

2016 ANNUAL REPORT

PRINCESS MARGARET CANCER CENTRE



LEADERSHIP MESSAGES

MESSAGE FROM THE UHN PRESIDENT & CEO



Peter Pisters

Peter Pisters MD, MHCIM, CPE, FACHE, FACS
President and CEO
University Health Network

Over the past year, Princess Margaret has played an important role in UHN's journey of renewal. Together we asked ourselves, why do we exist as an organization, and what are we here to do? We found those answers in our refreshed Purpose, Values & Principles (PVP). Walking through our doors, you can see purpose, transforming lives and communities through excellence in care, discovery and learning reflected in everything from the innovative treatments we offer, to the care we provide our patients. But our primary value, the needs of patients come first, truly reminds us why we exist as an organization.

Embedding our PVP into the fabric of UHN has been supported by important initiatives taking place around the organization. One example is the ground floor renovation at Princess Margaret. This transformation, designed with the patient experience in mind, signals our commitment to providing compassionate care for patients and their caregivers as soon as they walk through our doors. Our commitment to Safety, one of our values, is being realized through the Caring Safely transformation. From daily safety huddles to education sessions, we are taking action to make UHN a safer place for one another, and the individuals we serve. For more information on our Purpose, Values & Principles, and Caring Safely, visit renewinguhn.ca.

MESSAGE FROM THE CANCER CENTRE LEADERSHIP

We are pleased to share the 2016 Annual Report for the Princess Margaret Cancer Centre at the University Health Network (UHN). This report profiles the activities of our departments, disease groups, research institute, and education programs over the past year. We continued to drive progress on our refreshed strategic plan – World Class Personalized Cancer Medicine – a multi-faceted, integrated approach that involves finding the right treatment, for the right patient, at the right time.

As part of our multi-phase 10 year space transformation plan, we built additional capacity for academic programs, and clinical care in 2016 by relocating many of our staff to 700 University Avenue. The move is enabling the future redevelopment of our existing facilities to further improve the patient experience, and ensure we are able to meet the growing demand for cancer care.

We would like to acknowledge The Princess Margaret Cancer Foundation for its dedicated support and philanthropic efforts that help fund many of our initiatives. This year marked a major milestone as we successfully achieved our Billion Dollar Challenge, a fundraising campaign launched in 2012 to support the creation and delivery of Personalized Cancer Medicine. We would like to thank our donors, granting agencies, sponsors, and event and lottery participants for their continued support to transform Personalized Cancer Medicine to conquer cancer in our lifetime.

Lastly, we wish to thank all our staff and volunteers for their unwavering dedication and determination in providing the very highest standard of care and support for our patients, and for continually pushing the boundaries of innovation and collaboration in our quest towards our vision as a Top 5 Cancer Research Centre in the world. For more information, please visit us online at theprincessmargaret.ca.



Marnie Escaf

Marnie Escaf MHA, HBBA
Senior Vice President, Executive Lead
Princess Margaret Cancer Program



Mary Gospodarowicz

Mary Gospodarowicz MD, FRCPC, FRCR (Hon)
Medical Director
Princess Margaret Cancer Program



Rama Khokha

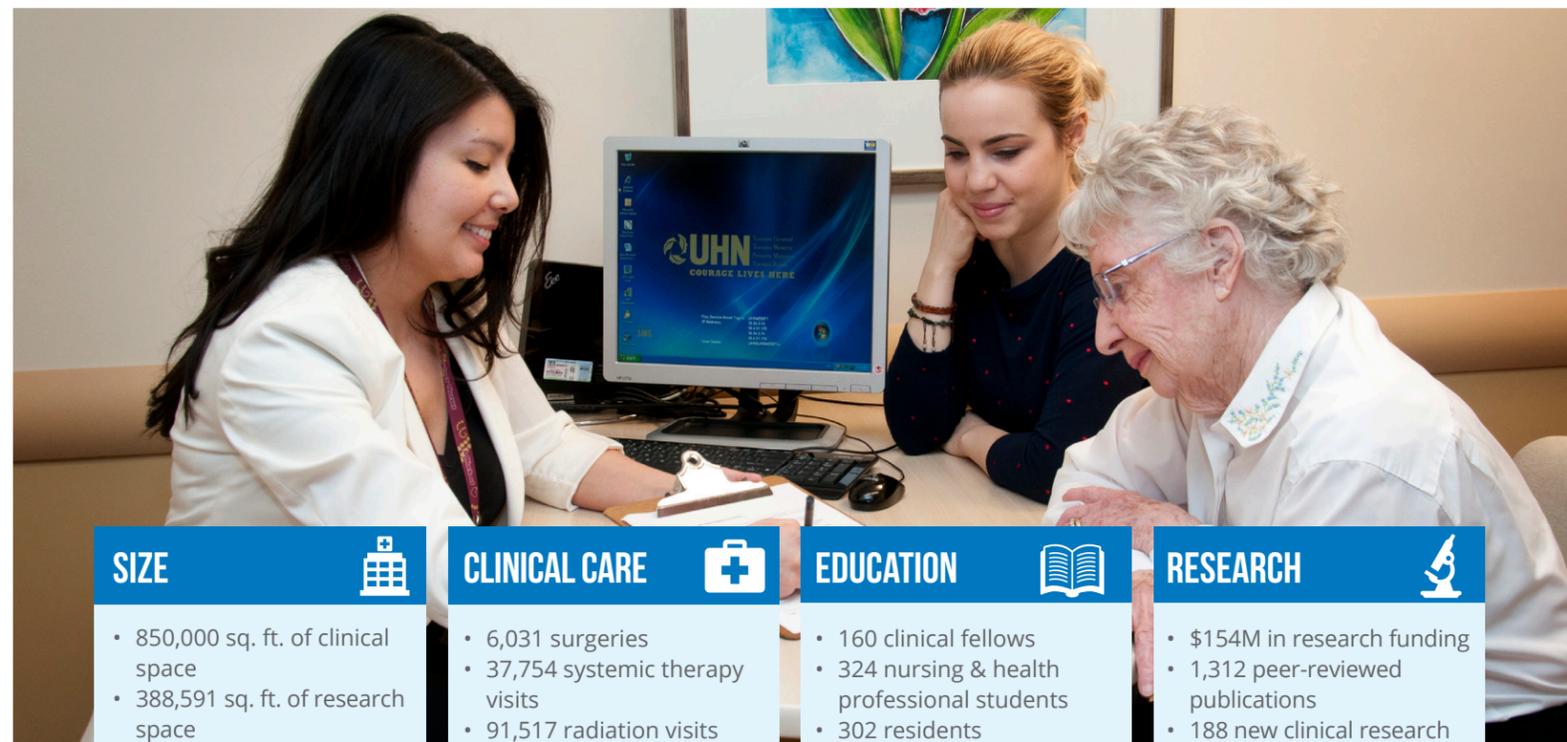
Rama Khokha Ph.D
Interim Director, Research
Princess Margaret Cancer Program



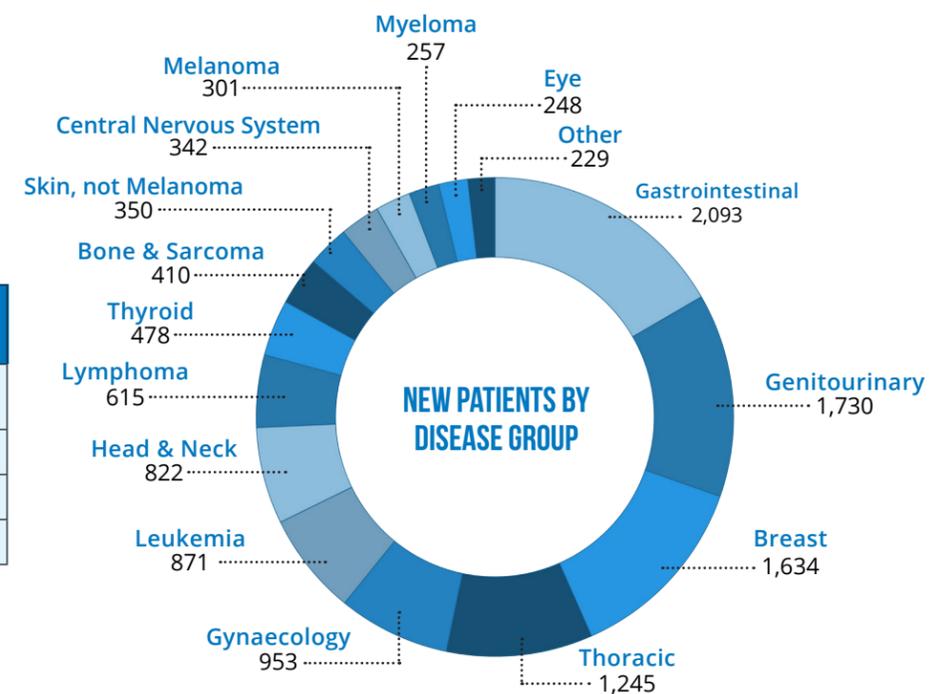
Brad Wouters

Brad Wouters Ph.D
Past Interim Director, Research
Princess Margaret Cancer Program

OUR PROGRAM



SIZE 	CLINICAL CARE 	EDUCATION 	RESEARCH 
<ul style="list-style-type: none"> 850,000 sq. ft. of clinical space 388,591 sq. ft. of research space >3,000 people including <ul style="list-style-type: none"> 176 oncologists 533 nurses 855 researchers & research staff 420 volunteers 202 beds 	<ul style="list-style-type: none"> 6,031 surgeries 37,754 systemic therapy visits 91,517 radiation visits 428 stem cell transplants 450 ambulatory clinics 228,380 clinic visits 	<ul style="list-style-type: none"> 160 clinical fellows 324 nursing & health professional students 302 residents 18,540 visitors to library 231,698 patient information resources distributed 1,420 participants in enrichment education programs 	<ul style="list-style-type: none"> \$154M in research funding 1,312 peer-reviewed publications 188 new clinical research studies opened 7,144 patients participated in clinical research studies 1,956 patients entered in clinical trials 17% of patients on clinical trials



NEW PATIENTS 2016 	
Malignant/In-Situ/Uncertain Behaviour	12,578
Non-Neoplastic	1,589
Benign	3,584
Total New Patients	17,751

OUR CLINICAL PROGRAMS

RADIATION ONCOLOGY



Fei-Fei Liu MD, FRCPC

Chief, Radiation Medicine Program
Professor and Chair, Department of Radiation Oncology, University of Toronto
Senior Scientist, Ontario Cancer Institute
Dr. Mariano Elia Chair in Head & Neck Oncology

The Radiation Medicine Program (RMP) is guided by a commitment to patient-centred care with focus on quality, safety, and expertise. Our program endeavors to improve the quality of radiation therapy worldwide through innovative research, education, and the uptake of cutting-edge, novel radiation practices and technologies. Our facilities include 16 linear accelerators, a state-of-the-art Magnetic Resonance-guided Radiation Therapy (MRgRT) suite, and two Leksell Gamma Knife Perfexion units. Our program includes 36 radiation oncologists, 33 medical physicists, and 160 radiation therapists. These core disciplines are supported by clinical, research, administrative, and technical support teams. This interprofessional group of over 350 staff work together to deliver high quality and safe radiation treatment to over 8,000 cancer patients annually.

SUPPORTIVE CARE

The Department of Supportive Care is dedicated to assisting those affected by cancer by providing programs and services that address the physical, emotional, psychological, and social needs throughout the cancer journey. Our department is comprised of three divisions: Psychosocial Oncology, Palliative Care, and Cancer Rehabilitation and Survivorship. The clinical care from our department is delivered by over 80 social workers, psychiatrists, psychologists, palliative care physicians, nurses, music therapists, kinesiologists, occupational therapists, physiotherapists, registered massage therapists, dietitians, and other allied health professionals. We have also become an internationally recognized center for research, and education, developing and testing novel approaches to treatment and training supportive care students and clinicians from all over the world. The unique integration of psychosocial, palliative care, and cancer survivorship and rehabilitation supports a holistic and comprehensive approach to supportive care for cancer patients and their families at all stages of the disease.



Gary Rodin MD

Head, Department of Supportive Care and Al Hertz Centre for Supportive and Palliative Care
Harold and Shirley Lederman Chair in Psychosocial Oncology and Palliative Care
Director, Global Institute of Psychosocial, Palliative & End-of-Life Care (GIPPEC)
Professor of Psychiatry, University of Toronto

SURGICAL ONCOLOGY



Gelareh Zadeh MD, PhD, FRCSC

Chief, Surgical Oncology
Head of Surgical Oncology, Cancer Care Ontario - Toronto Central Region
Associate Professor, Department of Surgery, University of Toronto
Wilkins Family Chair in Neurosurgical Brain Tumour Research

The Department of Surgical Oncology is committed to providing access to leading-edge surgical techniques and technologies that improve patient outcomes, with a focus on delivering comprehensive, compassionate care for our patients. With 72 dedicated cancer surgeons, our multidisciplinary surgical teams offer services for central nervous system, breast, skin and melanoma, sarcoma, urology, head and neck, thoracic, hepatobiliary, colorectal, gynecologic, ocular neoplasms, oncological reconstruction, endocrine, and dental oncology. We have an internationally recognized interdisciplinary program dedicated to clinical and translational research, innovation, and education. We endeavor to meet the increasing demand for the surgical management of cancer, and we are committed to providing the best practice of care through collaboration, outreach, and partnership with our community.

MEDICAL ONCOLOGY



Amit M. Oza MD

Head, Department of Medical Oncology and Hematology
Professor of Medicine, University of Toronto
Director, Cancer Clinical Research Unit, Princess Margaret Cancer Centre
Co-Director Bras Family Drug Development Program, Princess Margaret Cancer Centre

The Department of Medical Oncology and Hematology is dedicated to providing some of the most advanced and novel approaches to medical and hematologic oncology worldwide. Our team includes 69 medical and hematological oncologists and over 150 practitioners, nurses, trainees, and allied health professionals. We work together to provide compassionate, high quality, patient-centred care for people with common, rare, and complex forms of cancer. Our Blood and Marrow Transplant Program aims to improve outcomes for people with leukemia, lymphoma, myeloma, and other hematological disorders. We are committed to providing the latest developments in new cancer therapies, including immunotherapy and targeted therapies. Together, we endeavour to be global leaders in improving outcomes, and advancing care through continuous innovation and research.

COLLABORATIVE ACADEMIC PRACTICE



Pamela Savage RN, MAEd, CON(C)

Director of Professional Practice

Collaborative Academic Practice (CAP) is an evolving portfolio that has brought together Nursing and the health professions. Our portfolio is firmly rooted in the strength and contribution that each profession brings to the whole. Collaborating interprofessionally and across portfolios, CAP is committed to embedding 'Patients as Partners' in all that we do. Our portfolio includes 15 health professions comprised of more than 650 people, including staff in Anesthesia, Chiropractic, Clinical Nutrition, Kinesiology, Medical Imaging Technology, Nursing, Occupational Therapy, Physiotherapy, Psychology, Respiratory Therapy, Radiation Therapy, Social Work, Speech Language Pathology, Spiritual Care, and Therapeutic Recreation. Each profession works collaboratively to provide excellence in patient-centred care while advancing best practices, education, and research.

TECHNA INSTITUTE

CELEBRATING 5 YEARS OF INNOVATION

The TECHNA Institute was built to accelerate the translation of technological innovation into clinical practice for the benefit of patients. Celebrating its 5th anniversary, TECHNA is making excellent progress towards becoming one of the only self-sustaining research entities of its kind in the world.

TECHNA's unique formula is based on the concept of an integrated approach where deep technological understanding, full awareness of clinical need, and business development are integrated throughout the development process. TECHNA has facilitated the clinical development and adoption of an unprecedented number of technologies, including development of MR-guided radiotherapy, cone-beam CT image-guided surgery, creation of Artificial Intelligence technologies, implementation of state-of-the-art molecular imaging, and advancement of new technologies for cancer research. "Through our work in TECHNA, we are able to bring transformative approaches to surgery right into our operating rooms and impact patient care today." says Dr. Jonathan Irish, Clinical Faculty Lead for TECHNA and cancer surgeon at Princess Margaret. These innovations are impacting the delivery of care and delivering financial returns to sustain TECHNA's operations. This double bottom line of return on investment is what makes TECHNA so unique. Commercialization revenue from TECHNA-supported initiatives is projected to grow steadily, helped by projects such as the Elekta Icon™, a next-generation image-guided radiosurgery system developed in collaboration with Elekta that was unveiled at the 2015 European Society for Radiotherapy and Oncology (ESTRO) forum and is now available for sale globally.



THE GUIDED THERAPEUTICS OPERATING ROOM (GTx OR)



THE MAGNETIC RESONANCE GUIDED RADIATION THERAPY (MRGRT) FACILITY



ELEKTA ICON™ IMAGE-GUIDED RADIOSURGERY SYSTEM

Since the launch, TECHNA's intellectual property and commercialization activities generated 10 patents, 29 licensing opportunities, seven licensed products, and five start-ups resulting in projections of more than \$1M per annum for TECHNA's operations by 2018. TECHNA is described as "a critical member of our start-up ecosystem in Toronto by bridging healthcare start-ups across to clinical and technical know-how" by Dr. Paul Santerre, Physical Sciences Faculty Lead for TECHNA and Professor at the Institute of Biomaterials and Biomedical Engineering, University of Toronto. "It is exactly what we need to foster more innovation and impact society."

TECHNA's growing faculty include 15 leaders for key research and clinical translation areas, 37 affiliated faculty including clinicians, engineers, and scientists, and four full-time faculty. These individuals work on the development of next generation approaches for cancer treatment, including the creation of nanotechnologies to better detect cancers, the development of intra-operative tools to give surgeons real-time feedback about the tissues they are resecting, and the creation of software systems to enable the precise tracking of care outcomes. Our dedicated Technology Development Team has grown to over 40 members including project managers, engineers, designers, and commercialization experts with deep expertise on the challenges facing innovation in healthcare. There are 35 projects being managed by TECHNA representing \$15M in annual operations. Working with over 40 industry partners, the Institute has attracted over \$25M in research funding since its launch. "Incubating a product inside the hospital is attractive to all the stakeholders – it accelerates the translation of innovations into clinical care for the benefit of the patient" says Luke Brzozowski, Director of Operations and Engineering at TECHNA. "Every day we are working to enable innovation in the hospital setting and making real progress". For more information on TECHNA, visit technainstitute.com.

"At TECHNA, we are thinking about the end game from the start. We operate in a setting of churning clinical need and technology exploration and are looking for opportunities for impact whether from our own technology or from the technology of our numerous partners."

Dr. David Jaffray



THE TECHNA CORE TEAM

ACCELERATING CANCER RESEARCH

NEW SMART NANOPARTICLE

Photothermal therapy uses light and heat to treat cancer, and involves injecting nanoparticles into the body, where they accumulate in tumours. The nanoparticles absorb the light and convert it to heat, which destroys tumour cells. Although the therapy is promising, its widespread use is limited for two reasons: too much heat can be generated, resulting in collateral damage to surrounding normal tissue; and light stops travelling after it is absorbed, making the therapy ineffective for treating the inside of large tumours. Dr. Gang Zheng has now developed a smart, organic nanoparticle to address these issues.

Dr. Zheng's nanoparticle not only absorbs light and generates heat, but once a tumour-eliminating temperature is reached, the particle becomes invisible. This allows the light to further penetrate and eliminate the tumour, while preventing overheating that would normally occur and damage surrounding tissue. Dr. Zheng's nanoparticle innovation is based on biomimicry, as it is modeled on a naturally occurring process. Dr. Zheng observed that cyanobacteria have the natural ability to change the spatial arrangement of its pigments and therefore permit different wavelengths of light to penetrate. Dr. Zheng's nanoparticle harnesses this same ability, making it smart and efficient.

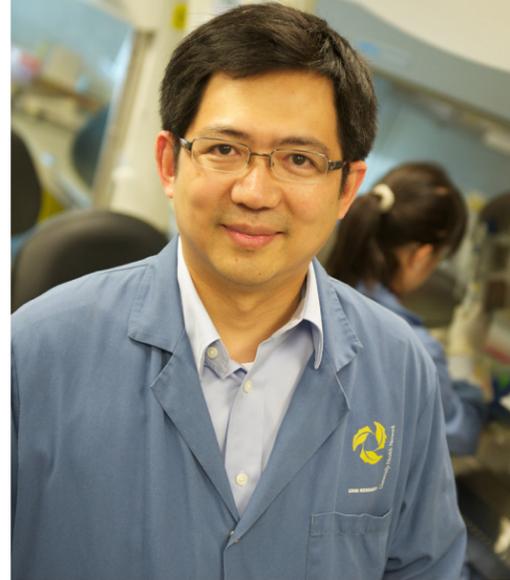
TEST PREDICTS LEUKEMIA PATIENTS' RESPONSE TO THERAPY TO HELP TAILOR TREATMENT

Leukemia researchers, with co-principal investigator Dr. Jean Wang, have developed a 17-gene signature derived from leukemia stem cells that can potentially transform patient care in acute myeloid leukemia (AML). AML is one of the most aggressive types of leukemia and the most common type of acute leukemia in adults. The new biomarker, named the LSC17 score, predicts whether patients with AML will respond to standard treatment at the time of diagnosis. The findings may enable clinicians to predict individual response and help guide treatment decisions within a day or two of diagnosis.

The biomarker comes from the leukemia stem cells that drive disease and relapse. These dormant stem cells have properties that allow them to resist standard chemotherapy, which is designed to defeat rapidly dividing cancer cells. The persistence of these stem cells is the reason the cancer comes back despite being in remission following treatment.

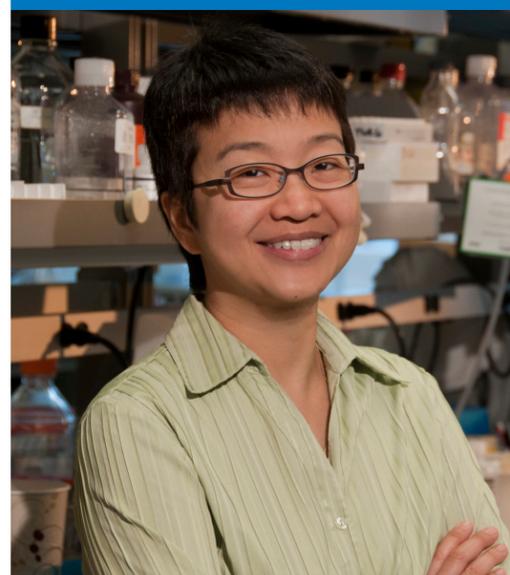
Scientists identified the minimal set of genes that were most critical for predicting survival of AML patients. With this core 17-gene score, scientists have shown they can rapidly measure risk in newly diagnosed AML patients.

The test to measure the LSC17 score has been adapted to a technology platform called NanoString. As the research team and international collaborators continue to validate the stemness risk score, plans are underway to test the score in a clinical trial at Princess Margaret, which now has the NanoString system in its molecular diagnostic laboratory.



"Our nanoparticles, which we've called photothermal enhancing auto-regulated liposomes (PEARLs), are a new form of 'smart' technology that—after being targeted to tumours—provide the right amount of heat required to kill cancer cells."

Dr. Ghang Zheng



"The LSC17 score is the most powerful predictive and prognostic biomarker currently available for AML, and is the first stem cell-based biomarker developed in this way for any human cancer. Clinicians will now have a tool that they can use upfront to tailor treatment to risk in AML."

Dr. Jean Wang

THE LIVING BIOBANK

The Princess Margaret Living Biobank now supports next generation testing in personalized medicine, providing patient-derived tumour xenografts (PDX) and patient-derived tumour organoids (PDO). A PDX is created when cancerous tissue from a patient's tumour is implanted directly into an immunodeficient mouse, thus creating a living model. A PDO is a three-dimensional structure grown from cancer cells in a gel-like compound using media containing components which support renewal. PDOs are amenable to faster expansion times in culture under the appropriate conditions and result in higher throughput compared to PDX models. The use of living models is providing solutions for cancer researchers facing the challenge of positive tumour responses in lab models that do not translate to clinical trials.

Patient derived models benefit the entire UHN research community and leverage resources to support investigator-driven science. Organoids can be grown directly from patient material in a timely manner and used for fundamental biomedical research as well as drug screening platforms. These models can be adopted for drug target validation, screening of experimental therapies, discovery of predictive biomarkers, and identification of biological mechanisms of action. The Living Biobank is a tool to answer many basic research questions that can positively impact cancer treatment. PDX and PDO models are increasingly recognized as a clinically relevant means to identify phenotype-genotype association in patient tumours, to test novel therapeutic strategies, and to discover biomarkers of drug response and resistance.

"Highly specialized techniques have enabled UHN to build a large collection of patient-derived tumour models. The recent centralization of this renewable resource allows all researchers to accelerate discoveries in prediction of drug response and drug resistance in patients."

Dr. Ming Tsao



A LAB RESEARCHER THAT WORKS WITH PDX MODELS

YOUNG LEADERS

BUILDING TOMORROW'S CANCER CENTRE



THE 2016 YOUNG LEADERS PROGRAM MEMBERS

Princess Margaret Cancer Centre launched an exciting new initiative in 2016 to foster the next generation of leaders in cancer care. The Young Leaders initiative enables critical leadership development training for multidisciplinary clinical and non-clinical staff in the early stages of their careers, while at the same time empowering participants to engage in opportunities that will create the cancer centre that they envision for the future.

Over 100 people have been engaged to date through two networking events and a formal Leadership Development Certificate Program that is now underway. The participants were excited and energized to connect with each other through the various events and meet with seasoned cancer centre leaders to discuss opportunities for engagement in the cancer centre's strategic priorities. One benefit that is already apparent is the increased connectivity and group cohesion that is occurring. Participants are meeting face to face with colleagues across various disciplines and departments and engaging in conversations about the future of Princess Margaret.

The Leadership Development Certificate Program was created specifically for the Young Leaders participants. The program consists of two four-hour intensive sessions as well as eLearning modules on critical topics in leadership. The first session included seasoned experts discussing topics such as change management, strategic visioning, appreciative inquiry and value-based innovation. The feedback from the participants was overwhelmingly positive and the program will continue in 2017.

An interactive workshop entitled Healthcare Philanthropy 20/20 was offered by the company Advancement Resources and hosted by the Princess Margaret Cancer Foundation. This inspiring session helped participants understand donor motivations and the importance of creating deeply meaningful philanthropic opportunities.

There will be a great deal of activity in 2017, starting with a Young Leaders Retreat to identify educational needs of the participants, inform the future events and speaker sessions, and lay the foundation for the initiative going forward.

EDUCATION STRATEGY

THE NEXT GENERATION OF HEALTH PROFESSIONALS

The continuum of cancer care is changing rapidly, and as it continues to evolve we must step up and lead the way. To address this, the Princess Margaret Cancer Education team launched a strategy in 2016 aimed at creating a culture of collaboration, integration, and leadership in education. Through this strategy, Princess Margaret will take a leadership role in informing, forming, and transforming new health professionals in an increasingly complex information environment, as well as engaging with patients and caregivers as partners.

Over the next five years, we hope to develop more flexible, adaptive, and evolving health professionals who are able to address the complexity and rapid pace of learning. These health professionals will understand the critical potential of patient engagement and empowerment, and help maximize 'Patients as Partners' – patients fully engaged in their own care. They will embrace the dramatic shift in roles of all health professionals, patients and caregivers and become change agents who work together to transform cancer education for the future.

There are a number of initiatives and programs underway to implement the Cancer Education strategy. To enable capacity building and innovation, our team is piloting a new Moodle based learning management system. This open-source learning management system has the potential to provide sustainable infrastructure for online learning, and will extend the reach of educational programming virtually to various types of learners. Currently, programs are being piloted for external learners through the Accelerated Education Program, for patients and caregivers in the Allogeneic Stem Cell Transplant Program, and for staff enrolled in the Young Leaders Program.

To encourage competency building and networking, the Cancer Trainee Professional Enrichment Program (CT-PEP) was launched in 2016. CT-PEP is an accredited curriculum designed to complement individual professional training programs and build skills in such areas as evidence-based practice, professional practice, collaboration and communication. The program is available to all trainees in cancer-related professional and research programs, and is structured as a series of eight sessions over the course of the academic year. To date, more than 80 individuals have attended five or more sessions. We look forward to continuing with this program in the future.

For more information on Princess Margaret's education strategy, visit transformcanceredu.ca.



THE CANCER EDUCATION TEAM

2016 HIGHLIGHTS

PREVENT OVARIAN CANCER PROGRAM

The Prevent Ovarian Cancer Program (POCP) is an initiative that aims to identify women at high risk for ovarian cancer and offer them the opportunity to reduce that risk. Women who inherit certain genetic mutations are at a higher risk of developing the most common type of ovarian cancer, high-grade serous ovarian cancer (HGSC). It is estimated that up to 20% of women with HGSC have a genetic predisposition for the disease. Detection has potential treatment implications, including risk-reducing surgery that is over 90% effective at preventing ovarian cancer.

It is estimated that up to 80% of women with HGSC have not had genetic testing. Estimates indicate that first degree relatives (mothers, sisters, daughters) of women with HGSC have close to a 10% risk of having an abnormality in one of the high risk genes related to ovarian cancer. Our work has identified that in Ontario alone, there may be up to 2,000 women currently at risk who are unaware of it. These women represent potential lives saved if they can be identified.

The POCP uses a web-based education campaign to recruit Ontario women to the program, followed by modified genetic counselling and genetic testing. The program began in September 2015 with the goal of testing 1,000 female first degree relatives of women who died of HGSC. To date, 312 women have enrolled in the program and 221 have received their results, some of whom have already undergone risk-reducing surgery. We estimate that we will reach the goal of 1,000 women by the end of 2018 and that these results will be used to change policy regarding who is eligible for genetic testing. For additional information, visit preventovariancancer.ca.



THE PREVENT OVARIAN CANCER PROGRAM TEAM

"Knowing that the Prevent Ovarian Cancer Program has identified an individual at risk and potentially saved their life is an incredibly rewarding feeling!"

Dr. Marcus Bernardini

AVOIDING UNDER AND OVER-TREATMENT IN OLDER ADULTS WITH CANCER

Cancer disproportionately affects older adults and older adults with cancer are often more complex and/or vulnerable than other cancer patients. Older people with cancer often have different concerns than other adults with cancer and sometimes face environmental and socio-economic challenges. These challenges can affect how they cope with their disease and the treatment choices they make.

Currently in its second year, the Geriatric Oncology Program was launched with the goal of improving care for older adults with cancer through research, education, and support in clinical care. The program has delivered targeted education to staff and developed clinical tools and resources to aid in decision-making when treating older adults with cancer. In addition, we have opened the Older Adults with Cancer Clinic; one of a few in the world that exists solely to provide personalized care plans to optimize the experience of complex and/or frail older adults along their cancer journey. The Older Adults with Cancer Clinic received over 170 referrals in the first 18 months. The clinic is focused on expanding its services and continuing to gather the best evidence to develop new tools and resources to support identifying frail and vulnerable older adults.



ALLISON LOUCKS, DR. SHABHIR ALIBHAI
DANIEL YOKOM, RANA JIN

"For these patients we know that their medical, functional, and social complexity demands an inter-professional approach – which is the basis of geriatrics."

Dr. Samir Sinha

SPACE TRANSFORMATION TO BUILD OUR CAPACITY

Over the past 20 years, there has been steady growth in the size and scope of the Princess Margaret Cancer Centre's programs. Today, more than 50,000 individuals move throughout our facilities every week, and this number is growing. According to the Cancer Quality Council of Ontario, the number of new cancer cases diagnosed each year in Ontario has increased annually since 1981, and in 2016, approximately 85,648 new cancer cases were projected, representing a 189% increase over the new cancer cases reported in 1981.

To meet this growing demand and to address the evolving needs of patients and families, Princess Margaret acquired 100,000 sq. ft. at 700 University Avenue, located just north of the cancer centre. In the fall of 2016, we relocated nearly 500 of our staff to this new space. The move was transformational, providing much needed space at Princess Margaret for growth in our academic and research programs.



THE NEWLY ACQUIRED SPACE AT 700 UNIVERSITY AVENUE



"The move to 700 University Avenue has been a key enabler of our Space Transformation strategy, creating much needed capacity for growth and for enhancing patient amenities, while consolidating our staff in a new purpose-built environment that is progressive, technology-enabled, and conducive to multidisciplinary collaboration."

Rudy Dahdal

EXPANDED STEM CELL TRANSPLANTATION PROGRAM SECURES DONORS FASTER



ORLAY LOPEZ, AGUSTINA BORIANO, BARDIA DORODGAR
MILEIDYS ALVAREZ, MYRA SOHAIL

Hematopoietic stem cell transplantation (HSCT) is the only curative treatment option for many benign and malignant hematologic diseases. In an allogeneic HSCT, a patient's tissue type, specifically their human leukocyte antigen (HLA) tissue type, is matched with a related or unrelated donor. However, only about 30% of people have a matched sibling donor and finding an unrelated donor can be difficult and time consuming. In the last decade, there has been significant progress in haploidentical stem cell transplantation, which uses a relative that is at least 50% matched to the patient. The advantage of having a haploidentical transplant is that it increases the chance of finding a donor as almost everyone has at least one haploidentical relative. Also, appropriately matched relatives can usually be asked to donate stem cells much more quickly than matched unrelated volunteer donors, thereby enabling transplants to be performed in a more timely manner. Since the program expanded to include haploidentical transplants in August, 2016, 18 transplants have been facilitated.

"This type of transplant identifies donors faster, saving time and resources. It is a promising step forward in replacing most of our Matched Unrelated Donor transplants to Haplo stem cell transplants."

Dr. Auro Viswabandya

SUPPORTING PATIENTS IN END OF LIFE DECISION MAKING



DR. GARY RODIN AND A MAID PATIENT

Following a decision by the Supreme Court of Canada and federal legislation, on February 6, 2016, terminally ill adult Canadians were given the right to request medical assistance in dying (MAID). This mandate enables those who request MAID to choose the timing and place of the end of their life and to experience a sense of personal control over the circumstances of their dying and death. The Department of Supportive Care at the Princess Margaret Cancer Centre assumed responsibility for creating and disseminating the UHN framework for MAID as well as coordination of staff education. MAID has been available at UHN since June 2016 and our framework has become a nationally recognized template for the delivery of MAID in a tertiary cancer centre.

UHN is committed to supporting patients' legal right to equitable, timely, and appropriate access to MAID, and to addressing the moral distress that staff may experience. The MAID assessment and intervention teams are composed entirely of staff who have volunteered to participate in this program. UHN has been a leader in education about MAID, with the development of patient information materials, an online resource, and delivery of MAID training workshops for healthcare providers across the province. Implementation of this legislated medical practice at UHN has been accomplished with the support of the hospital administration and staff from virtually every department at UHN. For more information about MAID at UHN, visit bit.ly/UHNMAID.

The approach that individuals choose at the end of life is a personal and family matter. An 82-year-old cancer patient at Princess Margaret shared that she chose MAID because "the one thing that I so value about MAID is that I can leave with my cognitive faculties intact, and that matters a great deal to me."

TRANSFORMING CANCER REHABILITATION & SURVIVORSHIP

Over the past two years, the Cancer Rehabilitation and Survivorship Program has undergone significant restructuring, and in March 2016 launched its new model that will enable the accommodation of more patients across all tumour sites while striving to further improve the patient experience. The new model includes a shift from primarily individual consults and separate clinics to a more seamless comprehensive impairment-focused rehabilitation program. In this integrated model, all patients referred to our program receive a comprehensive assessment with our multidisciplinary cancer rehab team. Based on the needs and complexity of the patient, they are then triaged into one of three streams: referral to community-based programs; in-house rehabilitation services provided by our team; or referral to UHN Toronto Rehabilitation Institute. This model maximizes resources to ensure that the patients receive the most appropriate care based on their needs.

Rehabilitation services include the newly launched CaRE@ELLICSR group rehabilitation program, physiatry consults, lymphedema assessments and group classes, and tailored return-to-work, sexuality, and nutrition consults. CaRE@ELLICSR is an eight week group-based cancer rehabilitation program that includes weekly supervised physical exercise classes and supported self-management sessions on various topics such as managing fatigue, mood, and nutrition. Patients in the program are followed and assessed regularly to track progress and outcomes.

In addition, we continue to provide wellness programming at ELLICSR including Healthy Steps, yoga, our ELLICSR Kitchen program, and many group education classes open to all patients at Princess Margaret without a referral.

Since its launch in the breast cancer site in 2005 with 204 patients, the Cancer Rehabilitation and Survivorship program has expanded to all sites and now sees over 900 new patients referred for cancer related impairment each year with over 3,000 visits. In addition, we have over 1,500 visits to our ELLICSR wellness program.



A PATIENT BEING LED THROUGH REHABILITATION EXERCISES

PERSONALIZING CANCER MEDICINE: HITTING HOME RUNS

On February 1-2, 2016, with more than 340 attendees, the Princess Margaret Cancer Centre hosted its Personalizing Cancer Medicine at Hyatt Regency Hotel Toronto, co-chaired by Drs. Aaron Schimmer, Natasha Leighl, and Gang Zheng.

This two day scientific forum was innovative and interactive, and engaged academic physicians, scientists, health professionals and trainees from Princess Margaret, our collaborating institutions, and our community. Small group breakout sessions were facilitated where disease focus groups came together to discuss the latest advances, challenges, and new opportunities in their field. Anchoring these breakout sessions were plenary presentations with 32 guest faculty and 97 Princess Margaret and UHN faculty. Dr. David Piwnica-Worms, from MD Anderson, discussed molecular imaging and cancer, Dr. John Dick discussed the translation of stem cell research into clinic, and Dr. Pamela Ohashi discussed immunotherapy advances in oncology.

Both days featured outstanding speakers and participants from Princess Margaret and collaborating centres. Research from our trainees was showcased in the poster viewing session, and topics of discussion included viral mimicry, myeloma, surgical innovation, and stem cell niche. Day one ended with a panel of Dr. Gary Rodin, Dr. Lillian Siu, and Dr. Vuk Stambolic who debated "is the best investment in healthcare new therapies, palliative care, or basic research?"



DR. BRAD WOUTERS



DR. JOHN DICK

"It's an exciting conference for basic and clinical research, bridging the fields."

"The conference is relevant with the pace of technological and scientific advancement."

"What a great opportunity to blend clinicians and establish dialogue."

"A great synopsis of pipeline approaches, inviting new ideas with productive discussion."



DR. ANDREA BEZJAK, DR. TRACEY SCHEFTER, DR. MEREDITH GIULIANI



DR. AARON SCHIMMER, DR. NATASHA LEIGHL, DR. GANG ZHENG

EXPANDING A CARING SAFELY CULTURE



THE PRINCESS MARGARET SAFETY COACHES

At the Princess Margaret Cancer Centre, ensuring high-quality, safe care is our highest priority. The PM Quality Committee is comprised of the Senior Vice President, Medical Director, Clinical Directors, Managers representative of over 20 quality subcommittees, as well as two patient partners. The Committee has a robust structure for reviewing incidents, sharing what we have learned from them, and ensuring action plans are in place to reduce preventable harm. In 2016, the Quality Committee launched three new initiatives:

- 'Mind the Gap' to highlight the importance of following up with patients who miss appointments;
- 'It's Your Accountability to be Safe' to encourage staff to speak up for safety; and,
- 'Transfer with Care' to increase effective use of communication tools in transitions in care.

Safety huddles were implemented in 2016 with the goal of 100% safety for patients and staff. On average the huddles last five minutes and have greatly enhanced timely resolution of issues and improved intra-departmental communication. The hospital wide expansion to over 35 safety huddles has enabled staff to be empowered to collaboratively identify problems and resolutions. Since the launch of the safety huddles, over 1,800 items at Princess Margaret have been raised with > 80% resolved within two weeks.

The Princess Margaret Cancer Centre also became the early adopter site for a new Safety Coach role and now has 21 trained safety coaches embedded into clinical and non-clinical areas. The role of the Safety Coach is to provide on-site peer support for safety concerns by expanding skills in inquiry, communication and error prevention strategies.

With the active role of the PM Quality Committee, the launch of the quality initiatives, our safety huddles and safety coaches, PM continues to drive safety as a core value.

"Quality is a team sport at Princess Margaret and we encourage everyone to participate to ensure the safety of our patients, families, caregivers, and staff."

Marnie Escaf

PARTNERSHIP IN SHANGHAI TO SHARE CANCER KNOWLEDGE AND EXPERIENCE

On November 21st, 2016, Princess Margaret Cancer Centre and Fudan University Shanghai Cancer Center (FUSCC) formalized a partnership to collaborate on research and education by signing a Memorandum of Understanding. FUSCC is one of the top ranked cancer centres in China, and the only specialized Cancer Centre in Shanghai. The cancer centre has 1,234 beds and the only Proton and Carbon Ion Facility in China. In 2015, FUSCC supported 1,213,000 outpatient visits, 56,400 hospitalizations and 34,400 surgeries. With a deep commitment to providing patients with quality medical services in a comfortable treating environment, FUSCC has a long history of patient care, research, collaboration and education. This collaboration is expected to provide a platform to exchange knowledge and experience in patient care, research, education, and training. The partnership will benefit both Princess Margaret and FUSCC to advance as world-class cancer centres and achieve global impact in their quest for comprehensive cancer control.



UHN CEO DR. PETER PISTERS AND PRESIDENT OF FUSCC DR. XIAOMAO GUO

NURSES PUTTING SAFETY FIRST



UHN NURSES PRACTICE THE NURSING SHIFT BEDSIDE REPORT

The Nursing Shift Report at the Bedside was established in 2016 to improve communication at shift change. In the past, incoming nurses received written, verbal, or taped reports from the outgoing nurse, often delaying their first interaction with patients by 20 to 45 minutes. The new method of reporting is done as soon as the incoming nurse starts and is face-to-face at the bedside.

This new reporting method improves communication and patient engagement. Nurses now see and engage with patients immediately upon commencement of their shift, discuss complex nursing care face-to-face with their colleagues, and have an opportunity to check and confirm patient identification, intravenous solutions, infusion pumps, and safety equipment such as oxygen and suction. This is one of many ways nurses at Princess Margaret are embracing and helping to realize UHN's Caring Safely initiative.

"The Nursing Shift Bedside Report increases efficiency in hand off, while ensuring patient safety and reducing preventable harm. It provides an opportunity for patients to be included as partners in their plan of care."

Jodi-Ann Manhertz

SHARING GENOMIC DATA TO CONQUER CANCER



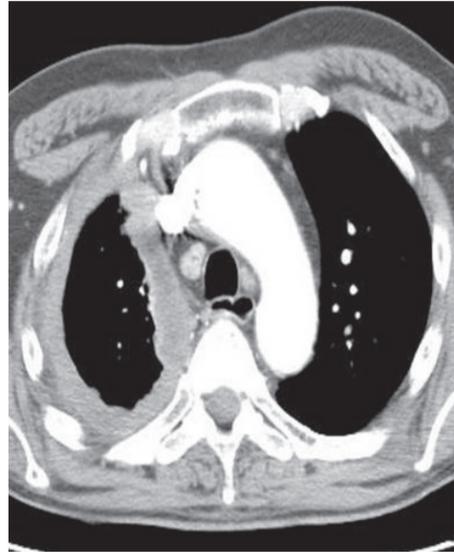
THE OCTANE RESEARCH TEAM

IMPACT (Integrated Molecular Profiling in Advanced Cancer Trial) and COMPACT (Community Oncology Molecular Profiling in Advanced Cancer Trial) are two clinical trials lead by Dr. Phillippe Bedard and Dr. Lillian Siu that provide information on specific cancer genes in order to tailor treatment accordingly.

Ontario-wide Cancer TArgeted Nucleic acid Evaluation (OCTANE) is an alliance building on the success of the IMPACT and COMPACT trials at the Princess Margaret. OCTANE will create large provincial cohorts of consented patients to enter initial genomic profiling and coordinate development of informatics tools to capture and share associated clinical data. These patient cohorts will facilitate targeted therapy and immune therapy clinical trials in the province, and identify patient subsets for more advanced genomic profiling. The study offers Next Generation Sequencing in Ontario at the following five centres to start: Princess Margaret Cancer Centre, Juravinski Cancer Centre, London Health Sciences Centre, The Ottawa Hospital, and Kingston General Hospital.

Princess Margaret opened the study in August 2016 and has enrolled 195 patients to date, of which tumour tissue samples from 94 patients have been collected, processed, and sequenced. By March 2017, it is anticipated that all four participating centres will have the OCTANE study activated at their site. Year two of the study will also see the development of specialized research sub-projects requiring more advanced genomic analysis of banked OCTANE research tissue and blood samples.

S.M.A.R.T. TREATMENT INNOVATIVE IN MESOTHELIOMA



A CHEST X-RAY OF A MESOTHELIOMA PATIENT

Princess Margaret is dedicated to the early diagnosis and treatment of mesothelioma, including screening people for asbestos related diseases. Led by Dr. Marc de Perrot, thoracic surgeon, the program handles close to half of the mesothelioma cases in Canada. Mesothelioma is an aggressive type of cancer that starts in the lining of the lungs. The majority of the 500 new cases diagnosed in Canada annually are caused by exposure to asbestos. The early detection program ensures that patients receive important information on how to protect themselves. Currently there are nearly 1,400 people in the screening program.

Princess Margaret is doubling the survival rate for mesothelioma patients with the development of the Surgery for Mesothelioma After Radiation Therapy (S.M.A.R.T.) technique. Dr. John Cho, a Radiation Oncologist, developed the technique in collaboration with Dr. de Perrot. The technique applies precise doses of radiation over five days, at which point an extra-pleural pneumonectomy (EPP) is performed. The radiation prior to surgery damages the cancer cells to prevent them from seeding and further multiplying during surgery. As a result, patients experience shorter treatment, fewer complications, faster recovery, and the three-year survival rate has more than doubled when compared to the traditional surgery first method.

Dr. Cho and Dr. de Perrot are now working on S.M.A.R.T. 2.0 to better identify which patients should receive treatment, so that only those who would benefit the most will undergo the intense radiation, followed by surgery. S.M.A.R.T. 2.0 is an example of Princess Margaret's drive toward Personalized Cancer Medicine, where treatment is tailored to the individual.

"These results offer real hope to mesothelioma patients. With the S.M.A.R.T. technique only seven years into development, survival rates for mesothelioma could be improved even further in the years to come."

Dr. Marc de Perrot

CANCER EDUCATION LEARNING SERIES INSPIRES SUMMER STUDENTS

A novel initiative was launched in 2016 to bring together students and trainees across disciplines to consider the breadth of careers in oncology. The Cancer Education strategy identifies the importance of redefining excellence within the team, noting the intention to embed interprofessional practice and team-based care in all education initiatives. This Summer Series was viewed as an opportunity to do this at the earliest stage possible – as students are establishing their career paths.

An average of 23 students attended each session, including students in life sciences, nursing, pharmacy, radiation therapy, genetic counseling, management innovation, patient education, supportive care, and pre-clinical cancer research. The series grew in popularity over the course of the summer, with about 80 attendees in the first month and over 100 in August. For more information on careers in oncology, visit bit.ly/careeroncology.

"The most impactful idea in this learning series is that high quality healthcare requires collaboration between different health professions and that there is no profession better than the other. With multidisciplinary collaboration, the best healthcare can be provided to patients."

Vanessa Fan, a third year student from the University of Toronto



A VIDEO FROM THE PRINCESS MARGARET CAREERS IN ONCOLOGY WEBSITE

CROSS BORDER KNOWLEDGE EXCHANGE



THE SYMPOSIUM ATTENDEES

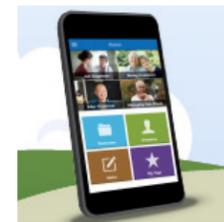


DR. PETER PISTERS, DR. ADALSTEINN BROWN AND DR. BOB BELL

The Princess Margaret Cancer Centre hosted a group of Senior Administration Executives from the Alliance of Dedicated Cancer Centres (ADCC) in September at a symposium to share knowledge and experience. The ADCC is a group of 11 cancer centres across the USA dedicated to improving and advancing the world's understanding of the causes, prevention, diagnosis, and treatment of cancer. For more information on ADCC, visit adcc.org.

The symposium provided the opportunity to discuss the differences between the Canadian and American healthcare systems, and created a platform to share how Princess Margaret and our guest organizations work towards conquering cancer. The event was a unique opportunity to see cancer care from an alternative perspective, and enabled the creation and strengthening of relationships with ADCC members. The day proved to be a great learning experience for all parties involved and we welcome future engagements.

PAVING THE WAY ALONG THE CANCER JOURNEY



"The Princess Margaret Cancer Journey", a free app available on the Apple App Store and Google Play, was launched in 2016. Many people find themselves overwhelmed following a cancer diagnosis and patients have a strong desire for information. The app is a guide to help patients during cancer treatment, and was designed to develop their self-management skills. Resources include articles on what to expect at each phase of a patient's cancer journey, questions patients may want to ask their healthcare team, descriptions of services available at the Princess Margaret and in the community, and links to trustworthy health information.

BREAST RECONSTRUCTION PROGRAM EMPOWERS PATIENTS

The Department of Plastic Surgery is committed to personalized patient care, establishing interactive educational workshops and empowering personalized decision making in the breast reconstruction program. These patient-centred initiatives are supported by the Clinical Nurse Coordinator, who works with patients to ensure safe and seamless transition through each stage of their surgical care. The Clinical Nurse Coordinator supports nearly 300 breast reconstruction patients annually.

Interactive workshops are facilitated at first consult with patients encouraging them to ask questions, learn about their treatment options, and share what is most important to them. The use of a decision-aid tool before consultations further personalizes the care experience and decision making process for all patients. In 2016, the workshops supported more than 100 patients for education and decision support.

Through these personalized medicine initiatives, patients are better informed about their treatment options and feel empowered in becoming active partners in their healthcare.



AGNES WISNIEWSKI, DR. ANNE O'NEILL, DR. STEFAN HOFER, DR. TONI ZHONG

"Our program has evolved personalized decision making and support, allowing us to deliver measurable quality improvements for patients' breast cancer reconstruction."

Dr. Stefan Hofer

NEW STUDY TARGETS OLIGOMETASTASES



THE INTERPROFESSIONAL OLIGOMETASTASES TEAM

In many cases, the diagnosis of a metastatic disease is associated with the inability to cure the patient. The concept that aggressive local therapy could provide a potential cure has motivated researchers to challenge this association. Technologic adoption of stereotactic radiotherapy has made it possible to deliver high doses of radiation to small targets in a few fractions with a substantial potential of controlling the disease. When delivered using state of the art technology and quality assurance, it is well tolerated with a low risk of significant toxicities. In 2013, Princess Margaret opened its first oligometastases clinical trial, designed to test a unified approach of a five-fraction regimen across all extracranial sites of disease, of which patients presenting with fewer than five metastatic lesions are eligible.

An interprofessional and multidisciplinary team meets monthly to review all cases being considered for the study, and to design the best treatment plan for this unique patient population. To date, 114 patients have participated in the study, with early results finding favourable local disease control is achievable even for metastatic sites less commonly considered for Stereotactic Body Radiation Therapy, such as lymph nodes or adrenal glands. We are projected to complete our targeted accrual by 2018.

In 2016, we translated our experiences into an education course as part of the accelerated education program in radiation medicine at Princess Margaret, entitled "SBRT for Metastases – Oligometastases and Beyond." To date, we have welcomed 50 participants from 10 countries.

"The oligometastases program was founded with a vision to expand the boundaries of curability. Our journey is opening up new paths through inter-professional learning and discovery of evidence that has the potential of benefitting all patients with metastatic disease."

Dr. Rebecca Wong

HELPING OUR PATIENTS STOP SMOKING

In 2016 the Smoking Cessation Program successfully implemented the novel screening platform CEASE in all ambulatory clinics at Princess Margaret. The CEASE platform is integrated with our Distress Assessment and Response Tool (DART) and is electronically administered on iPads. Patients are screened for their smoking status, and if they are current smokers, are provided with tailored patient education materials on the benefits of smoking cessation and referrals to cessation services are facilitated.

A Patient Education campaign for smoking cessation was launched on the Princess Margaret website, which includes patient education videos and an eLearning module for smoking cessation. The 'Quit Smoking to improve your Cancer Treatment' eLearning module includes elements of the trans-theoretical model of behaviour change, plain language, and digital health literacy in its design. The smoking cessation calculator has been developed for the website to demonstrate the non-health related costs of smoking. This calculator can be used to supplement the Smoking Cessation website, which focuses on the impacts of smoking on cancer treatment and overall health. More information can be found by visiting bit.ly/UHNcessation.

SCIENTISTS DISCOVER SWITCH TO HARNESS POWER OF CORD BLOOD



DR. JOHN DICK

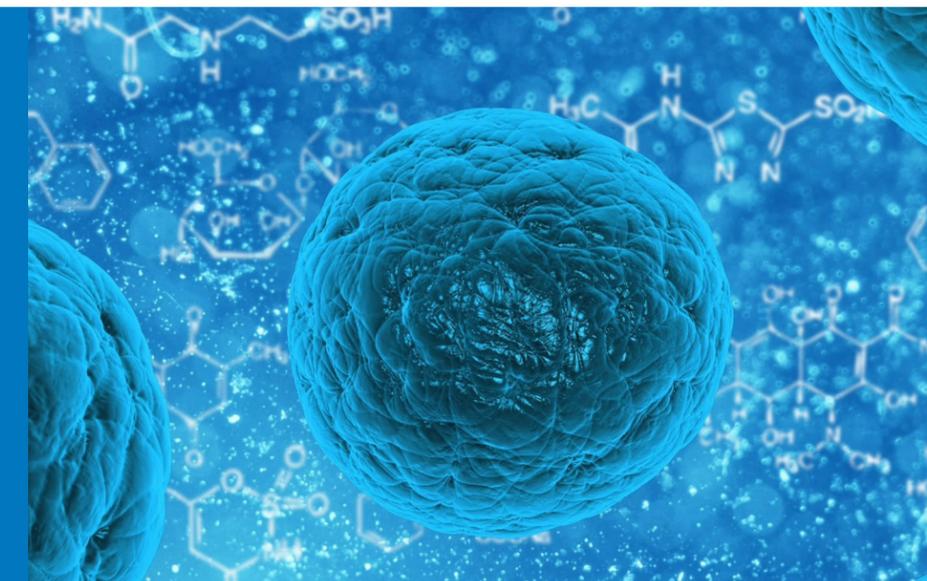
International stem cell scientists, co-led in Canada by Dr. John Dick and in the Netherlands by Dr. Gerald de Haan, have discovered the switch to harness the power of cord blood and potentially increase the supply of stem cells for cancer patients needing transplantation therapy to fight their disease.

Currently, patients needing stem cell transplants are matched to an adult donor with a compatible immune system through international registry services. About 40,000 people receive stem cell transplants each year, but that represents only about one-third of the patients who require this therapy. That's why there is a big push in research to explore cord blood as a source because it is readily available and increases the opportunity to find tissue matches. The key is to expand stem cells from cord blood to make many more samples available to meet this need.

When a stem cell divides, it creates cells that are able to develop into mature blood cells; however, they lose their critical ability to self-renew that all true stem cells possess. The teams discovered that microRNA (mirR-125a) is a genetic switch that is normally on in stem cells and controls self-renewal; this normally gets turned off in the progenitor cells. If scientists can artificially enable the switch on in those downstream cells, they can be endowed with stemness and therefore become stem cells that can be maintained over the long term.

"Stem cells are rare in cord blood and often there are not enough present in a typical collection to be useful for human transplantation. Our discovery shows a method that could be harnessed over the long term into a clinical therapy and we could take advantage of cord blood being collected in various public banks that are now growing across the country."

Dr. John Dick



OUR PEOPLE

NEW LEADERSHIP



Dr. Meredith Giuliani

Dr. Giuliani was appointed Medical Director of Cancer Education at the Princess Margaret Cancer Centre and University Health Network in the spring of 2016. She has been the Interim Director of Cancer Education since 2014, a role in which she has worked passionately to advance Princess Margaret's global leadership in cancer education. During her interim tenure, Dr. Giuliani implemented Princess Margaret Education Awards and launched the strategic plan for Cancer Education.

Dr. David Wiljer

UHN welcomed back Dr. Wiljer as the Executive Director of Education Technology & Innovation. Dr. Wiljer joins us from the Centre for Addiction and Mental Health (CAMH), where he was the Senior Director of Transformational Education and Academic Advancement. Prior to CAMH, he was the Director of Knowledge Management and Innovation at UHN, where he led work on the Princess Margaret website and the development of the UHN Patient Portal. Dr. Wiljer will represent education within the Technology and Innovation portfolio, working closely with our educational centres, external partners, with the cancer program, and with TECHNA to research and implement the next generation of learning technologies.



TRANSITIONS



Dr. Bradly Wouters to Dr. Rama Khokha

Dr. Wouters was the interim Director, Research at Princess Margaret from 2014 to 2016. He joined UHN as a Senior Scientist in 2008 from the Maastricht University in the Netherlands where he was a Professor and Director of the Radiation Oncology Research Department. On October 1, 2016, Dr. Wouters moved into his new role as the Executive Vice President of Science and Research at UHN where he will work to drive UHN's research agenda forward and enable continued success of UHN as Canada's foremost research hospital.



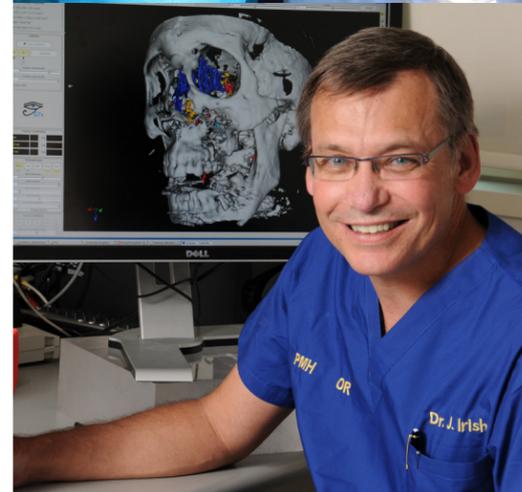
Dr. Khokha assumed the role of Interim Research Director in late 2016. She is a Professor and Vice Chair in the Department of Medical Biophysics, cross appointed to the Department of Laboratory Medicine and Pathobiology, University of Toronto. Dr. Khokha is one of Princess Margaret's top scientists and has won several prestigious awards including the Robert L. Noble Prize in 2015 from the Canadian Cancer Society, which is presented for outstanding achievements in basic biomedical cancer research.

Dr. Jonathan Irish to Dr. Gelareh Zadeh

Dr. Irish was the former Chief of Surgical Oncology and the former Toronto Central Regional Cancer Program Lead of Surgical Oncology. He is an international leader on quality improvement in cancer surgery and access to care improvements in healthcare systems, and a national leader on the development of novel approaches, development of navigation and tracking systems, and development of robotics for cancer surgery.



Dr. Zadeh assumed her role as Division Head in mid-2016. She is a Surgeon Scientist in the Division of Neurosurgery at University Health Network, with a dedicated neuro-oncology and skull base practice. She also has an active research laboratory focusing on integrated multi-platform molecular analysis of brain tumours, together with a focus on understanding molecular response to targeted therapies, such as anti-angiogenesis and metabolic inhibitors.



JONATHAN IRISH – INSPIRING LEADERSHIP

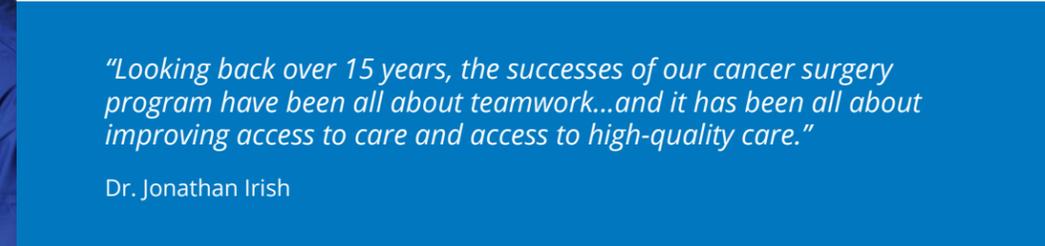
Dr. Jonathan Irish has been a member of the Princess Margaret family since 1992, when he began his career as a staff surgical oncologist in the Head and Neck site group. In 2016, we celebrated Dr. Irish's 15 years of dedicated leadership and service to the Princess Margaret Cancer Centre as the Chief of Surgical Oncology. During his leadership tenure, he grew the division from 25 surgeons to 64 surgeons to provide multidisciplinary care for our patients. Dr. Irish was also the Toronto Central South LHIN Surgical Oncology Lead and worked to develop Surgical Oncology Communities of Practice dedicated to quality improvement and improving access to care for over 10 years. He is an international expert in the implementation of quality improvement in healthcare systems, measurement of patient outcomes following head and neck cancer treatment, and has played a significant role in the development of comprehensive care models employed at the cancer centre. Dr. Irish has dedicated his life to cancer care and to Princess Margaret and its patients.

Under his leadership, Dr. Irish has driven initiatives in clinical care, research, and education to continually evolve the surgical oncology program into one that embraces change and influences the future. He initiated a department-wide wait time measurement and reporting process, which ultimately became the foundation for the province-wide Wait Times System. He established and operationalized the Guided Therapeutics (GTx) Program and its operating suite, and is also a founding member of the TECHNA Institute and continues as the Director of Clinical Faculty in the institute. Dr. Irish negotiated and implemented the first Alternate Funding Plan for surgical oncologists at Mount Sinai and UHN. Additionally, Dr. Irish helped grow the Surgical Oncology Fellowship Program to over 54 fellows, established the Surgical Oncology Fellowship Education Centre in Surgical Oncology, and expanded our international outreach through the development of a surgical oncology collaboration in Kuwait.

We are thankful that Dr. Irish will not be leaving Princess Margaret, instead, he will continue to focus on what he enjoys most; patient care. Dr. Irish will remain in his role as the Provincial Head of the Surgical Oncology Program at Cancer Care Ontario as a major health policy advisor and responsible for access to care, quality improvement and healthcare funding for the Province of Ontario's cancer surgery services. On October 13, 2016, Princess Margaret hosted a gathering to share memories and remarks on Dr. Irish's inspiring leadership. In a heartfelt statement, Dr. Irish thanked his colleagues and Princess Margaret for the exciting opportunities that have been presented, and his wife, for her never ending support throughout his career.

"Looking back over 15 years, the successes of our cancer surgery program have been all about teamwork...and it has been all about improving access to care and access to high-quality care."

Dr. Jonathan Irish



NEW TALENT

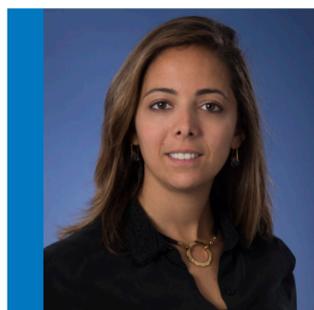
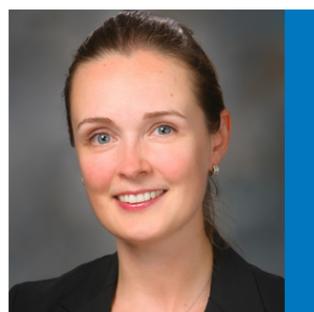


Dr. Genevieve Bouchard-Fortier

Dr. Bouchard-Fortier is a Surgical Oncologist and a graduate of McGill University. She completed a residency program in the Department of Obstetrics and Gynaecology at the University of Toronto. During this time, Dr. Bouchard-Fortier also obtained a Master of clinical epidemiology focusing on cancer screening and cancer prevention at the Harvard School of Public Health. Dr. Bouchard-Fortier completed her fellowship in Gynecologic Oncology in 2016 at the University of Toronto. Dr. Bouchard-Fortier's research and clinical interests include management of gestational trophoblastic disease as well as development of quality metrics to improve gynecologic oncology care.

Dr. Elena Elimova

Dr. Elimova is a Medical Oncologist and earned her Medical Degree from Memorial University of Newfoundland. She completed her internship and residency in Internal Medicine at the University of Ottawa School of Medicine and a clinical fellowship in Medical Oncology at University of Toronto. Her studies then led to the completion of a GI Medical Oncology Fellowship at MD Anderson Cancer Center. Most recently she worked as an Instructor in GI Medical Oncology at MD Anderson. Dr. Elimova's primary area of research is concentrated on the care of patients with gastroesophageal malignancies and the development of novel biomarkers which can predict response to therapy.

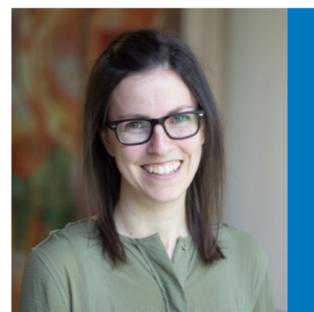


Dr. Joelle Helou

Dr. Helou is a Radiation Oncologist and completed her Medical Degree at the St. Joseph University School of Medicine in Lebanon in 2007. She then completed her residency training in Radiation Oncology at St. Joseph University in Lebanon and at the Institut Gustave Roussy in France with a specific focus on brachytherapy. Her research interests include brachytherapy for Genito-urinary cancer, patient-reported outcomes and health economics, predictive and prognostic biomarkers, and the role of stereotactic body radiation therapy in metastatic cancer with a primary focus on renal cell carcinoma, prostate and breast.

Dr. Chana Korenblum

Dr. Korenblum joined the Department of Supportive Care as a Staff Physician after completing a fellowship in the Adolescent and Young Adult (AYA) Psychosocial Oncology at Princess Margaret. She earned her BSc and MD at the University of Toronto, and completed a residency in Pediatrics and a fellowship in Adolescent Medicine at SickKids. She is cross-appointed at SickKids and focuses her clinical interests on psychosocial support for AYA across all phases of cancer treatment, as well as those who are grieving the death of a close family member from cancer. Her current research interests include evaluating the effectiveness of targeted AYA programs and psychosocial assessments and interventions in AYA with advanced cancer.



Dr. Stephanie Lheureux

Dr. Lheureux is a Medical Oncologist and an Assistant Professor, Faculty of Medicine at the University of Toronto. She obtained her Medical Degree and a specialization in Medical Oncology from the University of Caen in France and began her academic career as an Assistant Professor at the Academic Cancer Center of Caen in France. In 2013, she completed her PhD studies, which focused on the preclinical evaluation of new targeted therapies and drug resistance mechanisms in ovarian cancer. Her clinical and research interests remain in the areas of gynecologic cancers with strong focus on translational science.



Dr. Dawn Maze

Dr. Maze is a Medical Oncologist and earned her Medical Degree and underwent Internal Medicine training at Memorial University. She then completed a Hematology Fellowship at Queen's University concurrently with a Master of Science in Clinical Epidemiology. Following this, she completed a Malignant Hematology Fellowship at The Ottawa Hospital with a focus on Blood and Marrow Transplantation and Transfusion Research. From 2012 to 2016 she was a member of the Division of Hematology at The Ottawa Hospital. Her research activities are focused on optimizing transfusion practices in patients with hematological malignancies and in clinical trials of transplant and non-transplant treatments for myeloproliferative neoplasms.

Dr. Frank Michelis

Dr. Michelis acquired his Pharmacy degree in 1994 and then his Medical Degree in 1999 from the University of Athens Medical School in Greece. He completed his PhD in Experimental Pharmacology at the University of Athens Medical School with a focus on immunology. He then completed his specialty training in Hematology at the Evangelismos Hospital in Athens, Greece, with particular interest in allogeneic hematopoietic cell transplantation. His area of clinical focus remains in the Allogeneic Blood and Marrow Transplant Program at the Princess Margaret Cancer Centre, with a particular interest in allogeneic transplant for acute myeloid leukemia and long-term transplant outcomes.



Dr. Pam Mosher

Dr. Mosher is a Psychiatrist who received her training in undergraduate medicine at Stanford University and in adult and child psychiatry at Brown University, with further training in palliative care at Harvard. Most recently, she worked in the Department of Psychiatry at SickKids. Dr. Mosher has longstanding interests in the psychological experiences of medically-ill children and adolescents; grief and bereavement during childhood, adolescence, and young adulthood; and medical education and clinician wellness.

Dr. Hassan Sibai

Dr. Sibai is a Medical Oncologist who completed his undergraduate and subsequent postgraduate education at the American University of Beirut in 2009 and followed up with specialised training in Medical Oncology and Hematology in 2012. After short training in different centres, he completed his Fellowship in Leukemia and Allogeneic BMT from 2012 to 2016 at University of Toronto and Princess Margaret Cancer Centre. His research interests include myeloproliferative neoplasms and acute leukemia with commitment to improvement in teaching methods for residents.



Dr. Anna Spreafico

Dr. Spreafico is a Medical Oncologist who received her medical degree from the Vita-Salute San Raffaele University of Milan, Italy and completed her oncology training at the University of Pavia. She then pursued her PhD in translational research at the University of Colorado, Denver and completed a fellowship in experimental therapeutics and correlative sciences in clinical trials at the Princess Margaret Cancer Centre Drug Development Program. Her clinical research interests focus on drug development and early clinical trials and her disease-specific areas are melanoma, skin, and head and neck cancers.

SITE GROUP LEADERSHIP

In 2016, we refreshed our Site Group Leadership by changing nine of the 13 Site Leads. The Site Group Lead is responsible for integrating clinical practice, research, and education to support the delivery of a high quality, multidisciplinary program and to promote research and education. We would like to thank all outgoing leaders for their dedication and guidance during their leadership tenure and for their support during the transition. We welcome our new leaders and look forward to their achievements as they drive Personalized Cancer Medicine in their site group.

BREAST

Dr. David McCready



Dr. Anne Koch

Dr. Koch is a Clinician-Scientist and Radiation Oncologist, and is an Affiliate Scientist and Assistant Professor in the Departments of Radiation Oncology and Medical Biophysics at the University of Toronto.

CENTRAL NERVOUS SYSTEM

Dr. Norman Laperriere



Dr. Ken Aldape

Dr. Aldape is a Neuropathologist with a research interest in primary brain tumours. He has experience with identification of biomarkers in gliomas, including microarray studies.

GYNECOLOGY

Dr. Stephane Laframboise



Dr. Stephanie Lheureux

Dr. Lheureux is an Assistant Professor and Clinician Investigator in the Division of Medical Oncology and Hematology at the Princess Margaret Cancer Centre and the University of Toronto.

HEAD AND NECK

Dr. Brian O'Sullivan



Dr. John Waldron

Dr. Waldron has been a Radiation Oncologist at the Princess Margaret Cancer Centre for 23 years, and is an Associate Professor in the University of Toronto Department of Radiation Oncology.

LEUKEMIA

Dr. Aaron Schimmer



Dr. Karen Yee

Dr. Yee is a Hematologist at the Princess Margaret Cancer Centre, and an Assistant Professor and Clinician Investigator at the University of Toronto Division of Medical Oncology and Hematology.

LOWER GASTROINTESTINAL

Dr. Jennifer Knox



Dr. Fayez Quereshy

Dr. Quereshy is a Surgical Oncologist and an Assistant Professor in the Department of Surgery at the University of Toronto. His specialty interest focus is in gastrointestinal malignancies and specifically, colorectal cancer.

LUNG

Dr. Andrea Bezjak



Dr. Marc de Perrot

Dr. de Perrot is a Surgeon in the Division of Thoracic Surgery and an Assistant Professor at the University of Toronto. He is a Scientist in the Latner Thoracic Surgery Laboratories at the Toronto General Research Institute.

LYMPHOMA

Dr. Michael Crump



Dr. Anca Prica

Dr. Prica is a Staff Hematologist at the Princess Margaret Cancer Centre and Mount Sinai Hospital, and Assistant Professor in the Division of Hematology at the University of Toronto.

UPPER GASTROINTESTINAL

Dr. Jennifer Knox



Dr. Laura Dawson

Dr. Dawson is a Radiation Oncologist at the Princess Margaret Cancer Centre, and a Professor in the Department of Radiation Oncology, University of Toronto.

REMEMBERING DR. MICHAEL SHARPE

Dr. Michael Sharpe, an internationally respected medical physicist, passed away on June 22, 2016 after a brief but hard-fought battle with esophageal cancer. Dr. Sharpe was the Associate Head of Medical Physics in the Radiation Medicine Program at the Princess Margaret Cancer Centre, an Affiliated Faculty of the TECHNIA Institute, and an Associate Professor in the Departments of Radiation Oncology and Mechanical and Industrial Engineering at the University of Toronto.

Dr. Sharpe joined the Medical Physics team of the Radiation Medicine Program at Princess Margaret in 2002. Dr. Sharpe was respected as a leading intellect in the development of image-guided radiation therapy techniques and lectured around the world on his work in the emerging field of adaptive radiotherapy.

Dr. Sharpe had a passion for teaching and a natural skill in mentorship. He delivered lectures on advanced radiotherapy techniques, and was recruited by the American Society of Radiation Oncology (ASTRO) for their international teaching programs. In 2011, he was a founding faculty member of the annual European Society of Radiotherapy and Oncology (ESTRO) course on Advanced Treatment Planning.

Dr. Sharpe will be dearly missed and our thoughts and condolences are with his family and friends. Although his loss is felt the world over, his significant contributions to the lives of his family and friends, as well as his ground-breaking work in the field of Medical Physics will ensure that his legacy continues.



TRIBUTES



Dr. Robert Dinniwell

Dr. Dinniwell joined Princess Margaret in 2005 as a Radiation Oncologist and was an integral member of the breast and gastrointestinal site groups. Dr. Dinniwell was recruited to become the new Chair and Chief of the Division of Radiation Oncology, and Regional Radiation Lead, Department of Oncology at the London Regional Cancer Program, London Health Sciences Centre.



Dr. Anthony Brade

Dr. Brade was with Princess Margaret since 2005 as a Radiation Oncologist. He has been a valuable member of our lung, gastrointestinal, and central nervous system site groups. Dr. Brade was recruited to become the Division Head of the Department of Radiation Oncology at the Carlo Fidani Regional Cancer Centre, in the Credit Valley Hospital, Trillium Health Partners.



Dr. Caroline Chung

Dr. Chung was a member of the Princess Margaret team since 2011 as a Radiation Oncologist. She was the clinical and research lead for the Multidisciplinary Brain Metastasis Clinic, and in 2014 helped establish and lead the Robert and Andree Fitzhenry Brain Metastases Program. Dr. Chung departed to enter the next chapter of her career at the MD Anderson Cancer Center in Houston, Texas.

OUR LEADERS

Senior Management Team

Marnie Escaf (Chair)	Senior Vice President, UHN Executive Lead, Princess Margaret Cancer Centre
Judy Costello	Senior Clinical Director, Hematology, Hematologic Oncology & Palliative Care UHN Senior Director, Planning & Redevelopment
Rudy Dahdal	Senior Public Affairs Advisor
Jane Finlayson	Finance Manager
Zsolt Hering	Director of Pharmacy Operations
Jin-Hyen Huh	Executive Director, Solid Tumour Oncology and Gattuso Rapid Diagnostic Centre
Terri Stuart-McEwan	Director of Professional Practice Director of Operations, Radiation Medicine Program
Pamela Savage	Site Manager
Sophie Foxcroft	Director of Human Resources
Terra Ierasts	Director, Regional Cancer Program and Medical Affairs
Natasha Kuzmanov	Manager, Strategic Projects
Martha Wyatt	Clinical Director of Radiology Management
Hayley Panet	
Paul Cornacchione	

Cancer Executive Committee

Mary Gospodarowicz (Chair)	Medical Director, Princess Margaret Cancer Centre
Marnie Escaf	Senior Vice President, UHN Executive Lead, Princess Margaret Cancer Centre
Gelareh Zadeh	Head, Department of Surgical Oncology
Gary Rodin	Head, Department of Supportive Care
Amit Oza	Head, Department of Medical Oncology and Hematology
Fei-Fei Liu	Head, Radiation Oncology Medicine Program
Pamela Savage	Director, Professional Practice
Terri Stuart-McEwan	Executive Director, Solid Tumour Oncology and Gattuso Rapid Diagnostic Centre
Judy Costello	Senior Clinical Director, Hematology, Hematologic Oncology & UHN Palliative Care
Meredith Giuliani	Medical Director, Cancer Education
Peter Ferguson	Chair, Cancer Committee
Meena Merali	Director, Cancer Strategy Stewardship
Martha Wyatt	Director, Regional Cancer Program and Medical Affairs

Disease Site Group Leaders

Breast	Anne Koch
Central Nervous System	Ken Aldape
Endocrine	James Brierley
Genitourinary	Tony Finelli
Gynecology	Stephanie Lheureux
Head and Neck	John Waldron
Leukemia	Karen Yee
Lower Gastrointestinal	Fayez Quereshey
Lung	Marc de Perrot
Lymphoma	Anca Prica
Sarcoma	Peter Ferguson
Skin	Danny Ghazarian
Upper Gastrointestinal	Laura Dawson

AWARDS

Cheryl Arrowsmith - Fellow, American Association for the Advancement of Science

Marco Carlone - Innovation in Medical Physics Education Award, American Association of Physicists in Medicine (AAPM)

Steven Chan - Gilead Sciences Research Scholar in Hematology/Oncology, Gilead Sciences Research Scholars Program

Laura Dawson - 2016 ASTRO Fellow (FASTRO)

John Dick - Fellow, American Association for Cancer Research (AACR) Academy

Peter Ferguson - Donald R. Wilson Award. Associated Medical Services and the Royal College of Physicians and Surgeons of Canada

Robin Forbes - 2016 Association of Oncology Social Work (AOSW) Conference Scholarship

Meredith Giuliani - CMA Award for Young Leaders (Early Career)

Mary Gospodarowicz - O. Harold Warwick Prize, Canadian Cancer Society Research Institute

Patrick Gullane - Order of Ontario

Nicole Harnett - Canadian Association of Medical Radiation Technologists (CAMRT) Life Member Award

Nicole Harnett - Innovation in Medical Physics Education Award, American Association of Physicists in Medicine (AAPM)

David Hodgson - Medical Director of the Paediatric Oncology Group of Ontario (POGO)

Michael Hoffman - Early Research Award, Ministry of Innovation & Research

Sophie Huang - CARO Associate Member Award

David Jaffray - Fellow of the American Association of Physicists in Medicine (AAPM)

Marianne Koritzinsky - Michael Fry Award, Radiation Research Society

Allison Loucks - 2016 Saul and Esther Baker Award recipient

Tak Mak - RBC Top 25 Canadian Immigrant Award, Breast Cancer Dream Team, Stand Up To Cancer

Catherine Maurice - Outstanding Achievements in The Leading Physicians of the World, International Association of HealthCare Professionals

Hans Messner - Order of Ontario

Kieran Murphy - Leaders in Innovation Award, Society of Interventional Radiology Foundation

Bern Norrlinger - Innovation in Medical Physics Education Award, American Association of Physicists in Medicine (AAPM)

Radiation Medicine Program - 2016 Emmanuel van der Schueren Award from the European Society of Radiotherapy and Oncology (ESTRO)

Gary Rodin - 2016 Institute of Medical Science Mel Silverman Mentorship Award

Frances Shepherd - Giants of Oncology Care Award, Chemotherapy Foundation of America

Frances Shepherd - Officer of the Order of Canada

Glenda Towne - CCO Human Touch Award

Gang Zheng - Fellow, American Institute for Medical and Biomedical Engineering

THANKS A BILLION FROM THE PRINCESS MARGARET

It began with two donation envelopes, totaling \$5.18, from a young girl, Elle, whose grandfather had been treated at Princess Margaret Cancer Centre. Her heartfelt gift, on April 12, 2012, launched our Billion Dollar Challenge, the largest single fundraising campaign in the history of Canadian healthcare to support the creation and delivery of Personalized Cancer Medicine.

On January 11, 2017 we made a big announcement. The Princess Margaret Cancer Foundation along with Princess Margaret Cancer Centre had successfully achieved its Billion Dollar Challenge goal, securing \$500 million through philanthropy and another \$500 million through research grants.

We are most grateful for the generous support of our community which totaled over 1,802,000 gifts and the purchase of over 3,000,000 mega lottery tickets over the past 5 years.

Those generous donations, and the hundreds of thousands of others, have allowed the cancer centre to expand and streamline biobanks, establish the cancer genomics program, accelerate the Epigenetics Program, as well as amplify the Cancer Clinical Research Unit and expand our research enterprise to the Princess Margaret Cancer Research Tower.

The success of our Billion Dollar Challenge would not have been possible without the support of our donors, participants, granting agencies, event and lottery participants, volunteers, program partners, sponsors and staff.

Because of you, we are now in the early days of delivering on our promise of Personalized Cancer Medicine. With your continued support, we will conquer cancer in our lifetime.

To read the full impact report, visit thepmcf.ca/impact.

DURING THE PAST 5 YEARS

OVER 1,802,000 GIFTS MADE & MORE THAN 3,000,000 MEGA LOTTERY TICKETS SOLD. HERE ARE A FEW OF THE PRINCESS MARGARET'S SIGNIFICANT ACHIEVEMENTS:

APRIL 12, 2012



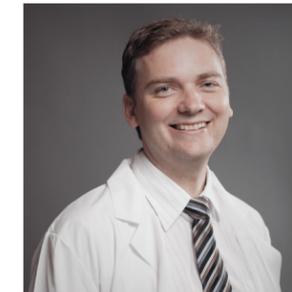
Launch of Billion Dollar Challenge. First donation totalling \$5.18 is made by a young girl named Elle, whose grandfather was treated at The Princess Margaret.

2013

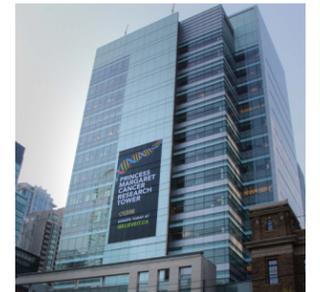


Emmanuelle Gattuso and her husband, Allan Slaight, and the Slaight family, make a historic donation of \$50 million.

2014



Dr. Rodger Tiedemann discovers the root cause of multiple myeloma relapse.



The Princess Margaret Cancer Foundation announces several transformational investments, including the largest-ever research expansion for The Princess Margaret and an unprecedented recruitment drive of 26 international cancer experts and their teams.

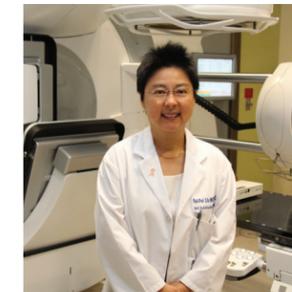
2015



Dr. Robert Bristow develops a genetic test to identify which men are at a higher risk for their prostate cancer to come back after localized treatment with surgery or radiotherapy.



Nine of Canada's leading gold mining companies donate six gold bars with a total value of more than \$3.28 million.



Drs. Fei-Fei Liu and Anthony Fyles reveal women with Luminal A subtype breast cancer – particularly those older than 60 – may not need radiation treatment if they are already taking hormone therapy.



Dr. John Dick redefines how human blood is made.

2016



Dr. Jean Wang develops a test for leukemia patients that can predict at diagnosis if patients will respond to standard treatment.



Dr. Thomas Kislinger identifies an innovative, non-invasive way to identify aggressive prostate cancer using liquid biopsy biomarkers.

JANUARY 11, 2017



The announcement of the successful achievement of the Billion Dollar Challenge. It was completed ahead of schedule with a total of \$532 million in philanthropic support and \$520 million in research grants.



