



Radiation Oncology
UNIVERSITY OF TORONTO

2023-2024 ANNUAL REPORT

UNIVERSITY OF TORONTO
DEPARTMENT OF RADIATION ONCOLOGY



Vision

Global leadership in Radiation Oncology by transforming practice through innovation and excellence in Research and Education.



Mission

We prepare future radiation medicine leaders, contribute to our communities, and improve the health of individuals and populations through discovery, application, and communication of knowledge.



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Dr. Laura Dawson

CHAIR'S WELCOME



Several highlights illustrate the accomplishments of our UTDRO faculty throughout 2023. The Medical Radiation Sciences (MRS) Program, under Ms. Cathryne Palmer and Ms. Kieng Tan, has been highly praised for its significant achievements. Notably, two MRS students were selected to present their research at the Canadian Association of Medical Radiation Technologists (CAMRT) Annual General Meeting held in Saint John, New Brunswick. The Postgraduate Medical Residency Program, led by Dr. Andrea Bezjak, has also excelled, with residents earning numerous awards and presentations while also seamlessly integrating into the Competence by Design curriculum despite pandemic challenges. Our Fellowship Program, directed by Drs. Jennifer Croke and Irene Karam, continues to draw top talent globally, with fellows making significant strides through research and publications. The Physics Residency Program, under the leadership of Dr. Andrea McNiven and now Dr. Patricia Lindsay, is highly regarded for its educational excellence, with residents at five GTA cancer centres actively engaging in clinical development, implementation, and academic contributions. Additionally, the newly launched MR-integrated Radiation Therapy (MRiRT) Training Program, led by Ms. Darby Erler and Ms. Mikki Campbell, has set a new benchmark in radiation therapy education by offering vital training in response to the growing importance of MRI in the field. Complementing these efforts, the Clinical and Experimental Radiobiology Course, run by Dr. Marianne Koritzinsky, has provided a comprehensive and highly-regarded week-long hybrid program that covers critical aspects of radiation biology with an emphasis on clinical

application and Continuing Professional Development. Adding to these achievements, our research portfolio, spearheaded by Dr. Michael Milosevic, has been notably exceptional this year with groundbreaking AI-based research that is advancing treatment effectiveness and efficiency on a global scale.

In 2023-2024, we were honoured to host our Annual General Meeting at the Faculty Club, an Alumni Reception at ASTRO in the beautiful city of San Diego, California, and another Alumni Reception at ESTRO in the charming city of Glasgow, UK. These events provided memorable reunions, bringing together over a hundred UTDRO alumni, friends, and/or faculty from around the world to celebrate our department's achievements.

Additionally, in August and December 2023, UTDRO hosted the Toronto Initiative for Diversity and Excellence (TIDE) Unconscious Bias Training. This two-part series, led by Professors Maydianne Andrade and Bojana Stefanovic, addressed and mitigated unconscious biases within academic settings, thereby enhancing inclusivity and equity within our department.

My sincere thanks to our three Vice Chairs, Drs. Eileen Rakovitch, May Tsao, and Michael Milosevic for their counsel, assistance, and dedication throughout the academic year. I am also deeply grateful to our Leadership Team for their commitment and hard work in deploying our programs and supporting our trainees. Finally, I would like to thank our faculty members, trainees, and UTDRO staff whose collective contributions uphold our department's esteemed status as a world-renowned leader in radiation medicine.

It is my pleasure to present the University of Toronto's Department of Radiation Oncology (UTDRO) Annual Report for 2023-2024. This year has been marked by significant achievements, growth, and celebrations that underscore our continued commitment to excellence in patient care, research, and education.

We are excited to welcome 12 new faculty members and congratulate the 13 faculty members who have been promoted over the past two academic cycles. Additionally, we are excited to introduce our new leadership team: Drs. Kathy Han, Patricia Lindsay, Eric Leung, Aruz Mesci, Andrew McPartlin, Srinivas Raman, and Hanbo Chen. We also extend a warm welcome to our new executive committee members, Ms. Winnie Li and Dr. Beibei Zhang.

Vice Chair Reports



EDUCATION

DR. MAY TSAO
VICE CHAIR, EDUCATION

Since the last UTDRO Annual Report (2019-2020), we have emerged from the challenges of the pandemic and have persevered in our mission to excel in our comprehensive range of training programs and education. From the academic years 2020-2021, 2021-2022 and 2022-2023, UTDRO was home to 273, 275, 286 undergraduate medical radiation sciences students, 12, 13, 12 physics residents, 22, 23, 24 radiation oncology residents, and 25, 30, 26 radiation oncology fellows, respectively.

During this time, we have had several successful accreditations (Radiation Oncology Residency 2020, and Medical Physics Residency 2022).

Our Medical Radiation Sciences Program (led by Ms. Cathryne Palmer and Ms. Kieng Tan) is praised locally, nationally and internationally as a well-run, high functioning educational program providing effective teaching and research mentorship by clinical faculty. Several radiation therapy students successfully completed research projects and had their abstracts accepted for presentation at the RTi3 Conference and UTDRO Research Day.

UTDRO faculty continued to be actively involved in the Undergraduate Medical Education Program by serving as tutors for several courses and by serving as mentors and teachers for numerous elective and selective students. Dr. Derek Tsang

completed his term as Director, Undergraduate Medical Education in 2023. Under his leadership, there continues to be increased Radiation Oncology engagement and representation in the undergraduate medical education curriculum. Dr. Srinivas Raman (who took on the role of Director, Undergraduate Medical Education in 2023) won the MD Program Teaching Excellence Award in 2021-2022.

The Postgraduate Medical Residency Program, under the leadership of Dr. Andrea Bezjak, continues to flourish with our outstanding radiation oncology residents. Our trainees are notable for their dedication as caring, compassionate physicians. In addition, our residents continue to be active in research and education initiatives, which have led to numerous conference presentations, publications and awards. Since our last annual report in 2019-2020, our residents have trained through the challenges of the pandemic and are now fully immersed in the Competence by Design curriculum.

The Fellowship Program at UTDRO (under the leadership of Drs. Jennifer Croke and Irene Karam) continues to attract impressive Radiation Oncologists nationally and internationally. Fellowship research projects are now being presented for effective feedback with a peer-review process. Many UTDRO Fellows have presented their work in scientific conferences, published in notable journals and have won research awards. Graduates continue to lead in their areas of expertise

gained from our UTDRO fellowship program.

The Physics Residency Program (under the leadership of Dr. Andrea McNiven and now Dr. Patricia Lindsay) is well known as an excellent educational program with physics residents assigned to one of five participating cancer centres in the GTA. Our physics residents not only learn and teach in our large, well equipped strong academic environment, they are also actively engaged in clinical development and implementation.

Our department's Continuing Professional Development (CPD) programs are led by Drs. Barbara-Ann Millar and Ewa Szumacher. Dr. Szumacher won the Colin Woolf Long Term Contributions to CPD in 2020-2021 and Dr. Millar won the Colin Woolf Award for Long Term Contributions to CPD in 2022-2023.

Dr. Marianne Koritzinsky won the 2020-2021 Colin Woolf award for Excellence in Program Development and Co-ordination in her role as Program Director for Clinical and Experimental Radiobiology Course. In 2023, Dr. Fei-Fei Liu was the recipient of the ASTRO mentorship award.

Thank you to all our trainees, education leaders, UTDRO Faculty and education administrative staff for our continued successes in education as we continue to move forward with a growth mindset filled with curiosity and exchanges of knowledge and ideas.



CLINICAL AFFAIRS

DR. EILEEN RAKOVITCH
VICE CHAIR, CLINICAL AFFAIRS

The University of Toronto, Department of Radiation Oncology (UTDRO) is dedicated to providing exceptional patient care, advancing research, and educating future leaders in the field. It is my pleasure to report the highlights of our achievements over the past year, including new faculty appointments, promotions, departures and retirements who ensure the future of UTDRO remains very bright!

We are delighted to welcome several new faculty members to our team. At Trillium Health Partners Mississauga Hospital: Drs. Andrew Chiang and Thomas McGowan. At Princess Margaret Cancer Centre: Ms. Joanna Javor, Drs. Dana Keilty, David Kirsch, Jennifer Kwan, Nauman Malik, and Yat Tsang. At Odette Cancer Centre: Drs. Deepak Dinakaran, Annie Hsu, and Ms. Michelle Nielsen, and at Royal Victoria Hospital, we welcome Dr. Catherine Vanderwater.

Over the past year, several faculty members have departed from UTDRO to take on extraordinary roles across Canada. Dr. Andrea McNiven has joined Alberta Health Services in Calgary as the Director of Medical Physics. Mr. James Loudon has moved to British Columbia to become the Director of Provincial Programs at BC Cancer. Dr. Melanie Davidson has also relocated to British Columbia, where she serves as Senior Medical Physicist at Kelowna General Hospital. Dr. Yiwen Xu also moved to British Columbia at the BC Cancer Agency as a Medical Physicist. Additionally, Dr. Humza Nusrat has joined Detroit at the Henry Ford Hospital as a Senior Staff Physicist. We would like to recognize their outstanding contributions to UTDRO and wish them well in their future endeavours!

In memoriam: Dr. David Beachey

We remember Dr. David Beachey who peacefully passed away, surrounded by family on May 15, 2024. Dr. Beachey's career was distinguished by his pioneering work in medical physics, starting at Sunnybrook Health Sciences Centre in 2001 and later becoming a cornerstone of UTDRO in 2025. His expertise in Linac quality

control and passionate commitment to educating the next generation of medical physicists left a significant mark on our department. Dr. Beachey will be warmly remembered for his boundless kindness, profound knowledge, and infectious humor. Our heartfelt condolences go out to Dr. Beachey's loved ones and colleagues as we honour his enduring legacy.

Several colleagues retired clinically in 2023-2024. On behalf of UTDRO, we express our gratitude and best wishes to Drs. James Brierley, Richard Tsang, Mary Gospodarowicz, Anthony Fyles, Normand Laperriere, Katharina Sixel, Shun Wong, and Jolie Ringash. Thank you for your mentorship, collegiality, leadership and invaluable contributions to research and education.

Departed and Retired Faculty



**DR. ANDREA
MCNIVEN**



**MR. JAMES
LOUDON**



**DR. MELANIE
DAVIDSON**



**DR. YIWEN
XU**



**DR. HUMZA
NUSRAT**



**DR. JAMES
BRIERLEY**



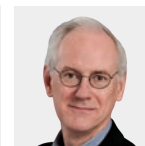
**DR. RICHARD
TSANG**



**DR. MARY
GOSPODAROWICZ**



**DR. ANTHONY
FYLES**



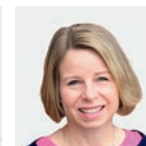
**DR. NORMAND
LAPERRIERE**



**DR. KATHARINA
SIXEL**



**DR. SHUN
WONG**



**DR. JOLIE
RINGASH**

CLINICAL AFFAIRS

DR. EILEEN RAKOVITCH
VICE CHAIR, CLINICAL AFFAIRS



Promoted Faculty



DR. ALI
HOSNI



DR. DAVID
SHULTZ



DR. WILLIAM
TRAN



DR. JILLIAN
TSAI



DR. DEREK
TSANG



DR. ALEXANDRA
RINK



DR. DANIELLE
RODIN



DR. TEODOR
STANESCU



DR. DANNY
VESPRINI



DR. ROBERT
WEERSINK



DR. JENNIFER
CROKE



DR. BENJAMIN
LOK



DR. CATHERINE
COOLENS

Over the past 2 years, we are proud to continue the tradition of successful faculty promotions in recognition of the national and international impact of UTDRO's scholarly contributions. Congratulations to Drs. Ali Hosni, David Shultz, William Tran, Jillian Tsai, Derek Tsang, Alexandra Rink, Danielle Rodin, Teodor Stanescu, Danny Vesprini, Robert Weersink, Jennifer Croke, and Benjamin Lok who were promoted to the rank of Associate Professor and Dr. Catherine Coolens who was promoted to the rank of Full Professor.

In addition, we are thrilled to congratulate Dr. Andrea Bezjak, who was named a 2024 ASTRO Fellow, Dr. Barbara-Ann Millar who received the prestigious Colin Woolf Award for Long-term Contributions to Continuing Professional Development, Dr. Padraig Warde on his appointment to the 2022 Order of Ontario, Dr. Meredith Giuliani who

was named a Fellow of the American Society of Clinical Oncology (FASCO), Dr. Jan Seuntjens who was honoured as the 2024 AIMBE Fellow, Dr. Fei-Fei Liu who was awarded the ASTRO mentorship award, Dr. Bradly Wouters who was elected as a Fellow of the Canadian Academy of Health Sciences, and Dr. Jay Detsky who was awarded the 2024 Annual Meeting Steven A. Leibel Memorial Award. These tremendous accomplishments recognize our longstanding impact towards improving cancer care and patient outcomes.

It's been a very productive few years. I would like to extend my gratitude to our committee members for their dedication and hard work. From the Department Appointment Committee, thank you to Drs. Mark Ruschin, Hans Chung, Philip Wong and Ms. Sophie Huang. From the Department Continuing Appointment Committee, we'd like to thank Drs. Laura Dawson, Alex Louie, Stanley Liu, Rebecca Wong, David Kirsch, Arjun Sahgal, Kathy Han, and Danielle Rodin and from the Department Promotions Committee, we express our thanks to Drs. Laura Dawson, Gerard Morton, Patrick Cheung, Mike Milosevic, May Tsao, David Hodgson, Jan Seuntjens, Alex Vitkin, Kathy Han, & Danielle Rodin. A special thank you to Ms. Ruby Han, Ms. Diana Lam and Ms. Prentice Fraser whose diligent oversight and coordination of UTDRO ensure we adhere to the university policies and procedures and whose efforts ensure we achieve our collective goals.



2023 ASTRO ANNUAL MEETING
PAY IT FORWARD
PARTNERING WITH OUR PATIENTS

Dr. Fei-Fei Liu awarded with the 2023 ASTRO Mentorship Award



RESEARCH

DR. MICHAEL MILOSEVIC
VICE CHAIR, RESEARCH

UTDRO and its affiliated academic and community hospitals, and research institutes comprise one of the largest, most productive academic radiation medicine programs worldwide. UTDRO researchers are at the forefront of radiation treatment innovation at every point along the patient journey, from early diagnosis and treatment response monitoring to high precision, image guided adaptive treatment, biological response modification, end-of-life care and long-term survivorship. One example is the leadership of UTDRO investigators in cutting edge AI-based research to improve treatment effectiveness and efficiency and disseminate these advances worldwide.

In 2023-24, there were 523 unique, peer-review research papers published by UTDRO faculty, many in high impact journals. Three examples among many include Dr. Tsai's report of the practice-changing CURB clinical trial in The Lancet, Dr. Han's and Dr. Leung's collaborative, validation clinical study of circulating HPV DNA in patients with cervical cancer published in the Journal of Clinical Oncology and Dr. Hahn's and Dr. Rakovitch's study of molecular characterization to guide treatment of patients with breast DCIS, also published in the Journal of Clinical Oncology.

Collectively, UTDRO faculty held a total of over \$21M in peer reviewed research funding in 2023-24, including over \$16M in grants with a UTDRO PI. Notable new

grants last year include Dr. Lok's Terry Fox New Frontier's Program Project Grant in small cell lung cancer, Dr. Poon's CIHR Grant for a phase III clinical trial of SBRT in HN cancer patients unable to tolerate conventional treatment and Dr. Rink's CIHR Project Grant to develop AI-assisted contouring for cervical cancer brachytherapy.

UTDRO Research Day on May 9, 2024 was one of the highlights of the academic year and showcased the cutting edge radiation medicine research by UTDRO trainees. Once again, UTDRO joined forces with the STARS21 training program, bringing together both clinical and basic science researchers. A record number of abstracts were submitted, resulting in 24 podium presentations and 48 poster discussions, all of which were of the highest caliber. Dr. Cynthia Menard, a UTDRO alumnus, gave a wonderful address entitled: Lessons from Data: Empowering Strides in Cancer Care, highlighting challenges in her career that remain relevant today and how she overcame them.

I extend my sincere gratitude to everyone in the UTDRO community who contributed to our research successes in 2023-2024, including those who committed time and resources to ensure the academic growth of our trainees and those who served as grant and abstract reviewers. I would like to thank Dr. Marianne Koritzinsky for her continued insight and support as UTDRO Director of Research, and Drs. Anne Koch and Shane

Harding for their leadership of the STARS21 program. Finally, I would like to thank the members of the UTDRO Research Committee (Drs. Adam Gladwish, Anthony Fyles, Eric Leung, Jean-Pierre Bissonnette, Lee Chin, Marianne Koritzinsky, Michael Velec, and William Tran) and all of the UTDRO office staff for their ongoing support and commitment to harnessing the full academic potential of our program and shaping the future of collaborative radiation medicine research.



Drs. Shane Harding, Michael Milosevic, Laura Dawson, and Anne Koch at our 2024 UTDRO Research Day event

Research Highlights

REPORTING PERIOD: JANUARY 1, 2023 TO JUNE 30, 2024

PUBLICATIONS



523

TOTAL PUBLICATIONS



2.38

PUBLICATIONS PER
INVESTIGATOR

FUNDING



\$21.8M

TOTAL FUNDING

Note: These figures include data for faculty at fully-affiliated hospitals and research institutes. The total funding includes funding for Principal Investigators and Co-Principal Investigators only and excludes large infrastructure grants.

Welcoming New Faculty

REPORTING PERIOD: JANUARY 1, 2023 TO JUNE 30, 2024



DR. ANNIE HSU, ASSISTANT PROFESSOR

Dr. Annie Hsu, PhD, is an Assistant Professor and Medical Physicist at the University of Toronto's Department of Radiation Oncology. Based at Sunnybrook Health Sciences Centre's Odette Cancer Centre, her focus includes optimizing treatment efficiency, patient safety through automation, and workflow productivity enhancement in radiation therapy.



DR. JENNIFER KWAN, ASSISTANT PROFESSOR

Dr. Jennifer Kwan, MD, PhD, FRCPC, is an Assistant Professor in the Department of Radiation Oncology, University of Toronto. She is a Radiation Oncologist-Clinician Scientist at the Princess Margaret Cancer Centre and cares for patients in the Breast and Adult Radiation Late Effects Clinics. Her lab investigates novel biomarkers and therapeutics to mitigate treatment-related toxicities.



DR. NAUMAN MALIK, ASSISTANT PROFESSOR

Dr. Nauman Malik, MD, MSc, FRCPC, DABR is an Assistant Professor at the University of Toronto's Department of Radiation Oncology, based at Princess Margaret Cancer Centre. His research includes personalized adaptive treatments with a focus on head & neck, gynecological cancers, and hematological cancers, and novel applications of interventional approaches such as brachytherapy.



MICHELLE NIELSEN, ASSISTANT PROFESSOR

Ms. Michelle Nielsen is an Assistant Professor and Medical Physicist at the University of Toronto's Department of Radiation Oncology, based at Sunnybrook's Odette Cancer Centre. Her expertise includes radiation oncology quality management and integration of novel technologies to advance radiation medicine, with a focus on adaptive radiation therapy.



DR. DANA KEILTY, ASSISTANT PROFESSOR

Dr. Dana Keilty, MDCM, MSc, FRCPC, is an Assistant Professor and Radiation Oncologist at the University of Toronto's Temerty Faculty of Medicine. She serves at Princess Margaret Cancer Centre and the Hospital for Sick Children, specializing in adaptive radiation approaches and technologies, Gamma Knife procedures, and central nervous system and pediatric oncology. Her research focuses on outcomes and toxicities with adaptive radiation.



DR. DEEPAK DINAKARAN, ASSISTANT PROFESSOR

Dr. Deepak Dinakaran, MD, PhD, FRCPC, is an Assistant Professor at the University of Toronto's Department of Radiation Oncology/Department of Medical Biophysics and a Clinician Investigator at Sunnybrook Health Sciences Centre. His expertise includes CNS tumours, precision radiotherapy, and innovative nanoparticle-based therapies. He leads a biophotonics and materials engineering lab aimed at advancing radiation techniques and radiotherapy-drug interactions for improved cancer treatment outcomes.



DR. THOMAS MCGOWAN, ASSISTANT PROFESSOR

Dr. Thomas McGowan, MD, FRCPC(C), is an Assistant Professor of Radiation Oncology at the University of Toronto. He practices at Carlo Fidani Peel Regional Cancer Centre, specializing in primary CNS malignancies, brain metastases, genitourinary, and breast cancers, with research interests in clinical trials and information systems in oncology.



DR. ANDREW CHIANG, ASSISTANT PROFESSOR

Dr. Andrew Chiang, MD, FRCPC, is a Radiation Oncologist at Carlo Fidani Peel Regional Cancer Centre, Credit Valley Hospital, Mississauga. He's also an Assistant Professor at the University of Toronto, specializing in CNS, lung, GI, and GU malignancies. His research focuses on SBRT to enhance treatment outcomes for oncology patients.



JOANNA JAVOR, LECTURER

Ms. Joanna Javor is a Lecturer and Radiation Therapist at Princess Margaret Cancer Centre. As a new faculty member, she specializes in palliative radiation therapy and oligometastases. Mrs. Javor is dedicated to enhancing the quality of care for palliative patients and advancing clinical protocols to improve treatment outcomes in oncology.



DR. DAVID KIRSCH, PROFESSOR

Dr. David Kirsch, MD, PhD, is a leading Radiation Oncologist at Princess Margaret Cancer Centre and a Professor of Radiation Oncology at the University of Toronto. He directs the Radiation Medicine Program and heads the Department of Radiation Oncology at University Health Network. His research focuses on sarcoma and radiation biology, with clinical interests in soft tissue and bone sarcomas and uveal melanoma.



DR. YAT MAN TSANG, ASSOCIATE PROFESSOR

Dr. Yat Man Tsang, MSc, PhD, is an Associate Professor in the Department of Radiation Oncology at the University of Toronto. He serves as the Director of Radiation Therapy of Radiation Medicine Program at Princess Margaret Cancer Centre. His research interests focus on radiotherapy trial quality assurance, ultra-hypofractionated/stereotactic radiotherapy treatment outcomes, and strategies to future-proofing radiation therapist practice.



CATHERINE VANDERWATER, LECTURER

Ms. Catherine Vanderwater is a Lecturer in the Department of Radiation Oncology at the University of Toronto and a Radiation Therapist at the Hudson Regional Cancer Program (North Simcoe Muskoka) Simcoe Muskoka Regional Cancer Program, Royal Victoria Regional Health Centre. Her research focuses on patient-reported outcomes, quality of life, and smoking cessation initiatives. Mrs. Vanderwater enjoys clinical teaching and ensuring the best possible experience for all patients.

Equity, Inclusion & Professionalism

MEET OUR EDI CO-DIRECTORS AND TIDE TRAINING FACILITATORS



DR. KATHY HAN, CO-DIRECTOR OF EQUITY, INCLUSION & PROFESSIONALISM

Dr. Kathy Han, MD, MSc, FRCPC, is an Associate Professor in the Department of Radiation Oncology at the University of Toronto. She serves as a Co-Director of Equity, Inclusion & Professionalism at UTDRO and is a Staff Radiation Oncologist at the Princess Margaret Cancer Centre. Her clinical focus includes gynecologic and breast cancers, with a research emphasis on translational studies.



DR. DANIELLE RODIN, CO-DIRECTOR OF EQUITY, INCLUSION & PROFESSIONALISM

Dr. Danielle Rodin, MD, MPH, FRCPC, is an Associate Professor in the Department of Radiation Oncology at the University of Toronto and serves as a Co-Director of Equity, Inclusion, and Professionalism. She is a Staff Radiation Oncologist at the Princess Margaret Cancer Centre and Director of the Global Cancer Program. Her clinical focus includes breast cancer and hematologic malignancies, with research interests in cancer disparities and health outcomes.



DR. MAYDIANNE ANDRADE, TIDE TRAINING FACILITATOR

Professor Maydianne Andrade is a University Professor in Biological Sciences, the founder and Co-Chair of TIDE, Co-founder and President of the Canadian Black Scientists Network, and who has served as Vice Dean Faculty Affairs & Equity, and as Acting Vice Principal Academic and Dean at the University of Toronto Scarborough.



DR. BOJANA STEFANOVIC, TIDE TRAINING FACILITATOR

Professor Bojana Stefanovic is a Senior Scientist, CRC Tier 1 in Functional Brain Neuroimaging, Director of Physical Sciences at Sunnybrook Research Institute, a Professor in the Department of Medical Biophysics at the University of Toronto and Chair of the Equity, Diversity and Inclusion Committee in the Department of Medical Biophysics.

Riding the “TIDE”: UTDRO Tackles Unconscious Bias

In a significant stride towards fostering inclusivity, the University of Toronto's Department of Radiation Oncology recently hosted a transformative two-part series titled, “Toronto Initiative for Diversity and Excellence (TIDE) Unconscious Bias Training”. Held on August 3 and December 7, 2023 and led by Professor Maydianne Andrade and Professor Bojana Stefanovic, the sessions aimed to address and mitigate unconscious biases within academic settings, with a focus on STEM and medicine.

The first session explored how unconscious biases impact the assessment of competence and achievements, particularly affecting women, racialized persons, and others from marginalized groups. The non-judgmental approach encouraged participants to recognize systematic biases and their cumulative effects on career progression. Practical strategies to learn about and interrupt these biases were discussed, followed by a Q&A session. The second session built on the insights from the first training session. Participants delved into recognizing biases in academic processes through scenario analysis and group discussions. The goal was to develop pragmatic strategies for fostering inclusive environments and altering departmental practices to mitigate bias. Overall, the training emphasized evidence-based methods to identify and address unconscious bias, underscoring the importance of inclusivity in academic assessment and culture. Attendees were encouraged to integrate these practices into their professional interactions, ensuring fairer evaluations and opportunities for all.

The TIDE EDI training, facilitated by Professor Maydianne Andrade and Professor Bojana Stefanovic, has catalyzed significant progress within the UTDRO department, particularly in fostering inclusivity and equity in the realms of healthcare and education. By delving into unconscious bias and its implications in academic and medical settings, the training has empowered our faculty and staff to confront and mitigate systemic biases. Its impact reverberates across various facets of our department's operations, from hiring practices to committee work. Notably, the training has become a pivotal component of new academic appointments, continuing appointment reviews, promotions, and more, underscoring its integral role in shaping a fair and inclusive academic environment. Through evidence-informed sessions led by distinguished experts, participants gained insights into recognizing and addressing bias, equipping them with practical strategies to foster inclusivity and interrupt negative dynamics. As a result, the ripple effects extend beyond our department, enriching the broader community by nurturing a culture of equity and diversity within healthcare and educational spheres.

For more information, visit the TIDE Unconscious Bias Training page at <https://radonc.utoronto.ca/tide-unconscious-bias-training>



The TIDE sessions were incredible in raising awareness about unconscious bias and providing practical tools to mitigate bias. The positive feedback we have received from many members of our department and the strong participation rate are a testament to our department's commitment to equity, diversity, and inclusion in the workplace.



DARBY ERLER & MIKKI CAMPBELL

Director & Associate Director of MRiRT Program



MRiRT Transforms Radiation Therapy



After completing this program, I truly feel prepared to work on the MR-Linac.

The placement provides you with a solidified understanding of how MRI physics and methodology is adapted to suit our needs in the world of RT.

- Joshua Torchia, MRiRT Alumni,
Tom Baker Cancer Centre

The rapid integration of Magnetic Resonance Imaging (MRI) into the radiation therapy (RT)

workflow with MRI simulators (MRSIM) and integrated MRI-guided treatment delivery systems (MR-Linacs) has unveiled significant gaps in education and training of radiation therapists (RTTs). Traditional RT training programs do not sufficiently prepare RTTs for the unique demands of MR-guided Radiation Therapy (MRgRT).

Highlighting the Need for Specialized Training

The Canadian Association of Medical Radiation Technologists (CAMRT) recently published a [Summary of Clinical Competence for Magnetic Resonance in Radiation Therapy](#) that identified numerous new competencies that are not currently included in either the national RT or MRI competency

profiles. In attempt to address these gaps, RTTs traditionally had to undertake two-year diagnostic certificate programs, which are not only time-consuming but also fail to address the specific requirements of MRgRT.

Launch of the MRiRT Training Program

In response to the growing need, the University of Toronto's Department of Radiation Oncology launched the MR-integrated Radiation Therapy (MRiRT) Training Program. This innovative, part-time program is designed specifically for experienced RTTs, enabling them to integrate MR-technology confidently and competently into their clinical practice without significant disruption to their schedule and departmental responsibilities.

Program Structure & Delivery

The MRiRT Training Program combines online (synchronous and asynchronous) theoretical instruction with practical clinical training. This hybrid model allows RTTs to gain the knowledge, skills, and judgement to deliver MRgRT safely and effectively. The online courses cover essential theoretical concepts, while a two-week immersive clinical experience ensures practical application, minimizing the need for extended absences from work.

Positive Impact and Learner Feedback

The first cohort of MRiRT learners, comprising of seven RTTs from Odette Cancer Centre and Tom Baker Cancer Centre, completed the program in March 2023. Feedback has been overwhelmingly positive, highlighting the program's effectiveness in bridging the training gap. The learners revealed they are thinking more critically about the integration of MRI into their practice, such as the direct application of MRI safety and understanding the trade-offs of MRI. The opportunity to practice activities such as screening, managing safety incidents and end-to-end online adaptive treatment workflows have been greatly appreciated. Joshua Torchia from Tom Baker Cancer Centre stated:

“The program provides you with an amazing opportunity to learn from professionals with a wide variety of backgrounds. This opportunity is invaluable, as these individuals can share first-hand experiences that bring didactic material, online labs, and

evaluations all together. After completing this program, I truly feel prepared to work on the MR-Linac. We're in the middle of an exciting time here at Tom Baker, as we're getting ready to move to a new cancer centre next year which will be equipped with two MR-Linacs and an MR-sim. The MRiRT program has successfully prepared me to approach this opportunity with open arms, as I'm confident that I'll be able to share my strong foundational knowledge with my colleagues as well. Throughout this program, I was truly able to develop a strong understanding of MRI physics and safety, and how these are implemented in the world of RT. The placement provides you with a solidified understanding of how MRI physics and methodology is adapted to suit our needs in the world of RT. There are many challenges that come with merging the two worlds, however, there is a method to the madness.”

Expansion and Growing Recognition

The 2023/2024 cohort expanded to include 10 RTTs from Odette Cancer Centre, Tom Baker Cancer Centre, and Cross Cancer Institute, with similarly positive feedback. Learners appreciated the clear, engaging instruction and the practical focus of the training. With applications for the 2024/2025 program now open, increased enrollment is expected as more RT departments recognize the need for specialized MRI training.

The Alberta College of Medical Diagnostic & Therapeutic Technologists (ACMDTT) has recognized the distinct

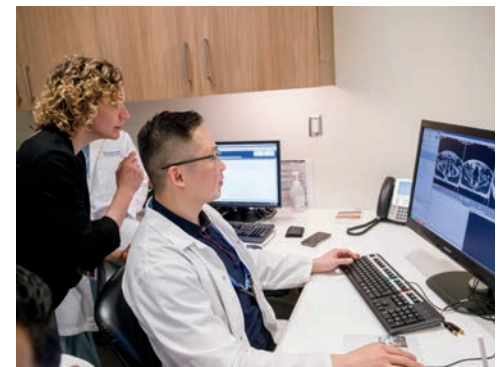


The team's approach was so clear and engaging, making complex MRI concepts easy to grasp. With their top-notch resources and expert guidance, students were well-prepared to excel in the world of MRI within Radiation Therapy.

- Rushi Patel, MRiRT Alumni,
Tom Baker Cancer Centre

nature of MRI practice in RT, requiring RTTs to obtain an enhanced practice certification. The MRiRT program is one of two identified to fulfill the didactic requirements for this certification.

The integration of MRI into radiation therapy marks a significant advancement, and the MRiRT training program is at the forefront of this transformation. By addressing training deficiencies & providing comprehensive education, the MRiRT training program ensure RTTs are equipped to deliver personalized and precision MRgRT. This innovative training approach is not only filling a critical gap but also setting a new standard in radiation therapy education.



MARIANNE KORITZINSKY

Director of Radiobiology Course



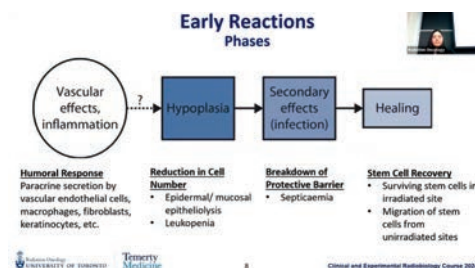
Radiobiology Course: A Solid Foundation

Clinical and Experimental Radiobiology was launched in 2009. It was based on the ESTRO “Basic Clinical Radiobiology” course, and ESTRO course directors, Drs. Albert van der Kogel (Nijmegen/Madison) and Mike Joiner (Detroit) were recruited to supplement the local teaching staff, alongside Dr. Søren Bentzen (Madison/Baltimore). UTDRO clinical radiation oncology residents were the target audience, with a few graduate students auditing the course.

Rapid Expansion

Over the years to follow, the course was opened to residents from across the country who would travel to Toronto for the week to attend. It became part of the UTDRO physics residency program and was approved as a 0.5 FCE course

for credit for University of Toronto graduate students through the Department of Medical Biophysics, where it is a mandatory component of the CAMPEP-accredited medical physics specialization. After online editions in 2020-2022, the course has been offered in a hybrid format, allowing many international residents and researchers to also tune in. Eligible participants can collect Continuing Professional Development credits through Canadian, American or European colleges. In 2024, 90 learners attended the course.



"Thanks for organizing and teaching this course! This is genuinely one of the most organized and best taught courses."

Curriculum Format

The course curriculum is designed to provide a comprehensive overview of radiation biology with a particular emphasis on aspects of direct relevance to the practice of radiation oncology. It addresses the molecular and cellular responses to radiation-induced damage that influence cell death in both tumours and normal tissues. Quantitation of radiation effects and the underlying biological basis for fractionation of radiotherapy and dose-response relationships in the clinic are covered in depth. The biological basis for current approaches to improve radiotherapy is described including novel fractionation schemes, retreatment issues, targeting hypoxia, biological modifiers and combined radiotherapy/chemotherapy. The suggested textbook for this course is Basic Clinical Radiobiology, which many of the faculty have co-authored. The course is offered in a 1-week intensive hybrid format, with 24 lectures, 9 tutorial sessions and 3 workshops, followed by a written exam.

“It allowed for ideas to be understood and thought about.”

It Takes a Village

The course is only made possible through the dedication of 17 faculty

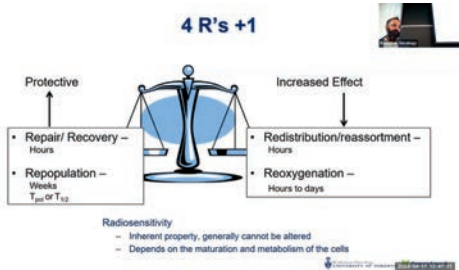
supported by a program committee, a curriculum committee and many hours of administrative work from the UTDRO office staff. After 16 years of contributions to the course, our external faculty Drs. Joiner and van der Kogel are stepping down and were the recent recipients of the UTDRO award for Outstanding Contributions to Radiobiology Education. A UTDRO award for excellence in radiobiology teaching was also recently established, which will honour the lecturer with the highest teaching scores.

“It was very clinically relevant and the questions asked were intriguing and thought-provoking”

Looking Ahead

In 2022, the program was honoured by the Colin Woolf Award for Excellence in Program Development and Coordination from the University of Toronto. Teaching scores are consistently high and feedback positive – but program leaders are constantly looking to improve. A focus for the coming years will be to increase the interactivity of tutorial sessions, especially between participants representing different disciplines. After all – what could be better practice for clinicians and researchers in this highly interdisciplinary field?

“The content was informative and presented in a concise, clear and interesting manner. Instructors were passionate, engaging and knowledgeable.”



JEAN-PIERRE BISSONNETTE

Program Director, Medical Physics PhD Specialization



Advancing the Future of Medical Physics

In the realm of healthcare, the interplay between technology and medicine has never been more vital. At the University of Toronto's Department of Medical Biophysics (MBP), the newly established Medical Physics PhD Specialization is at the forefront of this evolution, preparing the next generation of leaders in the field. Under the visionary leadership of Program Director Jean-Pierre Bissonnette, this program emphasizes rigorous academic training while also embracing innovative research that will impact patient care.

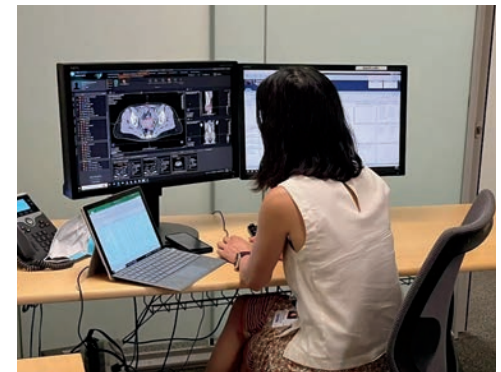
A New Era in Medical Physics

The journey to establishing the Medical Physics PhD Specialization began in 2020 when five faculty members from UTDRO - Drs. Jean-Pierre Bissonnette, Catherine Coolens, Tom Purdie, Alexandra Rink, and Robert Weersink,

were cross-appointed to the Department of Medical Biophysics. Their collaboration opened the doors for graduate students to engage in vital radiation oncology research. Recognizing Dr. Alex Vitkin's long-standing support for the creation of our program within MBP is also essential, as his efforts have been instrumental in laying the groundwork. The addition of Dr. Jan Seuntjens to the team in 2022 also marked a pivotal moment, bringing together seven esteemed faculty members to design a specialization tailored to enhance medical physics education and research, with the objective of creating a strong program whose graduates would feed naturally into the UTDRO Physics residency program.

The program integrates comprehensive coursework with practical applications, laying a robust foundation for aspiring

medical physicists. The curriculum includes three newly developed modules - MBP 1415H, MBP 1416H, and MBP 1417H - crafted to provide students with essential theoretical and scientific insights needed to excel in medical physics research. These modules, along with others covering clinical radiation physics, imaging technologies, and health physics, ensure that graduates are well-equipped to navigate the complexities of modern medical practices.



Accreditation and Growth

A milestone was achieved in June 2023 when the Medical Physics PhD Specialization received inaugural accreditation from the Commission on Accreditation of Medical Physics Programs (CAMPEP). This recognition validates the quality of the program and enhances the credentials of its graduates, who will receive a transcript designation affirming their specialized training upon completion.

Currently, twenty graduate students are officially enrolled, with interest levels soaring - over 45 students, including many M.Sc. candidates considering reclassification, have expressed their intent to join this forward-thinking program. The anticipated graduation of the first cohort in the 2024-25 academic year marks an exciting chapter for the department and the future of medical physics.

Preparing Future Leaders

The future of healthcare demands more than just technical knowledge; it requires a new breed of leaders who can navigate the intricate landscape of medical technologies and patient care. To that end, the program's 2024 goals include the rollout of a Professionalism and Leadership Workshop, aimed at fostering essential skills that will empower students to become influential figures in their field. Continuous improvement of the curriculum based on student feedback ensures that the

program remains responsive to the needs of its participants.

Research opportunities abound within the Medical Physics PhD Specialization, encompassing essential topics such as machine learning applications in radiotherapy, theranostics, and heavy particle therapy. Students will have the chance to engage in transformative research that directly impacts clinical practices, preparing them for successful careers in academia, industry, and clinical settings.

Join Us in Shaping the Future

For prospective students passionate about merging technology with healthcare, the Medical Physics PhD Specialization at the University of Toronto offers an unparalleled opportunity. With a CAMPEP-accredited program, a rich curriculum, and a commitment to research excellence, graduates will emerge as skilled professionals ready to address the challenges of modern medicine.

As we look ahead, the UTDR is committed to nurturing talent and innovation in medical physics. If you're ready to embark on a transformative journey that will not only enhance your career but also contribute to the advancement of healthcare, consider joining our Medical Physics PhD Specialization. Together, we can shape the future of medical technology and improve the lives of patients around the globe.

For more information, please refer to the program webpage under MBP: [Medical Physics PhD Program](#).



“The recently formed UofT CAMPEP-accredited medical physics graduate program is creating new dynamics of academic and innovation activity in medical physics in Toronto”

Beyond the Beam: A Physicist's Path

Arman Sarfehnia, PhD, MCCPM, is an Associate Professor in the Department of Radiation Oncology at the University of Toronto and a medical physicist at the Odette Cancer Centre. He holds affiliations with Toronto Metropolitan University (TMU) and McGill University. Dr. Sarfehnia plays a pivotal role in leading the quality assurance efforts at the Odette Cancer Centre and is involved in various clinical activities. His responsibilities extend to teaching CAMPEP graduate courses at both the University of Toronto and TMU, overseeing the quality and instrumentation rotation for UTDRO medical physics residents at Sunnybrook, and supervising graduate students within his NSERC-funded research program at the University of Toronto.

Dr. Sarfehnia's journey into medical physics began 25 years ago while completing his B.Sc. in Biophysics at the University of British Columbia. His interest in the field was ignited by relevant coursework and practical experiences during his honours research project at the BC Cancer Agency and a summer job at the BC Cancer Research Centre. This foundational experience led him to pursue graduate studies and residency in CAMPEP-accredited medical physics programs at McGill University.

Throughout his career, Dr. Sarfehnia has achieved significant milestones, including the development of a novel detector. This project, which originated as one of his student's graduate project, evolved into intellectual property that was later acquired by a private manufacturing company. Currently, he and his graduate students are working on making water calorimetry—a highly precise, yet complex, dose detector traditionally confined to national standard laboratories of developed nations—accessible to clinical settings and affordable for developing nations. This work has led to several innovations and patents at Sunnybrook Research Institute.

Dr. Sarfehnia finds excitement in the unique blend of clinical insight and technical expertise that medical physics offers. His work allows him to enhance treatments, streamline processes, and minimize errors in patient care. His engagement in international committees, teaching, research, and clinical service underscores his belief that medical physics is a dynamic and rewarding field, providing opportunities to make impactful contributions while pursuing one's own path.



“What excites me as a medical physicist is our unique ability to combine clinical insight with technical expertise, driving meaningful improvements in patient care. Our privileged position allows us to enhance treatments, streamline processes, & reduce errors.”





“Working with people that were passionate about both the immediate care of the patients, and the research that can have significant improvement for future patients, was the highlight of the program. It was the type of medical physicist I knew I wanted to become.”



Beyond the Beam: A Physicist's Path

Alexandra Rink, PhD, FCCPM, is a Senior Medical Physicist at the Princess Margaret Cancer Centre (the PM), where she also serves as the Lead Brachytherapy Physicist and an Associate Professor in the Departments of Radiation Oncology (UTDRO) and Medical Biophysics (MBP) at the University of Toronto. Since taking on the Brachytherapy clinical portfolio in 2013, Dr. Rink has driven several major changes in clinical practice, notably integrating MR-guided intracavitary and interstitial gynaecological high dose-rate brachytherapy. Under her leadership, the program now treats approximately 80 patients annually, with over a third being referred from other institutions to receive high-quality care that may not be available closer to their homes.

Since joining the staff in 2012, Dr. Rink has significantly contributed to teaching and research within the UTDRO. As the Brachytherapy Clinical Rotation supervisor, she has supported the guidance of 28 residents, many of whom have gone on to successful careers in brachytherapy across Canada and the United States. Additionally, Dr. Rink oversees research in her lab at the Princess Margaret Cancer Research Tower. With \$1.3M in funding from the Natural Sciences and Engineering Research Council and the Canadian Institutes of Health Research, her team is advancing brachytherapy treatments for gynaecologic cancers by focusing on improving treatment efficiency and efficacy through automation and artificial intelligence, as well as refining in vivo radiation dose measurements.

While pursuing a Chemical Physics undergraduate degree with plans to become a forensic scientist, Dr. Rink discovered the Department of Medical Biophysics at a conference. The potential to apply her physics knowledge to patient care resonated with her, leading her to pursue a PhD under Drs. Jaffray and Vitkin. This exposure to the Medical Physics community solidified her career path. After completing her PhD, Dr. Rink began her Residency in the same department.

For Dr. Rink, the most enjoyable part of her journey is the continuous learning and growth her career fosters. Looking ahead, she aims to expand her research portfolio, secure additional funding, recruit trainees, translate research into clinical practice, and uphold her leadership in Brachytherapy.

UTDRO Faculty Members

CURRENT FACULTY AS OF JULY 1, 2024

PROFESSORS

Andrea Bezjak
James Brierley (Emeritus)
Charles Catton
Patrick Cheung
Edward Chow
Catherine Coolens
Bernard Cummings
Gregory Czarnota
Laura Dawson
Anthony Fyles
Maria Gospodarowicz
David Hodgson
David Kirsch
Fei-Fei Liu
Andrew Loblaw
Michael Milosevic
Gerard Morton
Brian O'Sullivan
Lawrence Paszat
Eileen Rakovitch
A Michael Rauth (Emeritus)
Jolie Ringash
Arjun Sahgal
Jan Seuntjens
Ewa Szumacher
Gillian Thomas (Emeritus)
Richard Tsang
Alex Vitkin
Padraig Warde
David Wiljer
Rebecca Wong
Bradly Wouters

ASSOCIATE PROFESSORS

Ali Hosni Abdalaty
Ida Ackerman (Emeritus)
Elizabeth Barnes
Alejandro Berlin
Jean-Pierre Bissonnette
Scott Bratman
John Cho
James Chow
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Hans Chung
Jennifer Croke
Meredith Giuliani
Kathy Han
Andrew Hope
Sophie Huang
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Christine Koch
Marianne Koritzinsky
Daniel Letourneau
Eric Wing-On Leung
Stanley Liu
Benjamin Lok
Alexander Louie
Barbara-Ann Millar
Sten Myrehaug
Geordi Pang
David Payne
Ian Poon
Thomas Purdie
Ananth Ravi

Alexandra Rink
Danielle Rodin
Tara Rosewall
Mark Ruschin
Arman Sarfehnia
David Shultz
Hany Soliman
Teodor Stanescu
Alexander Sun
William Tran
Chiaojung Jillian Tsai
Yat Tsang
Derek Tsang
May Tsao
Yee Ung
Danny Vesprini
John Waldron
Robert Weersink
Philip Wong

ASSISTANT PROFESSORS

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Stephen Breen
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Leigh Conroy
Lorraine Courneyea
Tim Craig
Andrei Damyanovich
Jay Detsky
Lisa Di Prospero
Colleen Dickie
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Alyaa Elzibak
Matthew Follwell
Warren Donald Foltz
Caitlin Gillan
Adam P. Gladwish
Rachel Glicksman
Ezra Hahn
Shane Harding
Nicole Harnett
Lori Holden
Annie Hsu
Mohammad Islam
Irene Karam
Fatma-Zahra Kassam
Dana Keilty

Harald Keller
Brian Keller
Luluel Khan
Anthony Kim
Renee Korol
Jennifer Kwan
Anthony Lausch
Grace Lee
Winnie Tsz Yan Li
Patricia Lindsay
Jelena Lukovic
Muhammad
Nauman Malik
Claire McCann
Thomas McGowan
Andrew McPartlin
Aruz Mesci
Sylvia Ng
Michelle Nielsen
Humza Nusrat
Cathryne Palmer
Moti Paudel
Monica Serban
Tony Tadic
Amandeep Taggar
Kieng Tan
Mojgan Taremi
Edward Taylor
Chia-Lin Tseng
Michael Velec

Woodrow Wells
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Matthew Wronski
Michael Yan
Collins Yeboah
Ivan Yeung
Beibei Zhang

LECTURERS

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Renate Bradley
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Kitty Chan
Charles Cho
Daria Comsa
Tatiana Conrad

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Laura D'Alimonte
Jane DeRocchis
Louis Fenkell
Marisa Finlay
Robert Heaton
Joanna Javor
Juhu Kamra

Valerie Kelly
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Jidong Lian
Brian Liszewski
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Zabin Mawji
Merrylee McGuffin
Niusha Nowbahari

Oluwabunmi Ogundimu
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Natalie Rozanec
Raxa Sankreacha
Senti Senthelal
Anna Simeonov
Julia Skliarenko
Christiaan Stevens

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Darby Erler
Wendy Flanagan
Marc Potvin
Joe Presutti
Aisha Sheikh

Tiffany Tam
Catherine Vanderwater
Yongjin Wang
Jason Wong
Frederick Yoon
Jasper Yuen
Grace Zeng

UTDRO Trainees

REPORTING PERIOD: JULY 1, 2023 TO JUNE 30, 2024

FELLOWS

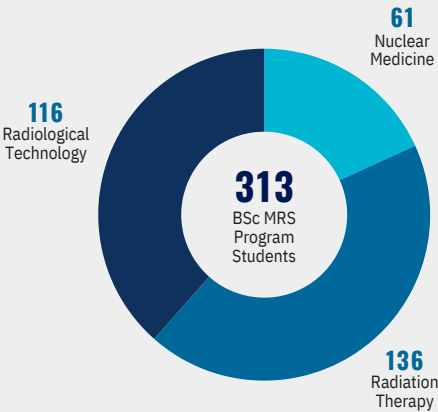
Ibrahim Alrekhaish
Marc Barcelona
Laura Burgess
Adrian Chan
Simone Chaudhary
Lessandra Chee
Revadhi Chelvarajah
Pradnya Chopade
Elizabeth Chuk
Stephen Ciocon
Ayah Erjan
Mame Faye
Aisling Glynn
Enrique Gutierrez
John Hudson
Kurl Jamora
Carlton Johnny
Alborz Jooya
Kaushik Katakai
Thomas Kennedy
Lama Khoja
Reinhardt Krcek
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Sondos Zayed

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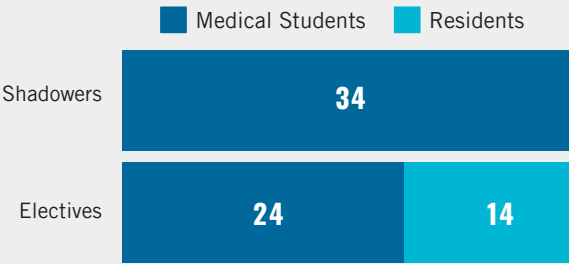
Sarah Aubert
June Cheng
Braden Chow
Mark D'Souza
Jie (Jane) He
Thomas Mann
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Lingyue Sun
Heather Young

RADIATION ONCOLOGY RESIDENTS

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Hannah Bacon
Dana Bartolucci
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Jason Fernandes
Alec Hughes
Fasila Johri
Inhwa Kim
George Li
Donna Liao
David Mak
Dustin Newton
Maleeha Qazi
Neelabh Rastogi
Kara Ruicci
Amir Safavi
Badr Id Said
Marissa Sherwood
Bryce Thomsen
Eric Zhao



TRAINEE LEARNING EXPERIENCES



**Odette Cancer Centre & Princess Margaret Cancer Centre*

Donors / Sponsors Recognition

REPORTING PERIOD: JANUARY 1, 2021 - PRESENT

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Tolmar Pharmaceuticals Canada
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Varian

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(Names listed alphabetically by last name)

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Laura Dawson
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John Garbin
K. L. Idler
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Alan Spencer
Raymond Vaughan
Rebecca Wong
Joel Yarney



DEPARTMENTAL EVENTS AT UTDRO







Annual General Meeting



Research Day



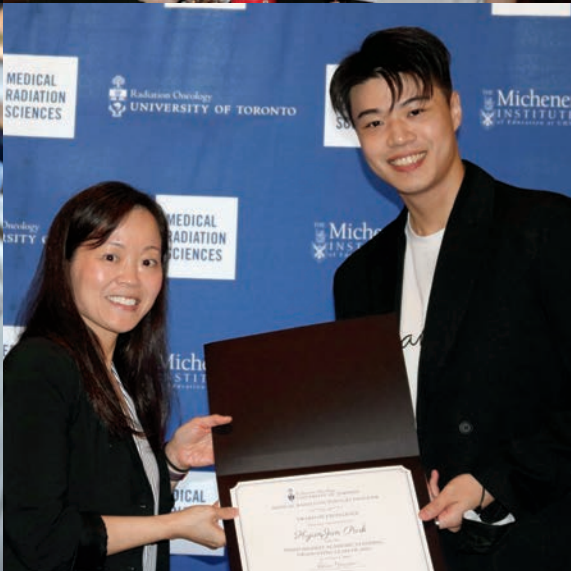
ESTRO Alumni Reception



ASTRO Alumni Reception



RTi3 Conference



MRS Pre-Convocation



UTDRO Staff, Faculty, and Trainees

ANNUAL REPORT 2023-2024

Design & Writing: Diana Lam

Special Contributions: Laura Dawson (Chair's Welcome), May Tsao (Vice-Chair Report), Eileen Rakovitch (Vice-Chair Report), Michael Milosevic (Vice-Chair Report), Darby Erler & Mikki Campbell (MRiRT Transforms Radiation Therapy), Marianne Koritzinsky (Radiobiology Course: A Solid Foundation), Jean-Pierre Bissonnette (Advancing the Future of Medical Physics), Arman Sarfehnia & Alexandra Rink (Beyond the Beam: A Physicist's Path)

Editing: Diana Lam, Ruby Han, Wing Yau

Read our full-length report online at radonc.utoronto.ca/annual-reports

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