June 2010

ELLICSR Opens its Doors

The Electronic Living Lab for Interdisciplinary Cancer Survivorship Research (ELLICSR) celebrated its official opening on June 4, 2010, an event that was attended by UHN and surrounding community members. The 12,000 square foot research centre is located at the Toronto General Hospital. This unique facility was made possible by grants from the Canada Foundation for Innovation (CFI) ($1.2M) and the Ontario Research Fund ($1.2M). With additional support, the total project was $3.7M.

"Finally we have a space that allows us to teach important life skills around diet and exercise, proven approaches to improve side the effects of treatment, as well as overall health and quality of life," says Dr. Pamela Catton, Medical Director of the Cancer Survivorship Program, and Founding Director of ELLICSR.

The goal of ELLICSR is to improve the cancer experience by exploring novel ways to learn from survivors, to develop new survivorship communities and to study how cancer survivors can be engaged, empowered and active in adopting healthier behaviours that minimize the negative impact of cancer and its treatment. It is a spacious community centre with teaching and self management areas for patients and survivors that include: a full kitchen, a community resource space, consultation rooms and an exercise room. ELLICSR is fully wired to support virtual programming, community connections and global collaborations. There is also a research team on-site who are keen to investigate new and interesting strategies to improve the cancer experience.

In a press release, Dr. Eliot Phillipson, former President and CEO of CFI, comments, "This is a unique area of interdisciplinary research we were keen to support as communities of cancer survivors continue to grow. Providing researchers with the tools they need to undertake leading-edge research is what CFI is all about."

Visit ellicsr.ca for more information about this truly unique local, national and international cancer resource.

Supported by the Canada Foundation for Innovation, the Ontario Research Fund, the University Health Network, Princess Margaret Hospital Foundation, The Quilt Project, The Weekend to End Breast Cancer, Butterfield-Drew Chair in Breast Cancer Survivorship, Desire2Learn, Klick Communications, Willow and Wellspring.

Immune System: Revising the 'Road Map' of Blood Development

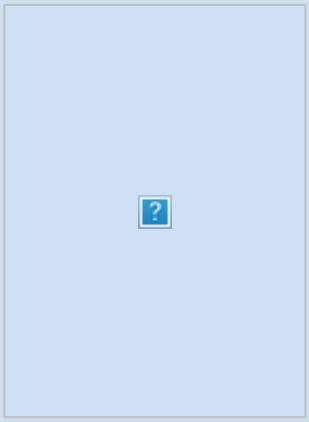
TWRI Celebrates Research

On May 12th, 2010, TWRI hosted its 10th Annual Research Day, which highlighted the groundbreaking basic and clinical research being conducted by graduate and post-graduates at the Institute over the past year.

The day-long event included a keynote address by Dr. Ann Graybiel, Professor and Investigator at the McGovern Institute for Brain Research at M.I.T, who presented "Learning and Memory Mechanisms of the Basal Ganglia". The day also included a competitive poster and oral competition. In total, 63 posters were on display touching upon all areas of research at TWRI and 10 individuals were selected to participate in an intense 15 minute oral presentation to a scientific panel. Winners of these competitions received a cash prize and a letter of recognition.

Congratulations to all the winners and a special thank you to the 2010 TWRI Research Day judges and organizing committee!

The human blood system is made up of many different types of cells and a deep understanding of the developmental 'road map'—how a single blood (hematopoietic) stem cell develops into a handful of different cells—is important for future therapies. Recent findings from a UHN-led team are adding important new knowledge that helps to explain when, and how, these changes occur along a blood stem cell's path to maturity.



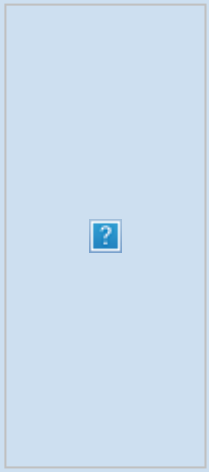
With Dr. Pamela Ohashi and colleagues, Dr. John Dick's team used a technology called flow-cytometric sorting to isolate seven distinct bone marrow cell types that represent distinct nodes in the 'roadmap' at which different blood cell fates are specified. One of these 'progenitor' cell types identified in the study was termed the multilymphoid progenitor (MLP) and it represents the earliest node from which white blood cells involved in the body's adaptive immune system, such as B and T cells, develop. The study showed that these cells can also develop into macrophages and dendritic cells, which are part of the innate immunity, previously thought to arise by a different path. Such an accurate 'roadmap' of hematopoiesis is essential for the development of cell-based therapies.

Explains Dr. Dick, "Unlike what was previously thought, discovering MLPs provides strong evidence that these specific immune cells separate in a gradual transition, rather than very early in development. Moreover, we now know the importance of MLPs and what is required to isolate, expand and mature these cells to obtain large quantities of immune system T cells and dendritic cells, which could be useful down the road for cancer immunotherapy."

Doulatov S, Notta F, Eppert K, Nguyen LT, Ohashi PS, Dick JE. Nature Immunology 13 June 2010 [Epub ahead]. [Pubmed abstract]. Research supported by the Canadian Institutes of Health Research, the Stem Cell Network of Canadian National Centres of Excellence, the Canadian Cancer Society Research Institute, the Terry Fox Foundation, Genome Canada through the Ontario Genomics Institute, the Ontario Institute for Cancer Research, the province of Ontario, the Leukemia and Lymphoma Society, the Canada Research Chairs Program, and the Ontario Ministry of Health and Long Term Care.

Malignant Mesothelioma: Identifying New Investigative Tools against Disease

The OCI-UHN Mesothelioma Research Program Team has recently identified a substance in the blood that helps to predict treatment response for patients with malignant mesothelioma (MM), a rare tumour in the thin lining around the lungs and inner walls of the chest (pleura) related to asbestos exposure that occurred many years prior to cancer development.



Explains senior author, Dr. Geoffrey Liu, "By using a simple blood test that looks for changes in specific proteins known to be associated with MM, we can better understand how the tumour is responding to treatment early on, and plan the remaining course of a patient's treatment accordingly."

With Drs. Natasha Leighl, Ron Feld, Demetris Patsios, Ming Sound Tsao, Marc de Perrot and colleagues from across Ontario, the team ran extensive tests on blood samples from 41 MM patients from December 2006 to August 2008 to observe changes in the proteins SMRP (soluble mesothelin-related peptide) and OP (osteopontin). Findings show

that rising SMRP levels were observed in all patients whose disease had progressed, and that patients responding to treatment had falling SMRP levels. Patients with stable disease had stable SMRP levels.

"When we used existing radiology tools to determine treatment response, we were unable to detect any significant association between relative changes in OP levels and disease course in the patients we examined," says Dr. Liu. "However, there was a significant association between SMRP changes and clinical outcome observed in patients receiving systemic therapy. This is exciting because, with our ongoing studies, SMRP could be a useful tool to physicians to detect changes in disease course better than the standard radiologic methods used today."

Wheatley-Price P, Yang B, Patsios D, Patel D, Ma C, Xu W, Leighl N, Feld R, Cho BC, O'Sullivan B, Roberts H, Tsao MS, Tammemagi M, Anraku M, Chen Z, de Perrot M, Liu G. J Clin Oncol. 2010 May 24. [Epub ahead of print]. [Pubmed abstract]. *This research was supported by the Ontario Ministry of Health and Long Term Care, a Cancer Care Ontario Chair in Experimental Therapeutics and Population Studies, and by the Alan B. Brown Chair in Molecular Genomics through the PMH Foundation. The Mesothelioma Research Program is supported by the Masters Insulators Association of Ontario, International Association of Heat and Frost Insulators and Asbestos Workers, Local 793 and other Unions and the Imperial Oil Charitable Foundation.*

Cancer: Getting to the Root of Depression in Patients with Advanced Disease

Recent findings from UHN's Dr. Gary Rodin are providing strong evidence of the need for integrated approaches to address emotional and physical distress in patients with advanced metastatic gastrointestinal and lung cancer. Cancer, similar to other medical illnesses, is a risk factor for depression, which can weaken treatment compliance and cause higher rates of health care use.

Working with Drs. Christopher Lo, Camilla Zimmermann, Lucia Gagliese, Jennifer Jones, Malcolm Moore, and Frances Shepherd, the team conducted the first longitudinal predictive study of depression in patients with metastatic cancer. They recruited 365 patients with metastatic lung or gastrointestinal cancer to complete, at two monthly intervals, measures of physical distress and psychosocial functioning, including self-esteem, attachment security, spiritual well-being social support, hopelessness and depression. Of those surveyed, 35% reported at least mild depressive symptoms, with 16% reporting moderate to severe depression symptoms, which were three times more common in the final three months of life than in the year before. A constellation of physical suffering and psychosocial vulnerability was found to predict depression near the end of life.

"Our findings further confirm that depressive symptoms in advanced cancer patients are relatively common and may occur as a final 'common pathway of distress' in response to the proximity to death, physical suffering and psychosocial vulnerabilities," explains Dr. Rodin. "Future studies are needed so that we can evaluate preventative and therapeutic options for patients, as well as to consider integrated and palliative interventions to address the problems of emotional and physical suffering experienced by these patients."

Lo C, Zimmermann C, Rydall A, Walsh A, Jones JM, Moore MJ, Shepherd FA, Gagliese L, Rodin G. J Clin Oncol. 2010 May 17. [Epub ahead of print]. [Pubmed abstract]. *Research supported by the Canadian Institutes of Health Research, York University and the Edith Kirchmann Fellowship at Princess Margaret Hospital.*

Neurology: Targeting Brain Communication Circuits to Better Understand Disease

Gaining greater insight into the structure of, or wiring behind, how the brain orchestrates body movements could have important implications for future treatment strategies for patients with Parkinson's disease or other neurological or psychiatric disorders. Recent findings from TWRI researchers are providing important new information on how the brain controls signals between its two hemispheres and what this could mean for patients.

Dr. Robert Chen and collaborators stimulated different motor control regions of the brain to better understand short- (SIHI) and long-latency interhemispheric inhibition (LIHI)—periods of message delay between hemispheres—and short- (SICI) and long- interval intracortical inhibition (LICI)—periods of message delay within one hemisphere. Findings show that the organization of brain circuitry in the hemisphere where the message starts and where the message is targeted to differs, depending on the type of inhibition that is taking place. Also, the ability of specific types of inhibitory signals to work together may be important in the control of precise movements.

"Our findings show that communication between brain hemispheres, and within a hemisphere, likely share some common circuitry and we are going to further investigate one pathway in particular," explains Dr. Chen. "If we can determine how the brain organizes and coordinates signals regarding movement, we may one day understand how this communication malfunctions in Parkinson's disease, schizophrenia and other movement disorders in order to help accelerate the development of new, targeted treatments."

Udupa K, Zhen N, Gunraj C, Chen R. J Physiol. 2010 Jun 2. [Epub ahead of print]. [Pubmed abstract].
Research supported by the Canadian Institutes of Health Research and the Catherine Manson Chair in Movement Disorders.

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