

## Mark Wainberg z"l (1945-2017)

**Dr. Mark Wainberg** received numerous international honours for his pioneering AIDS research, which included the development of 3TC, a drug that has been instrumental in saving millions of lives around the world. Dr. Wainberg died suddenly on April 11, 2017 while vacationing in Florida.

Dr. Wainberg was head of HIV/AIDS research at the LDI, as well as Director of the McGill AIDS Centre. He also served as Director of the LDI from 2000 to 2009.

What motivated Dr. Wainberg was not scientific inquiry alone, but his passion and commitment to helping those affected or threatened by HIV/AIDS. This sense of urgency was particularly evident at international conferences, where he did not hesitate to criticize governments that he felt could be doing more to fight the disease and help those in need, especially in developing countries.

In fact, Dr. Wainberg's determination to take an active role against AIDS was so strong that in the early 1980s, not long after the world-wide threat of AIDS gained prominence, he became the first scientist in Canada to work directly on HIV and to establish a bio-containment facility that was equipped to handle this specialized research.

He was also among the first in the world to identify the problem of HIV drug resistance. This led directly to Dr. Wainberg's key contribution, in 1989, to the discovery of the anti-viral drug 3TC, or Lamivudine, which is combined with other medications to treat the infections caused by the human immunodeficiency virus.

A native Montrealer, Dr. Wainberg was a Professor in the Departments of Microbiology and Immunology, Pediatrics, and Medicine at McGill University. He received his Bachelor of Science degree from McGill and his PhD from Columbia University in New York. After working at the Hebrew University Hadassah Medical School in Jerusalem as a post-doctoral research fellow and lecturer, he joined the LDI as a staff investigator in 1974.

Dr. Wainberg served as President of the International AIDS Society from 1998 to 2000, with responsibilities that included organizing the 13<sup>th</sup> International Congress on AIDS in Durban, South Africa in 2000. He also co-chaired the 16<sup>th</sup> International

AIDS Conference in Toronto in 2006, where he publicly challenged the Canadian government to support global efforts to fight AIDS.

"Now that we can treat AIDS, we have to contend with growing complacency," Dr. Wainberg stated in 2013. "The fact that many people live for decades with HIV means it costs billions to provide the necessary drugs. This is not sustainable, so the need for a cure is as pressing as ever."

Among Dr. Wainberg's many honours were:

- Officer of the Order of Canada
- Officer of the National Order of Quebec
- Chevalier in France's Legion of Honour
- fellow of the Royal Society of Canada
- honorary fellow of the Royal College of Physicians and Surgeons of Canada
- member of the Canadian Medical Hall of Fame
- 2012 Killam Prize for Health Science
- Lifetime Achievement Award from the Association of Medical Microbiology and Infectious Disease Canada

Dr. Wainberg will be remembered for his his scientific insight, his commitment to his work, his wit and smile, and his deep desire to bring relief and hope to those in need.



## Roderick McInnes appointed acting President of CIHR

The Honourable Jane Philpott, Minister of Health, announced that **Dr. Roderick McInnes** has been appointed as Acting President of the Canadian Institutes of Health Research (CIHR). He will serve in this capacity while the selection process for the next President of the CIHR continues over the coming months.

“Dr. McInnes’ track record of scientific excellence and knowledge of both the Canadian health research landscape and CIHR make him very well suited to take on this important new role,” said the Minister.

Dr. McInnes is an internationally recognized researcher who brings extensive leadership experience to CIHR, having served as the inaugural Scientific Director of the Institute of Genetics, from 2000-2010., and as Director of the Lady Davis Institute since 2009.

“CIHR is the engine of health research in Canada,” said Dr. McInnes. “It is a great honour to be asked to assume this important position at this critical time in CIHR’s history. I look forward to listening to the research community for its guidance in helping me and my CIHR colleagues to build on the opportunities ahead.”

**Dr. Gerald Batist**, Director of the Segal Cancer Centre, will be Acting Director of the LDI during Dr. McInnes’ absence.



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## \$4 million investment in clinical research

The Government of Canada and the JGH Foundation are investing \$4 million to create a Clinical Research Centre at the Lady Davis Institute (LDI) at the Jewish General Hospital (JGH) to provide an operating platform for transformative clinical research ranging from population-based studies to a multi-disciplinary clinical trials program. This is part of a larger investment in McGill University through the Post-Secondary Institutions Strategic Investment Fund (SFI), to upgrade research facilities.

“This historic investment is a down payment on the government’s vision to position Canada as a global centre for innovation. That means making Canada a world leader in turning ideas into solutions, science into technologies, skills into middle-class jobs and start-up companies into global successes.” said The Honourable Navdeep Bains, Minister of Innovation, Science and Economic Development.

“The funds will serve to strengthen our multi-disciplinary clinical research teams by giving us the space to consolidate and expand our capacity to conduct research into personalized health care and clinical trials of innovative therapies,” said **Dr. Marie Hudson**, Associate Director for Clinical Research.

This investment will allow the JGH, with its 75 clinical researchers, and other affiliated institutes of the Integrated Health and Social Services Network for West-Central Montreal, with 72 researchers, to take advantages of new infrastructure to enhance research capacity and enrich the patient research experience. The facility will make it more attractive for pharmaceutical companies to engage the JGH as a partner in large-scale clinical trials, as well as expanding opportunities for investigator initiated studies.

A world renowned centre for research and treatment in cancer, cardiovascular disease and pulmonary hypertension, neurodegenerative disease and stroke, thrombosis, respiratory diseases, and mental health and psychosocial aspects of disease, clinicians at the JGH pursue diverse interests and treat a large patient base.

“Access to novel therapies is one of the great benefits our patients receive,” said Dr. Hudson, “and this funding will help us to maximize these benefits.”



**Dr. Brett Thombs** has been named Chair-elect of the [Canadian Task Force on Preventive Health Care \(CTFPHC\)](#). Dr. Thombs is a Professor in the Department of Psychiatry in the Faculty of Medicine at McGill University and a Senior Investigator with the Lady Davis Institute. Dr. Thombs is internationally recognized for his work on depression screening, for his research on methods used to conduct and report on medical research, and for his work in rare diseases, including being Founder and Director of the Scleroderma Patient-centered Intervention Network

“The Task Force has the incredibly important job of working to make sure Canadians get the best preventive health care possible and avoid strategies that don't help, or that harm, them,” said Dr. Thombs. “I'm honoured to be able to serve in this position.”

**Dr. François Béland**, Professor at the École de santé publique of the Université de Montréal and co-director of McGill University/University of Montreal Research Group on Frailty and Aging (SOLIDAGE), will spend two months as a visiting scholar at the Laboratoire Interdisciplinaire de Recherche Appliquée en Économie de la Santé at the Université de Paris Descartes to study the economic effects of diminished autonomy.

**The theme for the 2017 Psychiatry Research Day** was, “*There should be an App for That: The Promise of Technology for Mental Health.*”

Dr. Marc Miresco (pictured above at left), a psychiatrist at the JGH, showcased a new app that helps patients participate more actively in their treatment, along with Ashley Tritt (second from right), a medical student at McGill University. Dr. Phyllis Zelkowitz (third from left), Director of Research in the Department of Psychiatry at the JGH, discussed the types of information that patients search for online. Dr. Dunkley (far right) presented on how apps can play a role in personalizing care through assessments of a patient's daily stressors. Dr. Nancy Low (second from left) served as discussant. Anita David (fourth from left) is the President of the Gustav Levinschi Foundation, which generously funds Psychiatry Research Day.

Drs. **Té Vuong** and **Gerald Batist** were part of a team of collaborators awarded [Québec Science's "Découverte de l'année 2016 – Prix du public"](#) for a pioneering drug delivery technology that uses special bacteria directed by a magnetic field to deliver chemotherapy directly to the site of a tumor. Originally developed by Professor Sylvain Martel of Polytechnique Montréal's Nanorobotics Laboratory, Dr. Vuong will be leading clinical research on its applicability to colorectal cancer at the Segal Cancer Centre.

## The source of age-related damage in familial prion diseases

Dr. **Andréa LeBlanc**'s paper on familial prion diseases in [Human Molecular Genetics](#) was recommended by the F1000Prime as being of special significance. The paper identifies a pathway to explain how mutations of the prion protein leads to neuronal damage, which culminates in the neuro-degeneration associated with prion diseases.

"The mystery is that people are born with these mutations, but they remain symptom free until around thirty, when they develop neurodegenerative symptoms and rapidly die within a year," Dr. LeBlanc said.

Prion diseases are rare, but of concern because they are transmissible – the most famous form being mad cow disease.

When functioning normally, the majority of prion proteins are secreted from the cell, however a small amount ends up in the cytosol by a process known as retro-translocation. This cytosolic prion protein serves a neuro-protective function. The mutant protein, however, does not go to the cytosol. Instead, it acts to prevent both healthy prion protein and other normal proteins from doing so. The resultant lack of cytosolic prion protein denies the brain an important protective element, while the accumulation of other normal proteins represents a significant source of stress for the neuron.

Her paper identifies a complex of proteins, known as HrD1, as being responsible for bringing the normal prion protein to the cytosol. This HrD1 complex is also a quality control checkpoint that eliminates misfolded newly synthesized proteins from the cell. The mutant prion proteins block this quality control mechanism resulting in the accumulation of misfolded proteins in neurons. It is this event that likely initiates the neurodegeneration.

"The neurons gradually become clogged with misfolded proteins, which may be why it takes some thirty years for symptoms to show," Dr. LeBlanc said.

Exploring further, her lab looked at a protein called BiP, which is important for detecting misfolded proteins in the retro-translocation loop. The level of BiP in cells carrying the mutant prion was extremely low. It is the lack of this protein that allows the misfolded proteins to stay in neurons. By replacing BiP levels in vitro, they were able to restore normal retro-translocation.

"The question now is whether a drug that could replace BiP would be effective in fighting off prion disease," she concludes. "There is a traditional Japanese medicine called Yokukansan that upregulates BiP in cells, which could be promising."

## Long-term limitations imposed on patients with pulmonary embolism

A multi-centre clinical study, led by Dr. **Susan Kahn** at the Jewish General Hospital (JGH), determined that nearly half of the patients who suffer a pulmonary embolism (PE) – a blood clot in the lung – experience long term limitations to their capacity for physical activity and that this had a negative impact on their quality of life. This research, [published in Chest](#), is the first to demonstrate that PE may have a lasting effect on patients.

"Our clinical experience told us that some patients who'd had a pulmonary embolism suffered from shortness of breath and chronic fatigue long after the PE had been treated and resolved," explained Dr. Kahn, founder and director of the Centre of Excellence in Thrombosis and Anticoagulation Care at the JGH. "Our study revealed that 47% of participants showed a significant reduction in their physical stamina."

One hundred patients were followed over the course of a year following treatment for PE. They answered quality of life questionnaires and participated in a number of physiological tests to measure their cardiopulmonary functions. All of the participants were generally healthy when they experienced their PE, so it was surprising that nearly half performed below 80% of their predicted peak oxygen uptake (a standard measure for cardiopulmonary exercise testing) one year later. These patients also scored lower in variables used to measure quality of life.

"One of the tests we use is to see how far a patient can walk in six minutes, which is a basic measure of mobility and stamina. When someone is limited in performing this test, it is really something that is interfering with their normal day-to-day functioning," she said.

The underlying cause of the PE did not seem to be a predictor of whether a person may experience long-term repercussions. The study did reveal that men were three times more likely to have adverse effects, younger patients fared worse, as did more overweight patients and smokers.

Though further study is required, the outcome of this research suggests that patients with PE may benefit from some form of exercise rehabilitation as part of their recovery.