**Stopping the spread**

Dr Jean-François Côté at the Université de Montréal’s Institut de Recherches Cliniques de Montréal has shown that a protein called DOCK1 is a critical regulator of how some breast cancers spread – significant because cancer metastasis accounts for the majority of cancer patient deaths. Removing DOCK1 in mice significantly decreased metastases, while higher levels of the protein were found in breast cancer patients with a lower prognosis, or recurrence of the disease. This provides an important target for future breast cancer treatments. Laurin et al., *Proc Nat Acad Sci* 2013.

**Selecting the best**

Drs John Bell and Jean-Simon Diallo at the Ottawa Hospital Research Institute are using mathematical models and a "synthetic biology" approach to design the most effective cancer-killing, or oncolytic, viruses. Two new oncolytic viruses have been identified with great potential for their ability to suppress anti-viral interferon proteins in cells, therefore maximizing their capacity to attack cancer cells while leaving normal cells unharmed. Le Boeuf et al., *Nat Comm* 2013.

**Tainted candy**

Many tobacco products are manufactured with added flavours such as candy, fruit or menthol. A recent survey by the University of Waterloo’s Propel Centre for Population Health Impact, a Society-funded research centre, found that high school students who use tobacco choose flavoured products over unflavoured tobacco more than half of the time. This research caught the attention of the Ontario Minister of Health who publicly responded that the government is considering its options when it comes to these products that are “clearly aimed at kids.” New provincial legislation would complement federal policies to restrict the sale of flavoured tobacco products. Manske et al., *Flavoured Tobacco Use among Canadian Youth: Evidence from Canada’s 2010/2011 Youth Smoking Survey.* 2013. [www.yss.uwaterloo.ca/index.cfm?section=5&page=288](http://www.yss.uwaterloo.ca/index.cfm?section=5&page=288)

**Mapping the problem**

Despite the growing concern around Canadians’ waistlines, the latest maps showing obesity rates in the country were published over a decade ago – until now. Dr Carolyn Gotay at the University of British Columbia’s Cancer Prevention Centre has updated this important information showing how obesity rates have climbed in the last 11 years, providing the evidence needed to promote action from the public, healthcare providers and decision-makers to improve the health of Canadians. Gotay et al., *Can J Pub Health* 2012.

**Cataloguing cancer risk on the job**

People who are exposed to cancer-causing substances at work can reduce their risk of developing cancer if there are effective tools available. Dr Jérôme Lavoué at the Université de Montréal, working in the area of exposure assessment science, is developing a toolkit to collect and use information on carcinogenic substances. He recently published a list of the professions at most risk for silica exposure, which can lead to lung cancer. He is collaborating with international experts to analyze exposure data from around the world. Beaudry et al., *J Occup Env Hyg* 2013; Sauvé et al., *J Env Monitor* 2012.

**Who benefits from end-of-life care?**

Palliative care for people with advanced cancer can be a support for both patients and their caregivers. Research by Dr Camilla Zimmermann at Princess Margaret Hospital has shown that early involvement with palliative care teams can improve caregiver mental health and quality of life even after bereavement. Her research was recognized by the Psychology Progress series for its contributions to advancing the field of psychology. Wadhwa et al., *Psycho-oncology* 2013.
When your defender turns against you

White blood cells are normally a key part of the body's defences against cancer, but research has shown that they may be responsible for helping cancer return after surgery for esophageal cancer. **Dr Lorenzo Ferri at McGill University** studied phenomena called neutrophil extracellular traps (NETs), which result when white blood cells are enlisted by the body to kill bacteria and avoid infections (as may happen after surgery). He found that these NETs also catch cancer cells, but instead of killing them, activate them. This provides a new approach to treatment after surgery to prevent the recurrence of cancer. *Cools-Lartigue et al., J Clin Invest 2013.*

Keeping cancer in its place

New work led by **Dr Rebecca Auer at the Ottawa Hospital Research Institute** revealed in a mouse model that boosting the immune system's "natural killer" cells during surgery reduces cancer metastases. The research team showed that a vaccine could effectively boost natural killer cells in patients, providing the basis for a full-fledged clinical trial that could reduce the spread of cancers in patients requiring surgery. *Tai et al., Cancer Res 2013; Tai et al., Clin Cancer Res 2013.*

Treating the untreatable

Triple-negative breast cancer can be extremely hard to treat with a poor prognosis. However, **Dr Shawn Li at Western University** has uncovered a new interaction in cells that could be targeted to improve treatment options. When a protein called Numb is modified by another called Set8, it loses its ability to maintain the p53 protein, which suppresses the growth of tumours. This complex pathway is influenced by chemotherapy drugs, which could explain why they are ineffective against some cancers and provides a strategy to reverse chemoresistance. *Dhami et al., Mol Cell 2013.*

Brain cancer detectives

The most common type of cancers found in the brain are actually metastases: cancers that spread from other places like the lung. Unfortunately, once brain metastases are diagnosed there is often very little that can be done for the patient beyond extending life for a few months. **Dr Sheila Singh at McMaster University** obtained samples of brain metastases that originated from lung cancers and showed, for the first time, that they contain stem-like cells. Thirty common genes were found across the tumour samples, and 25 triggered the cancer stem cells to metastasize to the brain. *Nolte et al., JNCI 2013.*

Age matters

Angiogenesis, or the development of new blood vessels, is one method cancers use to grow and spread. Therapies designed to fight this process have been less effective at treating children with cancer than adults. Research by **Dr Janusz Rak at McGill University** suggests that different types of cancer cells are involved in the spread of cancer in young and old mice. His team is continuing to explore how the aging process affects blood vessels, and how in turn anti-angiogenic therapy might be more or less successful in patients of different ages. *Meehan et al., Mech Ageing Dev 2013.*