



Canadian Cancer Society's Top 10 Breakthroughs of 2011

Canadian Cancer Society-funded researchers continue to lead the way in advances that will reduce the number of Canadians diagnosed with and dying from cancer, and improve the quality of life for people living with and beyond cancer. Here are the top 10 discoveries of 2011 that have changed the landscape of cancer research.

- 1. The drug exemestane significantly reduces risk of breast cancer in landmark trial**
A large international clinical trial investigating a new way to prevent breast cancer in women at increased risk of developing the disease found that the drug exemestane reduces this risk by 65 per cent compared with placebo. The trial was led by the NCIC Clinical Trials Group, which is funded by the Canadian Cancer Society. This discovery was recognized by the American Society of Clinical Oncology as one of the world's most important cancer treatment breakthroughs in 2011.
Reference: [The New England Journal of Medicine](#), June 2011
- 2. Toronto research team improves survival for individuals at high risk for cancer**
A Toronto research team led by Dr David Malkin have established the 'Toronto Protocol' shown to dramatically improve survival for families with Li-Fraumeni syndrome, a hereditary disease that significantly increases a person's risk of cancer. Those under the new surveillance protocol have a 100 per cent survival rate after cancer detection compared to only 21 per cent in families not under surveillance.
Reference: [The Lancet Oncology](#), June 2011
- 3. Discovery of human blood stem cell could end search for bone marrow**
With his research team in Toronto, Dr John Dick identified a human blood stem cell that is capable of regenerating the entire blood system. This breakthrough finding could lead to new ways of treating cancer and other debilitating diseases more effectively.
Reference: [Science](#), July 2011
- 4. Additional radiation treatment decreases breast cancer recurrence**
A Canadian-led clinical trial has found that additional radiation treatment improves disease-free survival in women with early breast cancer by 30 per cent and reduces the risk of cancer recurrence – a finding that could change the standard treatment for these women. The trial was led by the NCIC Clinical Trials Group, which is funded by the Canadian Cancer Society. This discovery was recognized by the American Society of Clinical Oncology as one of the world's most important cancer treatment breakthroughs in 2011.
Reference: [American Society of Clinical Oncology annual meeting](#), June 2011
- 5. New insight into the genetics of ovarian cancer**
Dr Sherif Abou Elela in Sherbrooke screened ovarian cancer cells and identified several variants in their genetic material that control growth and survival. This work provides important insight into the genetic factors that contribute to the development of ovarian cancers and cancer biology in general.
Reference: [Nature Structural & Molecular Biology](#), May 2011



6. Drug ‘holiday’ on the horizon for men with recurring prostate cancer

Our trial found that men with prostate cancer who are treated with intermittent hormone therapy live as long as those receiving continuous therapy, potentially reducing some of the side effects of treatment, including impotence. The trial was led by the NCIC Clinical Trials Group, which is funded by the Canadian Cancer Society. The findings were presented at the annual meeting of the American Society of Clinical Oncology (ASCO) where the research was selected as the “Best of ASCO”.

Reference: [American Society of Clinical Oncology annual meeting](#), June 2011

7. New imaging method could improve early detection of lung cancer

Dr Haishan Zeng in Vancouver found that a new technology called Laser Raman Spectroscopy (LRS) was able to detect pre-cancerous lung lesions with a 96 per cent sensitivity and a 91 per cent specificity, when used in combination with existing methods. The application of LRS could improve early detection of lung cancer and reduce the number of false positives associated with other methods.

Reference: [Journal of Thoracic Oncology](#), July 2011

8. Tumour-killing nanoparticles makes Toronto researcher Inventor of the Year

Dr Gang Zheng in Toronto recently developed a new class of nanoparticles, called porphyrins, which can target and destroy tumours. When they collect in tumours, porphyrins convert light from a laser into energy that kills the cancer cells. This work earned Dr Zheng the University Health Network Inventor of the Year award.

Reference: [Nature Materials](#), March 2011

9. Young men prefer smokeless tobacco

The Youth Smoking Survey examined the use of smokeless tobacco (chewing tobacco and snuff) by youth between 2004 and 2008. Results showed young Canadian men are the prime users of smokeless tobacco, with the highest use being in western provinces and the lowest in Quebec. The findings will help in the development, implementation and evaluation of tobacco control strategies, policies and programs for young people. The survey, funded by Health Canada, was conducted by the Propel Centre for Population Health Impact, which is a Canadian Cancer Society-funded program at the University of Waterloo.

Reference: [Canadian Journal of Public Health](#), September/October 2011

10. Findings may provide new treatment option for childhood leukemia

Leading one of the first studies of its kind to investigate the role of the KIR genes in the development of childhood leukemia, Dr Ali Ahmad and his research team in Montreal showed that children that inherited activating KIR genes had a decreased risk of acute lymphoblastic leukemia (ALL). The findings provide important insight into the underlying cause of ALL and may also reveal a new treatment option by targeting KIR proteins.

Reference: [Blood](#), August 2011



Society-funded researchers honoured

In 2011, scientists funded by the Society received major national awards recognizing their research achievements:

- **Dr Geoffrey Fong** received the Canadian Institutes for Health Translation Award for his research that has helped set the global agenda on tobacco regulation. Dr Fong is a professor in Psychology and Health Studies at the University of Waterloo and a researcher with the Propel Centre for Population Health Impact.
- **Drs Allan and Connie Eaves**, BC Cancer Agency, received the 2011 Canadian Blood Services Lifetime Achievement Award for their contributions to the field of transplantation and transfusion medicine in Canada and around the world.
- **Dr Anne-Claude Gingras**, Principal Investigator, Scientist, Mount Sinai Hospital, was named to the 2011 list of Canada's Most Powerful Women: Top 100 Awards by the Women's Executive Network Foundation in the "Trailblazers and Trendsetters" category. Dr Gingras is renowned internationally for her studies of protein interactions that play a role in the development of cancer, drug resistance and immunity.
- The following researchers have been elected by their peers to the Royal Society of Canada in recognition of their outstanding scientific achievements. Election to the Royal Society of Canada is one of the highest honours a scholar can receive in the arts, humanities and sciences.
 - **Dr Steven Jones**, BC Cancer Agency, for his leading contributions to the field of genome informatics.
 - **Dr James Rutka**, The Hospital for Sick Children, who is a surgeon and scientist with keen interests in the molecular biology of human brain tumours.
 - **Dr Frank Sicheri**, Samuel Lunenfeld Research Institute, Mount Sinai Hospital, who uses x-ray crystallography to understand how signalling proteins compose communication pathways in the cell and how the dysregulation of signalling proteins contributes to human disease.