

2012

Fighting for Life

CANCER RESEARCH



Dr Meredith Irwin and Dr Michael Ohh
fight cancer through leading-edge research.
Read the story on page 5.



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Research to Prevent Cancer



Anita Portier, 54, ovarian cancer survivor

Preventing a silent cancer

Anita Portier, a 54-year-old Ottawa translator, was diagnosed with ovarian cancer in 2008. Her diagnosis came nearly one year after she first felt some unusual fatigue and abdominal twinges, which she attributed to stress. Ovarian cancer is not easy to detect and, by the time she was diagnosed, her abdomen was swollen, she was often out of breath and her pain and fatigue were debilitating.

Anita was diagnosed with stage 4 cancer that had spread to her lungs, bladder and liver, and she underwent intensive chemotherapy before and after surgery. Three years later, Anita has beaten the significant odds against her and is now living beyond her cancer.

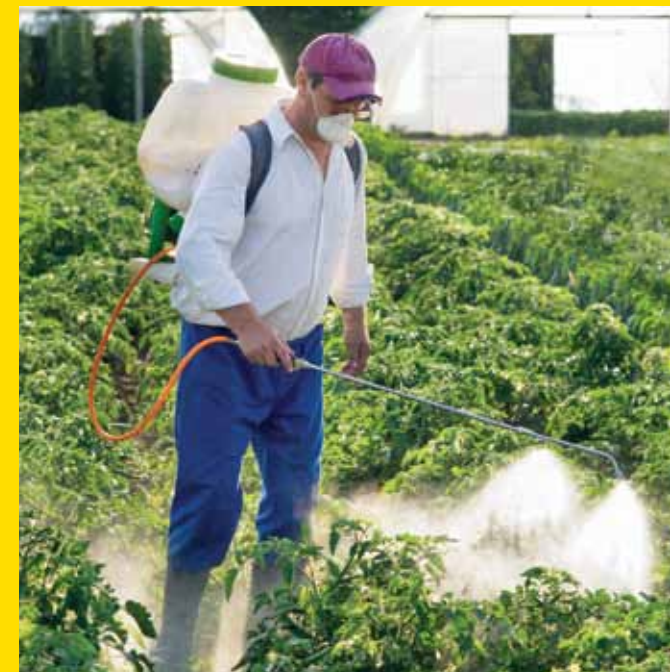
Because this cancer can be devastating with a relative survival of only 42%, researchers are working on all fronts to fight against ovarian cancer, including learning how it can be prevented. Dr Anita Koushik is doing just that: her Society-funded research is investigating the impact of Vitamin D levels from diet and sunshine exposure and use of anti-inflammatory medications, like aspirin, to determine their effect on ovarian cancer risk.

“Prevention research should be first and foremost. If more were known about how to prevent ovarian cancer ... I probably wouldn’t have had to go through what I did.”

- Anita Portier

“If research shows that Vitamin D protects against this deadly disease and if inflammation plays an important role, then there could be meaningful action women could take to prevent the disease,” she says.

The Society is funding more prevention research, such as Dr Koushik’s study. While treatments for ovarian cancer are getting better, Anita Portier says preventing the disease wherever possible is the best solution. “Prevention research should be first and foremost. If more were known about how to prevent ovarian cancer or if there was a good early detection test, I probably wouldn’t have had to go through what I did.”



Exposures add up

Through the Society’s advocacy efforts, Ontario passed the *Cosmetic Pesticide Ban Act*, greatly reducing the use of pesticides in lawns and gardens. However, pesticides are still commonly used in farming, raising questions about the safety of the workers handling them. The Occupational Cancer Research Centre (OCRC) is addressing these important concerns.

Karin Hohenadel, from the OCRC, led a 2011 study which showed an increased risk of developing non-Hodgkin lymphoma when farmers are exposed to multiple pesticides, an important advance as this type of pesticide use is very common in farming. “To prevent cancer and protect farm workers, we need more research to better understand the risk of exposure to pesticides and cancer,” says Hohenadel, whose grandparents were Ontario farmers.

Studies like this conducted by the OCRC – jointly funded by the Society, Cancer Care Ontario, and the Workplace Safety and Insurance Board, in collaboration with the United Steel Workers – will ultimately lead to policies to protect people with jobs that expose them to substances that increase cancer risk.

“To prevent cancer and protect farm workers, we need more research to better understand the risk of exposure to pesticides and cancer.”

- Karin Hohenadel



Old drug, new tricks

What if a 50-year-old drug commonly used to treat type 2 diabetes could be repurposed for use in cancer? The drug, called metformin, is inexpensive, taken orally and has minimal side effects, making it a potentially excellent drug to prevent cancer.

“If this widely available drug can prevent more of these very common cancers from occurring, it would be a very powerful blow in the fight against cancer.”

- Dr Neil Fleshner

Three Society-funded studies are focused on whether metformin could be effective in fighting various cancers. Dr Neil Fleshner, a clinician-scientist, is studying whether metformin may prevent prostate cancer. Dr Michael Pollak in Montreal is studying whether the same drug helps to prevent colorectal cancer. And Dr Pamela Goodwin is leading a large international clinical trial to find out whether metformin can help prevent recurrence of breast cancer.

Repurposing approved drugs allows new treatments to reach the public faster and can be inexpensive if the drug is already off patent. “If this widely available drug can prevent more of these very common cancers from occurring, it would be a very powerful blow in the fight against cancer,” says Dr Fleshner.

OUR IMPACT

- Researchers found that post-menopausal women who are physically active have a 30% to 40% lower risk of developing breast cancer.
- A clinical trial found that the drug exemestane reduces the risk of developing breast cancer by 65% in women with increased risk.

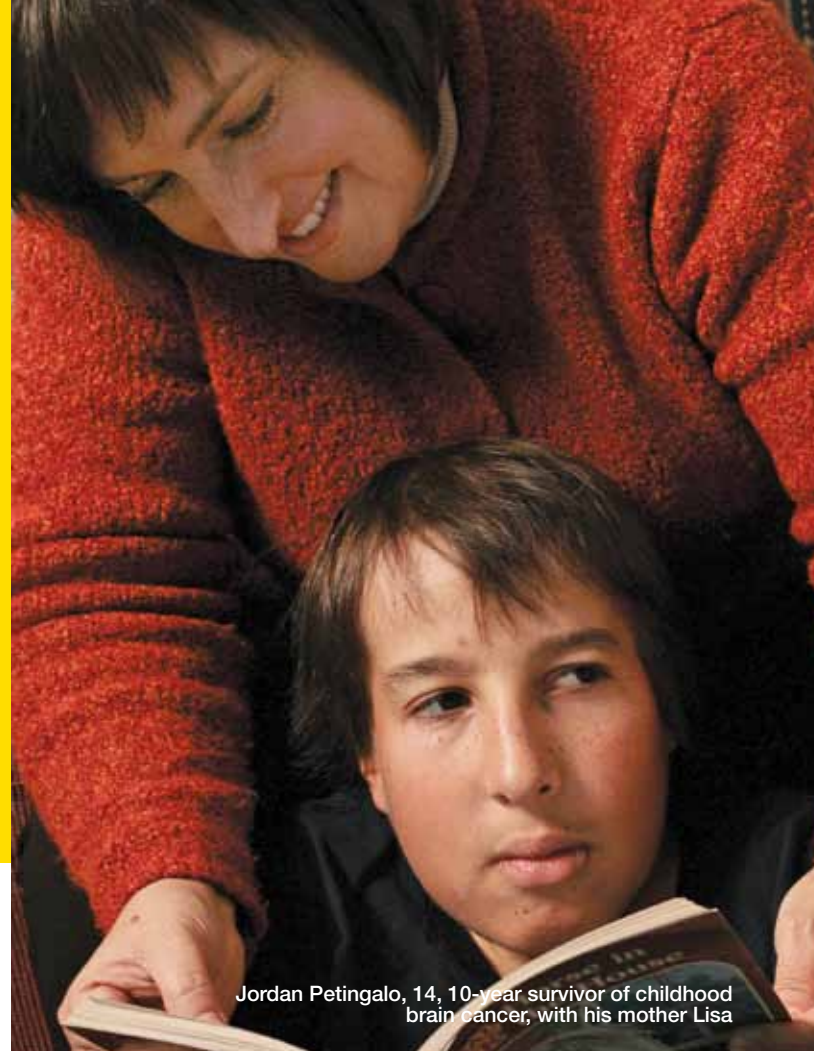
Research to Save Lives

Discovery could save kids' lives

Just before his third birthday, Jordan Petingalo was diagnosed with medulloblastoma, the most common childhood brain cancer. After intensive treatment, which included surgery, aggressive radiation and chemotherapy, the resilient Sault Ste. Marie boy beat the disease.

While about 60% of children with this cancer survive, most, like Jordan, will experience significant long-term effects from their treatment. The now 14-year-old, Grade 9 student suffered serious nerve damage to his feet, has learning disabilities and his growth has been affected. Though he has problems running and jumping, this inspiring teen still plays soccer, baseball and basketball. However, Jordan still needs to travel to Toronto several times a year to get growth hormone injections and be monitored for late effects of treatment.

To fight back against childhood cancer and to show their appreciation of the support they have received from the Society, the Petingalos have taken part in *Relay For Life* for the past decade. They were excited to learn about a recent Society-funded breakthrough in medulloblastoma



Jordan Petingalo, 14, 10-year survivor of childhood brain cancer, with his mother Lisa

"... the outcome will be so much better for the children and their families."

- Lisa Petingalo

that will undoubtedly improve outcomes for kids diagnosed with the disease. Dr Michael Taylor, a pediatric neurosurgeon in Toronto, discovered that medulloblastoma is not one disease, but four, each with a different genetic fingerprint.

By identifying the specific type of medulloblastoma a child has, treatment can be better tailored for each child, which could save more lives and create brighter futures for children with this disease.

Jordan's mother, Lisa, is excited to see that funds raised for research are making a difference and will have an impact. "If more lives can be saved and the most severe effects can be avoided, the outcome will be so much better for the children and their families," she says.

OUR IMPACT

- Researchers developed the 'Toronto Protocol' that when followed resulted in 100% survival in families with a syndrome predisposing them to cancer.
- Researchers discovered how to turn skin cells into blood, which will revolutionize the future of stem cell transplants.



Dr Meredith Irwin and Dr Michael Ohh

Marriage of minds

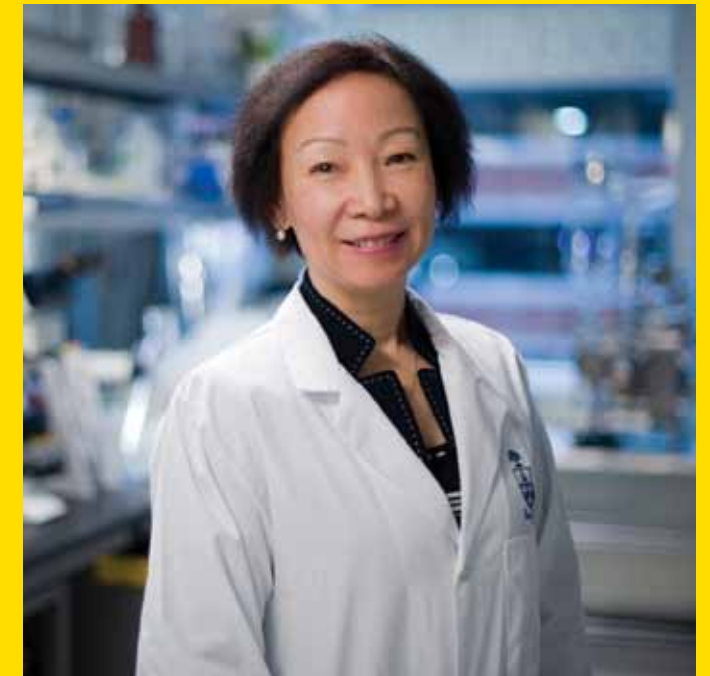
Dr Meredith Irwin and Dr Michael Ohh met in a Harvard University lab in 1998 while each was studying a different cancer-related protein. Today, the two Society-funded researchers are married to each other and their leading-edge research regarding those cancer-killing proteins could lead to new targeted therapies for cancer.

Dr Irwin, a clinician-scientist, is working to develop better treatments for children with neuroblastoma, a nervous system cancer that is a leading cause of childhood cancer death. She is studying a number of drugs to test their effect on advanced neuroblastoma and has also recently shown that new therapies, including one called nutlin, could help make chemotherapy more successful.

Dr Ohh has been studying a protein that when missing causes a variety of cancers, including kidney cancer. He discovered that this protein regulates how cells sense and respond to oxygen and, when missing, cells can grow with little oxygen. This promising research could lead to better treatments for cancer patients.

The couple also fight cancer by collaborating on research – for instance, studying the use of nutlin to make kidney cancer more responsive to chemotherapy.

"The Society has been wonderful in funding both basic and translational research, and without that support a lot of our work would not have been possible," says Dr Ohh.



Dr Li Zhang

Fighting leukemia

With over a decade of funding from the Society, Dr Li Zhang has pioneered an exciting new treatment for acute myeloid leukemia, the most common form of leukemia in adults, which uses the patient's own immune system to fight the disease.

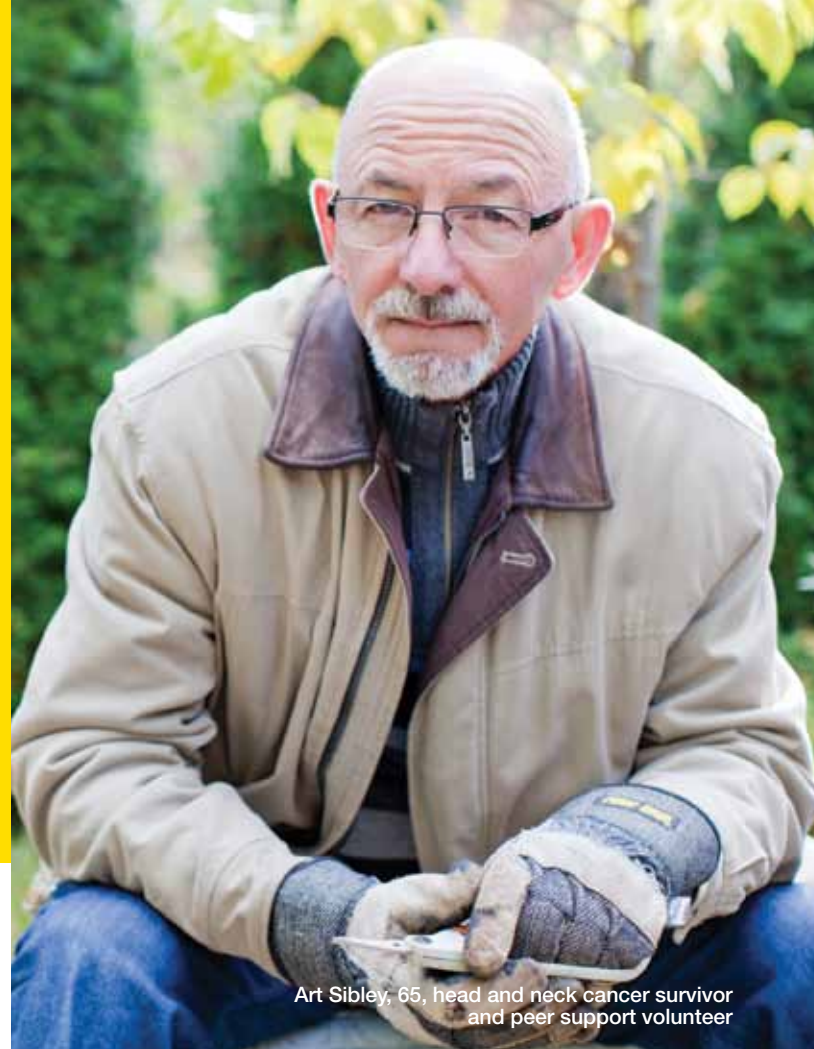
"Funding from the Society has helped me go from the initial discovery of these special cells to a new therapy that could save lives."

- Dr Li Zhang

Dr Zhang's team discovered a rare type of white blood cell, called a DNT cell, that can kill both leukemia cells and the donor cells that often cause rejection following a stem cell transplant. Her team has developed a method to increase the number of these cells, and this new treatment is now on the cusp of moving into clinical trials. The treatment will be tested first in combination with chemotherapy to treat leukemia and in the future may be used to reduce rejection risk after a stem cell transplant.

"Funding from the Society has helped me go from the initial discovery of these special cells to a new therapy that could save lives," says Dr Zhang.

Research to Enhance Quality of Life



Art Sibley, 65, head and neck cancer survivor and peer support volunteer

“Any research that can improve your quality of life while going through treatment and after surviving cancer is so important.”

- Art Sibley

This research is an essential step in making the tool widely available and used by clinicians to better support their patients. Ultimately, it will allow doctors to properly address swallowing problems and prevent serious complications such as malnutrition or pneumonia, an important concern for people with head and neck cancer.

As a volunteer with the Society's Peer Support program, Art has spoken to nearly 40 head and neck cancer patients. “I tell them adapting to swallowing problems is a long, slow process. Any research that can improve your quality of life while going through treatment and after surviving cancer is so important.”

Tackling side effects

Art Sibley, 65, is thankful his advanced tongue cancer was successfully treated with radiation and chemotherapy in 2004. But he's had to learn to live with the swallowing problems common in people suffering from head and neck cancers. “Radiation destroyed my saliva glands. I have a permanent dry mouth and eating is an issue even today,” says Art, a retired special constable with the Barrie Police Service.

Problems with swallowing, known as dysphagia, can lead to serious medical complications, such as pneumonia, malnutrition and dehydration, depression and anxiety, or even death. Art, an avid cyclist, dropped from 160 to 129 pounds and needed a feeding tube for almost five months to get adequate nutrition. Frightened of choking, he learned by trial and error to eat wet foods, avoid dry ones and drink liquids to wash food down.

Dr Rosemary Martino has funding from the Society to test a new tool designed to assess the severity of complications from swallowing disorders in head and neck cancer patients.

OUR IMPACT

- A clinical trial found that men with prostate cancer treated with alternating courses of hormone therapy live as long as those receiving continuous therapy with potentially fewer side effects.
- Researchers found that childhood cancer survivors have higher odds of hospitalization and longer hospital stays as young adults; an important discovery to better support survivors.



Dr Angela Cheung

Balancing risk and benefit

Society research recently showed that the drug exemestane can prevent breast cancer in post-menopausal women at increased risk of the disease. But, there are still questions about the effects of the drug on women's bone health that need to be addressed before it can be widely used.

“The Society's support of this research is a great opportunity to help many post-menopausal women ...”

- Dr Angela Cheung

Does it increase the risk of a hip fracture, for example, limiting a woman's activity level and independence?

The Society is funding research led by Dr Angela Cheung, a women's health physician in Toronto, to learn whether or not exemestane has negative effects on bone, such as decreased strength and density, that could lead to fractures. The results will give women better information to balance the risks and benefits when considering this new breast cancer prevention option.

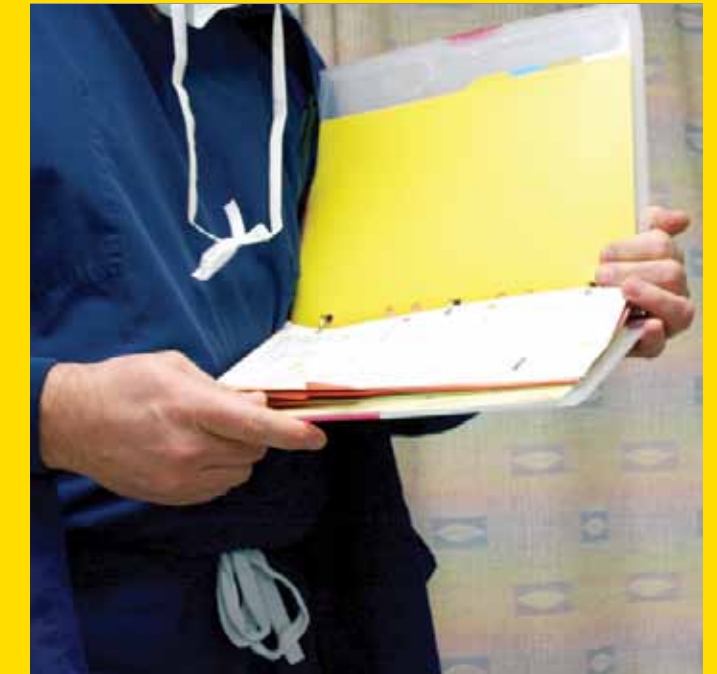
“The Society's support of this research is a great opportunity to help many post-menopausal women, not just in preventing cancer but in understanding how the treatment may or may not affect their bone health and quality of life,” says Dr Cheung.

Better outcomes, brighter futures

For many kids who survive cancer, their fight doesn't end with their last treatment. Cancer treatments are hard on anyone, but can be especially tough on young bodies. About two-thirds of survivors will experience long-term effects, including additional health problems or developmental challenges, which can have a real impact on their future.

To improve the quality of outcomes for kids with cancer and survivors and reduce the burden on families, the Society is collaborating with the Pediatric Oncology Group of Ontario on a special research initiative. A key part of the initiative is the evaluation and development of a new Survivor Care Plan that will help equip, enable and empower survivors and their families with the information they need to make decisions about their health.

Along with the other projects underway through this initiative, these efforts will help children with cancer have better futures beyond their cancer experience.



More research is needed to defeat cancer

Thanks to the generosity of our donors and the tireless efforts of our volunteers and staff, the Society is leading the fight against cancer.

But there is more research to be done. Help defeat cancer sooner by making a donation to the Canadian Cancer Society.

Please visit www.cancer.ca.

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