L'Institut de recherche
du Centre universitaire de santé McGill
à L'Hôpital de Montréal pour enfants

The Research Institute
of the McGill University Health Centre
at The Montreal Children's Hospital

Child health research: a world of hope

2009–2010
ANNUAL REPORT

Child health research: a world of hope

Construction site of the future Glen Campus of the MUHC, including the new Montreal Children's Hospital and research facilities, as of spring 2010.

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"Our investigators, whether pediatricians, clinician-researchers or scientists, are creating a world of hope for children through research."

Message from the Associate Director for Pediatric Research

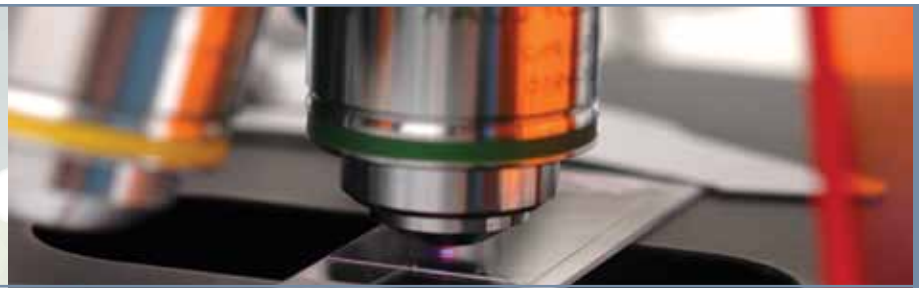
Jacquetta Trasler, MD, PhD
Associate Director for Pediatric Research,
The Research Institute of the McGill University Health Centre

Research—most especially, child health research—is an expression of faith in the future. The moments of breakthrough that we have celebrated in our Montreal Children's Hospital–based research programs this year give us a preview of that future, as does every milestone toward completion of our new facility on the Glen Campus, scheduled to open in 2014.

Our investigators, whether pediatricians, clinician-researchers or scientists, are creating a world of hope for children through research. Finding concrete solutions to today's complex health problems starts with an unsolved clinical problem. Experimental studies then lead to translational research, bringing solutions from the theoretical realm to the child's bedside.

As the building of a new, world-class health centre and research institute begins, our researchers are reaching for collaboration across disciplines and across geographic boundaries. Many, like those profiled in this issue, are forming networks that span not only the pediatric and adult sites at the MUHC but also the province, the nation and the globe. The new Children's research facility extends more than the promise of better health care for future generations of young Montrealers or Quebecers. It offers hope for a better world, for children everywhere.

As always, we are moving forward thanks to the dedication and drive of our investigators, staff and trainees, and thanks to the strong support of our Advisory Board and funding partners, including the FRSQ, CIHR, CFI, MCH Foundation and Foundation of Stars.



"The cycle of life begins with our children. The same is true for research."

Message from the Director of the Research Institute of the MUHC

The cycle of life begins with our children. The same is true for research. Research into pediatric diseases is an important and unique component of improved care for all of our patients—young and old. Many life-saving discoveries have been made at The Montreal Children's Hospital, which remains not only an integral part of the Research Institute of the MUHC, but an important institution in the city of Montreal. It's with good reason.

The first operation in Canada to repair a congenital heart defect on a child was performed at The Children's (then the Children's Memorial Hospital) in 1938. In 1949, it was the first pediatric hospital in this country to establish a division of medical genetics, and in 1951, the first to open a clinic specifically for patients with genetic disorders. Clearly ahead of its time now as then, The Children's continues to make progress toward its goal of providing better futures for children every year.

New facilities currently underway will enhance world-class research with continued focus on prenatal and childhood origins of disease. Building upon the decades of pediatric research behind us will ensure that our future research continues to grow and prosper, as we all envision that every child's life should.

Vassilios Papadopoulos, DPharm, PhD
Director, The Research Institute of the MUHC
Associate Executive Director for Research, MUHC

"This has indeed been a year of hope turned into real advances as our research community looks forward to a new hospital and the facilities it will provide to meet the never-ending challenge of seeking knowledge."

Message from the Chair of the Advisory Group on Research to the Council for Services to Children and Adolescents (CSCA)

Gretta Taylor Chambers, CC, OQ BA, DLitt
Chair of the Advisory Group on Research to the CSCA
Chancellor Emerita, McGill University

The Advisory Group on Research to the CSCA has found this to be a particularly fruitful year in child health research at The Montreal Children's Hospital. A breakthrough in diabetes and another in genetics by two teams of collaborating researchers underline the practical nature of the information gleaned from the research.

Bench-to-bedside, collaborative research has been the focal thrust of research programs undertaken at The Children's this year. The quest for knowledge translation has been both wide-ranging and forward-looking. From cancer research and genetic disorders to questions of prenatal health and development or those affecting reproductive health and human growth, MCH investigators are moving knowledge down paths leading to treatment and to a better understanding of the origins of the human condition.

The protection of children on the social level has not been overlooked. Ethical issues in pediatrics have been examined in a program bringing together researchers from the health sciences, social sciences, childhood education and the humanities. This has indeed been a year of hope turned into real advances as our research community looks forward to a new hospital and the facilities it will provide to meet the never-ending challenge of seeking knowledge.

"Clinical research needs to be intimately linked with clinical care and with our patients."

Message from the Associate Executive Director of The Montreal Children's Hospital

The first aim of the Montreal Children's Hospital campus of the Research Institute of the MUHC is to promote collaborative basic and clinical research programs that will improve patient care. As an overriding philosophy, clinical research needs to be intimately linked with clinical care and with our patients.

Although pediatric research is geared uniquely toward children and adolescents, it is now clear that studying the mechanisms of disease that result in pathology early in life, or even prenatally, can also shape our understanding of chronic diseases in our aging population. Similarly, knowledge gained from the risk factors and mechanisms that contribute to common disorders in adults, such as heart disease and cancer, can also lead to preventive strategies that benefit the pediatric population.

By enhancing collaboration between researchers engaged with the pediatric and adult populations, the Research Institute of the MUHC has served as a catalyst for success as we develop our brand new research facility at the Glen. Expectations are high for important pediatric research advances that will translate into improved health and health care for the most important resource we have, the pediatric population that we serve.

Harvey J. Guyda, MD, FRCP(C)
Associate Executive Director
of The Montreal Children's Hospital of the MUHC
Chair, Department of Pediatrics, McGill University

Our Researchers

New Recruit

Guilherme Sant'Anna, MD, PhD, FRCP(C)

Associate Professor of Pediatrics, McGill University
Department of Pediatrics, Neonatal Division, MUHC

Dr. Guilherme Sant'Anna, Respiratory Health and Neurosciences Axes, received his MD from the Federal Fluminense University and his PhD in Child Health (pulmonary physiology) from the Instituto Fernandes Figueira/FIOCRUZ, both in Brazil. He completed post-doctoral training in pulmonary physiology, cardiovascular physiology, and pediatrics at McGill University, and was an associate professor in pediatrics at McMaster University. His research interests are to better understand and optimize the respiratory assistance that some preterm infants require after birth, and the temperature and brain blood-flow control in asphyxiated infants.

By Axis of the Research Institute of the McGill University Health Centre

Cancer Axis

Sharon Abish
David Mitchell
Janusz Rak

Cardiovascular Diseases and Critical Care Axis

Marie Josée Béland
Adrian Dancea
Chantal Frigon
Ronald Gottesman
Sam Shemie
Dominique Shum-Tim
Christo I. Tchervenkov
Davinia Withington

Endocrinology, Diabetes, Nutrition and Kidney Diseases Axis

Najma Ahmed
Lorraine Bell
Preetha Krishnamoorthy
Laurent Legault
Constantin Polychronakos
Gloria S. Tannenbaum
Michele Zappitelli

Health Outcomes Axis

Maala Bhatt
Franco Carnevale
Evelyn Constantin
Geoffrey E. Dougherty
Ciarán Duffy
Mohamed El-Sherbiny
Sylviane Forget
Bethany Foster
John Richard Hamilton
Michael S. Kramer
Lucyna Lach
Stephen Liben
Mary Ellen Macdonald
Romain Mandel
John Jack Manoukian
David McGillivray
Hema Patel
Robert William Platt
I. Barry Pless
Caroline Quach
Saleem Razack
Janet Elizabeth Rennick

Human Reproduction and Development Axis

Sam Joseph Daniel
Cynthia Gates Goodyer
Paul Goodyer
Indra Gupta
Roman Jednak
Loydie Jerome-Majewska
Céleste C. Johnston
Jean-Martin Laberge
Annette Majnemer
Aimée Ryan
Michael Shevell
Laurie Snider

Infection and Immunity Axis

Martin Bitzan
Bruce Mazer
Christine T. McCusker
Jane McDonald
Dorothy Louise Moore
Marie-Noël Primeau
Earl Rubin
Ernest G. Seidman

Medical Genetics and Genomics Axis

Nancy Braverman
Kathleen Glass
Nada Jabado
Feige Kaplan
Robert K. Koenekoop
Rima Rozen
Charles R. Scriver
Jacquetta Trasler

Mental Illness and Addiction Axis

Sylvie Daigneault
Anne Duffy
Eric Fombonne
Brian Greenfield
Lily Hechtman
Klaus Minde
Cécile Rousseau

Musculoskeletal Disorders Axis

Gaëlle Chédeville
Reggie Hamdy
Jean Albert Ouellet
Frank Rauch
Celia Rodd
Rosie Scuccimarri
H. Bruce Williams

Neurosciences Axis

Jeffrey Atkinson
Marie-Emmanuelle Dilenge
Isabelle Gagnon
Erika Gisel
Pierre Lachapelle
Catherine Limperopoulos
Bernard Rosenblatt
Teresa Valois Gomez

Respiratory Health Axis

Robert Brouillette
Larry C. Lands
Johanne Morel
Francisco J.D. Noya
Pramod Puligandla
Charles Rohlicek
Guilherme Sant'Anna

Researchers Associated with MCH

Mark Anselmo
Robert Barnes
Farhan Bhanji
Claudette Bardin
Margaret Berry
Karen A. Brown
Natalie Buu
Sarah Campillo
John Paul Capolicchio
Dominic Chalut
Aurore Côté
Joëlle Desparmet
Giosi Di Meglio
Alessandra Duncan
Sherif Emil
Ricardo Faingold
Jean-Pierre Farmer
Shuvo Ghosh
Josée Lavoie
Serge Melançon
John Mitchell
José Luis Montes
Véronique Morinville
Thérèse Perreault
Maria Ramsay
Patricia Riley
Melvin Schloss
Ted Tewfik
Blair Newell Whittemore

Honours and Distinctions

2009

Dr. Harvey Guyda received the Contribution to Child Health Award 2009 from the Board of Directors of the Canadian Association of Pediatric Health Centres (CAPHC). The citation noted Dr. Guyda's significant contributions to child and youth health in Canada and internationally over four decades.

Dr. Richard Hamilton was honoured by the Hospital for Sick Children (Sick Kids) with an annual fellowship in his name, in recognition of his founding role in the Sick Kids Gastroenterology Division.

Dr. Jean-Martin Laberge was elected president of the Canadian Association of Paediatric Surgeons.

Dr. I. Barry Pless was appointed to the editorial board of *Chronic Diseases in Canada*, the official journal of the Public Health Agency of Canada.

Dr. Constantin Polychronakos received the 2009 Canadian Pediatric Society Research Award for his research on the genetics of diabetes.

Dr. Janet Rennick was awarded the CIHR IHDCYH–Canadian Association of Paediatric Health Centres (CAPHC) 2009 Poster Award and the McMaster Child Health Research Institute–CAPHC 2009 Poster Award for Clinical Research.

Dr. Gloria Tannenbaum was elected to the Council of The Endocrine Society, a distinguished international society dedicated to meeting the needs of basic scientists, clinical investigators and clinicians-in-practice.

2010

Dr. Maala Bhatt received the Terry Klassen Young Investigator Award from the Pediatric Emergency Research Group of Canada.

Dr. Jean-Pierre Farmer received the 2010 Pfizer Award of Excellence in Leadership from the Montreal Children's Hospital Foundation.

Dr. Jean-Martin Laberge received the 2010 Jean Coutu Medical Award of Excellence from the Montreal Children's Hospital Foundation.

Dr. Annette Majnemer gave the 2010 Muriel Driver Lecture at the annual meeting of the Canadian Association of Occupational Therapy. The lectureship and accompanying prize represent the most prestigious Canadian award for a body of research in this field.

Dr. I. Barry Pless was the recipient of the 2010 Emeritus Researcher Award from the Quebec Population Health Research Network for his exceptional contribution to the field, not only in Quebec, but nationally and internationally.

Dr. Janusz Rak received the 2010 Aldo Award of Excellence in Research from the Montreal Children's Hospital Foundation.

Dr. Charles R. Scriver received the Pollin Prize, the highest international distinction in pediatric research. He also received the 2010 Howland Medal, the highest award of the American Pediatric Society; the Folling Award from the European Phenylketonuria Group in Munich, Germany; and the PKU Hero Award at the National PKU Alliance inaugural meeting in Dallas, Texas.

Dr. Bruce Williams was honoured during the 1st Annual H. Bruce Williams Pediatric Surgical Research Day at the MCH. The day culminated with the official naming of the MCH Craniofacial and Cleft Palate Unit as the Dr. H. Bruce Williams Craniofacial and Cleft Palate Unit.

Bench-to-Bedside Collaborative Research

Selected Large-scale studies

Reproductive Health and the Environment

Dr. Cynthia Gates Goodyer, with co-principal investigator Dr. Barbara Hales of McGill University, received $2.5 million from the Canadian Institutes of Health Research (CIHR) to head a team to study the effects of brominated flame retardants exposure on human reproduction. Team members from the RI-MUHC and McGill include Drs. Peter Chan, Roman Jednak, Bernard Robaire, and Jacquetta Trasler. The team also includes investigators from the University of Montreal, the University of Toronto, the University of Western Ontario, York University and Health Canada. The proposal ranked first in its CIHR review committee.

Congenital Heart Disease

Dr. Rima Rozen is co-principal investigator on a project with Drs. Gregor Andelfinger and Andrea Richter at Hôpital Ste-Justine, and Dr. Mona Nemer at the University of Ottawa, to study congenital heart malformations. The research teams were awarded $1.78 million by CIHR and $600,000 by the Heart and Stroke Foundation to investigate the importance of genetic factors in such malformations, which form the single largest class of birth defects. Besides searching for new risk factors, Dr. Rozen's laboratory is studying the interaction of genes and nutrition—the role of folic acid and of choline, in particular—and identifying the mechanisms by which deficiency of these nutrients can lead to heart defects.

Neurology

Drs. Michael Shevell, Annette Majnemer and Eric Fombonne are involved in the creation of a National Centre of Excellence called NeuroDevNet. Led by Dr. Dan Goldowitz at the University of British Columbia, NeuroDevNet was awarded more than $19.5 million over five years from the Networks of Centres of Excellence of Canada to broaden understanding of the causes of pediatric disorders of brain development. Dr. Shevell heads a cerebral palsy (CP) demonstration project funded at $3.5 million. Dr. Majnemer is a co-investigator focusing on knowledge translation, while Dr. Pia Wintermark, an MCH recruit arriving in 2010, will participate in the CP project's imaging component. Dr. Fombonne is co-investigator of an autism spectrum disorders demonstration project.

Perinatal Health and Child Development

Dr. Jacquetta Trasler is co-principal investigator on a study called Étude 3-D (Découvrir, Développer, Devenir) led by Dr. William Fraser at Hôpital Ste-Justine. The multidisciplinary team of researchers from five universities was awarded $10 million over five years from CIHR to study the effects of perinatal events on child development. Pregnant women, fathers and newborns from some 5,000 families in Quebec and Eastern Ontario are being asked to take part. The researchers will examine the long-term impact of adverse prenatal risk factors (social, behavioural, environmental and genetic) on the health of future generations. Dr. Trasler leads a project studying health outcomes in children born using assisted reproductive technologies.

2010 Breakthrough

Diabetes

Dr. Constantin Polychronakos and his research team made a discovery that brings new hope for a cure for diabetes. They found that a previously unstudied gene known as RFX6 is necessary for the generation of islets of Langerhans, the cells that produce insulin in the pancreas. Published in *Nature* in 2010, this work was conducted in collaboration with a team at the University of California at San Francisco. It opens the door to finding a cure through gene therapy or therapeutics that will create new islets.

Investigator and Trainee Awards

Investigators

Canada Research Chair

Tier 1

- Eric Fombonne
- Ernest Seidman

Tier 2

- Catherine Limperopoulos

Fonds de la recherche en santé du Québec

National researcher

- Bruce Mazer

Research Scholar—Senior

- Robert Platt

Clinical Research Scholar—Senior

- Indra Gupta

Research Scholar—Junior 2

- Nada Jabado

Clinical Research Scholar—Junior 2

- Sam Daniel
- Bethany Foster
- Caroline Quach
- Frank Rauch
- Dominique Shum-Tim

Clinical Research Scholar—Junior 1

- Evelyn Constantin
- Isabelle Gagnon
- Janet Rennick
- Michele Zappitelli

Kidney Foundation of Canada

Krescent New Investigator Award

- Michele Zappitelli

Post-doctoral Fellowships

Canadian Institutes of Health Research

- Valerie Marcil
- Huiqi Qu

Fonds de la recherche en santé du Québec

- Flavia Lombardi Lopes
- Serge McGraw
- Julien St-Jean

Heart & Stroke Foundation of Canada

- Danny Del Duca

Kidney Foundation of Canada

- Reyhan El Kares

Doctoral Research Awards

Canadian Institutes of Health Research

- Donovan Chan
- Karine Jacob
- Nafisa Jadavji
- Xiaoyang Liu
- Kirsten Niles
- Denise Keiko Shikako Thomas

Fonds de la recherche en santé du Québec

- Danny Del Duca
- Inga Murawski
- Manon Ranger
- Hana Zouk

Kidney Foundation of Canada, KRESCENT Program

- Karen Hornby

Social Sciences and Humanities Research Council of Canada

- Anne-Marie Piché

Master's Research Awards

Canadian Institutes of Health Research

- Aysegul Erman
- Tara Errington
- Mallory Owen
- Bryan Ross

Fonds de la recherche en santé du Québec

- Jessica Chan
- Grzegorz Sobieraj

Natural Sciences and Engineering Research Council of Canada

- Michelle Miller

Sick Kids Foundation

- Nathalie Chokron

Researcher Profiles

Ethical Issues in Pediatrics

Many ethical issues are emerging with advances in pediatric and neonatal care. Concerns arise as to whether some therapies are warranted in situations where the child's outcomes are guarded or uncertain, prompting questions about "What is in the child's best interest?" and "Who should decide what is best for the child?" This last question leads to examination of the roles of parents and health care professionals, and the degree of recognition that should be given to the voices of children.

Franco A. Carnevale, RN, PhD

Health Outcomes Axis

Associate Professor, School of Nursing
Associate Member, Department of Pediatrics
McGill University

Chair, Pediatric Ethics Committee
Associate Member, Pediatric Critical Care
McGill University Health Centre

Dr. Carnevale and his collaborators have been examining such questions as they touch critically ill or disabled children. Their research has demonstrated that

1. parental responsibility has been inadequately understood (there is uncertainty, for instance, over which types of decisions should be parental and which should be medical);
2. children's voices have been largely disregarded; and
3. disabled children tend to be significantly discounted (i.e., there is a prevalent view that life with disability is not worthwhile).

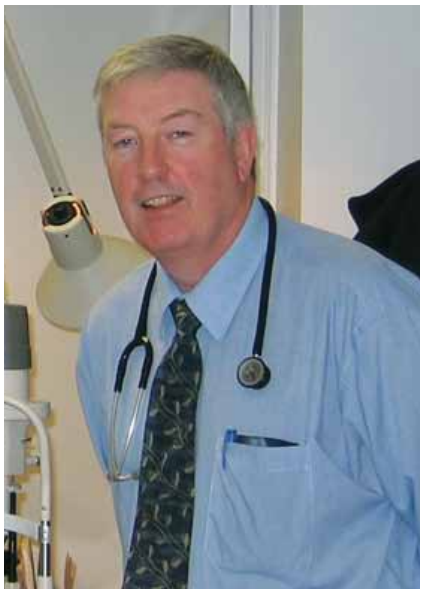
Having extended this research from North America into France, Italy and Brazil, Dr. Carnevale is now developing an interdisciplinary research program on childhood ethics. This program brings together researchers from the health sciences, social sciences, childhood education and the humanities. It fosters hope for children and families by sensitizing health care professionals to important ethical concerns through educational programs and policy development, inspiring changes in clinical practice.

Understanding Juvenile Idiopathic Arthritis

Many people are surprised to learn that children can be afflicted by arthritis. In fact, juvenile idiopathic arthritis (JIA) is among the most common chronic conditions affecting Canadian children. Up to one in 1,000 children under 16 years of age may be affected, and in over half of these cases, active disease persists into adulthood. With this in mind, Dr. Ciarán Duffy has led the development of a national research network that emphasizes health-related quality of life outcomes in JIA.

With the collaboration of over 40 investigators from coast to coast, an initial study called "ReACCh Out" has enrolled more than 1,500 new-onset JIA patients. This study aims to achieve a better understanding of the course and outcome of the disease and to identify, at an early stage, factors associated with a better response to treatment. The largest such longitudinal study worldwide, it has also prepared the way for studies on the biologic basis of the disease. One such study (BBOP) seeks to identify environmental, genetic and biologic factors predictive of certain disease outcomes, particularly health-related quality of life. A recent additional focus, again led by Dr. Duffy, is on exercise and physical activity in JIA—the LEAP Study.

The network undertaking these studies, the Canadian Alliance of Paediatric Rheumatology Investigators (CAPRI), has drawn some $10 million in grant funding. It has expanded to link with investigators in the United States and several European countries through the Understanding Childhood Arthritis Network (UCAN).



Ciarán M. Duffy, MB BCh, FRCP(C), FRCP(I)
Health Outcomes Axis

Professor of Pediatrics, McGill University

Director, Division of Rheumatology
and Associate Physician-in-Chief
The Montreal Children's Hospital of the MUHC

Reproductive Health and Human Growth

Brominated Flame Retardants and Reproductive Health

Research suggests that brominated flame retardants (BFRs) are affecting early stages of human development, and that at least one outcome is abnormal male reproduction. BFRs are used in consumer products to prevent them from catching fire too rapidly. Over 80% of exposure to BFRs is due to contaminated dust in our living spaces, with the remainder coming from food.

Cynthia (Cindy) Gates Goodyer, PhD

Human Reproduction and Development Axis

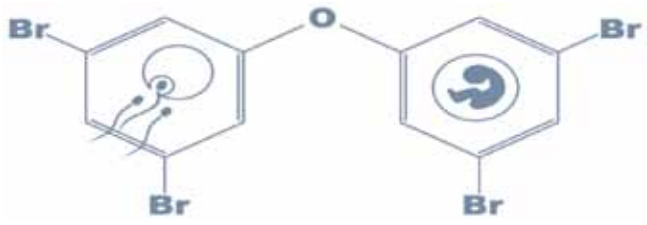
Associate Professor of Pediatrics,
McGill University

Endocrinology Research Laboratory,
Research Institute of the MUHC
at The Montreal Children's Hospital

Dr. Cindy Goodyer is leading a multidisciplinary research team from five Canadian universities and Health Canada to study the effects of BFRs on developmental abnormalities of reproductive systems and fertility. The team is also exploring ethical, legal and social issues surrounding BFRs since they pose a potential health risk not only to individuals, but to future generations.

The Human Growth Hormone Receptor

Dr. Goodyer's laboratory also studies human growth. This program aims to create a "biological blueprint" that will allow researchers to define genetic alterations in children with abnormal growth or with metabolic disorders, including obesity. Her group is presently working to identify regions within the growth hormone receptor (GHR) gene that control expression of the receptor in GH target tissues such as bone, liver or fat.



Cancer Research and Genetic Disorders

Penetrating Brain Tumours

As a hemato-oncologist, Dr. Nada Jabado provides care for children with cancer and inherited genetic disorders. As a researcher, she studies brain tumours, the leading cause of cancer-related mortality and morbidity in children.

Nearly half of these tumours are pediatric astrocytomas (PAs)—the high-grade tumours often being fatal, and low-grade ones requiring treatments that may cause permanent brain damage. Dr. Jabado has established an international network to gather and investigate PAs.

One of her chief discoveries is that pediatric and adult astrocytomas are distinct molecular entities, contraindicating the "cut-and-paste" of therapies from adults to children. Dr. Jabado's laboratory has also identified new molecular and genetic targets involved in PA formation and progression. These molecular events may be amenable to therapies, a prospect that could lead to improved outcomes in children with a devastating cancer.

Genetic Breakthrough

Dr. Jabado has formed an international network to investigate genetic disorders of unknown causes at the clinical, biological and molecular levels. With collaboration from the McGill Human Genetics Department, the McGill Innovation Centre, and Genome Quebec, she is co-running a project using next-generation exome sequencing. This novel technology allows researchers to unravel the genetic code of affected children in record time, and helps identify abnormal genes responsible for a disease. The team has identified two genetic disorders in this way—a medical breakthrough in Canada—and is working to better prevent the diseases, advise families, and adapt treatments to individual patients.

Nada Jabado, MD, PhD

Medical Genetics and Genomics Axis

Associate Professor of Pediatrics,
McGill University

Pediatric Hematology-Oncology
The Montreal Children's Hospital
of the MUHC

Blindness: Genetic Discoveries that Lead to Treatments

Blindness in children is a common and lifelong condition. The causes are most often hereditary, and currently, there are no cures. However, research is revolutionizing the management of Leber congenital amaurosis (LCA) and retinitis pigmentosa. In these disease groups, vision is lost because of a genetic insult leading to photoreceptor cell death or cell dysfunction. Dr. Koenekoop's laboratory is contributing to the discovery of new genes and mechanisms as well as testing new treatments based on these findings.

The laboratory, with collaborations from the University of Nijmegen in Holland and Baylor in the United States, has discovered the last four of 15 genes identified to date for LCA. One gene discovered by another group, RPE65, was found to be treatable by gene replacement—first in blind mice, then in blind dogs, and recently in humans. More than 30 humans have been treated, including children, and some vision has been restored.

Dr. Koenekoop's laboratory is participating in the first human drug trial for LCA patients with LRAT or RPE65 mutations. Initial results point to the existence of dormant photoreceptors that can be revived by gene or drug replacement, confirming that genetic discoveries can lead to an understanding of disease pathways, then to treatments.

Robert Koenekoop, MD, PhD, FRCS(C)

Medical Genetics and Genomics Axis

Associate Professor of Ophthalmology,
McGill University

Director, McGill University Ocular
Genetics Laboratory
Director, Pediatric Ophthalmology
The Montreal Children's Hospital of the MUHC

Selected Publications
(from nearly 300)

2009

Al-Kindy HA, Gelinas JF, Hatzakis G, Cote A. **Risk factors for extreme events in infants hospitalized for apparent life-threatening events**. J Pediatr 154(3):332-7, 337 e1-2, 2009.

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Amre DK, Mack DR, Morgan K, Fujiwara M, Israel D, Deslandres C, Seidman EG, Lambrette P, Costea I, Krupoves A, Fegury H, Dong J, Grimard G, Levy E. **Investigation of reported associations between the 20q13 and 21q22 loci and pediatric-onset Crohn's disease in Canadian children**. Am J Gastroenterol 104(11):2824-8, 2009.

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Beland MJ. **The new guidelines for preventing infective endocarditis: Controversy over the diminished role of antibiotics**. Paediatr Child Health 14(3):171-2, 2009.

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Cumyn L, French L, Hechtman L. **Comorbidity in adults with attention-deficit hyperactivity disorder**. Can J Psychiatry 54(10): 673-83, 2009.

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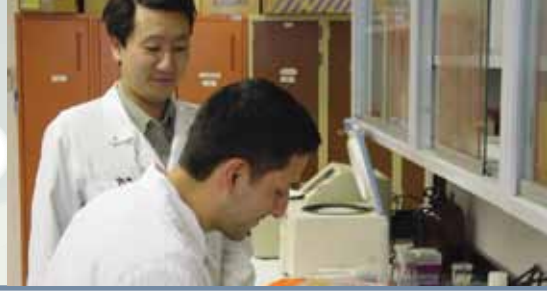

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Funding (01/04/2009–31/03/2010)

Major Benefactors of the Research Program at The Montreal Children's Hospital of the MUHC

Donation from the Montreal Children's Hospital Foundation: $2.3 M

Thanks to the generosity of its donors, the Montreal Children's Hospital Foundation disbursed $2.3 million in support of pediatric research in 2009–2010, contributing to the progress of a number of significant projects.

Among the Foundation's major partners in this contribution are Shire Canada (research to improve diagnosis and treatment of attention-deficit hyperactivity disorder), the Cole Foundation (leukemia research), and the National Bank Financial Group (research into the preconception and prenatal causes of birth defects in children, to better understand normal embryonic development and how it can be affected by environment and genetics). Leucan, the Children's Leukemia Research Association and the Fast Foundation were also important contributors to the MCH Foundation's substantial disbursement for this year.

The Montreal Children's Hospital Foundation continues working toward its objective of raising $100 million in *The Best Care for Children* campaign to construct the new Montreal Children's Hospital and its new research institute home on the Glen Campus. To date, this campaign has raised $74 million.

Website: childrenfoundation.com

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6,541,933	Canadian Institutes of Health Research
1,270,238	Fonds de la recherche en santé du Québec
600,000	National Institutes of Health (U.S.)
369,450	Juvenile Diabetes Research Foundation International
274,796	National Cancer Institute of Canada
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68,660	Heart & Stroke Foundation of Canada
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1,756	Multiple Sclerosis Scientific Research Foundation
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313,569	Administrative salaries
52,301	Administrative expenses
269,390	Core services salaries
186,402	Core services expenses
-376,493	Less cost recovery, basic research
188,008	Clinical research salaries
18,947	Clinical research expenses
-63,649	Less cost recovery, clinical research
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Our Research Community

The Research Institute of the McGill University Health Centre at The Montreal Children's Hospital is composed of over 100 researchers and over 100 graduate students and post-doctoral fellows engaged in a broad spectrum of basic and clinical research. It also comprises more than 100 technicians, coordinators, nurses and administrative personnel.

Our research community constitutes the pediatric site of the Research Institute of the McGill University Health Centre, a world-renowned biomedical and health-care hospital research centre. Located in Montreal, Quebec, Canada, the Institute is the research arm of the MUHC, the university health centre affiliated with the Faculty of Medicine at McGill University.

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Our website:
http://www.thechildren.com/en/research

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