Research Breakthroughs at UHN

Crohn's Disease Gene Discovered

A team of researchers led by Drs. Katherine Siminovitch (TGRI/TGH) and Peter St. George Hyslop (Krembil/TWH) have isolated a gene that predisposes people to Crohn's disease, an inflammatory bowel disease which causes severe abdominal pain and other symptoms frequently requiring hospitalization and surgery.

Normally, the gene produces a

protein that sits on the surface of cells and regulates traffic into the cell. In Crohn's sufferers the protein is faulty, and can't keep toxins out of the cell. As a result, the cell becomes damaged, causing inflammation that can lead to Crohn's disease.

Says Dr. Siminovitch, "This is an important finding because we can now begin to develop therapies that would fix the protein to reinstate its normal function. Development of such specific treatments may be more effective and have fewer negative side effects than currently available therapies."
Nature Genetics, Apr 11, 2004. doi: 10.1038/ng1339 **[advance online publication]**

Institute: TGRI/TGH and

Krembil/TWH
Division: Genomic Medicine
Priority Platform: Genes, Proteins & People

New Target for Treating Spinal Cord Injury Identified

Exciting research by Drs. Michael Fehlings and Linda Mills (Krembil/TWH) could help scientists design and develop new therapies for treating spinal cord injuries.

Using an in vitro model

of spinal cord injury, the research team found that an injury to the spinal cord causes cells called glia to send "injury signals" to other glial cells far from the injury site. It is believed that these signals, which are triggered by calcium, may contribute to causing cell injury and death far away from the primary injury site.

Says Dr. Fehlings, "Our research tells us that glial cells may be critical determinants of spinal cord injury outcome, and suggests that these cells may offer new targets for drug development." However, he adds, "we also found that some glial cells received the signal and survived, so more research is needed to determine the precise role of these signals."
Neuroimage 2004 Mar;21(3):1069-82

[PubMed abstract]

Institute: Krembil/TWH
Division: Cell & Molecular Biology
Priority Platform: Regenerative Medicine

Prostate Cancer—Loss of PTEN Implicated

A key cancer gene is critical for the development of prostate cancer, says a recent report authored by Dr. Tak Mak and Stephanie Backman (AMDI/OCI/PMH), and Drs. Vuk Stambolic, Ming-Sound Tsao, and William Chapman (OCI/PMH).

This gene, the PTEN gene, is a tumour suppressor gene that is essential for normal cell growth and has been implicated in over 50% of all types of human tumours.

"Prostate cancer is the second leading cause of cancer deaths in men, and there is currently no known single cause of its initiation," says Dr. Chapman. "Our finding is the first to show that PTEN is critical for suppressing tumour development in the prostate. In the future we may be able to target preventive measures towards restoring this gene, or reactivating it."
PNAS. 2004 Feb 10;101(6):1725-30
[PubMed abstract]

Institute: AMDI/OCI/PMH and

OCI/PMH
Division: Cell & Molecular Biology
Priority Platform: Genes, Proteins & People

A "Change of Heart" Happens Daily

Using microarrays to examine the expression of over 12,500 mouse heart genes during a 24-hour period, Drs. Michael Sole (TGRI/TGH), Tami Martino and Sara Arab found that the heart—at least in terms of gene expression—is a different organ at night than it is during the day.

Of the genes studied, approximately 13% showed remarkable differences in expression during the day-night cycle. Even more importantly, this subset of genes plays a key role in regulating heart growth, repair, and disease prevention.

Says Dr. Sole, "While it has long been known that sleep and wake patterns play an important role in heart health, this research provides new insight into the molecular mechanisms that underlie these patterns. Furthermore, it provides a framework for studying the implications of differential gene expression in disease."
J Mol Med. 2004 Apr 82(4):256-64
[PubMed abstract]

Institute: TGRI/TGH

Division: Genomic Medicine
Priority Platform: Genes, Proteins & People

Breaking News from UHN Research

Two UHN Researchers Awarded Canada Research Chairs

Congratulations to Drs. Daniel Drucker (TGRI/TGH) and Mitsu Ikura (OCI/PMH), each recently awarded a Tier I CRC.

Dr. Drucker holds the Chair in Regulatory Peptides, and will undertake research that may lead to treatments for diabetes and obesity. Dr. Ikura holds the Chair in Structural Biology, and will undertake research that may yield new therapies for cancer, heart disease and epilepsy.

Tier I Chairs, worth $1.4M over seven years, are awarded to experienced investigators recognized internationally for their achievements.

Canada's

Medical Hall of Fame Inducts Two From UHN

On April 6, 2004, the Canadian Medical Hall of Fame announced the induction of UHN's Drs. Ernest McCulloch and James Till (OCI/PMH). Drs. McCulloch and Till are recognized for changing Canada's healthcare landscape through scientific contributions such as establishing the concept of stem cells and a method for studying them.

Genome

Canada Funds Two UHN Projects

UHN Research extends its congratulations to Drs. John Dick and Peter Liu (TGRI/TGH), leaders of two successful applications to Genome Canada.

Dr. Dick's project ($8.5M) will help doctors make personalized diagnoses of diseases, and Dr. Liu's project ($6.1M) will lead to the development of heart failure medications. Fourteen large-scale applied-health genomics and proteomics projects, totaling $123M, were funded across Canada.

Updates

New LAB Launched at UHN

A new capability at UHN, called the Laboratory of Applied Biophotonics (LAB), was launched on April 1, 2004. Part of UHN's Biophotonics group at OCI/PMH, the LAB features expertise in optoelectronics and light-based devices, optical imaging, spectroscopy and photobiology.

Research Fact

Since its launch in 1998, the UHN Microarray Centre has supplied microarrays to an astounding597 labs in 25 countries including: Canada, USA, Australia, Austria, Brazil, China, Czech Republic, England, Estonia, France, Germany, Hungary, India, Israel, Italy, Japan, Luxembourg, Malaysia, the Netherlands, Scotland, Singapore, South Africa, Spain, Sweden and Switzerland.

One final note: We are pleased to announce that Net Results EXPRESS has been awarded an Honourable Mention in the 2003 Inspire Awards Employee Communications Competition of the League of American Communications Professionals (LACP). Thanks to everyone who responded to our Fall 2003 Survey for helping us develop a winning employee communications publication.

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