An ultrasensitive blood test for cancer

Dr Shana Kelley at the University of Toronto developed an extremely sensitive blood test that uses sensors on a chip to detect cancer mutations. This new, non-invasive test is fast and simple to perform. It is now being developed as an alternative to tissue biopsies to detect cancer, monitor how patients respond to therapy and personalize treatment decisions.


E-cigarettes in Canada

By studying over 14,500 Canadians, Dr David Hammond at the Propel Centre for Population Health Impact, University of Waterloo, found that e-cigarette use was highest among tobacco smokers and young people. About half of youth who had tried e-cigarettes had never smoked tobacco, underlining the urgency of fully understanding the health effects of e-cigarettes as they rise in popularity.

Reference: Preventive Medicine, September 2015

A new standard for managing cancer pain

Pain from advanced cancer that has spread to the bone can be treated with radiation therapy. However, the pain can temporarily get worse before getting better. Dr Edward Chow of the Sunnybrook Research Institute in Toronto and the NCIC Clinical Trials Group based at Queen’s University in Kingston led a clinical trial showing that the steroid dexamethasone could prevent pain flare-ups from radiation therapy. They concluded that this treatment should be part of standard care for bone metastases, which could change how advanced cancer is managed worldwide.

Reference: Lancet Oncology, November 2015

Progress in leukemias

Dr Guy Sauvageau at the Institute for Research in Immunology and Cancer, Université de Montréal, led a study of 2 forms of acute myeloid leukemia (AML) and identified for the first time a pattern of gene activity shared by these 2 subsets. This new information should advance how AML is diagnosed and how treatments can be tailored to improve survival.

Reference: Nature Genetics, September 2015

Pancreatic tumours in a dish

Dr Senthil Muthuswamy at the Princess Margaret Cancer Centre, University Health Network in Toronto, developed 3-D “mini-tumours” called organoids from human pancreatic cancer cells. These organoids closely mimicked how pancreatic tumours grow in people and are being used to test new drug treatments for pancreatic cancer, which has one of the lowest survival rates of any cancer.

Reference: Nature Medicine, October 2015
Genetic risk of aggressive stomach cancer

An aggressive form of stomach cancer is more common in Newfoundland families. By studying nearly 4,000 people from 75 families, Dr David Huntsman at the BC Cancer Agency in Vancouver determined that those with mutations in the CDH1 gene have a high chance of developing this stomach cancer – a 70% chance for men and a 56% chance for women. If people in this high-risk group are closely monitored, stomach cancers may be detected earlier and treated more effectively.

Reference: *JAMA Oncology*, April 2015

A new understanding of blood cells

By developing new ways to study single cells, Dr John Dick at the Princess Margaret Cancer Centre, University Health Network in Toronto, showed that specialized blood cells develop much more quickly from stem cells than previously thought, changing the “textbook” view of how blood cells are made. This paradigm shift could open up new opportunities for understanding blood cancers and how to treat them.


A new treatment strategy for prostate cancer

Dr Robert Day at the Université de Sherbrooke provided the first proof of concept that blocking a protein called PACE4 stops prostate cancer growth in mice. Anti-PACE4 therapy triggered prostate cancer cells to die and shrank tumours by 60%. A new collaboration is now advancing clinical testing and commercialization.

Reference: *Oncotarget*, February 2015

Canadian benchmarks for quality of end-of-life care in cancer

Dr Lisa Barbera of the Sunnybrook Research Institute and Canadian Centre for Applied Research in Cancer Control in Toronto found considerable variation in healthcare services provided to patients at the end of their lives across 4 provinces: British Columbia, Alberta, Ontario and Nova Scotia. She established benchmarks and quality indicators that will help regions evaluate their services and support resource allocation to improve healthcare delivery.


Tricking cancer stem cells to stop growing

Dr Daniel De Carvalho at the Princess Margaret Cancer Centre, University Health Network in Toronto, found something surprising and promising about an anticancer drug that targets colorectal cancer stem cells. The drug tricks the cancer stem cells into responding as if they had been infected with a virus, which limits the cancer cells’ ability to multiply – an approach that may complement new immunotherapies.

Reference: *Cell*, August 2015