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Lady Davis Institute
Research Newsletter

McGill

September 2014 Vol. 3 No. 5

LDI headquarters for national initiative to tackle dementia

The Honourable Rona Ambrose, Minister of Health, launched the Canadian Consortium on Neurodegeneration in Aging (CCNA), a national initiative aimed at tackling the growing onset of dementia and related illnesses and improving the lives of Canadians with these illnesses, as well as their families and caregivers.

The CCNA is headquartered in the Lady Davis Institute at the Jewish General Hospital and led by **Dr. Howard Chertkow**, co-founder and director of the JGH / McGill Memory Clinic. It brings together 20 research teams and experts from across Canada to focus research on three themes:

- delaying the onset of dementia and related illnesses
- preventing these illnesses from occurring
- improving the quality of life of Canadians living with these illnesses and their caregivers.

Dementia is a major global public health issue. In 2011, an estimated 747,000 Canadians were living with Alzheimer's or other dementias. By 2031, it is estimated that 1.4 million Canadians will have dementia, costing the Canadian economy nearly $300 billion per year.

The CCNA is supported with funding of $31.5 million over five years from the Government of Canada through the Canadian Institutes of Health Research and a group of 13 partners from the public and private sectors, including the Alzheimer Society of Canada and Fonds de recherche du Québec – Santé. The CCNA researchers will also benefit from an additional $24 million investment by a subset of the partners in Ontario and Quebec.

"Our Government is proud to be making this significant investment to face the global dementia challenge," said Minister Ambrose. ""The large consortium will accelerate innovative and collaborative research to make a difference in the quality of life and the quality of services for Canadians affected by these diseases. With the CCNA, we are joining forces with our international counterparts to support additional research with a view to finding a cure for dementia by 2025."

Canadian Consortium on Neurodegeneration in Aging

The vision of the CCNA is to bring together 20 research teams involving over 340 top Canadian researchers in the field of neurodegenerative diseases affecting cognition such as Alzheimer's in a collaborative and synergistic space. Researchers will work on bold and transformative research ideas to make a difference in the quality of life and the quality of services for those living with dementia and their caregivers.

To promote high impact, the CCNA will include inter-institutional and interdisciplinary collaboration. Researchers will work with key stakeholders such as patients and their families.

"By supplying an infrastructure, shared research platforms, national research teams, and a cohesive research agenda, we hope to accelerate our current progress towards new treatments, better understanding of Alzheimer's and associated diseases, improved quality of life for our patients and their families, and eventually the cures for these conditions. Canadian researchers will – even more than they do already - begin to play a prominent role on the world stage in the global fight against dementia. The CCNA will be transformative, and offers real hope of a better life for those living with Alzheimer's disease and other neurodegenerative diseases."

- Dr. Howard Chertkow, CCNA Scientific Director

Initiating research on e-cigarettes

A few years ago, **Dr. Mark Eisenberg** of the Centre for Clinical Epidemiology, couldn't interest funding agencies in a proposal to conduct clinical trials of electronic cigarettes as a smoking cessation device. This year – reflecting their growing presence in the marketplace – the Canadian Institutes of Health Research awarded him more than $800,000 over five years to lead a randomized clinical study of whether nicotine- or non-nicotine-delivering e-cigarettes are safe and effective in helping smokers to quit.

While anti-smoking efforts have been quite effective, nearly 20% of Canada's adult population continues to smoke and tobacco-related diseases contribute to the death of more than 37,000 Canadians annually, most from cancer or cardiovascular-related diseases.

Dr. Eisenberg's group published a systematic review of current research on e-cigarettes in *Circulation*, demonstrating the urgent need for clinical trials.

"With existing methods, whether nicotine patches or medications that alter how the brain responds to nicotine, and behavioural counselling, significantly less than half who try succeed in quitting long term," said Dr. Eisenberg, who has led clinical trials of Zyban and Champix, the two most commonly prescribed medications. "It's apparent that there is a need for more effective methods."

Electronic cigarettes mimic the feel and action of smoking, right down to producing water vapour smoke. Thus, they may be a more satisfying means by which smokers can gradually withdraw from their nicotine addiction.

"Smoking is a highly social and ritualistic activity, with oral and tactile dimensions that pills and patches can't duplicate," Dr. Eisenberg explains. "I'm optimistic that e-cigarettes will prove to be very effective because they address all dimensions of the smoker's habit."

"We are only beginning to examine the safety issues surrounding e-cigarettes," he points out, "It would be preferable not to smoke at all, but, to my mind, they are almost certainly better than regular cigarettes. I think they have the potential to wipe out conventional smoking."

New data on risk factor of genetic mutation for breast cancer

A comprehensive analysis of women with a hereditary loss-of-function mutation in the PALB2 gene revealed a significantly elevated risk of breast cancer, quite similar to what has already been identified with carriers of the BRCA2 mutation, which is among the most common known forms of hereditary breast cancer. **Dr. William Foulkes**, head of the Cancer Genetics Lab, was among the principal investigators on the work published in the *New England Journal of Medicine*.

"Finding genes that increase the risk of breast cancer is one thing, but the really important aspect is to be able to accurately quantify this risk. With this work, we can now advise women who carry mutations in these genes much more accurately," said Dr. Foulkes,

The research team analyzed the risk of breast cancer among 362 members of 154 families in which the PALB2 mutation was found. The degree of risk varied according to age, averaging out to 35% by the time carriers of the mutation reached 70.

"We can now advise women who carry the PALB2 mutation much more accurately," said Dr. William Foulkes.

Risk was significantly higher (58%) among those with a family history of early-onset breast cancer. As compared with the general population, the risk of developing breast cancer was eight to nine times higher for women with the mutation under the age of 40, six to eight times higher between the ages of 40 and 60, and fives times higher for women over 60.

"On the basis of our estimates of risk," the researchers write, "women with loss-of-function mutations in PALB2 should be studied to determine whether enhanced surveillance for breast cancer, in line with that offered to women with mutations in BRCA2, can influence outcomes. Risk-reducing surgical options could also be tested."

Studies involving subjects from many countries demonstrate that the PALB2 loss-of-function mutation is found in 0.6% to 3.9% of families with a history of breast cancer, depending on the population. Based on the findings presented in this paper, the risk of breast cancer for carriers of this particular mutation would be classified as high.

NEW RESEARCHERS AT LDI

Claudia Kleinman: Computational Biologist

Dr. Claudia Kleinman joined the LDI last May as a principal investigator in computational genomics, having completed a post-doctoral fellowship at McGill with Dr. Jacek Majewski, where she worked on implementing novel approaches to the analysis of gene expression and RNA processing by next-generation sequencing technologies. She has a unique background, combining research in molecular and computational biology that she applies to understanding epigenetic and genetic factors that influence gene regulation.

> Dr. Kleinman's areas of interest are cancer and neuro-developmental disorders, two areas where dysregulated gene expression plays a major role.

"Coming to the LDI offered me the opportunity to establish a lab where my research would move to more clinical applications and have a direct impact on patient health," she said. Dr. Kleinman is part of both the Segal Cancer Centre and the Ludmer Centre for Neuroinformatics and Mental Health, and sits on the scientific committee for the LDI's new Statistical and Bioinformatics Analysis Core Facility.

The primary goal of her research is to elucidate molecular mechanisms of disease initiation, progression, and therapeutic response using large-scale, multidimensional genomic data. Her particular areas of interest are cancer and neuro-developmental disorders, two areas where dysregulated gene expression plays a major role.

"Both fields generate unprecedented amounts of genome-wide data, making them fertile grounds for the integrative, data-driven strategies that I will employ," she explains. "Computational biology is transforming medical research because sequencing technologies are becoming increasingly powerful, so we're able to do molecular profiles of patients in a very timely and cost-efficient manner. This produces a huge amount of data that must be analyzed, which requires sophisticated computation."

Building on methods that she employed to define the molecular basis of ETMR, a deadly pediatric brain tumor, she intends to integrate genomic, epigenomic, and transcriptomic data, and to develop novel tools to examine all of this data for novel insights into the cellular composition and causes of disease.

Lysanne Campeau: Urology Research

Dr. Lysanne Campeau completed her medical studies and urology residency at McGill University in 2010 before pursuing her clinical and research interest in voiding dysfunction at the Wake Forest Institute for Regenerative Medicine in North Carolina. There, she completed a PhD in the Department of Physiology and Pharmacology. She went on to complete her clinical training at New York University in an accredited fellowship in Female Pelvic Medicine and Reconstructive Surgery. Her areas of specialization include neurogenic bladder disorders and incontinence, as well as pelvic reconstruction.

Dr. Campeau was recruited back as an Assistant Professor at McGill University, and joined the JGH Department of Urology to pursue her research interest and expertise. Her work is equally divided between clinical practice and research at the LDI.

"My research interest is the pathophysiology and pharmacology of the lower urinary tract system," she said, "particularly murine models of bladder activity. I am studying the effect of impaired glucose tolerance and metabolic syndrome with the intention of developing models and methods to assess voiding dysfunction and target the underlying mechanisms with pharmacological agents."

> "I expect the best treatment for overactive bladder will turn out to be prevention," Dr. Lysanne Campeau offers, "if we can identify changes in the bladder before the problem takes hold. Once that happens it's hard to reverse the process, so the solution will be to intervene as early as possible."

The cause of overactive bladder and associated incontinence can be neurological, but is often unidentifiable. Those who suffer from incontinence are at a higher risk of developing bladder infections, and other complications.

"We're in the process of defining the causes of overactive bladder so that we can better target and treat them," she said. "Over 30% of patients over 50 have some level of voiding issues. So, it's quite common and has a significant effect on quality of life." Currently, there is no cure, and existing medications are often unsatisfactory, either because they have limited effectiveness or cause discomforting side effects.

Dr. Mark Wainberg wins American Society of Microbiology award

Dr. Mark Wainberg, head of HIV/AIDS research at the LDI and Director of the McGill AIDS Centre, was awarded the 2014 Cubist-ICAAC (Interscience Conference on Antimicrobial Agents and Chemo-therapy) Award, the most prestigious honour conferred by the American Society for Micro-biology for outstanding accomplishments in anti-microbial research. Dr. Wainberg is among the world's leading microbiologists, making significant contributions to the development of antiretroviral therapies to treat HIV and to understanding the mechanisms of drug resistance that have made it such a difficult disease to contain. A past President of the International AIDS Society, he has also been a strong advocate for access to anti-HIV drugs in developing countries.

First Canadian Alzheimer's Disease Research Symposium—October 2014

Dr. Andréa LeBlanc is among the organizers of the 1st Canadian Alzheimer's Disease Research Symposium to be held October 2-4, 2014 in Quebec City. Dedicated to finding a cure for Alzheimer's disease and related dementia, the meeting will be devoted to Canadian research, including fundamental, imaging and bio-medical research.
Click here for details and registration..

51st Annual André Aisenstadt Memorial Clinical Day

The André Aisenstadt Memorial Clinical Day will be held in honour of **Dr. André Lisbona** on Wednesday, October 22, 8:00 to 15:00 in the Block Amphitheatre. Dr. Lisbona, a past Chief of Radiology and Director of the JGH Breast Referral and Investigation Centre has been at the JGH since 1969. This year's symposium is "Cancer Screening – Update 2014," and features talks on screening of lung, breast, colorectal, and prostate cancers. The event is accredited for continuing medical education.
Click here for the complete program and registration.

Recruiting for clinical study supporting caregivers of cancer patients

Family members caring for patients with advanced cancer are so preoccupied with giving care that they often neglect their own well-being. Stress and fatigue can build to the point where their health is put at risk and their ability to provide care becomes impaired.

"Caregivers are thrust into this role with minimal prepa-ration or guidance on how to balance their needs with those of their loved one. We need to support their needs within the context of caregiving" said **Jamie Penner,** a nurse and PhD candidate, who is recruiting participants for a pilot study to determine whether small amounts of physical activity, tailored to their interests and schedule, may keep them healthy and able to continue providing care as long as they wish.

"We know that physical activity is beneficial," she said. "Now we need to develop a physical activity program that is feasible for caregivers, and once we have done that we can measure its effect and then determine how to translate a program of physical activity, coaching, and support into clinical practice."

Over 14 weeks, study participants will receive coaching and support to engage in physical activity that they enjoy and can incorporate in their routines. To qualify, a person must be 18 years of age or older, able to speak and read English, and be involved in caring at home for a person with stage 3 or 4 cancer.

Interested family caregivers or clinicians treating those whose family caregivers may be interested in parti-cipating, cam contact Ms. Penner at 514-340-8222, ext. 3426, or jamie.penner@mail.mcgill.ca.

Obituary: Katrina Teske

The LDI and Segal Cancer Centre mourn the loss of Katrina Teske, research assistant in Dr. Marc Fabian's lab, who passed away on June 16. She was well known at the LDI for her positive attitude and dedication to her work.

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.

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