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UHN Research and UHN researchers mark the end of another year of achievements and growth. Below we list some of the year's top breakthroughs from across our research institutes:

January

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Breast Cancer: Largest Study Implicates Tissue Density: A national study led by OCI and CFIBCR scientist Dr. [Norman Boyd](#) identified breast tissue density as a major risk factor for breast cancer. The largest study of its kind to date, the research evaluated 2,000 women and showed that dense breast tissues make screening for cancer very difficult and, depending on a woman's age, extensive density may account for 16-30% of breast cancers. [[Pubmed abstract](#)]

Digestive System Disease: Defining Treatment Criteria for Rare Swallowing Disorder: For patients suffering from the swallowing disorder achalasia, surgical dissection of the muscular ring linking the esophagus to the stomach resulted in a 40% retreatment rate, compared to a 60% rate for patients treated by enlarging the contracted opening using an air-filled balloon, according to TGRI researcher Dr. [David Urbach](#). Although both methods commonly result in subsequent intervention, physicians should consider the patient's attitude towards surgical procedures and the desire to avoid further treatments when making recommendations. [[Pubmed abstract](#)]

February

Heart Failure: Unraveling the Role of Statins: Findings from a UHN study of heart cells, led by Dr. [Rudiger von Harsdorf](#), show that lovastatin—a type of statin commonly prescribed to treat overproduction of cholesterol in cardiovascular patients—uses the molecule FoxO3a as a signal to activate the cell cycle suppressor p21. Identifying this role for p21 in the growth-inhibitory effect of statins in the heart may lead to novel therapies aiming at the stability of p21 in heart failure patients. [[Pubmed abstract](#)]

March

Movement Disorders: Stimulating the Brain: A potential therapeutic treatment for individuals with cervical dystonia (CD) may be a reality thanks to the collective effort of TWRI researchers led by Dr. [Elena Moro](#). CD is a painful disorder characterized by the involuntary movement of neck muscles. The study found that deep brain stimulation blocking neural signals was an effective long-term therapy option. [[Pubmed abstract](#)]

April

Cancer: Looking for the Switch: UHN scientists Drs. [Hitoshi Okada](#) and [Tak Mak](#) have found the Bat3 protein is responsible for activating the p53 protein—a master gene implicated in many

human cancers. Bat3 signals the cell to stop growing—for DNA repair to occur—or to commit cell suicide, which ultimately suppresses tumour growth. Continued research will investigate if mutations in Bat3 are associated with specific human cancers and may prove Bat3's feasibility as a cancer marker or prognostic tool. [[Pubmed abstract](#)]

Heart Disease: Treating Sleep Apnea: Findings from TGRI researcher Dr. [Douglas Bradley](#) and colleagues have determined the importance of treating sleep apnea in heart failure patients. Following 164 heart failure patients, the team showed that when untreated, obstructive sleep apnea is associated with an increased risk of death independently of confounding factors in patients with heart failure. [[Pubmed abstract](#)]

May

Leukemia: New Model Shows Human Disease Back to “Big Bang”: OCI researcher Dr. [John Dick](#) and colleagues developed a method to convert normal human blood cells into “human” leukemia stem cells. For the first time ever, the team developed a method that can duplicate the natural process of how normal cells become leukemic. The converted cells, when transplanted into special mice that permit the growth of human cells, can replicate the entire disease process from the very moment it begins. [[Pubmed abstract](#)]

June

ALS: Antibody Developed: A new antibody developed at OCI may hold the potential to diagnose and treat amyotrophic lateral sclerosis (ALS)—informally known as Lou Gehrig’s disease. Developed by Dr. [Avi Chakrabarty](#) and colleagues, the antibody recognizes only the misfolded form of the SOD1 protein involved in the disease specifically. The antibody has been licensed to Amorfix Life Sciences Ltd. for development of new treatments. [[Pubmed abstract](#)]

September

Cancer: Proteins Controlling Growth & Survival: Research conducted by OCI's Dr. [Peter Cheung](#) has shown that the histone protein H2A.z is associated with a relaxed form of the DNA-containing structure, providing insight into how DNA is accessed by other cellular components to turn genes on or off. Efforts to understand how to control this family of proteins could potentially lead to novel anti-cancer drugs targeting rogue cell growth. [[Pubmed abstract](#)]

October

Cancer: Understanding the Importance of Cell Structure: OCI's Dr. [Mitsu Ikura](#) and colleagues have provided further insight into how cell structure deviations can contribute to metastasis, or cancer spread. Competition between CLIP170 and p150Glued microtubule proteins for the growing end of a microtubule alters a cell's foundation, changing cellular organization. This work adds to our understanding of cell adhesion and developing therapies against the spread of cancer. [[Pubmed abstract](#)]

November

Bladder Cancer: Examining Surgical Treatment Decisions: High-risk bladder cancer patients can now make better informed decisions about treatment options based on findings by TGRI

researcher Dr. [Shabbir Alibhai](#), OCI researchers Drs. [Antonio Finelli](#), [Neil Fleshner](#), [Michael Jewett](#) and doctoral student Dr. Girish Kulkarni. Using a mathematical model the team determined that younger people with high-risk bladder cancer who opted for immediate cystectomy (removal of the bladder) had higher life expectancy and quality of life than people who chose a more conservative treatment. Patients who place a high value on sexual function, gastrointestinal function or bladder retention or who are over the age of 70 may benefit from an initial conservative approach. [[Pubmed abstract](#)]

December

Macular Degeneration: Computing Power for Rehabilitation:

TWRI vision science researchers Drs. [Esther Gonzalez](#) and [Martin Steinbach](#) have designed a computer-based test for visual acuity that could aid in the rehabilitation of patients with age-related macular degeneration (AMD). To reliably assess the effects of interventions, physicians need to establish the highest visual acuity the patient is capable of. Patients with early AMD may demonstrate reduced function and the test uses targets of varying contrast, potentially allowing early detection of AMD. [[Pubmed abstract](#)].

Colorectal Cancer: Finding Suggests Extended Survival:

OCI/PMH researcher Dr. [Malcolm Moore](#) and colleagues in the PMH GI medical oncology group have found that cetuximab (erbitux) therapy extends overall metastatic colorectal cancer survival by 1.5 months and is associated with better physical and global quality of life than palliative care alone. A tumor bank created from the study will identify the biomarkers which will predict which patients could benefit from treatment.

Breaking News from UHN Research



2007 Research Honor Roll

2007 saw many honours conferred on UHN researchers. Below we list some of the highlights:

Drs. [John Dick](#), [Tak Mak](#) and Peter St George-Hyslop were honoured with three of the four inaugural Premier's Summit Awards for Medical Research in Ontario.

TGRI researcher Dr. [Peter Singer](#) was the recipient of this year's CIHR Michael Smith Prize in Health Research—Canada's Health Researcher of the Year in the category of Health Services and Systems and Population Health Research.

Stem cell pioneers and UHN researchers Drs. [James Till](#), [Ernest McCulloch](#) and [John Dick](#) were honoured with NCIC's new Diamond Jubilee award recognizing their landmark contributions in the history of understanding cancer.

OCI/PMH's Dr. [Richard Hill](#) won one of Canada's top cancer research awards, the National Cancer Institute of Canada's 2007 Robert L. Noble Prize, sponsored by the Canadian Cancer Society and recognizing outstanding achievements in cancer research.

In 2007 4 new and renewal Tier I Canada Research Chairs were awarded to UHN researchers in recognition of outstanding career

achievement. Awardees include Drs. [Eleanor Fish](#), [Ben Neel](#), [Linda Penn](#) and [Elise Stanley](#).

The 2007 J&J-UHN Development Acceleration Awards were awarded to Drs. [David Jaffray](#), [Lothar Lilge](#), [Li Zhang](#) and [Gang Zheng](#).

Dr. [David Jaffray](#) was also presented with the 2007 Inventor of the Year award by the UHN Technology Development & Commercialization Office for his creativity in bringing cutting-edge physics and engineering to the practice of imaging in the clinic.

Dr. [Andres Lozano](#) received The Order of Spain at the Spanish Embassy in Ottawa.

OCI's Dr. [Frances Shepherd](#) was awarded the Scientific Award from the International Association for the Study of Lung Cancer (IASLC) for her role in bringing together basic and clinical researchers to build one of the world's foremost groups of translational researchers in lung cancer.

Dr. Peter St George-Hyslop, TWRI Director, was elected a member of the Institute of Medicine of the (US) National Academies of Science.

TGRI senior scientist Dr. [George Steiner](#) was named a distinguished fellow of the International Atherosclerosis Society—an honour for his many years of exceptional contributions to the field of atherosclerosis and related disease.

2007 Highlights: Research Growth and New Initiatives

Focused expansion of UHN Research accelerated in 2007. Below we list some of the new programs and facilities launched this year:

Breaking New Ground: Landmark Funding for Spinal Cord Research: On February 3, 2007, the federal government pledged \$30M to support the national Spinal Cord Injury Translational Research Network (SCI-TRN), made up of more than 40 different clinical sites across the country, including UHN. One of the five platforms—lead by TWRI researcher Dr. [Michael Fehlings](#)—places emphasis on the identification, development and evaluation of best practices in SCI.

Ministry Announces \$21M in Funding for 5 UHN Research Projects: In April, five UHN research projects led by Drs. [Pamela Catton](#), [John Dick](#), [Igor Jurisica](#), [Katherine Siminovitch](#) and [Richard Weisel](#) were awarded a second round of funding from Ontario amounting to nearly \$21.5M and bringing total funding for the five projects to \$49M.

Building on MaRS: Phase II Expansion Announced: Premier Dalton McGuinty announced on June 27, 2007 the expansion of the MaRS Centre with the development of Phase II at the south-east corner of College Street and University Ave. The expansion includes a high rise advanced technology building of approximately 900,000 square feet encompassing state-of-the-art office, laboratory, technology and related space.

Thoracic Surgery Research Lab Opening: UHN's new The Albert and Temmy Latner Family Foundation Thoracic Surgery Research Lab officially opened its doors on June 14, 2007 thanks to a generous gift of \$3M from The Albert and Temmy Latner Family Foundation. The state-of-the-art facilities will be home to thoracic surgery initiatives that include minimally invasive staging in lung and esophageal cancer, lung regeneration and repair, the NovaLung program, and image-guided surgery.

New Partnership Accelerates Diabetes Research: On September 12, 2007, UHN announced the formation of a partnership with the University of Toronto's Banting & Best Diabetes Centre (BBDC) that will be housed at TGH. The partnership will enhance diabetes education, research and patient care, and expand the search for a cure.

Phenogenomics Centre Opens Doors: The Toronto Centre for Phenogenomics (TCP)—a \$69M state-of-the-art research facility—opened its doors for the first time on October 10, 2007. At 110,000 gross square feet, the Centre is Canada's largest vivarium dedicated to developing mouse models of human disease. The TCP is founded on a partnership between UHN, Mount Sinai Hospital, St. Michael's Hospital, The Hospital for Sick Children, the University of Toronto and various industry partners.

Research STTARR: UHN researchers and staff gathered at MaRS on October 22, 2007 for the Spatio-Temporal Targeting and Amplification of Radiation Response (STTARR) Innovation Centre official opening ceremony. The PMH facility is home to multidisciplinary radiotherapy research supporting cellular, preclinical, and clinical research.

New Cancer Research Partnership: On October 29, 2007, the Terry Fox Foundation officially announced the creation of the Terry Fox Research Institute—a virtual Canadian research institute dedicated to translational cancer research with nodes in British Columbia, Alberta, Ontario and Quebec. The new institute will launch national collaborative projects that will have impact on patient care in the short term. OCI's Dr. [Rob Rottapel](#) will lead the Ontario node of TFRI.

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