

RADIATION ONCOLOGY



2011/12 annual report



Radiation Oncology
UNIVERSITY OF TORONTO

VISION:
**EXCELLENCE AND LEADERSHIP IN
RADIATION MEDICINE RESEARCH
EDUCATION AND CLINICAL PRACTICE**

MISSION:
**TO ADVANCE THE SCIENCE AND
PRACTICE OF RADIATION MEDICINE**

ANNUAL REPORT 2011/12

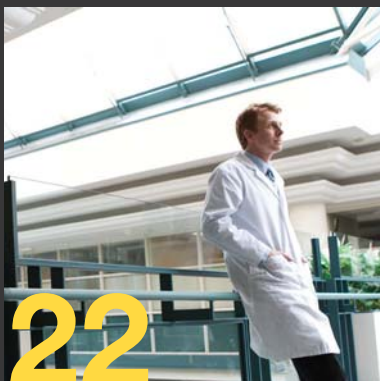
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CHAIR'S WELCOME

“...developing future opportunities for faculty, students and graduates.

It is with great pleasure that I present to you the University of Toronto, Department of Radiation Oncology (UT DRO) 2011-2012 Annual Report.

UT DRO remains committed to the pursuit of excellence. In this Annual Report we highlight the current initiatives and present stories about our faculty, students, fellows, and alumni. These stories showcase our programs and our thinking in developing future opportunities for faculty, students and graduates.

Our Department has continued to expand research, education, and clinical practice while maintaining a keen eye on our future directions. Our faculty continues to make significant contributions to research and education on an international level, securing funding from agencies worldwide and receiving honours for their work.

One of the most celebrated accomplishments last year was the award of the ASTRO – American Society of Radiation Oncology's Gold Medal, which was presented to

Professor Bernard Cummings, past-Chair of UT DRO at the 53rd Annual Scientific Meeting in Miami Beach in October 2011. Prof. Cummings is the fourth Canadian to receive this highest award in radiation oncology. The previous recipients were all from Toronto; Vera Peters in 1979, Harold Johns in 1980, and Walter (Bill) Rider in 1986.

Professor Bradley Wouters received the Klass Breur Gold medal Award from the European Society for Radiotherapy and Oncology at the meeting in Stockholm in 2011. Professor Rob Bristow was awarded the Honorary Membership from ESTRO in September 2011 joining the previous UT DRO recipients of this award Professors Vera Peters, Ray Bush, Bernard Cummings, and Mary Gospodarowicz.

In April 2012, Prof. Bristow was honoured as a 'national hero' by Prostate Cancer Canada for his contributions to prostate cancer research and awareness. Prof. Bristow received the John Ferguson

Memorial Award, presented to an individual who best exemplifies qualities of courage, determination and integrity, and whose outstanding impact in the fight against this disease is an inspiration to others.

The Medical Radiation Sciences 2011 Viewbook won a GOLD Hermes Creative Award. The Viewbook gives an in-depth introduction to the BSc program in Medical Radiation Sciences offered through the Michener Institute and the Department of Radiation Oncology at University of Toronto. The Hermes Creative Awards honour outstanding achievement and service in the communication profession.

In May 2012, Dr. Douglas Moseley, Princess Margaret Hospital, was awarded the Colin R. Woolf Award for Teaching Excellence in a UT Faculty of Medicine-sponsored Continuing Education program. He is the first UT DRO faculty member to receive this award.

Professor Fei-Fei Liu was the recipient of the Israel Cancer



Research Fund Women of Action award at their 11th annual luncheon. The award honours extraordinary women for their achievements in advocacy, philanthropy, business, and health sciences.

I want to extend my personal congratulations to Professors Jean-Pierre Bissonnette, Arjun Sahgal, and David Wiljer, who were promoted to the rank of Associate Professor on July 1, 2012.

This past academic year witnessed continuing development of our education and research programs. Prof. Wouters led the Clinical and Experimental Radiobiology program that was opened this year to students outside the UT DRO and met with great success. The program attracted candidates from across Canada, the United States and Australia. The UT DRO Continuing Education initiatives were expanded to include advanced education on Quality and Safety in Radiation Therapy, and Image Guided Radiation Therapy courses

in Lung and Head and Neck Cancers. Again this year, we held a very successful Target Insight VI Conference and a successful UT DRO Research Day.

Under the supervision of Prof. Bristow, Department of Radiation Medical Biophysics, Princess Margaret Hospital, CREMS Scholar 2010 Jennifer Locke (1T3) won best oral presentation for her project *NKX3.1 Haploinsufficiency is prognostic for prostate cancer relapse following surgery or image-guided radiotherapy* at the 26th annual Medical Student Research Day held this past January.

As you review all of our achievements in this report, I am certain that you will be impressed with the output and direction of the Department.

On July 1, 2012, I finish my term as Chair of UT DRO. I wish extend my sincere gratitude and appreciation to all of UT DRO faculty and staff for their support, their hard work and dedication, and congratulate everyone on the outstanding

achievements during the past 11 years. I am especially grateful for the continued support and dedication of UT DRO Vice Chairs, Professors David Jaffray, Pamela Catton, and Shun Wong. I also want to thank Prof. Jaffray who led the Department as Acting Chair from March 1 to June 30, 2012 while I was on sabbatical leave. The capable leadership and achievements of our Vice Chairs have an immeasurable impact on the success of our entire faculty and the Department as a whole.

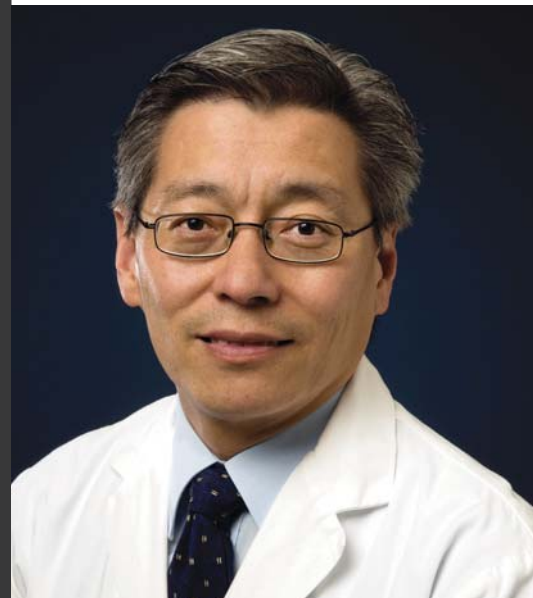
I am very proud that one of our own faculty, Professor Fei Fei Liu, is taking over the leadership of UT DRO having been selected for this post following a full international search. Her talent, expertise, and dedication will help UT DRO reach new heights and achieve even greater success and international recognition.

**Mary Gospodarowicz
MD, FRCPC, FRCR (Hon)
Professor and Chair**

VICE CHAIR REPORTS

CLINICAL AFFAIRS

SHUN WONG
MD, FRCPC
Vice-Chair, Clinical Affairs



ACADEMIC AFFAIRS

PAMELA CATTON
MD, FRCPC, MHPE
Vice-Chair, Academic Affairs



ACADEMIC PROGRAMS

DAVID JAFFRAY
BSc, PhD
Vice-Chair, Clinical Affairs



As Vice-Chair for Clinical Affairs, Professor Shun Wong is responsible for policy and program issues related to relations with clinical sites and faculty. In this portfolio, he oversees the appointment, three-year review and academic promotions of members of the Department, and ensures that the recruitment and clinical manpower plan at the clinical sites is aligned with the academic plan of the University Department.

During the reporting period 2011-2012:

- Radiation therapists Laura D'Alimonte, Colleen Dickie and John Radwan were offered new appointments.

- Radiation oncologists at Southlake, Credit Valley and Royal Victoria Hospital were offered adjunct appointments to support their teaching and educational activities at their respective community affiliate hospitals.
- Professors Jean-Pierre Bissonnette, Arjun Sahgal and David Wiljer were promoted to the rank of Associate Professor.
- Drs. Hans Chung, Marianne Koritzinsky and Danny Vesprini were successful in their 3-year review.

As Vice-Chair for Academic Affairs, Professor Pamela Catton is responsible for the oversight of all education and financial activities in the Department.

During the 2011-2012 period:

- Six Transition to Residency electives have been added to the University of Toronto's undergraduate medical education catalogue.
- A redevelopment of the nuclear medicine curriculum is underway for the MRS Diploma/BSc Program.
- The MRS program continues to collaborate to enhance the curriculum. Collaborators include Teaching Laboratories at U of T, the Division

of Anatomy in the Department of Surgery; and the University of Toronto Advanced Imaging and Education Centre (AIEC).

- Efforts have begun to create integral ties between the EIRR21 program and graduate education in UT DRO.
- Ms. Caitlin Gillan, was appointed to lead the conversion of the MHScMRS Program from an exclusively "on-campus" format to a "mixed" format for the September 2013 intake.
- The MHScMRS Program has been approved to include distance education formats and a new extended full-time program.

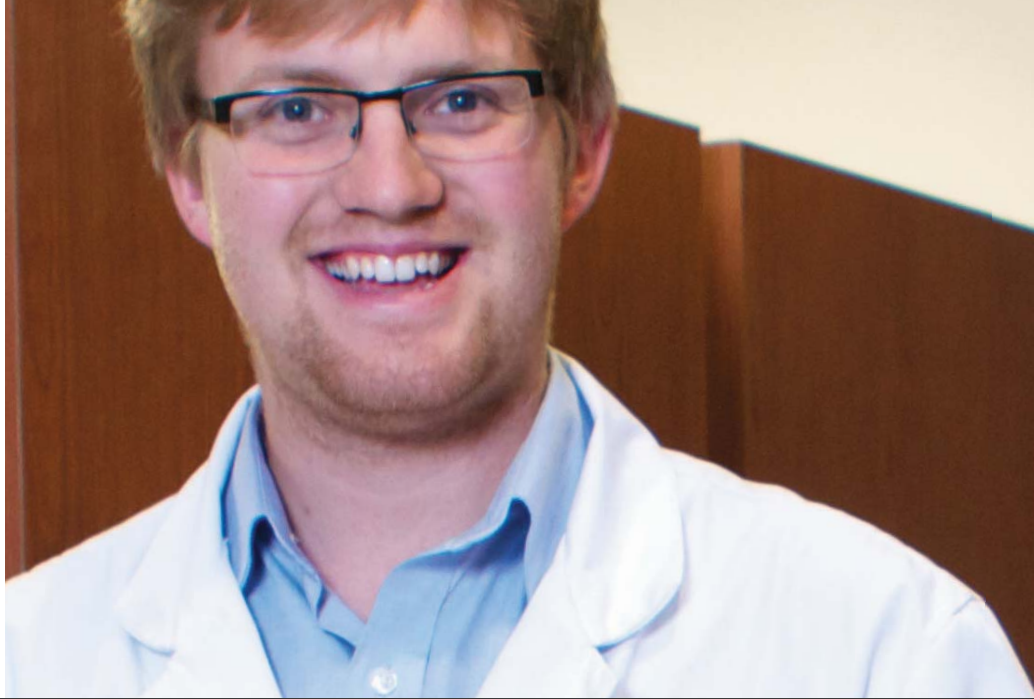
As Vice-Chair for Academic Programs, Professor David Jaffray is responsible for the oversight of the research programs in the Department. Over the 2011-2012 academic year, the Department of Radiation Oncology began to build upon its Strategic Plan through the development of short-, medium- and long-term research targets.

Overall, the Department is positioned for an exciting 2012-2013 academic year with a strong strategic plan, significant research momentum, and outstanding leadership.

During the 2011-2012 period:

- The academic productivity levels of the Faculty achieved over the past decade are sustained (2.2 publications/yr per faculty member).

- The quality of the publications has shifted slightly with the percentage of publications in intermediate impact journals ($5 < \text{JIF} < 10$) reduced compared to previous years (15.5% vs 19% in 2010) and the percentage of publications in higher impact journals ($\text{JIF} > 10$) maintained (7.2% vs 7.6% in 2010).
- Cross-site (PMH, OCC) and cross-discipline (RT, RO, RP) publication rates are also being monitored to allow us to measure the dynamics of our distributed, multi-disciplinary research enterprise and demonstrate our multi-disciplinary research activity.
- In 2011, both cross-disciplinary publication (9% vs 5% in 2010) and cross-institutional (PMH, OCC) publication (20% vs 15% in 2010) rates increased substantially.



PUTTING THE CARE IN HEALTHCARE

Joel Van Steenberg spends two hours each day on the Go Train so he can pursue his dream of helping people. Commuting to-and-from Toronto and Hamilton, the first-year Radiation Therapy student chose the BSc in Medical Radiation Sciences (BScMRS) degree program because he was looking for a way to apply his undergraduate degree and his passion of working directly with people. Offered in partnership with U of T and the Michener Institute of Applied Health Sciences, Van Steenberg says the program “is making sure it graduates people who put the care in healthcare.”

Hailing from Listowel, Ontario, Van Steenberg grew up on a small chicken farm with his parents and seven siblings. He completed his undergraduate degree in biology and chemistry at Redeemer University

College and then completed a co-op at University of Western Ontario in immunology and microbiology. Come graduation, he was looking at what he wanted to do and decided that U of T was a good match. “It is a well-known, respected program that allows students to work one-on-one with top oncologists in the field, the latest cutting-edge technology and provides the opportunity to learn through hands-on training in the best cancer centres in Ontario.”

The BScMRS degree offers an intensive 32-month curriculum. Students complete a number of clinical placements, which allow for hands-on practice, experience in different work environments and the opportunity to network with potential employers. Clinical partners in the past have included, R.S. McLaughlin Durham Regional

Cancer Centre, Oshawa; Cancer Centre of Southeastern Ontario, Kingston; Odette Cancer Centre at Sunnybrook Health Sciences Centre, Toronto; Ottawa Hospital Regional Cancer Centre, Ottawa; University Health Network, Princess Margaret Hospital, Toronto; and The Carlo Fidani Peel Regional Cancer Centre at The Credit Valley Hospital, Mississauga.

Van Steenberg loves the program. “It’s relatively small with about 50 students. There is a lot of inter-year support with second- and third-year students helping you come along in the educational process. I find that really beneficial.”

For Van Steenberg what really stands out is how much the program incorporates patient care courses in its curriculum. Fellow students or actors sit in as mock-patients



so that students can practice their techniques through simulated patient interactions. "This is a fun way to approach education. We ask them how they are doing, make sure we have good body language and use proper terminology. So you're

Van Steenberg has had many defining moments in the program. One in particular occurred during his clinical placement at PMH. "When I spoke to my first patient, I was blown away. You can be so good in the classroom but when you come

think there is a lot of potential. I have a huge interest in research but I also have a passion for pediatrics so I'm curious about the kind of direction I can take."

Another stream he is looking into is the possibility of becoming

"...YOU HAVE TO MAKE SURE THAT THE PATIENT IS YOUR GOAL AT ALL TIMES."

not just developing your mental awareness from the in-class experience, you're working on your social skills which will help you be a better radiation therapist. The program continually emphasizes that everything you do will at some point affect the patient. So you have to make sure that the patient is your goal at all times."

out into the real world it's a different situation entirely. I found out I can take what I learned in the classroom and apply it."

When looking to the future, Van Steenberg is still exploring his options. He has a thirst for knowledge and is fascinated with ongoing research that is taking place around the world in radiation oncology. "I

an Advanced Practice Radiation Therapist - someone who specifically works alongside an oncologist and takes some of the tasks of the doctor with regards to a specific site. "This is a very new discipline that Canada is trial testing at the moment. Hopefully by the time I graduate, it is something I can look into as a viable career option."

Professor

Jean-Pierre Bissonnette prides himself on influencing future physicists and helping them launch their careers.

Born in Chicoutimi, Québec and raised in Montréal, Prof. Bissonnette received his MSc in Medical Radiation Physics from McGill University and his PhD in Medical Biophysics from the University of Western Ontario. He worked as a medical physicist for seven years at Centre Hospitalier de L'Université de Montréal, then moved to Toronto in 2003 to work at Princess Margaret Hospital (PMH) and UT DRO. In 2008 he became director of the

two-year Medical Radiation Physics Residency Program.

In the last four years, Prof. Bissonnette has infused his values into the curriculum and as a result helped graduate leaders in the field. He credits the Education Scholars Program, which he completed through U of T's Centre for Faculty Development, with helping him shift his perception on teaching and learning. Since then, Prof. Bissonnette has encouraged faculty to diversify their teaching styles by implementing interactive and engaging tools in the classroom. "If we can make learning fun, then it becomes

satisfying for both teachers and residents," he says.

Current resident, Dr. Nathan Becker is completing his first year in the residency program at PMH. With a PhD in Physics and Astronomy from the University of Calgary, the BC native says "it's one of the top programs in Canada because it allows me to interact with world-renowned faculty on a daily basis. Some are experts who I cited in my research papers before I got here. It's an amazing place to build my career."

Graduates of the residency program, which is accredited by



CREATING THE NEXT
GENERATION OF MEDICAL
RADIATION PHYSICISTS

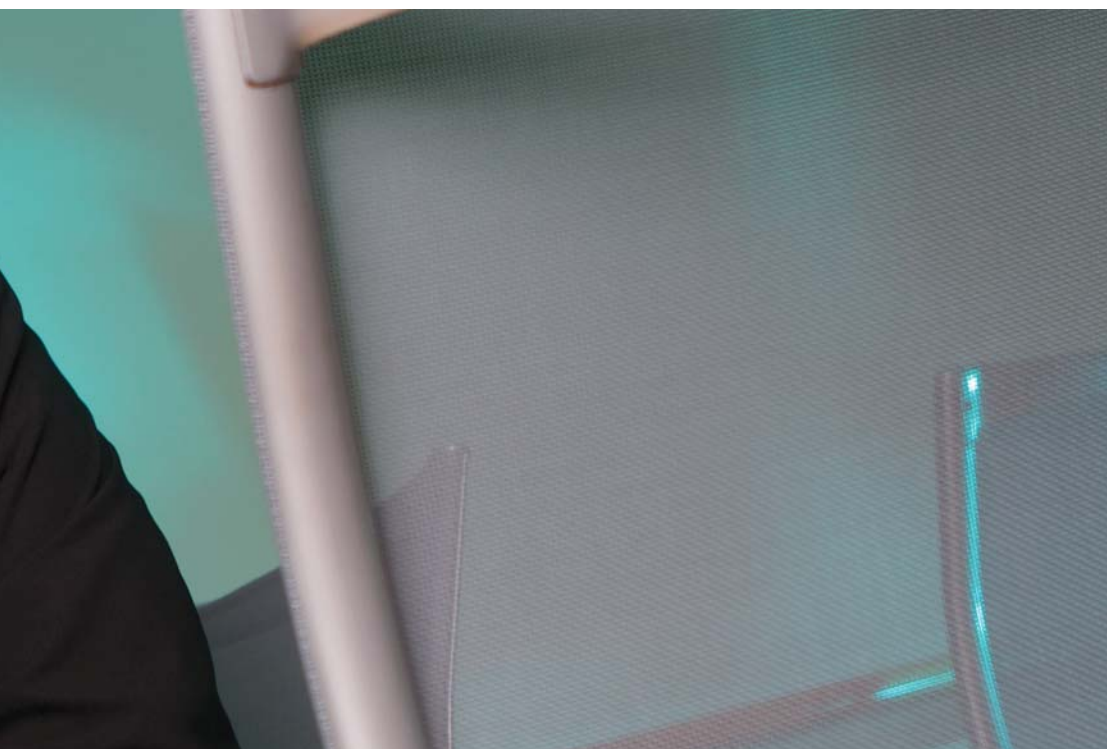
the Commission on Accreditation of Medical Physics Education Programs (CAMPEP), gain a fundamental knowledge of the disciplines of radiation oncology and therapy and are trained to recognize, understand and address scientific and technical problems relevant to the practice of radiation oncology physics. Residents learn from all three professions directly involved in radiation oncology including radiation oncologists, radiation therapists and medical physicists. The program operates out of five clinical sites including PMH, Odette Cancer Centre, Durham Cancer

involved in the program. One of my jobs is to ensure consistency in the curriculum across all locations. It's a big draw for the smaller regional centres to affiliate themselves with us because the very high calibre of talent we attract."

Prof. Bissonnette says the program is growing steadily and attracts candidates from all over Canada and the US. Competition to get into the program is fierce with 60 to 80 applicants competing for 4 to 5 available spots each year. "UT DRO is a great place to be because residents are exposed to cutting-edge research and new technologies. The program

Canada and the US. Some have pursued careers in industry working for companies who manufacture software and technology for medical imaging and radiation therapy practice. Notable graduates include Drs. Tom Purdie and Andrea McNiven, both medical physicists at PMH. Dr. Purdie's residency led to a clinical fellowship where he was involved in creating the lung Stereotactic Body Radiation Therapy (SBRT) program. He was also part of the North American task group that codified and standardized the practice in an international setting. Dr. McNiven is now co-leading a province-wide initiative developing a collaborative program evaluating the quality of IMRT delivery.

Prof. Bissonnette says that one of the program's key features involves residents gaining direct exposure to radiation oncologists and therapists so they understand how they perform, plan and execute their work. "This really sets us apart from any other program." In the future, Bissonnette hopes to maximize the interface between the residency program and other programs within UT DRO. "By having these groups work together during their clinical training, we're forming long-lasting friendships, strong networks and forging future generations of people who will work together to treat and, hopefully one day, help cure cancer."



Centre in Oshawa, the Credit Valley Hospital in Mississauga, and the Stronach Regional Cancer Centre in Newmarket.

"There is a high level of collegiality, interaction, collaboration and networking across all of the centres

truly attracts the best of the best," says Bissonnette.

Since 2008, 19 residents have graduated from the program. The majority are now working in GTA hospitals and cancer centres while others work in hospitals throughout

THE CONAN O'BRIEN OF MEDICAL PHYSICS

AN EYE FOR CREATIVE PRESENTATIONS

You might need to do a double take the first time you meet Dr. Douglas Moseley. With his red-dish hair, energetic personality and sense of humour he bears a striking resemblance to one of late night TV's on-air personalities.

Dr. Moseley, the self-professed 'Conan O'Brien of Medical Physics', is the first UT DRO faculty member to win the Colin R. Woolf Award for Excellence in Continuing Education: Excellence in Teaching for his 'creativity, innovation, style, enthusiasm, commitment, effectiveness and originality'. Although he is one of many UT DRO faculty members who teach in the Accelerated Education Program (AEP), he is known for making complex topics entertaining, fun and exciting. His educational videos which feature UT DRO faculty and staff dancing and lip syncing to hip hop music is a shining example of his original take on exploring topics such as Image-Guided Radiation Therapy and Intensity-Modulated Radiation Therapy.

Born in Breslau, Ontario, Dr. Moseley completed his BSc, MSc and PhD in applied mathematics at the University of Western Ontario. After graduating, he stayed in London, Ontario and worked for Honeywell Hi-Spec Solutions as a simulation technology specialist. He then spent three years in Phoenix, Arizona working as a principal engineer in the company's Advanced

Process Control Development Group. Once he came back to Canada, he started working for a small biomedical start-up company for a year. He eventually came to Princess Margaret Hospital (PMH) and trained as a medical physicist acquiring medical physics certification through the American Board of Radiology. His current research focuses on X-ray computed tomography, Image-Guided Therapy, Adaptive Radiation Therapy, Computed Tomography Reconstruction, and Respiration Correlated CT / 4D CT.

Currently Deputy Head of Medical Physics at the Stronach Regional Cancer Centre and medical physicist at PMH, Dr. Moseley's presentations have been described as 'spell bounding, fascinating and intriguing'. UT DRO medical physics resident Nathan Becker would agree. He has sat through many of Dr. Moseley's lectures and says "it's inspirational to see someone like him excel at the art of teaching. What stands out the most is how much he enjoys what he is doing; his excitement and energy. His presentations are dynamic, and his stage presence demands engagement from the audience."

Dr. Moseley's formula for success is simple; "smile, laugh and make learning fun." He says "it's amazing to me how someone could take a good topic and make it drudgery. If you can take a complex topic and make it fun and interesting, that's very exciting."

An expert at explaining challenging concepts, Dr. Moseley also uses animated graphics, games, similes and metaphors to get his point across. For example, he plays a game called The Slice is Right where he shows CT scans of common household objects while his students compete to guess what they are. "Students appreciate that you're putting an effort in explaining things to them. When somebody says 'Oh, I get it now!', that's the exciting part," he says.

When asked why he's so good at what he does Dr. Moseley says that he is driven by passion and curiosity. "That's what makes work fun; I love what I do."

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Caption



BETTER, FASTER, SAFER

PHYSICISTS AT PRINCESS MARGARET HOSPITAL (PMH) ARE DEVELOPING A NOVEL APPROACH OF DELIVERING RADIOTHERAPY THAT WILL REVOLUTIONIZE THE WAY CANCER PATIENTS RECEIVE TREATMENT.

(L-R) Teodor Stanescu and Marco Carlone

The new system is employing active magnetic resonance imaging (MRI) guidance for radiotherapy using a Siemens 1.5T MRI-on-rails where the MRI system is moved into the radiotherapy treatment room in the proximity to the linear accelerator (Linac), imaging is performed, and the MRI is moved away in an adjacent room. This new approach has the potential to improve treatment, making it faster and more accurate (thus increasing the chances of cure), decreasing side effects and recovery time and facilitating treatment of previously 'untreatable' cancers.

In 2008, Dr. David Jaffray, head of the Radiation Physics Department at PMH, spearheaded the idea and applied for a Canadian Foundation for Innovation (CFI) grant to fund the project. His goal was to replace the current x-ray-based image guidance used on linear accelerators (Linacs) with an MRI. This would prove to be

challenging because of the interference that occurs between the MRI and a Linac. He approached two of his colleagues to help deliver on the promise of this idea.

Drs. Marco Carlone, BSc (Eng), MSc (Medical Physics), PhD (Medical Physics) and Teo Stanescu, BSc (Nuclear Physics), PhD (Medical Physics), are the lead physicists who researched and are currently implementing this new technology called MRI-guided Linac.

Before coming to PMH, they worked together at The University of Alberta's Cross Cancer Institute where they were part of the group who designed and constructed the first working prototype of an MRI-Linac system. They say that at PMH the idea is similar but the MRI on Rails technology, using the two machines in proximity vs. combining both into a single machine, should be easier to build.

Dr. Carlone says "the approach here is that we purchase two different types of equipment, the MRI and Linac, figure out the interfacing between them and then work out the practical applications for the clinic."

Dr. Stanescu, adds "the objective of the new technology is to enable access to the excellent imaging capabilities provided by MRI in the Linac treatment room."

Currently, several MRI-Linac radiation treatment systems are under development around the world including at the Cross Cancer Institute (Edmonton, Alberta), the University Medical Center in Utrecht (The Netherlands), and the medical device company ViewRay (Oakwood Village, Ohio). The PMH team is the only one in the world that is using the combination of an MRI-on-rails and Linac system.

"We believe this is more technologically feasible," says Dr. Carlone. "The integrated machines will likely happen but I suspect it will be several years before they are clinic ready. The technology we are working on at PMH will allow us to determine how to improve treating patients. In Edmonton we were working on how to put the machines together, whereas here we are working on how to make it work in a clinic; that's the difference."

Both say that this initiative is easier on the engineering side but stress it is more challenging in other aspects. "Considering the complexity of the project and the aim to make the



technology available for treating patients quite soon, the safety component is both crucial and challenging," notes Dr. Stanescu.

Dr. Stanescu also says that another unique aspect of their initiative is that it's "focused on sharing the MRI scanner between two different treatment rooms. So we can use it for both external beam treatment (with the Linac) as well as for brachytherapy. The same MR will actually serve two purposes."

Professor Cynthia Ménard, a radiation oncologist at PMH who treats brain tumors and prostate cancer, has worked closely on this project providing guidance on the conditions under which Brachytherapy would work in that environment. "We have been limited in integrating MRI up to this point. It's too long, expensive and resource intensive. The goal is to make this process easier and more streamlined so we can do it in a more feasible way."

She expects the use of MRI will make treatments a lot faster, increase the level of precision of hitting a tumour and decrease uncertainty. "Brachytherapy takes about four hours right now so we can only treat one patient per day. I would expect the treatment time to be cut in half if not more, so once we have a more streamlined work flow we can treat multiple patients a day and it becomes more realistic in this economic environment."

Drs. Carlone and Stanescu say that this complex project would not have been successful without the



collaboration of more than 30 physicists and 37 radiation oncologists at PMH who contributed extensive knowledge and effort to the process. Some key contributors include Drs. Stephen Breen and Cynthia Ménard as well as Jette Borg, Mohammad Islam, Hamida Alasti, Laura Dawson, Sophie Foxcroft and Rudy Dahdal.

At this time, the new facility designs are being finalized which will then need to be approved by the Canadian Nuclear Safety Commission. Dr. Stanescu elaborates, "We are designing new devices required for the commissioning of the new facility. We are also developing a huge number of policies, procedures, guidelines and treatment protocols. Therapists will need to be trained on proper use of the machines."

Given PMH will have a treatment method that you can't find anywhere else, they also foresee

implementing professional development and training courses for other healthcare professionals around the world. "This model is really intended for research purposes and to advance the knowledge and improve methods of delivering radiation treatments," says Dr. Carlone.

STUDY IN RESIDENCY



Born in Taiwan, Dr. Kathy Han emigrated to Toronto with her family when she was 12 years old. At 14, her grandmother was diagnosed with lung cancer. This had a profound and lasting impact. “Even before I went to medical school, I knew I wanted to become an oncologist. That personal experience inspired me.”

Having just completed her residency training at University of Toronto, Dr. Han recently won the CARO Elekta Research Fellowship for her proposed study *Optimizing MRI-guided brachytherapy in cervical cancer: target delineation, accessibility, and clinical efficacy*. Her research will be carried out at Princess Margaret Hospital (PMH) under the supervision of Drs. Anthony Fyles and Michael Milosevic.

“Part of my project will involve looking at other non-standard MRI sequences (diffusion-weighted and dynamic contrast-enhanced MRI) and also FDG PET scanning to see if we can further improve precision in delineating tumors and therefore target them more effectively,” says Dr. Han. “The second portion is to see if there are ways we can make this technique more trans-

In the five years of her residency, she was involved in six projects at PMH and Sunnybrook. At PMH she was supervised by Dr. John Kim where she conducted a prospective study on the use of intensity modulated radiotherapy (IMRT) in treating anal cancer. Her findings, which she presented at last year’s ASTRO conference in Miami, found that IMRT is associated with low rates of acute toxicities and the outcomes appear similar, if not better than conformal radiotherapy.

“I think most residents don’t get the opportunity to be involved with prospective studies,” says Dr. Han. “It’s only at a place like the University of Toronto where you really get the chance to do something like this. It’s an amazing experience.”

At Sunnybrook, Dr. Han was mentored by Dr. Patrick Cheung where she conducted a randomized study comparing two immobilization methods for stereotactic body radiotherapy (SBRT) for lung tumors. She also worked with Dr. Eileen Rakovitch on research project entitled *Expression of Her2neu in ductal carcinoma in situ (DCIS) is associated with local recurrence*.

“EVEN BEFORE I WENT TO MEDICAL SCHOOL, I KNEW I WANTED TO BECOME AN ONCOLOGIST.”

latable so that centres with limited access to MRI can incorporate it into their practice.”

Completing her undergraduate degree in immunology at U of T, she went on to receive her MD from McGill University. She came back to U of T for the residency program. “It was my first choice. It had always been my dream to train here because it’s the largest and the best radiation oncology residency program in Canada.”

Dr. Han adds that the program offers the opportunity to work in state-of-the-art facilities and allows residents to be mentored by top experts in the field; something hard to find elsewhere.

During her residency, Dr. Han had the privilege of working with some of the best radiation oncologists in the world both at PMH and Sunnybrook. Her mentors included Drs. John Kim, Mary Gospodarowicz, Brian O’Sullivan, Patrick Cheung, Anthony Fyles, Michael Milosevic and ASTRO gold medal winner Bernard Cummings.

Dr. Han says that the U of T residency program is excellent at accommodating and promoting the academic aspirations of residents. “Some of my colleagues were able to complete other degrees without prolonging their residency training. I was encouraged by my supervisors to attend the summer-only Masters in Public Health program at Harvard University during my fellowship training.”

Once Dr. Han completes her Fellowship, she hopes to stay in Toronto and work in an academic centre. “I hope to focus on gynecological oncology,” she says.

THE BEST OF BOTH WORLDS

Growing up in Amherstburg, a small town near the mouth of the Detroit River in Essex County, Ontario, Laura D'Alimonte's knew she wanted to get into medicine from an early age. Her interest in radiation oncology stemmed from personal experience when her father was diagnosed with lung cancer just as she was finishing her BSc from the University of Windsor in biological sciences. "I would bring my dad to the Windsor Regional Cancer Centre for his appointments and

program for Radiation Sciences but nothing was in place. Prof. Catton was very optimistic and enthusiastic about therapists pursuing higher academic education. Her words always stood out at the back of my mind. Prof. Catton was the one who planted the seed even before I knew that I wanted to pursue a graduate degree."

When the opportunity arose, D'Alimonte applied to the Master of Health Science in Medical Radiation Sciences (MHScMRS) program. "I

MHScMRS program. She says that the program is targeted to people exactly like D'Alimonte. "We really want to attract the go-getters, those who rise above the main radiation therapy crop and are seeking out and capitalizing on opportunities."

D'Alimonte is part of the second cohort and loves it. "I'm getting a world-class education. The professors are amazing and I have learned a great deal from them in a short amount of time. The program allows you to meet new people, not only

"I'M GETTING A WORLD-CLASS EDUCATION. THE PROFESSORS ARE AMAZING AND I HAVE LEARNED A GREAT DEAL FROM THEM IN A SHORT AMOUNT OF TIME."

got to know the radiation therapists there. It was then I decided that this might be something I would like to pursue."

She researched various programs but felt the Radiation Therapy Degree /Diploma Program through U of T and the Michener Institute really stood out for her. In 2005 she graduated with an undergraduate degree in Medical Radiation Sciences. Before she left to pursue her clinical placement, she had an inspiring conversation with Professor Pam Catton, vice-chair of Academic Affairs at the Department of Radiation Oncology. "At the time there was talk about a Master's

was in my fifth year in the profession and I knew it was time for me to go to grad school. I didn't want to do something online and wanted to stay with U of T because it's my alumni school."

The MHScMRS program is the first professional master's program for radiation therapists in North America. It is designed specifically to develop the kind of advanced academic clinician who is in demand in contemporary radiation medicine practice.

Nicole Harnett, Director, Medical Radiation Sciences Graduate Program, University of Toronto, designed and developed the

within radiation oncology but within other multi-disciplinary teams."

Currently a research radiation therapist at the Odette Cancer Centre, D'Alimonte is going into her second year of the two-year program. Most recently, she was appointed to the GU site group working on various research studies. "I'm involved in projects that focus on educating prostate and breast cancer patients. We develop educational tools that help patients make better, informed choices." D'Alimonte is also the study co-ordinator for in-house technical studies. She stresses that as part of the program she has the unique opportunity to pursue her

WORKING WITH COLLEAGUES AND INITIATING RESEARCH

own research endeavours. "It's the best of both worlds - we work collaboratively with physicians, physicists, and nurses and then we have the chance to initiate and lead our own research projects."

D'Alimonte feels that pursuing higher credentials has made her a stronger healthcare professional. "Going back to school has made me think about how the healthcare system works here and where we can improve. I think we are sort of setting the example and are inspiring to our colleagues within our own institutions and across institutions. Because the program is still in its infancy we are not making that global impact yet but I think we are going to get there".

Just recently, D'Alimonte was appointed to one of the pilot positions in the advanced practice project. "Her personal and professional development, as well as what she has done within the master's program, positioned her very well to be awarded this position," says Harnett.

D'Alimonte is excited about taking on this new challenge and feels that the MHScMRS program has prepared her for this new position. As an Advanced Practice Radiation Therapist (APRT) in brachytherapy program, she will assess patients, carry out ultrasound and volume studies, perform brachytherapy insertions for a prescribed group of gynecologic patients, develop patient education materials, and initiate research activities.



TREATING THE TREATMENT

TOWARD PERSONALIZED
SYMPTOM CONTROL

Dr. Kristopher Dennis is no stranger to academic excellence. Throughout his career he has won 10 awards, authored more than 45 papers, and given more than 25 presentations provincially, nationally and internationally.

In 2011 he was awarded a fellowship by The Canadian Institutes of Health Research. Supervised by Dr. Edward Chow, senior scientist at Sunnybrook's Odette Cancer Centre, Dennis is a radiation oncologist and research fellow at the Centre in the UT DRO program. His research focus is on palliative radiotherapy and symptom control, and focuses on radiotherapy-induced nausea and vomiting (RINV). In the largest international study of its kind, Dennis' research is stimulating further study in this area. Despite estimates that as many as 80 per cent of patients undergoing common radiation treatments may develop RINV, these symptoms are

significantly understudied compared to nausea and vomiting caused by chemotherapy.

"Our goal is to encourage radiation oncologists to discuss the potential for RINV with each other and their patients," says Dr. Dennis. His study, published in the International Journal of Radiation Oncology, Biology, Physics included responses from 1,022 practicing radiation oncologists from 12 countries, to a Web-based patterns of practice survey developed in collaboration with clinician researchers from around the world. It represents the first peer-reviewed published data describing international patterns of practice in the management of RINV.

Originally from the Niagara region, Dr. Dennis completed his BScH in psychology from Queen's University, his MD from the University of Western Ontario and completed his

residency at the British Columbia Cancer Agency in Vancouver. He is currently completing his PhD from the Institute of Medical Science at U of T.

Dr. Dennis speaks passionately about why he chose palliative radiotherapy and why U of T was the ideal place to complete his Fellowship. During residency, he found the most satisfaction when he provided patients with treatment to relieve their symptoms. "It's a huge proportion of what we do as radiation oncologists but it's underrepresented in terms of research and academic output. I wanted to find a fellowship where I'd be satisfied clinically and develop academically. The program here at U of T is perfect."

Dr. Dennis says the breadth of the U of T program is its greatest strength. "You come in with an idea





about what you want to achieve and then you quickly meet people with similar or perhaps different interests – your ideas change and grow and diversify. It's really a hub of research activity and collaboration so no matter where I go during my future career I'll benefit from these connections."

that another reason he decided to do his fellowship at U of T was to work at Odette under the guidance of Professor Edward Chow. "He was the real pull for me in terms of why I came here. He's a prolific researcher and I wanted to be mentored by a world-leader. It's been a great environment for academic

tumors.

Once in Ottawa, Dr. Dennis intends to continue his research efforts on an international scale. "By working here I've been able to establish networks throughout the world. I can easily contact people from over a dozen countries; bounce trial ideas off of people and collaborate."

THE FIRST PEER-REVIEWED PUBLISHED DATA DESCRIBING INTERNATIONAL PATTERNS OF PRACTICE IN THE MANAGEMENT OF RINV

At the Odette Centre, Dr. Dennis' clinical duties are based in the Rapid Radiotherapy Response Program (RRRP), an outpatient clinic that provides palliative radiotherapy for patients with bone metastases, brain metastases and advanced lung cancer. The goal is to reduce the time between identification of the need for radiotherapy and its actual delivery. Dr. Dennis admits

work, more so than I expected, and I expected a lot."

Dr. Dennis completes his fellowship at the end of 2012 and will be working as a radiation oncologist at The Ottawa Hospital and the University of Ottawa in the new year. He will help to develop a dedicated palliative radiotherapy program and will continue with his research in RINV while treating gastrointestinal

In the end, he hopes for the day when oncologists aim to personalize symptom control in the same way that they do anti-cancer therapy.. "That's my dream," he says.

SOUND REASONING



Photo Credit: MediaSource-Doug Nicholson

"A passion for science, hard work, dedication and a strong commitment towards finding a cure for cancer is what makes Professor Gregory Czarnota a successful scientist," says Omar Falou, a postdoctoral fellow at the Sunnybrook Odette Cancer Centre.

Prof. Czarnota, Program Research Director at the Odette Cancer Centre, is known for his eagerness and perseverance to uncover the unknown, as well as his ability to 'think outside the box'. Throughout his career, he has worked tirelessly to obtain research funding. He says that in the last 20 years there has been a decrease in the amount of grant money available for research due to the shift in support for infrastructure development, making it increasingly challenging for individual researchers to acquire funding. "One of the reasons I'm successful is sheer force of will. I may have obtained 30 grants in the past five to six years, but looking up at the white board in my office, I have submitted 105 grants. It's persistence at its best; I don't give up."

To say that Prof. Czarnota is an outstanding scientist is an understatement. To date, he has received 50 grants which have netted more than \$200 million to support his research. He has authored more than 40 publications, presented over 30 lectures internationally, nationally and locally and has mentored and supervised more than 50 masters, PhD, postdoctoral fellows, radiation oncology residents and undergraduate students. Currently, he supervises three PhD candidates, one MSc candidate, three postdoctoral fellows and five summer students, in addition to the 10 research assistants who work in his laboratory.

William Tyler Tran, a radiation therapist and research associate who works for Prof. Czarnota, says he chose to work with him because "he's an excellent clinician. He provides exceptional scientific mentorship and is a leader

in his field." Tran says that Prof. Czarnota stands out above the rest because "he is able to critically appraise clinical issues and consistently seeks ways of translating his bench-side research into potential clinical applications that will benefit the Canadian population."

With a BSc from McMaster University, and a PhD and MD from the University of Toronto, this Mississauga native is at the forefront of cancer research and innovation. He led the world's first study demonstrating how the tumour-destroying effects of cancer radiotherapy could be increased at lower doses of radiation by using ultrasound in a new way; to disrupt tumour blood vessels through acoustically-stimulated microscopic bubbles. The results were recently published in Proceedings of the National Academy of Sciences U.S.A.

In this study, Prof. Czarnota and his colleagues used ultrasound to trigger resonance in microbubbles inside the blood vessels of mouse tumours, destabilizing structures, creating greater sensitivity to smaller doses of radiation thereby amplifying the tumour cell-death inducing effects of radiation treatment.

"Our findings indicate a real possibility for bigger treatment impact at lower radiation doses which would mean less toxicity for patients and reduced treatment burden overall," says Prof. Czarnota.

Another major component of Prof. Czarnota's research is his work demonstrating that ultrasound can be used to monitor a patient's response to cancer treatment. Here, breast cancer patients with large, locally-advanced tumours receiving neoadjuvant combined chemotherapy and radiation therapy are imaged at various intervals throughout their treatment in order to track their response to therapy.

"We've developed ways of using ultrasound to image tumor cell death and have proven that we can use this



(L-R) Omar Falou, Azza Al-Mahrouki, William Tran

THE WORLD'S FIRST STUDY DEMONSTRATING HOW THE TUMOUR-DESTROYING EFFECTS OF CANCER RADIOTHERAPY COULD BE INCREASED AT LOWER DOSES OF RADIATION BY USING ULTRASOUND

to predict the outcome of chemotherapy. Our most recent data shows that we can determine whether or not chemotherapy is working as early as one to four weeks. It's very important to know if the chemotherapy is not working because this may afford medical oncologists the opportunity to switch from an ineffective treatment to an effective one. That is something that they cannot presently do."

In looking to the future, Prof. Czarnota will continue to focus his research to improve outcomes for patients suffering from cancer. "Within the larger scientific community in Toronto, the UT DRO is an excellent place to

work. It fosters innovative research and affords great freedom to pursue high risk/reward strategies."

When asked what he thinks makes a good scientist, Prof. Czarnota says, "you need to be creative and to think outside the box. Coming up with ideas that no one else has and having the persistence and the drive to find the funding to pursue those ideas are key. You also need to have the discipline and the very hard work ethic to get the science done properly. Being a good salesperson, explaining your ideas and engaging the scientific community is essential."



EDUCATING THOUSANDS

NICOLE HARNETT INNOVATION IN CONTINUING EDUCATION

In the mid 80s Nicole Harnett was a practicing radiation therapist in Thunder Bay. Once she began supervising students who were coming to her centre to complete their clinical training in radiation therapy, she knew education is what she wanted to do. "That was my first foray into education and I really liked it." Shortly after, she was hired as a clinical and didactic instructor in the radiation therapy program at the Odette Cancer.

Although Harnett received her BSc from Lakehead University, she knew that if she was going to fully commit herself to education as a career she should prepare herself by pursuing graduate work in education. She received her MEd in Higher Education (Health Professional Education) from OISE at U of T and then was hired by the Michener Institute to help build the Bachelor of Science in Medical Radiation Sciences program in collaboration with U of T. Once the program was launched, "I co-ordinated the radiation therapy program, then I became the director

of the set of imaging programs, and finally the dean of Laboratory and Diagnostic Imaging." In 2004, she was hired by Princess Margaret Hospital (PMH) and UT DRO to develop the Accelerated Education Program (AEP) for the Radiation Medicine Program and build a master's degree for radiation therapists for UT DRO.

Funded by an unrestricted educational grant, the AEP was created to develop continuing education programs that would disseminate innovative research and practical knowledge generated in RMP, and to explore educational methodologies to facilitate this. Since the focus of these courses is on interprofessional practice that enhance team-work and collaboration, the courses create learning environments that are engaging, creative and interactive. The goal is to deliver top quality, timely and relevant programming that is of interest to all radiation medicine professionals.

In 2005, the Image Guided Radiation Therapy (IGRT) Foundational Course was the first to be delivered. “Since PMH was one of the first radiation medicine programs to adopt and develop Cone Beam CT as a technology, we felt we had a level of expertise to disseminate what we learned to the wider community.”

Since then, the number of AEP course offerings have grown to include: Intensity-Modulated Radiation Therapy Education; Quality & Safety in Radiation Therapy Education; and Accelerator Technology Education courses.

To date the AEP has run more than 30 courses and has trained over 1,000 professionals including fellows, residents and students. Attendees have come from all parts of the world including Tokyo, Hong Kong, Singapore, Australia, Tasmania, Central and South America, Europe and the United States.

Dr. Libni Eapen, a radiation oncologist at The Ottawa Hospital, attended the most recent Head and Neck IGRT course. He says the course interested him because it was great opportunity to see how the technology is implemented by a centre that has more experience with it. “The course was very useful, focused and allowed for many opportunities of interaction and discussion

CE course could be like this. PMH’s CE program was the most comprehensive and thoughtfully organized course I have been involved with. What stood out most for me personally was the amount I learned from participating in it. I changed my practice after seeing how my colleagues in Toronto were carefully addressing the technical challenges covered by the course. I can’t remember too many other CE experiences I can say this about.”

Harnett elaborates, “We recognized the extensive expertise that exists in this program. The obligation to innovate is a key component of our strategic vision. Sharing what we learn and what we know - this is the corner stone of our program.” She feels this initiative is going to serve as a spring board for further educational opportunities. “Our depth and breadth are outstanding. The people here are fantastic. We can and will have an increasing impact in the world of continuing education for radiation medicine.”

Within the next year, the Accelerated Education Program will continue adding to its suite of site specific courses including Paraspinal IGRT from October 11 to 13 and Liver IGRT from January 17 to 19, 2013 and a Quality & Safety in Radiation Therapy course from November 14 to 16.

“OUR DEPTH AND BREADTH ARE OUTSTANDING. THE PEOPLE HERE ARE FANTASTIC. WE CAN AND WILL HAVE AN INCREASING IMPACT IN THE WORLD OF CONTINUING EDUCATION FOR RADIATION MEDICINE.”

between disciplines. It concentrated on group practice as opposed to the individual practice so it’s that cultural change that we brought back with us.”

The majority of the courses are delivered by UT DRO faculty with more than 50 experts in the field having participated so far. In addition, external experts are also invited to provide different perspectives and ignite more interesting conversations about approaches and techniques.

Dr. David Schwartz, a recognized expert in the treatment of head and neck cancers from the North Shore LIJ Health System, Long Island, New York, was invited to teach the Head & Neck Radiotherapy IGRT course this past March. Having served as a faculty member for many other CE courses he says “I wish every medical

Although Harnett knows she that what has been built is an excellent product, she is always surprised at how satisfied attendees feel after completion of a course. “The feedback that we get from them tells the whole story. They can’t say enough about how dedicated and excellent the faculty are throughout the formal and informal curriculum.” That, she says, “is the ultimate compliment for the team.”



IMPORTING KNOWLEDGE

TRANSATLANTIC CONNECTION

Photo Credit: Diego Arroyo

Born in Burgos, a city in northern Spain, Dr. Laura Cerezo was determined to leave her home town to study medicine. She received her MD from the University of Valladolid, Spain, a PhD from University Autonoma of Madrid and completed her fellowship at Princess Margaret Hospital (PMH) in the early 1990s.

Currently she is the chair of Radiation Oncology at Hospital

“Two years ago, I found out that oncologists at PMH conducted a similar study in Canada which influenced me to look at a similar question in Spain. My colleagues and I are the first in Spain to conduct this kind of study and talk about the relationship between HPV and oropharyngeal cancers. Normally head and neck cancer is related to tobacco and alcohol use - now this

In the next few years, Dr. Cerezo plans to research the genetic expression of HPV-positive tumors and continue to study head and neck cancers. “Hopefully we’ll get a research grant from the Spanish government so we can proceed with this research. If we don’t get this grant, we’ll look at other sources of funding,” she says. Reflecting back on her experiences as a fellow

HER RESEARCH FINDINGS MADE HEADLINES ACROSS SPAIN

Universitario de la Princesa in Madrid where she leads a team of seven radiation oncologists who treat approximately 1,200 cancer patients per year. This spring she presented her paper entitled *Incidence of HPV Induced Oropharyngeal Cancer in Spain and its Prognostic Significance* at the European Society for Radiotherapy & Oncology (ESTRO) meeting. Her research findings made headlines across Spain.

virus has been discovered to be a factor - so it’s quite a new thing. It gained a lot of media attention.”

Her research concluded that the incidence of HPV-related oropharyngeal carcinomas in Spain is similar to that reported in other European countries, and apparently lower than the incidence in North America. In addition, HPV-positivity by p16 IHC was associated with improved overall survival in patients treated with chemoradiation.

in radiation oncology at PMH she notes, “The contrast between PMH and cancer centres in Spain was striking, - more technology, very large patient volumes, it impacted me greatly. I was inspired by the people I worked with, I specialized in radiation oncology because of that - directly because of my experiences as a student at PMH.”

CLINICAL REPORT

The past 12 months have witnessed continuing growth of research and educational activities at Princess Margaret Hospital (PMH)-University Health Network and Odette Cancer Centre-Sunnybrook Health Sciences Centre (Sunnybrook).

Just over 10,000 treatment courses were delivered at PMH, and more than 6,600 new radiation oncology cases were seen for consultation at Odette. Both centres

continued with upgrading of state-of-the-art radiation planning and treatment units and information and imaging systems.

The Department continued to foster its regional leadership in cancer care in partnership with Cancer Care Ontario. It provides educational and clinical support to an expanding list of academic and community hospitals both within and outside the Toronto Central LHIN. New initiatives included

multidisciplinary tumor boards and consultation services at The Scarborough Hospital, St. Joseph's Health Centre, Rouge Valley Centenary, St. Michael's Hospital, St. Joseph's Hospitals and the Stronach Regional Cancer Centre in Newmarket.

The academic activities of the Department continued to grow with successful recruits in all three clinical disciplines, Radiation Oncology, Medical Physics and Radiotherapy.

OVER 10,000 TREATMENT COURSES WERE DELIVERED AND MORE THAN 6,600 NEW RADIATION ONCOLOGY CASES WERE SEEN

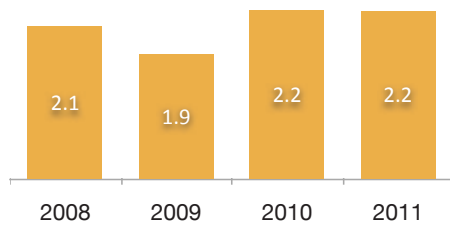
FACULTY HIGHLIGHTS

- New appointments: Radiation Therapists Laura D'Alimonte, Colleen Dickie and John Radwan; Adjunct appointments to radiation oncologists at Southlake, Credit Valley and Royal Victoria Hospital; Dr. Jean-Pierre Bissonnette, Associate Professor; Arjun Sahgal; Associate Professor; David Wiljer; Associate Professor. Successful in 3-year review: Drs. Hans Chung, Marianne Koritzinsky and Danny Vesprini.
- Prof Pdraig Warde continues as Provincial Head, Radiation Treatment Program at Cancer Care Ontario.
- Dr. Marco Carlone continues as Chair of Science and Education Council of the Canadian Organisation of Physicists in Medicine (COMP).
- Drs. Miller MacPherson and Ivan Yeung continue as the Clinical Physics Leads in Credit Valley and Newmarket Cancer Centers respectively.
- Prof. Jim Brierley continues as Chair of the National Staging Advisory Committee of the Canadian Partnership against Cancer.
- Prof. Tara Rosewall continues as Lead of The STTARR research programs.
- Prof. Brian O'Sullivan and colleagues in the Head and Neck Cancer site group are continuing to develop a point-of-care outcome assessment tool – the e-cancer outcome database at PMH.

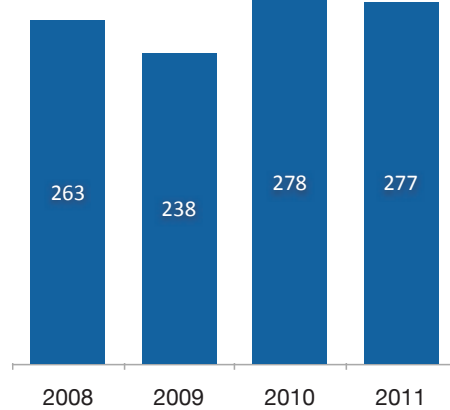
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PUBLICATIONS

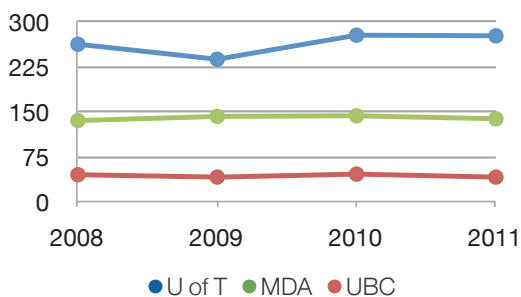
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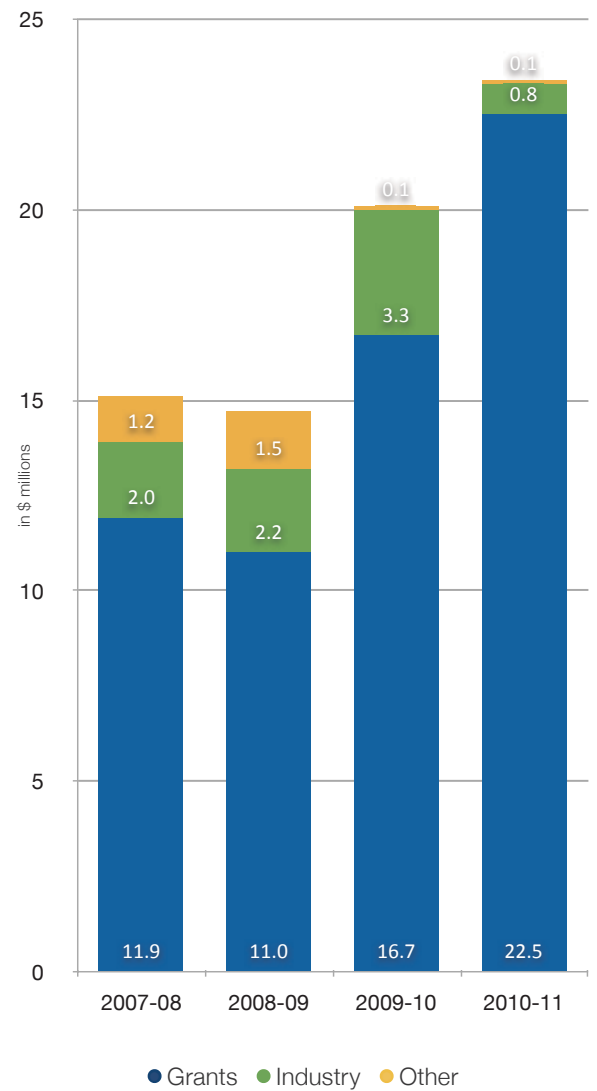
Total Publications



Publication Comparison



FUNDING



Yearly Research Funding*

2011 Research Report corresponds to the 2010/2011 academic year. However, funding statistics for 2011/2012 are not available at time of report generation, therefore, reported funding stats correspond to 2010/2011 academic year. Numbers reflect funding dollars per year, not total grant value.

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RESEARCH HIGHLIGHTS

FUNDING HIGHLIGHTS

- Profs. Y. Ung and R. Meyer received \$37M from the Canadian Cancer Society Research Institute for their research project “CCS Clinical Trials Group (Major Program)”.
- Prof. J. Rowlands received \$6.5M from the Ontario Research Fund (ORF) for his work entitled “Ontario Network for Advanced Medical Imaging Detectors”.
- Prof. D. Jaffray received \$5.5M from the Canadian Foundation for Innovation for his research on Robotic positioning for image-guided surgery and radiation therapy; Dr. Jaffray and collaborator Dr. Yeo also received \$1.9M from the National Institutes of Health (NIH) (USA) for the development of a hybrid MR-RF hyperthermia system to improve adjuvant thermotherapy in cancer treatment.
- Prof. D. Wiljer received \$1.9M from Elekta Inc. for his Image-guided radiation therapy education proposal entitled “Adapt, Engage, and Connect”.
- Profs. J. Rowlands and W. Zhao received an operating grant of \$1.75M from the National Institutes of Health (NIH) (USA) for a Flat Panel X-Ray Imaging Detector with Avalanche Gain.
- Prof. L. Barbera received \$1.2M from Cancer Care Ontario for her research entitled “Ontario Patient Reported Outcomes of Symptoms and Toxicity”.
- Dr. A. Hope received \$1.2M from Cancer Care Ontario for “On-PROST: Ontario Patient Reported Outcomes of Symptoms and Toxicity”.
- Prof. A. Fyles received \$1.1M from Canadian Institutes of Health Research (CIHR) for his work on Canadian Accelerated Partial Breast Irradiation (RAPID).
- Prof. A. Loblaw received \$830K from Sanofi-Aventis for his Randomized Trial of Concomitant Hypofractionated IMRT Boost versus Conventional Fractionated IMRT Boost for Localized High Risk Prostate Cancer.
- Dr. Coolens received \$3.8M from the Ontario Research Fund (ORF) for her work on the Centre for Innovation for Visualization and Data Driven Design (partnership with York, OCADU, UToronto).
- Prof. G. Czarnota received \$2.7M from the Canadian Institutes of Health Research (CIHR) for his research on Ultrasound for cancer therapy.
- Prof. G. Czarnota secured a \$421K grant from Cancer Care Ontario for research entitled “Combined ultrasound and optical methods for personalizing care in locally advanced breast cancer.”
- Prof. R. Bristow received \$20M for his research project “The Canadian Prostate Cancer Genome Network (CPC GENE)” from Prostate Cancer Canada and the Ontario Institute for Cancer Research.
- Prof. L. Paszat was awarded a \$1.2M Cancer Care Ontario Research Unit Grant for his work with SCREEN-NET ONTARIO: The Ontario Cancer Screening Research Network.
- Prof. R. Wong was awarded a Canadian Radiation Oncology Foundation/Sanofi-Aventis Research Innovation Award for her research “A Phase I/II study of high dose rate brachytherapy for the palliation of rectal cancer.”
- Profs. Loblaw, Ménard, Bristow, Vesprini, and Haider, in collaboration with Drs. Klotz (coPI), Fenster, Sugar, and Van der Kwast, have secured a Strategic Grant from the OICR for their research entitled “Active Surveillance Magnetic Resonance Imaging Study (ASIST Trial).” The \$2.7M Grant is effective from 2011-2013.
- Prof. J-P. Pignol secured a CIHR Operating Grant valued at \$130K for his work with Dr. Ivo Olivotto entitled “Long term outcomes of a multicentre controlled clinical trial of breast irradiation using Intensity-Modulated Radiation Therapy”.

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