



Lady Davis Institute Research Newsletter



November 2013 Vol. 2 No. 6

Donation to create Ludmer Centre for Neuroinformatics and Mental Health

The Irving Ludmer Family Foundation has donated \$4.5 million to the Douglas Mental Health University Institute and JGH to create the **Ludmer Centre for Neuroinformatics and Mental Health**, a multidisciplinary research platform that is unique in the world. Its goal is to significantly reduce the rates of mental illness by finding scientific methods to establish early childhood risk factors.

Researchers at the Ludmer Centre will address the following questions:

- How does the interaction of genes with favourable and unfavourable environments affect a child's brain development, cognitive ability, emotional and social function, and risk of mental illness?
- Why are some children affected a great deal by high-risk environments while others are more resilient?
- Do more recent societal innovations, such as day care, improve or hinder children's cognitive, emotional, and social development? Can these effects change an individual's biology, such as gene activity or brain structure and function?
- Can the study of how the environment affects gene function improve how we diagnose and treat mental disorders?

The centre will use an innovative and never-been-done approach that incorporates various branches of research such as neuroscience, computational biology, mathematics, genetics, epigenetics, bioinformatics, epidemiology and computer science. It will analyze and process

complex bodies of data from a number of research projects around the world.

Although thousands of pieces of information can be collected, there remains the challenge of making sense of them. The Centre will enable scientists to: identify the factors that need to be analyzed; process bodies of data thanks to computational innovations; and pull meaning from this information through mathematical and statistical approaches.

Dr. Celia Greenwood, who has developed advanced statistical methods in genetics and epigenetics, is among the researchers who will process large bodies of data in order to extract meaningful information and identify factors that may help to predict mental illness in children, the form of illness they may develop, and what can be done to prevent it.

The other principal investigators at the Centre are **Dr. Michael Meaney**, a neuroscientist, who created the MAVAN (Maternal Adversity, Vulnerability and Neurodevelopment) project at the Douglas, and **Dr. Alan Evans**, who created the Neuroinformatics and Genetics Program at McGill, and a computer-based approach to processing data from brain imaging and the genetic variations of an individual at the Montreal Neurological Institute.

Researchers will collaborate with scientists from around the world. The scope of this endeavour is enormous. The project will represent an investment of \$11 million over four years. The gift from the Ludmer Family Foundation is an unprecedented donation for mental health research.

JGH Award for Excellence in Basic Research—Dr. Mark Wainberg

Since HIV was first identified as a new form of retrovirus in the 1980s, **Dr. Mark Wainberg** has worked tirelessly in the laboratory to develop therapies that would contain and control the deadly AIDS epidemic it spawned. He has also stepped out into the public arena to serve as a passionate advocate for those millions of sufferers who still lack access to the costly cocktail of drugs that have proven so effective at prolonging life.

“It’s been an extraordinary journey from the time when HIV was a mysterious killer that nobody could do anything about, to where we can offer infected individuals the probability of a normal lifespan,” he said. Dr. Wainberg is best known for his role in the discovery of 3TC, one of the first anti-retroviral drug to deter the inexorable progression of AIDS. “It is extremely rewarding to have participated in drug development that has saved millions of lives.”

As President of the International AIDS Society, he was instrumental in organizing the 2000 International Congress on AIDS in Durban, South Africa, which had a tremendous impact on drawing attention to the disease in Africa. He was co-chair of the 2006 Congress in Toronto, where he challenged the Canadian government to support global efforts to fight AIDS.

“Now that we have the capacity to treat AIDS, we have to contend with growing complacency,” he argues. “The fact that so many people are living for decades with HIV means that it costs billions of dollars to provide the necessary drugs. This is simply not sustainable. Therefore, the need for a cure is as pressing as ever, and we continue to make progress.”

Dr. Wainberg is a fellow of the Royal Society of Canada, an Officer of the Order of Canada, an Officer of the *Ordre National du Québec*, an honorary fellow of the Royal College of Physicians and Surgeons of Canada, and a *Chevalier* in the *Legion d’Honneur* of France. In 2012 he won the Killam Prize for Health Science, one of Canada’s highest awards.

Each year, the Jewish General Hospital honours excellence in a variety of categories, including research. The 2013 honourees are Dr. Mark Wainberg for basic research and Dr. Mark Eisenberg for clinical research.

JGH Award for Excellence in Clinical Research—Dr. Mark Eisenberg

Through treating patients, the clinician-scientist is uniquely positioned to identify clinical concerns requiring further research. “I specialize in finding those areas that need to be fleshed out and then to concentrate where I can have a public health impact,” notes **Dr. Mark Eisenberg**, whose practice in cardiology drives his inquiries as an epidemiologist. “I make a point of publishing in cardiology journals that are widely read among practicing clinicians so that our work can impact how physicians treat their patients.”

Being a cardiologist, he has long been concerned with the effects of smoking. In this regard, he published the results of a decade-long study in the *Journal of the American College of Cardiology* earlier this year. While conventional wisdom had it that suffering a heart attack was enough to inspire smokers to quit, there was no scientific evidence one way or the other. Dr. Eisenberg’s extensive research demonstrated that, in fact, two-thirds of smokers returned to smoking within a year of a heart attack.

Dr. Eisenberg is troubled by the general decline in the number of physician-scientists. In 2008-09, while on sabbatical from McGill University, where he is a Professor of Medicine, he wrote *The Physician Scientist’s Career Guide* to encourage and assist students and recent graduates to plot out successful and fulfilling careers that incorporate research.

“The funding climate is very challenging and research demands additional training, so many physicians are dissuaded,” he said. “This is an important problem because clinician-scientists are critical in translating lab findings to the bedside. Therefore, it’s essential to encourage physicians in the pursuit of research.”

He praises the JGH for encouraging scientists to pursue those questions that interest and inspire them. He also notes that McGill is one of few institutions still offering tenured professorships in medicine, a crucial source of acknowledgement for the importance of their work.

SAVE THE DATE!

5th Annual LDI Scientific Retreat

Friday May 30, 2014

Holiday Inn—Midtown Montreal

Keynote Speaker: Dr. Morag Park,

Director, Goodman Cancer Centre,

McGill University

Gift for research into Alzheimer's disease and dementia

The JGH Program for Alzheimer's Disease and Dementia has received a generous gift of \$525,000 from the Oberfeld Family Campaign Fund for Alzheimer, including a lead gift of \$100,000 from the family itself. The essential funds provided by the Oberfeld campaign will support Alzheimer's disease research and prevention, as well as a comprehensive program that provides vital education and support for patients and their families from across Quebec.

Support is divided between the groundbreaking basic research conducted by **Dr. Andréa LeBlanc** towards finding the root causes of Alzheimer's; the Mary Katz Claman Alzheimer Risk Assessment Clinic, headed by **Dr. Hyman Schipper**, which is conducting fundamental and translational research to identify modifiable risk factors and investigate preventive strategies to stem the growing epidemic of Alzheimer's; and the Anna & Louis Goldfarb JGH/McGill Memory Clinic headed by **Dr. Howard Chertkow**, which is the largest of its kind in Canada and provides internationally recognized expertise in the early diagnosis and treatment of memory disorders and dementia.

Samy Suissa elected Fellow of Canadian Academy of Health Sciences

Dr. Samy Suissa, head of the Epidemiology Research Axis, was among the new fellows inducted into the Canadian Academy of Health Sciences for 2013 at a ceremony in Ottawa. CAHS Fellows are those who have a history of outstanding performance in academic health sciences in Canada.

Honours for Ernesto Schiffrin

The Canadian Cardiovascular Society awarded **Dr. Ernesto Schiffrin** the 2013 CCS Research Achievement Award, one of its most prestigious honours, for his contribution to Canadian cardiovascular health and care, while inviting him to present on his research at its annual meeting in Montreal. Last month, Dr. Schiffrin was elected President of Hypertension Canada.

Lorraine Chalifour wins John J. Day Award

Dr. Lorraine Chalifour has been honoured by the Quebec Heart & Stroke Foundation with the John J. Day Award for her research on endocrine disruptor re-programming of the heart: mechanisms and implications for the progression to disease.

Vanier Canada Graduate Scholarship

Anna McKinnon, a PhD candidate being supervised by **Dr. Phyllis Zelkowitz**, won the prestigious Vanier Canada Graduate Scholarship for her research into the processes through which maternal depression during the perinatal period impacts the mother-child relationship and child development. She is investigating the modulating role of the hormone oxytocin as it relates to perinatal depression, maternal social cognition, maternal interactive behavior, and to children's social cognitive development.

Recognition for Brett Thombs

Dr. Brett Thombs and **Michelle Roseman**, a graduate student under his supervision, have received the Bill Silverman Award from the Cochrane Collaboration for their paper, "Reporting of conflicts of interest from drug trials in Cochrane reviews: Cross sectional study," published in the BMJ. The Award is presented for high quality academic work that offers constructive suggestions on how the Cochrane Collaboration can improve its evidence synthesis methodology and, thus, improve its reviews. This particular study showed that Cochrane systematic reviews have not adequately accounted for potential bias of results from pharmaceutical industry funding of drug trials. This paper was highlighted as the LDI Paper of the Month in October 2012.

In a second achievement, the Arthritis Society has given Dr. Thombs a 2013-14 Investigator Salary Award for his outstanding contributions and demonstrated leadership in arthritis research. The award is intended for mid-career researchers whose work has had an international impact.

Amir Raz on *The Nature of Things*

Dr. Amir Raz, head of the Clinical Neuroscience and Applied Cognition Laboratory at the Institute of Community and Family Psychiatry, was featured on [CBC's *The Nature of Things*](#) episode about how placebos can have a real impact on our brains, our bodies, and even our health.

Prepared by the Research Communications Office, Lady Davis Institute at the Jewish General Hospital. Any suggestions with respect to content are welcome. Not to be reproduced without attribution.

To submit information or for media enquiries, contact: Tod Hoffman at: thoffman@jgh.mcgill.ca; 514-340-8222, ext. 8661.

Recruitment for clinical trials from Herzl Family Practice

Clinical research at the Herzl Family Practice Centre has received a boost with a \$500,000 grant from the Fonds de recherche de Quebec – Santé (FRQS) to finance its inclusion in the new Quebec Knowledge Network in Primary Health Care. Locally, a practice-based research network is being established and will be coordinated by **Dr. Roland Grad**, a family doctor, and **Dr. Pierre Pluye**, both of whom are investigators at the LDI.

Health professionals in primary care manage patients with the widest range of problems, some of whom could benefit from inclusion in clinical trials. At the same time, however, it can be challenging to identify which specific patients fit the rigorous inclusion criteria of a trial. Dr. Grad facilitates the recruitment of Herzl patients and should be contacted at the protocol development stage in order to evaluate the proposed study in terms of relevance to primary health care and feasibility of patient participation.

Once Herzl's involvement is secured, one of its clinicians will take part as a co-investigator or collaborator on the study. This physician's role will be to help coordinate recruitment, to advise colleagues, and ensure that patients are kept fully informed, as per the ethical obligation of any clinical trial.

"We are excited to partner in a province-wide initiative to launch a local practice-based research network," said Dr. Grad. "As primary care doctors, we identify problems encountered in the course of front-line practice that research may help to better address. We plan to come up with the means by which clinicians can participate in designing research projects."

One recent example of a successful collaboration was Dr. Grad's efforts to recruit hundreds of patients for a Canadian Institutes of Health Research (CIHR) funded study on predicting sleep apnea in a primary care setting, on which **Drs. Eva Libman** and **Sally Bailes** of the LDI are principal investigators.

"Depending on the question being investigated, it can be difficult to find an appropriate patient population," Dr. Grad explained, "particularly as we see patients with multiple co-morbidities. One of the issues that concerns us is determining effective ways for clinicians to recognize and, ultimately, to better manage their most complex cases."

Revealing the mechanism for interferon inhibition of HIV infection

Dr. Chen Liang has published research revealing that myxovirus resistance B (MxB), one of two human Mx proteins, is induced by interferon to inhibit HIV-1 infection. While it is well known that interferon protects against viral infection, the significance of this finding is the identification of a mechanism by which it may be triggered.

When Dr. Liang began this work three years ago, it was understood that MxA inhibited many forms of viral infection. Virtually nothing was known about the function of MxB.

"Now, we need to ascertain the molecular mechanism that will explain exactly how MxB functions against HIV. We need to go on to identify the viral protein that it targets and then to determine whether the virus can enact a counter-measure to evade MxB," he says, referring to the biological thrust-and-parry between virus and anti-virus. "In the long term, this may prove a promising avenue for the development of new anti-HIV therapies."

Dr. Liang's lab has been looking at interferon's role in inhibiting HIV since 2008. In 2011, he published a paper in the *Journal of Virology* that identified interferon induced transmembrane (IFITM) proteins that inhibit HIV-1 from entering cells. IFITM proteins have also been discovered to inhibit many other viral infections, including influenza, West Nile, Dengue, Ebola, and SARS corona viruses.

"We know that IFITM can block the virus from entering the cell and we know that if you knock out IFITM3 in mice, they are less susceptible to infection by influenza virus," he explains. "HIV has evolved to survive in humans, carrying specific proteins designed to overcome interferon-induced proteins. The fact that HIV has pursued this evolutionary path suggests that interferon has mounted a great pressure on HIV replication. We are trying to understand the factors that have made interferon so successful, one of which is now known as MxB, and to block the viral counter-measures so as to expose HIV to interferon once again."

["The Interferon-Inducible MxB Protein Inhibits HIV-1 Infection" by Zhenlong Liu, Qinghua Pan, Chen Liang et al in *Cell Host and Microbe* is the LDI Paper of the Month for December 2013.](#)