen E, Kremer LC, van der Pal H, Amstutz U, Rieder MJ, Bernstein D, Carleton BC, Hayden MR, Ross, CJD and the Canadian Pharmacogenomics Network for Drug Safety Consortium. A coding variant in RARG confers susceptibility to anthracycline-induced cardiotoxicity in childhood cancer. Nature Genetics 2015: 47: pp 1079-1083.

The discipline of Clinical Pharmacology & Toxicology has played an important role in discovering and developing the field of pharmacogenetics, which signifies an approach of genotype-based drug therapy to achieve the best therapeutic outcome while minimizing the risk of severe adverse drug reactions. Moreover, as genomic sequencing emerges as a powerful diagnostic tool for paediatric diseases, the pre-emptive pharmacogenetics assessment to inform future drug therapy becomes increasingly important. The pharmacogenetics approach in clinical and research settings to improve patient outcomes is one of the priorities of the division for the next few years.

Bapat P, Pinto LSR, Lubetsky A, Aleksa K, Berger H, Koren G, Ito S. Examining the transplacental passage of apixaban using the dually perfused human placenta. *Journal of Thrombosis and Haemostasis* 2016: e13353. Epub 2016 May 5.

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Ford-Jones EL, Mindorff CM Jr, Pollock E, Milner R III, Barker G, Gold R. Evaluation of a new method of detection of nosocomial infection in a Canadian pediatric intensive care unit: The nursing sentinel sheet system. *Journal of Infection Control* 2015: 18 (3): pp 176-193.

Ito S. Children: Are we doing enough? *Journal of Clinical Pharmacology & Therapeutics* 2015: 98: pp 222-224.

Kaplan YC, Nulman I, Koren G. Dose-Dependent Risk of Malformations With Antiepileptic Drugs: An Analysis of Data From the EURAP Epilepsy and Pregnancy Registry. *Journal of Therapeutic Drug Monitoring* 2015: 37 (5): pp 557-558.

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Terrana N, Koren G, Pivovarov J, Etwel F, Nulman I. Pregnancy Outcomes Following In Utero Exposure to Second-Generation Antipsychotics: A Systematic Review and Meta-Analysis. *Journal of Clinical Psychopharmacology* 2015: 35 (5): pp 559-565.

Van der Plas, E., Nieman, B.J., Butcher, D.T., Hitzler, J.K., Weksberg, R., Ito, S. & Schachar, R. Neurocognitive late effects of chemotherapy in survivors of acute lymphoblastic leukemia: Focus on Methotrexate. *Journal of the Canadian Academy of Child and Adolescent Psychiatry* 2015: 24 (1): pp 25-32.

Wu A, Dedina L, Dalvi P, Yang M, Leon-Cheon J, Earl B, Harper PA, Ito S. Riboflavin uptake transporter Slc52a2 (RFVT2) is upregulated in the mouse mammary gland during lactation. *Am J Physiology: Journal of Regulatory, Integrative and Comparative Physiology* 2016: 310(7): pp 578-85

Zur RM, Roy L, Ito S, Beyene J, Carew C, Ungar WJ. Thiopurine s-methyltransferase testing for averting drug toxicity: A meta-analysis of diagnostic test accuracy. *Journal of Pharmacogenomics* 2016: 17(6): pp 633-56

BOOK CHAPTERS

Choonara I, Hoppu K, Ito S, Kearns G. Paediatric Clinical Pharmacology. In: *Global Research in Paediatrics* (Barker C ed). 2015 (in press)

Nulman I, Terrana N, Lutwak M, Pearlston M. Psychotropic Medications in Pregnancy. In: *Optimizing Treatment for Children in the Developing World* (Macleod S, Hill S, Koren G & A. Rane A, eds). Springer International Publishing, New York NY 2015: pp 291-302.

Parker K, Ito S. Building quality curricula: the GRiP Fellowship Program in Paediatric Clinical Pharmacology. In: *Global Research in Paediatrics* (Barker C ed). 2015: (in press)

Tanoshima R, Ito S. Chapter 8.1 - Drug-induced bowel injury. In: *Walker's Pediatric Gastrointestinal Disease: 6th edition* (Walker, Kleinman, Sherman, Goulet, Sanderson, Schneider, eds). PMPH-USA Limited, Shelton CT 2015: (in press)

GRANTS AND FUNDING

5-HT3 Antagonists (Antiemetics) & Cardiac Safety, Using an Active Surveillance Approach. Carleton, B., Ito, S. **CIHR**. \$424,700 CAD (\$60,000 for SickKids site). January 1-2013 – December 31-2015

Assessing the drug exposure risk of infants breastfed by women with inflammatory bowel disease. Ito, S. **Crohn's Colitis Foundation of America**. \$345,508 USD. 2016-19

Assessing the drug exposure risk of infants breastfed by women with inflammatory bowel disease. Ito, S. **Crohn's Colitis Foundation of America**. \$364,963 USD. 2016-19

Characterizing the impact of chemotherapy on the developing brain. Ito, S. **Canadian Cancer Society**. \$297,100 CAD. November 1-2015 – October 30-2018

Childhood Cancer-Late Effects of Treatment - Neurocognitive-Phenome, Genome, Epigenome and Nutriome in Childhood leukemia Survivors: S. Ito, J. Hitzler, R. Schachar, R. Weksberg, B. Spiegler, D. O'Connor, S. Guger, B. Carleton. **CIHR**. \$1,898,381 CAD over five years. January 1-2011 – December 31-2016

Drugs and human milk. Ito, S. **CIHR Foundation Scheme Pilot 2**. \$602,292 CAD. September 1-2010 – September 29-2015

Global Research in Paediatrics. Ito, S. **European Commission, Framework Programme 7.** 443,360 EURO. January 1-2011 – December 31-2015

Impact of peri-childbirth depression on individuals with MS. Ito, S. **National Multiple Sclerosis Society.** \$77,663 USD. 2016 – 2019

Integrated pharmacogenetics-guided personalized therapy in children. Ito, S. **Ontario Ministry of Research and Innovation (ORF8).** \$2,836,127 CAD. 2016 – 2023

Pregnancy Outcome Following in-Utero Exposure to Second Generation Antipsychotics. Nulman, I. **Massachusetts General Hospital National Pregnancy Registry of Atypical Antipsychotics in pregnancy.** \$400,000 USD. January 1-2013 – December 31-2017

Our trainees are actively involved in research, enriching the quality of the learning environment. Ongoing research projects include knowledge syntheses on drug safety in pregnancy, mechanisms of drug transfer into breast milk, discovery of susceptible genes of adverse drug reactions, and long-term outcomes of intense drug therapy for childhood leukemia.

STAFF LISTING

Division Head

Dr. Shinya Ito

Full-Time Staff

Dr. Irena Nulman

Dr. Margaret Thompson

Part-Time

Dr. Ian Ball

Dr. David Juurlink

Dr. Christopher Lazongas

Dr. Connie Mackenzie

Dr. Marco Sivilotti

Scientific Staff

Iris Cohn, RPh

Cross-Appointees

Dr. Sylvain Baruchel

Dr. Yaron Finkelstein

Dr. Sheila Jacobson

Dr. Christopher Parshuram

Dr. Savithiri Ratnapalan

Dr. Dennis Scolnik

Dr. Bonnie Stevens

Dr. Anna Taddio

Clinical Fellows

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Dr. Nirmala Chandrasekaran

Dr. Shahnaz Chaudhry

Dr. Pauline De Bruyne

Dr. Yifat Gadot Dr. Tom Leibson Dr.

Jak Ozsarfati

Dr. Gali Pariente

Dr. Arthur Staroselsky

Dr. Birgit Pfaller-Eiwegger

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Dr. Emily Austin

Dr. Jesse Godwin

Dr. Peter Wu

Dr. Maude St-Onge

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Brojeni

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Joycelyn Peters-Adams

Victoria Snell

Donna Tedesco

Shannon Vanderkooi



DEVELOPMENTAL PAEDIATRICS

Making a difference for children and youth with developmental needs and their families

From left to right: Drs. Golda Milo-Manson, Andrea Hoffman, Darcy Fehlings, Sharon Smile, Angela Orsino, Joelene Huber, Evdokia Anagnostou, Laura McAdam and Jackie Chiang

DIVISION OF DEVELOPMENTAL PAEDIATRICS

The Division of Developmental Paediatrics is situated at the Holland Bloorview Kids Rehabilitation Hospital. The division consists of full time academic clinicians as well as a community section. The main clinical focus of the division is on childhood neuro-developmental and neuro-rehabilitation disorders. Comprehensive assessment and treatment programs are run for children and youth with conditions such as cerebral palsy, acquired brain injury, neuromuscular disorders and spina bifida. Inpatient services are provided for children with medical conditions requiring complex continuing care. Specialized assessment clinics provide diagnostic assessments for children and youth with autism spectrum disorder with clinics located at Holland Bloorview as well as regional developmental

clinics situated throughout the metropolitan Toronto area. The division runs a large psychopharmacology clinic providing consultation for children and youth with complex neuro-behavioural needs.

The division members lead research teams in applied childhood disability studies, in association with the Bloorview Research Institute led by Professor Tom Chau. Highlights include leadership of two Ontario-based translational neuroscience research networks funded by the Ontario Brain Institute – one focused on autism spectrum disorder led by Dr. Evdokia Anagnostou and one focused on cerebral palsy led by Dr. Darcy Fehlings.

Developmental Paediatrics at University of Toronto leads Translational Neuroscience Research Networks in Neurodevelopmental Disorders and Cerebral Palsy.

Within the division, there is a strong commitment to education. Under the leadership of Dr. Anne Kawamura as program director, the fully accredited subspecialty residency program in Developmental Paediatrics is the largest in Canada. Paediatric, physiatry, and neurology residents and medical students are trained in applied childhood disability. A highlight of the divisions' educational activities is the Child Development Update – a national conference held once every 3 years – chaired by Dr. Golda Milo-Manson and supported by the continuing educational office of the Department of Paediatrics.

Division members hold national/international leadership positions with Dr. Darcy Fehlings as the Past President of the American Academy for Cerebral Palsy and Developmental Medicine (AACPDM), Dr. Golda Milo-Manson as the chair of the Royal College of Physicians and Surgeons subspecialty committee in Developmental Paediatrics and Dr. Anne Kawamura as the incoming

President of the Developmental Paediatric Section of the Canadian Paediatric Society.

HONOURS AND AWARDS

Church, P: Received, Emerging Leader in Neonatology Award, Canadian Paediatric Society, Charlottetown, PEI, Canada, June, 2016

Kawamura, A: Received, Division of Developmental Pediatrics Faculty Teaching Award, Toronto, Canada, June 2015

Kawamura, A: Received, Teaching and Learning Recognition Award for Excellence in Clinical Education, Holland Bloorview Kids Rehabilitation Hospital, Toronto, Canada, June 2015

Penner, M: Received, CIHR Institute of Health Services and Policy Research, Student Poster Award. Canadian Association of Health Services and Policy Research Annual Meeting, Montreal, Quebec, May 2015

PUBLICATIONS

Abdullah K, Thorpe K, Mamak E, Maguire J, Birken C, Fehlings D, Hanley A, MacArthur C, Zlotkin S, Parkin P. Risk factors, practice variation and hematological outcomes of children identified with non-anemic iron deficiency (NAID), following screening in primary care setting. *Paediatrics & Child Health* 2015; Sep 20(6): pp 302-306.

Abdullah K, Thorpe K, Mamak E, Maguire J, Birken C, Fehlings D, Hanley A, MacArthur C, Zlotkin S, Parkin P. An internal pilot study for a randomized trial aimed at evaluating the effectiveness of iron interventions in children with non-anemic iron deficiency: The Optec trial. *Trials* 2015; Jul 16: pp 303. DOI: 10.1186/s13063-015-0829-4.

Amin R, Sayal A, Syed F, Daniels C, Hoffman A, Moraes TJ, Cox P. How long does it take to initiate a child on long-term invasive ventilation? Results from a Canadian pediatric home ventilation program. *Canadian Respiratory Journal* 2015; March-April 22(2): pp 103-108.

Banihani R, Baskin B, Halliday W, Kobayashi J, Kawamura A, McAdam L, Ray PN, Yoon G. A novel mutation in DMD (c.10797+5G>A) causes Becker muscular dystrophy associated with intellectual disability. *Journal of Developmental and Behavioral Pediatrics* 2016; April 37(3): pp 239-244.

Banihani R, Smile S, Yoon G, Dupuis A, Mosleh M, Snider A, McAdam L. Cognitive and neurobehavioral profile in boys with Duchenne muscular dystrophy. *Journal of Child Neurology* 2015; 30(11): pp 1472-1482.

Bello L, Gordish-Dressman H, Morgenroth LP, Henricson EK, Duong T, Hoffman EP, Cnaan A, McDonald CM, CINRG Investigators. Prednisone/prednisolone and deflazacort regimens in the CINRG Duchenne Natural History Study. *Neurology* 2015; 86(12): pp 1048-1055.

Bello L, Kesari A, Gordish-Dressman H, Cnaan A, Morgenroth LP, Punetha J, Duong T, Henricson EK, Pegoraro E, McDonald CM, Hoffman EP, Cooperative International Neuromuscular Research Group Investigators. Genetic modifiers of ambulation in the Cooperative International Neuromuscular Research Group Duchenne Natural History Study. *Annals of Neurology* 2015; Apr 1 77(4): pp 684-696.

Donald K, Kakooza A, Wammanda R, Mallewa M, Samia P, Babakir H, Bearden D, Majnemer A, Fehlings D, Shevell M, Chugani H, Wilmshurst J. Paediatric cerebral palsy in Africa: Where are we? *Journal of Child Neurology* 2015; Jul 30(8): pp 963-971.

Downey LC, O'Shea TM, Allred EN, Kuban K, McElrath TF, Warner DD, Ware J, Hecht L, Onderdonk A, Leviton A, ELGAN Study Investigators (Church PT). Antenatal and postnatal antecedents of parent-reported attention problems at 2 years of age. *Journal of Pediatrics* 2015;166: pp 20-25.

Findlay B, Switzer L, Narayanan U, Chen S, Fehlings D. Investigating the impact of pain, age, Gross Motor Function Classification System and sex on health-related quality of life in children with cerebral palsy. *Developmental Medicine and Child Neurology* 2016; 58(3): pp 292-297.

Fischer N, Church P, Lyons J, McPherson A. A qualitative exploration of the experiences of children with spina bifida and their parents around incontinence and social participation. *Child: Care, Health, and Development* 2015; Nov 41(6): pp 954-962.

Hashemi B, Bassett A, Chitayat D, Chong K, Feldman M, Flanagan J, Goobie S, Kawamura A, Lowther C, Prasad C, Siu V, So J, Tung S, Speevak M, Stavropoulos DJ, Carter MT. Deletion of 15q11.2(BP1-BP2) region: Further evidence for lack of phenotypic specificity in a pediatric population. *American Journal of Medical Genetics* 2015; Sep 167A(9): pp 2098-2102.

Kacperski J, Hung R, Blume HK. Pediatric post traumatic headache. *Seminars in Pediatric Neurology* 2016; Feb 23(1): pp 27-34.

Kingsnorth S, Orava T, Provvienza C, Adler E, Ami N, Gresley-Jones T, Mankad D, Slonim N, Fay L, Joachimides N, Hoffman A, Hung R, Fehlings D. Chronic pain assessment tools for cerebral palsy: A systematic review. *Pediatrics* 2015; Oct 136(4): pp 948-960.

Manning K, Menon R, Fehlings D, Mesterman R, Gorter J, Switzer L, Campbell C. Resting state and diffusion neuroimaging predictors of clinical improvements following constraint-induced movement therapy in children with hemiplegic cerebral palsy. *Journal of Child Neurology* 2015; Oct 30(11): pp 1507-1514.

Manning K, Menon R, Mesterman R, Gorter J, Switzer L, Campbell C, Fehlings D. Neuroplastic sensorimotor resting state network reorganization in children with hemiplegic cerebral palsy treated with constraint-induced movement therapy. *Journal of Child Neurology* 2016; Jan 31(2): pp 220-226.

McPherson AC, Swift JA, Peters M, Lyons J, Kibbe TJ, Church P, Chen L, Farrell RM, Gorter JM. Communicating about obesity and weight-related topics with children with a physical disability and their families: Spina bifida as an example. *Disease Rehabilitation* 2016; Mar 25: pp 1-7.

Oskoui M, Gazzellone M, Thiruvahindrapuram B, Zarrei M, Andersen J, Wei J, Wang Z, Wintle R, Marshall C, Cohn R, Weksberg R, Stavropoulos D, Fehlings D, Shevell M, Scherer S. Clinically relevant copy number variations detected in cerebral palsy. *Nature Communications*. 2015 Aug. <http://www.nature.com/naturecommunications>. DOI: 10.1038/ncomms8949.

Schulze A, Bauman M, Tsai A, Reynolds A, Roberts W, Anagnostou E, Cameron J, Nozzolillo A, Chenj S, Kyriakopoulou L, Scherer S, Loh A. Prevalence of creatine deficiency syndromes in children with non-syndromic autism. *Pediatrics* 2016; Jan 137(1): pp 2015-2672.

Veatch OJ, Reynolds A, Katz T, Weiss SK, Loh A, Wang L, Malow BA. Sleep in children with autism spectrum disorders: How are measures of parent report and actigraphy related and affected by sleep education? *Behavioral Sleep Medicine* 2015; Nov 30: pp 1-12.

BOOK CHAPTERS

McMorris C, Lake J, Lunsy Y, Dobranowski K, Fehlings D, Bayley M, McGarry C, Balogh R. Adults with cerebral palsy: Physical and mental health issues and health service use patterns. In: *Health disparities in intellectual disabilities* (Hatton C, Emerson E, eds). Elsevier, Lancaster (UK) 2015: pp 115-149.

Penner M, Zwaigenbaum L, Roberts W. Diagnosis of autism spectrum disorders: Screening, surveillance, assessment and formulation. In: *Clinician's Manual: Autism Spectrum Disorder* (Anagnostou E, Brian J, eds). Springer Health Care, UK 2015: pp 5-17.

Smile S, Kawamura A. Cerebral palsy and autism spectrum disorder. In: *Handbook of Assessment and Diagnosis of Autism* (Matson JL, ed). Springer 2016: pp 357-377

GRANTS AND FUNDING

Academic challenges for the preterm infant: Educators' knowledge, attitudes, and perceived barriers to providing aid to this population. Shah VS, Bassil K, Church P, Luther K, Lee SK. **MiCARE**. \$40,000 CAD. 2014-2016

An evaluation of the long-term effectiveness of botulinum toxin in children with Spastic cerebral palsy. Fehlings D, Goldsmith C, Narayanan U, Rosenbaum P, Wright W. **Canadian Institutes of Health Research**. \$442,307 CAD. 2008-2015

Assessing the efficacy of group intervention for developmental coordination disorder in former preterm infants. Cooper L, Church P, vanDyk J. **Sunnybrook AFP Innovation Fund**. \$23,650 CAD. 2015-2016

Autism Intervention Research Network - Physical Disorders. Kulthau K., Brian J, Anagnostou E, Loh A, et al: **Health Resource Services Administration (HRSA) - Maternal Child Health Bureau**. \$150,000 CAD. 2015-2020

Autism Treatment Network. Brian J, Anagnostou E, Loh A. **Autism Speaks**. \$420,000 CAD. 2015- 2017

Autonomic nervous system response to stress in children after mild traumatic brain injury (mTBI) compared to non-injured controls. Hung R. **AFP Innovation Grant**. \$9525.30 CAD. 2016

Autonomic nervous system response to stress in children after mild traumatic brain injury (mTBI) compared to non-injured controls. Hung R. **Bloorview Research Institute Catalyst Grant**. \$9,968 CAD. 2015

Bone fragility in boys with Duchenne Muscular Dystrophy. Ward L, McAdam L, Craven BC. **Physicians' Services Incorporated Foundation**. \$170,000 CAD. Nov 2014-Nov 2016

Bridging worlds by integrating perspectives and competencies - exploring the development of adaptive expertise. Kawamura A, Mylopoulos M. **Bloorview Research Institute (ON)**. \$12,000 CAD. Apr 2014-Mar 2016

Childhood Cerebral Palsy Integrated Neuroscience Discovery Network "CP-NET". deVeber G, Fehlings M, Menon R, Rosenbaum P, Scherer S, Ansari D, Biddiss E, Campbell C, Carter M, Chau T, Chen R, Cheyne D, Ferro M, Frid P, Gorter JW, Graham N, Hall G, Kenkelman M, Kawamura A, Kingsnorth S, McCormick A, Mesterman R, Miller S, Morshead C, Palisano R, Paterson A, Pelland L, Raybaud C, Samdup D, Scott S, Segalowitz S, Shroff M, Strothers S, Taylor M, van der Kooy D, Wintle R, Wright V. **Ontario Brain Institute. Integrated Discovery Program**. \$7,500,000 CAD. Apr 2013- Mar 2018

Developing best practice hip surveillance clinical guidelines for children with cerebral palsy at Holland Bloorview Kids Rehabilitation Hospital. Kawamura A, Fehlings, D, Ip M, Kim A, Kingsnorth C, Lindsay L. **Holland Bloorview Foundation - Centre for Leadership in Child Development**. \$2,000 CAD. Apr 2015-Mar 2016

Evaluation of the effectiveness of robotic gait training and gait-focused physical therapy programs for children and youth with cerebral palsy: A mixed methods RCT. Wright V, Wiart L, Andersen J, Fehlings D, Gaebler-Spira D, Levac D, Phelan S, Rosychuk R. **Canadian Institutes of Health Research**. \$876,150 CAD. 2014-2019

Exploring the King's Outcome Scale for Childhood Head Injury in Children Attending a Rehabilitation Hospital. Rumney P, Boyle E, Hung R, McAdam L, Cassidy JD, Cote P, Ameis A, Lacerte M, Greenspoon D. **Physicians Services Incorporated Foundation**. \$169,989 CAD. 2015-2016

Gathering evidence to support families in transition to development/rehabilitation services for children with neurodevelopmental disorders: Understanding parents' experiences and needs. Ballantyne M, Bernardo S, McPherson A, Church P, Fehlings D. **Bloorview Research Institute Catalyst Grant**. \$9,660 CAD. Apr 2015-Mar 2016

Implementation and Evaluation of Solution Focused Coaching Strategy within a Paediatric Multidisciplinary Neuromuscular Clinic. McAdam L, McPherson A, Keenan S. **AHSF AFP Innovation Fund**. \$76,648 CAD. Apr 2016-2018 Apr

Linking neuroplasticity with the outcomes of walking-based interventions: A feasibility trial comparing a motor learning versus a strength-based program in children with cerebral palsy. Wright V, Taylor M, Fehlings D, Chen J, Hilderley A. **American Academy for Cerebral Palsy and Developmental Medicine. 2016 Pedal-with-Pete Research Grant**. \$24,561 USD. Jan 2016-Jul 2017

OptEC: Optimizing early child development in the primary care practice setting: Pragmatic randomized trial of iron treatment for young children with non-anemic iron deficiency. Parkin P, Birken C, Fehlings D, Macarthur C, Maguie J, Mamak E, Mamdan M, Thorpe K, Zlotkin S. **Canadian Institutes of Health Research**. \$541,567 CAD. Apr 2011-Mar 2016

Outcomes of hip interventions for children with cerebral palsy - An international multi-centre prospective comparative cohort study. Narayanan U, Graham K, Willan A, Mulpuri, Kishore, Reggie, Stephens D. **Canadian Institutes of Health Research - Musculoskeletal Health and Arthritis**. \$678,975 CAD. Apr 2013-Mar 2018

Parental perspectives on advance care planning for individuals with cerebral palsy. Hoffman A. **Centre for Leadership in Child Development: Holland Bloorview Kids Rehabilitation Hospital**. \$18,000 CAD. 2016-2017

Prevention of osteoporosis - Clinical practice guideline use within the inpatient program at Holland Bloorview Kids Rehabilitation Hospital. Hoffman A. **The Hospital for Sick Children AFP Innovation Fund**. \$66,800 CAD. 2015-2017

Profiles of Vision Impairment in Pediatric Acquired Brain Injury. Hung R. **Holland Bloorview Kids Rehabilitation Hospital Center for Leadership for ABI Seed Funding**. \$2400 CAD. 2015

PROMPT identification of cerebral palsy: Primary-care Referral of Motor-impaired Children: Physician Tools. Majnemer, A, Ahmed S, Burko B, Dagenais L, Kirton C, Rodriguez R, Shiller M, Andersen J, Bussieres A, Darsaklis V, Leduc D, Shevell M, Snider L, Bergman H, Dagenais E, Fehlings D, Li P, Shikako Thomas D, Thibault J. **Canadian Institutes of Health Research (CIHR). Human Development, Child and Youth Health**. \$330,576 CAD. Apr 2014-Mar 2018

The Canadian Neuromuscular Disease Registry. Korngut L, McAdam L. **ALS Canada, Jesse's Journey, Families of SMA Canada**. \$10,000 CAD. 2011-2016

Training for pediatricians on early identification and diagnosis of autism spectrum disorder in children: Follow-up and evaluation. Brian J, Penner M, Eldon P, Kawamura A. **Holland Bloorview Foundation. Centre for Leadership in Child Development.** \$5,836 CAD. Apr 2015-Mar 2016

Understanding the transition needs and perspectives of youth and young adults with Duchenne muscular dystrophy as they transition to adult health care. McAdam L, Lindsay S, Milo-Manson G. **Centre for Leadership in Child Development, Holland Bloorview Kids Rehabilitation Hospital.** \$5,000 CAD. Apr 2015- Apr 2016

Use of the Lokomat® robotic gait trainer in the early stage rehabilitation of children and youth following acquired brain injury (ABI): A feasibility study. Hung R, Wright V. **Holland Bloorview Kids Rehabilitation Hospital Center for Leadership for ABI Seed Funding.** \$19,960.88 CAD. 2016

Validation of the Gait Outcomes Assessment list questionnaire. Narayanan Unni, Fehlings D, Wright Vermott J, Nordbye-Nielsen K. **Pediatric Orthopaedic Society of North America (POSNA).** \$30,000 USD. 2015-2016

STAFF LISTING

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 Dr. Ryan Hung
 Dr. Elizabeth Jimenez
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 Dr. Alvin Loh
 Dr. Laura McAdam
 Dr. Golda Milo-Manson
 Dr. Angela Orsino
 Dr. Melanie Penner
 Dr. Wendy Roberts
 Dr. Jay Rosenfield
 Dr. Peter Rumney
 Dr. Sharon Smile

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 Dr. Douglas Biggar
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 Dr. Paige Church
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 Dr. Carolyn Hunt
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 Dr. Nicola Jones-Stokreef
 Dr. Peggy Kirkpatrick
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 Dr. Lilly Rojnica
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 Dr. Amber Makino

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PAEDIATRIC EMERGENCY MEDICINE

Where clinical excellence drives academic excellence

From Left to Right: Drs. Olivia Ostrow, Deborah Schonfeld, Tania Principi

DIVISION OF PAEDIATRIC EMERGENCY MEDICINE

The 2015-2016 academic year showed us once again why the Division of Paediatric Emergency Medicine (PEM) is a world-leader in the care of ill and injured children. Now with nearly 70,000 patient visits annually and increasing patient complexity, our PEM team remains steadfast in its commitment to ensure that the highest standard of care is reliably delivered to each and every child.

That commitment was tested this winter season when a record number of patients visited the Emergency Department (ED). A late viral surge brought 25 percent more patients to the ED in the first three months of 2016 than in the same period in 2015. Teamwork, preparedness and shared purpose allowed our ED team to thrive despite the unprecedented demand for care.

Clinical excellence drives academic excellence. This year our PEM faculty was again recognized for outstanding academic accomplishments in leadership, education, quality practice and research. Dr. Suzanne Schneeweiss was appointed the Associate Dean of Continuing Professional Development for the University of Toronto, Faculty of Medicine. Dr. Yaron Finkelstein was inducted as a Fellow by the American College of Medical Toxicology in recognition of his expertise and leadership in medical toxicology. Drs. Charisse Kwan and Mark Tessaro made multiple media appearances across the country to share their pioneering work in point-of-care ultrasound. Drs. Tania Principi, Suzanne Schuh and Kathy Boutis received international acclaim for research challenging the established management of bronchiolitis and dehydration.

The division of Paediatric emergency medicine continues to be a world leader in the care of ill and injured children.

Our clinical and academic efforts continue in 2016-17 with exciting work already started on patient safety, led by our quality practice team of Drs. Tania Principi, Olivia Ostrow and Deborah Schonfeld. Competency-based training, led by our medical simulation team of Drs. Jonathan Pirie and Laura Simone, and physician wellness, led by Dr. Anna Kempinska.

Boutis, K: Nominated for Academic Paediatric Association Research Award. April, 2015

Boutis, K: Awarded Detweiler Travelling Fellowship Scholarship. March, 2016

HONORS AND AWARDS

Boutis, K: Winner of Canadian Paediatric Society PEM Research Award, Canadian Paediatric Society Annual Meeting, Toronto, ON, Canada. June, 2015

Now with nearly 70,000 patient visits annually and increasing patient complexity, our PEM team remains steadfast in its commitment to ensure that the highest standard of care is reliably delivered to each and every child.

Etoom, Y: Recognition for Compassion, Expertise, and for Going the Extra Mile. “My St. Joe’s Circle Program”, St. Joseph’s Health Centre, Toronto, ON, Canada. December, 2015

Finkelstein, Y: Awarded Fellowship in the American College of Medical Toxicology (FACMT), ACMT Annual Scientific Meeting, Clearwater Beach, FL, U.S.A. March, 2015

Finkelstein, Y: Winner of American Academy of Pediatrics-Section on Emergency Medicine Best Pediatric Academic Societies Abstract Award, Pediatric Academic Societies Annual Meeting, San Diego, CA, U.S.A. April, 2015

Fischer, J: Winner of Continuing Education Teaching Award, Course Coordination, Continuing Education, Department of Paediatrics, Faculty of Medicine, University of Toronto, Toronto, ON, Canada. June, 2015

Fischer, J: Recognition Award for Clinical Teaching, Division of Paediatric Emergency Medicine, The Hospital for Sick Children, Toronto, ON, Canada. June, 2015

Kempinska, A: Winner of Subspecialty Teaching Award for Excellence in Clinical Teaching, Department of Paediatrics, The Hospital for Sick Children, Toronto, ON, Canada. June, 2015

Kempinska, A: Winner of the James C. Fallis Award for Best Grand Rounds by Paediatric Emergency Medicine Staff (“Physician Wellness”), Division of Paediatric Emergency Medicine, The Hospital for Sick Children, Toronto, ON, Canada. June, 2015

Kempinska, A: Recognition for Clinical Bedside Teaching Award, (“Physician Wellness”), Division of Paediatric Emergency Medicine, The Hospital for Sick Children, Toronto, ON, Canada. June, 2015

Mehta, S: Runner-Up of James C. Fallis Teaching Award for Emergency Medicine Staff Physician Presentation (“Shock”). Division of Paediatric Emergency Medicine, The Hospital for Sick Children, Toronto, ON, Canada. June, 2015

Mehta, S: Nominated for Presidents’ Award, Division of Paediatric Emergency Medicine, The Hospital for Sick Children, Toronto, ON, Canada. December, 2015

Mehta, S: Recognition of SMILES Award, Division of Paediatric Emergency Medicine, The Hospital for Sick Children, Toronto, ON, Canada. February, 2016

Schneeweiss, S: Winner of Royal College Accredited CPD Providers Award for Continuing Education Leadership Program, Ottawa, ON, Canada, September, 2015

PUBLICATIONS

Al Sharif S, Ratnapalan S. Managing Children with Autism Spectrum Disorders in Emergency Departments. *Pediatr Emerg Care.* 2016 Feb 1; 32(2): pp 101-103.

Alshammary SA, Duraisamy B, Alshuhail A, Mhafzah M, Saleem LM, Mohamed N, Ratnapalan S. Diabetes Management Patterns in a Palliative Care Unit in Saudi Arabia. *Journal of Health Specialties* 2016 Apr 1; 4(2): p 116.

Alshammary SA, Alshuhail A, Duraisamy BP, Alabdullateef SH, Ratnapalan S. Interval Between First Palliative Care Consultation and Death Among Patients in a Comprehensive Cancer Center in Saudi Arabia. *Journal of Health Specialties* 2015; 3(2): pp 61-66.

Alterkait A, Jamjoom R, Ratnapalan S. Head Trauma and Intracranial Hemorrhage in Children with Idiopathic Thrombocytopenic Purpura. *Pediatr Emerg Care* 2015 Jun; 31(6): pp 454-458.

Ben-Yakov M, Boutis K. Five Things You Should Know About Distal Forearm Buckle Fractures in Children. *CMAJ* 2016; 188(7): p 527.

Beno S, Rosenfield D, Francescutti LH. Let’s Not Forget About Injury. *Paediatr Child Health* 2015 Oct; 20(7): pp 343-344.

Berant R, Kwan C, Fischer JW. Emergency point-of-care ultrasound assessment of the white out lung in the Pediatric Emergency Department. *Pediatric Emergency Care* 2015; 31(12): pp 872-875.

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BOOK CHAPTERS

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GRANTS AND FUNDING

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A Deliberate Practice Method for Learning the Spectrum of Physical Examination Findings in Child Sexual Abuse. Boutis K, David A, Pecaric M, Pusic M. **Division of Paediatric Emergency Medicine, The Hospital for Sick Children**. \$6,000 CAD 2014-2015.

A Feasibility Study on D-dimer Testing to Rule Out Venous Thrombotic Events in Children. Brandao L, Sabapathy C, Finkelstein Y, Schwartz S, Chan V, Trotier L, Brien W. **Paediatric Consultants Partnership Grant for Creative Professional Activity, The Hospital for Sick Children**. \$10,000 CAD 2013-2015.

Action Research on Organizational change for Improving Emergency Care for Children. Ratnapalan S, Dopson S, Darwent M. **Oxford University Hospitals, National Health System**. £5430.00 GBP.

Antidepressants: the Risk of Seizures. Finkelstein Y, McDonald E, Hutson J, Mamdani M, Juurlink D. **Canadian Drug Safety and Effectiveness Research Network (CDSERN-funded by CIHR DSEN Emerging Teams)**. \$15,000 CAD 2013 – 2015.

Assessment for learning: Examining the use of learning curves for ECG interpretation. Htala R, Boutis K, Pusic M. **Royal College of Physicians and Surgeons of Canada, Medical Education Grant.** \$17,000 CAD July 2014 – June 2017.

Bridging the G.A.P.: A Deliberate Practice Method of Learning Genital Abnormalities in Prepubescent Girls. Davis A, Pusic M, Pecaric, Boutis K. **CAME Wooster Family Education Grant - Canadian Association for Medical Education (CAME).** \$10,000 CAD December 2015 – December 2016.

Bridging the GAP: A Deliberate practice Method of learning Genital Abnormalities in Prepubescent girls. Davis A, Boutis K. **Research Training Centre Start-Up Fund Grant - The Hospital for Sick Children.** \$3,000 CAD May 2015 – May 2017.

Bridging the GAP: A Deliberate practice Method of learning Genital Abnormalities in Prepubescent girls. Davis A, Boutis K. **Division of Pediatric Emergency Medicine Grant Program, The Hospital for Sick Children.** \$6,000 CAD February 2014 – February 2019.

Bronchiolitis Epidemiology: Air Pollution and Trends of Hospitalization (The BREATH Study). Finkelstein Y, Schuh S, Brook J, Sander B, Kwong J, Chen H. **Physicians' Services Incorporated Foundation.** \$169,000 CAD 2015-2017.

Bupropion vs. Antidepressants: The Risk of Seizures. Finkelstein Y, McDonald E, Hutson J, Mamdani M, Juurlink D. **Canadian Drug Safety and Effectiveness Research Network (CDSERN-funded by CIHR DSEN Emerging Teams).** \$15,000 July 2013 to June 2015.

Clinical characteristics of dental injuries in children between 0-18 years attending emergency department of Canadian tertiary care hospitals. Scolnik D, James V. **Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP).** \$6,000 CAD 2015-2016.

Darunavir and Congenital Malformations, Using a Network Meta-analysis Approach. Straus S, Cricco A, Beyene J, Finkelstein Y, Hemmelgarn B, Hutton B, Moher D, Perrier L. **Canadian Institutes of Health Research (CIHR) 2013 competition: Rapid Funding for Drug Safety and Effectiveness Network Targeted Research.** \$100,000 CAD 2013-2015.

Development of Novel Clinical Tests to Diagnose and Monitor Asthma in Preschool Children. Boutis K, Stanojevic S. **Ontario Thoracic Society.** \$92,335 CAD November 2013 to December 2015.

Establishing Learning Curves for Distinguishing Abusive from Non-abusive Burns and Bruises in Children. Adelgais K, Abdoo D, Snyder K, Pusic M, Boutis K. **Colorado Department of Public Health and Environment, EMS and Trauma Program, Systems Improvement Category.** \$71,988.20 2015-2016.

Evaluating the Impact of Emergency Room Services for Children and Adolescents with Autism Spectrum Disorder. Zwaigenbaum L, Nicholas DB, Roberts W, Muskat B, Newton A, Ratnapalan S, Sharon R, Cohen-Silver J. **Autism Treatment Network/Autism Intervention Research Network on Physical Health.** \$299,583.30 CAD 2012-2016.

How Safe Are Our Pediatric Emergency Departments? A National Prospective Cohort Study. Plint A, Calder L, Stang A, Bhatt M, Johnson D, Klassen T, Farion K, Gouin S, Doan Q, Boutis K, Sawyer S, Newton A. **Canadian Institutes of Health Research.** \$1,129,364 CAD 2014-2018.

ImageSim - Innovating Medical Education of Medical Images. Boutis K. **Innovation Fund, The Hospital for Sick Children.** \$10,000 CAD 2016-2017.

Impact of Emergency Department Probiotic Treatment of Pediatric Gastroenteritis: A randomized controlled trial and economic analysis. Freedman S, Gorelick M, Schuh S, Gouin S, Farion K, Johnson D, Willan A, Goeree R, O'Connell K, Powell E, Roskind C. **Canadian Institutes of Health Research.** \$2,230,000 CAD 2013-2016.

Improving Resuscitations in Children. Ratnapalan S. **Oxford University Hospitals Charitable Fund.** £ 2280.00 GBP 2014-2016.

Intentional Self Poisoning: inferences from a population. Finkelstein Y, Sivilotti M, McDonald E, Hollands S, Hutson J, Mamdani M, Juurlink D. **Canadian Drug Safety and Effectiveness Research Network (CDSERN-funded by CIHR DSEN Emerging Teams).** \$50,000 CAD 2013-2015.

Introducing an mHealth Platform (TickiT®) to Improve Patient Engagement. Porter S, Kaufman W. **Ontario Centres of Excellence.** \$625,610 CAD 2015-2017.

Learning the Interpretation of Point of Care Emergency Ultrasound Images. Kwan C, Boutis K, Fischer J, Pecaric M, Pusic M. **Academic Pediatric Association.** \$10,000 CAD 2014-2015.

Levetiracetam and Developmental Toxicity, using a network meta-analysis approach. Straus S, Cricco A, Beyene J, Finkelstein Y, Hemmelgarn B, Hutton B, Moher D, Perrier L. **Canadian Institutes of Health Research 2013 competition: Rapid Funding for Drug Safety and Effectiveness Network Targeted Research** \$100,000 CAD 2013-2015.

Impact of Emergency Department Probiotic Treatment of Pediatric Gastroenteritis: Randomized Controlled Trial. Freedman, S. **University of Calgary.** \$85,000 CAD March 31, 2013 – March 30, 2017.

MAGIC (Methods and Application Group for Indirect Comparisons) Collaborating Centre. Hutton B, Moher D, Straus S, Tricco A, Wells G, Bjerre L, Cameron C, Clifford T, Coyle D, Fergusson D, Finkelstein Y, Grimshaw J, Hartling L, Hayden J, Hemmelgarn B, Lee Karen, Majumdar S, Reeves B, Schunemann H, Shea B, Stacey D, Sullivan S, Thabane L, Tugwell P. **Canadian Institutes of Health Research, Drug Safety and Effectiveness Network (DSEN) for Network Meta-Analysis.** \$7,000,000 CAD September 2014 – August 2019.

Magnesium Nebulization Utilization Management in Pediatric Asthma (MAGNUM PA Trial). Schuh S, Zemek, R, Plint A, Johnson DW. Freedman S, Thompson G, Ducharme F, Gravel J, Klassen T, Curtis S, Beer D, Black K, Coates A, Willan A. **Physician's Services Incorporated.** \$170,000 CAD 2014-2016.

Magnesium Nebulization Utilization Management in Pediatric Asthma (MAGNUM PA Trial). Schuh S (PI), Zemek, R, Plint A, Johnson DW. Freedman S, Thompson G, Ducharme F, Gravel J, Klassen T, Curtis S, Beer D, Black K, Coates A, Willan A. **Canadian Institutes of Health Research.** \$2,137,058 CAD 2014-2018.

MRI for Equivocal Ultrasound in Suspected Appendicitis. Doria A, Schuh S (Co-PIs), Wales P, Tomlinson G, Ungar W. **Physicians' Services Incorporated Foundation.** \$169, 000 CAD 2016-2018.

Pathogen Specific Effectiveness of Probiotics in Children with Acute Gastroenteritis. Freedman SB, Finkelstein Y, Chui L, Lee B, Louie M, Netter-Aguirre A, Pang X. **Canadian Institutes of Health Research 2014 Operating Grant Open Competition.** \$607,892 CAD 2014-2018.

Pediatric Environmental Health Specialty Unit (PEHSU) Program. Baum C, Wax P, MaKay C, Finkelstein Y, Lancaster L. **Centers for Disease Control and Prevention (CDC)-Agency for Toxic Substances and Disease Registry (ATSDR).** \$6,300,000 USD 2014-2019.

Pediatric Concussion Assessment of Rest and Exertion (PedCARE); a RCT". IMPACT-Child Health Award Competition. Zemek R, Reed N, Dematteo C, Benchimol E, Farion F, Barrowman N, Reid S, Tremblay M, Goulet K, Hung R, Boutis K (site-PI), Solomon B, Wilcock R, Kagan C, Crawford K, Giglia L, Gray J, Fraser D, Fergusson D, Saskin R, Nysten K, Stewart M, Mason R. **Ontario SPOR Support Unit (OSSU).** \$299,980 CAD 2016-2018.

Performance and cost-effectiveness evaluation of multiplex molecular testing for enteric pathogens in a Canadian health-care setting. Fera E, Petrich A. **Canadian Foundation for Infectious Disease Pilot Grant.** \$25,000 CAD 2015.

Pharmacogenomic Determinants of Ketamine Neurotoxicity in Young Children. Finkelstein Y, Boutis K, Hutchison J, Post M, Soriano S, Kim R. **McLaughlin Centre for Genomic Medicine 2012 Accelerator Grant,** University of Toronto. \$50,000 CAD January 2012 to December 2015.

Pharmacokinetics of Alternative Antibiotic Delivery Routes. Scolnik D, Finkelstein Y. **Apotex Inc.** \$15,000 CAD October 2011 – October 2016.

Predicting Persistent Postconcussive Problems in Pediatrics (5P). Zemek R, Anderson P, Barlow K, Barrowman N, Boutis K, DeMatteo C, Farion K, Freedman S, Gagnon I, Gravel J, Hoshizaki B, Keightley M, Klassen T, Meeuwisse W, Meehan W, Mikrogianakis A, Vassilyadi M. **Canadian Institutes of Health Research.** \$1,273,000 CAD March 2013 to February 2018.

Prognosticators of persistent concussion symptoms following pediatric minor traumatic head injury. Boutis, K. **Children's Hospital of Eastern Ontario.** \$183,097.32 CAD September 10, 2013 – December 30, 2017.

Research Training in Pediatric Emergency Medicine. Mandl K (PI), Finkelstein Y (Role: Training Faculty). **National Institute of Health (NIH)-Eunice Kennedy Shriver National Institute of Child Health and Human Development-T32 G Training Grant (2T32HD040128-11A1).** \$1,341,625 USD October 2014 – September 2019.

Scaphoid Fractures in Children. Gantz J, Beno S, Chan K, Boutis K. **Public Health Agency Canada Research Grant.** \$4,000 CAD 2015.

Severe Influenza in Infants, Children and Youths: Role of Clinical and Epidemiologic Risk Factors. Tran D, Bettinger J, Ipp M, Mcgreer A, Richardson S, Schuh S, Dery P, Le Saux N, Moore D, Salvadori M, Vaudry W, Gubbay J, Loeb M, O'Connor D, Sauve L. **Canadian Institutes of Health Research.** \$241,553 CAD April 2012 - April 2016.

SQUEEZE Trial: A Trial to Determine whether Septic Shock Reversal is Quicker in Pediatric Patients Randomized to an Early Goal Directed Fluid Sparing Strategy vs. Usual Care. Parker M, Choong K, Fox-Robichaud A, Thabane L, Hutchison J, Boutis K, Schonfeld D. **The Hospital for Sick Children AFP Innovation Fund.** \$192,206 CAD 2016-2018.

Strengthening Transitions in Pediatric Emergency Care: A Qualitative Study. Curran J, Fitzpatrick E, Chorney J, Murphy A, Porter S, MacPhee S, McNeil K. **Canadian Institutes of Health Research: Regional Partnership Program – Nova Scotia.** \$436,287 CAD April 1, 2013 to March 31, 2016.

The Deliberate Practice of Pediatric ECGs. Boutis K, Etoom Y, Pecaric M, Pusic M. **Division of Paediatric Emergency Medicine, The Hospital for Sick Children.** \$6,000 CAD 2014-2015.

The Pharmacokinetics of Antibiotics Delivered in the Emergency Department Setting. Scolnik D, Finkelstein Y, Tessaro M. **Apotex Fund.** \$15,000 CAD. Jan 2011 to Dec 2015.

The Psychological Effects of Pediatric Traumatic Brain Injury. Yeates K, Boutis K. **Canadian Institute for Health Research Foundation Scheme.** \$750,000 CAD 2015-2020.

The Role of Graduate Programs in Promoting Education Scholarship in Health Professionals. "Art of the Possible Education Scholarship Grant", Ghavam-Rassoul A, Ratnapalan S. **Department of Family and Community Medicine, University of Toronto.** \$4,500.00 CAD 2015-2016.

Translating Emergency Knowledge For Kids (TREKK). Klassen T, Hartling L, Jabbour M, Johnson D, Porter S, Scott S, Sinclair D, Lang E, Freedman SB, Black B, Gouin S, Stang A. **Networks of Centres of Excellence (NCE) Program - Knowledge Mobilization.** \$1,200,000 CAD January 1, 2011 to December 31, 2015.

Translating Emergency Knowledge for Kids (TREKK). Porter S. **University of Manitoba.** \$86,801.89 CAD January 31, 2012 – January 30, 2016.

Understanding Discharge Instructions for Children and Caregivers in the Transition from Pediatric Emergency Care. Curran J, Porter S. **Canadian Institutes of Health Research.** \$436,287 CAD 2013-2016.

Validating an on-line learning intervention that teaches the interpretation of pediatric electrocardiograms. Boutis K, Pusic M, Pecaric M, Etoom Y. **Department of Paediatrics, Paediatric Consultants, Innovation Fund.** \$5,000 CAD 2014-2015.

STAFF LISTING

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Interim Division Head

Dr. Jason Fischer – Sept. 2015

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 Dr. Heshy Sturm
 Dr. Alene Toulany
 Dr. Jeff Weisbrot
 Dr. Joseph Wiley
 Dr. Brent Williams
 Dr. Kim Zhou

Cross Appointees

Dr. Hartmut Grasmann

Clinical Fellows 2014-2015

Dr. Abdullah Akkam
 Dr. Huba Atiq
 Dr. Macarena Castro
 Dr. Roser Martinez Mas
 Dr. Gal Neuman
 Dr. James Thorburn

STAFF LISTING

Clinical Fellows 2015-2016

Dr. Saeed Alzahrani
 Dr. Vigil James
 Dr. Daniel Magnus
 Dr. Adaugo Owobu
 Dr. Tais Sao Pedro

Academic Fellows 2014-2015

Dr. Faisal Al-Sani
 Dr. Max Ben-Yakov
 Dr. Adrienne Davis
 Dr. Jessica Gantz
 Dr. Greg Harvey
 Dr. Lianne McLean
 Dr. Hasan Merali
 Dr. Daniel Rosenfield
 Dr. Laura Simone
 Dr. Laura Weingarten

Academic Fellows 2015-2016

Dr. Faisal Al-Sani
 Dr. Max Ben-Yakov
 Dr. Jessica Gantz
 Dr. Magali Gauthey
 Dr. Greg Harvey
 Dr. Elana Hochstadter
 Dr. Michelle Lee
 Dr. Sasha Litwin
 Dr. Fathima Razik
 Dr. Daniel Rosenfield

Ultrasound Fellows 2014-2015

Dr. Mara Hosang
 Dr. Sara Jones

Ultrasound Fellows 2015-2016

Dr. Lianne McLean
 Dr. Jade Seguin

SIM Fellow 2014-2015

Dr. Sandra Cardenas

SIM Fellow 2015-2016

Dr. Laura Simone

Trauma Fellow 2014-2015

Dr. Ahmad Al Thekair

Trauma Fellow 2015-2016

Dr. Genevieve Ernst

Research Fellow 2014-2015

Dr. Adrienne Davis

Administrative Staff

Syed Azmat
 Caseita Dewar
 Angie Frisk
 Kathleen Gilmore
 Ritsa Iriotakis
 Julie Lee
 Laurie McQuarrie
 Henna Mian
 Sandra Miller
 David Nissan
 Nicole Rivera
 Majda Savaglio
 Pauline Smith
 Kelly Sobie
 Annabel Sousa
 Maggie Stevanovic
 Deborah Taylor



ENDOCRINOLOGY

Providing comprehensive care and advancing excellence in research and education

From left to right: Drs. Rayzel Shulman and Jennifer Harrington

DIVISION OF ENDOCRINOLOGY

2015-2016 was another productive year for the Division of Endocrinology.

We continued to provide high quality, comprehensive care for children and youth with a wide variety of endocrine disorders. These efforts include care for patients with (i) type 1 and type 2 diabetes, diabetes that results from medications such as glucocorticoids, and diabetes secondary to cystic fibrosis; (ii) general endocrine disorders, including growth, thyroid disease, disorders of sex development, pubertal disorders and reproductive endocrine disorders; (iii) abnormalities of calcium metabolism and bone health; (iv) endocrine cancers, including thyroid cancer, adrenal cortical carcinoma, and pheochromocytoma; and (v) gender dysphoria.

The Division of Endocrinology is highly collaborative and is engaged in joint clinical programs with care providers from many different disciplines. Ongoing collaborations exist with social work, general pediatrics, general surgery, urology, adolescent medicine, genetics, oncology, orthopedic surgery, psychology, nuclear medicine, and respirology. The interdisciplinary medical-surgical SickKids Team Obesity Management Program (STOMP) continues to flourish, and, within Endocrinology, the Section of Paediatric and Adolescent Gynaecology provides care to pre-teen and adolescent girls with gynecology disorders and to pregnant adolescents. The Trans Youth Clinic (TYC) has been developed in collaboration with colleagues in the Division of Adolescent Medicine and has provided care to over 200 youth since it opened in 2013.

The Division of Endocrinology is highly collaborative and is engaged in joint programs with staff from many divisions and disciplines.

In addition to clinical care, the Division of Endocrinology continued our efforts to train future Endocrinologists from Canada and around the world. This year, we had seven trainees in our subspecialty training program: six from Canada and one from Israel.

(v) use of iPhone-based technology to assist youth with diabetes self-management, and (vi) examination of how social determinants of health and health policies affect diabetes outcomes. Our Juvenile Diabetes Research Foundation (JDRF)-sponsored Canadian

The Division also maintained a substantial focus on research, supported by several million dollars of funding. Diabetes remained the area of greatest focus with involvement in (i) prediction and prevention of type 1 diabetes through involvement in the multinational TrialNet and TRIGR study groups; (ii) implications and treatment of insulin resistance and obesity among children and adolescents; (iii) the evolution of obesity and insulin resistance in young children; (iv) prevention and treatment of the medical complications of diabetes, including a leading role within the multinational AddIT study group,

- The Division of Endocrinology continues to train future Endocrinologists from Canada and around the world
- Diabetes remained the area of greatest focus
- The Division of Endocrinology partners with Urology, Genetics, Gynecology, General Surgery, Nuclear Medicine, Adolescent Medicine, Orthopaedics, General Paediatrics, Oncology, Respirology, Psychiatry, Social Work and Psychology in collaborative clinics

Clinical Trial Network (CCTN) site is also very active. Other research areas include investigation of the factors that regulate the timing of puberty, effects of sex steroid on brain development, etiology and management of thyroid disorders and endocrine cancers, and management of calcium and bone abnormalities.

HONOURS AND AWARDS

Aggarwal, A: Toronto General Hospital. John H. Fowler Excellence in Teaching Award, Toronto, Ontario, Canada 2015

Daneman, D: Canadian Association of Paediatric Health Centres. Contribution to Child Health Award, Ottawa, Ontario, Canada 2015

Daneman, D: Diabetes Research Center, Washington University in St. Louis. Julio Santiago Memorial Lecture, St. Louis, Missouri, USA 2015

BOOK CHAPTERS

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Wasserman JD, Gassas A, Nathan P. Hematopoietic Stem Cell Transplantation. In: Handbook of Long Term Care of the Childhood Cancer Survivor (Mucci G, Torno L, eds). Springer-Verlag, New York City NY 2015: pp 179-208.

JOURNAL ARTICLES

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Cameron FJ, Wherrett DK. Care of diabetes in children and adolescents: controversies, changes, and consensus. Lancet 2015: 385 (9982): pp 2096-2106.

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GRANTS AND FUNDING

A Phase 1 study of safety and pharmacological activity of Substance P (sP) in the reversal of recent-onset Type 1 Diabetes. Sochett EB. **Vanilloid Genetics Inc.** \$1,136,990 CAD. February 1-2014-December 1-2017

A Pilot study of energy expenditure, body composition and neurocognitive function in psychoparathyroidism 1a-Altered resting energy expenditure as a cause of altered energy homeostasis in abnormal GNAS inheritance (including PHP1a, other forms of AHO and uniparental disomy of GNAS). Sochett EB. **Children's Hospital of Philadelphia.** \$3,721 CAD. September 1-2012-January 1-2015

A randomized controlled trial to evaluate the efficacy and safety of a gluten-free diet in patients with asymptomatic celiac disease and type 1 diabetes. Celiac and Diabetes: Dietary intervention and evaluation trial (CD-DIET). Mahmud FH. **JDRF Canadian Clinical Trial Network (CCTN).** \$3,200,000 CAD. September 9-2012-January 1-2017

A randomized controlled trial to evaluate the impact of child friendly menu labeling designs on food choices by parents and children in an inpatient hospital setting. Hamilton JK, Basak S, Steinberg A, Bar-Dayyan A. **Centre for Healthy Active Kids, SickKids Foundation and Fraser Mustard Institute for Human Development.** \$25,000 CAD. July 1-2015-June 30-2016

Adolescent type 1 diabetes cardio-renal intervention trial (AddIT). Daneman D, Mahmud FH, Sochett EB, Curtis J. **British Heart Foundation**. £60,800 GBP. (extended from March 26, 2013 to no defined dollar amount). January 1-2008-January 1-2017

Adolescent type 1 diabetes cardio-renal intervention trial (AddIT). Daneman D, Mahmud FH Sochett EB, Curtis J. **Cambridge, London, United Kingdom Subcontract - Juvenile Diabetes Research Foundation**. \$379,932 CAD. January 1-2007-January 1-2016

Adolescent type 1 diabetes cardio-renal intervention trial (AddIT). Sochett EB. **Canadian Coordinating Trials Network- Juvenile Diabetes Research Foundation**. \$234,196 CAD. March 1-2011-January 1-2016

Adolescent type 1 diabetes cardio-renal intervention trial (AddIT) Ancillary Study: Urinary inflammatory markers in adolescents with type 1 diabetes Ancillary Study. Mahmud FH. **JDRF Canadian Clinical Trial Network (CCTN)**. \$3,657,088 CAD. January 1-2011-January 1-2016

An assessment of psychological factors, inflammatory biomarkers and kidney complications; the Improving renal complications in adolescents with type 2 diabetes through REsearch (iCARE) cohort study. Dart AB, Wicklow BA, Blydt-Hansen T, Chateau D, Cummings E, Dean H, Hadjiyannakis S, Hamilton JK, Ho J, Jetha M, Kaminsky L, Legault L, Malik S, MCGAVOCK J, Morrison K, Mushquash C, Panagiotopoulos C, Pinto T, Samaan M, Samuel S, Sellers E, Sharma A. **Canadian Institutes of Health Research**. \$881,660 CAD. January 1-2015-December 31-2020

An early developmental model of overeating, obesity and executive dysfunction. Levitan R, Meany M, Davis C, Dubé L, Gruber R, Hamilton JK, Kennedy J, Matthews S, Soares C, Steiner M. **Canadian Institutes of Health Research**. \$763,130 CAD. May 1-2010-April 30-2015

Assessment of an electronic self-management tool on glycemic control in teens with type 1 diabetes. Palmert MR, Cafasso J, Katzman D, Skinner H, Rotondi M. **Thrasher Research Fund**. \$435,700 CAD. January 1-2013-December 31-2016

CANadian Pediatric Weight management Registry (CANPWR). Identifying the characteristics of successful change in Canadian pediatric weight management programs. Morrison K, Hamilton JK, Ball G, Berall G, Buchholz A, Chanoine JP, Legault L, Thabane L, Tremblay M. **Canadian Institutes of Health Research**. \$943,636 CAD. April 1-2012-March 31-2017

Canadians Seeking Solutions and Innovations to Overcome Chronic Kidney Disease (Can-SOLVE CKD). Sochett EB. **Canadian Institutes of Health Research- Strategy for Patient-Oriented Research (SPOR): SPOR Networks in Chronic Disease**. \$2,600,000 CAD. January 1-2016-January 1-2019

Carbohydrate counting and type 1 diabetes: assessment of accuracy in adolescents who currently count, and a randomized controlled trial of internet-based teaching for those learning to count. Hamilton JK, Pais V. **The Lawson Foundation**. \$92,000 CAD. August 1-2014-July 31-2016

Cardiometabolic risk, obesity and the microbiome: development over the first two years of life in children exposed to gestational diabetes in utero. Hamilton JK, Retnakaran R, Hanley AJ, Zinman B, Parkinson J, Comelli E. **Heart and Stroke Foundation of Canada**. \$263,561 CAD. July 1-2014-June 30-2017

CONTACT-conditional nuclei tagging in specific cell types to study the epigenetics of early brain development and disease. Palmert MR, Wilson M Lefebvre, Matthews J, Scott I. **Centre for Brain and Mental Health: Chase-an-idea in Early Brain Development Grant**. \$49,995 CAD. January 1-2015-January 1-2016

Deciphering the bases of sex differences in the brain and their role in psychiatric disorders. Palmert MR, Lerch J, Arnold P, Foster J. **Canadian Institutes of Health Research**. \$779,590 CAD. October 1-2012-September 30-2017

Epigenetic changes in DNA infants exposed to gestational diabetes in utero. Hamilton JK, Palmert MR. **Canadian Diabetes Association**. \$272,967 CAD. July 1-2012-June 30-2015

Food intake control in children. Anderson GH, Hamilton JK, Thomas SG. **Canadian Institutes of Health Research**. \$640,500 CAD. March 1-2015-April 30-2020

Genetic Characterization of Pediatric Papillary Thyroid Carcinoma. Wasserman JD. **C17 Research Network**. \$150,000 CAD. July 1-2014-June 30-2016

Genetic Determinants of Congenital Hypothyroidism. Deladoey J, Wasserman JD. **Canadian Institutes of Health Research**. \$446,805 CAD. January 1-2013-January 1-2016

Genetic Variants in Congenital Hypothyroidism. Wasserman JD. **American Thyroid Association**. \$50,000 USD. September 1-2015-August 31-2017

Genome wide DNA methylation alterations in infants exposed to gestational diabetes in utero. Hamilton JK, Retnakaran R, Hanley A, Palmert MR, Weksberg R. **Canadian Diabetes Association**. \$272,973 CAD. August 1-2012-July 31-2015

Growth hormone therapy and bone quality in paediatric osteoporosis. Sochett EB. **Eli Lilly**. \$125,000 CAD. November 1-2007-December 31-2017

Idiopathic juvenile osteoporosis - the next generation of sequencing data. Sochett EB. **McLaughlin Centre (Accelerator Grant in Genomic Medicine, University of Toronto) with matching funds from The Department of Paediatrics, The Hospital for Sick Children**. \$40,000 CAD. July 1-2014-January 1-2017

Initiative to Maximize Progress in AYA Cancer Therapy (IMPACT). Nathan P, Wasserman JD. **Canadian Institutes of Health Research**. \$1,250,020 CAD. January 1-2014-January 1-2018

Male-female differences in pubertal timing: use of perturbations of the Lin28/let-7 axis to examine mechanisms. Palmert MR, Wilson M, Goldenberg A. **Canadian Institutes of Health Research**. \$556,148 CAD. April 1-2014-March 31-2018

Microbiome patterns associated with specific growth trajectories in school age children: Interactive effects of diet and social determinants of health. Comelli E, Bandsma R, Barros AJD, Bassani D, Birken C, Borges MC, Bourdon C, Goldenberg A, Hamilton JK, Hanley A, L'Abbe M, Maguire J, Matijasevich A, Roth D, Santos IS. **CCNH Microbiome and Nutrition Collaborative Grant 2016, University of Toronto**. \$500,000 CAD. February 1-2016-February 1-2017

MiTy Kids (Metformin in women with type 2 diabetes in pregnancy kids trial). Feig D, Hamilton JK, Haqq A, Asztalos E, Ohlsson A, Murphy K, Lee S, Ryan E, Zinman B, Fantus G, Tomlinson G, Lipscomb L, Armson A. **Canadian Institutes of Health Research.** \$1,299,072 CAD. October 1-2012-September 30-2017

OPTIMOM Programmatic Grants in Food and Health. O'Connor D, Unger S, Doesburg S, Hamilton JK, Miller S, Pencharz P, Rovet J, Shah P, Stintzi A, Taylor M. **Canadian Institutes of Health Research.** \$1,999,672 CAD. March 1-2013-September 1-2018

Pediatric Thyroid Nodule Score (PTNS) Derivation and Validation of a Predictive Score for Thyroid Nodules. Wasserman JD. **Rare Disease Foundation.** \$3,500 CAD. March 1-2015-March 1-2016

Prospective, multicenter, single-arm study to evaluate efficacy, safety, and pharmacokinetics of Denosumab in children with osteogenesis imperfecta. Sochett EB. **Amgen Inc.** \$427,570 CAD. June 5-2015-June 4-2018

Quick Strikes Improving Outcomes for Youth with Type 1 Diabetes in Transition to Adult Care Through Strengthening Integration with Primary Care: An Exploratory, Cross-Provincial Study. Shulman R. **SPOR PIHCI Network.** \$75,000 CAD. January 1-2016-January 1-2017

Team to address bariatric care in Canadian children (Team ABC). Ball G, Hamilton JK, Birken C, Morrison K, Holt N, Masse L, Luca P, Anderson L, Buchholz A, Carsley S, Chanoine JP, Dettmer E, Cordeiro K, Forhan M, Hadjiyannakis S, Haines J, Legault L, Ho J, Maguire J, Parkin P, Maximova K, McPherson A, Perez A, Sprague A, Tu K, Toulany A, Tremblay M. **Canadian Institutes of Health Research.** \$1,555,881 CAD. March 1-2015-April 30-2020

The GH monitor registry and EasyPod connect study. Hamilton JK. **Serono Canada Inc.** \$20,200 CAD. May 1-2005-April 30-2015

Type 1 Diabetes TrialNet Toronto Clinical Centre. Wherrett, DK. **National Institutes of Health. National Institute of Diabetes and Digestive and Kidney Diseases.** \$1,751,736 USD. July 20-2015-April 30-2019

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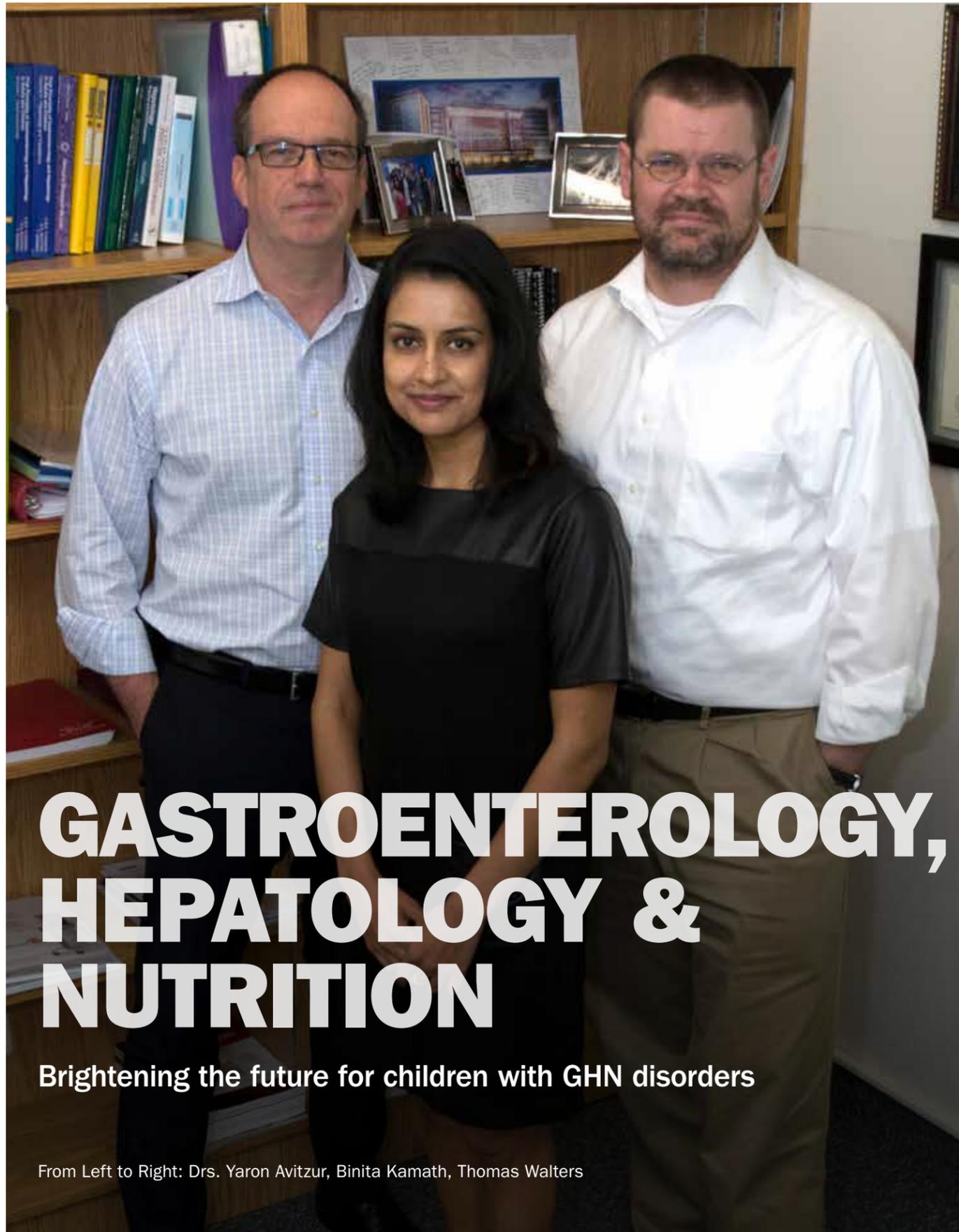
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GASTROENTEROLOGY, HEPATOLOGY & NUTRITION

Brightening the future for children with GHN disorders

From Left to Right: Drs. Yaron Avitzur, Binita Kamath, Thomas Walters

DIVISION OF GASTROENTEROLOGY, HEPATOLOGY AND NUTRITION

The Division of Gastroenterology, Hepatology and Nutrition (GHN) has continued to provide significant contributions in clinical care, research, and education across a breadth of subspecialist areas.

Highlights of the Division's research programs this year include the publication of a method to differentiate functional bile duct cells (cholangiocytes) from human pluripotent stem cells, in which Dr. Binita Kamath and

her collaborators also demonstrated the initial application of these cells to explore disease mechanisms and therapies in cystic fibrosis (published in Nature Biotechnology). A new disease causing severe protein-losing enteropathy was reported by Dr. Aleixo Muise, in collaboration with other Division and SickKids investigators, who demonstrated that PLVAP mutations cause disruption of endothelial fenestrated diaphragms and thus added a new category of vascular abnormalities

Dr. Binita Kamath and collaborators succeed in growing functioning bile duct cells from stem cells, providing a model system to explore the mechanisms of children's liver diseases.

to the list of causes of life-threatening congenital enteropathies. Dr. Tanja Gonska collaborated with her colleagues in the Cystic Fibrosis Centre to present an international study of the outcomes of newborn infants with positive screening tests but inconclusive diagnosis for cystic fibrosis. Continued monitoring of these children is necessary as 1 in 10 will develop evidence of CF by 3 years of age. Looking forward, research in the Division is strongly placed following success in this year's funding competitions achieved by many members of the Division in the current highly competitive funding environment.

Clinical care commitments continue to grow, with ambulatory patient visits and endoscopic procedures increasing; more than 1200 patients underwent endoscopic procedures in the last year. We strive for the provision of high quality clinical care and have undertaken a number of quality improvement initiatives this year, including the introduction of bowel preparation at home for selected children undergoing colonoscopy, and the development of an AboutKidsHealth landing page as an easily-navigable home for information about GHN disorders for affected patients and families. Our nutrition faculty (Drs. Mouzaki

and Bandsma) have contributed to the development of new standard parenteral nutrition solutions, which will provide safe and appropriate nutrition with reduced risk of prescription errors and reduced work load for preparation.

Through excellent research supporting improvements in clinical care, disseminated through our work in education the Training Program in Paediatric Gastroenterology passed its scheduled internal review by the University this year, thanks to the leadership and preparation of the Director, Dr. Yaron Avitzur and the Education Administrative

Dr Aleixo Muise identified a new monogenic cause of Very Early Onset Inflammatory Bowel Disease (VEOIBD). Muise investigated the cause of a severe congenital gastrointestinal disease causing massive loss of protein into the gut lumen. His studies identified a mutation in PLVAP gene that leaves blood vessels without a protein-catching sieve over the microscopic windows in their endothelial cell lining. The Muise laboratory is providing better understanding of VEOIBD mechanisms and seeking novel therapies to transform the lives of these children.

Coordinator, Sherry Joy. The reviewers commented particularly on the action-oriented RPC, the very supportive learning environment, the wide breadth of clinical exposure and the strong academic and research focus of the program. Our trainees continue to be recognized for the excellent work that they undertake, including a 2016 Canadian Graduate Scholarship Award for Dr. Amanda Ricciuto.

The Division of GHN therefore continues strong work for which its members were recognized this year with promotions to Associate Professor (Dr. Walters), and to Senior Scientist (Dr. Muise) and Senior Associate Scientist (Dr. Griffiths) within the Research Institute. Our faculty has impact at the highest level in multicenter research, international societies and conferences where we are strongly represented among committee chairs and invited speakers.

Based upon excellence in research supporting improvements in clinical care, disseminated through our work in education, we continue to brighten the future for children with GHN disorders around the world.

HONORS AND AWARDS

Mouzaki, M: Winner of the Fellows' Teaching Award, The Hospital for Sick Children, Toronto, Ontario, Canada. June, 2015

Walsh, C: Winner of the Teri Li Award from the North American Society Pediatric for Gastroenterology, Hepatology and Nutrition, Washington, DC, USA. October 2015

Walsh, C: Winner of the NASPGHAN Endoscopy Prize from the North American Society Pediatric for Gastroenterology, Hepatology and Nutrition Annual Meeting, Washington, DC, USA. October 2015

PUBLICATIONS

Ahmad T, Greer M-L, Walters TD, Navarro O. Bowel sonography and MR Enterography in Children, *American Journal of Roentgenology* 2016: 206 (1): pp 173-181.

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A multi-disciplinary human study on the genetic, environmental and microbial interactions that cause IBD. Croitoru K, Griffiths A. **Crohn's and Colitis Foundation of Canada** (\$5,600,000, 2007-2013; Renewed with funding from Helmsley Foundation and CCFC \$9,000,000 2013-2018)

A multidisciplinary approach to target chronic inflammation of the gut, liver and joint.

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A structured simulation-based training curriculum to improve the non-technical performance of endoscopy trainees: A randomized control trial. Walsh C, Grover SC. **Canadian Association of Gastroenterology Education Research**. \$7,500 CAD. Feb 2016-Feb 2017

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Canadian Pediatric Clinician Scientist Program.
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Celiac disease and gluten-free diet teaching: Is online
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Allen S, Bandsma R. **Medical Research Council.**
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Trial.** \$164,242 CAD. Jul 2014-Jun 2016

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Ng V, Kameth B. **Transplant and Regenerative Medicine
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Durie P, Knowles M, Ling S. **Genome Canada,
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GET TITLEConditions. PI: Ruskin D; Co-Investigators:
Stinson J, Walker K, Kohut S, Scaini V., Marcon M.
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Individualized CF therapy – 100 airway cell study. Bear B, Ratjen F, Gonska T, Rossant J, Moraes T, Ray P, Strug L, Rommens J. **CF Canada/SickKids Foundation**. \$75,000 CAD. Jan 2015 –Dec 2020

Inflammation, microbiome, and alimentation: Gastro-intestinal and neuropsychiatric effects: The IMAGINE-SPOR chronic disease network. **Canadian Institutes of Health Research**. \$720,000 CAD. 2011-2016

Intestinal microbiota, bile acids and NAFLD. Bandsma R, Mouzaki M. **Physicians' Services Incorporated Foundation**. \$146,000 CAD. 2014-2016.

iWITH: Immunosuppression Withdrawal for Stable Pediatric Liver Transplant Recipients. Feng S, Ng V, Avitzur Y. **National Institutes of Health- NIAID - National Institute of Allergy and Infectious Diseases**. \$210,586 USD 2012 – 2017

Long-term metabolic effects after severe malnutrition. Bandsman R. **Eat, Play, Think, Catalyst Grant. Centre for Child Nutrition, Health and Development, University of Toronto**. \$25,000 CAD. 2015-2016

Long-Term Survival in Childhood Solid Organ Transplants. Parekh, RS Dipchand A, Hebert D, Kim S, Nathan P, Ng VL, Patterson M, Solomon M, Thomas K. **Canadian Institutes of Health Research**. \$514,679 [CDN]. 2014 - 2018

Microbiome patterns associated with specific growth trajectories in school age children: Interactive effects of diet and social determinants of health. Bandsma R, Cornelli E. **Centre for Child Nutrition, Health and Development, Microbiome and Nutrition Collaborative Grant**. \$500,000 USD. 2016-2019

NADPH oxidase function in the pathogenesis of pediatric IBD and JIA. Muise A, Brumell J, Yeung R, Vallance B, Benchimol E. **Canadian Institutes of Health Research Team Grant: Health Challenges in Chronic Inflammation Initiative**, \$2,500,000 CAD. 2014-2019

NADPH oxidase function in the pathogenesis of pediatric IBD and JIA. PI: Brumell J. Collaborators: Muise A, Ellis J, Parkinson J, Yeung R, Vallance B, Benchimol E, Kaplan G, Walters TD, Feldman B, Griffiths A. **Health Challenges in Chronic Inflammation Initiative**. \$500,000 pa CAD (July 1, 2014-June 30, 2019)

National Early Onset Inflammatory Bowel Disease Cohort Study (NEOPICS). Muise A, Griffiths A. **Canadian Institutes for Health Research**. \$450,000 CAD. 2012-2015

Online education for Celiac Disease and the gluten-free diet teaching. Laura Vresk, Marcon M, Walsh C. **Canadian Foundation for Dietetic Research**. \$14,946.80 CAD. Jul 2015– Jul 2017

Online education for celiac disease and the gluten-free diet teaching. Vresk L, Marcon M, Walsh C. **Canadian Foundation for Dietetic Research**. \$22,000 CAD. Jul- 2015-Jul 2016

Paediatric Inflammatory Bowel Disease Network for Safety, Efficacy, Treatment and Quality Improvement in Care (Ped-set quality). Ruemmele F, Griffiths A. **European Commission**. 6,000,000 2015-2020.

POSITIVE study (ancillary study – autoimmunity and allergy in pediatric solid organ transplantation Mital S, Upton A, Foster B, Avitzur Y. **Canadian National Transplant Research Program (CNTRP)**. \$1,500,000 CAD. 2013-2018

Predicting Response to Standard Paediatric Colitis Therapy: the PROTECT Study. NIH/NIDDK U01 Multi-centre Clinical Study. PI: Hyams J. Co-investigators: Denson LA, Kugathasan S, Sylvester F, Gupta N, Walters TD, \$1,150,460 pa CAD. Jul 2012–Jun 2017

Prediction by ultrasound of the risk of hepatic cirrhosis in cystic fibrosis ('PUSH')Cystic Fibrosis Liver Disease Research Network. Ling S. **Cystic Fibrosis Foundation and National Institutes of Health**. \$333,000 CAD. Jan 2009–Dec 2020

Propensity Score-based Methods for CER Using Multilevel Data: What Works Best When. Kim, MO, Dubinsky M, Hyams J, Lu M, Macaluso M, Nehus E, Walters TD. **Patient-Centered Outcomes Research Institute (PCORI)**. \$250, 000 pa USD (Jan 2015-Dec 2017)

Protocol 1. "Observational Study of Children with Hepatitis B Virus Infection in North America: A Cohort study protocol of the Hepatitis B Research Network (HBRN)."

Protocol 2. "Entecavir and interferon- α 2a combination therapy for children immune tolerant to chronic hepatitis B infection. Ling S. **National Institutes for Health**. \$278,000 CAD per year. Jun 2010–May 2015

Ready, Set, Go! Raising Awareness of Transplant Recipients on Physical Activity and Exercise. Sunita Mathur and Tania Janaudis-Ferreira, Ng VL, Dipchand A, Coucill A, Deliva R, Patterson C, Singer L, Zaltzman J. **Toronto Transplant Institute Education Innovation Grant**. \$13,000 [CDN]. 2015 – 2016

Residents' experience with research during their postgraduate training: A qualitative study. Devine L, Stroud L, Stenfors-Hayes T, Cil, T, Ginsburg S, McDonald-Blumer H, Walsh C. **CanMEDS Research and Development Grant, Royal College of Physicians and Surgeons of Canada**. \$22,544 CAD. Jul 2014-June 2016

Risk Stratification & Identification of Immunogenetic and Microbial Markers of CD. Grant. PI: Kugathasan S. Collaborators: PRO-KIIDS Consortium. Walters T: Member of Executive Steering Committee and Director of Data Co-ordinating Centre. **Crohn's and Colitis Foundation of America**. \$1,000,000 pa CAD Jul 2013-Jun 2016

Risk stratification in newly diagnosed children with Crohn disease. Griffiths A, Kugathasan S. from **Crohn's and Colitis Foundation of America**. Sickkids \$75,000

Role of a novel stem cell in intestinal injury and repair in small bowel transplantation. Jones NL, Avitzur Y, Grant D. **Transplant and Regenerative Medicine Centre Catalyst Grant, The Hospital for Sick Children**. \$50,000 CAD. Jan 2015-Dec 31 2015

Role of a novel stem cell in intestinal injury and repair in small bowel transplant. Jones N, Avitzur Y. **Transplant Centre Catalyst grant, The Hospital for Sick Children**. \$50,000 CAD. 2015-2016

Role of autophagy in Helicobacter pylori infection and disease. Jones NL. **Canadian Institutes of Health Research**. \$173,063 per year. Jul 2015-Jun 2020 Jun

Role of PTPsigma and adherens junction proteins in IBD. Muise A, Rotin D. **Crohn and Colitis Canada**. \$375,000 CAD. 2014-2017

Studies of novel IBD-associated genes and their impact on innate immunity. Muise A, Brumell J. \$683,080. CAD 2015-2020

The Canadian Gastro-Intestinal Epidemiology Consortium (CanGIEC) Inflammatory Bowel Disease in Canada. Benchimol E, Griffiths A. **Canadian Institutes of Health Research**. \$451,801/ \$90,360/year09/2015-10/2020

The experience of caregivers of children with medical complexity receiving blenderized tube feeding: A qualitative study. Soscia J, Orkin J, Marcon M, Adams S, Cohen E, Friedman J, Gallagher K, Nicholas D, Saunders N. **Complex Care Initiative Grant Competition, The Hospital for Sick Children**. \$17,048 CAD. Dec 2014-Dec 2015

The gut microbiota in pediatric inflammatory bowel disease. Muise A, Figelys, Griffiths A, Hajibabaei, Walters T, Stintzi, Mack. **Canadian Institutes of Health Research** \$720,000 CAD 2011-2016

The gut microbiota in pediatric inflammatory bowel diseases. CIHR Operating Grant. Stintzi A, Mack D, Figeys D, Griffiths AM, Hajibabaei M, Muise A. \$720,000 CAD. Apr 2011–Mar 2016

The Hepatitis B Research Network: The impact of Adalimumab therapy on transmural inflammation and damage in pediatric Crohn's disease: A prospective longitudinal study employing MR. Griffiths AM, Church PC, Greer ML. **Abbvie**. \$245,000 CAD. 2014-2016

The role of regulatory T cells and Th2 response in the pathogenesis of allergy and autoimmunity after liver transplantation. Avitzur Y, Grunebaum E, Avitzur Y. **Donald and Audrey Campbell Chair in Immunology**. \$153,750 CAD. 2014-2018

Therapy Development for Cystic Fibrosis Patients in Qatar. Bear CE, Gonska T Moraes T, Ratjen F, Melnyk R, Ellis J, Rossant J. **Al Qamri Holding Group/Al Qamri-SickKids CF Therapy Programme**. \$1004,253- first year CAD. Jan 2014-Feb 2019

STAFF LISTING

Division Head

Dr. Simon Ling

Full-Time

Dr. Yaron Avitzur
 Dr. Robert Bandsma
 Dr. Peter Church
 Dr. Tanja Gonska
 Dr. Anne Griffiths
 Dr. Nicola Jones
 Dr. Binita Kamath
 Dr. Margaret Marcon
 Dr. Marialena Mouzaki
 Dr. Aleixo Muise
 Dr. Vicky Ng
 Dr. Philip Sherman
 Dr. Thomas Walters

Part-Time

Dr. Glenn Berall
 Dr. Carol Durno
 Dr. Paul Kortan
 Dr. Gary May
 Dr. Catharine Walsh

Clinical Fellows

Dr. Eileen Crowley
 Dr. Mohit Kehar
 Dr. Amin Sheikh

Research & Subspecialty Fellows

Dr. Yasser Al-Nasser
 Dr. Suzanna Attia
 Dr. Andreanne Benidir
 Dr. Nicholas Carman
 Dr. Marta Carneiro de Moura
 Dr. Abdul Elkadri
 Dr. Shaun Ho
 Dr. Eberhard Lurz
 Dr. Mar Miserachs
 Dr. Cynthia Popalis
 Dr. Isabelle Scheers

Nurse Practitioners

Karen Frost
 Constance O'Connor
 Silvana Oppedisano

Ambulatory Nurses

Farran Faus
 Meagan Grimwood
 Mary Alicia Millar
 Holly Norgrove
 Vikki Scaini

IBD Nurse

Krista Uusoue

Home TPN Nurse

Debra Harrison

GI Procedure Nurses

Carol Fitzmaurice
 Nicola Morgan
 Donna Stevenson
 Kelly Wimbush

Liver Transplant Nurse Practitioners

Maria De Angelis
 Krista J. Van Roestel

Liver Transplant Nurse

Jennifer Stunguris

Dieticians

Andrea Carpenter
 Megan Carricato
 Kathryn Chambers
 Glenda Courtney-Martin
 Penni Kean
 Rebecca Kinio
 Ines Martincevic

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Saeedah Ahamad
 Chona Callejo
 Margaret Johnson
 Sherry Joy
 Ivette Milanes Abreus
 Lilatool Shakur
 Suzanne Shek



HAEMATOLOGY/ ONCOLOGY

Highly integrated provider of clinical care, research and education with a mission to improve the health and outcomes of children with cancer and blood diseases

Dr. Joerg Krueger

DIVISION OF HAEMATOLOGY/ONCOLOGY

The Division of Hematology/Oncology (“the Division”) provides diagnostic services and specialist care for children up to 18 years of age with cancer and non-malignant blood disorders. The Division is the largest of its kind in Canada and among the largest such programs worldwide, with approximately 375 new cancer cases registered in the pediatric oncology program this past year. The Division is the designated centre for haematopoietic stem cell transplantation for patients up to 18 years of age in Ontario and the Atlantic provinces; the majority of the approximate 90 transplants performed this year

were for children with cancer, with others performed for children with benign hematologic disorders, severe immunodeficiency disorders or genetic diseases. The Division’s clinical volumes include approximately 14,500 in-patient days, 22,000 ambulatory care visits, and 11,800 day hospital visits.

The Division is organized into five sections and three programs: the Leukemia/Lymphoma Section (Section Head, Dr. Johann Hitzler); the Solid Tumor Section (Section Head, Dr. Meredith Irwin); the Neuro-oncology Section

The Division is the largest childhood cancer and blood disorders program in Canada and among the largest such programs worldwide, with approximately 390 new cancer cases registered in the pediatric oncology program this past year.

(Section Head, Dr. Eric Bouffet); the Blood and Marrow Transplantation Section (interim Section Head, Dr. Jim Whitlock); the Hematology Section (Section Head, Dr. Yigal Dror); the AfterCare (long-term follow-up) Program (Program Head, Dr. Paul Nathan); the New Agents and Innovative Therapies Program (Program Head, Dr. Sylvain Baruchel); and the Cancer Genetics Program (Program Head, Dr. David Malkin. Dr. Sarah Alexander serves as the Program’s Clinical Director. The Hematology Section has large clinical and research programs in pediatric thrombosis and hemostasis, the pediatric hemoglobinopathies and the inherited and acquired pediatric marrow failure syndromes and myelodysplasias. The Division, in collaboration with the Pediatric Oncology Group of Ontario (POGO), supports a network of pediatric oncology satellite centres in the Greater Toronto and surrounding areas, with almost 6000 annual visits to satellite centres. Satellite centres in sickle cell disease are established in Rouge Valley hospital and the William Osler Health Centre. Major achievements in the past year included: (1) the successful launch of our MIBG program, with 9 patients treated to date, including referrals from Newfoundland to British Columbia; and (2)

a successful transition to full section-based care led by Clinical Director Dr. Sarah Alexander, with inpatient services now arranged in alignment with the each of the five aforementioned sections as a means of further improving the quality and safety of our patient care.

The Division now provides access to innovative clinical services such as MIBG and precision medicine clinical trials for children from across Canada With financial support provided by the Garron family as a part of their transformative \$30M gift to the Cancer Centre, 18 tons of lead shielding were engineered into the 8th floor of the hospital to create a state-of-the-art MIBG facility, which in its first year of operation treated 10 Canadian children from Newfoundland to British Columbia suffering from recurrent or progressive neuroblastoma. To date, 12 patients from Newfoundland to British Columbia have been enrolled at SickKids in a first-in-children precision medicine study of dabrafenib for recurrent or progressive cancers bearing a mutation in the BRAF gene.

The Division's training program for pediatric hematology/oncology, the largest such program in Canada, underwent successful re-accreditation by the Royal College of Physicians and Surgeons of Canada in 2013. The Division's Training Program Director is Dr. Michaela Cada. The Education Program in the Division includes a large international training program in pediatric hematology/oncology and offers subspecialty training opportunities in areas such as the pediatric leukemias/lymphomas, neuro-oncology, phase I drug development, blood and marrow transplantation, bone marrow failure and pediatric thrombosis and hemostasis.

Research in the Division spans basic science to clinical care with a particular focus on translational research. Approximately one-half of the Division's 32 full-time Faculty have appointments as clinician scientists or clinician investigators in the Department of Pediatrics with parallel appointments in the Research Institute. Research in the Division is multidisciplinary, involving health care professionals with expertise in a variety of areas (e.g. nursing, psychology, social work, pharmacy). The Division is an active member of the Children's Oncology Group (COG), the largest pediatric cancer clinical trials group in North America (SickKids Principal Investigator, Dr. Sarah Alexander), as well as an active participant in activities of other clinical trials consortia including the Histiocyte Society, New Approaches to Neuroblastoma Therapy (NANT), the Pediatric Blood and Marrow Transplant Consortium (PBMTTC), the C17 Developmental Therapeutics Network and the Therapeutic Advances in Childhood Leukemia (TACL) consortium. Over 300 oncology clinical trials enrollments occurred this year, an increase of approximately 10% over the prior year. The Division is committed to facilitating knowledge exchange through collaborative international partnerships with a particular focus on low- and middle-income countries lacking the health care resources available in high-income settings such as Canada. Two such initiatives are currently underway in collaboration with the SickKids Centre for Global Child Health (C-GCH): (1) the Global Sickle Cell Disease Network (GSCDN) led by Dr. Isaac Odame; and (2) the SickKids-Caribbean Initiative (SCI), led by Dr. Victor Blanchette.

Notable research highlights include an international study led by Dr. Annie Huang and published in *Lancet Oncology*, which describes the use of molecular subtyping of atypical teratoid rhabdoid tumours (ATRT) of the brain to improve therapy for this rare, and highly malignant disease, and a study published in *Nature Genetics* and led by Dr. Uri Tabori, which uncovered the molecular cause of biallelic mismatch repair deficiency (bMMRD) syndrome.

Notable events in the past year included the first full year of clinical activities for our MIBG program. With financial support provided by the Garron family as a part of their transformative \$30M gift to the Cancer Centre, 18 tons of lead shielding were engineered into the 8th floor of the hospital to create a state-of-the-art MIBG facility, which in its first year of operation treated 10 Canadian children from Newfoundland to British Columbia suffering from recurrent or progressive neuroblastoma. As a member of the NANT consortium, SickKids can now offer NANT MIBG clinical trials to Canadian children. With support provided by Karen Fung, MSW, the Patient Navigator for our NAIT program, patients from across Canada are also coming to SickKids to participate in several first-in-children precision medicine clinical studies at SickKids which are not available elsewhere in Canada.

Also of note, Dr. Annie Huang received the Mid-Career Physician Researcher Award for Scientific Accomplishment from the Department of Pediatrics at The Hospital for Sick Children, Dr. Uri Tabori was announced in November as the winner of the 2016 Bernard and Francine Dorval Prize from the Canadian Cancer Society, and Dr. Eric Bouffet was elected as the next President of the International Society of Paediatric Oncology (SIOP).

The Administrative team for the Division comprises Dr. Jim Whitlock (Division Head), Amrita D. Naipaul (Director, Child Health Services) and Denise Ferreira (Manager, Business Operations).

HONOURS AND AWARDS

Alexander, S: Winner of the Staff Reward and Recognition, Division of Haematology/ Oncology, The Hospital for Sick Children, Toronto, Ontario, Canada. November, 2015

Brandao, LR: Winner of The Alvin Zipursky Teaching Award, Division of Haematology/ Oncology, The Hospital for Sick Children, Department of Paediatrics, University of Toronto, Toronto, Ontario, Canada. June, 2015

Egeler, M: Winner of Life Career Award: The Golden Pin, Association for the Histiocyte Society Meeting, Plaka, Athens, Greece. September, 2015

Gupta, A: Winner of Haematology/Oncology Stellar Divisional Rounds Award, Haematology/ Oncology, Department of Paediatrics, The Hospital for Sick Children, Toronto, Ontario, Canada. October, 2015

Huang, A: Winner of Traynor Lectureship and Award, Pediatric Brain Tumour Foundation, Toronto, Canada. April, 2015

Huang, A: Winner of Department of Pediatrics Mid-Career Physician Researcher Award for Scientific Accomplishment, The Hospital for Sick Children, Toronto, Ontario, Canada. June, 2015

Malkin, D: Mark Nesbit Visiting Professor, University of Minnesota Children's Hospital, Minneapolis, MN, USA. June, 2015

Malkin, D: Winner of Henry Friesen Award, Canadian Society for Clinical Research, Royal College of Physicians and Surgeons of Canada. November, 2015

Schechter-Finkelstein, T: Winner of the Junior Faculty Award for Clinical Excellence in Paediatric Medical Care, The Hospital for Sick Children, Toronto, Ontario, Canada. June, 2015

Tabori, U: Winner of 2016 Bernard and Francine Dorval Prize, Canadian Cancer Society, Canada. November, 2015.

PUBLICATIONS

Abbott LS, Zakova M, Shaikh F, Shewaramani N, Punnett A, Dupuis LL. Allergic reactions associated with intravenous versus intramuscular pegaspargase: A Retrospective Chart Review. *Paediatric Drugs* 2015: Aug: 17(4):315-21.

Abla O, Angelini P*, Di Giuseppe G*, Kanani MF, Lau W, Hitzler J, Sung L, Naqvi A. Early complications of hyperleukocytosis and leukapheresis in childhood acute leukemias. *Pediatric Hematology Oncology* 2016: Mar: 38(2):111-7.

Abla O, Weitzman S. Treatment of Langerhans cell histiocytosis: role of BRAF/MAPK inhibition. *Hematology Am Soc Hematol Educ Program* 2015: 2015(1):565-70.

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Amayiri N, Al-Hussaini M, Swaidan M, Jaradat I, Qandeel M, Tabori U, Hawkins C, Musharbash A, Alsaad K, Bouffet E. Synchronous glioblastoma and medulloblastoma in a child with mismatch repair mutation. *Childs Nervous System* 2016: Mar: 32(3):553-7.

Amayiri N, Tabori U, Campbell B, Bakry D, Aronson M, Durno C, Rakopoulos P, Malkin D, Qaddoumi I, Musharbash A, Swaidan M, Bouffet E, Hawkins C, Al-Hussaini M; BMMRD consortium. High frequency of mismatch repair deficiency among pediatric high grade gliomas in Jordan. *International Cancer* 2016: Jan 15: 138(2):380-5.

Amid A, Chen S, Brien W, Kirby-Allen M, Odame I. Optimizing chronic transfusion therapy for survivors of hemoglobin Barts hydrops fetalis. *Blood* 2016: Mar 3: 127(9):1208-11.

Amid A, Cheong M, Eng B, Hanna M, Hohenadel BA, Nakamura LN, Walker L, Odame I, Kirby-Allen M, Wayne JS. Hb S/β+ thalassemia due to Hb sickle and a novel deletion of DNase I hypersensitive sites HS3 and HS4 of the β Locus Control Region. *Haematologica* 2015; May: 100(5):e166-8.

Armstrong GT, Yasui Y, Chen Y, Leisenring W, Gibson TM, Mertens AC, Stovall M, Oeffinger KC, Bhatia S, Krull KR, Nathan PC, Neglia JP, Green DM, Hudson MM, Robison LL. Reduction in late mortality among five-year survivors of childhood cancer. *New England Journal of Medicine* 2016; 374 (9): pp 833-42.

Aronson M, Gallinger S, Cohen Z, et al. Gastrointestinal findings in the largest series of patients with hereditary biallelic mismatch repair deficiency syndrome: Report from the International Consortium. *American Journal of Gastroenterology* 2016; 111(2):275-84.

Au K, Singh SK, Burrell K, Sabha N, Hawkins C, Huang A, Zadeh G. A preclinical study demonstrating the efficacy of nilotinib in inhibiting the growth of pediatric high-grade glioma. *Neurooncology* 2015; May: 122(3):471-80.

Avila ML, Stinson J, Kiss A, Brandão LR, Uleryk E, Feldman BM. A critical review of scoring options for clinical measurement tools. *BMC Research Notes* 2015; 8: 612.

Avila ML, Ward LC, Feldman BM, Montoya MI, Stinson J, Kiss A, Brandão LR. Normal values for segmental bioimpedance spectroscopy in pediatric patients. *PLoS One* 2015; Apr 13:10(4):e0126268.

Bandopadhyay P, Ramkissoon LA, Jain P, et al. MYB-QKI rearrangements in angiocentric glioma drive tumorigenicity through a tripartite mechanism. *Nature Genetics* 2016; 48(3):273-82.

Barrera M, Yogalingam P, Hancock K, Rokeach A, Johnston D, Cataudella D, Cassidy M, Punnett AS, Shama W. Healthcare professionals' knowledge of family psychosocial problems in pediatric cancer: a pilot study. *Cancer Nursing* 2015; Dec 3. [Epub ahead of print]

Begonja AJ, Pluthero FG, Suphamongmee W, Giannini S, Christensen H, Leung R, Lo RW, Nakamura F, Lehman W, Plomann M, Hoffmeister KM, Kahr WH, Hartwig JH, Falet H. FlnA binding to PACSIN2 F-BAR domain regulates membrane tubulation in megakaryocytes and platelets. *Blood* 2015; Jul: 126(1):80-8.

Boerman GH, van Ostaijen-Ten Dam MM, Kraal KC, Santos SJ, Ball LM, Lankester AC, Schilham MW, Egeler RM, van Tol MJ. Role of NKG2D, DNAM-1 and natural cytotoxicity receptors in cytotoxicity toward rhabdomyosarcoma cell lines mediated by resting and IL-15-activated natural killer cells. *Cancer Immunology and Immunotherapy* 2015; May: 64(5):573-83.

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Buitrago L, Rendon A, Liang Y, Simeoni I, Negri A; ThromboGenomics Consortium (Kahr WH), Filizola M, Ouwehand WH, Coller BS. αIIbβ3 variants defined by next-generation sequencing: Predicting variants likely to cause Glanzmann thrombasthenia. *Proceedings National Academy of Sciences USA* 2015; Apr: 112(15):E1898-907.

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A pilot randomized controlled trial of individualized yoga to reduce fatigue in hospitalized children receiving intensive chemotherapy. Sung, L, Diorio C, Jacobs S, Schechter T, Tomlinson G. **Rally Foundation**. \$40,000 CAD. Jul 1-2015-Jun 30-2016

A pilot study of nivolumab in paediatric patients with hypermutant cancers. Bouffet E, Tabori U, Fried I, Grill J, Sullivan M. **Bristol-Myers Squibb**. \$2.8M CAD. 2016-2019

A population-based study of long-term outcomes in survivors of pediatric, adolescent and young-adult treated with allogeneic hematopoietic stem cell transplantation. Schechter T, Nathan P, Pole J. Collaborators: Gibson PJ, Johnston D, Portwine C, Silva M, Greenberg M. **C17 Research Network**. \$107,125 CAD. Nov 1-2015-Nov 30-2017

A prospective phase I/II study to evaluate the cysteine and glutathione prodrug N-acetylcysteine for the amelioration of DNA damage, oxidative stress, and hematological anomalies in patients with Fanconi anemia. Dror Y, Tirouvanziam R, Tolar J, Dufour C, Hanenberg H, Svahn J, Moalem S, Chitayat C, Cada M, Sung L. **Fanconi Anemia Research Fund**. \$188,000 USD. 2015–2016

A randomized control trial to evaluate the efficacy of a social skills intervention for childhood survivors. Barerra M, Sung L, Bartels U, Janzen L, Atenafu A, Cataudella D, Zelcer S, Downie A, Johnston D, Brandon S, Schulte F, Strother D, Briere M, Chung J, Hukin J, McConnell D. **Canadian Cancer Society**. \$566,969 CAD. Jun 30-2011–Jun 29-2015

A toolkit to minimize pain in infants. Odame I, Stevens B. **Grand Challenge Canada**. \$270,000 CAD. Sep 29-2013–Sep 28-2015

Addressing global inequalities in childhood cancer survival: What actions can be undertaken to improve access to appropriate diagnosis, treatment and care for children in low- and middle-income countries? A workshop proposal. Gupta S, Johnson S, Kutluk T. **Brocher Foundation**. \$11,652 CAD. 2014-2015

Application of genetic determinants of Li-Fraumeni syndrome. Malkin D, Goldenberg A, Shlien A, Doria A, Berman J. **Terry Fox Research Institute**. \$2,449,993 USD. Jul 2014–Jul 2017

Applying biomarkers to long-term effects in child and adolescent cancer treatment (ABLE Team)-post thrombotic outcomes. Brandao L, Williams S, Baruchel S, Cuvelier G, McBride ML, Mitchell LG, Rassekh SG, Schultz KR, Tsuyuki RT, Zapitelli M, Blydt-Hansen T, Brandao LR, Broady R, Carelton BC, Hayden MR, Lee AYY, Pinsk MN, Ross CJD, Spavor M, Lee A, Carleton B. **Canadian Institutes of Health Research**. \$961,985 CAD. 2011-2015

Biomarkers for pediatric glioblastoma through genomics and epigenomics. Jabado N, Majewski J, Pastinen T, Rak J, Kislinger T, Bouffet E, Bourque G, Fernandez C, Lachaine J, Bartlett-Esquilant G, Montpetit A, Zadeh G, Huang A. **Genome Canada**. \$98,391 CAD. Mar 31-2013–Mar 30-2017

C17 Pediatric Oncology Network (Core funding to C17 Council). Whitlock J, Eisenstat D, Brodner-Robb, K. **Canadian Cancer Clinical Trials Network (3CTN)**. \$298,015 CAD. Oct 2- 2014-Mar 31- 2018

C17 Pediatric Oncology Network (Per case funding to the 17 pediatric sites). Whitlock J, Eisenstat D, Brodner-Robb, K. **Canadian Cancer Clinical Trials Network (3CTN)**. \$576,000 CAD. Oct 2- 2014-Mar 31- 2018

Canadian Aplastic Anemia and Myelodysplastic Syndrome Study (CAMS) – Opening a registry and initiating the first study to apply next generation sequencing to identify genetic predispositions that affect treatment decisions in aplastic anemia. Dror Y], Klaassen R, Fernandez C, Yanofsky R, Wu J, Steele M, Abish S, Belletrutti M, Jardine L, Michon B, Pastore Y, Breakey V, Sinha R, Silva M, Goodyear L, Lipton J, Cada M, Zlateska B, Wagner A. **Alexion Inc Canada**. \$60,000 CAD. 2014–2016

Canadian Aplastic Anemia and Myelodysplastic Syndrome Study (CAMS) – Opening a registry and initiating the first study to apply next generation sequencing to identify genetic predispositions that affect treatment decisions in aplastic anemia. Dror Y, Klaassen R, Fernandez C, Yanofsky R, Wu J, Steele M, Abish S, Belletrutti M, Jardine L, Michon B, Pastore Y, Breakey V, Sinha R, Silva M, Goodyear L, Lipton J, Cada M, Zlateska B, Wagner A. **C17 Research Network**. \$90,000 CAD. 2014–2016

Canadian Aplastic Anemia and Myelodysplastic Syndrome Study (CAMS) - Opening a registry and initiating the first study to apply next generation sequencing to identify genetic predispositions that affect treatment decisions in aplastic anemia. Dror Y, Wagner A, Zlateska B, Michon B, Fernandez C, Lipton J, Wu J, Jardine L, Goodyear L, Steele M, Silva M, Belletrutti M, Cada M, Klaassen R, Yanofsky R, Sinha R, Abish S, Breakey V, Pastore Y. **Aplastic Anemia and Myelodysplasia Association (AAMDS) of Canada** \$25,000 CAD. 2015–2016

Cancer pain assessment and management in children: Using social media to bridge the gap. Chambers C, Nathan P, Irwin K, Stenson J, Fernandez C, Jibb L, Barwick M, Wittman H. **CCSRI Knowledge to Action Grant Competition**. \$100,000 CAD. Jan 2015-Dec 2017

Characterization and treatment of the novel TCIRG1 splice site mutation. Voronov I, Krueger J, Mendoza R. **Bone Health Centre**. \$10,000 CAD. June 30-2015-July 1-2016

Characterizing the impact of chemotherapy on the developing brain. Nieman B, Hitzler J. **Canadian Cancer Society Research Institute**. \$297,096 CAD. 2015-2018

Childhood Cancer Survivor Study (CCSS). Robison L, Nathan PC, Bhatia S, Krull K, Leisenring W, Mertens A, Neglia J, Oeffinger K, Sklar C, Hudson M. **National Cancer Institute**. \$20,422,953 USD. Jan 2011-Dec 2016

Clinical and biological implications of monoallelic gene expression in pediatric malignant brain tumors. Tabori U, Taylor M. **Canadian Institutes of Health Research**. \$573,543 CAD. Sep 30-2012–Sep 29-2016

Clinical relevance of supratentorial ependymoma subgroups. Bouffet E, Hawkins C, Ramaswamy V. **B.r.a.i.n.child**. \$24,824 CAD. 2015-2016

COG National Cancer Institute Community Oncology Research Program (NCORP) research base. Sung L, Pollock BH. **National Cancer Institute**. \$19,806,175 USD. 2014-2019

Cognitive performance and psychosocial development in young adult cancer survivors: A prospective, longitudinal study. Edelstein K, Bernstein L, D'Agostino N, Pond G, Petr K, Gupta A, Batist G, Muanza T, Vuong T, Crump M, Schuh A, Matthew A, Hodgson D, Aubin S. **Canadian Cancer Society Research Institute**. \$299,734 CAD. Jan 2013-Jun 2016

Combined telomerase inhibition and drug screen as novel therapies for tumor initiating cells in pediatric nervous system tumors. Tabori U. **Canadian Institutes of Health Research**. \$300,000 CAD. Jun 30-2010–Jun 29-2015

Creation of a registry of children and adolescents evaluated in the lymphadenopathy clinic: Optimizing patient care through consistent practice. Schwartz S, Wiley J, Gupta S, Gerstle T, Campisi P, Science M, Wadhwa A, Punnett A, Alexander S. **SickKids Creative Professional Activities Grant**. \$10,000 CAD. Jul 1-2015-Jun 30-2018

Creating and validating child adverse event reporting in oncology trials. Reeve BB, Hinds PS, Freyer D, Joffe S, Sung L, Baker J. **National Institutes of Health**. \$3,039,195. 2013-2018

DDAVP vs exercise in patients with mild hemophilia A – which is better and do they work synergistically in improving hemostasis? Carcao M. **Canadian Hemophilia Society – Care Until Cure Program**. \$140,560 CAD. 2015-2017

Deciphering the pathobiology of Shwachman Diamond syndrome hematopoietic failure using human induced pluripotent stem cells. Dror Y, Keller G, Rommens J. **Canadian Institute for Health Research**. \$430,237 CAD. Sep 30-2013–Sep 29-2016

Defining risk groups of AML in children with Down syndrome. Hitzler J. **Jerome Lejeune Foundation USA**. \$37,976.75 USD. Aug 2015-Aug 2017

Defining the epigenome of malignant glial and primitive neural brain tumours. Huang A, Noushmehr H, DeCarvalho D. **University of Toronto and University of Sao Paulo Joint Call**. \$40,000 CAD. 2014-2015

Defining treatment-related mortality in pediatric cancer. Sung L, Pole JD, Johnston D, Gibson P, Portwine C, Silva M. **Pediatric Oncology Group of Ontario**. \$99,380 CAD. May 31-2013–May 30-2015

Delineating transforming pathways in primitive neuro-ectodermal brain tumours. Huang A. **Canadian Institutes of Health Research**. \$200,000/annum CAD. 2014-2019

Determination of molecular signatures that allow differentiation between unilateral and bilateral Wilms' tumors using genome-wide arrays and whole-exome sequencing. Lorenzo A, Bagli D, Gerstle T, Shuman, Grant R, Weksberg R, Choufani S. **C17 Research Network**. \$150,000 CAD. Jul 2013-Jul 2015

Development and evaluation of business rules for the collection of paediatric cancer stage by population registries. Aitken J, Baade P, Farrugia H, Green A, Gupta S, Hallahan A, Thursfield V, Valery P, Youlden D. **Cancer Australia**. \$115,860 AUD. 2015-2016

Development and validation of a pediatric cancer-specific symptom assessment screening tool. Sung L, Spiegler B, Dupuis L, Regier D. **Canadian Cancer Society**. \$917,954 CAD. Jan 31-2014 – Jan 30-2019

Development of a cancer diagnosis reporting system. Sung L, Shatokhina O, Lecce L. **Garron Family Cancer Centre, The Hospital for Sick Children**. \$33,000 CAD. 2014-2015.

Diabetes in childhood cancer survivors. Lega I, Baxter N, Nathan P. **Pediatric Oncology Group of Ontario**. \$15,000 CAD. Jan 2015-Dec 2016.

Discovery of novel disease-associated genes in patients with inherited bone marrow failure syndromes in Canada. Dror Y, Klassan R, Fernandez C, Yanofsky R, Pastore Y, Wu J, Breakey V, Silva M, Abish S, Sinha R, Michon B, Brossard J, Belletrutti M, Steele M, Lawrence J, Goodyear L, Cada M, Sung L, Scherer S. **C17 Research Network**. \$120,000 CAD. 2016-2018

Dissecting the hematopoietic hierarchy and function in nonmalignant and malignant states using inherited disorders with hematopoietic stem cell/progenitor loss. Dror Y, Dick J, Taylor C, Guidos C, Shlien A. **Canadian Institutes of Health Research**. \$750,000 CAD. 2016-2020

DNA copy number variation in Li-Fraumeni Syndrome. Malkin D. **Canadian Institutes for Health Research**. \$1,084,000 CAD. Jan 2013–Feb 2018

Does baseline coagulation profile and exercise induced change in hemostatic profile explain phenotypic variability between hemophilia A and hemophilia B patients: a comparative cohort study”. Carcao M. **Pfizer Canada Inc**. \$119,500 CAD. Jan 14-2013–Dec 12-2015

Echocardiographic change in cancer survivors at risk for cardiomyopathy. Chow E, Nathan P, Border W, Friedman H, Meacham L, Sachdeva R, Armenian S, Bhat A. **Rally Foundation for Childhood Cancer Research**. \$200,000 USD. Jan 2016-Dec 2018.

Elucidating the genomic complexities of choroid plexus tumor development to improve diagnosis, prognosis and treatment of young brain tumor patients. Merino D, Malkin D. **Canadian Institutes for Health Research**. \$150,000 CAD. Apr 30-2012–Apr 29-2015.

Epigenetic analysis of pineoblastomas. Huang A. **B.r.a.i.n.child**. \$25,000 CAD. 2015-2016.

Establishment of a mismatch repair zebrafish brain tumor model. Tabori U. **B.r.a.i.n.child**. \$25,000 CAD. 2015 – 2016.

Evaluation of educational and infrastructural interventions targeted at barriers to antibiotic delivery in febrile neutropenia. Principi T, Gupta S, Burry E. **Division of Pediatric Emergency Medicine, SickKids Hospital Research Grant**. \$5,000 CAD. 2014-2015.

Examining the relationship between white matter integrity and the speed of neuronal processing in children with brain tumours. Mabbott D, Tabori U, Bouffet E. **Canadian Institutes of Health Research**. \$640,915 CAD. Sep 30-2012 – Sep 29-2017.

Exercise intervention in children treated with radiation for brain tumors. Mabbott DJ, Timmons B, Bartels U, Bouffet E, Laughlin S, Piscione J, Scantlebury N, Scheinemann K. **Canadian Cancer Society**. \$200,000 CAD. Jul 31-2012 – Jul 30-2015.

FAZA molecular-functional imaging of hypoxia in childhood sarcomas: Feasibility steps towards personalized medicine. Doria A, Shamma A, Vali R, Gupta A, Malkin D, Fusher J, Cheng HL, Somers G, Moineddin R. **Garron Family Cancer Centre**. \$49,908 CAD. May 2014-Jun 2016.

Feasibility study on role of D-dimer in pediatric thrombosis. Brandao L, Williams S. **Paediatric Consultants and Stago Inc**. \$30,000 CAD. 2015-2016.

Functional MR imaging of hypoxia in childhood sarcomas: Feasibility steps towards personalized medicine. Doria A, Shamma A, Vali R, Gupta A, Malkin D, Fisher J, Cheng HL, Somers G, Moineddin R. **Society of Pediatric Radiology**. \$49,595 CAD. May 2014-Jun 2016.

Hemoglobinopathy transition navigator vital toronto. Williams S. **Toronto Foundation Grant**. \$30,000 CAD. 2015.

Identifying collaborative research opportunities in adolescent and young adult cancer: A bi-national meeting between Canada and Australia. Gupta S, Baxter N, Nathan P, Pole J. **Canadian Institute for Health Research**. \$8,250 CAD. 2015-2016.

Immunogenicity, efficacy and safety of treatment with human-cl rhFVIII in previously untreated paediatric patients with severe haemophilia A. Carcao M. **Octapharma** \$8,025/pt CAD + \$8,700 CAD. 2013-2018.

Impact of chlorhexidine bathing on reducing infections in children with cancer. Zerr D, Sung L, Milston A, Zaoutis T. **National Institutes of Health**. \$2,809,406 CAD. 2012-2017.

Improving access to standardized fertility preservation information in pediatric oncology: A 1 year pilot knowledge translation intervention. Lorenzo A, Gupta A, Barwick M, Hadipour-Lamehsari S, Lo K, Donen R. **Pediatric Oncology Group of Ontario**. \$14,961 CAD. May 2014-Jun 2016.

Improving the quality of oncofertility decision making among young women at risk of infertility during cancer survivorship. Baxter N, Kennedy E, Simmons E, Gupta A, Yee S, Brezden-Masley C, Nathan P, Hicks L, Greenblatt E. **Canadian Cancer Society Research Institute**. \$299,936 CAD. Feb 2014-Mar 2017.

Infographic development: Fertility Preservation Program. Gupta A. **The Hospital for Sick Children Executive Advisory Council and Innovation Acceleration Team**. \$10,000 CAD. May 2013-Jun 2016.

Inherited bone marrow failure syndromes: from gene discoveries to pathobiology. Dror Y, Scherer S, Berman J, Cada M, Virtanen S, Gordon Keller, 16 Canadian Inherited Marrow Failure Registry site co-investigators. **Canadian Institute for Health Research**. \$760,000 CAD. Dec 31-2012–Mar 30-2018.

Initiative to maximize progress in adolescent cancer therapy (IMPACT). Baxter N, Nathan P, Gupta S, Pole J, Greenberg M, Barr R, Gupta A, Sussman J, Sutradhar R, Sawka A, Wasserman J, Rapoport A. **Canadian Institute for Health Research**. \$913,870 CAD. 2014-2019.

Initiative to maximize progress in adolescent cancer therapy (IMPACT). Baxter N, Nathan P, Gupta S, Barr R, Greenberg M, Pole J, Sussman J, Sutradhar R, Gupta A, Alexander S, Hicks L, Johnston D, Paszat L. **C17 Research Network**. \$179,676 CAD. Aug 2013-Jul 2015.

International consensus on staging systems for pediatric cancer registries. Gupta S, Frazier L. **National Cancer Institute, Center for Global Health**. \$21,936 CAD. 2014-2015.

Investigating the role of the CpG island methylator phenotype (CIMP) to EZH2 remodeling and for cancer epigenetic therapy. DeCarvalho D, Huang A. **Canadian Cancer Society Research Institute**. \$200,000 CAD. 2014-2016.

Late effects after high risk neuroblastoma (LEAHRN) study. Henderson T, Diller L, Nathan P, London W, Mostoufi-Moab S, Brinkman T, Naranjo A. **St. Baldrick's Foundation**. \$2,232,904 USD. Jan 2015-Dec 2020.

Long term clinical implication of pediatric low grade glioma molecular subgroups. Tabori U. **The PLGA Foundation USA**. \$150,000 UDS. 2015-2017.

Long term clinical implication of pediatric low grade glioma molecular subgroups (part 2). Tabori U. **Making Headway Foundation USA**. \$25,000 USD. 2015-2016.

Long-term survival in childhood solid organ transplants. Parekh R, Dipchand A, Hebert D, Kim S, Nathan P, Ng V, Paterson M, Solomon M, Thomas K. **Canadian Institutes of Health Research**. \$514,679 CAD. Jan 2014-Dec 2018.

Management and health outcomes in adolescents with non-Hodgkin's lymphomas in Ontario. Baxter N, Nathan P, Greenberg M, Pole J, Gupta S, Alexander S, Hicks, L. **Pediatric Oncology Group of Ontario**. \$14,934 CAD. 2013-2015.

Mapping the functional genome of CNS-PNETs. Huang A, DeCarvalho D. **SickKids Garron Family Cancer Centre**. \$50,000 CAD. 2014-2015.

Measuring impact of a program provided to older adolescents and young adults with cancer: Assessing behavioural change among healthcare providers and patient satisfaction of service. Mitchell L, Panet H, Stuart-McEwan T, D'Agostino N, Heck C, Srikanthan A, Gupta A. **UHN Research**. \$529,000 CAD. Jan 2015-Jun 2016.

Modifying the biological late effects of paediatric and adolescent cancer treatments: Prevention and mitigation. Nathan P. **Ontario Institute for Cancer Research**. \$500,000 CAD. Mar 31-2012-Mar 30-2017.

Molecular determinants of Li-Fraumeni Syndrome-associated cancers. Malkin D. **Canadian Institutes for Health Research**. \$750,150 CAD. Sep 30-2010-Sep 29-2015.

Molecular determinants of the Li-Fraumeni Syndrome. Malkin D. **Canadian Institutes of Health Research**. \$3,444,000 CAD. Sep 2014-Sep 2021.

Molecular-functional imaging of hypoxia in childhood sarcomas: Feasibility steps towards personalized medicine. Malkin D, Doria A. **Society of Pediatric Radiology**. \$49,900 USD. Sep 2014-Aug 2015.

Molecular insights into gray platelet syndrome. Kahr WHA. **Canadian Institutes of Health Research Canada**. \$821,637 CAD. Dec 31-2011-Mar 30-2017.

Multi-center single arm phase II study of myeloablative allogeneic stem cell transplantation for non-remission acute myeloblastic leukemia (AML) using clofarabine and busulfan x 4 (CloBu4) regimen. Schechter-Finkelstein T. **University of Michigan**. \$43,350 USD. Jan 31-2012-Jan 30-2016.

Multi-center studies to improve diagnosis and treatment of pediatric candidiasis. Sung L. **Duke University**. \$598,320 USD. 2013-2018.

MYC-CRISPR: Using CRISPR strategies to identify drugs and regulators of MYCN in high risk neuroblastoma. Irwin MS, Melnyk R. **Garron Family Cancer Centre**. \$50,000 CAD. Jan 2014-Dec 2015.

Neurocognitive-phenome, genome, epigenome and nutriome in childhood leukemia survivors: N-PhenoGENICS. Ito S, Guger S, Hitzler J, O'Connor D, Schachar R, Spiegler B, Weksberg R, Carleton B. **Canadian Institutes of Health Research**. \$356,676/year CAD. 2015-2010.

Novel approaches to the prediction, diagnosis and treatment of cardiac late effects in survivors of childhood cancer. Nathan P, Mertens L, Mital S, Kantor P, Greenberg M, Dillenburg R, Liu P, McManus B, Sandor G, Phillips M, Dube M-P, Mandel K, Scherer S, Hodgson D, Manlhiot C, Rosenberg H, Zelcer S, Lougheed J. **Canadian Institutes for Health Research**. \$2,182,749 CAD. Sep 30-2011-Sep 29-2016.

Novel implications of THOR hypermethylation in telomere maintenance and gliomagenesis. Tabori U, **Canadian Institutes of Health Research**. \$990,000 CAD. 2014-2019.

Open-label, randomized, parallel-group, active-controlled, multi-centre, non-inferiority study of dabigatran etexilate versus standard of care for venous thromboembolism treatment in children from birth to less than 18 years of age: The DIVERSITY study. Brandao L. **Boehringer Ingelheim**. \$132,000 CAD. 2014-2018.

Open-label safety and tolerability of dabigatran etexilate mesilate given for 3 days at the end of standard anticoagulant therapy. Multi-centre, multinational, non-randomized, uncontrolled single arm trial to investigate tolerability and safety of dabigatran etexilate solution in children 1 to <12 years of age. Brandao L. **Boehringer Ingelheim**. \$46,915.50 CAD. 2012-2016.

Operating Grant. Ramaswamy V, Taylor M. **Alex's Lemonade Stand Young Investigator Award**. \$100,000 USD. 2014-2016.

Palliative and End-of-Life Care (PEOLC) Initiative. Widger K, Rapoport A, Bouffet E, Friedrichsdorf S, Greenberg M, Husain A, Liben S, Pole J, Siden H, Whitlock J, Wolfe J. **Canadian Partnership Against Cancer**. \$959,264 CAD. 2013-2017.

Patterns and predictors of health care utilization by adult survivors of childhood cancer: A Pediatric Oncology Group of Ontario and Institute for Clinical Evaluative Sciences population database linkage study. Nathan P. **Pediatric Oncology Group of Ontario**. \$108,092 CAD. Feb 28-2010-Jun 29-2016.

Pediatric brain tumour repository and database for brain tumours. Tabori U, Rutka J. **b.r.a.i.n child**. \$22,000 CAD. Mar 31-2013-Jun 29-2015.

Phase II study of high dose chemotherapy with cyclosporine for vision-threatening intraocular retinoblastoma. Chan HSL, Gallie BI. **Terry Fox Research Institute**. \$151, 816 USD. Sep 2012-Aug 2015.

Predicting deficits in social competence for pediatric brain tumor survivors. Barrera M, Vannatta K, Patenaude A, Gerhardt C, Yeates K, Bartels U. **National Institute of Health**. \$566,969 USD. 2013-2018.

Predicting the risk of infection in children receiving chemotherapy for acute myeloid leukemia. Sung L, Beyene J, Allen U. **Canadian Cancer Society**. \$817,963 CAD. Jun 30-2008-Jun 29-2015.

Prediction and prevention of glioma recurrence by targeting telomere dependent self-renewal capacity of tumor initiating cells. Hawkins C, Tabori U. **Canadian Institutes of Health Research**. \$757,479 CAD. Mar 31-2011-Mar 30-2016.

Prognosticating factors in pediatric low grade gliomas: A retrospective analysis. Tabori U. **Dana Farber Cancer Institute**. \$25,000 USD. Oct 31-2011-Oct 30-2016.

Quality of life, fatigue and family functioning for children with relapsed acute leukemia in El Salvador. Sung L, Vasquez R, Fuentes S. **SickKids Centre for Global Child Health**. \$25,000 CAD. 2015-2016.

Randomized, placebo-controlled study of olanzapine for the control of chemotherapy-induced vomiting (CIV) in children receiving cyclophosphamide-based conditioning for allogeneic hematopoietic stem cell transplant. Dupuis, L, Schechter T, Spettigue W, Sung L, Dvorak C. **Canadian Institutes of Health Research**. \$100,000 CAD. Jul 1-2015-Jun 30-2016.

Recruitment of endogenous neural stem cells to promote repair following acquired brain injury in children. Miller FD, Mabbott DJ, Frankland PW, Morshead CM, Bouffet E. **Garron Family Cancer Centre Matching Funds, The Hospital for Sick Children**. \$300,000 CAD. Mar 2013-Feb 2016.

Recruitment of endogenous neural stem cells to promote repair following acquired brain injury in children. Miller FD, Mabbott DJ, Frankland PW, Morshead CM, Bouffet E. **The W. Garfield Weston Foundation - Brain Canada Multi-Investigator Research Initiative**. \$1.5M CAD. Mar 2013-Feb 2016.

Risk of mental health sequelae among childhood cancer survivors, mothers, and siblings: A population-based study using health administrative data. Gupta S, Nathan P, Kurdyak P, Pole J, Sutradhar R. **Canadian Cancer Society Research Institute**. \$241,017 CAD. Jan 2016-Dec 2019.

Role of D-dimer in pediatric thrombosis. Finkelstein Y, Schwartz S, Brandao L. **Pediatric Consultants at The Hospital for Sick Children/Diagnostica Stago.** \$36,599.10 CAD. 2016–2018.

Severity, risk factors, change over time and minimal clinically important difference of anxiety in children receiving chemotherapy or undergoing hematopoietic stem cell transplantation. Sung L, Hesser T, Pole JD, De Souza C. **Pediatric Oncology Group of Ontario.** \$14,960 CAD. 2016-2017.

Studies of alpha granule formation in human megakaryocytes and platelets. Kahr WHA. **Canadian Institutes of Health Research.** \$689,721 CAD. Sep 30-2010-Sep 29-2015.

SU2C brain tumour stem cell proposal. Dirks P, Weiss S, Taylor M, Arrowsmith C, Marra M, Lupien M, Tyers M, Jabado N, Pugh T, Caudy A, Bader G, Mason W, Bouffet E. **SU2C Canada.** \$11.8M 2015-2019.

Targeting metastatic neuroblastoma. Irwin MS, Kaplan DR, Moran M. **Canadian Institutes of Health Research.** \$771,485 CAD. Jan 2014–Dec 2019.

Targeting the Integrin-Linked Kinase (ILK) in rhabdomyosarcoma. Malkin, D. **Canadian Institutes of Health Research.** \$381,270 CAD. Jan 2012–Nov 2015.

Targeting the telomere maintenance pathway for cancer diagnostics and therapeutics. Kelly S, Dirks P, Bristow R, Shlien A, Castelo Branco P, Mai S, Tabori U. **Canadian Cancer Research Society.** \$1.25M CAD. 2015-2020.

Targeting thrombospondin-1 in medulloblastoma. Huang A, Zadeh G. **Canadian Institutes of Health Research.** \$762,872 CAD. Dec 31-2011–Mar 30-2017.

TCD with Transfusions Changing to Hydroxyurea (TWITCH): A Phase III randomized clinical trial to compare standard therapy (erythrocyte transfusions) with alternative therapy (hydroxyurea) for the maintenance of lowered TCD velocities in pediatric subjects with sickle cell anemia and abnormal pre-treatment TCD velocities. Kirby M, Williams S, Odame I. **National Heart, Lung, and Blood Institute.** \$202,443 USD. May 14-2013-Jul 30-2015.

Teens taking charge: A pilot randomized controlled trial of a self-management and transitional care program for youth with cancer. Stinson J, Breakey V, Gupta A, Dick B, Dupis F, Johnston D, Laverdiere C, Le May S, Lee Chong A, Portwine C, Victor J. **Canadian Institutes of Health Research.** \$327,894 CAD. Feb 2014–Jan 2016.

The cost and cost-effectiveness of treating pediatric Hodgkin lymphoma and Wilms Tumour in a middle-income country. Gupta S, Arora B, Jain S, Denburg A, Horton S. **Centre for Global Child Health.** \$25,000. 2016-2017.

The effect of locus of care upon adolescent and young adult cancer outcomes: An IMPACT cohort study. Gupta S, Nathan P, Baxter N. **Alex's Lemonade Stand Young Investigator Grant.** \$99,988.60 USD. 2015-2017.

The ICHANGE (International Childhood Astrocytomas Integrated Genomics and Epigenomics) Consortium. Jabado N, Pastini T, Majewski J, Huang A, Rak J, Kislinger T and Zadeh G. **Genome Canada.** \$10M. 2013-2017.

The impact of the model of long-term follow-up care on adherence to surveillance for late effects among survivors of adolescent and young adult cancers. Nathan P, Gupta S, Baxter N, Pole J, Sutradhar R, Denburg A. **Canadian Cancer Society Research Institute.** \$192,790 CAD. 2016-2018.

The pathophysiology of exercise intolerance in children following hematopoietic stem cell transplant. Wells G, West S, Nathan P, Schechter-Finkelstein T, Gassas A, Egeler M. **Garron Family Cancer Centre.** \$50,000 CAD. Jan 2015-Dec 2016.

The pathophysiology of exercise intolerance in children following hematopoietic stem cell transplant. Wells G, Gassas A, Schechter T, Nathan P, Egeler M, West S. **Pediatric Oncology Group of Ontario.** \$15,000 CAD. Jan 2015–Dec 2016.

The role of histones in the development of pediatric diffuse intrinsic pontine glioma. Hawkins, C, Bouffet E, Cheung P, Singh S, Bartels, U. **Canadian Cancer Society Research Institute.** \$1,250,000 CAD. 2014-2019.

The transcriptional consequences of somatic mutations in Ewing sarcoma. Shlien A, Malkin D. **Ewing Sarcoma Foundation of Canada.** \$100,000 CAD. Sep 2014–Sep 2016.

Toxicity monitoring on phase III clinical trials with administrative data. Aplenc R, Fisher B, Adamson P, Alonzo TA, Keren R, Sung L, Vujkovic M, Gerbing R, Hall M, Bertoch D. **National Institutes of Health.** \$1,806,518 CAD. 2012-2016.

Training and mentorship of hematologic oncologists. Sung L, Burns L. **National Institutes of Health.** \$1,443,290 CAD. 2013-2018.

Translating genomic discoveries to cure ultrahypemutant mismatch repair deficient brain tumors. Tabori U. **Israel-Canada Joint Research Program, Canadian Institutes of Health Research.** \$1,300,000 CAD. 2015-2018.

Translating the discovery of novel neuroblastoma genes. Irwin MS, Shlien AS, Malkin D, Meyn S, Somers G. **McLaughlin Center, University of Toronto.** \$100,000 CAD. Jan 2015-Dec 2016).

Updated guidelines for the management of fever and neutropenia in children with cancer and/or undergoing hematopoietic stem cell transplantation. Sung L. **Canadian Institutes of Health Research.** \$10,000 CAD. 2016-2017

Using a humanoid robot to reduce procedural pain and distress in children with cancer: A pilot randomized controlled trial. Stinson JN, Nathan PC, Jibb LA, Beran T. **SickKids Pain Centre.** \$24,407 CAD. 2015.

Using health administrative data to understand and improve end of life care among children with cancer: A population-based cohort and validation study. Gupta S, Widger K, Rapoport A, Kassam A, Pole J, Earle C, Wolfe J, Nelson K, Sutradhar R. **Garron Family Cancer Centre.** \$50,000 CAD. 2015-2016.

Utilization of global systems and informatics approach to define the role of ncRNAs in determining molecular phenotypes of embryonal brain tumours. Huang A, Bader. **Brain Canada.** \$43,458 CAD. Jan 31-2013 – Jan 30-2016.

Utilization of THOR hypermethylation for stratification and noninvasive detection of cancer. Tabori U. **Canadian Cancer Research Society.** \$200,000 CAD. 2014-2016.

Utilizing response- and biology-based risk factors to guide therapy in patients with non-high-risk neuroblastoma on COG ANBL1232. Irwin MS, Attiyeh EF, Gasier-Foster J, Park JR. BIQSFP (Biomarkers, Imaging, Quality of Life Studies Funding Program). **National Cancer Institute/NIH National Clinical Trials Network.** \$1,244,961 USD. Jan 2014-Dec 2019.

Virtual peer-to-peer (VP2P) support mentoring for adolescents with cancer: A pilot pragmatic randomized controlled trial. Stinson J, Nathan P, Gupta A, Barrera M, Kohut S. **Canadian Cancer Society Research Institute.** \$196,700 CAD. Jan 2015-Dec 2017.

White matter integrity and neurocognition in sickle cell patients. Odame I. **Canadian Hematology Society.** \$10,000 CAD. May 7-2013-May 6-2015.

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IMMUNOLOGY/ ALLERGY

Significant expansion in the division of immunology and allergy

From Left to right: Dr. Thomas Eiwegger, Kai Yu Garry and Xiaojun Yin

DIVISION OF IMMUNOLOGY & ALLERGY

This year has been characterized by significant expansion of the clinical, educational and research activities of the Division of Immunology and Allergy. The implementation of Ontario newborn screening for severe combined immune deficiency has led to a marked increase in the number of infants referred for immune assessment by the divisions' experts. Additionally, our allergy team has been evaluating increasing numbers of children with suspected food or drug allergies in an attempt to "de-label" them or identify appropriate alternatives. To help bolster our clinical and research capabilities in allergy, particularly food allergy,

we recruited Dr. Thomas Eiwegger. Dr. Eiwegger, a Clinician-Scientist, has already established a clinic dedicated to advancing the care and research of children with complex food allergies. Dr. Eiwegger will be investigating the mechanisms that lead to allergic responses with a focus on food allergy. We also recruited a dietician to our allergy clinic that will help with the education and research of children and families affected by food allergies. These recruitments are part of our Food allergy and Anaphylaxis Programs' vision of curing food allergy within a decade, and establishing SickKids as one

The Division of Immunology and Allergy is providing cutting edge care to children suffering from diverse inherited immune abnormalities as well as life threatening allergic reactions.

of the leading centers of food allergy research and training in Canada and the world. Our Paediatric Clinical Immunology and Allergy training program continues to attract the best Canadian and international trainees, who have been highly productive. Many of them subsequently secured academic appointments in Canadian centers, such as the Janeway and Alberta Children's Hospital, or international institutes (Soroka and Schneider Children's Medical Center, Israel). Research continues to be a major focus of our division, with extensive local, national and international collaborations leading to publications in leading immunology and allergy journals (Biol Blood Marrow Transplant, Cell Mol Gastroenterol Hepatol, Gastroenterology, Pediatr Cardiol, Allergy, JCI Insight, Nat Immunol, etc).

Dr. Adelle Atkinson is in her 11th year as the Director of Post Graduate Medical Education in the Department of Paediatrics. The core paediatric training program currently has 80 outstanding residents, the largest program in Canada. Graduates from the program have a long track

record of matching to competitive subspecialty programs, academic generalist programs and graduate programs. Dr. Atkinson continues to excel as an outstanding medical educator. Dr. Atkinson presented at many international conferences in the area of postgraduate medical education and faculty development including topics such as residency selection, professionalism, clinical teaching and feedback. Dr. Atkinson also contributed to objective assessment of teaching effectiveness (J Surg Educ). Dr. Atkinson also holds national and international leadership roles at the Royal College of Physicians and Surgeons of Canada. She currently co-chairs the International Conference on Residency Education and the International Resident Leadership Summit as well as vice-chairing the Specialty Committee for Paediatrics. Dr. Atkinson is also the co-chair

This year, after decades of investigations, Dr. Chaim Roifman and a multidisciplinary group of researchers at Sickkids uncovered the genetic cause of Roifman syndrome, a rare congenital disorder described by Dr. Roifman 20 years ago.

of the newly formed Program Director Advisory Committee (PD-NAC) through the RCPSC, a national advisory committee that addresses issues for Program Directors across the country. In addition to the new role of serving on the Education Committee for the Royal College, a role given to her based on her educational experience, Dr. Atkinson also sits on the Paediatrics Examination Board and the OSCE examination creation committee. Dr. Atkinson is also a member of the FMEC project (Future of Medical Education in Canada). At the University of Toronto, Dr. Atkinson participates in admissions for the Undergraduate Program and chairs the POWER Steering Committee. In terms of education and outreach/public health, Dr. Atkinson is regularly invited to provide continuing education in paediatric allergic diseases, and has a special interest in the prevention of atopy, a topic about which she has often spoken at various national conferences. As director of the Allergy Clinic, Dr. Atkinson continues to work on “de-labeling” patients, a concept formed recognizing that some patients have been labeled inaccurately or may have outgrown their food allergy. Given the burden of illness of labels to food allergies, Dr. Atkinson has led the initiative to ensure that the correct patients are labeled accurately with the food allergies they truly have. She also provides education to patients and their families, and has done media outreach locally and nationally to raise awareness about allergic diseases in children as well as provide accurate information to the public about the current state of clinical care and research in paediatric allergic diseases.

Dr. Thomas Eiwegger earned his doctoral degree at the Medical University of Vienna, Austria, where he also completed his paediatric training. He did his post Doctoral training at the Swiss Institute of Asthma and Allergy from 2008-2010 and after returning to the Medical University of Vienna he trained in paediatric allergy and respiratory medicine. Before moving to SickKids, Dr. Eiwegger was principal investigator and associate Professor in the Department of Paediatrics and Adolescent medicine, Medical University of Vienna, Austria. Dr. Eiwegger is a well known scientist and clinician who has spoken at national and international conferences and is part of the

boards of the two most important journals in the field of Allergy namely the Journal of Allergy and Immunology and Allergy. He authored 44 publications in peer-reviewed journals and 5 book chapters. He has been very successful in supervising and mentoring young scientists and has many years of experience in lecturing under-graduate and post-graduate students. Dr. Eiwegger will further enhance SickKids existing network of outstanding allergy research and will help establish collaborations to bring cure to the many children affected by food allergy. Dr. Eiwegger aims to develop new treatment approaches for food allergy by delineating the sequence of biological events that take place in children who are allergic to food in comparison to healthy, non-allergic children. This involves the search for novel subsets of immune cells that play a significant role in food allergy. Moreover, he will establish new methodologies that will help understand how the immune system recognizes a food allergen in food allergic children. This will open the door for the development of new treatment approaches and create better diagnostic markers for food allergy (*J Allergy Clin Immunol*).

Dr. Eyal Grunebaum continues to lead the expansion and diversification of the Immunology and Allergy Division, while also serving as the director of the Pediatric Clinical Immunology and Allergy Training Program. Dr. Grunebaum continues to advance care for patients with complex and severe immune abnormalities, including innovative allogeneic hematopoietic stem cell transplantations (*J Allergy Clin Immunol*) and investigational gene therapy. Dr. Grunebaum’s lab focuses on the management of inherited purine defects, and explores novel protein and cell therapies using induced pleuri-potent stem cells and relevant animal models (*Am J Respir Crit Care Med*). Dr. Grunebaum has also expanded his research into allergy and immune dysregulation. As the SickKids principal investigator in a national study led by Dr. Mazer from McGill, Dr. Grunebaum is investigating the ability of oral immunotherapy to ameliorate milk allergy, and is exploring the role of regulatory T cells in primary immune defects and food allergies. Dr. Grunebaum is also working closely with SickKids Foundation to enhance the impact of the Food

Allergy and Anaphylaxis Program locally and nationally. This includes close partnership with parents of children with food allergies, media outreach (such as Metro Toronto) and recruitment of industry partners (i.e. Kraft Peanut Butter).

Dr. Roifman continues to contribute his extensive experience and knowledge to the development of the clinical, educational and research activities of the Division, while serving as the Chair and Scientific Director of Immunodeficiency Canada and the editor-in-chief of *LymphoSign Journal*. This year, Dr. Roifman identified the genetic basis of Roifman Syndrome (*Nat Communication*), and described the functional impact of a novel gene, *RelB*, involvement in primary immunodeficiency (*J Autoimmunity*). As the director of the Clinical Fellowship Training Program, Dr. Roifman has increased the divisional research output to an average of 2 papers per year per fellow. Furthermore, with the success of the SCID newborn screening program that Dr. Roifman pioneered in 2013, he continues to promote the implementation of this program in Alberta and Quebec. Dr. Roifman secured multiple grants, including a seed grant to investigate novel genetic determinants of primary immunodeficiency using cutting edge bioinformatic tools.

Dr. Julia Upton continues to have a very active role in our divisions’ clinical, educational and research activities. This year, Dr. Upton expanded her efforts to improve the diagnosis of food allergic individuals. She completed her study evaluating the utility of baked milk testing in milk allergic children that was presented at the American Academy of Allergy, Asthma and Immunology national conference. Dr. Upton is also the principle investigator of a study evaluating the role of Platelet Activating Factor (PAF) in Pediatric Anaphylaxis among children presenting to SickKids Emergency Department. This study aims to better define and predict severity of allergic reactions in children. Dr. Upton is also assessing the ability of immune therapy to reduce allergic reactions to various foods (*Int*

Arch Allergy Immunol). She also drew attention to the ability of transferring allergies by blood product transfusions in a landmark publication in the *CMAJ* where she was the senior responsible investigator and joined a study led by Dr. PJ Subbarao, The Development of Novel Clinical Tests to Diagnose and Monitor Asthma in Preschool Children. Dr. Upton also continues her efforts to promote the recognition of immunodeficiency by publishing 2 reports about unusual presentations of immune deficiencies and appearing in a video about the 10 warning signs of primary immunodeficiency for Immunodeficiency Canada. Dr. Upton is also involved in multiple educational initiatives involving undergraduates, residents and fellows, and became a Member of the Executive Committee of the sub-Specialty Examination Committee for Clinical Immunology and Allergy for the Royal College of Physicians and Surgeons of Canada in which she is responsible for writing oral and written questions, administering and marking the exam. Dr. Upton accepted an enrollment scholarship to a Masters programme in Epidemiology at the Harvard T.H. Chan School of Public Health.

Brenda Reid, Clinical Nurse Specialist, has been instrumental in providing leadership to nurses across the country in the management of PID. Brenda leads a national network of nurses developing PID nursing protocols in conjunction with Immunodeficiency Canada. She is responsible for coordinating the gammaglobulin replacement program for patients with hypogammaglobulinemia. She is responsible for coordinating the care of complex immunodeficient patients and participates in clinical research within the Division. She continues to provide leadership to Newborn Screening Ontario on developing education materials and protocols for babies suspected or identified with severe immune deficiency by newborn screening.

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GRANTS AND FUNDING

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Carrier-mediated delivery of therapeutic proteins into the brain. Melnyk R, Minassian B, Josselyn SB, Ellis J, Grunebaum E. **Brain Canada Multi- investigator Research Initiative.** \$1,500,00 CAD. Jan 2014–Dec 2016

Correlation of genotype to outcome and the role of The Hospital for Sick ChildrenT in combined immunodeficiency. Roifman CM, de la Morena M. **Immunodeficiency Canada.** \$20,000 CAD. 2014–2016, Jeffrey Modell Foundation. \$50,000 CAD. 2014–2016

Distinguished Professorship (Role of Zap-70 in T cell development). Roifman CM. **Immunodeficiency Canada.** \$150,000 CAD. 2013-2018

Food Allergy Research. Grunebaum E. **SickKids Foundation.** \$500,000 CAD. Sep 2014–Aug 2019

Food Allergy Research: Amy Kaiser and Ken Rotman Food Allergy Initiative. Grunebaum E. **SickKids Foundation.** \$1,000,000 CAD. Sep 2013–Aug 2018

Investigations into regulatory mechanisms governing memory B cells and generation of novel antibodies from the jawles sea Lamprey. Ehrhardt Goetz RA, Grunebaum E, Campisi P, Propst E. **Canadian Institutes of Health Research.** \$732,220 CAD. Jul 2013-Jun 2018

Jeffrey Modell Research Laboratories for the diagnosis of primary immunodeficiencies. Roifman CM. **Jeffrey Modell Foundation.** \$250,000 CAD. 2013-2017

Outcome of patients with combined immunodeficiency. Roifman CM, Ehl S. **Immunodeficiency Canada.** \$50,000 CAD. **2015–2017, Canadian Centre for Primary Immunodeficiency.** \$30,000 CAD. 2015-2017

PNP deficiency - a multicenter study. Grunebaum E. **Jeffrey Modell Foundation** \$60,000 CAD. 2012–2015

Presentation and outcome of Zap 70 deficiency. Roifman CM. **Jeffrey Modell Foundation.** \$50,000 CAD. 2013-2018

SCID newborn screening at the Canadian Centre for Primary Immunodeficiency. Roifman CM. **CI Society.** \$125,000 CAD. 2013-2018

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INFECTIOUS DISEASES

Evolving as an internationally recognized paediatric division

From left to right: Drs. Michelle Science, Faisal Kordy and Debra Louch

DIVISION OF INFECTIOUS DISEASES

The Division of Infectious Diseases at The Hospital for Sick Children has had a very productive year in all domains relating to clinical care, research, education, leadership and outreach regionally, nationally and internationally. Founded in 1979, the Division continues to evolve and is regarded as one of the premier pediatric infectious diseases Divisions internationally.

The clinical consult teams provide service to patients in the ambulatory as well as in-patient settings. There are two in-patient consult services that focus on infections in immunologically normal and abnormal hosts, respectively. We continue to see increasing complexity among patients and we are often requested to provide advice on patients throughout Canada and internationally. In addition to the two traditional clinical consult services, we now have

We have a diverse spectrum of rich clinical material which serves to provide trainees with the experience they need to manage infectious diseases.

an active antimicrobial stewardship team. In 2015, this team led a major national conference on antimicrobial stewardship. The Division continues to be actively involved in the organization and staffing of a travel medicine clinic at SickKids.

the best trainees from Canada and around the globe. We have a diverse spectrum of rich clinical material which serves to provide trainees with the experience that they need to manage infectious diseases in the years to come.

The Division is integrally involved in the Infection Prevention and Control (IPAC) programme at SickKids. We are involved in the development of strategies to handle the threat of emerging infectious diseases, including but not limited to Ebola, Zika virus, and multi-drug resistant bacterial and mycobacterial infections.

Faculty members continue to hold editorships and visiting professorships. Faculty members are actively involved in major professional societies nationally and internationally. These societies include but are not limited to the Canadian Pediatric Society, the Canadian Pediatric AIDS Research Group, the Royal College of Physicians and Surgeons of Canada, the Infectious Diseases Society of America and the International Pediatric Transplant Association.

In handling the above challenges, the Division collaborates closely with key partners, including the Department of Pharmacy, the Division of Microbiology, the Transplant and Regenerative Medicine Centre, and the Pediatric Medicine, Surgical, IPAC and Critical Care teams.

Representatives from the Division continue to play key roles in activities of the Royal College of Physicians and Surgeons of Canada, and in many areas of undergraduate, graduate, postgraduate and continuing medical education activities. Our training programme continues to attract

Integrally involved in the Infection Prevention and Control (IPAC) programme at SickKids. Developing strategies to handle the threat of emerging infectious diseases, including but not limited to Ebola, Zika and multi-drug resistant bacterial and mycobacterial infections.

The past academic year has seen major activity in global health research relating to infectious diseases. In addition, our research initiatives include HIV-related studies that focus on the goal to achieve a functional cure for pediatric HIV. We conduct research on new anti-retrovirals, vaccinology and research into the mechanisms of host susceptibility to viral infections and related conditions. These conditions include EBV-related post-transplant lymphoproliferative disorder (PTLD), influenza illness, infections in patients with cystic fibrosis, and encephalitis. Multi-centered trials relating to the diagnosis and prevention of infections in transplant patients are ongoing.

HONOURS AND AWARDS

Alabi, A: Winner of Travel grant, Joint 20th Annual Conference of The Union North America Region and the National TB Controllers Association, Denver, Colorado, USA. February 2016

L'Huillier, A: Winner of Gertrude Von Meissner Foundation Grant, Geneva, Switzerland. August 2015

L'Huillier, A: Winner of Geneva University Hospitals Research and Development Project Grant, Geneva, Switzerland. August 2015

L'Huillier, A: Winner of Ernst and Lucie Schmidheiny Foundation Grant, Switzerland, Grant, Switzerland. November 2015

L'Huillier, A: Winner of Eugenio Litta Foundation Grant, Geneva, Switzerland. March 2016

Morris, S: International Society of Travel Medicine Research Award, International Society of Travel Medicine Annual Meeting, Quebec City, Quebec, Canada. May 2015

Tam, J: SickKids Research Day - Core Paediatrics Poster Winner. The Hospital for Sick Children Department of Paediatrics, Toronto, ON, Canada. May 2015

Wadhwa, A: Winner of RCPSC Accredited CPD Provider Innovation Award, Ottawa, Ontario. September 2015

Wong, J: Winner of IDWeek Trainee Travel Grant, Infectious Diseases Society of America for IDWeek, San Diego, CA, USA. October 2015

Wong, J: Winner of CACMID Student Oral Presentation Award Canadian Association for Clinical Microbiology and Infectious Diseases for AMMI Meeting, Vancouver, BC, Canada. April 2016

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Adler E, Alexis C, Ali Z, Allen UD, Bartels U, Bick C, Bird-Compton J, Bodkyn C, Boyle R, De Young S, Fleming-Carroll B, Gupta S, Ingram-Martin P, Irwin M, Kirby-Allen M, McLean-Salmon S, Mihelcic P, Richards-Dawson MA, Reece-Mills M, Shaikh F, Siquee-Brown C, Thame M, Weitzman S, Wharfe G, Blanchette V. Bridging the Distance in the Caribbean: Telemedicine as a means to build capacity for care in pediatric cancer and blood disorders. *Stud Health Technol Inform.* 2015 May;209:1-8.

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BOOKS CHAPTERS

Waters V, Halperin S: *Bordetella pertussis*. In *Principles and Practices of Infectious Diseases*. Mandell GL, Bennett JE, Dolin R (eds). Elsevier, Philadelphia. 8th edition 2015. In press. PA

GRANTS AND FUNDING

A toolkit to save newborn lives in rural Pakistan. Morris SK, Bhutta Z. **UBS Optimus Foundation Global Health Grant**. \$150,000 CAD. 2013–2016

A toolkit to save newborn lives in rural Pakistan. Morris SK, Bhutta Z. **Grand Challenges Canada Stars in Global Health**. \$113,000 CAD. Jan 2013 – Present

An integrated toolkit to save newborn lives. Morris SK. **Grand Challenges Canada**. \$94,600 CAD. 2/2016 – Present

An integrated toolkit to save newborn lives and brains. Morris SK. **March of Dimes Basil O'Connor Starter Scholar Research Award**. \$150,000 USD. Feb 2014-Jan 2016

An integrated toolkit to save newborn lives and brains. Morris SK, Armstrong R. **Grand Challenges Canada Saving Brains Grant**. \$270,000 CAD. May 2013-Present

An open-label, randomized, adaptive, multicenter, pharmacokinetic/ pharmacodynamic, phase 1B study of oseltamivir in the treatment of influenza in immunocompromised children, between 0-18 years of age, with confirmed influenza infection. Allen U, Tran D. **Hoffman La Roche**. \$76,372 CAD. 2013-2016

Assessing the breadth and depth of cystic fibrosis-associated polymicrobial respiratory tract infections. Guttman D, Waters V. **Canadian Institutes of Health Research Emerging Team Grant (Canadian Microbiome Initiative)**. \$3,234,240 CAD. 2010-2015

Association of biochemical vitamin D status and severity of influenza in children Tran D. **Canadian Foundation for Dietetic Research (CFDR) Time Period: 2015-17** \$19,942

Association of vitamin D status and respiratory tract infection: A systemic review and meta-analysis of observational evidence. Furlong K, Tran D. **The Hospital for Sick Children, Research Institute, Trainee Start Up Fund Program**. \$3,000 CAD. 2014-2016

Canadian Immunization Research Network (CIRN). Halperin S, Tran D. **Canadian Institutes of Health Research and Public Health Agency of Canada (PHAC)**. \$6,600,000 CAD. 2014-2017

Canadian Immunization Research Network. Halperin S, Allen U. **Canadian Institutes of Health Research**. \$583,497 CAD. 2014-2017

Canadian National Transplant Research Program: Increasing Donation and Improving Transplantation Outcomes. West I, Hebert MJ, Mital S, Allen U, Foster B. **Canadian Institutes of Health Research**. \$14.2 million CAD. 2013-2018

Canadian Paediatric Surveillance Program: Vaccine hesitancy survey. Tran D. **Public Health Agency of Canada (PHAC)**. \$3,000 CAD. 2015-2016

Canadian rotavirus surveillance through the Immunization Monitoring Program Active (IMPACT): Assessment of Hospitalizations and Emergency Department Visits - the Impact of Publicly Funded Vaccine Programs in Canada. Le Saux N, Halperin S, Scheifele D, Bettinger J, Vaudry W, Tran D. **GlaxoSmithKline Canada**. \$28,920 CAD. 2011-2016

Cellular aging and HIV comorbidities in women and children. Cote H, Bitnun A, Money D, Pick N, Soudeyns H, Brophy J, Janssen P, Kakkar F, Lapointe N, Murray M, Prior J, Silverman M, Singer J, Smith M. **Canadian Institutes of Health Research**. \$2,500,000 CAD. 2013–2018

Creation of a registry of children and adolescents evaluated in the lymphadenopathy clinic: Optimizing patient care through consistent practice. Schwartz S, Alexander S, Gerstle J, Campisi P, Wadhwa A, Punnet A, Gupta S, Wiley J. **Pediatric Consultants Partnership's Grant for Creative Professional Activity. The Hospital for Sick Children**. \$10,000 CAD. 2015-2017

Economic appraisals of seasonal influenza vaccines in low and middle income countries. Jit M, Morris S. **World Health Organization**. \$25,000 USD. Jan 2013-2016

Effect of prenatal vitamin D supplementation on acute respiratory infections in infants in Bangladesh. Morris SK, Roth D. **Bill and Melinda Gates Foundation**. \$1,240,842 USD. 2014-2016

Getting to Zero: Male circumcision in the Bahamas. George, C, Brennen, D, Roberts, R and Read, SE. **CANFAR**. \$160,000 CAD. 2012-2016

Immunization Monitoring Program Active (IMPACT). Halperin S, Vaudry W, Tran D. **Public Health Agency of Canada (PHAC)**. \$364,555 CAD. 2012-2016

Immunogenicity and safety of human papilloma virus vaccine in solid organ transplant. Schwartz K, Allen U, Avitzur Y, Hebert D, Kaufman M. **Physicians' Services Incorporated**. \$20,000 CAD. 2014-2015

Immunogenetic markers of extreme clinical phenotypes of post-transplant lymphoproliferative disorder: A pilot project. Allen U, Dipchand A, Beyen J, Grunebaum E, Hu P, Levings M, Ng V, Preiksaitis J. **Enduring Heart Foundation**. \$35,000 USD. 2015-2016

Improving the prevention, diagnosis and treatment of post-transplant lymphoproliferative disorders after solid organ transplantation using peripheral blood and tissue biomarkers. Preiksaitis J, Allen U, Lai R, Peters A. **Alberta Innovates Health Solutions**. \$737,363 CAD. 2013-2016

Infant feeding in HIV: Knowledge, experiences, and research priorities for women living with HIV. Khan S, Bitnun A, Loutfy M, MacGillivray SJ, Yudin M. **St. Michael's Hospital Medical Services Association innovation Fund**. \$40,000.00 CAD. 2015-2017

International pediatric travelers: Risk perception, incidence of disease and adherence with recommendations at a tertiary care centre based travel clinic. Morris SK. **International Society for Travel Medicine**. \$10,000 USD. 2015-2016

LCI to monitor treatment response for pulmonary exacerbations. Ratjen F, Waters V. **Cystic Fibrosis Canada**. \$309,956 CAD. 2016-2019

Long-term immunogenicity and clinical efficacy of the quadrivalent HPV vaccine in HIV positive girls and women. Bitnun A, Brophy J, Dobson S, Hankins C, Harris M, Hill J, Kakkar, F, Klein M, Krajden M, Lapointe N, Loutfy M, Ogilvie G, Raboud J, Samson L, Smaill F, Stuart G, Tan D, Trottier S, Walmsley S, Wobeser W, Yudin Y. **Canadian Institutes of Health Research**. \$1,521,548 CAD. 2014-2018

Maternal, newborn, and child health (MNCH) coalition knowledge, management initiative. Morris SK. **Care Canada, Plan Canada, Save the Children**. \$1,070,000 CAD. Jun 2012– Feb 2015.

Mild exacerbations in cystic fibrosis. Waters V. **Vertex 2015**. \$70,000 CAD. 2014-2016

Needs assessment for global health training in Canada. Morris SK. **The Hospital for Sick Children Creative Professional Activities Education Grant**. \$5000 CAD. 2014 – Present

Neurodevelopmental outcomes of pre-and perinatal exposure to antiretroviral treatment in HIV uninfected children. Smith, M, Read SE, Bitnun A. **CANFAR**. \$160,000 CAD. 2012-2015

Parathyroid-vitamin D axis dysregulation in early-onset infant stunting in resource poor settings. Roth D, Morris S. **Bill and Melinda Gates Foundation**. \$1,999,993 USD. 2012–Present

Pediatric HIV infection: Exploring determinates of a functional cure. Soudeyns H, Bitnun A, Brophy J, Hawkes M, Kakkar F, Kaul R, Lapointe N, Lavoie P, Read SE, Samson L, Vaudry W. **Canadian Institutes of Health Research**. \$1,982,500 CAD. 2013-2018

Personalized microbiology in cystic fibrosis pulmonary exacerbations: Assessing the pulmonary microbiota as a predictor of treatment response. Coburn B, Waters V. **Cystic Fibrosis Canada**. \$166,977 CAD. 2016-2018

Planning research for infant feeding in HIV study (IFIHS). Khan S. Read SE, Loutfy M. Yudin M, Bitnun A. **Canadian Institutes of Health Research**. \$12,500 CAD. 2015-2016

Population-based core surveillance of meningococcal invasive infections at participating centers across Canada. Le Saux N, Bettinger J, Halperin S, Tran D. **Canadian Paediatric Society**. \$25,632 CAD (SickKids subcontract). 2013-2016

Prevalence and determinants of early childhood under vaccination in Toronto primary care practices. Tran, D. **The Hospital for Sick Children, Paediatric Consultants Creative Partnership Grant**. \$9,913 CAD. 2014-2016

Prospective surveillance for pediatric TB disease in Canada: Canadian Paediatric Surveillance Program. Ian Kitai I, Shaun Morris. **Public Health Agency of Canada**. \$58,000 CAD. 2013–2016

Prospective surveillance of tuberculosis in Canadian children. Morris SK, Kitai I. **The Hospital for Sick Children Department of Pediatrics Grant for Creative Professional Activity.** \$10,000 CAD. 2014-2016

Randomized controlled trial of prednisone in CF pulmonary exacerbations (PIPE Study) Waters V. **Cystic Fibrosis Canada.** \$356,419 CAD. 2016-2019

RSV Immunoprophylaxis. Allen U. **Abbvie Canada** \$163,000 USD. 2015-2016

RSV Immunoprophylaxis: Immunocompromised host. Allen U. **Abbvie Canada.** \$25000 CAD. 2015-2016

Severe influenza in infants, children and youths: Role of clinical and epidemiologic risk factors Tran D. **Canadian Institutes of Health Research.** \$776,835 CAD, 2012-2018

Short-chain fatty acids in the cystic fibrosis lung. Grasmann H, Waters V. **SickKids CF Center.** \$50,000 CAD. 2014-2015

Special immunization clinic network to investigate vaccine safety issues: optimizing the clinical management of patients with contraindication to vaccination and those with adverse events following immunization (AEFI) as a platform for observational research. De Serres G, Top K, Halperin S, Tran D. **Canadian Institutes of Health Research, PHAC/CIHR Influenza Research Network.** \$24,656 CAD (SickKids subcontract) 2012-2016

The CF lung microbiome and persistent versus eradicated *Pseudomonas aeruginosa* Waters V. **Ontario Thoracic Society.** \$10,000 CAD. 2014-2016

The CF lung microbiome and persistent versus eradicated *Pseudomonas aeruginosa* Waters V. **US CF Foundation.** \$83,000 CAD 2014-2019

The role of *Staphylococcus aureus* on establishment and maintenance of *Pseudomonas aeruginosa* biofilm infections in cystic fibrosis. Waters V. **Cystic Fibrosis Canada Research Fellowship (Dr. Trevor Beaudoin).** \$70,000 CAD. 2016-2018

Understanding issues and defining research priorities related to infant feeding in HIV. Khan S, Kordy F, Bitnun A, Loutfy M, MacGillivray SJ, Yudin M, Read SE. **Canadian Foundation for AIDS Research (CANFAR).** \$24,500.00 CAD. 2015-2017

Vitamin D and related biomarkers as predictors of severe influenza in children. Tran D. **Canadian Institutes of Health Research.** \$135,210. 2015-2017

Neonatal kit project in Rahim Yar Khan. **Department of Pediatrics and Child Health, Aga Khan University, Pakistan.** \$50,000 USD. Morris S. 2016

Neonatal kit projects in Pakistan and Kenya. Morris S. **Baby Hero Foundation.** \$6000 USD. 2013–Present

STAFF LISTING

Division Head

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Full-Time

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Dr. Shaun Morris

Dr. Michelle Science

Dr. Dat Tran

Dr. Anu Wadhwa

Dr. Valerie Waters

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Dr. Stan Read

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Dr. Marta Garcia

Dr. Arnaud L'Huillier

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Dr. Ana Blanchard

Dr. Nancy Nashid

Dr. Jennifer Tam

Dr. Jacqueline Wong

Research Fellows

Dr. Nadia Alattas

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NEONATOLOGY

Embedding quality improvement initiatives into daily clinical care

From Left to Right: Dr. Regan Giesinger and Jillian Lewis.

DIVISION OF NEONATOLOGY

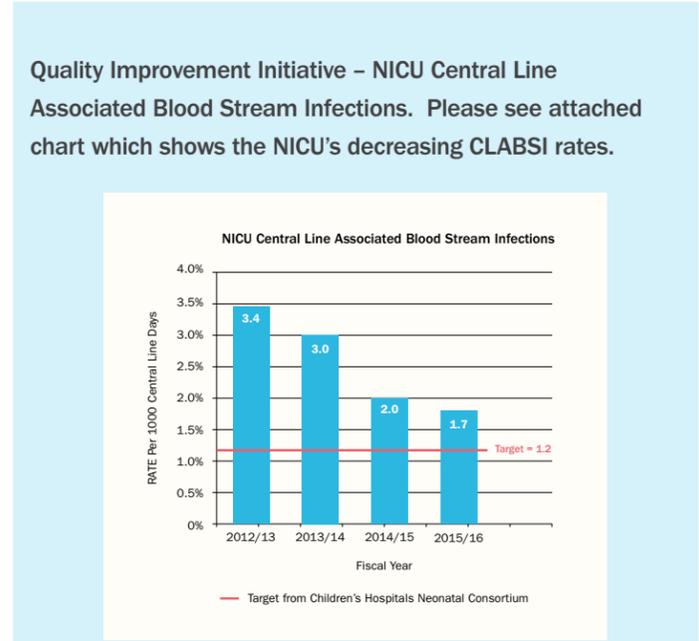
The Division of Neonatology welcomed Dr. Regan Giesinger who joined the Division on July 1, 2015 as a staff neonatologist and Assistant Professor, Department of Paediatrics, University of Toronto. Regan completed her medical degree at Queen's University, Kingston; her paediatric residency at the University of Western Ontario, London; and her neonatal-perinatal medicine fellowship in Toronto. Her research focus is haemodynamic instability in critically ill neonates. Dr. Omar Elkhateeb was appointed to a staff position in Riyadh, Saudi Arabia, after two years as a transport fellow; and one year as a staff neonatologist at SickKids.

The Division's three clinical services—transport, NICU and follow-up—continue to provide outstanding care despite the usual, never ending ebbs and flows that are characteristic of neonatal-perinatal medicine. The scope of the Acute Care Transport Service continues to expand as the team transports an increasing number of children who are no longer neonates or infants. Research projects within the transport domain include quality of care during transport, implementation of best practices, and improvements for safe transport. One of the highlights of the year was the inaugural multidisciplinary T4 Conference—Triage, Transport, Treatment and Transition—held in October 2015.

The Division's three clinical services – transport, NICU and follow-up – continue to provide outstanding care.

The NICU continues to provide outstanding care for critically ill neonates with hypoxaemic respiratory failure, hypoxic-ischaemic encephalopathy, and multiorgan failure as a consequence of infection and other serious conditions. Approximately 40% of the NICU's patients are surgical neonates—atresiae of the gastrointestinal tract and anterior abdominal wall defects—are the dominant congenital anomalies amongst this population in our NICU. Many neonates are admitted for surgical management of the complications of prematurity, especially necrotising enterocolitis. A care bundle has been implemented to reduce the incidence of this devastating condition and there has been an increased emphasis on newer approaches for its surgical management. Antibiotic and nitric oxide stewardship programs have yielded new insights about the use of these agents, facilitated the development of evidence-informed guidelines, and improved clinical practice. The research foci of Divisional faculty include chronic neonatal lung injury and pulmonary hypertension; developmental gastrointestinal physiology; the clinical

efficacy of cardiovascular agents especially those used in the perioperative management of the haemodynamically significant patent ductus arteriosus; whole genome



sequencing studies in newborns with congenital anomalies; and lung simulation for mechanical ventilation training. The highlight of the year was the transition from our Clinical Information Management System to KidCare on September 29, 2015. Computerised order entry was the most important of several new features that were implemented with this transition. The successful transition was the culmination of three years' effort by many multidisciplinary teams within the Neonatology Program and beyond.

The scope of the Neonatal Developmental Follow-Up Clinic is expanding because of the increased interest in the developmental outcomes of neonates with congenital cardiovascular malformations. In collaboration with the Labatt Heart Centre, these children are being referred to the Clinic. Neonatologists and neurologists are collaborating on multiple studies documenting outcomes for neonates with acquired brain injury, congenital cardiovascular malformations and the impact of being born preterm on the developing brain. The expansion of the Clinic is expected to continue as a direct consequence of an increasing number of referrals and the desire to follow these children until they have reached school age.

HONORS AND AWARDS

Giesinger, R: Mallinckrodt Pharmaceuticals. 2015 Mallinckrodt New Investigator Program Award, St. Louis, Missouri, USA 2016

Giesinger, R: University of Toronto. Neonatal-Perinatal Medicine Trainee of the Year Award, Toronto, Ontario, Canada 2015

McNamara, P: SickKids Fellows End of Year Celebration. Research Mentorship Award, Toronto, Ontario, Canada 2015

Moodie, R: Canadian Paediatric Society. Award of Merit, Ottawa, Ontario, Canada 2015

Moodie, R: Ontario Medical Association. Presidential Award, Toronto, Ontario, Canada 2015

PUBLICATIONS

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Jain A, McNamara PJ. Persistent pulmonary hypertension of the neonate. Advances in diagnosis and treatment. *Seminar in Fetal and Neonatal Medicine* 2015: 20 (4): pp 262-271.

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Kamaleswaran R, Wehbe RR, Pugh JE, Nacke L, McGregor C, James AG. Collaborative multi-touch clinical handover system for the Neonatal Intensive Care Unit. *Electronic Journal of Health Informatics (eJHI)* 2015: 9 (1): pp e5.

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BOOK CHAPTERS

Tomlinson C, Hellmann J. The newborn as organ donor. In: *Ethical Issues in Pediatric Organ Transplantation* (Greenberg R, Rodrigues-Arias D, Goldberg A, eds). Springer 2015: pp 119-130.

Weisz D, Giesinger RE, McNamara PJ, Jain A. Chapter 29: Hemodynamics. In: *Avery's Neonatology: Pathophysiology and Management of the Newborn* (7th Edition). (MacDonald MG, Seshia MMK, eds). Wolters Kluwer 2015: pp 457-486.

GRANTS AND FUNDING

Peer-Reviewed

A multi-center, randomized, placebo-controlled, double-blind, two-armed, parallel group study to evaluate efficacy and safety of iv sildenafil in the treatment of neonates with persistent pulmonary hypertension of the newborn (PPHN) or hypoxic respiratory failure and at risk for PPHN, with a long term follow-up investigation of developmental progress 12 and 24 months after completion of study treatment. McNamara PJ, Jankov RP, Giesinger R. **Parexal Funded Multi-Centre Trial.** \$13,056 CAD per patient. August 13-2014-August 12-2019

Analgesia and sedation in the preterm neonate: Brain development and outcome. Taylor M, Grunau R, Miller S, Synnes A, Kelly E, Whyte H, Ly LG, Sled JG, Poskitt K, Brant RF, Chau V. **Canadian Institutes of Health Research.** \$1,104,217 CAD. July 1-2014-June 30-2020

Cardiovascular physiology and brain development in newborns with congenital heart disease. Miller S, Seed MTM, Blaser S, Brant RF, Chau V, Hickey EJ, Kingdom JC, Ly LG, MacGowan CK, Schwartz SM, Sled JG. **Canadian Institutes of Health Research.** \$1,008,289 CAD. July 1-2015-June 30-2021

CIHR team in maternal infant care. Lee SK, Armson BA, Aziz K, Baker GR, Ly LG, Barrington KJ, Dendukuri N, El-Haji MO, Hayward RSA, Joseph KS, Liston RM, Magee LA, O'Campo PJ, Ohlsson A, Saigal S, Sauve RS, Shaw NT, Skarsgard ED, Stevens BJ. **Canadian Institutes of Health Research.** \$8,459,279 CAD. October 1-2008-September 30-2016

Cognitive outcome in children born very preterm: Longitudinal measures of brain structure & function from birth. Taylor M, Whyte HE, Sled JG, Shroff M, Miller S. **Canadian Institutes of Health Research.** \$821,700 CAD. July 1-2014-June 30-2019

Development of a lung simulator for mechanical ventilation training. Belik J. **The Hospital for Sick Children, The Innovation Acceleration Team.** \$7,000 CAD. September 1-2015-August 31-2016

Developmental programming of hypertension. Belik J. **Canadian Institutes of Health Research.** \$558,396 CAD. July 1-2014-June 30-2018

Hemodynamic findings in septic shock. Ting J, Kisson N, Osiovich H, Synnes A, McNamara PJ. **University of British Columbia, Child and Family Research Institute Seed Grant.** \$6,500 CAD. December 1-2015-March 1-2017

Improving quality of care during transport of sick neonates: A national collaborative partnership for outcome improvement and system enhancement. Lee K-S, Whyte HE, Shah P, Barrington K, Lee S, Mirea L, Redpath S. **Canadian Institutes of Health Research, Partnerships for Health System Improvement Grant.** \$524,644 CAD. June 1-2013-May 31-2016

Milrinone in neonatal PPHN trial (MINT). El-Khuffash AF, McNamara PJ. **Irish Health Board Trials Network Grant.** \$255,000 CAD (180,000 Euro). September 1-2015-August 31-2020

Myocardial dysfunction in septic shock in preterm infants. Ting J, McNamara PJ, Synnes A, Collet JP, Osiovich H, Kisson N. **University of British Columbia, Child and Family Research Institute.** \$6,500 CAD. January 12-2015-January 03-2017

Neonatal protein and energy metabolism. Pencharz P, Tomlinson C, Ball RO. **Canadian Institutes of Health Research.** MOP 12928. \$739,355 CAD. April 1-2012-March 31-2017

Neurological outcome of hypoglycemia in neonatal encephalopathy. Tam EQY, Brant RF, Ly LG, Zwicker JG, Chau V, Mamak E, Mignone C, Solimano AJ, Connolly M, Poskitt K, Miller SP, Synnes AR, Hahn CDA, Moore AM, Widjaja E, Roland E. **Canadian Institutes of Health Research.** \$703,735 CAD. April 1-2014-March 31-2019

Ontario congenital anomalies surveillance enhancement initiative. Moore AM, Fell D. **Public Health Agency of Canada.** \$80,000 CAD. April 1-2014-March 31-2018

Preclinical assessment of nitrite as therapy for chronic neonatal lung injury and pulmonary hypertension. Jankov RP. **Physicians' Services Incorporated (PSI) Foundation.** \$169,500 CAD. February 1-2016-January 31-2018

Preclinical assessment of rho-kinase inhibitors for chronic pulmonary hypertension. McNamara PJ, Jankov RP. **Canadian Institutes of Health Research.** \$655,855 CAD. April 1-2011-March 31-2016

Simulation-based team-leadership training for neonatal resuscitation: Is learning by observation as effective as learning by participation? Kalaniti K, Louca E, Whyte HE, Finan E, Campbell DM. **Canadian Paediatric Society, NRP Emerging Investigator Award.** \$5,000 CAD. December 1-2014-December 1-2015

Validation of echocardiographic indices of right ventricular dimensions and function in preterm neonates with chronic pulmonary hypertension: A comparison with cardiac MRI. Jain A, Jankov RP, Seed M, McNamara PJ. **Icaria Investigator Competition.** \$15,000 CAD. October 1-2015-September 30-2017

Whole exome sequencing in the NICU – Developing a rapid, specific and sensitive pipeline for the diagnosis of genetic disease in the newborn. Cohn R, Bowdin S, Moore AM, Bedford M, Doctor S. **McLaughlin Centre.** \$100,000 CAD. May 1-2014-April 30-2016

Non Peer-Reviewed

Neonatal echocardiography simulator equipment grant. McNamara PJ. **Mallinckrodt Pharmaceuticals.** \$25,000 CAD. January 1-2015-December 31-2015

Neonatal hemodynamics club. Kluckow M, McNamara PJ. **Mallinckrodt Pharmaceuticals, Educational Grant.** \$95,000 CAD. January 1-2015-December 31-2017

The Artemis Project: Real-time streaming of high volume, high fidelity physiological data for clinical decision support. James AG, McGregor C. **TD Bank Information Technology Group.** \$135,000 CAD. November 31-2015-October 31-2016

The Artemis Project: Real-time streaming of high volume, high fidelity physiological data for clinical decision support. James AG, McGregor C. **TD Bank Information Technology Group.** \$135,000 CAD. November 31-2014-October 31-2015

TNE App Phase II – PPHN and PDA. McNamara PJ, El-Khuffash AF. **Icaria Incorporated, Educational Grant.** \$18,000 CAD. January 1-2013-December 31-2015

STAFF LISTING

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NEPHROLOGY

HEMODIAFILTRATION (HDF) HAS ARRIVED: The paediatric HDF program at SickKids is the first of its kind in North America

From left to right: Rose Nemece, Dr. Christoph Licht and Katherine Karkut

DIVISION OF NEPHROLOGY

2015-16 was another highly productive year for the Division of Nephrology. The number of children treated by the Nephrology team in the ambulatory, in-patient, and intensive care settings continued to climb. Under the leadership of Dr. Rulan Parekh, the Nephrology educational training program continued to attract top candidates from across Canada and around the world, offering opportunities to combine state-of-the-art clinical and research training. In 2015, Dr. Damien Noone took over the supervision of PGY2 residents and oversees their education in Nephrology, and he assumed the role of Associate Program Director. The period 2015-2016

further established the Division's reputation as one of the top Nephrology research divisions internationally, due to the high number of successful grant applications from national and international granting agencies, the number of publications in top scientific journals, and the number of invitations to speak at leading conferences. In 2015, Dr. Norman Rosenblum received the Physician Researcher Award for Career Excellence from the Department of Paediatrics, University of Toronto.

Under the leadership of Christoph Licht, in 2015 the SickKids Dialysis/Apheresis Program underwent

2015-16 was another highly productive year for the Division of Nephrology

significant innovations. Most importantly, in 9/2015 hemodiafiltration (HDF) replaced conventional hemodialysis (HD) as treatment standard. HDF provides a combination of hemodialysis and hemofiltration thus optimizing dialysis during each individual treatment, and - as a result - significantly improving the long-term outcomes of patients, particularly with respect to vascular and bone health, growth, and anemia. This is the first such program established for children in Canada. Successful implementation of the paediatric HDF program was celebrated during World Kidney Day in March 2016

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PUBLICATIONS

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Teoh CW, Thakor AS, Amaral J, Parra D, Harvey EA, Noone DG. Successful image-guided retrieval of an embolized fragment of a fractured hemodialysis catheter tip from the pulmonary artery. *Case Reports in Nephrology and Dialysis* 2015; 6 (1): pp 21-25.

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BOOK CHAPTERS

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Rosenblum ND. Congenital Anomalies of the Kidney and Urinary Tract: an Overview. In: *Congenital Anomalies of the Kidney and Urinary Tract: Clinical Implications in Children* (Barakat A, Rushton HG, eds). Springer International Publishing, Switzerland 2016. In Press.

Rosenblum ND. Malformation of the Kidney: Structural and Functional Consequences. In: *Brenner and Rector's The Kidney, 10th Edition* (Brenner BM, Chertow G, Marsden P, Skorecki K, Taal M, Yu ASL, eds). Elsevier, Inc, Philadelphia PA 2016: pp 2294-2307.

GRANTS AND FUNDING

3H-Hemodiafiltration. Shroff R, Harvey E, Noone D. **Great Ormond Street Hospital**. \$3150 CAD. 2016 – 2018

aHUS Registry. Licht C. **Alexion Pharmaceuticals, Inc**. \$10,000 USD. 2013 – 2016

An open-label, multi-center controlled clinical trial of Eculizumab in adolescent patients with plasma therapy sensitive atypical hemolytic-uremic syndrome (aHUS) (C08-003B). Licht C. **Alexion Pharmaceuticals, Inc**. \$20,872 USD. 2009 - 2016

Biomarkers for Diagnosis of Thrombotic Microangiopathies: A Pilot Study. Pavenski K, Licht C. **Alexandra Yeo Chair Grant in Benign Hematology, University of Toronto**. \$5000 CAD. 2014 – 2016

Canada Research Chair in Developmental Nephrology (Tier I). Rosenblum, N. **Canada Research Chairs Program**. \$200,000 CAD. 2012 - 2019

Canadian National Transplant Research Program: Increasing Donation and Improving Transplantation Outcomes. West LJ, Mital S, Parekh R. **CIHR**. \$1,370,000 CAD. 2013 – 2018

CAN-SOLVE CKD SPOR. Rosenblum, N. **Chronic Disease Network**. \$1,245,000 CAD. 2016 - 2021

Control of cerebellum cell specification, migration and organization by SUFU. Rosenblum, N. **Canadian Institutes of Health Research**. \$146,824 CAD. 2011 - 2016

Discovery of Novel Targets and Development of Treatments for Complement-Mediated Disease. Licht C. **McLaughlin Centre**. \$3000 CAD. 2014 – 2018

Functions of Hedgehog-Gli-dependent signaling in stromal cells during normal and malformed mammalian kidney development. Rosenblum, N. **Canadian Institutes of Health Research**. \$180,000 CAD. 2013 - 2018

Long-Term Survival in Childhood Solid Organ Transplants. Parekh R. Dipchand A, Hebert D, Kim SJ, Nathan P, Ng VL, Paterson M, Solomon M, Thomas K. **CIHR**. \$514,679 CAD. 2014 – 2016

Modulation of Vascular Injury by the Motility Regulators, Slit and Roundabout. Robinson L. **Canadian Institutes of Health Research (CIHR)** \$616,945 CAD. June 2011 – June 2016

Multi-center Controlled Clinical Trials in Alport Syndrome – A Feasibility Study (1 R21 DK91480-01A1). Kashtan C. Licht C. **NIH Exploratory/Developmental Research Grant Award**. \$47,898 USD. 2012 - 2016

Non-invasive Monitoring of Pediatric Kidney Allograft Injury to Improve Diagnosis and Patient Outcome. Blydt-Hansen T, Langlois V, Hamiwka L, Morgan C, Sharma A, Matsell D, Lau K, Tsampalierio A, Feber J, Phan V, Gibson I, Ho J, Mital M, Nickerson DW. **CIHR**. \$951 777 CAD. 2013 – 2018

Open-Label Uncontrolled Study to Evaluate the Safety and Pharmacokinetics of 4 x 375 mg/m² Intravenous Rituximab in Pediatric Patients with Severe Granulomatosis with Polyangitis (Wegener’s) or Microscopic Polyangitis. Yeung R, Hebert D, Noone D. **Roche Pharmaceuticals**. \$59,530 CAD. 2015 – Present

Quantitative analysis of the efficacy of Renvela to chelate phosphate in 2 commonly used renal formulas, and the effect of Renvela on trace element composition. Harvey E, Licht C. **The Hospital for Sick Children, Paediatric Consultants Partnership’s Grants for Creative Professional Activity**. \$3,231 CAD. 2012 – 2016

Preventing Chronic Kidney Disease After Acute Kidney Injury. Robinson L. **Canadian Institutes of Health Research (CIHR)**. \$709,455 CAD. Oct 2014 – Sep 2019

Primary Outcomes in Glomerulonephritis Study (PROGRESS). Holzman L, Parekh R. **NIH/NIDDK**. \$200,000 CAD. 2013 – 2018

Regulation of Leukocyte-Endothelial Interactions. Robinson L. **Natural Sciences and Engineering Research Council of Canada**. \$170,000 CAD. June 2012 – June 2017

RI Scientific Support. Licht C. **The Hospital for Sick Children, Department of Paediatrics, University of Toronto**. \$75,000 CAD. 2015 – 2018

RNSseq in patient-derived ex vivo models: genetic diagnostics beyond whole exomes. Dowling J, Lemaire M, Brudno M. **Genome Canada**. \$250,000 CAD. 2016 – 2018

Sleep Studies for Hemodiafiltration (HDF) Patients. Licht C, Harvey E, Noone D. **Fresenius Medical Care Canada**. \$10,000 CAD. 2016 – 2018

Slit2: A Novel Biologic Therapy for Diabetic Nephropathy. Robinson L. **Novo Nordisk A/S**. \$705,115 USD. March 2015 – February 2017

Slit-Robo Signalling in Atherogenesis. Robinson L. **Canadian Institutes of Health Research (CIHR)**. \$762,836 CAD. July 2015 – June 2020

Substudy. Nephrotic Syndrome Rare Diseases Clinical Research Network (NEPTUNE). Kretzler M, Licht C. **National Institute of Diabetes and Digestive and Kidney Diseases**. \$5000 CAD. 2016 – 2017

TAKE IT: Teen Adherence in Kidney Transplant Effectiveness of Intervention Trial. National Institute of Health. Foster B, Furth S, Hebert D. **National Institute of Health**. \$757,183 USD. 2011 - 2016

The Canadian Childhood Nephrotic Syndrome (CHILDNEPH) Project. Samuel S, Parekh R. **CIHR**. \$541,940 CAD. 2015 – 2020

Using Slit2 and Normothermic Ex Vivo Perfusion to Optimize Kidney Transplantation. Robinson L. **The Hospital for Sick Children, Transplant & Regenerative Medicine Centre (TRMC)**. \$150,000 CAD. April 2014 – September 2015

STAFF LISTING

Division Head

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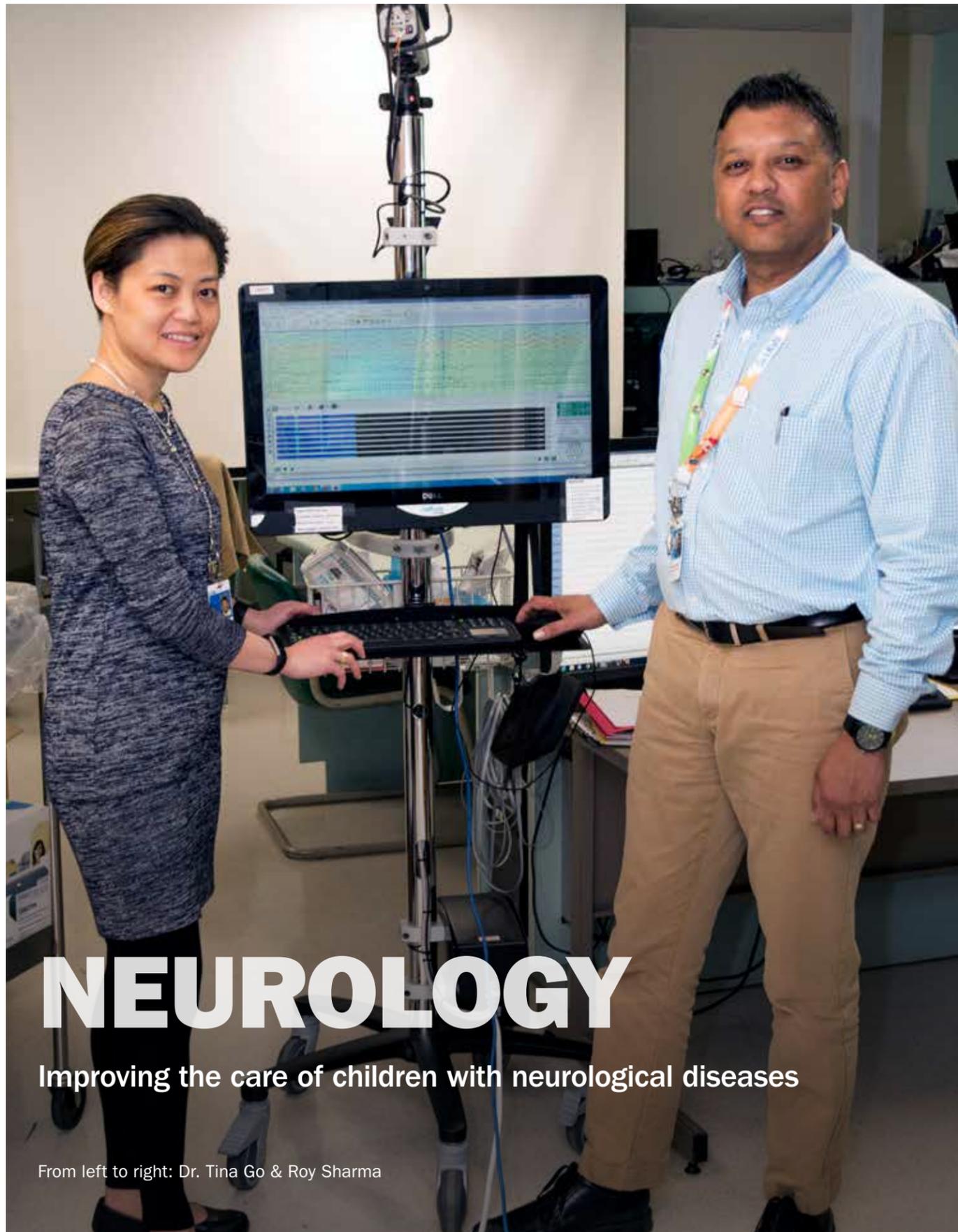
Bernard Singh

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Burnett Wint

Dana Debernyj

Ram Mohabir



NEUROLOGY

Improving the care of children with neurological diseases

From left to right: Dr. Tina Go & Roy Sharma

DIVISION OF NEUROLOGY

The Division of Neurology has a Royal College accredited training program in Child Neurology as well as postdoctoral training programs in epilepsy, stroke, neonatal neurology, neuromuscular neurology, neurometabolic disease and neuroinflammatory diseases. In addition, there are a number of graduate students and postdoctoral fellows in clinical neurophysiology, neurogenetics, molecular and cellular neurobiology.

The highlight of our academic year is the division's annual Prichard Day. In memory of Dr. John Stobo Prichard, former division head, the day highlights our trainees' research endeavours. Dr. Prichard was very involved in education and in his honour, our trainees present their research work on this day, ending with a keynote lecture by a world-renowned expert. This year we were honoured to host Dr. Steven Back. Dr. Back is a Professor of Pediatrics,

The Division is active in the many integrative activities of the SickKids Centre for Brain and Mental Health.

Neurology and Anesthesiology-Critical Care Medicine at Oregon Health & Science University (OHSU), Portland Oregon. He is the Director of the Division of Pediatric Neuroscience at OHSU-Doernbecher Children's Hospital and holds the Clyde and Elda Munson Professorship in Pediatric Research. Dr. Back's laboratory at OHSU-Doernbecher Children's Hospital focuses on studies of the causes of brain injury in premature infants. We thank the Prichard Family for their continued support of our trainees and this very special day.

The clinical, translational and basic research foci of the Division of Neurology are epilepsy and neurophysiology, stroke, cognitive neuroscience, brain health outcomes and quality of life, myopathies, neuroinflammatory diseases, fatty acid oxidation disorders, molecular and cellular neurobiology, and neonatal neurology.

The Division is active in the many integrative activities of the SickKids Centre for Brain and Mental Health (<http://www.sickkids.ca/Brain-Mental-Health/index.html>). Division members also look forward to active engagement

with the recently funded CHILD-BRIGHT (Child Health Innovations Limiting Disability—Brain Research Improving Growth and Healthy Trajectories) SPOR (Strategy for Patient-Oriented Research) Network.

HONOURS AND AWARDS

Chau, V: Winner of Clinical Excellence in Teaching, William A. Hawke Award, Division of Neurology, The Hospital for Sick Children, University of Toronto. Toronto, Ontario, Canada. June 2015.

Dowling, JJ: George Karpati Lecture, Congenital myopathies: from structure to therapy. Montréal Neurological Institute, Montréal, QC. May 26, 2015

Clinical, translational and basic research advances in epilepsy and neurophysiology, stroke, cognitive neuroscience, brain health outcomes, myopathies, neuroinflammatory diseases, fatty acid oxidation disorders, molecular and cellular neurobiology, and neonatal neurology

Kobayashi, J: Winner of CANMED Faculty Award, University of Toronto. Toronto, Ontario, Canada. June 2015.

Minassian, B: Winner of the Muscular Dystrophy Canada, George Karpati Award, Toronto, Ontario Canada. Sept 2015

Moharir, M: Winner of International Collaborative Award for Research for the Neonatal CSVT RCT Planning Grant. Recognition for the award at the Pediatric Academic Societies Conference. San Diego, CA. USA. April 2015

Moharir, M: Runner-up, Faculty Teaching Award, Division of Neurology, Dept. of Pediatrics. The Hospital for Sick Children. Toronto, ON. CANADA. June 2015.

Tein, I: President, The International Child Neurology Association. May, 2014-2018

Tein, I: Professorship, Advanced Pediatrics Centre, Postgraduate Institute of Medical Education and Research, Chandigarh, India. Jan. 15-18, 2016

Tein, I: Member, The World Brain Alliance (one of six core members). May, 2014-2018

Weiss, SK: Winner of 2014-15 Colin Woolf Award for Longterm Contributions to Continuing Education. Continuing Professional Development, Faculty of Medicine, University of Toronto, Toronto, ON, Canada. Feb. 2016

PUBLICATIONS

Akiyama T, Akiyama M, Kobayashi K, Okanishi T, Boelman CG, Nita DA, Ochi A, Go CY, Snead OC III, Rutka JT, Drake JM, Chuang S, Otsubo H. Spatial relationship between fast and slow components of ictal activities and interictal epileptiform discharges in epileptic spasms. *Clinical Neurophysiology*. 2015;126 (9): pp 1684-1689.

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DesRoches C, Patel J, Wang P, Minassian BA, Salomons GS, Marshall CR, Mercimek-Mahmutoglu S. Estimated carrier frequency of creatine transporter deficiency in females in the general population using functional characterization of novel missense variants in the SLC6A8 gene. *Gene* 2015; 565 (2): pp 187-191.

DesRoches CL, Patel J, Wang P, Minassian BA, Marshall CR, Salomons GS, Mercimek-Mahmutoglu S. Carrier frequency of guanidinoacetate methyltransferase deficiency in the general population by functional characterization of missense variants in the GAMT gene. *Molecular Genetics and Genomics* 2015; 290 (6): pp 2163-2171.

Doesburg SM, Tingling K, MacDonald MJ, Pang, EW. Development of network synchronization predicts language abilities. *Journal of Cognitive Neuroscience* 2016; 28(1): pp 55-68.

Doja A, Orr SL, McMillan HJ, Kirton A, Brna P, Esser M, Tang-Wai R, Major P, Poulin C, Prasad N, Selby K, Weiss SK, Yeh EA, Callen DJA. Canadian Paediatric Neurology Workforce Survey and Consensus Statement. *Canadian Journal of Neurological Sciences* 2016; 43 (3): pp 402-409.

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Dunkley BT, Doesburg SM, Jetly R, Sedge PA, Pang EW, Taylor MJ. Characterising intra- and inter-intrinsic network synchrony in combat-related post-traumatic stress disorder. *Psychiatry Research: Neuroimaging* 2015; 234 (2): pp 172-181.

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Fullerton H, Hills NK, Elkind MS, Dowling M, Wintermark M, Tan M, Rivkin MJ, Titomanlio L, Barkovich J, deVeber G, VIPS Investigators. Infection, vaccination, and childhood arterial ischemic stroke: results of the VIPS Study. *Neurology* 2015; 85 (17): pp 1459-1466.

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GRANTS AND FUNDING

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Carrier mediated delivery of therapeutic proteins into the brain. Minassian B, Melnyk R. The W. **Garfield Weston Foundation – Brain Canada Multi-Investigator Research Initiative (MIRI)**. \$1,500,000 CAD. 2013-2016

Cellular aging and HIV comorbidities in women and children. Cote H, Smith ML. **Canadian Institutes of Health Research**. \$2,500,000 CAD. 2013-2017

Center for the Study of Adult Literacy: Developing instructional approaches suited to the cognitive and motivational needs of struggling adult readers. Greenberg D, Lovett MW, Graesser A, Frijters J, Branum-Martin L. **Institute of Education Sciences (US Department of Education)**. \$10,000,000 USD. Sep 2012-Aug 2017

Centre for Developmental Brain Plasticity & Repair (CDBPR). Miller SP plus 10 members. **Canadian Foundation for Innovation**. \$6,328,890 CAD. 2015-2020

Childhood Cerebral Palsy Integrated Discovery Network “CP-NET”. CP-NET Executive: Fehlings D (Lead), deVeber G, Fehlings M, Menon R, Rosenbaum P, Scherer S. CP-NET Research Team: Ansari D, Biddiss E, Campbell C, Carter M, Chau T, Chen R, Cheyne D, Ferro M, Frid P, Gorter JW, Graham N, Hall G, Henkelman M, Kawamura A, Kingsnorth S, McCormick A, Mesterman R, Miller S, Morshead C, Palisano R, Paterson A, Pelland L, Raybaud C, Samdup D, Scott S, Segalowitz S, Shroff M, Strothers S, Taylor M, van der Kooy D, Wintle R, Wright V. **Ontario Brain Institute**. \$5,000,000 CAD. 2013-2018

Childhood cerebral palsy integrated discovery network (CP-NET). **Ontario Brain Institute**. \$7,500,000 CAD. Aug 2013–Jul 2018

Cholesterol and omega-3 fatty acid levels on brain development and clinical determinants of nocturnal hypoventilation in patients with adult and pediatric myasthenia gravis. Katzberg H, Ryan TM, Bril D, Narang I, Barnett-Tapia C, Vajsar J. **Muscular Dystrophy Canada**. \$42,500 CAD. Jan 2015-Oct 2016

Clinical Research Fellow in Epilepsy. Andrade D, Berlot F. **UCB Pharma**. \$50,000 CAD. Jul 2014–Jun 2015

Closed-loop feedback stimulation to stop seizures in patients. **Ontario Brain Institute/Epilepsy Integrated Discovery Program**. \$75,000 CAD. 2015-2017

Cognition and pediatric epilepsy. Sub project in EPLINK/Integrated Discovery System for Epilepsy (New Approaches to Intractable Seizures). Smith ML. **Ontario Brain Institute**. \$250,000 CAD. 2013-2018

Cognitive dysfunction in MS: Using altered brain oscillations to link molecular mechanisms with clinical outcomes. Mabbott D, Prescott, Yeh EA, Lefebvre A. **SickKids Centre for Brain and Mental Health Chase an Idea Grant**. \$50,000 CAD. 2016

Cognitive functions in children born very preterm: Relation to brain structure and function from birth through childhood. Taylor MJ, Sled JG, Whyte HE, Miller SP, Shroff MM, Smith ML. **Canadian Institutes of Health Research**. \$821,701 CAD. 2014-2019

Cognitive outcome in children born very preterm: Longitudinal measures of brain structure & function from birth. Taylor MJ, Miller SP, Shroff MM, Sled JG, Smith ML, Whyte HE. **Canadian Institutes of Health Research**. \$821,701 CAD. Oct 2014-Sep 2019

Assessment of Prevention, Diagnosis, and Treatment Options Collaborative Assessment of Pediatric Transverse Myelitis: Understand, Reveal, Educate (CAPTURE) Study. Yeh, EA, Greenberg B, Banwell B, Krishnan C, Pardo C, Becker D, Boyce D, Waldman A. **Patient-Centered Outcomes Research Institute**. \$1,500,000 USD. 2013-2016

Combining MEG and MRI to improve localization of epileptic brain activity. Cheyne D, Lerch J, Otsubo H, Widjaja E, Wennberg R. **Ontario Brain Institute**. \$250,000 CAD. 2013–2018

Comparing the language network with scalp and subdural EEG in patients with epilepsy. Pang EW, Valiante TA, Donner EJ. **Ontario Brain Institute, EPLink**. \$250,000 CAD. 2013-2018

Creatine supplementation in childhood Myositis. Feldman B, Tein I, Schulze A, Wells G, Stephens S. **The Myositis Association**. \$100,000 CAD. Jan 2015-Dec 2016

Creating a zebrafish model of NFAT5-related arrhythmogenic right ventricular cardiomyopathy. **Canadian Institutes of Health Research**. \$25,000 CAD. 2015-2016

Critical Care EEG Monitoring Consortium – Research Infrastructure Award. Hahn CD, Abend NS, Hirsch L, Husain AM, LaRoche SM, Lee JW. **American Epilepsy Society and Epilepsy Foundation**. \$50,000 CAD. 2014-2019

Determining the incidence and genotype-phenotype relationships of nemaline myopathy to facilitate trial readiness, health service provision and diagnosis. Dowling J. **A Foundation Building Strength**. \$300,000 USD. 2015-2018

Development, implementation and evaluation of an internet-based behavioural sleep intervention for children with neurodevelopmental disabilities. Weiss SK, Corkum P, Brown C, Constantin E, Reid G, Ispiroglu O, Smith I. **NeuroDevNet**. \$939,900 CAD. Apr 2015-Apr 2018

Drug discovery and validation in RYR-1 related myopathies. Dowling J. **RYR-1 Foundation**. \$40,000 USD. 2016

Drug discovery for RYR1-related myopathies. Dowling J. **Muscular Dystrophy Association**. \$300,000 USD. 2016-2019

Early childhood behavior: Relations to early brain structure/function and maternal mood. Oberlander T, Brant RF, Chau V, Grunau RE, Lim KI, Miller SP, Misri S, Rurak DW, Wiebe SA. **Canadian Institutes of Health Research**. \$1,139,616 CAD. Sep 2012–Aug 2017

Early detection and neurodevelopment outcome in late onset IUGR. Mike S, Kingdom J, Miller SP, Blaser D, Jaeggi E, Macgowan C, Manlhiot C, McCrindle B, Keating S. **Canadian Institutes of Health Research/SickKids Foundation**. \$298,390 CAD. 2013-2016

Environmental enrichment and infantile spasms: Morphological studies. Snead OC EpLink: Phase II of The Epilepsy Discovery Project Genetic Database. **The Ontario Brain Institute**. \$500,000 CAD. 2014-2019

Ergometric evaluation and training in mitochondrial myopathies. Tein I. **Mitochondrial Research Fund**. \$3,000 CAD. Jul 2014-Jan 2016

Establishing the EpLink Genetics Platform. Minassian B, Andrade A, Poulter M. **OBI-EpLink**. \$100,000 CAD. Jul 2013-Jun 2017

Evidence-based e-health solutions for youth with mental illness. Carney C, Corkum P, Henderson J, McShane K, Sidani S, Stinson J, Chaim G, Figliano-Scott J, Robb J, Shapiro C, Weiss, S. **Canadian Institutes of Health Research**. \$354,080 CAD. Oct 2015-Nov 2019

Examination of brain coordination dynamics underlying hypnosis and volitional acts using intracranial electroencephalography. Perez-Velazquez JL. **BIAL Foundation** €50,000. 2015-2017

Exploring stochasticity in the spatio-temporal patterns of coordinated brain activity. Perez-Velazquez JL. **NSERC Discovery Grant**. \$155,000 CAD. 2012-2017

First Ontario EEG screening for children with risk factors for Infantile Spasms. Cortez M, Tam E, Nenadovic V. **EpLink Ontario Brain Institute Epilepsy Project**. \$250,000 CAD. Jul 2013-Jun 2018

Canadian Pediatric Stroke Imaging Platform: Harnessing in International Focus. deVeber G. **Brain Canada**. \$1,550,000 CAD. Jan 2016-Jan 2019

Genetics of reading disabilities. Barr CL, Kerr EN, Knight J, Lovett MW. **Canadian Institutes for Health Research**. \$1,293,293 CAD. Apr 2014-Mar 2019

Genetics of temporal lobe epilepsy. Minassian B, Bassett A, Krings T, Chow Eva, Andrade D. **Ontario Brain Institute**. \$90,000 CAD. Apr 2013-Mar 2016

Genomics of pharmaco-resistant epilepsies. Cossette P, Minassian B, Michaud J, Rouleau G, Scherer S, Andrade D. **Genome Canada. Lead Genome Centre**. \$10,000,000 CAD. 2012-2018

Identification of carnitine-responsive cardiomyopathy and myopathy in adult patients with dilated and hypertrophic cardiomyopathy and limb girdle weakness. Faghfoury H, I Tein I. **Physicians' Services Incorporated Foundation of Ontario**. \$94,616 CAD. Jan 2014-Jan 2016

Identification of genes involved in epilepsy and epilepsy pharmacoresistance. Minassian B. **University of Toronto, McLaughlin Centre**. \$75,000 CAD. 2014–2015

Identifying genetic bases of intractable epilepsy. Minassian B. **University of Toronto, McLaughlin Centre**. \$75,000 CAD. 2015–2016

Impact of pediatric epilepsy surgery on health-related quality of life. Widjaja E, Smith ML, Ferro K, Speechley M, Connolly C, Snead OC. **Canadian Institutes of Health Research**. \$697,800 CAD. 2014-2019

Infantile spasms in Down syndrome: Correction of the epileptic phenotype. Snead OC, Cortez MA, Eubanks J, Salter M. **Canadian Institutes of Health Research**. \$755,000 CAD. 2011-2016

Knock-in based mouse model of RYR-1 myopathy. Dowling J. **RYR-1 Foundation**. \$30,000 USD. 2016

Limiting disability- brain research improving growth and health trajectories. Majnemer A, Miller SP, Goldowitz D, Kirton CA, Cohen E, Thomson D, Gavin F, Florence D, Major-Cook N, et al. **CIHR -SPOR Networks in Chronic Disease - CHILD-BRIGHT: Child Health Initiatives**. \$25,000,000 CAD. Apr 2015-Mar 2021

Longitudinal follow-up study of a military PTSD patient cohort using magnetoencephalography. Taylor MJ, Pang EW, Dunkley BT. **CIMVHR**. \$270,810.91 CAD. 2015-2017

Longitudinal natural history study of myotubular myopathy. Dowling J. **Valerion Therapeutics**. \$98,321 USD. 2014-2016

Micro-exons: filling in the gaps in neurogenetic disease. Dowling J. Chase-an-idea Catalyst Grant. **Centre for Brain and Mental Health, SickKids**. \$50,000 CAD. 2015-2016

Microbiome Team Grant: Regenerative Strategies in White Matter Disease of the CNS. Miller F, Yeh EA **Ontario Institute of Regenerative Medicine (OIRM)**. \$800,000 CAD. Dec 2015-2017

Mitochondrial Complex I dysfunction in Prader Willi Syndrome: A New therapeutic target. Tein I. **Foundation for Prader-Willi Research**. \$148,000 CAD. Mar 2016-Feb 2017

Music Therapy to Enhance Sleep in Sick Infants in NICU. Ochi A, Tam E. **SickKids Brain & Behaviour Chase an Idea Grant**. \$50,000 CAD. Jul 2015-Jun 2016

Neural correlates of movement disorders resulting from childhood stroke. Cheyne D, Dlamini N, deVeber G. **Canadian Institutes of Health Research**. \$309,000 CAD. 2014-2017

Neurocognitive bases of treatment resistance in developmental dyslexia. Morris RD, Pugh KR, Lovett MW, Seidenberg MS, Frijters JC, Sevcik RA, Zevin J, Landi N, Mencl E. **National Institutes of Child Health and Human Development**. \$3,112,500 USD. Jul 2013-Jun 2018

Neurodevelopmental Outcome after Prematurity. Tam E, FerrieroD. **Gerber Foundation**. \$131,009 CAD. Jan 2012-Jun 2016

Neurodevelopmental outcomes of pre- and peri-natal exposure to antiretroviral treatment in HIV-uninfected children. Read S, Bitnun, Smith ML. **CANFAR**. \$160,000 CAD. 2012-2016

Neurological outcome of hypoglycemia in neonatal encephalopathy. Tam EWY, Brant RF, Chau V, Connolly M, Hahn CD, Ly LG, Mamak E, Miller SP, Moore AM, Poskitt KJ, Solimano AJ, Synnes AR, Widjaja E, Zwicker, JG, Roland E. **Canadian Institutes of Health Research**. \$703,747 CAD. Apr 2014–Mar 2019

New approaches to intractable epilepsy: Phase II of The Epilepsy Discovery Project. Minassian B. **The Ontario Brain Institute**. \$250,000 CAD. 2014–2019

Nodular heterotopias as a biomarker for pharmacoresistant schizophrenia. Andrade D, Bassett A, Krings T. **NARSAD (USA) Young Investigator Award**. \$59,648 USD. Jul 2012-Jul 2016

Nonconvulsive seizures among critically ill children. Hahn CD, Hutchison JS, Snead OC, Parshuram CS, Otsubo H. **Canadian Institutes of Health Research & SickKids Foundation - New Investigator Research Grant**. \$431,694 CAD. 2009-2015

Optimizing mothers' milk for preterm infants. O'Connor DL, Unger S, Doesburg SM, Fusch C, Hamilton JK, Innis SM, Kiss AJ, Miller SP Pencharz, PB, Rovet JF, Shah P, Stintzi A. Tam EWY, Taylor MJ, Tomlinson C, Zlotnik Shaul R. **Canadian Institutes of Health Research**. \$1,999,675 CAD. Jun 2013–May 2018

Oral prednisolone versus vigabatrin as first line treatment in newly diagnosed infantile spasms. Snead OC, Go C. **Ontario Brain Institute**. \$30,000 CAD. Apr 2014– Mar 2017

Patient-specific adaptive closed-loop neurostimulation for optimum treatment of intractable epilepsy. Perez-Velazquez JL, Genov R. **Canadian Institutes of Health Research Collaborative Health Research Projects**. \$154,800 CAD. 2016-2018

Personalized medicine for the treatment of epilepsy. Minassian B, Cossette P, Michaud J. **Genome Canada**. \$11,000 CAD. 2013–2017

Phase 3, randomized, double-blind, Sham-procedure controlled study to assess the clinical efficacy and safety of ISIS 396443 administered intrathecally in patients with infantile-onset spinal muscular atrophy. Vajsar J, Dowling J, Chau V. **ISIS Pharmaceuticals**. \$186,000 USD. Jan 2014-Dec 2016

Phase I - add-on high-cannabidiol low-THC whole cannabis plant extract for children with treatment resistant epilepsy. McCoy B, Snead, OC, Weiss S, Zak M, Lewis E, Sinopoli K, McDonald K, Wang. **Tilray**. \$80,000 CAD. Oct 2015–Sep 2018

Phosphoinositide metabolism and its role in skeletal myogenesis. Dowling J. **NSERC**. \$190,000 CAD. 2015-2021

PI3 kinase inhibition as a novel treatment strategy for myotubular myopathy. Dowling J. **Myotubular Trust**. \$100,000 BP per annum. 2014-2016

Placental health predictors of brain development and cognitive outcomes in early childhood. Ganea P, Kingdom J, Shah P, Lee K, Jenkins J, Doesburg S, Miller SP, Chau V, Emis A. **Fraser Mustard Institute for Human Development and OISE**. \$10,000.00 CAD. 2015-2017

Placental health predictors of cognitive outcomes in early childhood. Ganea P, Kingdom J, Shah P, Miller SP, Chau V, Akbari E, Doesburg S. **Fraser Mustard Institute for Human Development and OISE**. \$65,000 CAD. Jul 2014–Jun 2017

Post-Marketing Retrospective and Observational Study: Utilization and Effectiveness Analysis of Gamunex in Guillain-Barré Syndrome (GBS) Vajsar J. **Grifols Inc**. \$11,000 CAD. Mar 2014–Mar 2016

Progressive degeneration from onset in pediatric Multiple Sclerosis: Evaluation of clinical and health related quality of life, early loss of brain integrity, and accelerated immunological senescence. Yeh EA. **MS Foundation**. \$3,400,000 CAD. 2015-2018

Regulators of PI3P metabolism in skeletal muscle development and as modifiers of myotubular myopathy. Dowling J. **Canadian Institutes of Health Research**. \$161,000 per annum. 2014-2017

Rehabilitation in pediatric MS, mentor-based post-doctoral fellowship. Yeh EA. **National Multiple Sclerosis Society**. \$352,950 USD. 2015-2020

Respiratory dysfunction and sleep disordered breathing in children with myasthenia gravis. Narang I, Katzberg H, Vajsar J. **The Hospital for Sick Children Foundation**. \$18,920 CAD. 2015-2016

Safety and efficacy of outpatient initiation of the Ketogenic Diet: Increasing accessibility and reducing wait times in the Province of Ontario. RamachandranNair R, Donner EJ, Fabe J, Thabane L, Prasad N, Whiting S. **Ontario Brain Institute**. \$250,000 CAD. 2013-2018

SMA Registry. Korngut L, Vajsar J, Ray P, Simard L, MacKenzie A. **Families of SMA, Canada**. \$100,000 CAD. 2012-2017

Stroke Imaging Laboratory for Children (SILC). deVeber G. **Heart and Stroke Foundation and SickKids Foundation**. \$2.2 million CAD. Sep 2013-Apr 2019

Structural and functional brain connectivity in typical and atypical development. Doesburg SM, Duerden E, Miller SP, Pang EW. **Canadian Institutes of Health Research**. \$702,933 CAD. Oct 2014-Sep 2019

Physical activity studies on pediatric MS (supervisor of postdoctoral fellow - Samantha Stevens). Yeh A. **Restracomp, Research Institute, The Hospital for Sick Children**. \$120,000 CAD. 2016-2018

The Comprehensive Tuberous Sclerosis Clinic Research Initiative –National TSC Registry. McCoy B, Bartels U, Licht C, Gross G, Rutka J, Anagnostou E, Ng V, Pope E, Connolly M, Major P. **Novartis**. \$40,000 CAD. Oct 2015–Sep 2020

Therapeutic hypothermia after pediatric cardiac arrest (THAPCA). Moler F, Hutchison JS, Guerguerian A-M, Hahn C. **National Institutes of Health**. \$21,000,000 CAD. 2010-2016

Think fast! The role of automaticity in the cognitive control of action. Cheyne D. **NSERC** \$145,000 CAD. 2014–2020

Trajectories of brain development and neurocognitive outcomes in children born premature. Miller S, Grunau, R, Bjornson B, Brant R, Poskitt K, Synnes A, Weinberg J. **Canadian Institutes of Health Research**. \$1,171,869 CAD. 2011-2016

Transitional Epilepsy Program: Improving adult health care in patients with pediatric-onset epilepsy. Andrade D, Snead OC, Miller SP, Borlot F. **Ontario Brain Institute**. \$30,000 CAD. Apr 2013-Mar 2016

Treatment adherence in pediatric multiple sclerosis. Yeh, EA Schwartz C, Weinstock-Guttman B, Ness J, Patterson M, Rodriguez M, Waubant E. **National MS Society**. \$525,000 USD. Oct 2012-Oct 2016

Typical and atypical development of frontal lobe systems and the maturation of social cognitive function. Taylor MJ, Pang EW, Doesburg S, Anagnostou E. **Canadian Institutes of Health Research**. \$766,896 CAD. Jan 2012-2017

Understanding the thoughts and emotions of others: Neuroimaging measures of typical and atypical development. Taylor M, Anagnostou E, Pang, E, Smith ML. **Canadian Institutes of Health Research**. \$748,500. 2015-2020

Understanding the thoughts and emotions of others: Neuroimaging of typical and atypical development. Taylor MJ, Pang EW, Smith ML, Anagnostou E. **Canadian Institutes of Health Research**. \$881,385 CAD. 2015-2020

University of Toronto Michael Bahen Chair in Epilepsy Research Endowment. Minassian B. **University of Toronto Advancement Office**. \$425,000 CAD. 2012-2016

Using brain imaging to determine predictors of developmental coordination disorder and response to intervention. Zwicker J, Bjornson BH, Brant RF, Brown-Lum M, Giaschi DE, Glegg, Stephanie MN, Grunau R, Eckstein M, Mackay M, Miller SP, Montgomery IE, Oberlander TFA, Synnes AR. **CIHR Foundation**. \$684,199 CAD. Jul 2015-Jun 2020

Validation of monitoring changes in brain synchrony to anticipate seizures and implement feedback stimulation to stop seizure occurrence. Perez-Velazquez JL.

Vascular effects of infection in pediatric stroke II (VIPS II). deVeber G, Fullerton H. **National Institutes of Health**. \$3,012,486 USD. Jul 2015-Jun 2020

STAFF LISTING

Division Head

Dr. Steven Miller

Full-Time

Dr. Rand Askalan

Dr. Vann Chau

Dr. Nomazulu Dlamini

Dr. Elizabeth Donner

Dr. James Dowling

Dr. Cristina Go

Dr. Cecil Hahn

Dr. Jeffrey Kobayashi

Dr. Blathnaid McCoy

Dr. Berge Minassian

Dr. Mahendranath Moharir

Dr. O. Carter Snead

Dr. Emily Tam

Dr. Ingrid Tein

Dr. Jiri Vajsar

Dr. Shelly Weiss

Dr. Ann Yeh

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Dr. Gabrielle deVeber

Dr. Jonathan Gladstone

Dr. Hans Katzberg

Dr. Wayne Langburt

Dr. Christine Lay

Dr. Evan Lewis

Dr. William Logan

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Dr. Gilbert Miller

Dr. Peter Rumney

Dr. Teesta Soman

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Dr. Darcy Fehlings

Dr. Joelene Huber

Dr. Saadat Mahmutoglu

Dr. Golda Milo-Manson

Dr. Robyn Westmacott

Dr. Elysa Widjaja

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Dr. Miguel Cortez

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Dr. Elizabeth Pang

Dr. Mary Lou Smith

Dr. Margot Taylor

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Dr. Siri Sonty

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Dr. Yasushi Iimura

Dr. Kagawa Kota

Dr. Giulia Longoni

Dr. Midori Nakajima

Dr. Dragos Nita

Subspecialty/Clinical Fellows

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Dr. Michael Alber

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Dr. Sameer Al-Mehmadi

Dr. Amr Al-Shahed

Dr. Mariam Ayed

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Dr. Lara Leijser

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Dr. Jaspal Singh

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Maureen Waite

Barbara Zimnowodzki



PAEDIATRIC MEDICINE

Optimizing health outcomes for children with highly prevalent conditions and those with complex health needs

From left to right: Drs. Zia Bismilla, Michael Weinstein and Stacey Bernstein

DIVISION OF PAEDIATRIC MEDICINE

The Division of Paediatric Medicine continues to play an integral role in the Department of Paediatrics, with respect to clinical care, quality improvement, education and research. The Division's diverse and active Sections include: General Paediatric Hospital Medicine (Inpatient, Ambulatory, Complex Care), Paediatric Advanced Care Team (palliative care), Child Maltreatment Paediatrics (SCAN), Paediatric Dermatology and Community Paediatrics. Representatives from each of these sections play active roles within the hospital, and also hold key leadership

roles in national and international professional organizations. Key areas of focus throughout the Division include optimizing outcomes for patients with general and complex pediatric conditions, preventive health and social pediatrics.

Dr. Carolyn Beck continues to provide exceptional leadership for the busy inpatient hospital medicine section. The inpatient physician staffing model has been successfully consolidated with a stable, dedicated group

Developing and engaging collaborative networks, we improve the health and well-being of children through excellence in clinical care, education, research and health systems transformations in primary, secondary and tertiary care settings.

of hospitalists who are either full time Division members, or attend on site at least half-time (with the remainder of their clinical work as pediatric hospitalists in one of the GTA hospitals). The inpatient general pediatric units have continued to experience sustained growth patient volumes and high acuity and complexity, requiring increased attention to optimizing systems and processes, while maintaining a focus on quality and safety. Carolyn Beck, Sarah Schwartz and Trey Coffey have been at the helm of initiatives in this area, in partnership with Kate Langrish, Nadia Tavernes and the outstanding management team. Extensive planning has been underway for a pilot beginning in July, 2016, for the highest acuity group of general pediatric inpatients requiring intensive nursing support to be cohorted on an Intermediate Care Unit on 7C. The Streamlined Care Unit (SCU) continues to offer efficiencies through cohorting of patients with predictable clinical trajectories. The expansion of the Alternative Care Environment (ACE) model to Pediatric Consultation Clinic continues to develop, focused on optimizing inpatient bed utilization and length of stay. The expansion consists of an ACE clinic model, which offers the ability to provide semi-

urgent, coordinated, multidisciplinary patient assessments in the outpatient setting for patients who do not require overnight nursing care. Continuity is a key theme in quality of care and a nursing case manager model for long stay patients was successfully piloted this year. The Division's work on I-PASS, led by Trey Coffey and Zia Bismilla, and part of a national research collaborative, has continued to support enhanced patient care through attention to handoff/transfers of clinical care not only within the Division, but also more widely throughout the Department. This year will see a pilot of a streamlined process for general pediatric inpatient admissions, with

Research in Paediatric Medicine has continued its exponential growth and success. Division members have been exceptionally productive this year. Sustained success in grant support for research endeavours is evident, with Divisional faculty successfully competing for CIHR foundation scheme and SPOR grants, holding a total of more than 42 million dollars of grant funding, and numerous high-impact peer-reviewed publications.

augmented nursing staffing, in an attempt to continue to optimize patient flow in collaboration with our Emergency Department and Critical Care colleagues.

Activity in ambulatory general pediatrics has grown, with continued focus on providing urgent access to general pediatric consultation from the emergency department and inpatient units, in addition to established clinics addressing complex conditions, including growth and feeding (failure to thrive clinic), cleft lip and palate consultations, obesity in young children (STOMP early years program), neurofibromatosis, complex neurodevelopmental and behavioural problems, and medically-unexplained symptoms. The Complex Care Program and its satellites continue to grow, with Julia Orkin, providing leadership within the newly-established Complex Care Kids Ontario network. The Paediatric Advanced Care Team, led by Adam Rapoport, has continued to experience tremendous growth, with a notable increase in clinical activity, a sought-after elective experience, provincial committee development and a fellowship training program. Academic productivity in PACT has dramatically increased.

Education remains a key area of activity in Paediatric Medicine, with a significant proportion of core training for University of Toronto undergraduate students and pediatric residents provided by Divisional faculty, including the active Community Section. Under Michael Weinstein, Divisional Director of Education as of February 2014, active efforts are underway to optimize continuity of care and bedside teaching for medical students and residents on the inpatient units, adjusting to changes in trainee work hours, family-centered rounds and efficiency mandates. Division members continue to be recognized for their outstanding contributions to education through teaching awards (see below) Innovative curriculum development continues in Paediatric Dermatology, PACT and Child Maltreatment. Susanna Talarico has taken on leadership for educational activities in Social Pediatrics, including the increasingly popular elective for medical students and residents, and

the SPReSS Program. Physicians in Paediatric Medicine continue to play key leadership roles in undergraduate and postgraduate education within the Department, University and Learning Institute, and participate actively in Royal College committees and examination boards. A Divisional focus on education scholarship continues with Zia Bismilla as the lead.

The Division continues to offer a large, diverse and active fellowship program, with a total of 28 fellows in the 2015/16 academic year, hailing from Canada, the US, Europe, the Middle East, UK and Mexico. Sarah Schwartz continues as the Fellowship Director for the Division, and track directors are in place for each of the specific fellowship programs within the Division. Clinical fellows in general paediatric hospital medicine play an active role on our inpatient services, and provide high quality trainee on call coverage for general pediatrics. The academic general paediatric fellowship continues to thrive, with fellows developing skills in clinical epidemiology, health services research, medical education, global health and public health. Active fellowship programs which are unique in Canada continue in Paediatric Dermatology, Child Maltreatment Paediatrics and Community Paediatrics, and Paediatric Palliative Care.

The Paediatric Medicine Research Program has continued its exponential growth and success. With areas of focus in patient-based outcomes research, health services research, global health research and a well-established innovative primary care research network (TARGet Kids), Division members have been exceptionally productive this year. Sustained success in grant support for research endeavours is evident, with Divisional faculty successfully competing for CIHR foundation scheme and SPOR grants, holding a total of more than 42 million dollars of grant funding, and numerous peer-reviewed publications. Dr. Astrid Guttmann continues to play a leadership role in child health services research and health policy, with a tremendously productive research program and holds the position of Chief Science Officer at the Institute for Clinical

Evaluative Sciences (ICES) and was recognized this year with awards for trainee and faculty mentorship from the Department and University.

Paediatric Dermatology remains the busiest ambulatory clinical service in the Department. The Dermatology Section continues to provide outstanding clinical care for children with rare dermatologic conditions and those requiring interdisciplinary approaches. Headed by Elena Pope, the section provides leadership nationally and internationally in the field, is tremendously active in education at all levels, and offers a unique and popular fellowship training program which is building clinical and academic capacity. Irene Lara-Corrales was the course director for the popular and impactful annual Pediatric Dermatology Update. Academic activity within the Section has led to success in grant funding and numerous publications which are improving the course of clinical care for children with rare skin conditions.

The SCAN Program continues to grow under the co-leadership of Tanya Smith, nurse practitioner and Emma Cory. Clinical activity continues both on site at the hospital, and at the downtown Child and Youth Advocacy Centre, a model partnership between medical, mental health, child protection and police services. An active fellowship program is in place, training paediatricians who will build capacity in Canada and internationally. Certification in Child Maltreatment Paediatrics by the Royal College is now finalized and the Toronto fellowship program will apply for accreditation this upcoming year. A successful annual National Symposium on Advanced Practices in Child Maltreatment Paediatrics was held in Toronto this year, chaired by Michelle Shouldice, and will be held in Regina in the fall of 2016. An interprofessional clinical research program in child maltreatment continues to develop, with increasing poster presentations and publications arising from the team.

This outstanding group of clinicians, educators and researchers has had a tremendously successful year and remains dedicated to working together to improve the health and welfare of children through general pediatric clinical care, a commitment to education, and scholarship. Important collaborations with the Division's downtown partner St. Michael's hospital, Toronto area regional hospitals, community pediatricians, primary health care providers, and research networks are essential to the Division and continue to grow. Congratulations on an excellent year!

HONOURS AND AWARDS

Au H: Group Winner for Excellence in Teaching- Departmental Award presented to the Department of Paediatrics, Markham Stouffville Hospital by the University of Toronto Markham Stouffville Site Family Medicine Teaching Unit. Toronto, Ontario, June 2015

Bernstein S: POWER Teaching Award for outstanding teaching, Department of Paediatrics, University of Toronto. 2015

Bernstein S: Canadian Association of Medical Education (CAME) Certificate of Merit Award. 2015

Coffey T: Winner of the Pediatric Hospital Medicine Quality and Safety Award: Awarded to the I-PASS Study Group. San Antonio, Texas, USA. July, 2015.

Coffey T: Winner of the POWER Teacher Award for Postgraduate Teaching, The University of Toronto, Department of Paediatrics, Toronto, Ontario, Canada. June, 2015.

Cohen E: Winner of the Canadian Harkness/CFHI Fellow in Health Care Policy & Practice, Commonwealth Fund and Canadian Foundation for Healthcare Improvement, California, USA. July, 2015.

Feldman M: RCPSC Continuing Professional Development (CPD) Activity Grant (14.3-CPD5) - \$1,000.00, PAEDIATRIC UPDATE 2015

Friedman JN: Canadian Paediatric Society, Hospital Paediatrics Resident Travel Grant (Jessica Malach, Julia Sorbara), 2015

Ford Jones L: Mothercraft Bill Bosworth Memorial Award, May 2015

Liy-Wong C, Pope E, Parkin P, Lara Corrales I: Awarded first place: Society for Pediatric Dermatology, poster award. The relationship between neurobromatosis type 1, juvenile xanthogranuloma and malignancy. 2015

Lara-Corrales I: Awarded first place poster award; the relationship between neurobromatosis type 1, juvenile xanthogranuloma and malignancy. 41st Annual Meeting, Society for Pediatric Dermatology, Boston, Massachusetts, USA. July 2015

Nelson K: Runner up, Senior Trainee Clinical Science Award, Department of Paediatrics Research Day, The Hospital for Sick Children, Toronto, Ontario 2015

Nelson K: Canadian Child Health Clinician Scientist Program Doctoral Award (\$50,000 per year for 2 years). This national award provides salary support as well as research training opportunities for individuals from multiple disciplines in doctoral training programs

Newman C: Award for Teaching Excellence for the Paediatric Resident Lecture Series. 2015

Orkin J: Recognition for Clinical Excellence by Parents of Patients on Ward 7E. 2015

Orkin J: SPRESS Research Student Award, The Hospital for Sick Children 2015

Rapoport A: Winner of the 2014-2015 Department of Paediatrics Award for POWER Teacher- Outstanding contributions to postgraduate teaching. University of Toronto, The Hospital for Sick Children, Toronto, Ontario, Canada 2014-2015

Saunders N: Claire Bombardier Award (\$1000) For the most promising student in the Clinical Epidemiology and Health Care Research Program at the Institute for Health Policy, Management and Evaluation, 2015

Saunders N: Thomas and Edna Naylor Award (\$1000), For a graduate student (MSc or PhD) in the Institute of Health, Policy, Management and Evaluation, University of Toronto who completes the best paper based on their thesis in the field of health services research, 2015

Shouldice, M: Runner up, Faculty Mentorship Award, Department of Pediatrics, University of Toronto, The Hospital for Sick Children, Toronto, Ontario, Canada. Jun, 2015

Shouldice, M: Richard Rowe Award, Department of Pediatrics, University of Toronto, The Hospital for Sick Children, June 2015

Silver S: Teaching Award: Lionel Weinstein Clerkship Award

Talarico S: R.H.A Haslam Preclerkship Teaching Award for Excellence in Preclerkship Teaching, Faculty Development Award, The Hospital for Sick Children, Toronto, Ontario, Canada, 2015

Talarico S: Helen P. Batty Award for Excellence and Achievement in Faculty Development for Innovation in Program Development and Design, 13th Annual Education Achievement Celebration, University of Toronto, Toronto, Ontario, Canada, 2015

Talarico S: Clinical Practice Award, 7B Awesome Award, The Hospital for Sick Children, Toronto, Ontario, Canada, 2015

Weingarten K: Academic Half Day Teaching Award, Haem/Onc: Awarded to the staff responsible for the year's best formal teaching session, as judged by the fellow group. 2015

Weinstein Michael: Harry Bain Postgraduate Teaching Award, Winner, Department of Pediatrics, University of Toronto.

Weinstein, Miriam: Marvin Gerstein award for teaching; 2015 Department of Paediatric Annual Awards Day Celebration. The Hospital for Sick Children. June 2015

BOOK CHAPTERS

Cidro J, Suleman S, Leslie K, Amaria K, Hartman B, Thompson G, Freeman J, Bismilla Z, Bismilla V, Moore E, Alebraheem Z, Kaufman M: "Adolescent Health and Nutrition in US and Canada – An Overview of Issues and Determinants". In in Makrides M, Bhutta Z, Prentice A (eds): "Health and Nutrition in Adolescents and Young Women: Preparing for the Next Generation". In: Nestle Nutrition Institute Workshop Series. (pp 27-48) vol 80, 2015.

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Grant VJ, Huffman J, Cheng A, McNeil G, Bismilla Z, Lai A (Eds): "Scenario Design" In: Comprehensive Healthcare Simulation PEDIATRICS Edition, Springer Publishers 1st ed 2016, I, 1117 p. 160 illus, 11 illus in color. March 2016.

Kassam A & Rapoport A. Co-Editor. Palliative Care Working Group. Review and revision of the chapter on palliative care for the "POGO Provincial Pediatric Oncology Satellite Program Manual: A Blueprint for Service Version 4". Co-Editors: Pediatric Oncology Group of Ontario. Toronto, ON. 2014-2015

Li P, Goodman D, Guttman A. "Pediatric Medical Practice Variations" in the HANDBOOK OF HEALTH SERVICES RESEARCH, in press Springer Verlag

Li S, Pope E. Localized Sclerodermas. In: Cassidy's Textbook of Rheumatology, 7th edn. Elsevier, Philadelphia, USA. May 2015.

Shouldice M, Ward M. Head Injuries in Children due to Child Abuse, Terminology. January 26, 2016

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Abdullah K, Thorpe K, Maguire J, Birken CS, Fehlings D, Hanley A, Parkin P. Risk factors, practice variation and hematological outcomes of children identified with non-anemic iron deficiency (NAID), following screening in primary care setting. *Archives of Disease in Childhood. Paediatr Child Health* 2015 Aug-Sep;20(6):302-6

Abdullah K, Thorpe KE, Mamak E, Maguire JL, Birken CS, Fehlings D, Hanley AJ, Macarthur C, Zlotkin SH, Parkin PC. An internal pilot study for a randomized trial aimed at evaluating the effectiveness of iron interventions in children with non-anemic iron deficiency: the OptEC trial. *Trials* 2015;16:303.

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Benchamol EI, Smeeth L, Guttman A, Harron K, Moher D, Petersen I, et al. The REporting of studies Conducted using Observational Routinely-collected health Data (RECORD) Statement. 2015 *PLoS Med* 12(10): e1001885. doi:10.1371/journal.pmed.1001885

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GRANTS AND FUNDING

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CIHR Team in traffic and road injury prevention program for Canadian children. Snowdon AW, Howard AW, with Co-investigators Altenhof WJ, Kobti A, Gilliland JA, Ahmed SE, Angell GB, Bruce B, Bussiere D, Georgie VE, Hussine A, Kent RD, Leitch KK, Thrasher C, Worster AS, Birken CS, McClafferty K, Shkrum M: **Canadian Institutes of Health Research** \$1,744,000. 2010-2015

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Core set of outcomes for children with severe neuro-disability and gastrostomy tube dependency: A tool of standardized outcomes for clinical research and practice. Offringa M, Kapadia M, Cohen E, Guttman A, Maguire J, Mahant S, Nelson K. Norman Saunders Complex Care Research Grant Competition, **Norman Saunders Complex Care Initiative**. \$26,500 CAD. December 2014 – December 2015

Creation of a Registry of Children and Adolescents Evaluated in the Lymphadenopathy Clinic: Optimizing patient care through consistent practice. Schwartz S, Alexander S, Gupta S, Gerstle T, Campisi P, Science M, Wiley J. **Paediatric Consultants Partnership, Creative Professional Activity Grant. Department of Paediatrics, University of Toronto.** \$10,000. 2015 – 2016

Depression and Cardiometabolic Risk Among Infants of Depressed Mothers. Korczak D, Szatmari P, Parkin P, Dennis CL. **SickKids Centre for Brain and Mental Health** \$30,000 2015-2016

Design, development and usability evaluation of a patient-initiated CCDSS for the management of sore throat in children. Mistry N, Straus, S, Simpkins C, Maguire J, Porter SC. **Knowledge Translation Canada, Student Research Award** \$15,000 2012–2015

Development and validation of FE-RISK: An early childhood iron deficiency risk stratification tool. Borkhoff C, Persaud N, Parkin P, Abdullah K, Birken C, Maguire J, Thorpe K. **Sickkids Centre for Healthy Active Living Catalyst grant.** \$24,170.00 2015-2016

Development of a care pathway for children with typical, newly diagnosed ITP at The Hospital for Sick Children. Beck CE (PI), Carcao M, Porter S, Cada M, Blanchette V, Parkin PC. **SickKids Innovation Fund** \$9,500. 2012 – Ongoing

Disseminating Safe Handoffs: Mentored Implementation of I-PASS for Better Handoffs and Safer Care. Bismilla Z, Landrigan (Site Mentor- responsible for oversight and effective implementation of all elements of the implementation bundle at individual sites). **Agency for Healthcare Research and Quality Grant 1R18HS023291.** \$1,479,818, 2014-2017

DO IT! Trial Extension: Vitamin D outcomes and interventions in toddlers: A TARGet Kids! randomized controlled trial. Maguire JL, Birken CS, Hoch J, Loeb M, Mamdani M, Mazzulli T, Parkin P, Thorpe K, Vieth R: **Thrasher Research Fund** \$448,884. 2012-2015

Emerging team in rare diseases: achieving the ‘triple aim’ for inborn errors of metabolism, Potter E, Guttman A. **Canadian Institutes of Health Research** \$298,098/year CAD 2012 - 2017

Enhancing the Quality of Palliative and End-of-Life Care for Children with Cancer. Widger K, Rapoport A, Bouffet E, Friedrichsdorf S, Greenberg M, Husain A, Liben S, Pole J, Siden H, Whitlock J, Wolfe J. **Canadian Partnership Against Cancer.** \$959,264 CAD grant + \$25,000 CAD incentive payment (Total = \$984,264). 2014 – 2017

Epidermolysis Bullosa Clinical Characterization and Outcomes Database. Pope E, Lara-Corrales I, Lee M. **EB Medical Research Foundation** \$11,000 USD Dec 2013 - present.

Evaluating collaborative care for postpartum depression in pediatric primary care settings (EPDS Trial). Dennis C-L, Birken C, Grigoriadis S, Hoch J, Isaranuwachai W, Letourneau N, Maguire J, Parkin P, Thorpe K, Vigod S. **Canadian Institutes of Health Research** \$981,384 2014-2020

Evaluating the implementation and impact of a medical-legal partnership. Beder M, Meaney C, Sridharan S, Pinto AD, Persaud N, Maguire J. **St. Michael's Hospital Translational Innovation Fund.** \$50,144 2015-2016

Evaluation of Phase 2 of Ontario's Mental Health and Addiction Strategy and Building a Cross-Sectoral Data System. Kurdyak P, Guttman A. **Ontario Ministry of Health and Long-term Care.** \$10,000,000 CAD 2014 – 2019

Exploring Models of Care for Adolescents and Young Adults with Benign Hematological Disease. Baker J, Sgro M, Bonifacio J, Mistry N. **St. Michael's Hospital, The Hospital for Sick Children AFP Innovation Fund** \$12,000. 2015-2017

Fit for school, fit for life: Child health and school readiness. Birken CS, Janus M, Maguire J, Parkin P, Randall-Simpson J, Duku E, Tremblay M, Lebovic G, Mamdani M. **Canadian Institutes for Health Research** \$1,256,576. 2014-2019

From Silos to Shared Care: Strengthening Ties Between CL Psychiatry and PACT to Strengthen Mental Health Resources for Children with Life-Threatening Conditions. Rapoport A, Mosher P, Widger K **Medical Psychiatry Alliance (MPA) Project Grant.** (No monetary value. All project need to be donated in kind.) November 2015

Health Outcomes of Children with Medical Complexity and their Caregivers. Cohen E, Berry J, Brehaut J, Guttman A, Lim A, Mahant S, Major-Cook N, McNeil D, Morinis J, Nicholas D, Offringa M, Peebles E, Ray J, Rosenbaum P, Stremler R, Stromquist L, To T, Vigod S, Williams L, Wodchis W. **Canadian Institutes for Health Research, Foundation Scheme Programmatic Grants.** \$997,729 CAD. July 2015 – June 2021

Health service utilization and costs for children receiving long-term home mechanical ventilation in Ontario. Rose L, Amin R, Cohen E, Gershon A, Guttman A. **Ontario Thoracic Society, Operating Grant.** \$49,564 CAD. August 1, 2015 – July 31, 2016

Improving resident handoff in teaching hospitals: Understanding implementation and effectiveness of a handoff bundle. Coffey M, Starmer A, Mahant S, Bismilla Z, Landrigan C. **Physician Services Incorporated.** \$154,820 CAD. January 2011 – June 2015

Initiative to Maximize Progress in AYA Cancer Therapy (IMPACT). Baxter N, Nathan P. Pole J, Gupta S, Sutradhar R, Rapoport A, Greenberg M, Gupta A, Sawka A, Barr R, Sussman J, Wasserman J. **Canadian Institutes of Health Research (CIHR) Operating Grant Competition.** \$913,872.00 CAD. 2014 – 2019

Integration and Identity: Understanding the Mechanisms that Foster a Holistic Physician in Longitudinal Integrated Clerkships. Kulasegaram K, Bernstein S, Martimianakis MA, Mylopoulos M, Kuper A, Wood N, Weyman K, Clavell N, Graves L, Kaufman A, Nyhof-Young J, Pittini R, Tartaro P, Webster F, Whitehead C, Wright S. **AMS Phoenix Project** \$35,000. 2015

Intrapleural DNase and Tissue Plasminogen Activator in Pediatric Empyema (DTPA trial). Cohen E, Connolly B, Hoch J, Laberge S, Maclusky I, Mahant S, Mamdani M, Ratjen F, Thorpe K. **Canadian Institutes of Health Research, Open Operating Grant Program.** \$315,121 CAD. October 1, 2010 – March 31, 2017

Joint Statement on Shaken Baby Syndrome. Shouldice M, Ward M. **Public Health Agency of Canada** \$9941.86 Sept 2015 – Oct 2016

Lead Child Health Theme – Health System Approaches to Transition to Adult Care for Youth with Chronic Conditions. Wodchis W, Guttman A. **Ontario Ministry of Health and Long-term Care, Health System Research Fund 2013 – 2016 Health System Performance Research Network (HSPRN)** \$4,645,190. 2013-2016

Measuring and Evaluating the Performance of integrated Health Systems for Complex Chronic Disease Patients. Stukel T, Guttman A. **Canadian Institutes of Health Research, Foundation Scheme Grant.** \$1,854,664 CAD 2015 – 2022

Mechanisms and biomarkers of growth faltering in early childhood. Roth D. **Ontario Ministry of Research and Innovation (Early Researcher Award)**. \$140,000 2015-2019

Molecular diagnostics to improve the care of children with complicated pneumonia. Wadhwa A, Cohen E, Petrich A, Farrell D, Gubay J, Connolly B, Weinstein M, Dell S, Mahant S. **Paediatric Consultants Partnership's Grants for Creative Professional Activity**. \$10,000 CAD. April 2013 – April 2015

Nadolol versus Propranolol for patients with infantile hemangioma: A randomized controlled non-inferiority trial. Pope E, Lara-Corrales I, Drolet B. **Physicians Services Incorporated (PSI) Foundation** \$164,570 June 2014- 2016

Neonatal Intubation Competency Assessment Tool (NICAT): Development and Validation Study. Bismilla Z, Finan E, Walsh C. **Canadian Pediatric Society Neonatal Resuscitation Program Grant**. \$25,000 Sept 2015-Aug 2016

OptEC: Optimizing Early Child Development in the primary care physician practice setting: pragmatic RCT of iron treatment for young children with non-anemic iron deficiency. Parkin P, Birken CS, Fehlings D, Macarthur C, Maguire J, Mamak E, Mamdani M, Thorpe K, Zlotkin S, Azad A, Barozzino T, Chisamore B, Feldman M, Ipp M. **Canadian Institutes of Health Research, Open Operating Grant** \$541,567. 2011-2016

Pilot randomized control trial of an online communication tool for collaborative care in complex patients. Husain A, Stinson J, Rapoport A, Cohen E, Jamieson T, Cafazzo J, Grunfeld E, Bezjak A, Goldman R, Guerriere D. **The Hospital for Sick Children AFP MSH-UHN AMO Innovation Fund**. \$199,974 CAD. April 2013 – April 2015

Prevalence and social determinants of developmental outcomes among 5-year-old children with health disorders: A Pan-Canadian study. Bennett T, Birken C, Coplan R, Duku E, Ferro M, Forer B, Georgiades S, Gorter J, Guhn M, Pei J, Santos R, Manson H, Janus M, Brownell M. **CIHR Operating Grant** \$378,411 2015-2018

Probiotics for the prevention of antibiotic-induced diarrhea in hospitalized children (PAID). Mahant S, Johnston B, Parkin P, Sherman P, Maguire J, Loeb M, Wahi G, Guyatt G. **Physicians' Services Incorporated Foundation** \$165,000 2016-2018

PROMOTE: Preschoolers at risk - obesity trajectories & cardiometabolic factors: towards early identification. Birken CS, Adeli K, Hamilton J, Hanley A, Maguire J, McCrindle B, Parkin PC, Feldman M, Ipp M, Jacobson S, Peer M, Taylor C, Chisamore B, Lau E, Do A, Neelands P, Perlmutter M, Saunderson J, Vaughan J. **Canadian Institutes of Health Research, Operating Grant** \$655,641. 2012-2016

Quantifying healthy birth, growth and development knowledge integration. Roth D. **Bill and Melinda Gates Foundation** \$149,600 US. 2015-2016

Relationships as Learning: Understanding How Relationship Building Facilitates Patient-Centered Learning in Longitudinal Integrated Clerkships. Hutchinson C, Kulasegaram K, Martimianakis T, Bernstein S, Mylopoulos M, Weyman K, Nyhof-Young J, Pittini R. **Education Development Fund, Faculty of Medicine, University of Toronto** \$19,875. 2015

Reporting of studies Conducted using Observational Routinely-collected Data (RECORD). Benchimol E, Guttman A. **Canadian Institutes of Health Research, Operating Grant**. \$120,000 CAD 2013 – 2015

Resource Stewardship Workshop: Teaching internal medicine and pediatric residents to communicate effectively with patients to avoid potential harm from unnecessary diagnosis tests. Mukerji G, Weinerman A, Moore C, Atkinson A, Stroud L, Wong BM, Schwartz S. **Education Development Fund, Faculty of Medicine, University of Toronto**. \$10,000. 2014-2016

Retrospective Chart Review of Systemic Treatments in Pediatric Psoriasis: international multicenter study. Lara-Corrales I, Paller A. **International Psoriasis Council** \$3,000. April 2015- Present

Strengthening practice through partnerships: Supporting parents of children with cerebral palsy as they transition from neonatal follow-up to developmental/rehabilitation services. Ballantyne M, Orava T, Bernardo S, Sozer A, McPherson A, Church P, Fehlings D, Cohen E. **Holland Bloorview Centres for Leadership in Child Development**. \$10,000 CAD. April 1, 2015 – March 31, 2016

Study: "Parental Perspectives on Advance Care Planning (ACP) for Individuals with Cerebral Palsy. Hoffman A, Widger K, Humphreys J, Low V, Fishbein-Germon B, Rapoport A. **Centre for Leadership in Child Development activity**. \$18,000.00 CAD April 1, 2016 March 31, 2017

Surgical interventions and outcomes of children with trisomy 13 and 18 in Ontario. Nelson K, Guttman A. **Norman Saunders Complex Care Initiative** \$20,000 CAD 2012-Present

TARGet Kids!: Optimizing Human Potential. Maguire JL, Birken CS, Janus M, Mamdani M, O'Campo P, Parkin PC, Stabile M, Straus S, Szatmari P, Thorpe K. **CIHR Foundation Scheme Live Pilot** \$1,564,448 2015-2020

Teaching Dermatology to Pediatric Residents Using E-Modules: A Prospective Comparative Study. Craw L, Lara-Corrales I. **Paediatric Consultant's Education Innovation and Development Grant** \$5,000 Jun 2014 – Jul 2015

Team to address bariatric case in Canadian children (Team ABC3). Birken C, Hamilton J, Holt, Masse, Morrison, Anderson L, Buchholz, Carsley S, Chanoine, Cordeiro, Dettmer, Forhan, Hadjiyannakis, Haines J, Ho, Legault, Luca, Maguire J, Maximova, McPherson, Parkin P, Perez, Sprague, Tournay, Tremblay M, Tu. **Canadian Institutes of Health Research: Team Grant in Bariatric Care**. \$1,380,881 2015-2019

Test-Enhanced Continuing Education - A Randomized Controlled Trial at SickKids Paediatric Update. Feldman, ME, Kulasegaram M, Martimianakis T, Wan M. **Educational Development Fund (Faculty of Medicine)** \$19,250 2015 – 2016

The Experiences and Expectations of Family Caregivers and Health Care Providers of Advance Care Planning in Children with Medical Complexity (CMC). Amin R, Orkin J; Cohen E, Rapoport A, Netten K, Adams S. **Norman Saunders Complex Care Initiative Grant Competition**. \$23,304.00 CAD. December 2015 –December 2016

The EXPLORING SLEEP Study: A Study EXPLORING the experiences and perceptions of end-users in the development of a SLEEP promoting intervention among family caregivers of children who depend on medical technology. Keilty K, Barbita J, Cohen E, Spalding K, Stremmer R. **Norman Saunders Complex Care Research Grant Competition, Norman Saunders Complex Care Initiative**. \$10,949 CAD. December 2014 – December 2015

The experience of caregivers of children with medical complexity receiving blenderized tube feeding: a qualitative study. Orkin J, Soscia J, Adams S, Cohen E, Friedman J, Gallagher K, Marcon P, Nicholas D. **Norman Saunders Complex Care Initiative Grant Competition.** \$17,048 CAD. May 2015 – May 2016

The influence of temperament on outdoor play in early childhood. Sharp J, Birken CS, Maguire J, Parkin PC, Lebovic G, Carsley S, Abdullah K. **Academic Pediatric Association Resident Investigator Award (RIA) Program** \$5,000 2014-2015

The role of whole genome sequencing as a diagnostic tool for children with medical complexity. Hayeems R, Meyn S, Bowdin S, Orkin J, Cohen E, Stavropoulos, Marshall C, Basran R, Monfared N, Ungar W, Cohn R. **Norman Saunders Complex Care Initiative Grant Competition.** \$24,695 CAD. December 2015 – December 2016

The SMH-Mentored Implementation I-PASS Project. Landrigan C, Starmer A, Coffey T and the I-PASS Study Group. **Agency for Healthcare Research and Quality (AHRQ).** \$1,999,179 USD. September 2014 – September 2017

The TARGet Kids! research study. Maguire JL, Birken CS, Parkin PC: **St. Michael's Hospital Foundation** \$489,650. 2012-2017

The Validation of iscorEB for Patients with Epidermolysis Bullosa. Pope E, Lara-Corrales I, Bruckner A. **Jackson Gabriel Silver Foundation** \$9,660 USD, Jan 2014 - present.

The Validation of iscorEB for Patients with Epidermolysis Bullosa. Pope E, Lara-Corrales I, Bruckner A. **EB Medical Research Foundation** \$7,760 USD Jan 2014 - present.

Topical Garlic Concentrate for Alopecia Areata in Children: a Prospective, Open-label Study. Pope E, Liy Wong M, Lara-Corrales I, Katipunan K. **CANAAF** \$5,000 Feb 2015 – present

Topical Garlic Concentrate for Alopecia Areata in Children: a Prospective, Open-label Study. Pope E, Liy Wong M, Lara-Corrales I, Katipunan K. **Canadian Dermatology Foundation** \$20,000 Feb 2015 – present

TRanslating Emergency Knowledge for Kids (TREKK). Wittmeier K, Guttman A. **Networks of Centres of Excellence (NCE) Knowledge Mobilization Initiative.** \$1,599,184 CAD 2011 – 2015

Understanding the effects of social, behavioural and metabolic factors on early childhood growth trajectories among Aboriginal Canadians. Hanley A, Rae J, Harris S, Zinman B, Hamilton J, Birken C, Parkin P, Maguire J: **Canadian Institutes of Health Research** \$793,317. 2013-2018

Using health administrative data to understand and improve end of life care among children with cancer: A population-based cohort and validation study. Gupta S, Widger K; Rapoport A, Kassam A, Pole J, Earle C, Wolfe J, Nelson K, Sutradhar R. **Garron Family Cancer Centre Pitblado Discovery Grant.** \$50,000 CAD over 1 year. 2015-2016

Vitamin D mediated regulation of autophagy; linking environmental-gene interactions in inflammatory bowel disease. Jones N, Roth D. **Crohn's Colitis Foundation of Canada.** 2015-2018

X-AOM: Xylitol for the prevention of acute otitis media episodes in children aged 2-4. Azarpazhooh A, Laupacis A, Birken C, Hoch J, Isaranuwachai W, Mamdani M, Parkin P, Thorpe K, Persaud N. **CIHR Operating Grant** \$677,428 2015-2019

Youth with Chronic Conditions Transitioning to Adult Care. Wodchis W, Guttman A, Cohen E, Moore C. **Health Systems Performance Research Network, Ministry of Health and Long-Term Care.** \$4,645,190 CAD. May 2013 – May 2016

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RESPIRATORY MEDICINE

Excellence in inpatient care, education and research

Left to right front: Hani Al-Saleh , Dr. Padmaja Subbarao, Jennifer Walsh, Susan Balkovec, Dr. Charlotte Miller
Left to right back: Aimee Dubeau, Krzysztof Kowalik, Melanie Emmerson, Christopher Olesovsky

DIVISION OF RESPIRATORY MEDICINE

The Division of Respiratory Medicine is committed to providing excellence in inpatient care, education and research. Our members of the Division are active on all these fronts:

Dr. Sharon Dell is currently on a 6 month Sabbatical as a visiting scholar in the Department of Clinical Epidemiology School of Public Health at the University of Sydney in Australia. Sharon is strengthening her skills in clinical trials methodology for the rare disease research and establishing new collaborations in Primary Ciliary Dyskinesia research. Dr. Sharon Dell was recently awarded the American Thoracic Society Pediatric Clinician Educator Award at the American Thoracic Society Annual Conference.

This annual award recognizes a candidate for his or her outstanding and innovative clinical and teaching abilities.

Dr. Padmaja Subbarao was recently promoted to Associate Professor at the University of Toronto. She continues to co-Direct the CHILD study cohort for recruitment and retention, (summary details re Child Study) recent research award is looking at lung development.

The Home Ventilation Program continues to expand under the leadership of Dr. Reshma Amin. Her research continues to focus on the impact of children using long-term ventilation at home on the patient, family and the healthcare system. She is the pediatric lead for a provincial

SickKids Sleep Medicine program continues to advance in clinical care and over the past year has developed strategic alliances with 2 community based sleep facilities that will provide paediatric sleep services.

initiative to evaluate the use, education needs, health service utilization and outcomes of the Mechanical In-insufflator (Cough Assist) in the province of Ontario. She is also currently evaluating 'fitness to fly' in a cohort of adolescents with Duchene Muscular Dystrophy.

Dr. Indra Narang continues to advance research and is the current paediatric lead of the Sleep network, funded by CIHR to evaluate obstructive sleep apnea across the lifespan. Further, Dr. Narang has received funding from the

Under the leadership of Dr. Indra Narang, SickKids Sleep Medicine program continues to advance in clinical care and over the past year has developed strategic alliances with 2 community based sleep facilities that will provide paediatric sleep services. This will be enhanced with commitment by the Sleep program at SickKids to train four Paediatric Respirologist's in Sleep Medicine in the next academic year. Other clinical achievements include the successful introduction of a Paediatric to Adult Transitional Sleep Clinic in collaboration with Toronto General Hospital.

Dr. Felix Ratjen and his team continue to conduct multiple studies in cystic fibrosis with a specific focus on treatments directed towards the basic defect. The team has developed specific expertise for physiological outcome measures and serves as a core center for North America for studies using multiple breath washout technology as an outcome measure. As a co-lead of the CF centre Dr. Ratjen is also moving individualized CFTR modulator therapy forward in close collaboration with Drs. Christine Bear, Janet Rossant and Theo Moraes.

Heart and Stoke foundation as well as the CHAK center to evaluate the impact of obstructive sleep apnea on cerebrovascular function and neurocognition in adolescence.

Dr. Melinda Solomon, led the fellowship training program through another successful year. She continues to be the Medical Director of the Bronchoscopy Program and the Paediatric Lung Transplant Program, caring for both pre-and-post transplant patients. Dr. Solomon has been the Director of the Cystic Fibrosis Clinic at SickKids for over 10 years, and continues to be the facilitating teaching of Cystic fibrosis to patients, families, trainees and other healthcare professionals.

Dr. Hartmut Grasmann has developed multiple research collaborations within the institution expanding his research focus on nitric oxide metabolism in lung disease. This year he has been promoted to full Professor based on his research achievements. In addition to his productive research portfolio Dr. Grasmann is one of two physicians dedicated to the care of lung transplant patients which has expanded over the years to include infant lung transplantation

Dr. Felix Ratjen and his team continue to conduct multiple studies in cystic fibrosis with a specific focus on treatments directed towards the basic defect. The team has developed specific expertise for physiological outcome measures and serves as a core center for North America for studies using multiple breath washout technology as an outcome measure. As a co-lead of the CF centre Dr. Ratjen is also moving individualized CFTR modulator therapy forward in close collaboration with Drs. Christine Bear, Janet Rossant and Theo Moraes.

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Arrieta MC, Stiemsman LT, Dimitriu P, Thorson L, Russell S, Yurist-Doutsch S, Kuzeljevic B, Gold MJ, Lefebvre D, Subbarao P, Mandhane P, Becker A, McNagny K, Sears M, Kollmann T, Mohn W, the CHILD Study Investigators, Turvey S, Finlay B. Early infancy microbial and metabolic alterations in children impact risk of asthma. *Science translational medicine* 2015; 7 (307): 307ra152.

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Azad MB, Konya T, Persaud RR, Guttman DS, Chari RS, Field CJ, Sears MR, Mandhane PJ, Turvey SE, Subbarao P, Becker AB, Scott JA, Kozyrskyj AL, CHILD Study Investigators. Impact of maternal intrapartum antibiotics, method of birth and breastfeeding on gut microbiota during the first year of life: a prospective cohort study. *BJOG: An International Journal of Obstetrics and Gynaecology* 2016: 123 (6): pp 983-993.

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GRANTS AND FUNDING

A Centre for Individualized Cystic Fibrosis Therapy. Cystic Fibrosis Canada and SickKids Collaborative Fund Raising. Rossant J, Bear C, Ratjen F, Moraes T. **Cystic Fibrosis Canada and SickKids Collaborative Fund Raising.** \$7,500,000 CAD. July 1-2015 – June 30-2020

Arginase inhibition to augment nitric oxide production in cystic fibrosis. Grasemann H. **Cystic Fibrosis Canada.** \$235,468 CAD. April 2013 – March 2016

A Pediatric Device for Home Diagnosis of Sleep Apnea in Children - Medical Sciences Proof-of-Principle (MSc PoP) Program. Alshaer H, Narang I, Al-Saleh S, Bradley TD. \$62,091 CAD. 2015 – 2016

A Phase 3, Double Blind Placebo controlled Study to Evaluate the Pharmacokinetics, Safety, and Tolerability of Lumacaftor in Combination with Ivacaftor in Subjects 6 Through 11 Years of Age With Cystic Fibrosis, Homozygous for the F508del-CFTR Mutation. Ratjen, F. **Vertex Pharmaceuticals.** \$220,246.99 USD. 2015 - 2016

A Phase 3 Efficacy and Safety Study of Ataluren (PTC124) in Patients with Nonsense Mutation Cystic Fibrosis. Ratjen F. **PTC Therapeutics, Inc.** \$20,583 fixed cost - \$10,965/patient. 2014 - 2016

A Phase 3, Open-Label Study to Evaluate the Pharmacokinetics, Safety, and Tolerability of Lumacaftor in Combination with Ivacaftor in Subjects 6 Through 11 Years of Age With Cystic Fibrosis, Homozygous for the F508del-CFTR Mutation. Ratjen, F. **Vertex Pharmaceuticals.** \$74,534.32 USD. 2015 – 2016

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Assessment of Cerebrovascular Abnormalities and their Relationship to Neurocognitive Deficits in Obese Children with Obstructive Sleep Apnea. Narang I, Kassner A. **Center for Healthy Active Kids (CHAK) Catalyst Grant. The Hospital for Sick Children.** \$25,000 CAD. January 1-2015 – December 31-2015

A Two-Part Multicenter Prospective Longitudinal Study of CFTR-dependent Disease Profiling in Cystic Fibrosis (PROSPECT). Ratjen F. **Cystic Fibrosis Foundation Therapeutics Inc.** \$177,731.00 USD. 2014 – 2019

Bronchopulmonary dysplasia: from neonatal chronic lung disease to early onset adult COPD. Moraes, T, Luu TM, Katz S. **The Canadian Respiratory Research Network.** \$49,808 CAD. July 1-2014 – June 30-2015

Canadian Birth Cohort: Indoor Air and the Development of Asthma and Allergy (CHILD Study). Sears, M, Subbarao P, Becker A, Mandhane Piush, Turvey S. **AllerGen Networks of Centres of Excellence (NCE) Inc.** \$2,000,000 CAD. 2016 – 2019

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Cough augmentation techniques to optimizing weaning success and prevent reintubation for critically ill patients. Rose L, McKim D, Adhikari N, Fraser I, Leblanc C, Katz S, O'Connell C, Fergusson D, Amin R, Leasa D. **Canadian Institutes of Health Research.** \$92,219 CAD. 2014 – 2015

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Deciphering the metabolic signatures of the metabolic syndrome (MetS) in young children. Subbarao P, Anand S. **DoHAD Team Grant LOI.** \$10,000 CAD. April 2015 – November 2015

Determinants of Clinical Outcomes in Children and Youth Living with Skeletal Deformity. Zabjek K, Amin R, Zeller R, Mather S, Deguise J. **CIHR Project Scheme Competition.** \$300,000 CAD for 3 fiscal years April 2016 - March 31 2019

Development of highly efficient and clinically applicable nucleic acid delivery approaches for permanent correcting CF lung disease caused by all CFTR mutations. Gonska, T; Yeger, H; Bear, C; Moraes, T; Hu, J. **INSTITUTION.** \$500,000 USD. February 2016 – January 2018

Development of novel clinical tests to diagnose and monitor asthma in preschool children. Subbarao P, Boutis K, Stanojevic S. **Ontario Thoracic Society.** \$92,335 CAD. 2013 – 2015

Discovery of therapies targeting the CF mutation common in Qatar. Bear C, Moraes T. **AI Qamra Project.** \$3,193,056 USD. January 2014 – January 2017

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Early signs of efficacy study with BAY63-2521 in adult homozygous DF508 Cystic Fibrosis patients. Ratjen, F. **Bayer**. \$33,766.40 USD. 2014 – 2015

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Genes by environment interactions in the development of non-communicable chronic respiratory diseases, asthma and COPD. Subbarao, P. **CIHR**. \$1,953,002 CAD. 2016 - 2021

Genetic Disorder of Mucociliary Clearance. Knowles, M., Davis S, Fordham L, Leigh M, Dell S, Ferkol T, Krischer J, Milla C, Sagel S, Rosenfeld M, McShane P. **National Institute of Health**. \$6,249,996 USD (219,540 to Dell) August 2014 – July 2019

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Incidence of Altered Craniofacial Morphology and Malocclusion in Children and Youth with Obstructive Sleep Apnea. Nelly H, Almeida F, Amin R, Narang I. **SickKids Foundation New Investigator Grant**. \$280,000 CAD. 2013 – 2016

Increasing Awareness of Childhood Narcolepsy. Narang, I. **Wake Up Narcolepsy, Inc**. \$5,000 CAD. 2016 – 2017

Interpleural DNase and tissue plasminogen activator in pediatric empyema (DPTA trial). Ratjen, F. Cohen, E. **Canadian Institutes of Health Research**. \$315,121 CAD. 2012 - 2015

Interpleural DNase and tissue plasminogen activator in pediatric empyema (DPTA trial). Ratjen, F. Cohen, E. **Physician Services Incorporated**. \$91,000 CAD. 2013 - 2015

LCI to monitor treatment response for pulmonary exacerbations. Ratjen, F, Stanojevic S, H Grasmann H, Waters V. **Cystic Fibrosis Canada**. \$257,264 CAD. 2016 - 2019

Lung Clearance Index (LCI) as a marker of early lung disease in preschool children. Ratjen, F. **NIH – National Heart Lung and Blood Institute**. \$1,738,992.71 USD. 2012 – 2016

Lung Function in preschool children: Utility of diagnosis of asthma. Ratjen F, Subbarao P. **Canadian Institutes of Health Research**. \$447,195 CAD. 2014 – 2019

Multi-center, randomized, double-blind, placebo-controlled phase 2 study to assess the safety, tolerability and early signs of efficacy of tid orally administered BAY63-2521 in adult ΔF508 homozygous Cystic Fibrosis patients (Study 17020). Ratjen, F. **Bayer Pharmaceuticals**. \$43,287USD. 2015 – 2016

Narrowing the gender gap: Modulating estrogen/IL-17 signaling to control Th17 cells and neutrophil extracellular traps in the cystic fibrosis lung. Swezey N, Palaniyar, N. **Cystic Fibrosis Canada**. \$123,000/year CAD. 2015 - 2018

Pediatric to Adult Sleep Disorders Clinical and Research Transitional Care Program. Ryan C, Narang I. **Department of Medicine Integrating Challenge Grant & Division of Respiratory Medicine, Toronto General Hospital**. \$50,000 CAD. 2013 – 2016

Primary human nasal epithelial cell culture in CF to test for responses to CFTR modulators. Moraes, T. **Cystic Fibrosis Canada**. \$15,000 CAD. July 2014 – July 2015

Programmatic research to understand how modifiable environmental factors interact with the genome in the development of asthma. Subbarao, P, Turvey S. **CIHR**. \$1,675,435 CAD. 2016 - 2021

Qualitative Assessment of Symptoms of Narcolepsy in Children. Narang I. **Wake Up Narcolepsy, Inc**. \$14,000 CAD. 2015 – 2016

Randomized, double-blind, placebo-controlled, cross-over multi-center study to assess the efficacy and safety of inhaled Tobramycin nebuliser solution (TOBI®) for the treatment of early infections of P. aeruginosa in cystic fibrosis subjects aged from 3 months to less than 7 years. Ratjen, F. **Novartis**. \$6,750 CAD per patient. 2010 - present

Saline Hypertonic in Preschoolers (SHIP-CT) – Study. Ratjen, F. **Cystic Fibrosis Foundation Therapeutics**. \$170,931 USD. 2015 - 2018

SHIP (Saline Hypertonic in Preschoolers) Study. Ratjen F. **Cystic Fibrosis Foundation Therapeutics Inc**. \$2,058,043 USD. 2014 – 2018

Short-chain fatty acids in the cystic fibrosis lung. Grasmann H. **SickKids CF Centre Catalyst Research Grant**. \$50,000 CAD. June 2014 - December 2015

'Sleep and Sedation – Translational Science to Public Health'. Horner RL, Bradley TD, Chung F, Juurlink D, Mamdani M, Mukherjee S, Narang I, Orser B, Stremler R. **University of Toronto/Department of Medicine Integrating Challenge Grant**. \$250,000 CAD. 2013 – 2015

Stacking Exercises Attenuate the Decline in Forced Vital Capacity and Sick Time (STEADFAST). Barrowman N, Kovesi T, MacLusky I, McKim D, Sumner A, Coyle D, Momoli F, Heletea M, Mah J, Spier S, Amin R. **Jesse's Journey**. \$299,996 CAD. 2013 – 2016

The assessment of sleep disordered breathing in children on dialysis. Licht C, Carter, S, Amin R. **Fresenius Medical Care**. \$10,000 CAD. 2015 – 2016

The Canadian Respiratory Research Network: Origin and Progression of Airway Disease (CRRN). Ratjen F, Aaron, S. **Canadian Institutes of Health Research**. \$4,350,000 CAD. 2013 – 2018

The Canadian Respiratory Virus Research Collaborative. Marchant D, Moraes T. **Li Ka Shing Institute of Virology, University of Alberta**. \$30,000 CAD. February 2016 – January 2019

The Diagnostic Accuracy of an Ambulatory Level III Sleep Study for the Screening of Sleep Disordered Breathing in Children with Neuromuscular Disease. Amin R, Al-Saleh S, McAdam L, Narang I. **Ontario Respiratory Care Society**. \$23,047 CAD. 2015 – 2016

The Disruptive Effects of Anesthesia on Sleep in Children. Narang I, Maynes J, Selvadurai S, Horner R, Armando L. **Perioperative Services Innovation grant, The Hospital for Sick Children**. \$7,928 CAD. 2015 – 2016

The effects of mild pulmonary exacerbations on clinical outcomes in cystic fibrosis. Ratjen, F. **Vertex Pharmaceuticals**. \$83,300 USD. 2015 – 2016

The Experiences and Expectations of Family Caregivers and Health Care Providers of Advance Care Planning in Children with Medical Complexity (CMC). Amin R, Orkin J, Cohen E, Rapoport A, Adams S. **Norman Saunders Complex Care Initiative**. \$23,304 CAD. 2015 – 2016

The Impact of developmental deficiency of Lgl1 on long-term respiratory risk. Sweezey N, Kaplan F. **Canadian Institutes of Health Research**. (CIHR) \$776,484 CAD. 2011 - 2016

The predictive validity of the Assessment of the Quality of General Movements for identification of long-term neurodevelopmental outcome in preterm infants. Church P, Van Dyke J, Shah V, Dell S, To T. **Physician Services Incorporated Foundation**. \$37,500 CAD. May 2014 - May 2015

The Transition of Teenagers receiving long – term domiciliary mechanical ventilation to adult care: The TTEEN VENT STUDY. Rose L, Dale C, Varadi R, Goldstein R, Amin R, Amaria K. **Ontario Respiratory Care Society**. \$15,000 CAD. 2014 – 2015

Toronto CHILD Study. Subbarao P. **Don & Debbie Morrison**. \$500,000 CAD. 2013 - 2018

Understanding the impact of maternal and infant nutrition on infant/child health. Subbarao P, Anand S. **CIHR**. \$1,946,614 CAD. 2013 – 2018

Ventilator Assisted Individuals Living in the Community: Understanding the Impact on the Healthcare System and Improving Equitable and Timely Access to Appropriate Resources to Promote Optimal Health Service Utilization and Health Related Quality of Life. Rose L, Nonoyama M, Leasa D, Sinuff T, McKim D, Goldstein R, Gershon A, Amin R. **Ministry of Health and Long-term Care of Ontario Health Services Research Fund**. \$3,000,000 CAD. March 2016 - March 2019

Volume Assured Pressure Support Mode for Non-invasive Ventilation: Can it Improve Overnight adherence in Children with Neuromuscular Disease?. Amin R, Al-Saleh S, Syed F, Medin D. **SickKids Hospital. Paediatric Consultants Partnership's Grants for Creative Professional Activity**. \$9,970.00 CAD. 2015 – 2016

STAFF LISTING

Division Head

Dr. Felix Ratjen

Full-Time

Dr. Suhail Al-Saleh

Dr. Reshma Amin

Dr. Sharon Dell

Dr. Hartmut Grasemann

Dr. Theo Moraes

Dr. Indra Narang

Dr. Melinda Solomon

Dr. Padmaja Subbarao

Dr. Neil Sweezey

Part-Time

Dr. Charlotte Miller

Dr. Peter Bikangaga

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Dr. Sanja Stanojevic

Clinical Fellows

Dr. Oneza Ahmaren

Dr. Haley Fishman

Dr. Hasan Ghandourah

Dr. Amy Glicksman

Dr. Erin Kwolek

Dr. Anya McLaren

Dr. Kevan Mehta

Dr. Tara Mallowney

Dr. Jonathan Rayment

Subspecialty Residents

Dr. Hani Al-Saleh

(Asthma and ILD Training)

Dr. Saadoun Bin-Hasan

(Sleep Training)

Dr. Alison Carroll

(Lung Transplant Training)

Dr. Christine Racette

(Asthma Training)

Administrative Staff

Elena Fiadzinu

Beverley Nutt

Jessica Pereira

Oksana Rewa

Victoria Snell (Manager)



RHEUMATOLOGY

Providing and fostering excellence in scholarly clinical care for children with rheumatic diseases

From left to right: Dr. Brian Feldman, Audrey Bell-Peter, Kristi Whitney, Dr. Lynn Spiegel

DIVISION OF RHEUMATOLOGY

The Division of Rheumatology provides comprehensive care for children with rheumatic diseases. The ambulatory clinics have approximately 5700 patient visits per year at The Hospital for Sick Children. In addition to the general rheumatology clinics, there are unique multidisciplinary subspecialty clinics for children with autoinflammatory diseases, dermatomyositis, morphea,

systemic juvenile idiopathic arthritis, systemic and neonatal lupus erythematosus, spondylitis, and vasculitis. Many children have benefited from treatments in the medical day care unit, where children receive joint injections, therapeutic infusions or undergo investigations that would normally require in-patient admission.

The Division of Rheumatology has one of the strongest resident and fellowship training programs in North America.

Our program offers a comprehensive range of services for the evaluation and treatment of children with a vast range of paediatric rheumatic and inflammatory diseases. Our program is also far reaching; our members have extended our services to Northern Ontario. Rheumatology provides clinical care and undertakes research studies in systemic inflammatory disorders and inflammatory diseases of the bones and joints.

The Division of Rheumatology has one of the largest paediatric rheumatology fellowship training programs in North America and is fully accredited by the Royal College of Physicians and Surgeons of Canada. This academic year, our fellows originated from Canada, India, Palestine and the Netherlands. Our graduates have been successful in obtaining academic placements around the world and trainees have been productive in the research arena. In addition, the Division has given paediatric rheumatologists the opportunity to subspecialize – both in the clinical aspect of systemic and neonatal lupus erythematosus and vasculitis and also in the development of their research skills.

Research foci include the development of trial designs for the study of rare diseases, outcome, prognosis and

Dr. Rae Yeung was the recipient of the 22nd Annual Abraham Shore Memorial Lectureship in Pediatric Rheumatology. She received the award in Calgary which was hosted by Dr. Susan Benseler.

American College of Rheumatology – a number of our staff and trainees presented at the ACR in November. For more information here is the link for the supplement: <http://acrabstracts.org/wp-content/uploads/2015/10/acr-2015-abstracts-rev2.pdf>

Dr. Ronald Laxer and collaborators published the 7th edition of the Textbook of Pediatric Rheumatology.

The Regional Paediatric Rheumatology Community Dinner took place on January 19th. This semi-annual event allows staff and community partners to meet and discuss thought-provoking cases. Thank you to all the presenters for showcasing their most interesting and challenging cases.

RED Day – RED day took place on Saturday, May 14th, 2016. The theme was: Be Prepared: Your Force Awakens. The keynote speaker was Dr. Paul Badali and featured musical performances by a patient.

treatment studies in juvenile idiopathic arthritis, systemic lupus erythematosus and neonatal lupus, scleroderma, dermatomyositis, vasculitis and central nervous system vasculitis; in addition we have a strong translational and basic science research program.

Our mandate is to provide excellent scholarly clinical care, undertake research studies about systemic inflammatory disorders and inflammatory diseases of the bones and joints in childhood, and train physicians to become prominent leaders in the field of Paediatric Rheumatology.

HONORS AND AWARDS

Yeung, R: Winner of the Abraham Shore Lectureship Award, Calgary, Alberta, Canada. October, 2015.

Laxer, R: Winner of the CRA Distinguished Rheumatologist Award, Canadian Rheumatology Association Annual Meeting, Lake Louise, Alberta, Canada. February, 2016.

BOOK CHAPTERS

Ferguson, PJ, Laxer RM. Autoinflammatory Bone Disorders. In: Textbook of Pediatric Rheumatology – 7th Edition (Petty R, Laxer R, Lindsley C, Wedderburn L, eds). Elsevier 2015: pp. 627-641.

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GRANTS AND FUNDING

A Double-Blinded, Placebo-Controlled, Multicenter Study of the Efficacy and Safety of the Adalimumab in Pediatric Patients with Enthesitis Related Arthritis. Burgos-Vargas, R, Tse, S.M. **Abbott International.** \$174,792 CAD. December 1, 2010 – November 30, 2015

A multicenter, open-label study to assess the pharmacokinetics, safety, and efficacy of certolizumab pegol in children and adolescents with moderately to severely active polyarticular-course juvenile idiopathic arthritis. Schneider R. **UCB Bioscience.** \$384,545 CAD. January 1, 2013 – December 31, 2018

A Multi-center, Randomized Parallel Group, Placebo-Controlled Double-Blind Trial to Evaluate the Safety, Efficacy, and Pharmacokinetics of Belimumab, a Human Monoclonal Anti-BLyS Antibody, Plus Standard Therapy in Pediatric Patients with Systemic Lupus Erythematosus (SLE). Levy DM. **GlaxoSmithKline.** \$584,240 CAD. March 1, 2013 – March 1, 2016

A phase I pharmacokinetic and safety study of tocilizumab (TCZ) in patients less than 2 years old with active systemic juvenile idiopathic arthritis (sJIA). Schneider R. **Hoffman La Roche.** \$45,721 CAD. April 1, 2012 – March 31, 2016

A phase Ib, open-label, multicenter study to investigate the pharmacokinetics, pharmacodynamics, and safety of tocilizumab following subcutaneous administration to patients with polyarticular-course juvenile idiopathic arthritis. Schneider R. **Hoffman La Roche.** \$90,280 CAD. April 1, 2014 – March 31, 2016.

An internet-based psycho-educational program for children with juvenile idiopathic arthritis (JIA) and their parents: A randomized controlled trial. Stinson, J., Benseler, S.M., Feldman, B., Spiegel, L., Tse, S.M., Campillo, S., Duffy, C., Hetherington, R., Huber, A., Luca, L., McGrath, P., Palermo, Tucker, L., Victor, C., Shiff, N., Johnson, N., Dancy, P., Berard, R. **Canadian Institutes of Health Research.** \$614,303 CAD. July 1, 2012 – June 30, 2015

An open dose escalating factor VIII prophylaxis study assessing the safety efficacy and cost-effectiveness in young patients with severe haemophilia A (Canadian haemophilia primary prophylaxis observational extension study and pharmacokinetic substudy). Blanchette, V., Feldman, B. **Bayer Canada.** \$349,418 CAD. January 1, 2013 – December 31, 2015

An open label canakinumab (ACZ885) dose reduction or dose interval prolongation efficacy and safety study in patients with Systemic Juvenile Idiopathic Arthritis (SJIA). Schneider R. **Novartis Pharmaceutical Ltd.** \$82,244 CAD. January 1, 2015 – December 31, 2106

An Open-Label Extension Study of Canakinumab in Patients with Systemic Juvenile Idiopathic Arthritis (SJIA) and Active Systemic Manifestations. Ruperto, N, Brunner H, Lovell D, Martini A, Schneider R, Silverman E, Laxer RM. **Novartis Pharmaceuticals Canada Inc.** \$92,695 CAD. July 1, 2010 – June 30, 2015

Assessing Substance Use and Concurrent Disorders in Adolescents with Chronic Conditions. Levy, D., Leslie K. **The Hospital for Sick Children Paediatrics Consultants Partnerships Grant.** \$5,660 CAD. January 1, 2014 – Present

Autoantibody conformational epitopes in Lupus and NLE. Hamilton, R., Deber, C., Jaeggi, E., Silverman, E.D., Gramolini, A. **Canadian Institutes of Health Research.** \$926,103 CAD. April 1, 2014 – Ongoing

Better Understanding of Kawasaki Disease. Yeung, R., McCrindle, B., Siminovitch, K. **Canadian Institutes of Health Research.** \$792,717 CAD April 1, 2011 – March 31, 2016

Biologic basis of heterogeneity in juvenile idiopathic arthritis. Yeung, R. **Novartis Pharmaceuticals Canada Inc.** \$150,000 CAD. January 7, 2014 – January 6, 2017

Biomarker discovery and mechanisms of fetal pathology in congenital heart block. Hamilton, R., Jaeggi, E., Standberg, L., Silverman, E.D. **Canadian Institutes for Health Research.** \$1,031,989 CAD. January 1, 2012 – ongoing

Childhood-onset systemic lupus erythematosus (cSLE) in Ontario: Determining prevalence and longterm outcomes. Silverman, E., Levy, D. **Physician's Services Incorporated Foundation.** \$158,500 CAD. August 31, 2011 – February 28, 2015

Chronic childhood vasculitis: Characterizing the individual rare diseases to improve patient outcomes. Cabral D, Benseler S, Foell D, Graham J, Hancock R, Luzmani R, Ross C, Yeung RSM. **Canadian Institutes of Health Research.** \$2,500,000 CAD. April 1, 2011 – March 31, 2016.

Chronic Childhood Vasculitis Characterizing the individual rare diseases to improve patient outcomes(Pediatric Vasculitis Initiative or PedVas). Benseler, S., Yeung, R. **University of British Columbia.** \$336,040 CAD. January 31, 2012 – January 30, 2017

CIHR Doctoral Award - Improving design and analysis of longitudinal studies of prognosis in uncommon diseases. Lim, L., Feldman, B. **Canadian Institutes of Health Research.** \$105,000 CAD. April 30, 2012 – April 29, 2015

CIHR team in linking exercise, physical activity and pathophysiology in childhood arthritis (LEAP): A Canadian Collaborative Team. Duffy, C., Benseler, S.M., Laxer, R.M., Schneider, R., Silverman, E., Spiegel, L., Tse, S., Yeung, R., Tucker, L., Baxter-Jones, A., Houghton, K., Macdonald, H., McKay, H., Oen, K., Rosenberg, A., Roth, J., Ward, L., Feldman, D., Guzmán, J., Stringer, E., Boire, G., Cabral, D., Cameron, B., Campillo, S., Chédeville, G., Cheung, A., Dancey, P., Ellsworth, J., Huber, A., Johnson, N., Karunanayake, C., Lang, B., Miettunen, P., Pullenayegum, E., Ramsey, S., Scuccimarri, R., Schmeling, H., Turvey, S., Watanabe Duffy, K. **Canadian Institutes of Health Research.** \$2,500,000 CAD. April 1, 2010 – December 31, 2015

Congenital Heart Block International Research Network. Hamilton, R., Jaeggi, E., Hornberger, L., Silverman, E.D. **Canadian Institutes of Health Research.** \$311,172 CAD. June 1, 2012 – May 1, 2015

Creation of a Mobile Application to Support Self-Management for Adolescents with SLE. **Lupus Foundation of America.** Kaufman, M., Levy, D. \$110,000 USD. June 1, 2012 – ongoing

Developing MR imaging guidelines and outcome measures in Juvenile Idiopathic Arthritis: A special interest pediatric research group. Doria, A.S., van Rossum, MAJ., Benseler, B., Miller, E., Rosenberg, A., Roth, J., Stinson, J., Tse, S., Yeung, R. **Canadian Institutes of Health Research.** \$24,954 CAD. January 1, 2013 – January 1, 2018

Developing Interdisciplinary Knowledge Exchange Capacity on Imaging Outcome Measures for Assessment of Hemophilic Arthropathy Between China and Canada. Doria, A., Benseler, S.M., Stinson, J., Tse, S., Spiegel, L. **Canadian Institutes of Health Research.** \$450,000 CAD. January 1, 2013 – January 1, 2018

Effectiveness of certolizumab in Polyarticular JIA. Silverman E, Levy D. **UCB Pharma.** \$500,000 USD. April 1, 2014 – Present

Effects of Pubertal Hormone Changes on SLE. O’Neal, K., Levy, D.M. **Indiana University.** \$35,000 CAD. October 1, 2012 – September 1, 2015

Evaluating a new Pilot Model of Care for Pediatric Rheumatology in Ontario. **The Hospital for Sick Children Paediatric Consultants Partnership Grants for Creative Professional Activity.** Levy, D. \$10,000 CAD. Dec 17, 2014 – Dec 16, 2015

Exploring the Lived Experiences of Children with Facial Morphea. Laxer RM, Pope E, O’Brien C, Boydell K. **Scleroderma Society of Ontario.** \$4,500 CAD. January 1, 2015 – December 31, 2015

From molecules to disease-Dissecting the mechanisms underlying tissue specific inflammation in Kawasaki Disease. Yeung, R. **Arthritis Research Foundation.** \$83,472.20 CAD. August 31, 2013 – August 30, 2015

iCanCope with Pain: Usability and Feasibility Testing of a Smartphone Application to Manage Pain in Youth with Arthritis. Stinson, J., Laxer, R.M., Feldman, B., Luca, N., Spiegel, L., Laloo, C., Connelly, M., Menna-Dack, D. **The Arthritis Society.** \$327,000 CAD. October 1, 2014 – September 30, 2017

Identifying risk factors for decline of kidney function in systemic lupus erythematosus. Silverman, E.D., Hiraki, L.T., Paterson, A.D. **Lupus Foundation of America (LFA), Pediatric Lupus.** \$100,000 USD. January 1, 2015 – Present

Improving the Care of Patients with Systemic Vasculitis through the Development of Management Recommendations and Educational Materials: a Canadian Vasculitis Network (CanVasc) Initiative. Pagnoux, C., Barra, L., Khalidi, N., Carette, S., Milman, N., Yeung, RSM, Benseler, S., Twilt, M., Baldwin, C., Reich, H., Walsh, M., Towheed T., Towheed, Liang, P., Pineau, C., Bakowsky, V., Dipchand, C., Yacyshyn, E., Kam, S., Cabral, D., Trudeau, J., Fifi-Mah, A., Taylor-Gievre, R., Robinson, D., Famorc, L. **Canadian Rheumatology Association (CRA) Awareness/Advocacy/Education Grant.** \$90,170 CAD per year. June 1, 2015 – May 31, 2017

International OMERACT Collaboration Towards Validation of MRI Scoring Systems as Outcome Measures for Assessment of Juvenile Idiopathic Arthritis. Doria A, Benseler SM, Miller E, Spiegel L (Co-I), Stimec J, Stinson J, Tse S, van Veenendaal M. **Canadian Institutes of Health Research.** \$150,000 CAD. April 1, 2013 – March 31, 2016

International Study: Safety and efficacy of belimumab in pediatric SLE. Silverman E, Levy D. **GSK.** \$640,000 CAD. April 1, 2013 – March 31, 2020.

It’s not just about getting along: Discourses of Collaboration and Team Learning. Martimianakis T, Mylopoulos M, Schneider, R., Tse, S. **Royal College/AMS CanMEDS Research and Development Grant.** \$23,910 CAD. April 1, 2014 – March 31, 2016

Jointly Managing JIA Online: An Internet-based Psycho-educational Game for children with Juvenile Idiopathic Arthritis (JIA) and their Parents. Stinson, J.N., Berard, R., Feldman, B., Mcgrath, P., Tucker, L., Campillo, S., Huber, A., Shiff, N., Victor, J., Dancey, P., Johnson, N., Spiegel, L., Duffy, C., Luca, N., Tse, S. **Canadian Institutes of Health Research.** \$415,817 CAD. June 1, 2014 – December 31, 2016

Kawasaki Disease: On our way to unraveling the pathogenesis. Yeung, R. **Canadian Institutes of Health Research (CIHR)** \$798,779 CAD. March 31, 2011 – March 30, 2016

Knowledge Synthesis Program. Principal Investigator: Stinson J. Co- Investigator: Benseler, S.M., Feldman, B., Spiegel, L., Tse, S.M., Campillo, S., Duffy, C., Hetherington, R., Huber, A., Luca, L., McGrath, P., Palermo, Tucker, L., Victor, C., Shiff, N., Johnson, N., Dancy, P., Berard, R. Funding. **Canadian Institutes of Health Research.** \$614,303 CAD. January 1, 2012-January 1, 2015

LEAP Biobank Service Agreement (Protocol funded by CIHR titled Linking Exercise, Activity and Pathophysiology in Juvenile Idiopathic Arthritis Study (LEAP Study). Yeung, R. **Children’s Hospital of Eastern Canada.** \$89,681 CAD. January 31, 2011 – March 31, 2016

“Moving on”: Perspectives of young people with arthritis, their caregivers, and health care providers on transition. Luca, N., Stinson, J., Spiegel, L., Elliott, A., Johnson, N., Toupin-April, K., Johns, C., Rosettis, A., Mosher, D, Ahola Kohut, S. **Canadian Institute for Outcomes in Rheumatology.** \$76,953 CAD. July 1, 2014 – June 30, 2016.

Multicenter Study of the Efficacy and Safety of the Adalimumab in Pediatric Patients with Enthesitis Related Arthritis. Burgos-Vargas, R., Tse, S.M. **Abbott International.** \$174,792 CAD. January 1, 2010 – January 1, 2015.

Multi-site Randomized Clinical Trial of FIT Teens for Juvenile Fibromyalgia. Kashikar-Zuck S, Stinson J, Feldman B, Tse S calendar months. **NIH/NAIMS.** \$107,018 USD. July 1, 2016 – June 30, 2021

Novel MRI Technology as a Biomarker of Early Joint Changes and Responsiveness to Therapy in Juvenile Idiopathic Arthritis. Doria, A., Feldman, B., Rosenberg, A., Schneider, R., Silverman, E., Spiegel, L., Benseler, S., Crawley, A., Laxer, R., Tse, S., Babyn, P., Mikulis, D., Miller, E., Stinson, J., Yeung, R. **Canadian Institutes of Health Research, The Natural Sciences and Engineering Research Council of Canada.** \$300,000 CAD. October 1, 2012 – September 1, 2015

NADPH oxidase function in the pathogenesis of pediatric IBD and JIA. Brumell, J., Muise, A., Vallance, B., Benchimol, E., Ellis, J., Parkinson, J., Yeung, R. **Canadian Institutes of Health Research.** \$2,500,000 CAD. July 1, 2014 – June 30, 2019

Periodic Fever Syndrome in Canada: Canadian Pediatric Society Prevalence Study. Dancey, P., Benseler, S., Junker, A., Laxer, R.M., Miettunen, P., Turner, L., Gattorno, M. **Canadian Pediatric Society, Novartis Pharmaceuticals Inc.** \$73,270 CAD. September 1, 2010 – September 1, 2014

Precision Decisions to STOP-JIA. Yeung, RSM., Goldenberg, A., Mellins, E., Tomlinson, G., Schanberg, L., Singer, N., Nigrovic, P., Morris, Q., Albani, S., Ringold, S., Thompson, S., Kimura, Y. **The Arthritis Foundation.** \$805,950.64 USD. April 1, 2015 – March 31, 2017

Ro52 Antibody Targets with dual roles in Lupus and NLE. Hamilton, R., Silverman, E.D. **Alliance for Lupus Research.** \$586,426 USD. June 1, 2014 – ongoing

Servicing Ontario's Children and Youth with Arthritis. Feldman, B., Levy, D., Laxer, R., Schneider, R., Roth, J., Berard, R., Soon, G., Blanchette, N., Whitney-Mahone, K., Murray, S., O'Brien, C., Graham, N. **The Arthritis Society.** \$54,780 CAD. October 1, 2013 – September 30, 2014

Subcutaneous tocilizumab in Polyarticular JIA. Silverman, ED., Levy, D. **Roche Pharmaceuticals.** \$40,000 CAD. January 1, 2014 – December 31, 2017

TAS iCanCope – “iCanCope with Pain: Usability and Feasibility Testing of a Smartphone Application to Manage Pain in Youth with Arthritis. Stinson, J., Laxer, R., Feldman, B., Luca, N., Spiegel, L. **The Arthritis Society.** \$327,000 CAD. October 1, 2014 – September 30, 2017

The Arthritis Society/CAN Graduate Phd Salary Award Competition. Yeung, R. **The Arthritis Society.** \$31,500 CAD. August 31, 2013 – August 30, 2016

The effect of creatine supplementation on muscle function in childhood myositis. Feldman, B.M., Stephens, S., Wells, G.D., Tien, I., Schulze, A., Schneiderman, J. **The Myositis Association.** \$100,000 CAD. April 1, 2014 – March 30, 2016

The Hemophilia Joint Health Score v2.1 Validation in Adult Patients Study: (HJHS - VAPS) A multi-centre international study. St-Louis, J., Feldman, B. **International Prophylaxis Study Group** \$88,735.19 CAD. December 1, 2014 – June 30, 2016

The genetics of kidney function decline in pediatric lupus. Silverman, ED, Hiraki, LT, Paterson, AD. **Lupus Foundation of America (LFA), Pediatric Lupus.** \$100,000 USD. April 1, 2015 – March 31, 2016.

Towards a better understanding of Kawasaki Disease. Yeung, R., McCrindle, B. **Canadian Institutes of Health Research.** \$792,717 CAD. December 31, 2010 – March 30, 2016

Translating Research into Practice Identifying Factors that Influence the Uptake of Canadian Research Findings in the Clinical Care of Children with Arthritis. Levy, D., Stringer, E. **Canadian Initiative for Outcomes in Rheumatology Care (CIORA).** \$74,990 CAD. January 1, 2015 – Present

Understanding the Biological Basis of Juvenile Spondyloarthritis. Tse, S.M., Yeung, R., Anderson, M. **Spondyloarthritis Research Consortium of Canada.** \$25,000 CAD. July 1, 2014 – June 30, 2016

STAFF LISTING

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GRAND ROUNDS

The Department of Paediatrics Grand Rounds are held weekly and serve as the flagship academic activity for the Department of Paediatrics.

The Grand Rounds Committee during the period April 2015 - March 2016 was chaired by Lillian Sung and included Ronald Laxer (past Chair), Eyal Cohen, Anu Wadhwa, Marvin Gans, Theo Moraes, Sanjay Mahant, Mallory Downie and Andrew Helmers.

The summer Grand Rounds series, coordinated by the Chief Residents, allows senior trainees and subspecialty fellows to provide updates within specific specialties and sub-specialties. The sessions entitled “Daneman and Friends” continue to be a highlight of the program. For these Rounds, our Department Chair invites several staff to address a specific theme. As in past years, the Chief Resident’s Rounds, entitled “Cases from the Ward” remain extremely popular where two to three senior paediatric residents present unique cases that they have come across.

Professors’ Rounds are delivered by individuals who have been promoted to full professor in the Department of Paediatrics in the previous year. This past year Professors’ Rounds were given by Chris Parshuram, Patrick McNamara, Elena Pope, Jill Hamilton, Shelly Weiss, Vicky Ng, Hartmut Grasemann, Lillian Sung and Mark Palmert. Named lectureships continue to be an important component of the Grand Rounds program. This past year, Dr. Denis Daneman, the outgoing Chief, Department of Paediatrics delivered the Harry Bain Lecture. The Robert H. A. Haslam Lecture was given by Dr. Freda Miller, Cell and Molecular Developmental Neurobiologist at The Hospital for Sick Children, while Dr. Lillian Sung from the Division of Haematology/Oncology gave the Daniel Burton Leukemia Lecture as

her professorial rounds. Dr. Denise Adams from Harvard Medical School gave the Laski Lecture. Dr. Benjamin Wilfond from Seattle Children’s Hospital presented the Christine Harrison Lecture on Bioethics. Dr. Polly Ferguson from Akron gave the Abe Shore Lecture and Dr. Seetha Sankaran from the Children’s Hospital of Michigan gave the Barry Smith Lecture. Dr. Lorelei Lingard from the University of Western Ontario gave Grand Rounds as part of this year’s Medical Education Day. The inaugural Grand Rounds for “Diversity Day” focused on representation and inclusion of diverse communities was given by Dr. Joane Reede. Dr. Michelle Shouldice invited Judge Stephen Gouge to discuss Child Maltreatment and Paediatrics in an Adversarial System. A very notable Grand Rounds were given by Dr. Fergus Cameron of South Africa, during Dr. Daneman’s symposium. We were also fortunate to be able to host many additional visitors to Grand Rounds (see Schedule)

This year we continued to live-stream the Grand Rounds to members of the Department of Paediatrics. The lectures are archived for two years thus allowing department members who might not be able to attend the “live” sessions to still benefit from the lectures. This year, we also performed the first evaluation of Grand Rounds attendance and quality. Attendance to Paediatric Grand Rounds has increased over time and the quality of sessions as judged by the audience has been very high.

Once again, the Department of Paediatrics Grand Rounds Committee acknowledges the tremendous help and support of a number of individuals who do the vast majority of the behind-the-scenes work. In particular we want to thank Amoye Henry for her excellent project coordination support, and Frank Ferrari, Sam Mendolia and Roberto Linuares for their audio-visual technical expertise.

APRIL 2015 – MARCH 2016 SCHEDULE

April 1	Ingrid Tein, BSc, MD, FRCP (C) Associate Professor of Pediatrics, Staff Neurologist, The Hospital for Sick Children, University of Toronto Greg Wilson, MD, FRCP (C) Pathologist, The Hospital for Sick Children Cynthia Hawkins, MD, PhD Pathologist, The Hospital for Sick Children	Annual Clinicopathological Conference: An infant with dysmorphism, hypospadias, failure to thrive, heart disease and suspected metabolic disease
April 8	David Naylor, MD Professor of Medicine and President Emeritus, University of Toronto	R. H. A. Haslam Lecture Epistemological Cross-Currents in Modern Medicine
April 15	Ron Keren, MD, MPH Vice President of Quality and Chief Quality Officer The Children’s Hospital of Philadelphia	Diagnostic Imaging and Antimicrobial Prophylaxis for Children Diagnosed with a UTI
April 22	Felix Ratjen, MD PhD FRCP FERS Head, Division of Respiratory Medicine Sellers Chair of Cystic Fibrosis Professor, University of Toronto The Hospital for Sick Children	Healthier Children. Better outcomes: Cystic Fibrosis in the 21st century
April 29	John D. Lantos, MD Professor of Pediatrics, University of Missouri Kansas City School of Medicine Director, Children’s Mercy Bioethics Center	Current Controversies in Paediatric Bioethics
May 6	Karen Leslie MD, MEd FRCP Professor of Paediatrics Division of Adolescent Medicine Hospital for Sick Children Director, Centre for Faculty Development University of Toronto	Surviving Thriving in Academic Medicine: The role of Faculty Development
May 13	Matthew L. Warman, MD Investigator, Howard Hughes Medical Institute Professor of Genetics and Orthopaedic Surgery, Harvard Medical School Director, Orthopaedic Research Laboratories, Boston Children’s Hospital	Heritable Skeletal Fragility Disorders, New Genes, New Pathways, New Therapies
May 20	Sanjay Mahant, MD MSc FRCP Division of Paediatric Medicine Hospital for Sick Children Associate Professor, Department of Paediatrics University of Toronto	Excellent Clinicians: Humility over Hubris
May 27	Allison A. Eddy, MD, FRCP Head, Department of Paediatrics University of British Columbia Chief of Paediatric Medicine BC Children’s Hospital	Science and Chronic Kidney Disease: Adventures, Discoveries And Life Lessons.
June 3	Tim Keiffer, PhD Professor, Cellular & Physiological Sciences and Surgery University of British Columbia	Cell-Based Insulin Replacement for Diabetes”

APRIL 2015 – MARCH 2016 SCHEDULE cont'd

June 17	Steven Mittelman, MD, PhD Children's Hospital of Los Angeles Department of Endocrinology Assistant Professor of Pediatrics and Physiology & Biophysics	Daniel Burton Lecture: Obesity and Cancer: Lessons from Childhood Leukemia
July 8	Adi Ovadia & Luis Murguia Immunology & Allergy Resident Rounds	From infancy to adulthood: the unique spectrum of immunodeficiencies
July 15	Nicole Coles, Meg Wolfe-Wylie & Jennifer Galle Endocrinology Resident Rounds	Got Milk? The Many Faces of Hypocalcemia
July 22	Ayeshah Chaudhry, Rebekah Jobling, Maha Saleh & Pierre Sinajon Clinical Genetics Resident Rounds	Exome Sequencing – One test, two diagnoses, three lives
July 29	Chia Wei Teoh, Murali Bhagavatula & Hassan Faqeehi Nephrology Resident Rounds	Hyperkalaemia: A Potpourri of Clinical Cases
August 5	Maria Jose Soto & Shilpa Shah Critical Care Medicine Resident Rounds	Madness in the Method of Stayin' Alive: Controversies in CPR
August 12	Ajibola Alabi, Nancy Nashid & Jacqueline Wong Infectious Diseases Resident Rounds	Hit Me With Your Best Shot: The Meningococcal B Story
August 19	Mehul Jariwala & Andrea Human Rheumatology Resident Rounds	Running Hot: an Approach to Recurrent Fevers
August 26	Conall Morgan, Ronand Ramroop & Emilio Alvarellos Cardiology Resident Rounds	Physiology, Management and Outcomes of Hypoplastic Left Heart Syndrome
September 2	Karen Thomas, Amina Benlamri, NICU Fellows Neonatology Resident Rounds	The Breast Milk Challenge
September 9	Bernard Kaplan, MBBCh, FAAP Professor of Pediatrics, Perelman School of Medicine at the University of Pennsylvania	Re-imagining The Hemolytic Uremic Syndromes
September 16	Jennifer Stinson, PhD, RN-EC, CPNP Associate Professor Nursing, Paediatrics, University of Toronto Centre for the Study of Pain Mary Jo Haddad Nursing Chair in Child Health	Improving Outcomes in Child Health: Harnessing the Potential of Electronic and Mobile Technologies
September 23	Cancelled for Yom Kippur	
September 30	Joan Y. Reede, MD, MS, MPH, MBA Dean for Diversity and Community Partnership at Harvard Medical School	Diversity Day: Diversity Inclusion Achieving Excellence through Diversity
October 7	David Goldbloom, OC, MD, FRCPC Professor, Senior Medical Advisor, Centre for Addiction and Mental Health; Professor of Psychiatry, University of Toronto	The Mental Health Commission of Canada – The First Eight Years.

APRIL 2015 – MARCH 2016 SCHEDULE cont'd

October 14	Susan Swedo, MD Pediatrics and Developmental Neuroscience Branch (PDNB) National Institute of Mental Health Magnuson Clinical Center Bethesda, Maryland	Research in the field of Paediatrics and Neuropsychiatry
October 21	Victor Blanchette, MD, MA, MB, MRCS, LRCP, DCH, MRCP, FRCP(C), FRCP McCaig Magee Medical Director, SickKids-Caribbean Initiative Centre for Global Child Health Hospital for Sick Children	Global Research Partnerships: Hemophilia as a Model Disease
October 28	Christopher Parshuram, MB.ChB. DPhil. FRACP Professor, Critical Care Medicine & Paediatrics, Critical Care Medicine, Health Policy Management & Evaluation Hospital for Sick Children	Safety Scientist Experiments
November 4	Denise M. Adams, MD Marjory J. Johnson Chair of Vascular Tumor Research Medical Director, Hemangioma and Vascular Malformation Fellowship Director, Hematology / Oncology Professor, UC Department of Pediatrics	Vascular Anomalies 2015
November 11	Benjamin Wilfond, MD Director, Treuman Katz Center for Pediatric Bioethics Professor and Chief, Division of Bioethics; Professor, Pulmonary and Sleep Medicine, Department of Pediatrics; Seattle Children's Hospital	Christine Harrison Lecture: Tracheostomies and Assisted Ventilation in Children with Profound Disabilities: Navigating Family and Professional Values
November 18	Jovian Collins, MD, Madeline Drake, MD, Jessica Malach, MD, Ursula Madej, MD	Cases from the Wards
November 25	Denis Daneman, MBBCh FRCPC DSc(Med) Professor and Chair, Department of Paediatrics, University of Toronto Paediatrician-in-Chief, The Hospital for Sick Children	The Patient Teacher: In the shoes of Harry Bain
December 2	Lillian Sung MD, PhD Professor, Department of Paediatrics, Senior Scientist, Child Health Evaluative Sciences, The Research Institute The Hospital for Sick Children	Helping Kids Feel Better: Putting the SPARK in Healthcare
December 9	Patrick McNamara, MB, FRCPC Professor, Department of Paediatrics, Staff Neonatologist, Associate Scientist, Research Institute The Hospital for Sick Children	Redefining the Foundations of Neonatology: Role of Physiology in Guiding Cardiovascular Care
December 16	Paediatric Residents	Holiday Skits

APRIL 2015 – MARCH 2016 SCHEDULE cont'd

January 13	Elena Pope MD Division of Paediatric Medicine (Dermatology) Professor, Department of Paediatrics, The Hospital for Sick Children	Working with Orphan Diseases: Challenges and Opportunities
January 20	Ryan Smith, MD Shazeen Suleman, MD Holden Sheffield, MD	Cases from the Wards
January 27	Jill Hamilton MD, Division of Endocrinology Professor, Department of Paediatrics, The Hospital for Sick Children	The “ABCs” of Childhood Obesity
February 3	Shelly Weiss, MD Division of Neurology Professor, Department of Paediatrics, The Hospital for Sick Children	Better nights, better days; a clinical and research update in the evaluation and treatment of insomnia in children with neurodevelopmental disabilities
February 10	Vicky Ng, MD Division of GI Professor, Department of Paediatrics, The Hospital for Sick Children	Pediatric Liver Transplantation in 2016: Something for Everyone to Care About
February 17	Paediatric Residents	Resident Grand Rounds: Cases from the Wards
February 24	Hartmut Grasemann, MD Division of Respiratory Medicine Professor, Department of Paediatrics, The Hospital for Sick Children	The Nitric Oxide Paradox in Asthma, Obesity, and beyond...
March 2	Lorelei Lingard, MD Founding Director & Senior Scientist, CERI Professor, Department of Medicine Professor, Faculty of Education Adjunct Professor, Department of Family Medicine Associate Scientist, Lawson Health Research Institute	Myths and Truths about Clinical Teamwork, and how we understand “Competence” in Medical Education
March 9	Catherine Birken, MD Division of Paediatric Medicine Associate Professor, Department of Paediatrics, The Hospital for Sick Children	TARGeting Child Health Prevention Research in Community Settings – how can we move this field forward?
March 16	Cancelled for March Break	
March 23	Seetha Shankaran, MD Professor of Pediatrics Wayne State University School of Medicine Director, Division of Neonatal/ Perinatal Medicine Children’s Hospital of Michigan and Hutzel Women’s Hospital	Barry Smith Lecture: Hypothermia for Neonatal HIE, current and future directions
March 30	Fergus Cameron, BMedSci, MBBS, DipRACOG, FRACP, MD Director, Diabetes Services Deputy Director of the Department of Endocrinology and Diabetes and Director Healthy Bones Unit Royal Children’s Hospital Melbourne	Dr. Daneman’s Symposium: The cargo cult of diabetes care-perspectives from the Antipodes

MEDICAL EDUCATION TRAINING AND SCHOLARSHIP IN THE DEPARTMENT OF PAEDIATRICS, UOFT, 2015-2016

The Department of Paediatrics is committed to providing the best possible training for future paediatricians. This report serves to recognize the excellence and dedication of our teachers, educators and education leaders in realizing this goal. It celebrates their achievements and outlines promising new directions for research, innovation, teaching and development in medical education. Our educational story is one of constant renewal and growth. Ongoing work by our educators address gaps and maximize the opportunities for learning offered to students and trainees. Our educational leaders and their committees ensure that our training programs incorporate the most effective educational practices and that our graduating physicians are competent and committed to clinical excellence and are poised to make important contributions to paediatric healthcare research and education.

This year we would like to extend our profound gratitude to Dr. Denis Daneman for his unwavering support of the Department’s educational enterprise during his tenure as Chair of the Department of Paediatrics. He challenged us to strive for excellence, fueled our creativity, provided the resources to appropriately support our educational initiatives, created new opportunities for the growth and development of students, residents, fellows and faculty and nurtured and mentored a new generation of academic leaders. Dr. Daneman has been a hands-on teacher and educator, engaging trainees and teachers alike with his infectious enthusiasm, getting to know our personal stories, stretching our perspectives and enlarging our imaginations.

Many new programs and initiatives have stemmed from his vision and direct support. The Office of Medical Education was expanded with new, separate, but collaborative roles for the Associate Chair (Education) and the Director of Postgraduate Education. In addition two new portfolios, Education Scholarship and Faculty Development were established. New student research programs, SPRESS the PERC summer program, are now well established and thriving. Perhaps most importantly, Dr. Daneman has infused our programs, trainees and faculty with his humanitarian spirit and social consciousness, challenging us to always remember the essence of what we do.

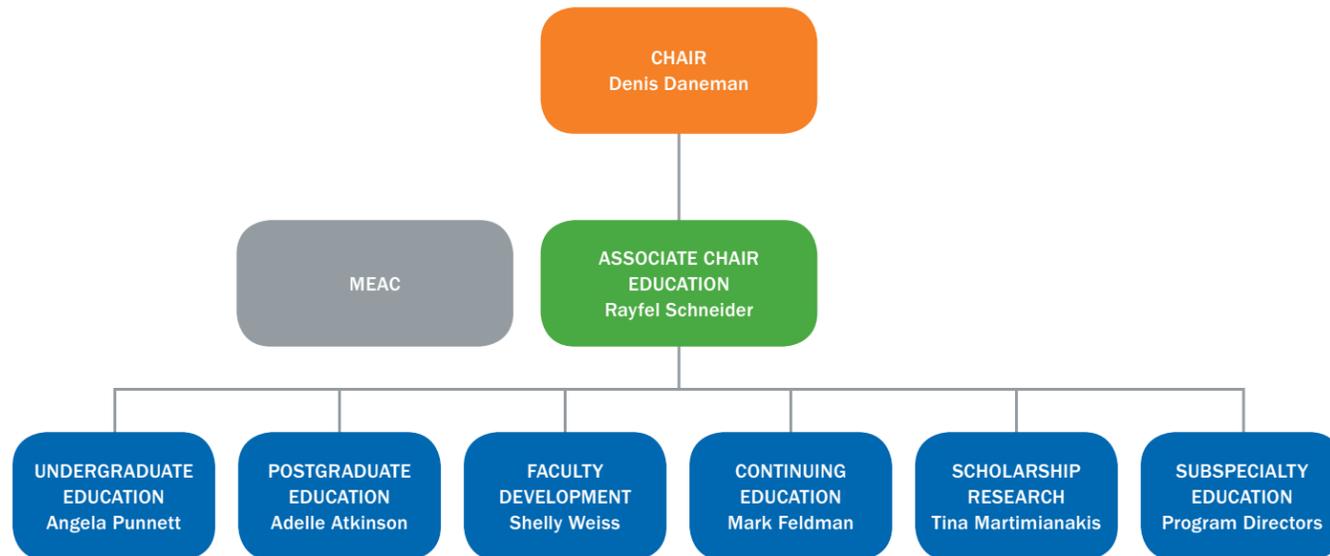
Rayfel Schneider,
Professor of Paediatrics
Associate Chair, Medical Education

EDUCATION ORGANIZATION

The Department of Paediatrics supports medical education through the Undergraduate, Postgraduate and Continuing Education portfolios and the offices of Faculty Development and Medical Education Scholarship. Educational activities in the Department of Paediatrics are led by Dr. Rayfel Schneider, the Associate Chair (Education) and the Medical Education Advisory Committee (MEAC). The MEAC works to enhance excellence in teaching and education and to increase

the recognition of the educational achievement of trainees and faculty. It also serves to foster collaborations and networks with other groups interested in education and to provide advice and guidance to the Chair with regard to educational priorities.

The activities of the education portfolios and the educational accomplishments of faculty and trainees are provided in the body of the report.



Educational Administrative Staff

Mary Antonopoulos, Undergraduate Education
 Joanna Barnes, Undergraduate Education
 Margarita Komarova, Undergraduate Education
 Susan Jenkins, Administrative Supervisor
 Sandra Layno, Postgraduate Education
 Josefina Bento, Postgraduate Education
 Michelle Wan, Continuing Medical Education
 Clare Schlesinger, Faculty Development & Medical Education Scholarship

Education Scientists

Tina Martimianakis, PhD, Department of Paediatrics
 Maria Mylopoulos, PhD, Learning Institute and Department of Paediatrics
 Catharine Walsh, MD, FRCPC, PhD, Learning Institute and Department of Paediatrics

Education Evaluator

Kathryn Parker, PhD, Holland-Bloorview Hospital and Department of Paediatrics

Faculty pursuing formal training in education 2015-2016

Blaithnaid McCoy (Education Scholars Program)
 Damian Noone (Education Scholars Program)
 Sherri Baine (Stepping Stones)
 Jordan Carr (Stepping Stones)
 Gordon Soon (Stepping Stones)
 Suzan Schneeweiss (NEAL)

Trainees pursuing formal training in education 2015-2016

Mohammad Zubairi, (Masters in Education)
 Julia Sharp (Stepping Stones)
 Leanne Shamrakov (Stepping Stones)
 Rebecca Smith (Stepping Stones)
 Rachel Markin (Stepping Stones)
 Rebecca Levy (Stepping Stones)

Faculty completed formal training in education 2015-2016:

Clare Hutchinson, (Masters in Education)
 Michaela Cada (Education Scholars Program)
 Emma Cory (Education Scholars Program)
 Katherine Hick (Education Scholars Program)
 Angela Orsino (Education Scholars Program)
 Sharon Naymark (Stepping Stones)
 Melissa Carter (Stepping Stones)

Trainees who completed formal training in education 2015-2016:

Maha Saleh (Stepping Stones)
 Melanie Ostreicher (Stepping Stones)
 Joanna Humphreys (Stepping Stones)

EDUCATIONAL TRAINING IN THE DEPARTMENT OF PAEDIATRICS

UNDERGRADUATE EDUCATION

Director

Dr. Angela Punnett

Educational Program Coordinators

Mary Antonopoulos

Joanna Barnes

Members of the Pediatric Undergraduate Education

Committee (PUGMEC):

Dr. Hosanna Au

Dr. Nirit Bernhard

Dr. Zia Bismilla

Dr. Mark Feldman

Dr. Emer Finan

Dr. Claudio Fregonas

Dr. Claire Hutchinson

Dr. Sheila Jacobson

Dr. Miriam Kaufman

Dr. Angela Punnett

Dr. Seetha Radhakrishnan

Dr. Shawna Silver

Dr. Susanna Talarico

Dr. Talya Wise

Dr. Jennifer Young

Dr. Angela Orsino (Holland-Bloorview)

Dr. Dror Koltin (THP-CVH)

Dr. Katarzyna Gwiazda (THP-MH)

Dr. Gagandeep Saund (Brampton)

Dr. Anna Selliah (WOHC)

Dr. Clare Hutchinson (NYGH)

Dr. Janet Saunderson (TEGH)

Dr. Sohail Cheema (SMH)

Dr. Sharon Naymark (SJHC)

Dr. Raymond Shu (SGH- Birchmount)

Dr. Peter Azzopardi (SGH-General)

Dr. Jeff Weisbrot (YCH)

Dr. Joseph Porepa (HRRH)

Dr. Yehuda Mozes (RVCH)

U of T medical students:

Chief Pediatric Residents:

Mallory Downie & Andrew Helmers

Highlights from 2015-2016

The Longitudinal Integrated Clerkship (LInC) program expanded to include students at 3 academies this year. We would like to extend our thank you to our local and community faculty for their continued support and supervision of students in this new model. The final touches for the new Foundations Curriculum for Preclerkship are nearing completion. This integrated learning model and earlier introduction to clinical medicine will commence in the Fall of 2016.

Continuing our record for leadership in UME at the University, the following faculty have been appointed to new positions: Hosanna Au as Director of Life Cycle Course in the Foundations curriculum in addition to her myriad of other leadership roles in UME; Nirit Bernhard as Director of Portfolio, a rapidly expanding course that expands preclerkship and clerkship; Mara Cole as Co-Site Director with Sharon Naymark at St Joseph's Health Centre; Ra Han as Co-Director of the LINC program at the Fitzgerald Academy; Sally Kenawy and Gilbert Miller as Co-Site Directors at Humber River Regional Hospital; Leah Tattum as Site Director at the Scarborough Hospital- General; Kushal Raghbir as Site Director at the Scarborough Hospital- Birchmount. A big thank you to exiting site directors Nirit Bernhard (SJHC), Joseph Porepa (HRRH), Peter Azzopardi (Scarborough-General), and Raymond Shu (Scarborough-Grace) for their years of outstanding service in their roles. Finally, a heart-felt congratulations and best wishes to two amazing paediatric leaders: Jay Rosenfield, who completed his 10-year term as Vice Dean, Undergraduate Medical Education and Denis Daneman, who is completing his 10-year term as Chair, Paediatrics. We look forward to working with Ronald Cohn as incoming Chair, Paediatrics.

Congratulations to the teaching award winners this year:

RHA Haslam Pre-Clerkship Teaching Award

Susanna Talarico

Lionel Weinstein Clerkship Teaching Award

Shawna Silver

Community Paediatrics Clerkship Teaching Award

Nick Blanchette

Preclerkship

Our office continues to host the summer research and clinical programs - PeRCS (10 students) and SPReSS (9 students) and we would like to thank participating faculty for providing diverse projects, mentorship and role modelling. Thank you also to our staff leaders Binita Kamath & Seetha Radhakrishnan (PeRCS) and Susanna Talarico (SPReSS) for coordinating these highly successful research programs.

As we transition to the Foundations curriculum, this is will be the final year of the MMMD curriculum and ASCM for general Paediatrics in the 2nd year of preclerkship. We greatly appreciate the contributions of faculty and residents to lectures, seminars, PBL, and clinical skills teaching during these courses. We look forward to exciting new opportunities in the new curriculum.

Clerkship

SickKids hosted the 5th annual Paediatric Undergraduate Program Directors of Canada (PUPDOC) in the Fall of 2015. The Directors worked on a new electronic educational card game under the direction of their special guest, Mike Paget, E-learning Manager at University of Calgary. This promises to be a great tool for students. Locally, the 6-week core clerkship program involves at least 250 teachers across 12 sites and the LINC program now spans 3 academies with plans for further growth. A dedicated undergraduate education committee provides oversight for orientation, educational activities and learning environment issues. In addition, Paediatrics continues to offer a wide selection

of popular electives and selectives (TTR placements). At Convocation Hall last year we congratulated the following winners for their Awards in Paediatrics:

Dr. Roy Simpson Scholarship in Paediatrics

Pamela Anne Newman

Dr. Yumin Li Access to Excellence in Paediatrics Award

Julia Alexandra Maria DiLabio

Dr. Yumin Li Access to Excellence in Paediatrics Research Award

Shama Sud

Dr. Carl Witus Prize in Paediatrics

Esther Kitai Rosenthal

The final word always goes to our teachers, the heart of this education program. Thank you for your ongoing commitment to and enthusiasm for education. You are an inspiration to our students and our community!

POSTGRADUATE EDUCATION

Director

Dr. Adelle Atkinson

Educational Administrative Staff

Sandra Layno

Josefina Bento

Members of the Postgraduate Education Committee 2015/16

Dr. Adelle Atkinson, Dr. Ann Jefferies, Dr. Eddy Lau, Dr. Michelle Shouldice, Dr. Melinda Solomon, Dr. Elizabeth Jimenez, Dr. Aideen Moore, Dr. Jeff Kobayashi, Dr. Michael Hill, Dr. Clare Hutchinson, Dr. Silvio Gonzalez, Dr. Ra Han, Dr. Shawna Silver, Dr. Katherine Hick, Dr. Dr. Andrew Helmers, Dr. Mallory Downie, Dr. Brie Yama, Dr. Thomas McLaughlin, Dr. Laura Kinlin, Dr. Michelle Gould, Dr. Melanie Bechard, Dr. Elizaveta Limenis, Dr. Carol Lam, Dr. Suparna Sharma, Dr. Shazeen Suleman, Dr. Savithiri Ratnapalan

TOTAL NUMBER OF CORE PAEDIATRIC RESIDENTS 2015/16

PGY1	PGY2	PGY3	PGY4	TOTAL
21	21	20	8	70

Highlights from 2015-16

Postgraduate teaching in Paediatrics is decentralized with more than 10 sites involved in delivering our curriculum. The Core Residency Training Program trains individuals from around the world with a variety of backgrounds and training, making the program a rich environment to acquire the knowledge and skills essential to the practice of Paediatrics.

The core program continues to be the largest training program in Canada with unparalleled resources both in depth and breadth of patient problems as well as an outstanding teaching and research faculty. It has full approval as an accredited Royal College training program and attracts the most sought after candidates in the country. Applicant numbers continue to increase yearly (despite no change in medical school graduate numbers) and include international medical graduates (Canadians who studied outside North America and new immigrants to Canada). The program is rich with diversity of educational and experiential backgrounds.

The success of the core training program is largely due to faculty engagement in the process and a robust program assessment strategy. A very active Residency Program Committee oversees the administration and running of the training program, and a variety of subcommittees exist to ensure that each part of the program (resident selection, international resident selection, academic curriculum, evaluation, research, mentoring, wellness, advocacy etc.) are delivered in an evidence-informed fashion with scholarship as a natural part of the process.

The curriculum of the program is in constant evolution responding to resident feedback, Ministry of Health priorities, best practices in teaching and assessment

and the changing landscape of our community. This year we continue to enjoy a significant amount of Distributed Medical Education which the residents have embraced.

Resident scholarship continues to be of a high standard. All residents are engaged in scholarly activities on topics related to clinical research, education, patient safety, quality assurance and patient advocacy. Our Residency Scholarship Oversight Committee, continues to provide resources and guidance to the residents under the leadership of Dr. Hans Hitzler and Dr. Binita Kamath, and the engagement of multiple faculty across the organization who continue to mentor and supervise resident scholarly projects.

Some of our projects are initiated and led by our trainees and others by our teachers and educators. Some of the scholarly activities explore aspects of our programming and aim to improve our curriculum and teaching, such as looking at how residents think about assessment, and perceptions of wellness and work-life balance amongst trainees.

A primary focus for the program continues to be enhancing the teaching and evaluation of the new 2015 CanMEDS roles. There is a robust CanMEDS curriculum within the academic ½ day, which covers a wide variety of topics and a CanMEDS OSCE offered each spring with almost 100 trainees taking part. Over the last few years, real time feedback during the OSCE was introduced with tremendous success. This year, a physical examination simulation day was held during the academic ½ day for the first time, with expert faculty demonstrating and teaching the core residents these clinical skills, and then evaluating their performance and providing feedback. Since the implementation of CanMEDS 2015, there is increased emphasis on patient safety, quality and stewardship in the curriculum as well as a focus on physician wellness.

The program is starting to think forward to Competency Based assessment and the development of milestones and entrusted professional activities. The timeline for

the beginning of this transition to Competency By Design (CBD) is the fall of 2016. It is an exciting time in postgraduate medical education as we move towards a new model of ensuring competence, along the continuum through robust observational data and assessment.

Advocacy and social paediatrics continue to be a significant area of focus of the program. There are currently a number of major advocacy projects underway under the leadership of the resident advocacy group. In addition to the Gosford Park Public School, our residents are very involved with the Rosedale Heights Secondary School and Firgrove Primary school in the Jane and Finch neighbourhood. All of these schools have at risk children and youth, and have found

this collaboration beneficial for both the children and their parents. Other advocacy projects include clothing drives, The POP Clinics (a paediatric consultation clinic for uninsured children) and newsletters for inpatients as examples. Residents have been involved at the ground level in implementing these projects in a scholarly way.

The postgraduate program will soon be gearing up for another round of CaRMS resident selection, again expecting an increase in applicants. The MD/PhD program stream through CaRMS strives to attract candidates who are interested in a research career and will involve intensive research support throughout the training program.

SUBSPECIALTY EDUCATION

Chair: Dr. Rayfel Schneider, Educational Administrative Staff: Sue Jenkins

PROGRAM	PROGRAM DIRECTOR
Adolescent Medicine*	Katherine Hick ¹
Cardiology*	Jennifer Russell ¹
Clinical Genetics*	Roberto Mendoza ¹ , Melissa Carter ¹
Clinical Pharmacology*	Margaret Thompson (RC stream), Irena Nulman ¹
Developmental Paediatrics*	Anne Kawamura ¹
Emergency Medicine*	Suzanne Beno ¹ , Tania Principi ¹
Endocrinology*	Diane Wherrett ¹
Gastroenterology/Hepatology/Nutrition*	Simon Ling ¹ , Yaron Avitzur ¹
Haematology/Oncology*	Michaela Cada ¹ , Angela Punnett ¹ , Ahmed Naqvi
Immunology/Allergy*	Eyal Grunebaum ¹
Infectious Diseases*	Anu Wadhwa ¹
Neonatology*	Emer Finan ¹ , Martin Skidmore ¹
Nephrology*	Rulan Parekh ¹
Neurology*	Ann Yeh, Blathnaid McCoy
Paediatric Medicine	Michelle Shouldice, Sarah Schwartz, Sanjay Mahant
1. Academic Paediatric Medicine	Michelle Shouldice ¹ , Sarah Schwartz
2. Paediatric Dermatology	Miriam Weinstein, Elena Pope
3. Child Maltreatment	Emma Cory
4. Community Paediatric	Mark Feldman
5. Paediatric Hospital/Inpatient Medicine	Sarah Schwartz
6. Palliative Care	Kevin Weingarten
Respiratory Medicine*	Melinda Solomon ¹
Rheumatology*	Shirley Tse ¹

¹ Member of Subspecialty Program Directors Committee; * Royal College Program

TOTAL NUMBER OF POSTGRADUATE TRAINEES

Number of Subspecialty Residents	88
Number of Clinical Fellows	217
Number of Research Fellows	23
Number of Core Paediatric Residents	78
Total	396

There are 16 Royal College accredited programs in the Department of Paediatrics as well as clinical fellowships in Academic Paediatric Medicine, Community Paediatrics, Dermatology and Child Maltreatment. There are also a number of boutique, highly specialized fellowship training programs within the paediatric subspecialties. The Program Directors meet on a regular basis to discuss their programs and consider ways to better support training.

This year, our Royal College-accredited programs participated in the annual national subspecialty paediatrics match, attracting candidates from across the country. The subspecialty programs continued to attract excellent applicants from around the world. A total of 25 trainees from across Canada and the United States matched to our subspecialty programs. An additional 14 positions were allocated to highly competitive Canadian and international trainees to begin training in Paediatric subspecialties.

CONTINUING EDUCATION

Director

Dr. Mark Feldman

Educational Administrative Staff

Michelle Wan

Members of the Continuing Education Committee

Mark Feldman (Chair), Andreea Dragulescu, Trey Coffey, Bonnie Fleming-Carroll, Eyal Grunebaum, Aideen Moore, Mort Goldbach, , Morton Goldbach, Saul Greenberg, Ian Kitai, Karen Leslie, Golda Milo Manson, Mark Palmert,

Angela Punnett, Suzan Schneeweiss, Gordon Soon, Melinda Solomon, Margaret Thompson, Michael Weinstein, Shelly Weiss

Highlights from 2015-2016

Our flagship departmental CE event, Paediatric Update May 11-14, 2016 reached new heights as the already largest paediatric CE event led by a department of paediatrics in Canada, with an attendance of 300 registrants over the 4 days. This year, thirty five (35) faculty and Sickkids staff participated in the delivery of the program along with 10 guest presenters. The Conference also featured a very successful Infectious Diseases Subspecialty Day chaired by Dr. Ian Kitai, which provided an opportunity to explore emerging trends and issues that relate to major infectious diseases affecting children including a state of the art update to diagnosis, prevention and management of common and emerging infectious disease problems. To date, the 2016 subspecialty day has been our highest ever attended with over 200 paediatricians across Canada registered.

The conference also received increased financial support from the Royal College of Physicians and Surgeons this year in addition to unrestricted education grants from industry and non-profit organizations.

Recognizing the importance of assessment and feedback in continuing education, an innovative, electronic, pre & post conference test was first introduced at Paediatric Update 2014. The goal was to introduce self-assessment (pre-test), reflection (pre-conference) and peer assessment with feedback (post-test). A minimum number (25) Category

3 credits was a recent requirement of the RCPSC for our maintenance of competence. For the first time at a large paediatric conference in Canada, this 'knowledge assessment' component qualified for RCPSC category 3 (assessment) MOC credits. This year, we have continued to expand the MOC 3 program to increase the number of course offerings to 15 for 2016 compared to 10 in 2015 and 5 in 2014. Moreover, to the best of our knowledge, for the first time at any large national CE event, within any medical discipline, Test-Enhanced Learning will be critically evaluated in 2016 at Paediatric Update via a randomized controlled trial. This study is supported with a grant from the University of Toronto Education Development Fund.

For the 2015/16 academic year, Dr. Golda Milo-Manson has been recognized with a Department of Paediatrics teaching award for sustained contributions to CE in her efforts and expertise heading the very successful Developmental Paediatrics Conference and for providing invaluable insights and wisdom to our Paediatric Update Committee over many years. Her co-winner is Dr. Thomas Walters whose 2016 Dept. of Paeds CE award recognizes

excellence in Course Coordination for leading the IBD imaging course.

Faculty members throughout the Department of Paediatrics have been very active in continuing education activities again this 2015-2016 academic year. City Wide Paediatric rounds, supervised by Dr. Mark Feldman from the Division of Paediatric Medicine, continued to be a very popular event attracting 120 community-based paediatricians per quarter.

The 2015/16 academic year marked the launch of the inaugural SickKids Teaching Scholars Program. The STSP is a 'teach the teachers' interprofessional 'in-house' course intended to develop junior faculty and fellows and interprofessional staff into scholarly teachers. Full complement of 26 learners have provided high evaluations of the course and its teachers at the mid-course mark for feedback.

Finally, many more of our divisions have been engaged in a variety of educational offerings (see table 2).

TABLE 2: EDUCATIONAL OFFERINGS, DEPARTMENT OF PAEDIATRICS; JULY 1, 2015-JUNE 30, 2016

DIVISION/DEPARTMENT	COURSE DIRECTOR/SUPERVISOR	CE OFFERINGS, PAEDIATRICS JULY 1, 2015 - JUNE 30, 2016
	Dr. Lillian Sung	Weekly Paediatric Grand Rounds
	Dr. Tina Martimianakis	Monthly Medical Education Scholarship Journal Club
	Dr. Tina Martimianakis	Monthly Medical Education Scholarship Rounds
	Dr. Rayfel Schneider	Annual SickKids Paediatric Research Day May 18, 2016
	Dr. Mark Feldman	SickKids Annual Paediatric Update Conference May 11-14, 2016
	Dr. Mark Feldman, Michele Durrant	Teaching Scholars Program Sept 2015-August 2016
	Dr. Alene Toulany	Paediatric Co-Learning Curriculum in Quality Improvement Sept 16 and 17 2015, Dec 27 and 28 2015, June 3, 2016
	Dr. Shelly Weiss, Dr. Lisa Robinson	Diversity Day September 30, 2015
	Dr. Shelly Weiss	Medical Education Day March 2, 2016
Adolescent Medicine Karen Leslie, CE Lead		Weekly Divisional Rounds Wednesday at 10:30 – 11:30 am, Quarterly Journal Club

**TABLE 2: EDUCATIONAL OFFERINGS, DEPARTMENT OF PAEDIATRICS;
JULY 1, 2015-JUNE 30, 2016 cont'd**

Cardiology Andreea Dragulescu, CE Lead	Drs. Luc Mertens Jan Marek & Folkert Meijboom	Congenital and Paediatric Echocardiography From Basics to Advanced April 28 – 30, 2016
Centre for Brain and Mental Health	Dr. Frida Miller & Dr. Tony Pignatiello	8th Annual Brain & Mental Health Day Neuroscience Research Symposium April 6, 2016
Developmental Paediatrics Golda Milo Manson, CE Lead	Weekly Academic Divisional Rounds Journal Club	
	Dr. Golda Milo- Manson	Child Development Update November 13-14, 2016
Emergency Medicine Suzan Schneeweiss, CE Lead	Divisional Rounds (3x/month)	
	Dr. Suzan Schneeweiss	Annual Paediatric Emergency Medicine Conference October 1-2, 2015
	Dr. Jason Fischer	Paediatric Emergency Ultrasound Course Sept 30, 2015
	Dr. Suzan Schneeweiss	Paediatric Emergency Procedural Sedation Course September 30, 2015; April 1, 2016; July 24, 2016
	Dr. Olivia Ostrow	Advanced Paediatric Life Support Course Nov 9-10, 2015; Jan 18-19, 2016; May 9, 2016
Endocrinology Mark Palmert, CE Lead	Weekly Divisional Rounds (Also available on Ontario Telehealth Network)	
Gastroenterology Simon Ling, CE Lead	Course Directors: Drs. Anne Griffiths, Thomas Walters, Peter Church	Inflammatory Bowel Disease Global Exchange Program for paediatric IBD specialists March 4-5, 2016
	Drs. Mary-Louise Greer, Thomas Walters, Peter Church, Anne Griffiths	Magnetic Resonance Imaging in Inflammatory Bowel Disease 3rd Symposium March 6, 2016
	Dr. Yaron Avitzur	GHN Division Teaching Rounds Weekly on Wednesdays all year round
	Dr. Robert Bandsma	GHN Research Seminars Biweekly on Wednesdays September - June
	Dr. Robert Bandsma	GHN Journal Club 6 – 8 Occurrences per year
Clinical and Metabolic Genetics Roberto Mendoza, CE Lead	Weekly Divisional Rounds	
	Dr. Ronald Cohn/Adel Gilbert	Conversations with Genetics: Your Day to Day Practice The Centre for Genetic Medicine monthly seminar series. January 28-July 22, 2015
	Dr. Sarah Bowdin	Workshop in Applied Genomic Medicine May 9-11, 2016.
	Dr. David Malkin	2015 Multidisciplinary Symposium on Childhood Cancer

**TABLE 2: EDUCATIONAL OFFERINGS, DEPARTMENT OF PAEDIATRICS;
JULY 1, 2015-JUNE 30, 2016 cont'd**

Haematology/Oncology Angela Punnett, CE Lead	Weekly Divisional Rounds Journal Club	
	Dr. Suzan Williams & Dr. Leonardo Brandao	8-Week Summer Lunch and Learn Series “Bleed & Clotting disorders in Children” Weekly from July 9-August 27, 2015
	Dr. Angela Punnett	Cross Talks Garron Family Cancer Centre May 28, 2015; June 12, 2015; Feb 4, 2015
	Dr. Angela Punnett	Annual Childhood Cancer Therapy Update (CCTU) February 3, 2016
Infectious Diseases Ian Kitai, CE Lead	Dr. Upton Allen	Weekly Divisional Rounds
	Dr. Anupma Wadhwa	Journal Club Monthly October to May
	Dr. Ian Kitai	Paediatric Update – ID Day May 11, 2016
	Dr. Upton Allen	Weekly Divisional Rounds
	Dr. Valerie Waters	Infectious Disease Clinical & Research Forum A monthly series of clinical research related topics of interest to ID Fellows, Staff and other members of the ID community. February 2, 2016 February 23, 2016 March 22, 2016 March 30, 2016 April 26, 2016 May 24, 2016 June 28, 2016
Immunology Eyal Grunebaum, CE Lead	Weekly Divisional Rounds, Sept – June	
	Dr. Eyal Grunebaum	Weekly Academic Half Days Immunology Structured Educational Sessions Immunology and Allergy Divisional rounds Allergy Educational Structured Sessions
Paediatric Medicine Mark Feldman, CE Lead	Paediatric Medicine Journal Club (Bi-monthly)	
	Dr. Mark Feldman	City Wide Rounds Held 4 times annually for community based Paediatricians September 8, 2015 November 17, 2015 January 19, 2016 April 19, 2016
	Dr. Irene Lara-Corrales	Dermatology update November 25, 2016

**TABLE 2: EDUCATIONAL OFFERINGS, DEPARTMENT OF PAEDIATRICS;
JULY 1, 2015-JUNE 30, 2016 cont'd**

Pharmacology Margaret Thompson, CE Lead	Weekly Clinical Pharmacology and Toxicology Rounds Weekly Rounds for Motherisk Program	
Respiratory Medicine Melinda Solomon, CE Lead	Dr. Indra Narang	Paediatric Sleep Symposium March 6, 2015
Rheumatology Gordon Soon, CE Lead	Dr. Shirley Tse	Weekly Academic Rounds and/or Journal Club
	Dr. Brian Feldman	Immunity Cross Talks (Nov 25, 2015)
	Neely Lerman and Karen Queffelec	Rheumatology Education Day (RED) (May 14, 2016)
	Dr. Brian Feldman	Semi-Annual Rheumatology Community Rounds (Jan 19, 2016)
	Dr. Earl Silverman	Immunology Teaching Rounds
	Drs Earl Silverman, Deborah Levy and Linda Hiraki	Lupus Teaching Rounds
Neonatology Aideen Moore, CE Lead	Weekly Academic Journal Club Weekly Chief's Rounds	
	Dr. Hilary Whyte	T4 Health – Triage, Transport, Treatment and Transition Conference October 6, 2015
	Dr. Dany Weisz	15th Annual Neonatal Research Day April 20, 2016
	Dr. Kyong-Soon Lee	Canadian Neonatal Transport Network (CNTN) Annual Meeting October 5, 2015
Nephrology Damien Noone, CE Lead	Weekly Divisional Rounds Weekly Transplant Centre Educational Rounds	
	Neurology Shelly Weis, CE Lead	Weekly Divisional Rounds
	Dr. Ann Yeh	2015 Neuroinflammation Symposium and 6th Annual MB-ON end MS RRTC Retreat April 30-May 1, 2016

FACULTY DEVELOPMENT

Director

Dr. Shelly Weiss

Educational Administrative Staff

Clare Schlesinger

Members of the Faculty Development Committee

Dr. Shelly Weiss

Dr. Nirit Bernhard

Dr. Doug Campbell

Dr. Anne Dipchand

Dr. Mark Friedberg

Dr. Tina Martimianakis

Dr. Sanjay Mehta

Dr. Paul Nathan

Dr. Suzan Schneeweiss

Dr. Rayfel Schneider

Dr. Jennifer Young

Highlights from 2015-2016

On March 2, 2016, the Faculty Development Committee organized an extremely successful Medical Education day. Lorelei Lingard, PhD, Director, Centre for Education Research & Innovation, Professor, Department of Medicine Schulich School of Medicine & Dentistry at University of Western Ontario was the invited keynote speaker and there were 50 attendees. The topic for Department of Paediatrics grand rounds was “Myths and Truths about Clinical Teamwork, and their Implications for how we understand “Competence” in Medical Education”. Following grand rounds there was a 90-minute interactive workshop led by Dr. Lorelei Lingard titled “3 Pearls for improving your Scholarly Writing”. The day concluded with a panel of education scholars who presented their research in the area of education. The speakers included Clare Hutchinson MD, Staff Physician, Rheumatology, The Hospital for Sick Children, Susanna Talarico BSc, BEd, MD FRCPC, MScCH, Associate Staff Physician, Paediatric Medicine, The Hospital for Sick Children and Vishi Gnanakumaran, MA, PhD candidate, Industrial-Organizational Psychology & Rebecca Lee, BA, MA Student, Industrial-Organizational Psychology, University of Guelph.

The Department of Paediatrics’ mentorship program for junior faculty is ongoing. All faculty, upon their appointment to the Department, are invited to meet with Dr. Weiss, the Director of Faculty Development. In this meeting, many issues regarding orientation and academic career development as well as mentorship are discussed. Each junior faculty is given the opportunity to participate in the formal departmental mentorship program which involves an assigned mentor who is outside of his/her division with a similar job profile. At this meeting the junior faculty members are made aware of the resources and programs provided both by the Faculty Development Office as well as the Center for Faculty Development, U. of T.

The Department of Paediatrics Faculty Mentorship Award was introduced in 2013 to recognize a faculty member

for his or her outstanding approach to mentoring. Each year, letters of nomination are submitted to the Faculty Development Committee and a subcommittee is appointed to review all candidates and adjudicate. Drs. Jonathan Hellmann and Astrid Guttman were the co-recipients of the 2016 award, which was presented as part of the Department of Paediatrics’ annual awards day in June 2016. Drs. Prakesh Shah, Patrick McNamara, Karen Leslie and Hilary Whyte were also nominated for the award.

The Faculty Development committee meets 5-6 times per year and coordinates innovative programs. The inaugural Diversity Day took place in September 2015. The keynote grand rounds speaker was Dr. Joan Reede, MD, MS, MPH, MBA, Dean for Diversity and Community Partnership at Harvard Medical School. Following the grand rounds, invited local speakers, Ike Okafor, Senior Officer, Service Learning and Diversity Outreach, Office of Health Professions Student Affairs Faculty of Medicine, University of Toronto, Malika Sharma, MD FRCPC Fellow, Wilson Centre For Research in Education, University of Toronto Infectious Diseases/HIV Physician, Maple Leaf Medical Clinic and Lisa Richardson MD MA FRCPC, Assistant Professor of Medicine, University of Toronto, Co-Lead, Indigenous Health Education, UME, University of Toronto presented regarding topics related to diversity at the University of Toronto and inspired a lively discussion. This event received exceptionally positive feedback and has become an annual event with the next event planned for November 2016.

The Faculty Development Committee has also organized medical education and career development presentations to the paediatric divisions upon request. Topics have included research methodology, mentorship, professionalism, and feedback evaluation. Five divisions have participated in the last year.

Dr. Weiss, in her role as Director, FDC is co-supervising with Dr. Leanne Son Hing PhD, University of Guelph, a doctoral student in the Department of Organizational Psychology at the University of Guelph who is conducting a qualitative research study to evaluate pediatric faculty

wellbeing. In phase one of the study, 30 faculty members participated. The results of phase one were presented by Vishi Gnanakumaran, PhD candidate at the 2016 Medical Education day. Phase two involved having the faculty who were interviewed participate in focus groups to provide feedback on the data collected. 14 of the 30 faculty members interviewed participated in the focus groups. Currently the data is being analyzed to prepare a manuscript for submission for publication.

Finally, Dr. Weiss represents the FDC in new initiatives at the University of Toronto. The first is as a member of the Faculty Development Leaders Committee, chaired by Dr. Karen Leslie at the Center for Faculty Development (CFD). In this role, Dr. Weiss was invited to attend a 'Mentoring Think Tank' also at the CFD in May 2016. Dr. Weiss is a member of a community of practise which is a new group recently initiated and includes participants of a course titled 'Fostering Professionalism and Humanism' (Feb. 2015-April 2016), chaired by Drs. Anne Matlow and Anna Skorzewrka, at U. of T.

SCHOLARSHIP/RESEARCH

Director

Dr. Tina Martimianakis

Educational Administrative Staff

Clare Schlesinger

Members of the Educational

Scholarship Enhancement Committee

Dr. Tina Martimianakis (Chair)

Dr. Anu Wadhwa

Dr. Maria Mylopoulos

Dr. Nikki Woods

Dr. Angela Punnett

Dr. Shelly Weiss

Dr. Melinda Solomon

Dr. Catharine Walsh

Highlights from 2015-2016

Administration and Coordination

The office of Medical Education Scholarship oversees activities associated with enhancing the capacity of learners and faculty to engage in educational scholarship broadly defined to include: research in education, program development, educational innovation and scholarly teaching. It also showcases the Department's education achievements and works to identify opportunities for future growth. In addition, the office oversees the adjudication of educational granting opportunities supported through the Paediatric Consultants Fund.

Funding

Educational research and educational development are supported through two separate grant competitions offered twice a year. As of Spring 2016, the grants provide up to \$10,000 to support 1 or 2 year projects led by members of the Department (faculty and trainees) that contribute meaningfully to the educational mission of our programs. This past year, 1 application was successful in the Innovation and Development stream and 1 Research Grant was approved for funding. The office and committee also provides support and mentorship on grant development related to the Educational Development Fund, UofT competition. Proposals are submitted to an internal competition for matched funding. The ESEC committee adjudicates the proposals and provides formative feedback to the project team. Selected projects are then recommended for submission to the EDF fund competition with matched funding and a letter of support from the Associate Chair (Education).

Programming

The Office of Medical Education Scholarship continued to deliver its two-part educational series to provide opportunities for dissemination, networking and sharing of ideas on ongoing projects:

Medical Education Scholarship Rounds

"Moving our ideas forward"

The rounds provide a forum for faculty and trainees to share their educational research and scholarship and an opportunity to think about methodological issues. The rounds are intended to have practical application to educational work. Resources are also shared at each session to provide participants with the opportunity for future learning.

Educational Journal Club

"Integrating knowledge into practice"

At each session, participants are exposed to a selection of interesting articles published in the last couple of years on topics such as competency based teaching, assessment and evaluation, the hidden curriculum, professionalism, etc.

This past year, we had many invited speakers from other Departments and Universities, including two international speakers.

MES ROUNDS 2015-2016

Sept 24	Everyone Has A Say But Who Is Listening?	Sarah Schwartz and Brie Yama
Oct 26	An Exploration of Paediatric Residents and Allied Healthcare Professionals Perceptions of Multisource Feedback	Mahan Kulasegaram
Jan 25	Promises & Pitfalls of Epidemiological Designs	Malika Sharma
Feb 22	Creating a Profession? Exploring the need for a Global Child Health Fellowship 300in a Canadian context"	Sanjay Mahant (Joint with WC)
March 29	Accountability, Advocacy, Activism: Action or just alliteration?	Mary Patterson
May 2	Expertise, humility and motivation	Ryan Brydges

EDUCATIONAL JOURNAL CLUB 2015-2016

Nov 16	Wilson Centre Rounds	
Dec 7	The implementation of a night float system at a large Canadian Paediatric training program: Perceived impact on patient care, education and quality of life	Zia Bismilla & Adelle Atkinson
Jan 11	Thinking about generational differences in identity constructions	Tina Martimianakis
Feb 8	Decolonizing professions: The health care practitioner caught in the middle	Tim Mickleborough
May 9	The Simulation of Visually Diagnosed Tests: Climbing the Learning Curve with Deliberate Practice	Kathy Boutis

PUBLICATIONS

Our educational research and scholarship is disseminated regularly in leading clinical and educational journals. This past academic year our faculty and residents authored **33** peer reviewed publications, 1 online publication and 5 book chapters.

Peer Reviewed Publications

Cahn PS, Bzowycyk A, Collins L, Dow A, Goodell K, Johnson AF, Klocko D, Knab M, Parker K, Reeves S, Zierler BK. A design thinking approach to evaluating interprofessional education. PubMed. *Journal of Interprofessional Care*. 2016 May; 30(3): 378-80. doi:10.3109/13561820.2015.1122582.Epub 2016.

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Mahmood, T, Haji, F, Damignani, R, Bagli, D, Dubrowski, A, Manzone, J, Truong, J, Martin, R, Mylopoulos, M. Compliance Does Not Mean Quality: An In-Depth Analysis of the Safe Surgery Checklist at a Tertiary Care Health Facility. *American Journal of Medical Quality*. 2015. DOI:10.1177/1062860614567830.

Martimianakis MA. Medical Education, Social responsibility and praxis: Responding to the needs of all children. *Paediatrics and Child Health* 2016;21(5):252-253.

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Paradis E, O’Brien B, Nimmons L, Bandiera G, Martimianakis MA. Design: Selection of Data Collection Methods, *Journal for Graduate Medical Education*. 2016;8(2):263-4.

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Pusic M, Chiaramonte R, Pecaric M, Boutis K. A Simple Method for Improving Self-Assessment While Learning Radiograph Interpretation. *Med Education* 2015 Aug: 49(8): pp 838-846

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Walsh CM. In-training gastrointestinal endoscopy competency assessment tools: types of tools, validation and impact. *Best Practice & Research Clinical Gastroenterology*. 2016; 30(2): 357-74. doi: 10.1016/j.bpg.2016.04.001. PA

Walsh CM. Training and assessment in pediatric endoscopy. *Gastrointestinal Endoscopy Clinics of North America*. 2016; 26(1):13-33. doi: 10.1016/j.giec.2015.08.002. PA

Widger K, Friedrichsdorf S, Wolfe J, Liben S, Pole JD, Bouffet E, Greenberg M, Husain A, Siden H, Whitlock JA, Rapoport A. Protocol: Evaluating the impact of a nation-wide train-the-trainer educational initiative to enhance the quality of palliative care for children with cancer. *BMC Palliative Care* 2016: Jan 27: 15(1):12.

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Online Publications

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Book Chapters

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Parker K, Ito S. Building quality curricula: the GRIP Fellowship Program in Paediatric Clinical Pharmacology. In: *Global Research in Paediatrics* (Barker C ed). 2015: (in press)

Pirie J (Lead), Kappus L, Sudikoff S, Bhanji F. Simulation curriculum development and application to competency based education, including continuing professional development. In: *The Comprehensive Textbook of Healthcare Simulation: Pediatric Edition*. (Cheng A, Grant V, eds.) Springer 2015

Varpio L, Martimianakis MA, Mylopoulos M. The Methodologies and Methods of Qualitative Research: Relationships and Implications. In: Curnig S, Cleland J (Eds.), *Researching Medical Education*. Hoboken, NJ: Wiley-Blackwell. 2015.

EDUCATIONAL FUNDING

In the past academic year, the grant capture of our faculty, residents and fellows included **58** awards totaling **\$2,816,988.93** (multi-year funds have been adjusted to reflect monies allotted for one academic year in the calculation of this total) to pursue research in education.

Paediatric Consultants (PC) Education Research Grants, HSC

In the 2015-2016 academic year, 2 Paediatric Consultants Education Grants were awarded to faculty members pursuing research which promises to increase understanding of educational phenomenon and contribute to theory building on such topics as research methods, attitudes and perceptions to teaching, career decision-making and technologically enhanced learning. The projects awarded also hold potential to enhance our local educational practices.

PC: Education Research

The Cultural Encounter in Developmental Paediatrics. Kawamura A, Zubairi M, Mylopoulos M, Martimianakis T. **Paediatric Consultants Educational Research Grant**. \$3903. March 2016 –April 2017.

PC: Education Innovation & Development

A smartphone application designed for teaching children emergency safety skills. Huber J, Young E, Campbell D, Mihalidis A, Walsh C. **Paediatric Consultants Education Innovation and Development Grant**. \$5000. July 2015 – June 2016.

Education Development Fund, UofT

The EDF is a seed fund of the Faculty of Medicine designed to catalyze initiatives that immediately and directly impact University of Toronto Faculty of Medicine education and teaching programs through innovation and development. Proposals require matched funding that can come from a variety of sources such as grants, clinical departments and other. The following awards are in progress:

Adapting theatre practice to enhance role-playing and communication skills of Occupational Therapy trainees. Stier J, Nelles LJ, Carnahan H, Walsh CM. **Education Development Fund, University of Toronto.** \$7502.00. July 2014 – February 2016.

Missing Voices: The Impact and Influence of Patients and Non-Physician Health Professionals on Longitudinal Integrated Clerkship (LInC) Training. Hutchinson, C, Weyman K, Martimianakis T, Kulasegaram K, Mylopoulos M. **Education Development Fund, University of Toronto.** \$19,875 CAD. August 2015 – August 2016.

The interaction of children's education and health policies with the relations of children, parents, educators and health professionals: Implications for health policy, health professions education, and practice. Ng S, Phelan S., Miller F, Leslie K. **Educational Development Fund.** \$20,000. 2014-2016

Test-enhanced continuing education. A randomized controlled trial. Feldman M, Kulasegaram KM, Martimianakis MA, Wan M, Schneeweiss S. **Educational Development Fund, University of Toronto.** \$19,250 CAD. 2015 – 2016

Relationships as learning. Understanding how relationship building facilitates patient-centred learning in longitudinal integrated clerkships. Hutchinson C, Kulasegaram K, Martimianakis MA, Bernstein S, Mylopoulos M, Weyman K, Young L, Pittini R. **Educational Development Fund, University of Toronto.** \$19,875 CAD. 2015 – 2016

PeRCS: The Pediatric Research and Clinical Summer (PeRCS) Program

Cardiovascular Genetics and Phenotypes of Inherited Arrhythmia Syndromes. Hamilton R, Tofighi T. **The Pediatric Research and Clinical Summer (PeRCS) Program.** \$4,000. June – August 2016.

Differences in Brain Development Associated with Neonatal Pain. Miller S, Halani S. **The Pediatric Research and Clinical Summer (PeRCS) Program.** \$4,000. June – August 2016.

International paediatric travelers: risk perception, incidence of disease and adherence with recommendations at a tertiary care centre based travel clinic. Morris S, Jackson E. **The Pediatric Research and Clinical Summer (PeRCS) Program.** \$4,000. June – August 2016.

Nocturnal Hypoxemia, Hypercapnia and Childhood Stroke. Dlamani N, Toutounji S. **The Pediatric Research and Clinical Summer (PeRCS) Program.** \$4,000. June – August 2016.

Predictors of pediatric rheumatic disease outcomes. Feldman B, Goldberg T. **The Pediatric Research and Clinical Summer (PeRCS) Program.** \$4,000. June – August 2016.

Pathophysiology of DGKE-associated atypical hemolytic-uremic syndrome (aHUS). Lemaire M, Nayak A. **The Pediatric Research and Clinical Summer (PeRCS) Program.** \$4,000. June – August 2016.

Preschoolers at Risk: Preventing Obesity and Cardiometabolic Health Outcomes in Early Childhood A TARGet Kids! Study. Birken C, Altbaum J. **The Pediatric Research and Clinical Summer (PeRCS) Program.** \$4,000. June – August 2016.

Stability of mitochondrial tRNA sequence variants. Sondheimer N, Sonney S. **The Pediatric Research and Clinical Summer (PeRCS) Program.** \$4,000. June – August 2016.

The prognostic utility of a normal neurological examination in neonates with hypoxic ischemic encephalopathy in the era of cooling. Ly L, Dziegielewski C. **The Pediatric Research and Clinical Summer (PeRCS) Program.** \$4,000. June – August 2016.

Thrombophilia Impact During Patient Admission to a Paediatric Hospital. Brandao L, Lu C. **The Pediatric Research and Clinical Summer (PeRCS) Program.** \$4,000. June – August 2016.

SPReSS: The Social Pediatrics Research Summer Studentship (SPReSS) Program
ITHELLPS: Evaluating an Educational Intervention to Train Paediatric Residents on Taking a Social History. Au H, Gupta J. **The Social Pediatrics Research Summer Studentship (SPReSS) Program.** \$3,300. June – August 2016.

Strengthening Community Resource Utilization for Parents of Children with Down Syndrome – Phase 2. Bernhard N, Sayal P. **The Social Pediatrics Research Summer Studentship (SPReSS) Program.** \$3,300. June – August 2016.

School Based Health Care: A Model for Improving Educational Achievement for Children in Inner City Schools. Freeman S, Cheung A. **The Social Pediatrics Research Summer Studentship (SPReSS) Program.** \$3,300. June – August 2016.

Speech and Language Delay in the Children of Adolescent Parents- an exploration of the barriers to effective intervention. Hick K, Saab D. **The Social Pediatrics Research Summer Studentship (SPReSS) Program.** \$3,300. June – August 2016.

A retrospective review of children and adolescents evaluated at the SickKids tuberculosis clinic because of notifications from the Immigration Medical Exam. Kitai I, Yang C. **The Social Pediatrics Research Summer Studentship (SPReSS) Program.** \$3,300. June – August 2016.

Evaluation of Social Determinants of Health (GTA) and Diabetes Care in GTA Regional Diabetes Clinics. Mahmud F, Cummings L. **The Social Pediatrics Research Summer Studentship (SPReSS) Program.** \$3,300. June – August 2016.

Housing & Health - An exploration of housing instability amongst children with medical complexity. Orkin J, Zahavi A. **The Social Pediatrics Research Summer Studentship (SPReSS) Program.** \$3,300. June – August 2016.

Developmental Screening at the 18 month well-child visit in Community Health Centres: expansion of the TARGet Kids! Network. Parkin P, Jiang P. **The Social Pediatrics Research Summer Studentship (SPReSS) Program.** \$3,300. June – August 2016.

Developmental Screening at the 18 month well-child visit in Community Health Centres: expansion of the TARGet Kids! Network. Parkin P, Osmond M. **The Social Pediatrics Research Summer Studentship (SPReSS) Program.** \$3,300. June – August 2016.

Other Funding Sources

An important component of our educational research activity involves collaborations that span departments and institutions. Furthermore, our faculty were involved in collaborative research projects that were merited with funding from a variety of sources including the Royal College, CIHR, PSI, Royal College, among others.

An internet-based psycho-educational program for children with juvenile idiopathic arthritis (JIA) and their parents: A randomized controlled trial. Stinson, J., Benseler, S.M., Feldman, B., Spiegel, L., Tse, S.M., Campillo, S., Duffy, C., Hetherington, R., Huber, A., Luca, L., McGrath, P., Palermo, Tucker, L., Victor, C., Shiff, N., Johnson, N., Dancy, P., Berard, R. **Canadian Institutes of Health Research**. \$614,303 CAD. July 1, 2012 – June 30, 2015

A qualitative investigation of faculty well-being at The Hospital for Sick Children. Weiss SK, Son Hing L, Gnanakumaran V. **SickKids (Dr. D. Daneman) Pediatric Chair Fund**. \$8,000 CAD. Jan 2015-Mar 2016

A structured simulation-based training curriculum to improve the non-technical performance of endoscopy trainees: A randomized control trial. Walsh CM, Samir C, Grover. **Canadian Association of Gastroenterology Education Research Grant**. \$7,500. February 2016 – February 2017.

Academic challenges for the preterm infant: Educators' knowledge, attitudes, and perceived barriers to providing aid to this population. Shah VS, Bassil K, Church P, Luther K, Lee SK. **MICARE**. \$40,000 CAD. 2014-2016

Assessment for learning: Examining the use of learning curves for ECG interpretation. Htala R, Boutis K, Pusic M. **Royal College of Physicians and Surgeons of Canada, Medical Education Grant**. \$17,000 CAD July 2014 – June 2017.

Bridging the G.A.P.: A Deliberate Practice Method of Learning Genital Abnormalities in Prepubescent Girls. Davis A, Pusic M, Pecaric, Boutis K. **CAME Wooster Family Education Grant - Canadian Association for Medical Education (CAME)**. \$10,000 CAD December 2015 – December 2016.

Bridging the GAP: A Deliberate practice Method of learning Genital Abnormalities in Prepubescent girls. Davis A, Boutis K. **Research Training Centre Start-Up Fund Grant - The Hospital for Sick Children**. \$3,000 CAD May 2015 – May 2017.

Bridging the GAP: A Deliberate practice Method of learning Genital Abnormalities in Prepubescent girls. Davis A, Boutis K. **Division of Pediatric Emergency Medicine Grant Program, The Hospital for Sick Children**. \$6,000 CAD February 2014 – February 2019.

Bridging worlds by integrating perspectives and competencies - exploring the development of adaptive expertise. Kawamura A, Mylopoulos M. **Bloorview Research Institute (ON)**. \$12,000 CAD. Apr 2014-Mar 2016

Career Development Award. Walsh CM. **Canadian Child Health Clinician Scientist Program**. \$70,000. April 2016 – March 2020.

Center for the Study of Adult Literacy: Developing instructional approaches suited to the cognitive and motivational needs of struggling adult readers. Greenberg D, Lovett MW, Graesser A, Frijters J, Branum-Martin L. **Institute of Education Sciences (US Department of Education)**. \$10,000,000 USD. Sep 2012-Aug 2017

Classrooms, Clinics & Curricula: Uncovering How Medical Students Learn to Manage their Learning. Kulasegaram K, Mylopoulos M, Monteiro S, Brydges R, McConnell M, Woods N, Wadey V. **Spencer Foundation 2015 Competition for Field Specific Grants**. 49,100 CAD. July 2015 – July 2017

Developing best practice hip surveillance clinical guidelines for children with cerebral palsy at Holland Bloorview Kids Rehabilitation Hospital. Kawamura A, Fehlings, D, Ip M, Kim A, Kingsnorth C, Lindsay L. **Holland Bloorview Foundation - Centre for Leadership in Child Development**. \$2,000 CAD. Apr 2015-Mar 2016

Development and validation of a Neonatal Intubation Competency Assessment Tool. Bismilla Z, Walsh CM, Finan E, Jeffries A, Moussa A. **Canadian Paediatric Society NRP Research Grant**. \$25,000. September 2015- October 2016.

Establishing Learning Curves for Distinguishing Abusive from Non-abusive Burns and Bruises in Children. Adelgais K, Abdoo D, Snyder K, Pusic M, Boutis K. **Colorado Department of Public Health and Environment, EMS and Trauma Program, Systems Improvement Category**. \$71,988.20 2015-2016.

Evaluation of educational and infrastructural interventions targeted at barriers to antibiotic delivery in febrile neutropenia. Principi T, Gupta S, Burry E. **Division of Pediatric Emergency Medicine, SickKids Hospital Research Grant**. \$5,000 CAD. 2014-2015.

Evaluation of knowledge translation and retention using an interactive echocardiography training module. Golding F, McCrindle BW, Bennett S, Manlhiot C. **Labatt Family Heart Centre Innovation Funds**. \$20,310.00 CAD. Nov 1-2014-November 1-2016

Humanism and the premedical realm(s): a narrative overview and preliminary analysis. Michalec B. Co-Investigators: Hafferty F, Hanson M, Kanter S, Martimianakis MA, Michaels R. **Arnold P. Gold Foundation Research Institute, USA**. \$5,000 USD. 2015 – 2017

Improving resident handoff in teaching hospitals: Understanding implementation and effectiveness of a handoff bundle. Coffey M, Starmer A, Mahant S, Bismilla Z, Landrigan C. **Physician Services Incorporated**. \$154,820 CAD. January 2011 – June 2015

Integration and identity: understanding the mechanisms that foster a holistic physician in longitudinal integrated clerkships. Bernstein S, Kulasegaram K. Martimianakis MA, Mylopoulos M, Graves L, Hawa R, Nyhof-Young K, Weyman K, Hutchinson C, Pittini R, Woods N. **Associated Medical Services- AMS Phoenix Project** \$39,000 CAD. 2015 – 2016

Integration & Identity: Understanding the Mechanisms that Foster a Holistic Physician in Longitudinal Integrated Clerkships. 2015 AMS Phoenix Project Call to Caring Grant. Bernstein S & Kulasegaram KM. Martimianakis T, Mylopoulos M, Kuper A, Woods N, Hawa R, Hutchinson C, Weyman K, Clavell N, Graves L, Kaufman A, Nyhof-Young J, Pittini R, Tartaro P, Webster F, Whitehead C, Wright S. 37,500 CAD. August 2015 – August 2017

“It’s not just about getting along”. Discourses of collaboration and team learning. Martimianakis MA, Mylopoulos M, Schneider R, Tse S. **Royal College CanMeds Education Grant**. \$23,910 CAD. 2014 – 2016

Learning the Interpretation of Point of Care Emergency Ultrasound Images. Kwan C, Boutis K, Fischer J, Pecaric M, Pusic M. **Academic Pediatric Association**. \$10,000 CAD 2014-2015.

Medical student experiences with disability and chronic illness. Stergiopoulos E, Martimianakis MA. **Ontario Medical Student Association/Associated Medical Services**. \$5,000. 2016.

Medical student experiences with disability and chronic illness. Stergiopoulos E, Martimianakis MA **Ontario CREMS Social Science, University of Toronto, Toronto.** \$5,000 CAD. 2016.

Online education for Celiac Disease and the gluten-free diet teaching. Vresk L, Marcon M, Walsh CM. **Canadian Foundation for Dietetic Research.** \$14,946.80. July 2015 – July 2017.

Residents' experience with research during their postgraduate training: A qualitative study. Devine L, Stroud L, Stenfors-Hayes T, Cil T, Ginsburg S, McDonald-Blumer H, Walsh CM. **CanMEDS Research and Development Grant, Royal College of Physicians and Surgeons of Canada.** \$22,544.00. July 2014 – June 2016.

Simulation-based team-leadership training for neonatal resuscitation: Is learning by observation as effective as learning by participation? Kalaniti K, Louca E, Whyte HE, Finan E, Campbell DM. **Canadian Paediatric Society, NRP Emerging Investigator Award.** \$5,000 CAD. December 1-2014-December 1-2015

The Role of Graduate Programs in Promoting Education Scholarship in Health Professionals. "Art of the Possible Education Scholarship Grant", Ghavam-Rassoul A, Ratnapalan S. **Department of Family and Community Medicine, University of Toronto.** \$4,500.00 CAD 2015-2016.

Towards the development of best practices for the assessment of competence in medical education. Department of Medicine Integrating Challenge Grant. Ginsburg S, Kuper A, Brydges R, Hodges B, Kulasegaram, K, Mylopoulos M, Norman G, Whitehead C, Woods N. 150,000 CAD. October 2015 – August 2017

Training for pediatricians on early identification and diagnosis of autism spectrum disorder in children: Follow-up and evaluation. Brian J, Penner M, Eldon P, Kawamura A. Holland Bloorview Foundation. **Centre for Leadership in Child Development.** \$5,836 CAD. Apr 2015-Mar 2016

Unraveling the complexity of collaborative decision making in a geriatrics interprofessional team meeting. Seng TT. Collaborators: Ling MLC, Lim WS, Ong YH, Chan M, Martimianakis MA. **National Health Care Group Health Outcomes and Medical Education Research (HOMER), Singapore.** \$9,632. 2016 - 2018

AWARDS

International

Walsh, C.M. Recipient of the Teri Li Award, in recognition of novel and/or extensive educational efforts in pediatric Gastroenterology for a junior faculty (within 10 years of fellowship), North American Society for Pediatric Gastroenterology, Hepatology and Nutrition, October 2015

Walsh, C.M. Recipient of the NASPGHAN Endoscopy Prize, in recognition of best endoscopy related research presentation, North American Society for Pediatric Gastroenterology, Hepatology and Nutrition Annual Meeting, October 2015

National

Martimianakis, M. A. Recipient of the CAME Meridith Marks New Educator Award, in recognition of scholarly contributions to the field of medical education, Canadian Association for Medical Education, April 2016

Martimianakis, M. A. Co recipient, along with Maria Mylopoulos and Nikki Woods of the Early Career Medical Educators (ECME) Mentorship Award, ECME group. April 2016

Mylopoulos, M. Co recipient, along with Maria Athina (Tina Martimianakis) and Nikki Woods of the Early Career Medical Educators (ECME) Mentorship Award, ECME group. April 2016

University

Coates, P. Winner of the W. T. Aikins Award for Excellence in Undergraduate Teaching for Course/Program Development and Coordination, Faculty of Medicine, University of Toronto, May 2016.

Weiss, S. Winner of the Colin R. Woolf Award for Long-Term Contributions to Continuing Education, Faculty of Medicine, University of Toronto, May 2016.

Department of Paediatrics, University of Toronto

Au, A: Winner of the R.H.A. **Haslam Preclerkship Teaching Award** for excellence in preclerkship teaching, June 2016.

Doctor, S & Ipp, M: Winners of the **Postgraduate Community Teaching Award** in recognition of excellence in the teaching of paediatric residents within community-based hospitals and offices, June 2016.

Gans, M: Winner of the **Marvin Gerstein Award** for excellence in teaching as nominated by core paediatric residents, June 2016.

Griffiths, A: Winner of the **Subspecialty Teaching Award** for commitment to excellence in teaching the subspecialty residents and clinical fellows, The Hospital for Sick Children, Toronto, June 2016.

Hellmann J, Guttman A: Winners of the **Denis Daneman Faculty Mentorship Award** for outstanding approach to mentoring, June 2016.

Kanani R & Carr J: Winner of the **Lionel Weinstein Clerkship Teaching Award** for excellence in clerkship teaching, June 2016.

Milo-Manson, G: Winner of the **Continuing Medical Education Award** for Sustained Excellence in Contributions to Continuing Education in Department of Paediatrics/University of Toronto Continuing Education sponsored event, June 2016.

Nofech-Mozes, Y: Winner of the **Community Paediatrics Clerkship Award**, June 2016

Schonfeld, D: Winner of the **Harry Bain Award** for excellence in teaching as nominated by core paediatric residents, June 2016.

Wadhwa, A: Winner of the **PERLs Award (Paediatric Educational Resident Lecture Series Award)** for excellence in teaching at the Paediatric academic sessions, June 2016.

Walters, T: Winner of the **Continuing Medical Education Award** for excellence in course coordination in a Department of Paediatrics/University of Toronto Continuing Education sponsored event, June 2016.

POWER TEACHING AWARDS

For outstanding contributions for Postgraduate Teaching

Dr. Ron Laxer
 Dr. Valerie Waters
 Dr. Astrid Guttman
 Dr. Jonathan Wasserman
 Dr. Paige Church

Divisional/Hospital: Residents/Fellows

Christopher Ondaatje Award

To a senior resident for excellence in clinical teaching as nominated by core paediatric residents

Dr. Joey Latino (PGY3)

Dr. Jessica Malach (PGY4)

CanMEDS Award – (Core Trainee)

Dr. Laura Erdman

CanMEDS Award – (Subspecialty Trainee)

Dr. Daniel Rosenfield

PeRLS Awards – Fellow

Dr. Connall Morgan

DEPARTMENT OF PAEDIATRICS RESEARCH DAY WINNERS

Core Paediatrics

Winner: Sandra Isabel

Basic Science – Junior Trainee

Winner: Lindsay Cho (Rheumatology)

Basic Science – Senior Trainee

Winner: Simon Eng (Rheumatology)

Clinical Science – Junior Trainee

Winner: Thiviya Selvanathan (Neurology)

Clinical Science – Senior Trainee

Winner (tie): Jessie Guo (Neurology)

Mohamed Ahmed (Neonatology)

LEADERSHIP IN EDUCATION BEYOND THE DEPARTMENT OF PAEDIATRICS

Several of our faculty members currently hold key leadership positions in education beyond our department, demonstrating our growing capacity to inform educational practice more broadly.

PAEDIATRICS FACULTY HOLDING LEADERSHIP POSITIONS OUTSIDE THE DEPARTMENT

Dr. Adelle Atkinson	Chair, Power Steering Committee Member, UG Admissions Committee
Dr. Hosanna Au	Paediatrics Lead, PreClerkship Program Director of Life Cycle Course in the Foundations curriculum
Dr. Susanna Talarico	Associate Director of the Portfolio Course Medical Director, AboutkidsHealth
Dr. Stacey Bernstein	Clerkship Director, University of Toronto
Dr. Nicola Jones,	Principle Investigator and Lead, Canadian Child Health Clinician Scientist Program, University of Toronto
Dr. Karen Leslie	Director of Centre for Faculty Development , University of Toronto(2009-)
Dr. Tina Martimianakis,	Associate Medical Services (AMS) Phoenix Project Management Committee Strategic lead International, Wilson Centre
Dr. Jonathan Pirie	Chair, Board of Examiners, Faculty of Medicine
Dr. Seetha Radhakrishnan	Director of the Electives Program, University of Toronto
Dr. Norman Rosenblum	Associate Dean, Physician Scientist Training, University of Toronto.
Dr. Jay Rosenfield	Vice Dean, Undergraduate Medical Education at the University of Toronto (2005-2016)
Dr. Suzan Schneeweiss	Associate Dean, Continuing Professional Development Faculty of Medicine, University of Toronto
Dr. Rayfel Schneider	National CaRMS Paediatric Subspecialty Match Steering Committee
Dr. Brian Simmons	Director, Standardized Patient Program, University of Toronto

THE ‘CHOOSING WISELY’ INITIATIVE AT SICKKIDS

Unnecessary tests and treatments do not add value to care. In some cases they can potentially expose patients to harm; they can lead to more testing to investigate false positives; and often they can contribute to a patient’s stress levels. These tests and treatments also put an increased strain on the resources of our health-care system.

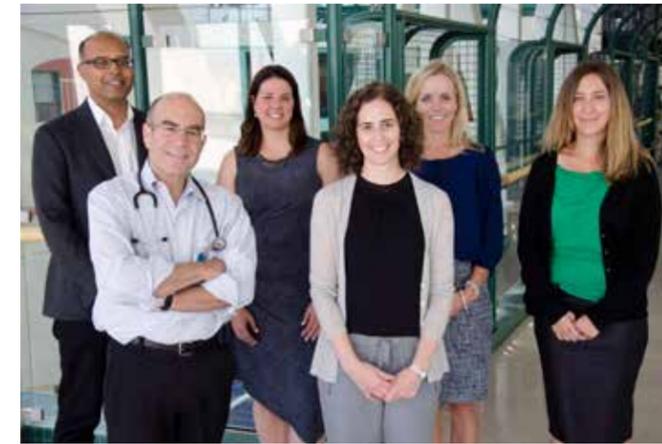
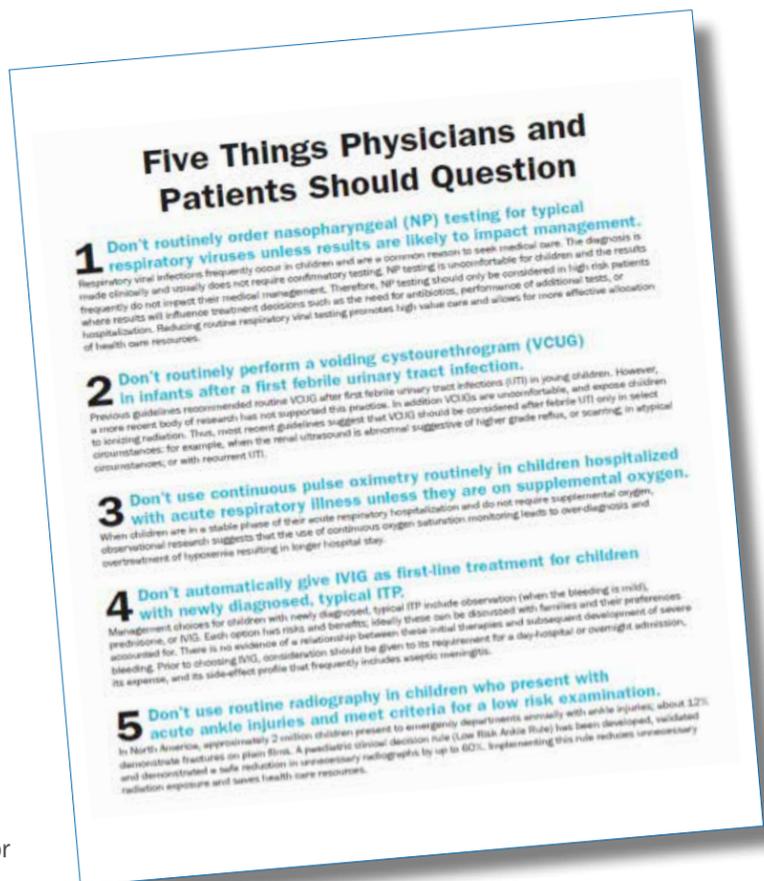
That’s why SickKids is participating in Choosing Wisely Canada, a campaign to help clinicians and patients engage in conversations about unnecessary tests and treatments to help make smart and effective choices that will ensure high-quality care.

As part of the campaign, national specialty societies have developed lists of “Five Things Clinicians and Patients Should Question.” These lists identify tests and treatments commonly used in each specialty, which are not supported by evidence and/or could expose patients to unnecessary harm.

As a paediatric health centre that cares for children with highly complex and specialized medical conditions, SickKids is the first hospital in Canada to create its own ‘top 5’ recommended list of tests and treatments that our staff should aim to reduce.

Led by Dr. Jeremy Friedman, Associate Chair (clinical) in the Department of Paediatrics, this top five list was created by first engaging stakeholders at SickKids to identify hospital tests and treatments they believed were being used inappropriately at times. These items were then combined with existing recommendations for paediatric care from various Choosing Wisely specialty lists, after which the Department of Paediatrics’ Clinical

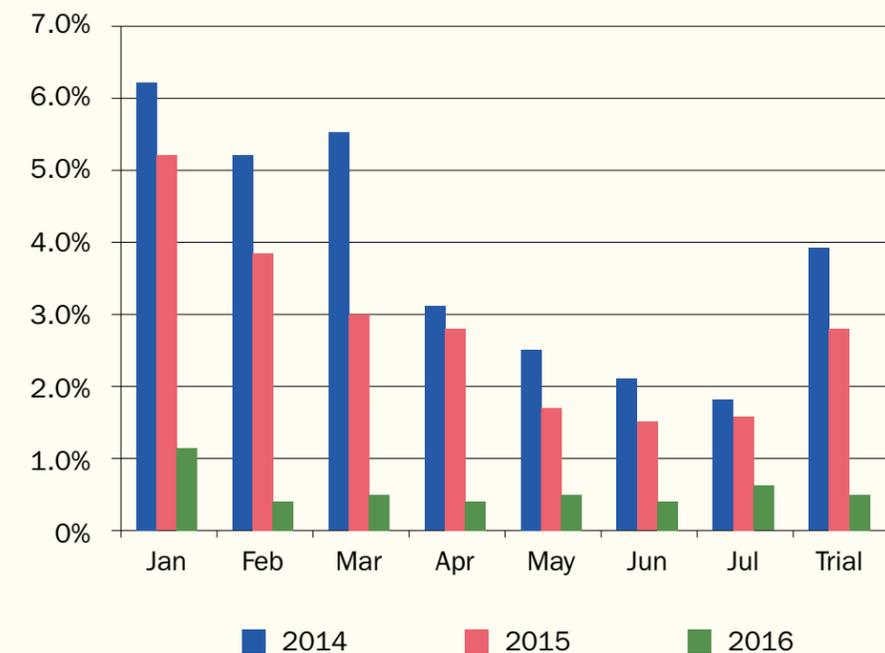
Excellence Committee reduced the list based on strength of evidence and appropriateness for our hospital. Finally, the list was included in an anonymous survey sent to all full-time medical faculty and paediatric resident trainees, where the highest ranked recommendations were reviewed with a scoring system that factored in: ease of implementation; expected value; ease of measurement; and alignment with hospital initiatives.



From left to right: Drs. Sanjay Mahant, Jeremy Friedman, Tania Principi, Carolyn Beck, Olivia Ostrow, Deena Savlov (Kathy Boutis is not pictured, as she is on Sabbatical)

A physician champion for each of the recommendations on the ‘top 5’ list was chosen (Drs Olivia Ostrow, Deena Savlov, Sanjay Mahant, Carolyn Beck, Tania Principi and Kathy Boutis). With the help of hospital representatives from information services, public affairs, child health services and decision support, an implementation strategy was tailored for each of the five items. These generally involved quality improvement projects, re-design of ordering pathways, education of the teams involved and feedback and audit of the measured results. The initiative was launched in January of 2016 and initial improvements in the measured outcomes have been seen for all items. Some examples are provided in the accompanying graphs:

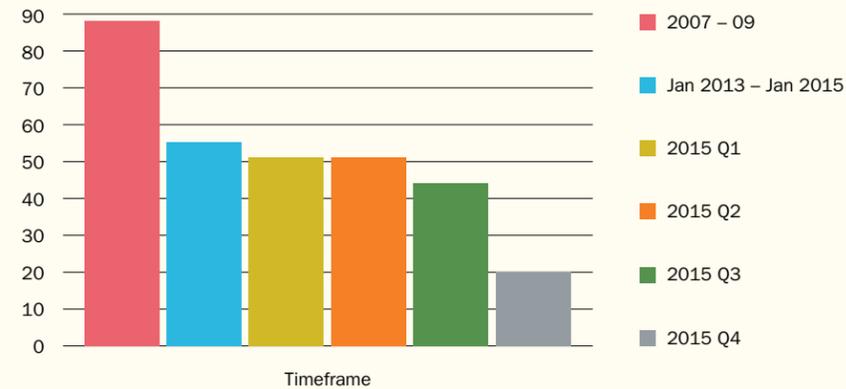
Multiplex Respiratory Testing Rate Per ED Patient Volumes



Choosing Wisely at SickKids

Prior to choosing IVIG, consideration should be given to its expense, its requirement for a day-hospital or overnight admission, and its side-effect profile that frequently includes aseptic meningitis.

Baseline: A cross-sectional study of management of newly diagnosed, typical ITP from 2007 – 2009.
From 2013 – 2015, a QI bundle was implemented to decrease the use of IVIG.

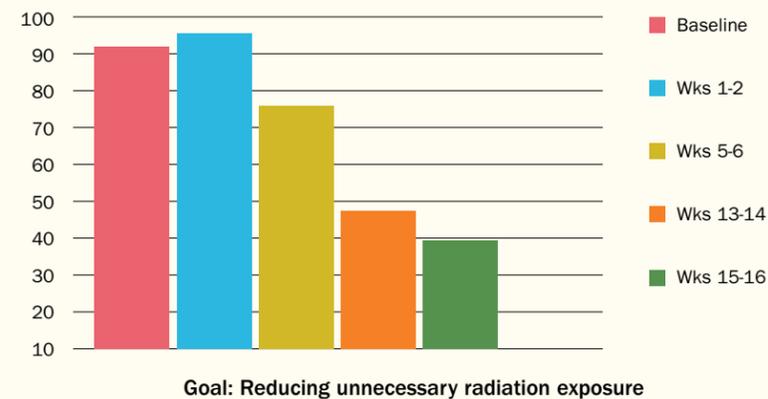


Choosing Wisely at SickKids

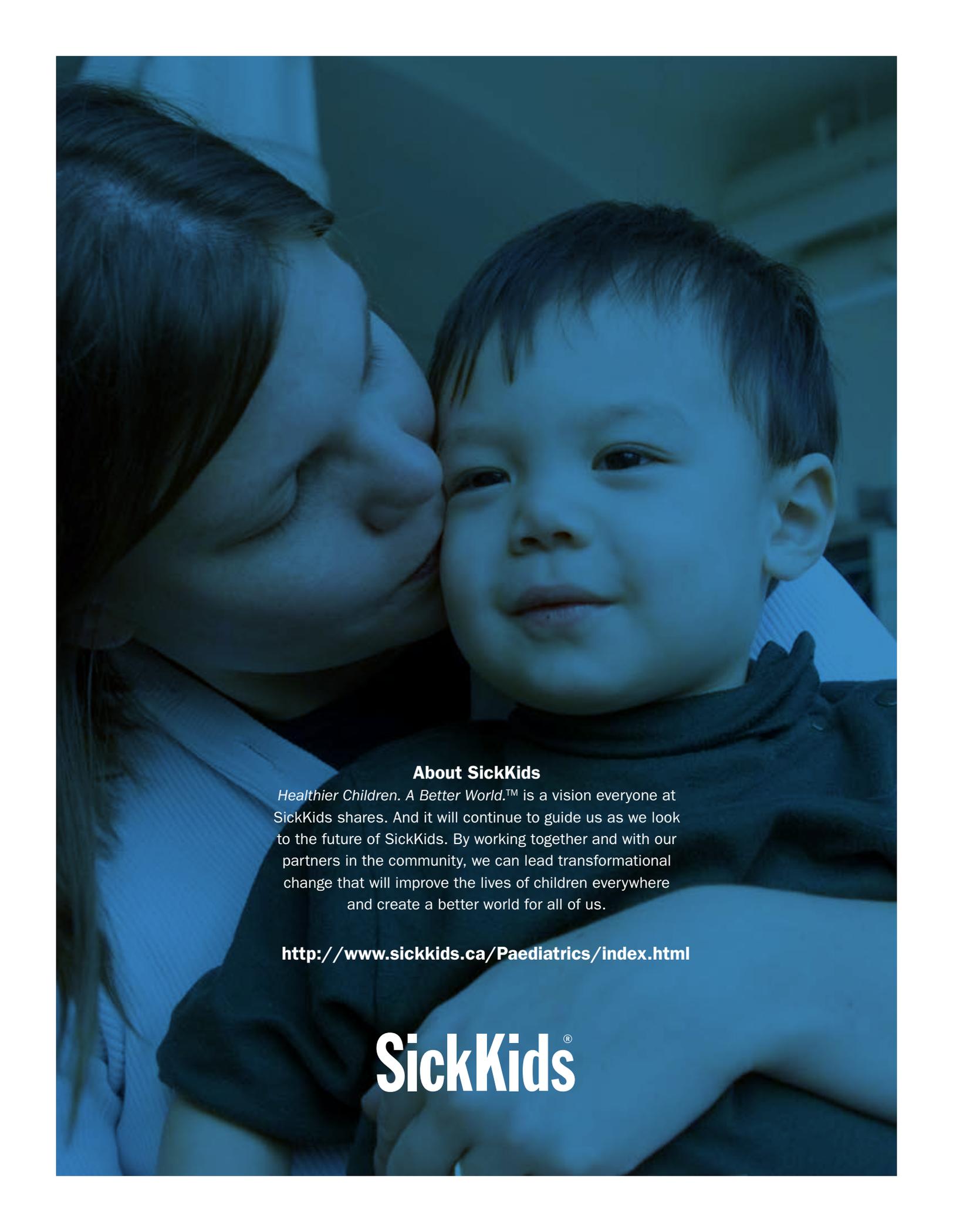
In North America, approximately 2 million children present to emergency departments annually with ankle injuries; about 12% demonstrate fractures on plain films.

A paediatric clinical decision rule has been developed, validated and demonstrated a safe reduction in unnecessary radiographs by up to 60%.

Measuring our progress:
Baseline data was established, and progress measured over 16 weeks



Clinical care is enriched by the patient safety and quality strategies; choosing wisely initiatives; greater accountability and more.



About SickKids

Healthier Children. A Better World.™ is a vision everyone at SickKids shares. And it will continue to guide us as we look to the future of SickKids. By working together and with our partners in the community, we can lead transformational change that will improve the lives of children everywhere and create a better world for all of us.

<http://www.sickkids.ca/Paediatrics/index.html>

SickKids[®]