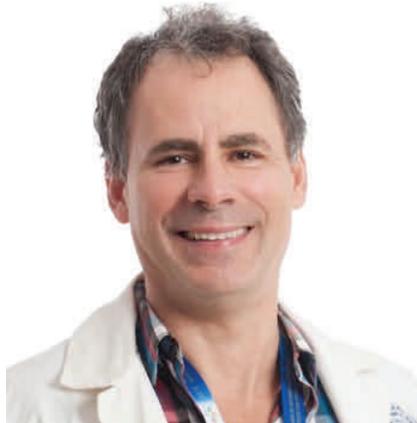


Award for Excellence in Basic Research

Dr. Stéphane Richard is the winner of the 2016 Award for Excellence in Basic Research. A James McGill Professor of Medicine and Oncology, he also serves as Associate Director for Research Space. The goal of his research is to define the physiological role of a class of RNA binding proteins referred to as STAR (signal transduction activator of RNA metabolism) and a family of nine protein arginine methyltransferase (PRMT1 to PRMT9). He is actively exploring the molecular roles of protein methylation and RNA binding proteins in epigenetics, RNA metabolism, and DNA damage signaling. His work has implications for cancer, metabolism, neuroscience, and stem cell research.

Among his recent achievements was a breakthrough in the understanding of the molecular mechanisms behind pancreatic cancer, published in [Cell Reports](#).



His lab showed that pancreatic tumours often lose the ability to express a small RNA molecule called miR-137. This molecule induces a defense mechanism known as cellular senescence, which keeps cancer cells in check. The loss of miR-137 works in conjunction with various mutations frequently observed in pancreatic tumors to trigger uncontrolled cell growth and then cancer. At the same time, restoring normal miR-137 levels in pancreatic cancer cells has a protective effect, as doing so induces senescence and stops the cells from spreading. “These results suggest that modulating levels of miR-137 may be important for triggering tumor suppressor networks in pancreatic cancer,” the paper concluded.

Award for Excellence in Clinical Research

Dr. Brent Richards is the winner of the 2016 Award for Excellence in Clinical Research. A clinical endocrinologist at the JGH, he conducts research through the Centre for Clinical Epidemiology at the LDI. His primary objectives are to identify the genetic determinants of common, aging-related endocrine diseases, such as osteoporosis, and to use this information to improve clinical care.

In the past year, Dr. Richards had the distinction of having two papers published simultaneously in the prestigious journal *Nature*. [In one](#), he led a team that used extensive genetic data compiled by the UK10K project to identify an uncommon genetic variant that has twice as strong an effect on bone mineral density (BMD) and fracture as any previously revealed.



[The second](#) was on the UK10K project, the largest population genome sequencing effort to date. By assembling genomic data from 10,000 individuals in the United Kingdom, it explores the contribution of rare genetic variants to human disease and its impact on risk factors. These studies represent an initial realization of the hope that sophisticated analysis of the genome would reveal those genes associated with disease.

In another genetic study, this one appearing in [PLOS Medicine](#), he confirmed the long-standing hypothesis that low levels of vitamin D are strongly associated with an increased susceptibility to multiple sclerosis. Since vitamin D supplements are generally safe and inexpensive, the finding further supports the health benefits of maintaining adequate levels of the vitamin.

7th Annual LDI Scientific Retreat

Nearly 300 researchers, trainees, and staff attended the 7th annual LDI Scientific Retreat. The keynote addresses were by Dr. John Bell of the Ottawa Hospital Research Institute, on the topic of virus-based cancer therapeutics, and Dr. Jay Kaufman of McGill University, on epidemiology in the service of a worthy cause.

Trainee participation is a key element of the day. First prize for oral presentations went to David Olganier of Dr. Rongtuan Lin's lab for "Interplay between Nrf2 and autophagy enhances VSV oncolysis by curtailing innate antiviral immunity" and second prize went to Lauren Mokry from Dr. Brent Richard's lab for "Obesity and Multiple Sclerosis: A Mendelian Randomization Study." Prizes for best poster were awarded to Rachel La Selva, Prateep Pakavathkumar, Natasha Larivee, Chia Hao Chang, William Yang, Khalid Hilmi.

The honour of LDI Employee of the Year went to Christian Young (below), manager of the core facilities.



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Key mechanism identified in deadly glioblastomas

Research led by **Dr. Arezu Jahani-Asl**, and published in *Nature Neuroscience*, is the first to show that a protein called Oncostatin M Receptor (OSMR) is required for glioblastoma tumors to form. Glioblastoma, the most aggressive type of brain tumor to strike adults, is resistant to radiation and chemotherapy, and difficult to remove with surgery.

"The fact that most patients live only 16 months following diagnosis is just heartbreaking. We need to gain a better understanding of what is really going on inside these tumors," said Dr. Jahani-Asl.

Researchers had known for some time that a mutant variation of a gene known as EGFRvIII produces a major tumor-forming protein in glioblastoma. But treatments aimed at disabling EGFRvIII in patients have been disappointingly ineffective. Studying tumor stem cells taken from glioblastoma patients revealed that EGFRvIII needs to bind with OSMR before it can send out any tumor-forming signals. By analyzing 339 patient samples, the authors concluded that the higher the OSMR expression, the faster the patient died. This was confirmed in mouse studies, where animals injected with human brain tumor stem cells with low OSMR expression lived 30 percent longer than those injected with tumor stem cells with normal OSMR expression. Blocking OSMR activity prevented EGFRvIII from forming tumors in mouse brains.

The researchers concluded that these two genes, OSMR and EGFRvIII, conspire to promote tumor growth by making what's known as a "feed forward" mechanism: when OSMR produces its protein, it signals EGFRvIII to rev up and produce its tumor-forming protein.

Dr. Jahani-Asl is now developing antibodies and small molecules designed to inhibit the OSMR protein or its interaction with EGFRvIII – a step toward the ultimate goal of finding ways to treat these tumors. "If we find that they can reverse tumor formation in rodent models," she says, "we will eventually be equipped to adapt those techniques for testing in patients."



Dr. Adi Klil-Drori (left), a post-doctoral fellow in pharmaco-epidemiology, is presented with a 2016 Young Investigator Award from Dr. Thomas Roberts, Jr., Chair of the Conquer Cancer Foundation of the American Society of

Clinical Oncology. His project is to examine the association of metformin use with the risk of malignancies of the lymphoid system (e.g., non-Hodgkin lymphoma) in patients with type 2 diabetes. This study will be co-supervised by Drs. Laurent Azoulay and Michael Pollak.

Dr. Klil-Drori is embarking on a two-year clinical fellowship in medical oncology with Dr. Sarit Assouline at the Clinical Research Unit. He came to the LDI from the Rambam Medical Center in Haifa, where he trained in internal medicine and hematology.



Dr. Mark Wainberg (left), Director of the McGill AIDS Centre, is presented the Lifetime Achievement Award by Dr. Daniel Gregson, President of the Association of Medical Microbiology and Infectious Disease Canada, in recognition of his outstanding and distinguished career.

Funding for study of prenatal factors for depression

Seeking an explanation for why twice as many girls as boys develop anxiety and depressive disorders by the time they reach early adolescence, **Dr. Ashley Wazana** of the Centre For Child Development and Mental Health is collaborating with teams in Canada, the United Kingdom, the Netherlands, and Singapore to study the correlation between prenatal experience and eventual psychopathology. The Canadian Institutes for Health Research has granted \$1.5 million over five years to fund the project.

“Differences by gender in the response to stress are well documented in early emotional development,” Dr. Wazana said. “Genetic differences in susceptibility to prenatal events are important and the early environment reflected in early maternal care might be a significant influence on the effect of prenatal, gender and genetic risk. We want to go back to the prenatal period in discover whether biological factors or underlying environmental factors that emerge in puberty are the result of longer-standing influences that may be dormant,”

Ultimately, the study aims to identify critical time-points along the trajectory of the disorder at which access to care, whether for the mother or the child, could serve a preventive function.

“The development of a predictive model that identifies risk factors using comparable data on prenatal exposure, genotype, early mother-child interactions and temperament as well as anxious and depressive psychopathology could inform early intervention and help to guide maternal care,” he said. “Depression is among the greatest causes of diminished quality of life and comorbidity, so we are in dire need of models that direct us to targets through which we can reduce its impact. As with any chronic condition, early intervention is crucial.”

Approximately 600 families are participating, with 300 families evaluated by the research team at the JGH. The infrastructure for computing the complex data associated with this study is provided by the Ludmer Centre for Neuroinformatics and Biostatistics, and Dr. Celia Greenwood is participating as the PI responsible for biostatistics and complex genetic modeling.

Interdisciplinary support for thyroid cancer patients

Because survival rates for thyroid cancer are excellent, the psychosocial needs of thyroid cancer patients have heretofore been overlooked. But whatever the prognosis, the anxiety experienced by patients given any cancer diagnosis is very real. **Dr. Melissa Henry**, along with **Dr. Michael Hier** and the JGH ENT Department, received funding from Genzyme to initiate research into patients' bio-psychosocial needs and screening for distress within this population, as well as to implement an interdisciplinary model of care. Patients often identify important benefits from having a "human touch" that extends beyond their physical care.

Adopting an interdisciplinary team-based care approach offers patients with a newly diagnosed or suspected case of thyroid cancer the opportunity to meet with Gabrielle Chartier, a dedicated nurse who has been assigned to the team. Her role is to assure continuity of care and support throughout the process of treatment and care management from diagnosis onward. Since the research was initiated 20 months ago, she has seen every patient with a newly diagnosed or suspected thyroid cancer at the Segal Cancer Centre.

The period between diagnosis and the initiation of treatment – which can be lengthy because thyroid cancer usually progresses slowly – is particularly stressful. During this time, a patient will not typically need to see their physician. Generally, they are left alone to contend with uncertainty.

"Because of its generally positive prognosis, nursing care had been lacking," Dr. Henry affirms. "Our research is designed to assess what patients need and how best to respond. So far, every indication is that patients find psychosocial support essential to their care during a very vulnerable time in their lives." This underscores how resources ought not to be allocated strictly according to prognosis, but should take into account the whole person in all medical circumstances.



McGill Global Mental Health Program

On May 30th the McGill Global Mental Health Program (GMHP) was launched at the Institute of Community & Family Psychiatry. **Dr. Laurence Kirmayer**, Director of the Division of Social and Transcultural Psychiatry in the Department of Psychiatry at McGill University, is the Director of this novel multidisciplinary initiative.

The GMHP aims to foster collaborative action research, capacity building, and knowledge exchange to address the disparities in mental health in low- and middle-income countries. The program builds on McGill's longstanding engagement with cultural psychiatry by bringing the methods and perspectives of social sciences and mental health practice to bear on understanding and responding to mental health problems in international contexts.

A balanced research agenda for the future of GMH must focus not only on the biological molecular bases and global burden of mental disorders, but also on the broader social, cultural, environmental and economic determinants of mental health and illness. To maximize the capacity for effective knowledge translation and innovation in resource-scarce countries, action research initiatives must engage with local priorities and perspectives.

Melissa Lu, a secondary V student at The Study, won a bronze Medal as well as Entrance Scholarships to the Universities of Ottawa and Western Ontario at the Canada-Wide Science Fair for successfully identifying mutated proteins produced by the gene RASGRP4 in patients with non-Hodgkin's lymphoma who did not respond to conventional chemotherapy. Her discovery could result in new approaches to targeted therapies. She was mentored in her project by **Dr. Koren Mann**, head of the Molecular and Regenerative Medicine Axis.



Dr. William Foulkes, head of the Cancer Genetics Laboratory at the LDI, Director of the Program in Cancer Genetics at McGill, and a clinical cancer geneticist at the JGH and MUHC, has been elected a Fellow of the Royal College of Physicians in the United Kingdom. Fellowship in the RCP is "a mark of achievement and skill as a doctor and recognises ongoing contribution to the profession." In 2015, Dr. Foulkes was honoured with the **JGH Award for Excellence in Basic Research**.