The Elana Waldman Ovarian Cancer Research Program
at Princess Margaret Cancer Centre

A Request for Support

Fall 2014
Executive Summary

Remembering Elana
Elana was a fighter. In 2005, despite being diagnosed with stage three ovarian cancer and learning that she only had a 30% chance of surviving five years, she persevered and beat the odds, living eight years. This time was vigorously spent with friends and family, especially her husband Mark and their vibrant daughter Sydney, the real loves of her life. Elana’s courage was a testament to the power of a person’s will to live.

Over a year after Elana’s passing, we are reminded of how many lives she touched. Elana was a community champion who advocated for basic ovarian cancer research, more effective education and the early detection and proper diagnosis of ovarian cancer. She was a dynamic voice and an inspiration to ovarian cancer patients battling this lethal disease.

Elana’s Time at The Princess Margaret
Elana truly believed she had the best treatment available to her at The Princess Margaret, one of the top 5 cancer research centres in the world. Her multidisciplinary care team knew her needs were unique and were able to provide personalized care throughout her time at the Cancer Centre. Elana’s life was extended with the help of cutting-edge clinical trials led by some of the top ovarian cancer specialists in the world, including Dr. Amit Oza, Senior Staff Physician and Medical Director of the Clinical Cancer Research Unit. Dr. Oza and the Gynecologic Oncology Group are recognized for their close collaboration on research and patient care with specialists worldwide.

Your Opportunity to Strengthen Basic Ovarian Cancer Research
Elana was passionate about basic research, which attempts to answer fundamental questions that could lay the foundation for further advances. In many cases, research performed at the basic level leads to discoveries that are translated into groundbreaking clinical trials. Elana understood that clinical trials are key to unlocking the “how” and “why” of ovarian cancer, providing answers that will lead to better screening, diagnosis and treatments for ovarian cancer.

You have a unique opportunity to help strengthen basic and clinical research through The Elana Waldman Ovarian Cancer Research Program. Enhancing these two areas is critical to conquering ovarian cancer, particularly since the world has witnessed little improvement in survival and cure rates over the past 30 years.

A Tipping Point in Ovarian Cancer Research
The Princess Margaret has reached a tipping point in ovarian cancer research and our scientists are on the verge of amazing breakthroughs. They have world-leading expertise, the right equipment and extensive space at the new MaRS Discovery Centre. All they need are the funds...
to actually do the heavy lifting - all the clinical trials and research studies necessary to transform the patient experience and improve outcomes for women with ovarian cancer.

These research projects that make up the Elana Waldman Ovarian Cancer Research Program are in progress that we have outlined in this proposal. They represent more than $3 million needed to accelerate this work, which will have a greater impact for ovarian cancer patients. With your support, we will be able to get new treatments to patients much faster.

The program will transform ovarian cancer care by offering:
- New ways to diagnose;
- New ways to detect;
- Better courses of treatment;
- Recruitment opportunities for the world’s best doctors and scientists.

Our Request to You
Our immediate priority is to raise $3 million to expand The Elana Waldman Ovarian Cancer Research Program to support the highest priorities in ovarian cancer research and accelerate the search for a cure. The Princess Margaret Cancer Foundation is ready to match $1 million of the $3 million needed.

This proposal outlines program priorities requiring additional funding that cover the entire spectrum of ovarian cancer, from discovery to patient care.

Without you, this cutting-edge research would not be possible!

The Elana Waldman Laboratory for Ovarian Cancer Research will be housed in the new MaRS Centre, a part of the Discovery District, Canada’s largest science, technology and research centre.
What is Ovarian Cancer?

Ovarian cancer is a type of cancer that begins in the ovaries. It is often referred to as the “silent killer” as symptoms only appear once the disease is advanced and the cancer has spread.

It is estimated that in 2014, 2,700 Canadian women will be diagnosed with ovarian cancer and 1,750 women will die from the disease in Canada.² Ovarian cancer is considered the most serious of all gynecological cancers. There currently is no screening, however when found early and treated survival rates are 90%.

The Elana Waldman Ovarian Cancer Research Program

The Program’s Current State of Affairs

The Princess Margaret is home to one of the largest ovarian cancer programs in the world. On average, the Gynecologic Oncology Group sees 400-500 women annually from all over Canada. About 100-150 of these patients are enrolled in clinical trials annually. Women diagnosed with ovarian cancer who are referred to The Princess Margaret benefit from the knowledge and expertise of globally recognized doctors and scientists who push the boundaries of cancer knowledge and clinical practice on a daily basis.

Dedicated support through The Elana Waldman Ovarian Cancer Research Program will accelerate the advancement of high priority areas spanning the research and development continuum. All women diagnosed with ovarian cancer will be offered individualized treatment from the time of their first visit, including:

- Tumour(s) will be analyzed to pinpoint genetic mutations* that may exist;
- Assessment of their cancer’s resistance to drugs and other treatments.

This information will be used by doctors to determine the next course of treatment and identify clinical trials that may be suitable for patients. About 200 women with ovarian cancer at The Princess Margaret have had their genes sequenced by this kind of personalized genetic information.

Your support will also fuel initiatives in prevention and screening; translational and clinical research; and pre-clinical studies within the ovarian cancer research group. Supporting initiatives across the spectrum of research will ensure that new findings in the lab feed into clinical practice, and clinical findings loop back into the lab to inform future studies.

* A mutation is a change in the DNA that is the root cause of cancer and means that the change causes cells in your body to grow in a damaging manner. There are different kinds of mutations, including somatic and germline. Somatic are genetic mutations that accumulate in cells of the body over a person’s lifespan and are usually not passed on from generation to generation. A germline mutation is a heritable mutation that is passed down from generations.

The Elana Waldman Ovarian Cancer Research Program will create a comprehensive “bench-to-bedside approach” for ovarian cancer research and care. Findings generated in these three areas illustrated below will directly feed into and inform the other priority areas.

**Patient Impact**

Ultimately, the Elana Waldman Ovarian Cancer Research Program will help to improve survival rates of ovarian cancer patients through improved identification, understanding and treatment of the disease. It will impact the health of women living with ovarian cancer for generations to come.

**Examples of Program Priorities Requiring Additional Funding**

Below you will find some current and future priorities in the ovarian cancer program. Many of these studies are not being done anywhere else in the world. As the team’s research expands, these priorities may change.

**A. Screening and Prevention of Ovarian Cancer**

1. *New and Innovative Screening Programs*

Past attempts at screening for ovarian cancer have been ineffective and there remains an urgent need for safe preventive therapy. Current/future studies include:

a. **Targeting Hereditary Cancer - BRCA1 & BRCA2 Screening**

A priority of the program is to ensure that all women with the most malignant form of ovarian cancer have access to BRCA1 and BRCA2 testing. This has significant clinical and family implications.

In Ontario, genetic testing requirements state that women with this malignant form of ovarian cancer are eligible for BRCA1/2 testing regardless of their family history. Yet discouragingly, this information is not being passed on by doctors to a significant number of patients who meet the criteria for BRCA1/2 testing.
In response, the program has begun a clinical trial whereby all women referred to The Princess Margaret with high grade serous ovarian cancer (the most malignant form of ovarian cancer) will be approached for BRCA1/2 testing. This trial will allow the team to determine whether women across Ontario are getting this important information, and also help identify future treatments that have been shown to be effective. We will also check for BRCA1/2 in tumour tissue from all women with ovarian cancer – this has recently been shown to be of considerable importance in determining response to therapy.

Importantly, alongside The Princess Margaret Genetic Counselling team, all immediate relatives of women who have a mutation in either BRCA1/2 will also be offered screening, which includes parents, children and siblings.

**How You Can Help**

Your support will allow the team to identify women who may be at an increased risk of developing ovarian cancer, who can then be monitored appropriately and provided the appropriate care.

**b. The TP53 Mutated Gene - A Driver of Ovarian Cancer**

Many women with high grade serous ovarian cancer have a mutation in a gene called TP53, which stands for “tumour protein 53” and this mutation typically leads to ovarian cancer.

**How You Can Help**

Your support will help the team actively explore new ways of screening for the TP53 mutation that combines cutting-edge technologies with current clinical practices.

**c. Using Tagged Amplicon DNA Sequencing to Develop an Ovarian Cancer Liquid Biopsy**

The Gynecologic Oncology Group is working closely with partners at Cancer Research United Kingdom to develop technology that can track TP53 mutations (or specific changes) in the blood. This technology, known as Tagged Amplicon DNA Sequencing (TAm-Seq), has been shown to track the amount of mutated TP53 in blood samples taken from women with high grade serous ovarian cancer during treatment. Using this modern and highly analytical technology, it is possible to look at the individual components of the DNA that contains the mutation and see how it changes the way cells function. By performing research with the knowledge gained from the DNA sequence, exciting and further substantial understanding of how tumours grow and respond to drugs can be investigated.

This “real-time” technology can indicate how a woman is responding to treatment. The team and nine other cancer centres across Canada and the United Kingdom will further evaluate this technology in an upcoming clinical trial.

DNA sequencing technology is not only used to identify mutations at the root of a patient's tumour, but is considered key to personalizing cancer treatment.
How You Can Help

With your support, the Gynecologic Oncology Group will lead the development of the next generation of tools that will allow doctors to access “real-time” data that reveals if/how a woman is responding to her treatment.

d. Refining the Pap Smear to Detect Ovarian Cancer

The Princess Margaret is evaluating and refining technology that would allow doctors to identify potentially cancerous cells in samples taken during routine pelvic exams (Pap Smear).

How You Can Help

Your support will allow the team to further evaluate and improve technology to identify cancer promoting mutations in these easily accessible samples taken during pelvic exams.

2. Prevention Studies – Easy to Use Interventions that May Pinpoint the Cells Responsible for Starting Ovarian Cancer

Building off of findings in other types of cancers and preliminary evidence that suggests a benefit in ovarian cancer, Aspirin may help reduce a patient’s risk of developing ovarian cancer, as it helps to decrease the levels of two pro-inflammatory proteins in the body.

Inflammation has long been associated with ovulation, which is a risk factor in the development of high grade serous ovarian cancer. The team is evaluating whether low-dose Aspirin in women with inherited BRAC1/2 mutations may be an effective preventive cancer strategy by assessing its impact on the development of early cancer cells.

How You Can Help

Your support will help the team pinpoint the cells responsible for starting ovarian cancer and evaluate how Aspirin prevents the disease.

B. Transforming Ideas Into Innovations

Your support will help doctors and scientists establish a comprehensive research program dedicated to transforming ideas in the lab into promising innovations for patients. Current/future studies include:

1. Using Mouse Models to Predict Ovarian Cancer

Every woman diagnosed with ovarian cancer referred to The Princess Margaret will have a sample of her tumour developed in a mouse model. In summary, this means that the sample of the tumour will be transplanted into specific mice that are bred and raised to allow researchers to analyze the impact, growth and treatment of the specific tumour transplanted into their tissue. These “xenografted” mouse models will be used to determine the future course of a patient’s treatment and help advance drug development.
Under the leadership of Dr. Benjamin Neel, Research Director, The Princess Margaret houses more than 150 ovarian cancer animal models. These models can be used to advance the drug development process by aggressively analyzing how drugs will affect ovarian cancer, and in particular, how drugs can eradicate or control ovarian cancer.

**How You Can Help**

Your funds will directly support staff and much-needed lab infrastructure that will link basic researchers with doctors across several different disciplines (surgery, pathology, clinic and basic sciences).

### 2. The Ovarian Cancer Clinical Trials Program

Under the direction of Dr. Amit Oza, The Princess Margaret is home to one of the world’s largest early phase ovarian cancer clinical trials programs, consistently enrolling more than 30% of women with ovarian cancer who are referred to The Princess Margaret (over 120 patients per year). At any one time, there are more than 12 ovarian cancer clinical trials open and enrolling patients.

Over the last 12 years, the team has been responsible for conducting some of the first Phase 1 trials (finding a safe dose) with drugs that have gone on to Phase III testing (comparing the new treatment with the current standard) and ultimately become the new standard of care.

Phase II trials establish the effectiveness of a treatment. The Princess Margaret’s Phase II Clinical Trials Consortium, led by Dr. Oza, also belongs to the international Gynecologic Cancer InterGroup, which includes 27 cooperative groups leading Phase III trials dedicated to eradicating all gynecologic cancers. Membership gives patients at The Princess Margaret access to in-demand anti-cancer drugs that might not otherwise be available.

Dr. Oza’s group has been responsible for designing and developing several early phase trials that will now be conducted across the world, significantly accelerating the pace by which drugs are tested and brought to market.

Some of these clinical trials include:

- **Phase II clinical trial of the drugs Bevacizumab and Cyclophosphamide in recurrent ovarian cancer or primary peritoneal carcinoma (cancer of the stomach).** A collaboration between The Princess Margaret Phase II Clinical Trials Consortium and California and Chicago consortia, this pivotal Phase II trial in ovarian cancer showed positive results of administering Bevacizumab in this patient group. As a result of these findings, additional trials evaluating Bevacizumab in advanced ovarian cancer were developed.

- **A Phase II clinical trial of the drug Cediranib in recurrent or persistent ovarian, peritoneal (stomach) or fallopian tube cancer.** The Princess Margaret and groups in Chicago and California collaborated to reveal that this powerful drug works against ovarian cancer. The drug will be licensed for use in the upcoming months.
Clinical Trials That Urgently Need Your Support

You now have the opportunity to provide the necessary funding to help our team begin innovative clinical trials in ovarian cancer. Examples of these trials include:

a) **Immune therapy clinical trials.** Using a patient’s immune system to kill cancer cells. The team hopes to begin this trial in the upcoming months.

b) **Using surgery and intraperitoneal therapy (chemotherapy injected into the stomach) to cure early ovarian cancer.** Recent results from Dr. Barry Rosen, Head of Gynecologic Oncology at The Princess Margaret, and colleagues, suggest that surgery followed by chemotherapy may double the average survival rates for many women. They will continue to explore this potentially life-saving area of research. **If these findings can be confirmed and improved, they may be able to cure women with advanced ovarian cancer.**

c) **Using targeted anti-cancer drugs to tackle resistant cancer.** About 20% of women with ovarian cancer have a type that is strongly resistant to treatment. The team is evaluating the use of targeted drugs to overcome this resistance.

C. Revealing the Underpinnings of Ovarian Cancer & Fuelling Future Research

The Gynecologic Oncology Group is helping to uncover the biological underpinnings of ovarian cancer through their studies, and is pointing the way toward better prevention and treatment. Examples of priority research areas underway include:

1. **Using Antibodies in the Fight Against Ovarian Cancer**

   In collaboration with a world-class, state-of-the-art program at the University of Toronto, our researchers will begin to develop and test innovative antibody drugs that identify and attack ovarian cancer cells. These antibodies are man-made versions of the antibodies our bodies make to fight off infections. They can be designed to hone in on certain parts of the cancer cell. This area of research has shown great promise in treating ovarian cancer in early studies and provides insights into how a tumour develops.

   **How You Can Help**

   The team’s priority is to develop the next generation of effective antibody-based drugs for ovarian cancer patients. Your support would be directed towards the research involved in developing and evaluating these innovative drugs.

2. **Immune Therapy: Harnessing the Power of the Immune System**

   The human immune system is an amazing part of our body that keeps us healthy by fighting off foreign bacteria and viruses on a routine basis. We now have evidence that, in combination with drug therapy, our immune system has the ability to fight some cancers.
The Princess Margaret is exploring new ways to manipulate the immune system to be more successful in eradicating the disease, including ovarian cancer. Immune therapy is appealing because it specifically targets the tumour, as opposed to chemotherapy, which targets any rapidly finding cell in the body.

Dr. Pamela Ohashi, Director of the Immune Therapy Program, has built a powerhouse of scientists and doctors who are developing a comprehensive immune therapy program. Their goal is to design and develop new immune-related ovarian cancer clinical trials.

Dr. Ohashi’s team was the first in Canada to develop Adoptive Tumour Infiltrating Lymphocyte (TIL) Therapy, a promising new technique to treat cancer. It involves taking particular immune cells from a patient’s tumour and expanding them in the lab. T-cells extracted from a tumour are known as TILs and are thought to have a built-in ability to target the tumour cells. After generating more TILs through the expansion process, they are transferred back into the patient in the hopes of launching a stronger attack against their tumour(s).

Dr. Ohashi recently opened the first clinical trial in Canada using this promising and innovative approach to help the body’s immune system kill cancer cells.

**How You Can Help**

Your gift will support new immune therapy trials in ovarian cancer, as well as other forms of immune therapy including the use of specific artificial cells to fight tumours in the ovaries.

**3. Developing the Next Generation Ovarian Cancer Therapy**

Drs. Gang Zheng, Senior Scientist, and Amit Oza are proposing a new approach to the treatment of ovarian cancer - the development of microscopic particles undetectable by the human eye. These nanoparticles are designed to act as carriers loaded with a drug called Doxorubicin that “bombs” the cancer cells with chemotherapy. These “nano ninjas” can also be designed to “light up” when they successfully target the tumour, which allows them to be detected by Positron Emission Tomography (PET). PET uses radiation to produce full-colour, 3D images of functional processes inside the body. Once research is completed in the lab, this next-generation treatment will move to the clinic.

Ultimately, these nanoparticles will provide doctors with visual confirmation that the patient’s tumour has been completely removed after surgery, as well as detect where cancer cells may have spread.

**How You Can Help**

Your gift will directly support the development of this revolutionary technique that will use nanoparticles to target cancer cells with chemotherapy.
D. Supporting Patient Education Sessions

Patient education is not only important at the time of diagnosis, but throughout all stages of treatment. The amount of information and misinformation regarding cancer has never been more easily accessible. So it’s important that patients are given accurate, timely and relevant information, not only to reduce stress, but also to empower them to ask their physician or cancer specialist the right questions.

The ovarian cancer team has established quarterly education sessions for patients at The Princess Margaret. As the seminar series matures, sessions will expand to cover endometrial and cervical cancers. The sessions are led by a gynecologic medical oncologist, a clinical trials nurse and specialty experts in palliative care, sexual health, and genetic counseling as needed.

Each session involves nearly 20 women and their families, and aims to provide each patient with online and printed resources. These sessions have also helped women connect with a strong social network of other women with ovarian cancer who are going through similar challenges.

**How You Can Help**

Your support will help cover the costs of hosting two-hour educational sessions, helping staff produce necessary materials, and assist with any travel expenses for guest speakers.

E. Supporting the Next Generation of Superstar Fellows

A fellow is typically a doctor, from Canada or abroad, who has completed specialist training in medical oncology. Aside from taking care of patients on a day-to-day basis, a large proportion of fellows have also had prior experience in clinical trials and research at their home institution.

The next generation of fellows, working between the laboratory and the patient, will become leaders in the ovarian cancer field. They will take what other doctors and scientists have done in the past and transform it into concrete bedside practices. Their global impact will be tremendous. Once they are trained at The Princess Margaret, fellows take their new knowledge and skills back to their home cancer centre, creating a ripple effect on patient care and services worldwide.

**The Clinical Research Fellowship Program** provides the opportunity for fellows to define and refine their career goals and enhance their ability to pursue successful careers as doctors and scientists. The program fosters enthusiasm for clinical, translational and basic research through mentorship and structured research programs that provide opportunities to carry out original research.
The program currently has three fellows working with Dr. Oza:

**Dr. Stéphanie Lheureux** received a medical oncology degree from the University of Caen, France in 2011. She obtained her Ph.D. thesis in the pre-clinical evaluation of new targeted therapy in ovarian cancer. She has a particular interest in gynecology cancers and translational research. Stéphanie began her Clinical Research Fellowship in July 2013.

**Dr. Michelle Wilson** received her medical degree in 2003 from the University of Auckland, New Zealand. In May 2013, she was a Fellow with the Royal Australasian College of Physicians. She has worked as an Honorary Lecturer and a Research Fellow with the University of Auckland. Michelle began her Clinical Research Fellowship in July 2013.

**Dr. Cristina Martin-Lorente** received her medical degree from the University of Barcelona in 1998. From 1999 to 2009, she was a medical oncologist at the Espiritu Santo Community Hospital in Barcelona. In 2009, she joined the Medical Oncology Department at the Santa Creu and Sant Pau Hospital in Barcelona where she diagnosed and treated gynecological cancer patients. She began her Clinical Research Fellowship in December 2013.

The program has also welcomed two additional fellows in the past few months.

- **Victor Rodriguez-Freixinó**, from the Vall d’Hebron University Hospital at the Autonomous University of Barcelona, began his fellowship on July 1st, supervised by Dr. Oza.

- **Carolina Ibanez-Caceres**, from The Pontifical Catholic University of Chile, began her fellowship on September 1st and will also be supervised by Dr. Oza.

**How You Can Help**

You can provide crucial salary support for the next generation of ovarian cancer fellows, the future leaders in ovarian cancer discoveries and patient care.
Your Gift in Action

Our current goal is to secure $3 million in donor funding to continue with our highest priorities, but our plan is to continue to raise funds for future projects. The Princess Margaret Cancer Foundation will match $1 million of the $3 million needed to help fund:

- Improved screening for earlier diagnosis;
- Developing the next generation of tools to access "real-time" data for treatment;
- Clinical trials to create better treatments;
- Profiling and analyzing patients’ genes to properly match patients to trials and treatment;
- Mice models to conduct research on how well treatments are working.

Recognition and Reporting

In recognition of your generous gift, The Princess Margaret Cancer Foundation would be delighted to work with you to tailor naming opportunities that best reflect your particular wishes. To recognize your generosity, we can offer:

- Visual laboratory recognition at the new MaRS Centre;
- A celebration event;
- An annual impact report and meeting with key staff from The Princess Margaret and The Foundation;
- Recognition on The Princess Margaret Cancer Foundation and Believe It websites;
- Recognition on the main donor wall at the Cancer Centre at the appropriate level;
- Listing in The Foundation’s Annual Report;
- Invitations to Foundation special events.

Responsibility and Accountability

The Elana Waldman Ovarian Cancer Research Program will be led by globally respected clinician-scientists Drs. Benjamin Neel and Amit Oza, who together bring a unique depth and breadth of basic and clinical ovarian research expertise. As Co-Chairs, Drs. Neel and Oza will be responsible for providing strategic direction and oversight. They will establish and oversee a program committee comprised of leading scientific and clinical experts.

A scientific committee will drive research and include experts from all fields of ovarian cancer treatment and research. This committee will oversee an “Innovation Seed Fund” to support high quality and innovative ovarian cancer research proposals. In the long-term, they will be responsible for critical program oversight and reporting of all activities on an annual basis. The scientific and program committees will set priorities and recommend projects for funding to the Chairs.

The Elana Waldman Laboratory For Ovarian Cancer Research

The Elana Waldman Laboratory for Ovarian Cancer Research will create a central hub for the most advanced research in diagnosing and treating ovarian cancer. This laboratory will increase the level of support The Princess Margaret is able to offer patients, serve as a magnet in
recruiting the best clinicians and scientists, attract competitive funding and enable researchers to conduct the most groundbreaking clinical trials.

**The Princess Margaret Cancer Centre**

PROJECT: Elana Waldman Laboratory Rendering

![3D Mock-up](image)

An artist rendering of the proposed Elana Waldman Laboratory at the new MaRS Centre.

**Thank You**

Thank you for your interest in supporting The Princess Margaret Cancer Foundation. Your generous gift would make a tremendous difference to The Princess Margaret, our patients and their families. For more information, please do not hesitate to contact:

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Collaboration Across Multidisciplinary Teams

Drs. Benjamin Neel and Amit Oza, two of the most recognized cancer specialists in the world, are leading a multidisciplinary team to develop the next generation of personalized therapeutic treatments for ovarian cancer patients. This powerhouse of senior scientists and clinicians has the potential to transform scientific research and patient care globally.

Dr. Benjamin Neel is Research Director at The Princess Margaret. Dr. Neel has made many significant cancer research contributions, including being the first to demonstrate how slowly transforming RNA tumour viruses cause cancer. He is an internationally recognized researcher in the field of cell signaling, and holds a number of scientific patents. He is the author of more than 190 original papers and 29 invited reviews, several of which have been published in leading scientific journals.

Dr. Amit Oza is a Senior Staff Physician and Medical Director of the Clinical Cancer Research Unit at The Princess Margaret. He is also Co-Director of the BRAS Drug Development Program, the largest new drug development program in Canada. Dr. Oza is the principal investigator and co-investigator in Phase I, II, and III trials for gynecological cancer malignancies worldwide. Dr. Oza has published more than 180 articles in high-impact journals including New England Journal of Medicine, Lancet Oncology, and the Journal of Clinical Oncology.

Dr. Laurie Ailles is a Senior Scientist at The Princess Margaret. Her research is largely based on the “cancer stem cell hypothesis,” and she has spent many years working in the area of blood stem cell biology and how this relates to leukemia and cancer stem cells. She has spent the past few years interrogating this concept in head and neck cancer, as well as ovarian cancer.

Dr. Marcus Bernardini is a Gynecologic Oncologist in the Department of Gynecologic Oncology at The Princess Margaret. His clinical interests include surgical management of advanced epithelial ovarian cancer, as well as minimally invasive techniques (e.g. robotic surgery) in gynecologic oncology. His research focus is on the molecular characterization and behaviour of ovarian cancer and its precursors.
Dr. Marcus Butler is a Medical Oncologist with a long standing interest in cancer immune therapy. At the Dana-Farber Cancer Institute, his research focused on establishing methods to deliver immune therapy to patients, including ovarian cancer. Dr. Butler was recruited a few years ago to The Princess Margaret to join the Immune Therapy Program. As Director of the Immune Monitoring Laboratory, he investigates the immunologic impact of cancer and anti-cancer therapies in clinical trials.

Dr. Pamela Ohashi is an Immunologist and Director of the Immune Therapy Program at The Princess Margaret. Dr. Ohashi is the only Canadian member of the U.S National Cancer Institute Cancer Immune Therapy Network. She has received numerous prestigious awards and honours, including being selected for the Cinder Award from the Canadian Society of Immunology, the Canadian Society of Immunology Investigator Award and the American Association of Immunologists PharMingen Investigator Award.

Dr. Barry Rosen is Head of Gynecologic Oncology at The Princess Margaret. He is also former President of The Society of Gynecologic Oncologists of Canada. Dr. Rosen has developed a special clinical and research interest in hereditary ovarian cancer. He is active in developing gynecologic oncology databases that can be both integrated into the patient medical record and used for clinical research.

Dr. Robert Rottapel is a Senior Scientist at The Princess Margaret. His research is focused on the genetics of ovarian cancer and signal transduction in cancer immune cells. Dr. Rottapel is also the Amgen Chair in Cancer Research at the Cancer Centre.
The Princess Margaret: One of the Top 5 Cancer Research Centres in the World

The Princess Margaret is Canada’s only hospital devoted exclusively to cancer treatment, research and education. What makes The Princess Margaret one of the top 5 cancer research centres in the world?

**Research Performance**
- Almost 395,000 sq. ft. of state-of-the-art research space;
- 1 in 5 new patients is participating in a clinical trial;
- #4 in the world for citations in high impact research;
- 1 of 6 global centres chosen by GlaxoSmithKline for translational research excellence;
- Only Phase 1 program in Canada to receive a grant from the U.S. National Cancer Institute.

**Scale**
- 1,410 research staff, including 300 principal investigators;
- An average of 1,400 patient visits per day;
- Largest radiation medicine program under a single roof in North America and one of the world’s largest radiation facilities;
- Several international partnerships with centres in Brazil, India, Kenya, Jordan and Kuwait;
- Largest Phase I clinical trials program in Canada and one of the top-rated programs of its kind worldwide.

**Breadth**
- 200+ types of cancer treated, including many of Canada’s most complex and rare cases;
- Canada’s only centre using genetic “fingerprints” to help patients;
- Canada’s largest surgical oncology team and one of the largest in the world.

**Track Record**
- World-first discoveries include stem cells, the T-cell receptor, colon cancer stem cells, lung cancer gene signature, blood stem cell, new drug targeting enzyme PLK4, root cause of myeloma relapse;
- Led by internationally renowned experts Dr. Benjamin Neel, Research Director, and Dr. Mary Gospodarowicz, Medical Director.

**Global Leader**
- World-leading programs in lung cancer research and treatment, cancer stem cell research, image-guided therapeutics, patient survivorship and more;
- Emerging world leaders in Personalized Cancer Medicine, immune therapy, breast cancer research, and palliative care.
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