THE PRINCESS MARGARET
JOURNEY
TO CONQUER CANCER®

Shaping The Future of Cancer Breakthroughs, One Step at a Time

2024 Journey Impact Report

Table of Contents

A Message From Our Leader

At The Princess Margaret, we know that the research we do today will save lives tomorrow. Our renowned team of doctors, researchers, and scientists is continuously making ground-breaking discoveries that are improving patient outcomes and saving more lives here in Canada and around the world.

Thanks to our community of supporters, this past year the Foundation raised an incredible $270 million for life-changing cancer research, education, and care. Every donation helped accelerate the pace of innovation and is helping to give cancer patients more quality time with their loved ones.

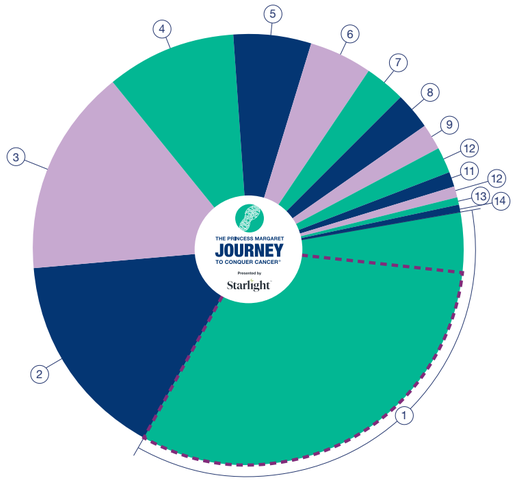
We believe in a future free from the fear of cancer. With help from our incredible community of supporters, we know we can transform cancer outcomes and experiences for people across Canada and around the world. With ongoing advances in early detection, innovative treatments, and comprehensive support programs, we are closer than ever to Conquering Cancer. Together, we can make a significant difference and bring hope to countless individuals and their loved ones affected by this disease.

Dr. Miyo Yamashita
President and Chief Executive Officer,
The Princess Margaret Cancer Foundation

The Journey's Impact: $1.63M Raised in 2024

In 2024, almost 2,500 participants, plus donors, sponsors and volunteers rallied together to contribute $1.63 million towards life-saving cancer research, bringing the Journey to Conquer Cancer's grand fundraising total to more than $15 million since its inception. All funds raised from this year's nearly 17,000 donations directly benefit The Princess Margaret's mission to Conquer Cancer In Our Lifetime.

Please see below for a breakdown of where the funds raised are allocated. By focusing on the Cancer Centre's highest priorities, we can make the largest impact exactly where it is needed most.



The graph above illustrates that of the $1.63 million raised at the 2024 Journey to Conquer Cancer, $1,311,937 million is designated funding, while the remainder is undesignated.

$318,062
Undesignated Fundraising

1
$486,368
Blood & Hematology
- **$407,681** Multiple Myeloma
- **$78,687** Other Blood Cancers

2
$205,149
Brain & Central Nervous System

3
$204,621
Highest Priorities

4
$133,476
Gastrointestinal

5
$73,331
Prostate & Genitourinary

6
$68,587
Breast

7
$35,422
Gynecology

8
$34,007
Lung

9
$27,137
Head & Neck

10
$23,137
Sarcoma

11
$8,289
Pediatric

12
$7,047
Supportive Care

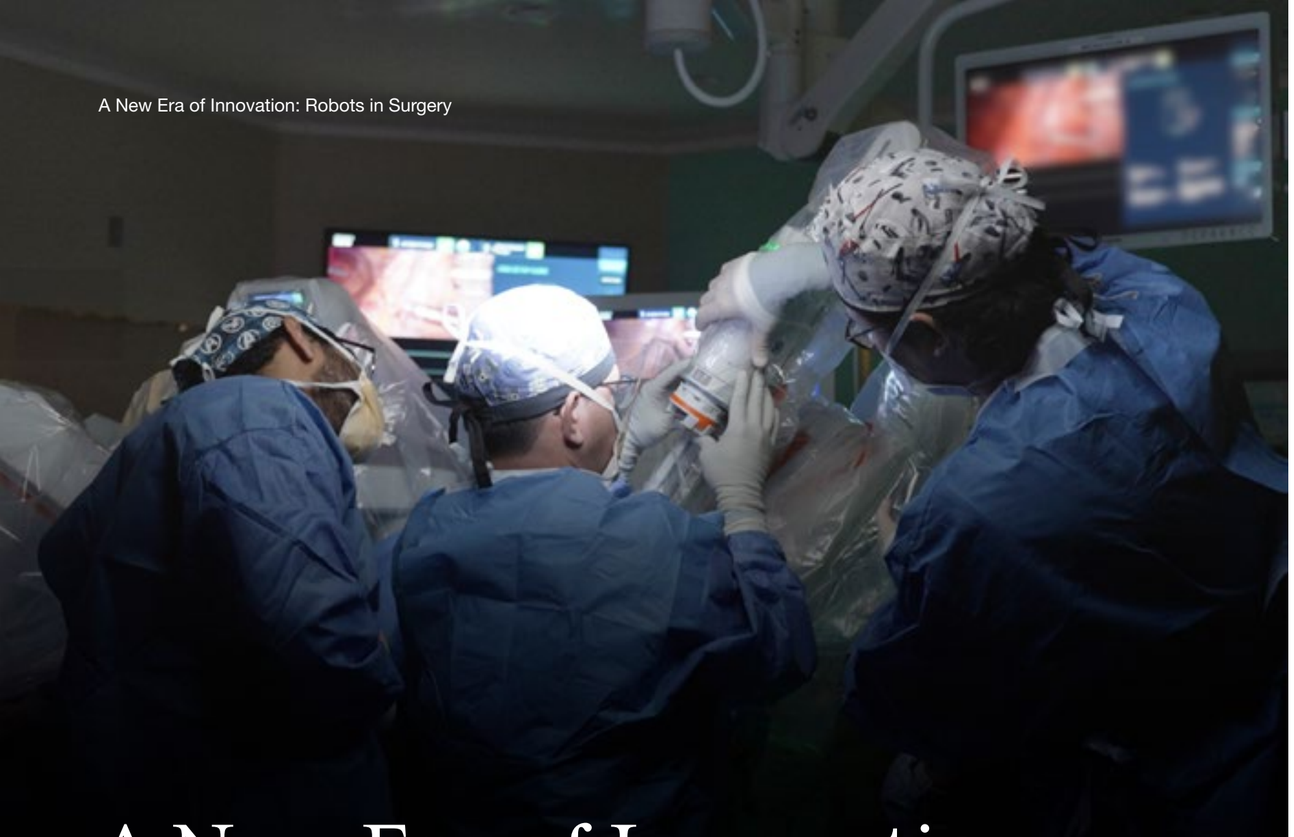
13
$6,423
Endocrine

14
$5,984
Skin

Multiple Myeloma
M-Moving Together Toward the Cure

Thank You to the MM5K Team!

A very special thank you goes out to MM5K – Journey's longest-standing team – who raised an incredible **$407,681** for life-saving multiple myeloma research in 2024. Over their 20-year history, this powerhouse team has raised an astounding **$10 million** for cancer research at Princess Margaret Cancer Centre. Thank you!



A New Era of Innovation: Robots in Surgery

Robotic technology has fully arrived at the Sprott Department of Surgery at UHN and will pave the way for a new era of innovation and optimized care for Princess Margaret patients. Within the span of a few weeks, the first robotic surgical procedures in Canada and North America were successfully conducted. Patients can now return home with minimal scars and fewer days in hospital.

Robotic surgery has long been a passion for urologic oncologist, Dr. Antonio Finelli, Head, Division of Urology, Sprott Department of Surgery. “What excites me about the robot is that it allows me to be a better surgeon in general. The surgery is associated with less harm to patients and fewer side effects and hopefully getting them back to normal life as soon as possible.”

Dr. Finelli’s expert hand-eye co-ordination is as evident in the operating room as it is on the pavement. A dedicated Road Hockey to Conquer Cancer participant for 12 years, his team has raised almost $550,000 to date.

Advancing Glioblastoma Treatment

Glioblastoma is a notoriously difficult-to-treat primary brain cancer. Despite aggressive treatment, the cancer often returns at which point treatment options are limited. However, a new international study shows great promise for patients with glioblastoma.

Neurosurgeons Drs. Farshad Nassiri and Gelareh Zadeh, have published the results of an innovative therapy which combines the injection of an oncolytic virus (a virus that targets and kills cancer cells) directly into the tumour, using intravenous immunotherapy. They discovered that this combination therapy can eradicate the tumour in select patients, with evidence of prolonged survival.

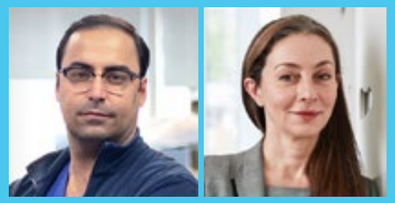
In addition, they found a new genetic signature that has the potential to predict which patients with glioblastoma are most likely to respond to treatment. “The oncolytic virus creates a more favourable tumour microenvironment, which helps to boost anti-tumour immune responses.” says Dr. Zadeh, Co-Director of the Krembil Brain Institute at UHN and Senior Scientist at The Princess Margaret.

The results, published in Nature Medicine, show that this combination therapy is safe, well tolerated with no major unexpected adverse effects and extended patient survival on average by 12.5 months. “We’re very encouraged by these results which clearly signal that this can be a safe and effective approach,” says Dr. Nassiri, a senior neurosurgery resident at the University of Toronto.

“I believe this translational work, combining basic bench science and clinical trials, is key to moving personalized treatments for glioblastoma forward,” says Dr. Zadeh.

This is one of the few clinical trials with favourable results for glioblastoma over the last decade, and it was truly a team effort. The next steps are to test the effectiveness of the combination therapy against other treatments in a randomized clinical trial.

> **Our goal, as always, is to help our patients. That’s what motivates us to continue this research.”**
>
> —Dr. Farshad Nassiri, MD, PhD



This study, published in Nature Medicine, has been a five-year journey for Drs. Farshad Nassiri (L) and Gelareh Zadeh (R).

Unlocking New Ways to Treat Breast and Ovarian Cancer

Researchers have discovered a potential new way to target cancers that bear mutations in the BRCA1 gene. Genetic mutations in BRCA genes - known as BRCA1 and BRCA2 - are associated with an increased risk for breast and ovarian cancers.

When our DNA becomes damaged, BRCA1 is crucial for its repair; however, when it's mutated, it loses its function and is unable to repair the damaged DNA. BRCA1- mutated cancers are difficult to treat because they are more aggressive and are resistant to chemotherapies.

The study led by Dr. Razqallah Hakem, Senior Scientist at The Princess Margaret, focused on a concept called synthetic lethality, which is when the simultaneous loss of function of two genes leads to cancer cell death.

The absence of one of these genes is not enough to promote cell death – the cancer cells can still survive if one of the genes remains functional.

To take advantage of this concept, the team sought to find synthetic lethal partners of BRCA1 by using sophisticated genetic tools. They discovered that the loss of a gene called methylphosphate capping enzyme (MEPCE) resulted in the death of BRCA1- mutant cancer cells. Further, they found that the deletion of MEPCE results in a highly unstable genome in BRCA1-mutant breast and ovarian cancer cells. Loss of MEPCE also impaired the ability of the cells to copy and replicate DNA, and exposed other molecules involved in these processes as potential therapeutic targets.

Our findings provide new insights into the molecular mechanisms underlying the synthetic lethality of BRCA1 mutations and identify new class of therapeutic targets for treating BRCA1-mutant tumours that have become resistant to standard therapies."

—Dr. Razqallah Hakem, PhD
Senior Scientist, Princess Margaret Cancer Centre

Detecting Cancer at its Earliest Stages

The Cancer Early Detection program shifts the focus of cancer treatment and research from advanced to early-stage cancers. Detecting cancer early significantly improves treatment success rates, with research indicating a five- to ten-fold increase in cure rates for certain cancers. Early Detection can also help patients avoid toxic chemotherapies and high-dose radiation with harsh side effects, thus improving the patient's quality of life.

Early Detection Initiatives Update

Liquid biopsy

The Cell-Free DNA in Hereditary And High Risk Malignancies (CHARM) study continues to make significant progress as a cancer early detection tool. Led by Dr. Trevor Pugh, findings from the first cohort on cancer detection in patients with Li-Fraumeni syndrome, which leads to a high risk of developing many cancers, have been published in Cancer Discovery. This collaboration between The Princess Margaret, Hospital for Sick Children, and the Ontario Institute for Cancer Research garnered attention from national news who ran stories highlighting the potential of the screening tool.

A Pilot Research Study: Breast Cancer Combined Visualization And Characterization Tools – novel Positron Emission Mammography system and Liquid Biopsy strives to detect breast cancer early by combining liquid biopsy and the emerging low-dose positron emission mammogram (PEM). This study is underway by breast radiology and site research lead, Dr. Vivanne Freitas.

Universal Genetic Testing for Oncology (UNIFY)

In collaboration with the breast site at The Princess Margaret, the Bhalwani Familial Cancer Clinic is offering comprehensive genetic testing to all breast cancer patients as a standard of care. This first-of-its-kind program has now offered UNIFY genetic testing to over 200 patients after only three months. Over half of the patients are tested in-house at the University Health Network Genome Diagnostics lab who have expanded testing from a 19-gene panel to a state-of-the-art 76-gene panel.

CHIP Clinic

Clonal Hematopoesis of Indeterminant Potential (CHIP) are stem-cell derived genetic changes originating in the blood. This can be a sign of early cancer risk, and we have broken ground on Canada's first CHIP clinic. Led by hematologist Dr. Aniket Bankar and medical oncologist Dr. Rob Vanner, this clinic will help us understand this new clinical entity and its impact on cancer care.

(L to R), Larissa Peck, MSc, CGC, genetic counsellor, Bhalwani Familial Cancer Clinic, and Dr. Raymond Kim, MD, PhD, Medical Director, Early Detection, Princess Margaret Cancer Centre.

A First-in-Canada Milestone

Pioneering Research in Radiofrequency Ablation (RFA) for Thyroid Treatment

For patients with thyroid tumours, surgery can be intimidating, invasive and, in some cases, even life-altering.

But an innovative procedure called radiofrequency ablation (RFA) could offer patients a less invasive option that doesn't require surgery and reduces the potential for undesirable side effects. This procedure was performed for the first time in Canada by Dr. Jesse Pasternak, a surgeon in the Endocrine Clinic at The Princess Margaret and UHN's Sprott Department of Surgery.

RFA is commonly used for chronic lower back pain, neck and arthritic joints, and its use is currently approved to remove large or cancerous thyroid nodules. Dr. Pasternak is conducting a clinical trial to support the use of this procedure on small, suspicious nodules.

A thyroidectomy, the surgery that often removes nodules, can lead to a number of undesirable side effects, such as loss of thyroid function and cosmetic concerns for patients with post-thyroidectomy scarring. Dr. Pasternak has been exploring minimally invasive removal options for decades and is motivated by the desire to offer patients options that allow more flexibility in their treatment. The RFA procedure preserves thyroid function and leaves the patient without a scar.

The first RFA procedure for a thyroid nodule in Canada was completed in April 2023 on Deborah Guitmann Mutchnik. She had been monitoring a thyroid nodule for seven years which had started to become worrisome. When she found out she was eligible for this study, she jumped at the opportunity. "I don't like surgery, so this was a perfect alternative."

"For patients who are not candidates or don't want surgery, radiofrequency ablation is a potential solution to directly target the nodule with no negative effects to the thyroid," Dr. Pasternak says.

The study seeks to find whether the RFA procedure can entirely eliminate smaller nodules. It also would allow patients to have suspicious nodules treated before they have the chance to grow into something more dangerous. Dr. Pasternak and his team hope their pioneering research will allow this procedure to become widespread in Canada to provide more options to patients everywhere.

> **"The goal of this research is to get this treatment approved to provide the least invasive options to the most patients."**
>
> —Dr. Jesse Pasternak, MD, MPH
> Section of Endocrine Surgery, Division of General Surgery UHN Sprott Department of Surgery

Members of the Radiation Medicine Program at The Princess Margaret with the new Halcyon linear accelerator.

State-of-the-Art Radiation Treatment

The Halcyon Linear Treatment Accelerator

The Princess Margaret Radiation Medicine Program (RMP) has added a new patient-centric, state-of-the-art Halcyon radiation treatment machine to its existing cutting-edge fleet of treatment machines.

The Halcyon linear accelerator stands out with benefits such as lower couch height for easier patient access, rapid high-quality imaging for accurate patient positioning, and when combined with efficient treatment delivery, this limits time on the treatment couch for seamless patient experiences.

With the ability to collect images in 15 seconds – about half the time of standard treatment machines – the Halcyon improves RMP's ability to treat many patients using precise image-guided techniques.

"We are excited to bring new technology to The Princess Margaret which facilitates the delivery of high-precision radiotherapy to cancer patients in a more comfortable visit," says Dr. David Kirsch, Head, Radiation Oncology, Radiation Medicine Program, at The Princess Margaret.

Halcyon radiation therapists describe working with the new machine as "an incredibly positive experience." Its streamlined operation allows our team to provide safe and efficient care and ensures patients and caregivers spend less time in treatment.

The Halcyon will usher The Princess Margaret into a new era of progress in cancer care worldwide.

Testing a New Drug for Lung and Colon Cancer

A large international effort led by Dr. Adrian Sacher and colleagues at 35 institutions spanning 12 countries around the world has advanced the clinical potential of a new anti-cancer drug. The study found that the drug, which targets a mutation in a gene known as KRAS, shows minimal adverse effects in cancer patients.

Normally, KRAS is instrumental in cell growth and division; however, when mutated, it can lead to the transformation of healthy cells into cancerous ones. Despite KRAS mutations being the most commonly found mutations that drive cancer development, treatment options that directly target this molecular pathway have been limited.

Recently, a new drug called divarasib was developed by Genentech to target a particular type of KRAS mutation that is present in 12-14% of non-small cell lung cancers and a small percentage of colon cancers.

Dr. Sacher and colleagues tested the safety of divarasib in 137 cancer patients whose tumours harboured the specific KRAS mutation and found few serious reactions, with only 3% of participants discontinuing the drug because of serious side effects.

Notably, patients with metastatic non-small-cell lung cancer exhibited a positive response to divarasib, with over half displaying a favorable reaction to the treatment. Similarly, nearly a third of colon cancer patients showed a positive response.

“This study establishes divarasib’s clinical activity and tolerability in tumours with KRAS G12C mutations. We are conducting randomized studies of divarasib to confirm these results and are also exploring divarasib’s potential in combination with other anticancer drugs,” explains Dr. Sacher. “Nonetheless, divarasib has demonstrated the most promising rate among KRAS inhibitors to date.” This important study was published in the New England Journal of Medicine.

“We are hopeful that this study constitutes the first step in developing new treatment strategies based around selective KRAS inhibitors that lead to new treatment options for our patients with lung, colon and other solid tumours.”

—Dr. Adrian Sacher, MD
Affiliate Scientist & Clinician Investigator, Princess Margaret Cancer Centre

Thank You

Thank You to our Participants, Supporters, Donors, and Volunteers

Cancer is complex, a group of hundreds of diseases, influenced by lifestyle, environment and genetics. It is full of the challenges that only collaborative research, intensive training and engaged philanthropy can meet – together.

The Princess Margaret relies on our community to enable exceptional care and impact research, just as our community relies on us to provide comprehensive cancer care and exceptional patient experiences. As the leading cancer centre in Canada, it is imperative that we provide the best available cancer therapies in an environment that comforts and enhances confidence in scientific investigation for ever-improved patient outcomes.

Thank you from The Princess Margaret Cancer Foundation, on behalf of the many cancer patients and their families who will benefit from your generous support of our work, both here at The Princess Margaret and around the world.

To learn more about the Journey to Conquer Cancer and how you can get involved, please visit **Journey2Conquer.ca**.

THE PRINCESS MARGARET
JOURNEY
TO CONQUER CANCER®

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