



Lady Davis Institute Research Newsletter



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Meet the Elite International Scientific Advisory Board of the LDI

For the first time in its forty-five year history, the LDI has a permanent International Scientific Advisory Board (ISAB). The purpose of the Board, which is among the most prestigious at any medical research institute in Canada, is to provide advice and guidance in defining the overall strategic direction of the LDI, focusing its programs, and helping address challenges to its operations.

“The LDI is tremendously fortunate to have an ISAB of the stature that we have assembled,” said **Dr.**

Roderick McInnes, Director of the LDI. “Their counsel will be invaluable in maintaining our position as one of Canada’s leading research institutes.”

The inaugural meeting of the ISAB will be held in Montreal March 18 to 19.

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The ISAB is chaired by **Sir John Bell**, Regius Professor of Medicine at Oxford University, President of the Academy of Medical Sciences, and Chair of the UK government’s Office for Strategic Coordination of Health Research. Dr. Bell is the founder of the Wellcome Trust Centre for Human Genetics, and has led the significant expansion in biomedical research activities in the Clinical School in Oxford. His own research program has contributed to a clearer understanding of genetic determinants of susceptibility in Type 1 diabetes, rheumatoid arthritis, and also certain molecular interactions associated with activation of the immune system. He has been a pioneer in devising a large number of high-throughput genomic methodologies applied to biomedical science.

The ISAB is made up of:

- **Dr. Valerie Beral**, a Professor of Epidemiology at Oxford and, since 1988, Director of the Cancer Epidemiology Unit ;
- **Dr. Alan Bernstein**, President and CEO of the Canadian Institute for Advanced Research, who was founding president of the CIHR (2000-2007);
- **Dr. Paul Frenette**, Director and Chair of the Ruth L. and David S. Gottesman Institute for Stem Cell and Regenerative Medicine Research at the Albert Einstein College of Medicine in New York.;
- **Dr. Thomas Hudson**, President and Scientific Director of the Ontario Institute for Cancer Research;
- **Dr. David Naylor**, President Emeritus and Professor of Medicine at the University of Toronto;
- **Dame Linda Partridge**, Director of the University College London Institute of Healthy Ageing, and founding director of the Max Planck Institute for Biology of Ageing in Cologne;
- **Dr. Michael Simons**, RW Berliner Professor of Medicine and Cell Biology, Director of the Cardiovascular Research Center and Chief of Cardiovascular Medicine at Yale University;
- **Sir Patrick Sissons** was Regius Professor of Physics and Head of the School of Clinical Medicine at Cambridge (2005-2012), and (from 2009) Director of Cambridge University Health Partners;
- **Sir Simon Wessely**, Head of the Department of Psychological Medicine and Vice Dean for Academic Psychiatry at the Institute of Psychiatry, King’s College London;
- **Dr. Jeff Wrana**, Senior Investigator at the Lunenfeld-Tannenbaum Research Institute at Mount Sinai Hospital and Professor of Molecular Genetics at the University of Toronto.

National Centre of Excellence for Precision Therapeutics in Cancer

The federal government announced a \$15 million investment over five years to the National Centre of Excellence (NCE) PreThera Research, a non-profit entity of which **Dr. Gerald Batist**, Director of the Segal Cancer Centre (SCC), is Scientific Director. Another \$17 million in funding was provided by the pharmaceutical and biotech industries, as well as the Cancer Research Society and Terry Fox Research Institute.

The JGH and LDI represent the central clinical and research hub for the initiative, in partnership with the Centres hospitalier universitaire de Québec and de l'Université de Montréal, along with others in Quebec and across Canada. The new Molecular Pathology Centre at the SCC will serve as its central biobank.

Specializing in research for precision therapeutics, the objectives of the NCE are to significantly improve the cancer drug development ecosystem, to increase treatment options for patients, and to reduce the cost burden to the health system. It establishes an extensive database of tumor biopsies in order to profile biomarkers in a broad variety of cancer patients.

“This investment will allow us to pursue promising research based on long-term follow-up of patients and molecular profiling of their tumor along with the expansion and reinforcement of a clinical and translational research network of international calibre,” said Dr. Batist, “as well as the development of an ethical and legal framework to allow full deployment of personalized medicine. This partnership will permit the implementation of state of the art information technology platforms to bring into standard clinical practice the current use of biomarkers and targeted treatment strategies for cancer patients in order to better equip physicians in their clinical decision making.”

PreThera will be the first Canadian database to include molecular and clinical data of cancer patients. It will be instrumental in enabling researchers to track changes in genetic mutations that characterize the progression of cancer and its capacity to become drug resistant.

A total of \$22 million invested in PreThera Research, a public-private national centre of excellence for personalized medicine in cancer

CIHR Operating Grants awarded

Successful applications for operating funds from the Canadian Institutes of Health Research (CIHR) included two first place rankings within their respective review committees:

- **Haim Abenheim** (Epidemiology), who received more than \$1.1 million over four years to study progesterone for the prevention of miscarriage.
- **Mark Eisenberg** (Epidemiology), who received more than \$850,000 over five years for a trial to evaluate the efficacy of e-cigarette use for smoking cessation.

Finishing second in her CIHR committee review was **Giuseppina Ursini-Siegel** (Cancer), who was granted more than \$700,000 over five years to define the molecular mechanisms and clinical implications of p66ShcA as a driver of the epithelial to mesenchymal transition in breast cancer.

Stéphane Richard (Cancer) finished third, with funding renewed for more than \$1 million over five years to define the role of protein arginine methyltransferases and RGG/RG motifs in cancer and in the maintenance of genomic stability.

Other grant recipients were:

- **Chantal Autexier** (Aging), \$700,000 renewal over five years to study telomerase regulation.
- **Simon Bergman** (Epidemiology), more than \$220,000 over two years to understand surgical recovery in elderly patients and its association with quality of care.
- **Chen Liang** (HIV/AIDS), \$650,000 over five years, to study the antiviral function of IFITM proteins.
- **Christel Renoux** (Epidemiology), \$120,000 for two years to study second generation antidepressants and the risk of accidental vascular cerebral ischemia and hemorrhage.

Bluma Brenner (HIV/AIDS) received a \$100,000 CIHR bridge fund for phylogenetic-based prevention interventions to curb the spread of HIV among homosexual men in Montreal.

McGill MedStar Trainee Award

Mona Wu, a doctoral candidate being supervised by Drs. William Foulkes and Marc Fabian in the Cancer Axis, was awarded a McGill MedStar Award in recognition of excellent research carried out in the Faculty of Medicine. Her publication, "Biallelic DICER1 mutations occur in Wilms tumours," was published in May 2013 in the [Journal of Pathology](#). Wilms tumours are a type of childhood kidney tumour. Although mutations in some genes have already been linked to Wilms tumours, the work emerging from Dr. Foulkes' lab is the first to identify the gene *DICER1* as a gene that can be mutated in these tumours.

9th Annual Psychiatry Research Day

A hard pill to swallow? Social, political, and economic perspectives on mental illness as brain disease

Friday March 21, 2014 08:30 to 12:30

ICFP Amphitheatre, 4333 Cote-Ste-Catherine Road

Featuring:

- **Dr. Amir Raz** - "The taking of a pill is sometimes more meaningful than the actual pill you are taking ;"
- **Dr. Suparna Choudhury** - "Are we our brains? Cognitive neuroscience and the politics of brain-based identities;"
- **Dr. Ashley Wazana** - "Under the influence: Lessons from interventions to protect medical knowledge and practice from physician pharmaceutical industry interactions;"
- **Dr. Laurence Kirmayer** - "Knowledge translation in global mental health: Mental health literacy, political economy, and indigenous psychiatries;"

[On-Line Registration](#)

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New evidence Caspase-6 is key to cognitive impairment in Alzheimer's

Dr. Andréa LeBlanc has demonstrated for the first time in a mouse model that Caspase-6 activity, in the absence of the plaques and tangles that are also abundant in the brain of Alzheimer's sufferers, is responsible for memory deficits and impaired cognitive function comparable to that which afflicts humans. Her findings were published in [Cell Death & Differentiation](#).

"Caspase-6 is highly abundant in every Alzheimer's afflicted brain that we have studied, and we have found a correlation between higher amounts of active Caspase-6 and lower cognitive function in aged individuals, particularly in episodic memory,

which one of the first types of memory to decline in Alzheimer's disease," said Dr. LeBlanc.

Dr. LeBlanc has demonstrated for the first time in vivo that Caspase-6 activity is responsible for memory deficits and impaired cognitive function comparable to that which afflicts humans.

It has been her hypothesis that the amyloid plaques that characterize a brain ravaged by Alzheimer's are likely a

late symptom of the disease, as opposed to an early cause. By creating a mouse model that expresses Caspase-6 in the area of the brain responsible for memory and ascertaining that the animal experiences memory loss in the absence of plaques and tangles, she has put forth a strong case that Caspase-6 is a probable causal factor for Alzheimer's cognitive impairment.

"The mouse model proves that Caspase-6 activity is sufficient to cause cognitive impairment," she said. "Moreover, it mirrors the development of Alzheimer's in humans."

Future research objectives include identifying and testing Caspase-6 inhibitors to develop a therapy that may prevent the progression of Alzheimer's in aging individuals. This new Caspase-6 mouse model is essential for early pre-clinical trials.

Vahab Soleimani joins LDI

Dr. Vahab Soleimani was recruited this year from the Ottawa Hospital Research Institute, where he had been a postdoctoral fellow, to pursue his research on muscle stem cells.

“My lab will explore three key areas: first, the mechanisms by which muscle stem cells are renewed and differentiated. Second, the effects of niche micro-environment on muscle stem cell function in aging and in muscular dystrophies. Finally, the molecular basis for myogenic deregulation in pediatric soft tissue tumors,” he explained.

Muscle stem cells, with their robust capacity to regenerate and repair damage, make for an especially vibrant model in which to study how stem cells behave.

“We need to identify the mechanisms responsible for their proliferation, differentiation, and renewal,” he says. “Why is it that these cells become depleted in muscular dystrophies? And why, with age, does the regenerative and reparative capacity of muscle stem cells decline?”

Only with an understanding of the molecular mechanisms at play would it be possible to develop targeted drugs that could interfere with these processes. Such drugs could potentially serve to rejuvenate muscle stem cells in aging individuals, causing them to perform with the vigour they exhibit in youth.

In muscular dystrophies, a genetic mutation causes chronic breakdown of muscle tissue, which results in depletion of muscle stem cells. Overwhelmed, they reach a point where they can no longer keep up with the damage and the patient will die.

“Can we use muscle stem cells as a paradigm to discover how other tissue might be regenerated?” Dr. Soleimani ponders. “Stem cells hold great promise for repairing damage, but manipulating them just so has proven extremely complex. Once we understand the circuit board of molecular biology that regulates their function, the sky is the limit in terms of the therapeutic applications for stem cells.”

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NSERC Postgraduate Prize

Michael Lifshitz, a doctoral candidate in the cognitive neuroscience lab of Dr. Amir Raz, has won the 2013 André Hamer Postgraduate Prize from the Natural Sciences and Engineering Research Council of Canada (NSERC). He is working to prove how mental training can improve behaviour. His research uses non-invasive imaging to show how mental training strengthens brain networks resulting in improved cognitive, emotional, and social aptitude. The Prize is valued at \$10,000.

CIHR Café Scientifique: What women need to know about blood clots

Women are at increased risk of developing venous thrombosis when experiencing hormonal changes. Drs. Vicky Tagalakakis, Mark Blostein, Haim Abenheim, and Susan Kahn, Director of the Centre of Excellence for Thrombosis and Anticoagulation Care, present a free CIHR Café Scientifique on Thursday, March 20, 2014 from 6:30 pm to 8:30 pm at Java U, (5620 Cote-des-Neiges). To reserve, contact Caitlin Wharin, 514-340-8222 # 4673, or email: cailin.wharin@ladydavis.ca.

CALL FOR NOMINATIONS

2014 LDI Awards: to honour the achievements and contributions of the very best members of the LDI community in the following categories:

Award for Excellence in Basic Research;
Award for Excellence in Psychosocial or Clinical Research;
Administrative Employee of the Year.

[CLICK HERE TO SUBMIT A NOMINATION](#)

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