

RADIATION ONCOLOGY



annual report

2010/11



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 2010/11

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**THE HARDEST CHOICES:
BRINGING DIFFICULT
DISCUSSIONS TO THE
FOREFRONT**



**GAMMA KNIFE: CROSSING
DISCIPLINES AND DIVISIONS
TO TREAT BENIGN ILLNESS**



**CREATING A NEW STANDARD
OF CARE: UT DRO PHYSICIANS
ARE CHANGING THE WAY WE
TREAT PROSTATE CANCER**



**360 DEGREES OF TREATMENT:
NEW TECHNOLOGY TARGETS
TUMOURS FROM ALL ANGLES**



**AN OPPORTUNITY UNLIKE
ANY OTHER: FIRST NON SITE-
SPECIFIC FELLOWSHIP IN DRO
HISTORY**



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CHAIR'S WELCOME

“Our faculty continues to make significant contributions to research and education on an international level...”

It is with great pleasure that I present to you the University of Toronto, Department of Radiation Oncology 2010-2011 Annual Report. Our Department has continued to expand research, education, and clinical practice while maintaining a keen eye on our future directions.

Our Department grew significantly over the past year as we welcomed eighteen new members to the UT DRO faculty, eight of whom hold adjunct appointments.

Our faculty continues to make significant contributions to research and education on an international level, securing funding from agencies worldwide and receiving honors for their work. This fall, Professor Bernard Cummings will be awarded the prestigious ASTRO Gold Medal, ASTRO's highest honor, for his outstanding contributions to the field of radiation oncology, including research, clinical care, teaching and service. Dr. Andrea Bejak

became Canadian Association of Radiation Oncology (CARO) President-Elect and will take over as CARO's President in September. At Sunnybrook, Dr. Eileen Rakovitch was appointed Campbell Chair in Breast Cancer Research, and Dr. Gregory Czarnota was appointed Director of Cancer Research.

Congratulations are due to Dr. Normand Laperriere, who was promoted to the rank of full Professor, and Drs. Lisa Barbera, Gregory



Czarnota, and Gerard Morton, who were promoted to the rank of Associate Professor.

I am excited to announce that the first class of the new Master of Health Science in Medical Radiation Sciences completed their studies in August and are set to convocate this November. The program's second class will begin their studies in September 2011, and will have the option of learning via a new distributed learning format that supports the completion of most coursework outside of Toronto.

Our department continues to provide excellent programs and events and this would not be possible without the help of our faculty and committees. This year, our CE planning committee was successful in securing a CIHR Grant for the RTi3 meeting. RTi3 was attended by a record 140 participants from five countries. The Target Insight conference partnered with Cancer Care Ontario once again in 2011 and attracted its biggest audience to date, 190 registrants.

We made considerable progress defining our Department's future direction through the strategic planning process. With the advice of faculty, and of leaders in radiation oncology worldwide, we have identified key priorities moving forward. I look forward to working toward these common goals with the continued cooperation, feedback, and assistance of our outstanding faculty.

I am grateful for the support and dedication of Vice Chairs Professors David Jaffray, Pamela Catton, and Shun Wong over the past year. Professor Catton led the Department as Acting Chair from June to October 2010 while I took a sabbatical, and oversaw the implementation of our new Departmental website. 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.

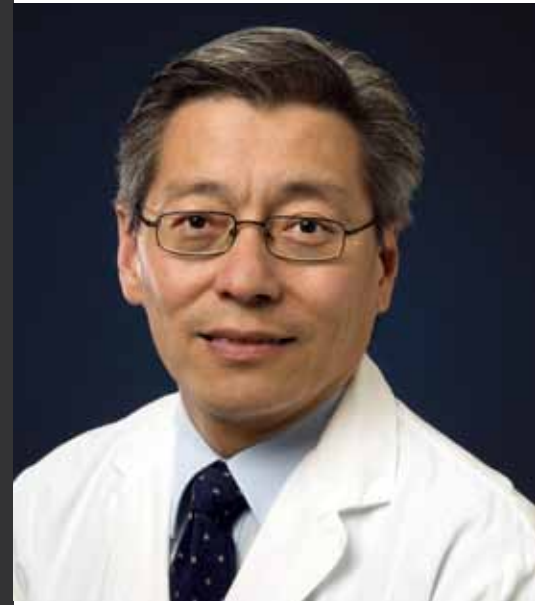
As you review our achievements in this report, I am certain that that you will be impressed with the output and direction of the Department.

**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, Dr. 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 of July 1, 2010 to June 30, 2011:

- Dr. Normand Laperriere was promoted to the rank of Professor, and Drs. Lisa Barbera, Gregory Czarnota, and Gerard Morton were promoted to the rank of Associate Professor.

The Vice-Chair of Academic Affairs is responsible for overseeing the educational and financial activities of UT DRO and works to build strong educational programs that serve the professional and research training needs of all professional radiation disciplines in an environment of fiscal responsibility.

During the reporting period of July 1, 2010 to June 30, 2011:

- We recruited a new Chair for the Radiation Therapy Stream of the MRS program, Catherine Ladhani, to succeed Fiona Cherryman, a UTDRO faculty member who has moved portfolios.
- The strong relationship with the Department of Physiology and the Division of Teaching Laboratories at U of T has continued to flourish.

The Vice-Chair of Academic Programs oversees the research activities and works to build opportunities that bridge the faculty, facilities, and research programs of the UT DRO. Overall, the atmosphere for research in UTDRO is positive. The metrics for tracking research activity are all trending up: more grant funding, greater number of publications, and more publications per faculty. Following on from our launch of the strategic plan in 2010, this year provides new horizons for collaboration and the opportunity to initiate new research directions. If all goes well, we will see growth in the collaboration between clinical sites, between university departments, and, as a result, further strengthening of UTDRO science.

During the reporting period of July 1, 2010 to June 30, 2011:

- Drs. Caroline Chung, Stanley Liu, Warren Foltz, Teodor Stanescu, and Justin Lee were appointed to the rank of Assistant Professor. Mr. Neil D'Souza was appointed to the rank of Lecturer. Ms. Carina Feuz, Florencia Siu Moon Jon and Kieng Tan were appointed Instructors. Dr. Masoom Haider was cross appointed as Professor.
- We bid farewell to Drs. Deidre Batchelar and Joyce Nyhof-Young.

This relationship, in collaboration with the Division of Anatomy in the Department of Surgery, continues with the ongoing development of an online Anatomy course to be implemented and delivered to MRS students in September 2011.

- The MRS Program replaced the traditional admissions personal interview with the Multiple Mini Interview (MMI), which evaluates non-cognitive characteristics.
- The UT DRO Fellowship Program attracted 27 Fellows from six countries including Australia, Canada, Ireland, Japan, New Zealand, and the UK. Two of our fellows won prestigious research awards: an ASCO Young Investigator Award and the IMS Whiteside Thesis Dissertation Award.

- The European Society for Radiotherapy and Oncology recognized Dr. Bradley Wouters with the 2011 Breur Medal for his research contributions.
- Dr. Robert Bristow received \$20M for his research program "The Canadian Prostate Cancer Genome Network (CPC GENE)" from Prostate Cancer Canada and the Ontario Institute for Cancer Research.
- Dr. Jean-Philippe Pignol secured a CIHR Operating Grant for his work with Dr. Ivo Olivetto entitled "Long term outcomes of a multicentre controlled clinical trial of breast irradiation using IMRT."
- Dr. Tim Chan from the Department of Mechanical and Industrial Engineering at UofT successfully led a CRRP Team grant for robust treatment planning.

AN OPPORTUNITY UNLIKE ANY OTHER

DR. SWAMINATH PARTICIPATES IN FIRST NON SITE-SPECIFIC FELLOWSHIP IN DRO HISTORY

It was the promise of a one-of-a-kind experience that led Dr. Swaminath to pursue a fellowship with the UT DRO: “I came because of the opportunities available here. Princess Margaret Hospital is one of few centres in Canada, or even North America, with an academic program in Stereotactic Body Radiotherapy.” His fellowship is the first of its kind in our Department, focusing on a treatment technique - Stereotactic Body Radiotherapy (SBRT) – instead of a disease site: “It’s a unique opportunity; I don’t think I’d be able to do this type of fellowship anywhere else.”

First introduced to radiation oncology as a summer student conducting research with a Radiation Oncologist in London, Ontario during his teens, he went on to complete his Bachelor of Science at Queen’s

University, then to the University of Ottawa for medical school. It wasn’t until his third year, though, that he really experienced radiation oncology first-hand. On a surgery rotation, he had the opportunity to take part in a multidisciplinary team of surgical, medical, and radiation oncologists. From that point on he was hooked: “I was interested in the technical part of it – it’s a different type of medicine. You still have the patient interaction, but you also have a highly technical specialty.” Three months’ worth of electives in his fourth year confirmed his decision to pursue the specialty, taking him to McMaster University for residency training.

As his two-year fellowship comes to an end, Dr. Swaminath is also wrapping up his Masters degree through the Institute of Medical

Science, focused on SBRT for liver metastases. Roughly 70% of liver metastases are controlled at one year by SBRT, but assessing response and control is a challenge, “with SBRT, you’re often left with something – whether it’s a scar or fibrosis...” Through his current research he hopes to discover which population will benefit most from liver SBRT. Specifically, his research is directed at patient outcomes - “determining the dose needed to eradicate liver metastases and the impact of changes on treatment that may influence dose response.” Studies have shown that because the liver moves and changes shape during treatment, often the dose seen during planning may not precisely reflect the actual dose delivered. Using PMH-created Morfeus software, Dr. Swaminath is



“comparing delivered dose to the dose prescribed for the patient to see if there are any differences and studying whether or not those differences change the outcome.”

SBRT is also the focus of Dr. Swaminath’s side project on health economics concerning the cost-

or not it’s worth it to do SBRT. This helps other centres determine whether or not they would benefit from starting a new program. What we have noticed is that the cost isn’t very different, but there could be a change in the number of life years gained from SBRT treatment.”

develop the CyberKnife Program: “I’m fortunate that Hamilton had the CyberKnife and an SBRT program in its infancy. I feel like I’ve gained the expertise and clinical judgment necessary to help them build their program.” He won’t forget colleagues in Toronto, though, and

“IT’S A UNIQUE OPPORTUNITY; I DON’T THINK I’D BE ABLE TO DO THIS TYPE OF FELLOWSHIP ANYWHERE ELSE.”

effectiveness of SBRT versus conventional radiation for early stage lung cancer in collaboration with his wife, MRS alumnus Gunita Mitera (see story on page 17). Theirs is the first publicly-funded analysis of its kind based on the Canadian health-care system: “It’s important to know, in our healthcare system, whether

His next big move is a little bit south and a little bit west, back to familiar ground. In April 2011, Dr. Swaminath joined faculty in the Oncology Department at McMaster University and staff at Juravinski Cancer Centre where he is helping

will continue to focus on working together to improve efficacy of SBRT for all patients: “the more expertise and multicentre collaboration we have, the better off we’ll all be.”

BEZAK

LEADING WITH AN INTERNATIONAL PERSPECTIVE

By the time she finished medical school, Dr. Bezjak had already called five countries home. Born and raised in Croatia, with one year stints in Jamaica and Uganda as a child due to her father's interest in tropical medicine, Dr. Bezjak moved to Kuwait with her family as a teen and entered the newly-established Kuwait Medical School where her father had been hired as Chair of the Department of Medical

Dr. Bezjak to radiation oncology: "The radiation oncologists I met were really happy with their career and opportunities, and the things they could do for their patients. I went into radiation oncology training without doing a single elective in it. I just knew. It was also the fact that you treat both early stage, locally advanced, and incurable patients. There's a big spectrum of what you can do for patients." She came to

Dr. Bezjak's early career focused on quality of life, an area in which she also obtained her Master's in Clinical Epidemiology at McMaster University. Quality of life and palliation for lung cancer continue to be a significant focus in her practice and research. She explains, "The reality is that many patients with lung cancer either have incurable disease or will develop incurable disease with metastases and thus

...IF YOU CAN LEAVE A LEGACY OF EXCELLENT CLINICAL CARE YOU'LL MAKE A BIG DIFFERENCE

Microbiology. She transferred to McGill University to complete her clinical years, and entered the internal medicine residency program there with plans of becoming a medical oncologist. It was the exposure to radiation oncologists satisfied with their careers, and the breadth of practice that re-oriented

Toronto "just for three years, to be able to train in radiation oncology in the premier residency program in Canada." Despite her intentions of returning to Montreal, and even taking the Quebec specialty and licencing exams, a job offer at the Princess Margaret Hospital was "too good to turn down".

palliating symptoms and improving their quality of life is extremely relevant. As technology has improved, it has allowed us more opportunity to treat patients more with curative intent, but the goals of maintaining quality of life and having people live well longer, are still the same." The



implementation of stereotactic body radiotherapy (SBRT) for lung in 2005 at PMH now allows for the treatment of patients once considered too unwell for aggressive treatment, who now have high rates of cure.

A faculty member with the UT DRO for the past twenty years, Dr. Bezzak has worked her way from Lecturer to Professor. She has held numerous leadership positions locally, nationally, and internationally, as the past Chair of the NCIC CTG Quality of Life Committee, member of the Palliative Radiation Oncology Program, Lung site group leader at PMH, and member of the Lung Cancer Disease Site Group Committee within Cancer Care Ontario's Program in Evidence-Based Care. Dr. Bezzak will be stepping into her next leadership role this year as President of the Canadian Association of Radiation Oncology (CARO). Her thoughts on the goals for the organization

are: "to continue to build CARO and increase the engagement of oncologists, physicists, and therapists. I will continue to advocate for the future of our specialty including jobs for our junior members and the involvement of radiation oncologists in improving outcomes of Canadians afflicted with cancer."

Dr. Bezzak credits the academic and professional environment at the University of Toronto and Princess Margaret Hospital as essential to her success: "Many of the opportunities that I have had were because I was at U of T and PMH. Especially when I was younger, it was the older colleagues who opened the doors and established opportunities. The first part is the opportunities and the second is the peer group; the fact that everybody is dedicated, working hard, and excelling is very motivating. It makes you want to achieve when you're in a group that's achieving."

Taking an active role in the education of trainees is an element within her career of which Dr. Bezzak is most proud. She explains, "One thing I'm most proud of is the trainees that I've interacted with who have established themselves and been successful in enjoying their careers. One of the biggest things I think I can do for my field is ensure that the radiation oncologists of tomorrow are the best they can be. I'm very passionate about excellence in clinical care and about being an oncologist, not just a radiation oncologist. Sometimes people think that it's only if they discover a new cell target or a new therapy that the future of cancer will be improved, but I think if you can leave a legacy of excellent clinical care you'll make a big difference."

Over the ten years since its inception in September 2001, the HDR Brachytherapy program at the Odette Cancer Centre has garnered a lot of attention for its innovation. The program, which treats three to six patients per week, has accomplished two 'firsts': the first cancer centre to perform High Dose Rate (HDR) brachytherapy treatment for prostate in one visit, and the first to use ultrasound imaging instead of CT to plan the procedure.

Set apart from other treatments by its minimal invasiveness and ability to deliver the highest dose possible while sparing surrounding organs, HDR treatment is ideal

for patients with intermediate disease who may not be interested in or eligible for surgery. Dr. Hans Chung explains "It's a higher dose, so there's a higher chance of curing the cancer. Because we can pinpoint the tumour, less radiation is delivered to surrounding areas, so there are fewer side effects. The advantage is that the treatment is minimally invasive, with only temporary placement of needles, and a cure rate comparable to surgery." Presently, the treatment is given as a boost preceding external beam radiation therapy (EBRT).

Traditional treatment with HDR brachytherapy involved two

fractions, or treatments, one week apart in addition to five weeks of external beam radiation therapy. Dr. Gerard Morton, Associate Professor in the UT DRO, explains his interest in treating with only one HDR 'boost': "Two fractions worked very well, but the problem was that it meant all our patients had to go through two procedures one week apart. It was not convenient for patients and involved a lot of additional resources."

With the team's vision focused on the long-term, they began to research new ways to improve the treatment process and, subsequently, patient outcomes. Dr. Morton explains, "Our real interest

(L-R) Drs. Andrew Loblaw, Gerard Morton, Hans Chung



CREATING A NEW STANDARD OF CARE

UT DRO PHYSICIANS ARE CHANGING THE WAY WE TREAT PROSTATE CANCER

was to see if we could come up with a better approach, and instead of having to do two fractions, do one. Instead of five weeks of EBRT, could we get away with a shorter course of radiation? What we've done is come up with a novel way of delivering HDR brachytherapy consisting of a single HDR treatment and combining it with three weeks of external beam. We calculated that, in theory, this would be equivalent to what we were giving before. It should have lower acute side effects for the patient and the same or better chance of controlling the cancer."

Current data for this treatment now dates back five years and sup-

ports the hypothesis. Dr. Morton and his colleagues put forward a few years ago. He explains, "Data confirms that our new, novel single fraction protocol works very well and very favourably compares with what we, and everybody else, had been doing previously." Dr. Chung adds, "the disease-free survival rates are very good. There's more and more data coming out. Recent reports suggest 90% biochemical control rates for intermediate-risk disease." The novel procedure has since been adopted by many other centres across Canada, the US, and Europe as the standard way of doing HDR brachytherapy for prostate cancer.

In late 2009, the program broke ground for a second time, using ultrasound to both guide the needles and plan the dose: "The patient comes to the operating room, is put under general anesthesia, has needles inserted via ultrasound, and

from start to finish, including treatment, is about one and a half hours compared to nearly six hours when we planned using CT images. Since we introduced this, we've treated approximately 250 patients. We are prospectively collecting patient quality of life data and outcome data to compare with what we were doing previously."

The team has no intention of stopping here. Dr. Morton explains that the "next step is to determine if we really need EBRT in addition to HDR and to develop protocols for treatment with HDR only." There is a lot of excitement about the future of treatment when a patient might come in, undergo a ninety minute procedure in the operating room, and have his cancer completely treated. This is something that Dr. Morton hopes to see come to fruition in the next 18 months: "It's part of some work we're doing now. We have a number of pieces in the puzzle, and a number of research projects ongoing looking at different types of ultrasound and MRI imaging to map out the tumour location. Our goal is to put all this information together so we can very precisely identify the timing of brachytherapy, locate the cancer, and selectively boost in that area. With some ongoing clinical trials, we'll start reducing the amount of external beam we're giving and hopefully get rid of it all together."

ports the hypothesis. Dr. Morton and his colleagues put forward a few years ago. He explains, "Data confirms that our new, novel single fraction protocol works very well and very favourably compares with what we, and everybody else, had been

right there and then we create a plan using the same ultrasound images. Treatment is given without having to move the patient. Because the patient isn't moved, we know the treatment given is very precise and accurate. The average length of time



Each year, the UT DRO engages the local, national and international oncology community through its extensive continuing education (CE) programming. Conferences, Rounds, and education courses are just a few of the initiatives hosted by the Department annually to engage the greater community in research and to drive implementation of research findings into clinical practice. With each passing year, the events are revitalized to meet the changing needs of the radiation oncology, medical physics and radiation therapy communities.

RTi3, established as the Kingsbridge Conference in 2003, began as a local CE event for radiation therapists and evolved to become the largest conference of its kind in Canada and amongst the largest in the world, with more than 130 attendees from five countries in 2011. The conference was re-branded in 2010 to represent three recurring themes: Inquire, Inspire, and Innovate, which reflect

student registration funded by a CIHR Meetings, Planning and Dissemination Grant.

RTi3 Co-chair Amanda Bolderston explains the success of the conference, "It's succeeded and grown because it fills a niche for radiation therapists. There has been a need, a gap, that we've been able to meet." Over the years, RTi3 has "evolved to become a more structured conference – with sponsor involvement, and a full two-day, accredited program."

The 2011 conference captured the interest and involvement of Medical Radiation Sciences students across Canada. The new student session "was one of the highlights of the conference, and one of the best-attended sessions. The quality of student work was obvious with students taking home the Best Poster and Best Podium Presentation awards."

The DRO's other annual conference, Target Insight, has also pursued new directions in recent

level. People want to know how to get IMRT or IGRT in their practice right now."

The 2011 conference was attended by a record high 190 participants, representing all fourteen cancer centres across Ontario. Dr. Milosevic explains, "We went from being a GTA meeting to a provincial initiative, bringing in expertise from across the province where it was appropriate." He describes this year's theme - On target, On track - as encapsulating the three aspects of IMRT implementation in Ontario: "utilization targets, that is, the issue of whether or not all people in the province who need or should have radiation treatment are being offered it and receiving it; targets for radiation safety; and traditional radiation treatment targeting – hitting the tumour every time. We wanted to discuss if Ontario is on track to deliver the best possible care to every patient."

As for the conference's future direction, Dr. Milosevic explains, "I

WE NEED TO BE ABLE TO IDENTIFY WHAT THE NEEDS ARE IN THE COMMUNITY AND RESPOND TO THOSE NEEDS MOVING FORWARD

the conference's focus on education, research, and clinical practice. Each year, RTi3's momentum has increased: initially due to the conference's amalgamation with Co-chair Tara Rosewall's Research Symposium, next with the participation of an international audience in 2010 thanks to a new partnership with Sheffield-Hallam University in England and, in 2011, with new travel grants and subsidized

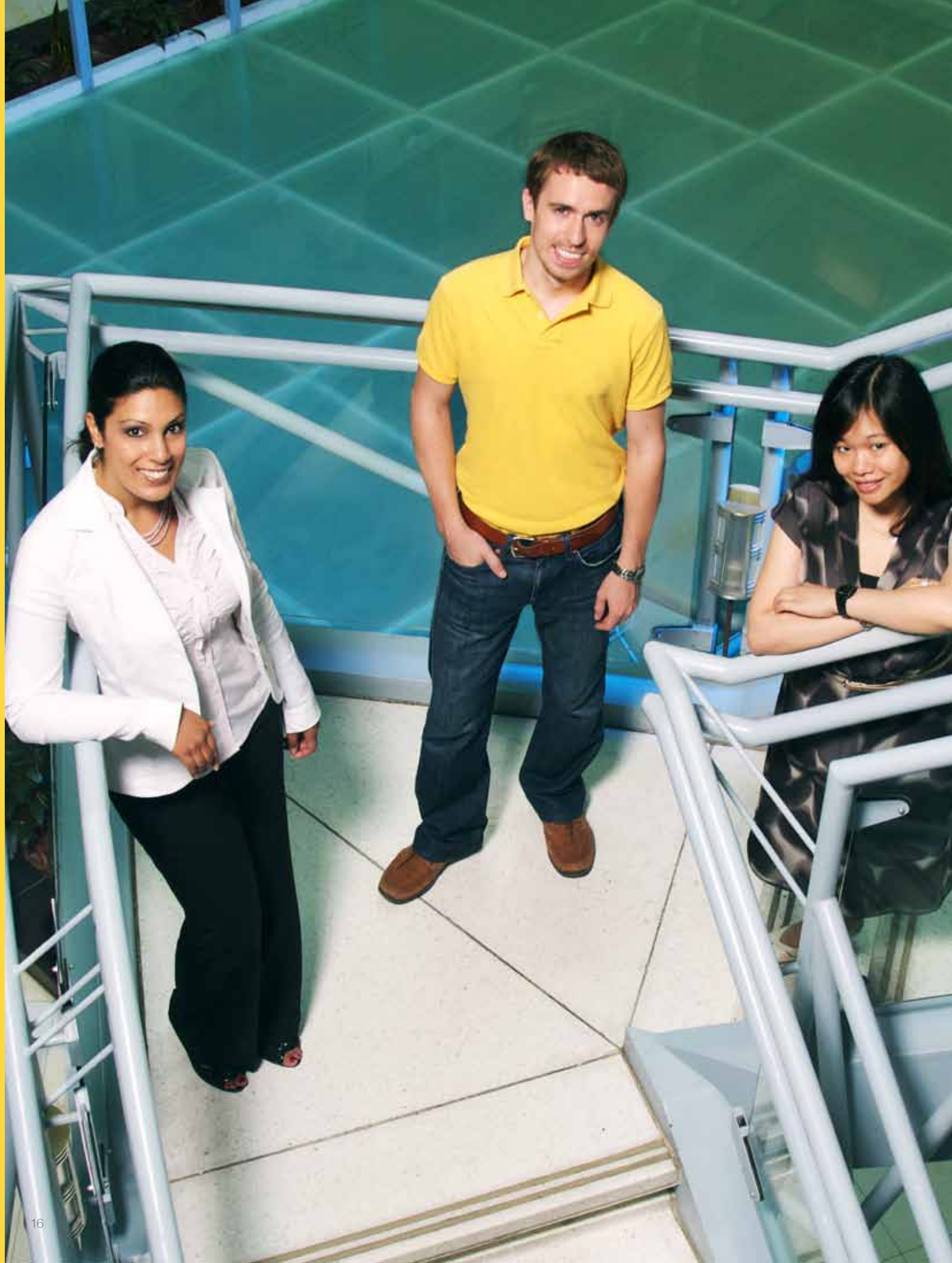
years. The conference, now in its fifth instalment over the span of a decade, shifted focus in 2010 due to a new partnership with Cancer Care Ontario. Conference Co-chair Dr. Mike Milosevic describes Target Insight as moving from "a research-focused program to a practice-changing program in 2010. The need we saw was in teaching how to translate research findings and new developments at the clinic

think the direction we've taken now is where we'll continue to go. We need to be able to identify what the needs are in the community and respond to those needs moving forward. It's to be expected that these needs will change over time as people become more and more comfortable with the kinds of things we've been talking about over the past couple of years. It's about bringing innovation and change to the community."



(L-R) Dr. Michael Milosevic, Amanda Bolderston, Dr. Michael Sharpe





THE NEXT GENERATION

FROM THE CLASSROOM TO THE CLINIC AND BACK. THESE MRS GRADS ARE SEARCHING FOR ANSWERS AND CHANGING POLICY, PRACTICE IN THE PROCESS.

(L-R) Gunita Mitera, Mike Velec, and Winnie Li

WINNIE LI

After learning about the Medical Radiation Sciences (MRS) program through friends who had entered one year earlier, Winnie Li, then finishing up her BSc at U of T, decided the program would be her next step. A member of the second graduating class of the U of T/Michener MRS program, Winnie caught the eye of the Radiation Medicine program at PMH and graduated in 2003 with a job offer at the Cancer Centre. In 2010 she was appointed Lecturer in the UT DRO.

Winnie is currently involved in education, supervising a course through Cancer Care Ontario for Radiation Therapists, and teaching at the IGRT Education Course with UT DRO colleagues Nicole Harnett and Caitlin Gillan.

Under Dr. David Jaffray's supervision, Winnie is also working towards an MSc through Institute of Medical Sciences. The Masters was a natural progression for Winnie, who was working as a Cone Beam Radiation Therapist full-time until January of 2010 when her studies began. She now works part-time at Princess Margaret Hospital on the Perfexion unit, and spends the rest of her time working on her degree. Perfexion, and stereotactic treatment in general, is Winnie's primary area of interest because "accuracy and precision are crucial so the consequences of inaccuracy can be severe." Her thesis is focused on determining if the stereotactic frames currently used to immobilize patients are as accurate as they are thought to be: "By affixing cone beam CT scanners to the perfexion unit, it will now be possible to more precisely determine the frame's accuracy. Once completed, the findings will be used to generate evidence-based margins for cranial tumors on the perfexion unit."

Winnie sees research as a necessary ingredient for the advancement of radiation therapists: "As a profession, for us to move forward, we need to do research, we need to do education. We need to get people interested in doing that little bit more." She has presented her work at the CARO and ASTRO Annual Meetings over the past couple of years, and will be presenting this year at CAMRT.

She expresses gratitude to have been hired at the Princess Margaret Hospital where her career has thrived: "I love working at PMH; it's provided me with great opportunities. Working with Dr. Jaffray, on the cone beam CT implementation, has taught me so much - much more than I would have anticipated I would ever learn."



MIKE VELEC

As a second-year BSc student at the University of Waterloo, Mike Velec realized his degree wasn't taking him in the right direction. When a career-interests test suggested radiation sciences, Mike started to do some research. It was then that he came across the MRS program and decided to apply. At the time, he didn't anticipate that he would later discover his passion for research, which led him to take on a 50/50 role (half clinical, half research) after one year at PMH, and now pursue an MSc degree through the U of T Institute of Medical Science.

For the past four years, he has been working with Dr. Kristy Brock, also his MSc supervisor, to determine how the accuracy of liver cancer radiotherapy can be improved using deformable image registration. He describes deformable image reconstruction as "a way of combining information in different images from different modalities and time points so you can better understand how the patient is responding to therapy."

Liver cancer has historically been a challenge to treat using radiation because the organ's shape and position change with respiration making tumor targeting difficult. Using deformable image registration in combination with stereotactic treatment, radiation professionals are now able to plan and deliver precise doses to the tumor: "With deformable registration we are able to track the patient at the time of treatment and see what dose is actually being delivered to the tumor. I think deformable image registration is another step toward making treatment more accurate. We think this technology will help many aspects of radiation therapy, but that the greatest gain will be for high-dose, limited fraction stereotactic treatment."

Working within, and seeking feedback from, a team of radiation oncologists, physicists, and therapists is crucial to Mike's work; it's a process that allows him to ensure his research translates to the clinical setting. Mike explains, "You need help every step of the way to make sure that your results are going to be meaningful for patients. You can look at numbers all day, but at the end of it you need to collaborate with clinicians to ensure your research will impact patients."

With his Masters degree nearing completion, Mike plans to continue developing his career, combining both clinical practice and research, and aims to seek an academic appointment with the UT DRO before the year is up.



GUNITA MITERA

Gunita Mitera's passion for her work is something you can hear in her voice. Graduating from the U of T/ Michener program in 2003, Gunita immediately began full-time work at the Sunnybrook Odette Cancer Centre, only recently leaving to commence her PhD in Health Services Research through U of T's Department of Health Policy, Management, and Evaluation. Gunita admits that after spending a few years in the clinic and gaining experience clinically and academically, she noticed "barriers in the system. I wanted to come up with ways to be more efficient in how we care for our patients. That got me thinking, 'how can I make a difference?'"

It was not long before she approached the question head-on and enrolled in a Masters of Business Administration program where her degree work, completed part-time, focused on health care specifically looking at total quality management. For Gunita, the motivation that propels each new research project forward is the potential to implement her results and improve patient access, safety, and quality of care within the cancer system.

"I really hope that I'm able to make a difference in the radiation therapy world in terms of heightening the research productivity that comes from radiation therapists and radiation therapy-led research projects that can eventually be implemented into evidence-based care for our patients. I would love to make a difference by improving the quality of care patients receive when they come for radiotherapy treatment. What I hope to get out of the PhD is the ability to bring the skills I'm learning back to the radiotherapy department."

Gunita will soon publish her research on the cost-effectiveness of stereotactic body radiotherapy (SBRT) for early-stage non-small cell lung cancer patients ineligible for surgery - an analysis never before completed using the Canadian healthcare system data. There is international excitement for implementing SBRT versus conventional radiotherapy for this cohort of patients; however, conducting a cost-effectiveness study in the Canadian health care context is an important part of the decision-making process and is crucial in helping decision-makers allocate resources for widespread implementation. She explains that although conventional therapy remains the



standard at most centres, her results have shown that "there is a cost-effectiveness advantage for SBRT in this cohort of patients with early stage non-small cell lung cancer. SBRT allows you to offer fewer treatments and fewer patient visits to the cancer centre, instead of many weeks of radiation. Thus, given the cost-effectiveness advantage, it may be worthwhile to consider investing resources into implement SBRT widely to reduce wait times and improve access to care."

She is also the principal investigator for an international study in metastatic spinal cord compression – a topic that captured her interest as an MRS student. The study, aimed at developing a quality of life module for this population of patients who experience unique quality of life issues, is operating under the guidance of the European Organisation for Research and Treatment of Cancer (EORTC). Gunita had the opportunity to present the study's first phase findings at the 2010 ASTRO meeting, receiving a lot of interest from oncologists, physicists, and therapists.

Currently, Gunita is focused on her full-time PhD work, which she expects to complete in 2015. Armed with five more years of research expertise, Gunita hopes to return to OCC and make a positive impact both within the department and larger cancer care system. She also sees herself seeking a new role within the DRO community as faculty.



THE HARDEST CHOICES

PGY4 resident Dr. Amanda Caissie is no stranger to hard work. She completed her PhD in ocular oncology at McGill while attending medical school full-time at Queen's. A native of the Maritimes, Dr. Caissie always imagined herself pursuing medical oncology, but it wasn't long before a unique opportunity led her down a different path.

A recipient of the Ivan Smith Award in her second year of medical school, Dr. Caissie was first exposed to radiation oncology while participating in the four week program at the Odette Cancer Centre. The experience won her over: "Radiation Oncology is very different. The big difference for me is that it's goal-oriented; you're

BRINGING DIFFICULT DISCUSSIONS TO THE FOREFRONT: ENCOURAGING TIMELY PATIENT – PHYSICIAN DIALOGUE IN PALLIATIVE CARE

Not Resuscitate' orders for patients with incurable cancer, and making recommendations where deficiencies exist. Timely DNR status discussions, those that occur within 24 to 48 hours of admission, are an essential component of palliative care. These conversations empower patients to make decisions about their care and similarly empower physicians to act according to the patients' wishes without relying on substitute decision-makers in dire situations. Dr. Caissie explains, "We've been able to show that if you don't have the timely discussion, it leads to more ICU consults and futile CPR attempts. It's not just hospital economics - it's important for the patient and their families as well."

IT'S NOT JUST HOSPITAL ECONOMICS - IT'S IMPORTANT FOR THE PATIENT AND THEIR FAMILIES

either aiming to cure or you're aiming to palliate an actual symptom. It was the palliative component that really drew me in."

Her interest in palliative radiation grew with clinical exposure where, over the span of one month during her clerkship years, she was able to see the remarkable benefits of non-curative radiation treatment: "As a medical student I saw that within one month a patient could come in miserable with bony pain, receive treatment, and leave with their pain controlled."

Dr. Caissie's passion for palliative care led her to seek out Dr. Camilla Zimmermann, Head of Palliative Care Services at the University Health Network, as a supervisor and collaborator. Her work with Dr. Zimmermann is focused on evaluating the policy and practice of 'Do

Dr. Caissie is keeping busy sharing her preliminary findings, recently giving an invited lecture at the Palliative Symptom Control meeting at the Temmy Latner Centre, a leading palliative care facility in Toronto. She also presented at the Ontario-wide Hospice and Palliative Care conference and the Annual Symposium of Multinational Association for Supportive Care in Cancer (MASCC) in Greece. Her palliative care research landed her the Best Resident Poster award last year at CARO, where she hopes to present additional work this fall.

She credits her supervisors for the support and opportunities she has received over the past couple of years. In addition to her code status research, Dr. Caissie has worked with Dr. Edward Chow on research specific to palliation in radiation oncology, and Drs. Shun Wong and Greg Czarnota on pre-clinical cancer research.

Looking to the future, Dr. Caissie expects her career to maintain an academic focus. "Through it all I want to maintain some kind of constant curiosity, be it on the research side of things or taking it into the clinical realm; to always ask 'why?'"

360 DEGREES OF TREATMENT

NEW TECHNOLOGY TARGETS TUMOURS FROM ALL ANGLES, DECREASES TREATMENT TIME UP TO 50%

The latest radiotherapy technology to be implemented at the Princess Margaret Hospital, Volumetric Modulated Arc Therapy (VMAT), decreases treatment time by up to 50% while maintaining both the accuracy and dose offered by Intensity Modulated Radiation Therapy (IMRT). This represents a tremendous step forward.

VMAT DELIVERS A VOLUMETRIC DOSE BY TREATING THE ENTIRE VOLUME OF THE TUMOR AND NOT JUST A SECTION OR SLICE

The mechanics behind VMAT are complex, requiring the synchronization of each element. The radiation beam is shaped with the multi-leaf collimator, the gantry moves around the patient at variable speed, and dose rate (beam intensity) is modulated as well. Its ability to treat faster is attributed to the constant movement of the machine, Dr. Létourneau explains, "...the treatment process is uninterrupted: the beam remains on while the arm, or gantry, moves around the patient at varying speeds, and the beam aperture changes shape. When the gantry moves and the beam crosses an organ at risk, the beam's intensity is

lowered to minimize radiation dose to healthy tissues. Unlike similar therapies, VMAT delivers a volumetric dose by treating the entire volume of the tumor and not just a section, or slice, while the patient remains unmoved."

The amount of time saved varies depending on the tumor site with approximately four to five minutes

being saved for prostate treatments, and as many as 15-20 minutes for body stereotactic spine and lung treatments. Currently, up to ten patients are treated with VMAT per week, totaling more than 100 since its implementation in the fall of 2010.

The efficiency VMAT offers is not only valuable for the department, allowing for the treatment of more patients, but also for patients. Faster treatments ease patient discomfort, shortening the length of time they must remain still on the hard treatment couch and minimizing patient and organ movement. Dr. Purdie elaborates, "It's faster and therefore more comfortable for the patient.





(L-R) Drs. Tom Purdie, Daniel Létourneau

It can be difficult maintaining a still position for long periods of time, so any amount of time saved is beneficial; even more so for patients who are elderly or in pain.”

The catch is that VMAT is not helpful for all disease sites. Current departmental results show VMAT to be useful for the treatment of prostate, lung cancer and spinal bone metastasis, while not beneficial for some other sites including breast. At this point, many other sites have yet to be explored. Dr. Létourneau explains, “the experience we’ve gained in terms of planning and delivery, and in quality control, has made us more ready to expand to other sites and take advantage of VMAT’s efficiency.”

Technology has come a long way, but there is still no one-size-fits-all approach to radiation therapy. Dr. Létourneau explains, “VMAT is not designed to replace all other types of delivery techniques, but rather complement our tool kit. There’s no reason to use VMAT for everything. For some sites it provides effective treatment, but there’s no single method that is suited for everything.” Dr. Tom Purdie agrees, “VMAT is another treatment option, not a complete replacement for IMRT as it’s not useful for all sites.”

A small group at Princess Margaret Hospital, lead by Dr. Létourneau, is currently involved in a province-wide quality assurance program focused on testing the quality of IMRT and VMAT planning and delivery. The program, funded by Cancer Care Ontario, aims to assess the current status of these treatment techniques in terms of process and performance: “In the end, we’ll have a big picture of what’s happening within the province. If there’s a variation in performance and in how IMRT and VMAT are planned and delivered, then there’s an opportunity to improve and raise the standard. We at PMH will learn from others too – there’s potential for improvement for everybody involved.”

Because VMAT is very new, expertise in the technology is constantly developing. Dr. Létourneau explains, “I think with more experience we’ll gain expertise and get better at the optimization of treatment plans.” As the home base for two of the world’s top cancer centres, UT DRO is always on the leading edge of technology: “There are constant upgrades in technology. Although many of these are smaller steps that don’t necessarily change our practice, we are constantly in a state of improvement.”



GAMMA KNIFE

**CROSSING DISCIPLINES AND
DIVISIONS TO TREAT BENIGN ILLNESS.**

Some of these patients don't face the traumatic diagnosis of cancer, many may not set foot inside a cancer centre, but like many who do their quality of life is increased dramatically thanks to radiation treatment. The Gamma Knife Program, in partnership with the UHN Krembil Neuroscience Centre at Toronto Western Hospital serves patients with neurological disorders, often facing a lifetime of pain or disability, who would otherwise be treated with life-long medication or invasive surgical procedures. Treatment by the Gamma Knife offers this group of patients another option; Dr. Cynthia Ménard explains, "What we bring to the table is an alternative treatment that is less invasive...It's a one-day treatment." Dr. May Tsao adds, "It's much easier to recover from Gamma Knife treatment than surgery. Instead of weeks to recover, it's a day or two."

The Gamma Knife Program owes its success to its multidisciplinary team of neurosurgeons, radiation oncologists, physicists, radiologists, radiation therapists and nurses. Dr. Ménard attests, "combining all of the expertise and approaching these problems as a group, and then treating in concert, is where the program's strength lies."

The Program's inclusion of experts from several hospitals is another unique feature, overcoming the barrier between hospitals that many programs tend to experience. Dr. Ménard explains, "It's really a U of T program. Not only does it cross disciplines in terms of pulling together people, it crosses hospitals. It's a joint program between Princess Margaret Hospital and the Krembil Neuroscience Centre, and includes radiation oncologists from the Odette Cancer Centre, and neurosurgeons from Sunnybrook and St. Michael's Hospital."

(L-R) Drs. Cynthia Ménard, May Tsao

The Gamma Knife's technology was developed in the 1950s by Lars Leksell. The past few decades with increased medical imaging techniques have dramatically improved its effectiveness and expanded the scope of the Program, which is a close collaboration with the Department of Medical Imaging: "We involve them in protocol development, image review, and the defining of radiosurgical targets."

The process for patients involves two visits to the Gamma Knife Centre - first for a consultation to assess eligibility for radiosurgery and obtain informed consent; and a second visit to receive treatment. During the treatment visit, a stereotactic frame is affixed to the patient's

The Program, which treats several patients per day, twice weekly, features an ever-growing follow-up practice. Currently, 30 to 40 patients are seen each clinic day, and more than 700 are followed throughout Ontario. Dr. Ménard explains follow-up is a key element of the Program: "These are not patients who succumb to their illnesses, usually, they're patients who survive. The reason we have the follow up practice is to pick up the late-effects of radiation. We are very well connected with telehealth; it allows us to maintain follow up with patients from across Ontario."

The future is never clear, so predictions of what's to come are challenging. Dr. Tsao offers her outlook: "In the

THE GAMMA KNIFE USES UP TO 201 BEAMS FROM AN ARRAY OF COBALT60 SOURCES CONVERGING IN A SINGLE POINT TO FOCUS THE RADIATION DOSE AND LIMIT RADIATION TO HEALTHY TISSUES.

skull using local anesthetic and four pins. The frame is the most invasive aspect of the procedure, but a necessary one; immobilizing the patient's head is crucial to the success of the treatment. Dr. Ménard explains, "It's a very precise and accurate treatment because the targets are small and the stakes are high. These patients are going to live a long time and they will live to know the consequences of poor treatment. We give very high doses to pinpoint targets and if we get that location wrong, the implications can be devastating." The Gamma Knife uses up to 201 beams from an array of cobalt60 sources converging in a single point to focus the radiation dose and limit radiation to healthy tissues.

scheme of things, I think we'll figure out ways to deliver the treatment accurately and safely without the current frame using advanced imaging techniques." Dr. Ménard envisions the Program serving new patient populations. Currently, individuals with arteriovenous malformations, trigeminal neuralgia, and acoustic neuromas comprise the majority of the patients treated within the Program, but the future might hold other uses. Dr. Ménard shares, "Perhaps new applications in neuroscience will be explored, even possibly including seizure disorders."

CONNECTING OUR COMMON TIES

UT DRO MOVES FORWARD TO
BUILD ALUMNI COMMUNITY

IT'S NO SECRET THAT OUR ALUMNI ARE ONE OF OUR GREATEST STRENGTHS AND ASSETS, OUR STRONGEST ADVOCATES AND REPRESENTATIVES FOR OUR DEPARTMENT WORLDWIDE. THEIR ACCOMPLISHMENTS IMPACT THE RADIATION ONCOLOGY COMMUNITY LOCALLY, NATIONALLY, AND INTERNATIONALLY. FOR MANY YEARS OUR ALUMNI WERE AN UNTAPPED RESOURCE. IN 2010, THE UT DRO, ALIGNING WITH THE FACULTY OF MEDICINE STRATEGIC PLAN, TOOK A STEP FORWARD TO DEVELOP A FORMAL ALUMNI ENGAGEMENT STRATEGY WHICH INCLUDED OUR FIRST ANNUAL ALUMNI RECEPTION DURING THE 2010 ASTRO ANNUAL SCIENTIFIC MEETING IN SAN DIEGO. THE WELL-ATTENDED EVENT HOSTED MORE THAN 80 ALUMNI REPRESENTING SEVERAL COUNTRIES INCLUDING THE UNITED KINGDOM, THE NETHERLANDS, IRELAND, AUSTRALIA, AND THE UNITED STATES.



ALUMNI SPOTLIGHT

DR. MAX DAHELE

Dr. Max Dahele joined the UT DRO as a Fellow in 2006, working first at the Odette Cancer Centre and subsequently Princess Margaret Hospital. The Fellowship program allowed him to “gain expertise in advanced radiotherapy techniques including IMRT, IGRT, lung SBRT, 4DCT, PET-CT and TomoTherapy” as well as “develop an academic focus and increase research output.” Currently working as a Radiation Oncologist at the VU University Medical Centre in Amsterdam, his interests include SBRT, imaging, and improving treatment efficiency. He is undertaking a PhD at VU University on stereotactic radiotherapy for lung and spine tumours. Dr. Dahele attended the first annual alumni reception in San Diego last year, and describes the event as “a lot of fun and a great opportunity to catch up with friends and colleagues.” He continues, “I put a lot in and took a lot away from the Fellowship program including a mentor. My experience has created opportunities as well as a sense of loyalty. I fully support the development of a U of T DRO alumni network.”



DR. JOHN CARSON

Dr. Carson entered the radiation oncology residency program in 1978, prior to the Department's division from the Department of Radiology. He was previously enrolled in the Internal Medicine program at Dalhousie, but changed his focus after meeting then-Medical Director at Princess Margaret Hospital Dr John Simpson: “Princess Margaret Hospital was then, and still is one of the best radiation oncology centers in the world. I saw such an incredible variety of diseases, and had the opportunity to learn clinical radiation oncology as well as the technical aspects, from the very best.” Dr. Carson is now an Associate Professor of Radiation Oncology at Dalhousie University, where he is involved in teaching the Radiobiology course to PGY 3-5 residents. His clinical practice is based out of the Saint John Regional Hospital, one of Dalhousie's principal teaching hospitals. Dr. Carson has been the principal investigator for RTOG trials in his centre for more than twenty years – a responsibility he is now passing on as he nears retirement. Dr. Carson sums up his career with one sentiment: “it has been an amazing ride.”



DR. DORIANNE RHEAUME

Initially attracted to Medical Oncology, Dr. Rheaume credits then-resident Dr. Judith Balogh for encouraging her to consider Radiation Oncology. Presently Professor of Radiation Oncology at Dalhousie University, Dr. Rheaume's focus is on NeuroOncology, Lung, and Breast Cancer. She is involved with the NCIC and EORTC studies, currently participating as a local principal investigator on a study of Radiation versus Chemotherapy for Low Grade Gliomas. During her twenty-year career, Dr. Rheaume has held medical and administrative leadership positions, ranging from Chief Resident in Radiation Oncology at PMH, seven-year Secretary-Treasurer of CARO and, most recently, as Chair of the Royal College Specialty Committee for Radiation Oncology. She attributes her success to her training and experiences in the UT DRO: “It was at Princess Margaret Hospital that I learned what effective leadership in Medicine looked like. Bernard Cummings, Tom Keane and Mary Gospodarowicz, among others, all influenced my career indelibly.”



VIRTUAL EDUCATION

REAL WORLD CONNECTIONS

Knowledge-transfer, and the sharing of expertise, has become a thing of relative ease, free from geographic, financial, and even time constraints. With video conferencing technology, supported by the

Video conferencing doesn't just help the UT DRO keep faculty informed, it also helps the Department act as a leader to other centres in Ontario. Dr. Wiljer shares, "As the largest Radiation Oncology

the technology offers Sudbury "the benefit of accessing PMH and OCC CE effortlessly. It puts us in closer contact despite the limitations of geography." Virtual attendance offers substantial benefits, being

WHEN IMPLEMENTING NEW PROCEDURES, WE LOOK TO THE DRO FOR GUIDANCE

Ontario Telemedicine Network, the UT DRO is able to share know how, exchange knowledge, and engage in dialogue seamlessly with doctors and other health care professionals at cancer centres throughout the province.

Over the past five years the UT DRO has arranged monthly rounds with the Princess Margaret Hospital and Odette Cancer Centre alternating hosting responsibilities. Continuing Education Director Dr. David Wiljer explains, "Our Department is distributed, with faculty at the Princess Margaret Hospital, Odette Cancer Centre, Southlake Regional Health Centre, Royal Victoria Hospital, and Credit Valley Hospital. To ensure everyone has the same educational opportunities and is informed in the same way, video conferencing provides an obvious service."

department in Canada, we have an obligation to play a leadership and knowledge-sharing role for colleagues at other centres regionally, nation-wide and internationally." Currently, cancer centres in Sudbury and Thunder Bay participate in the monthly UT DRO Rounds. Dr. Andrew Pearce, a radiation oncologist at the Sudbury Regional Hospital, agrees: "When implementing new techniques and procedures, we look [to the UT DRO] for guidance." His colleague, physicist Dr. Konrad Leczczyński sees Rounds as "a nice way to connect with leading radiation oncology centres and hear what they are doing. They give us a bit of coaching."

Through the Ontario Telemedicine Network, the DRO has been afforded the chance to provide educational opportunities that would otherwise not exist for those outside Toronto. Dr. Pearce feels

both time and cost-effective: "the frequency with which we can send ourselves and staff is limited; nothing is lost by us not being physically present – we see the speaker and slides and can participate. It would be impossible to attend this much external CME without the technology."

It's not only the chance to share knowledge that benefits all centres involved, but also the increased opportunities for collaboration and engagement. Dr. Konrad Leczczyński explains: "we get to know people in Toronto a bit better so it's easier to initiate further contact regarding collaboration." Dr. Pearce agrees, "It's a starting point for direct contact." Staff from PMH and Sudbury have already taken the next step in strengthening their relationship with radiation oncologists and planners regularly taking part in exchanges between the two centres.

CLINICAL REPORT

The past twelve months have witnessed continuing growth of the clinical, research and educational activities of the Radiation Medicine Program at Sunnybrook Health Sciences Centre - Odette Cancer Centre and Princess Margaret Hospital.

Over 14,000 radiation oncology patients were seen in academic year 2010-2011, and about 16,600 courses of radiation treatment were

delivered. Upgrades to the existing clinical infrastructure continued. Princess Margaret Hospital faculty provided consultations in many collaborating institutions including St Michael's and St. Joseph's Hospitals in Toronto and the Southlake Cancer Centre in Newmarket. Similarly, the Odette Cancer Centre continues to foster its regional leadership role in cancer care. In addition to co-managing the temporary radiation

treatment facility at the Royal Victoria Hospital, Radiation Oncologists continued to participate in peripheral clinics and multidisciplinary cancer conferences at a large number of academic and community hospitals both within and outside of the Toronto Central LIHN. Two new clinics, Breast and Gastrointestinal Radiation Oncology, were initiated at The Scarborough Hospital.

WE ARE PROUD OF THE MANY FACULTY WHO RECEIVED **AWARDS** DURING THE PAST YEAR AND WELCOME A GROUP OF **OUTSTANDING NEW LEADERS** TO THE DEPARTMENT.

FACULTY HIGHLIGHTS

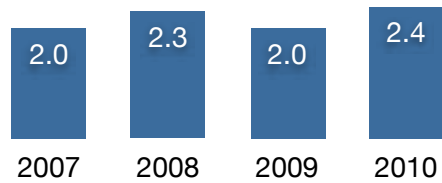
- New appointments: Full hires Dr. Caroline Chung, Assistant Professor; Dr. Stanley Liu, Assistant Professor; Dr. Warren Foltz, Assistant Professor; Dr. Teodor Stanescu, Assistant Professor; Dr. Justin Lee, Assistant Professor; Mr. Neil D'Souza, Lecturer, Ms. Carina Feuz, Instructor; Ms. Florencia Siu Moon Jon, Instructor; Ms. Kieng Tan, Instructor; Cross-appointed Dr. Masoom Haider: Professor; and Adjunct faculty Drs. Marisa Finlay, Jonathan Tsao, Charles Hayter, Glenn Jones, Jidong Lian, Christiaan Stevens, and Yongjin Wang.
- Dr. Bernard Cummings was awarded the prestigious ASTRO Gold Medal in recognition of his outstanding contributions to the field of radiation oncology, including research, clinical care, teaching and service.
- Dr. Andrea Bezzak was announced President-Elect of CARO
- Dr. Eileen Rakovitch was appointed Campbell Chair in Breast Cancer Research
- Ms. Tara Rosewall was awarded the CAMRT fellowship for 2011 in acknowledgement of her advanced competence, personal commitment, and contribution to the growth of the profession and the association.
- Dr. Gregory Czarnota was appointed Director of Cancer Research at Sunnybrook Health Sciences Centre
- Dr. Mary Gospodarowicz was made President-Elect of the Union for International Cancer Control (UICC). She will take office at the UICC AGM in Montreal in 2012.
- Dr. Laura Dawson was elected to the ASTRO Board of Directors for a four-year term beginning October 31, 2010
- Ms. Kieng Tan and Ms. Wendy Flanagan received CAMRT's Phillips Award
- Ms. Shao Hui (Sophie) Huang received the Best Poster Award at ESTRO (European Society for Therapeutic Radiation Oncology)
- Dr. 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).
- Dr. Bradly Wouters was awarded the 2011 Breur Medal from ESTRO

2010/11

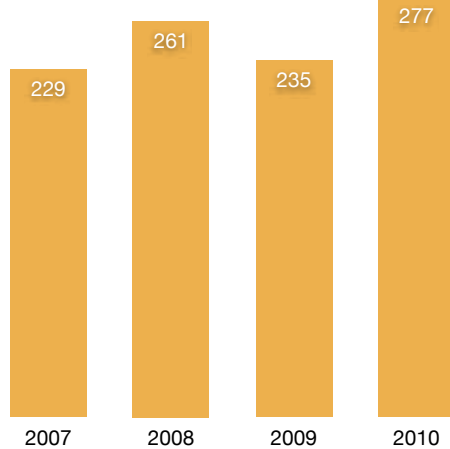
RESEARCH HIGHLIGHTS

PUBLICATIONS

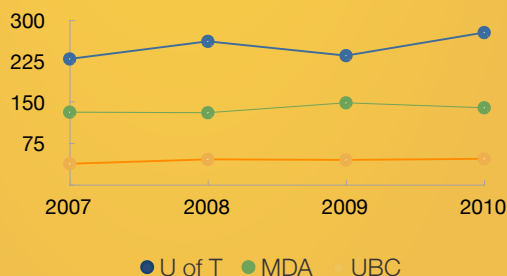
Publications per Investigator



Total Publications



Publication Comparison



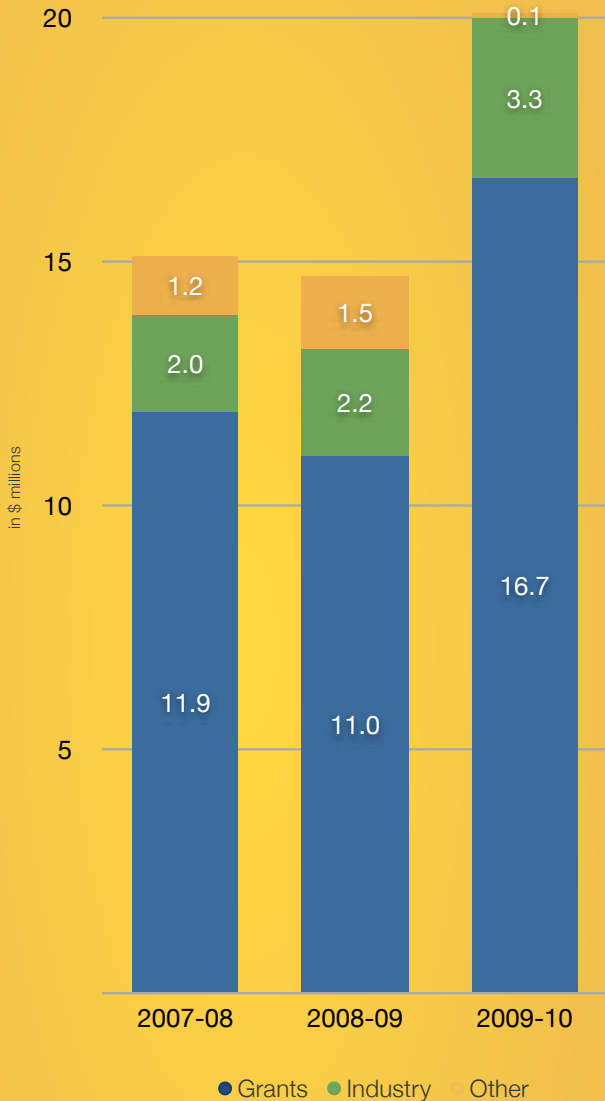
RESEARCH PROGRAM

Members of UT DRO have made significant gains in research funding and productivity in the last year. The current faculty has tremendous strength and expertise in diverse research areas that spans molecular radiation biology, radiation physics and imaging, outcome studies and clinical trials, and health services and epidemiology. Strong collaborations, both within and beyond the University (national and international), have been established. In the UT DRO strategic plan, the faculty has identified the need to centre our research efforts on the urgency to improve patient care and outcomes. The following themes on research have emerged based on the recent completed strategic planning of UT DRO:

- Repairing radiation damage including developing the world's first program in "Radio-Repair"
- Optimized biological and physical targeting for the patient including multidisciplinary, multimodal targeting, initiating radioisotope therapy research, and smart particle therapy research
- Informatics for radiation oncology including creating a Toronto-wide data warehouse.
- Metastatic and recurrent disease research including building the best metastatic disease management program in the world.

The faculty is currently working on an implementation strategy to develop these four research themes.

FUNDING



FUNDING HIGHLIGHTS

- Dr. Robert 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.
- Dr. Greg Czarnota secured a \$421,000 grant from Cancer Care Ontario for research entitled “Combined ultrasound and optical methods for personalizing care in locally advanced breast cancer.”
- Dr. Lawrence 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.
- Dr. Rebecca 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.”
- Drs. 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.
- Dr. Jean-Philippe Pignol secured a CIHR Operating Grant valued at \$130,323 for his work with Dr. Ivo Olivotto entitled “Long term outcomes of a multicentre controlled clinical trial of breast irradiation using IMRT.”

Yearly Research Funding*

2011 Research Report corresponds to the 2010/2011 academic year. However, funding statistics for 2010/2011 are not available at time of report generation, therefore, reported funding stats correspond to 2009/2010 academic year. Numbers reflect funding dollars per year, not total grant value.

...THE FACULTY HAS IDENTIFIED THE NEED TO CENTRE OUR RESEARCH EFFORTS ON THE URGENCY TO IMPROVE PATIENT CARE AND OUTCOMES

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