Radiation Oncology
UNIVERSITY OF TORONTO

TECHNOLOGICAL INNOVATIONS IN PROSTATE CANCER RADIOTHERAPY

JUNE 21, 2018

PRINCESS MARGARET HOSPITAL

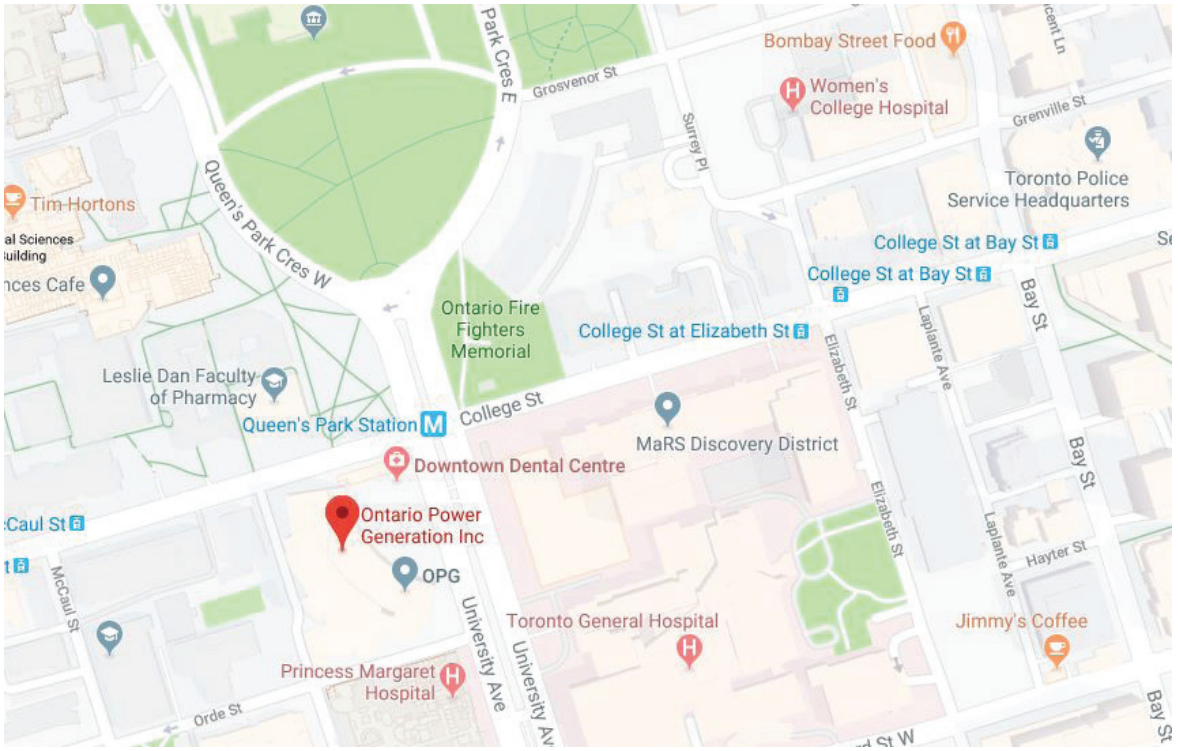
&

JUNE 22, 2018

ODETTE CANCER CENTRE

Locations

Day 1 - Princess Margaret Hospital, Ontario Power Generation, 700 University Ave., 6th Floor



Day 2 - Sunnybrook Odette Cancer Centre, 2075 Bayview Ave., T-Wing, Jenkins Auditorium - (take the east elevators on the main floor to the basement)

You can catch the shuttle bus traveling from downtown to the Sunnybrook Campus in front of Women's College Hospital at 76 Grenville Street. When you arrive at Sunnybrook, you will get off at the first stop. The Odette Cancer Centre (OCC) (T-Wing) is the first building on the right as the bus turns into the main entrance of the campus. The shuttle bus departs from this stop located in front of OCC to go back downtown. This is also a public transit bus stop. **WC** = Women's College; **Bayview** = OCC/ Sunnybrook.

Sunnybrook Shuttle Bus Schedules

Monday through Friday Service (Excluding Holidays)

	Southbound				*Northbound*		
Bus	**Bayview**	**CNIB**	**HOAC**	**WC**	**HOAC**	**CNIB**	**Bayview**
Shuttle 2	5:30 AM	5:33 AM	5:50 AM	6:00 AM	6:05 AM	6:22 AM	6:30 AM
Shuttle 1	**5:45 AM**	**5:48 AM**	**6:05 AM**	**6:15 AM**	**6:20 AM**	**6:37 AM**	**6:45 AM**
Shuttle 2	6:30 AM	6:33 AM	6:50 AM	7:00 AM	7:05 AM	7:22 AM	7:30 AM
Shuttle 1	**6:45 AM**	**6:48 AM**	**7:05 AM**	**7:15 AM**	**7:20 AM**	**7:42 AM**	**7:50 AM**
Shuttle 2	7:30 AM	7:35 AM	7:50 AM	8:00 AM	8:05 AM	8:17 AM	8:25 AM
Shuttle 1	8:00 AM	8:05 AM	8:20 AM	8:30 AM	8:35 AM	8:50 AM	9:00 AM
Shuttle 2	8:25 AM	8:30 AM	8:50 AM	9:00 AM - 9:15 AM	9:20 AM	9:35 AM	9:45 AM
Shuttle 1	9:15 AM	9:18 AM	9:35 AM	9:45 AM	9:50 AM	10:05 AM	10:15 AM
Shuttle 2	9:45 AM	9:48 AM	10:05 AM	10:15 AM	10:20 AM	10:35 AM	10:45 AM
Shuttle 1	10:15 AM	10:18 AM	10:35 AM	10:45 AM	10:50 AM	11:05 AM	11:15 AM
Shuttle 2	10:45 AM	10:48 AM	11:05 AM	11:15 AM	11:20 AM	11:35 AM	11:45 AM
Shuttle 1	11:15 AM	11:18 AM	11:35 AM	11:45 AM	11:50 AM	12:05 PM	12:15 PM
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Shuttle 2	2:45 PM	2:50 PM	3:05 PM	3:15 PM – 3:35 PM	3:40 PM	3:55 PM	4:05 PM
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Shuttle 2	5:35 PM	5:45 PM	6:10 PM	6:20 PM	6:25 PM	6:50 PM	7:00 PM
Shuttle 1	6:15 PM	6:20 PM	6:40 PM	6:50 PM	6:55 PM	7:20 PM	7:30 PM
Shuttle 2	7:00 PM	7:03 PM	7:25 PM	7:30 PM	7:35 PM	7:52 PM	8:00 PM
Parking and Transportation Services van			Pick up will be at CNIB front door			11:00 PM	11:05 PM
						11:20 PM	11:25 PM
						11:40 PM	11:45 PM

Saturday Service

	Southbound			*Northbound*	
	Bayview	**CNIB**		CNIB	Bayview
Parking and Transportation Services Van	6:45	6:50	Pick up and drop off will be at CNIB front door	3:10 PM	3:15 PM
	10:45	10:50		7:10 PM	7:15 PM
	14:45	14:50		11:00 PM	11:05 PM
				11:20 PM	11:25 PM
				11:40 PM	11:45 PM

Sunday Service

	Southbound				*Northbound*		
Bus	**Bayview**	**CNIB**	**HOAC**	**WC**	**HOAC**	**CNIB**	**Bayview**
Shuttle 1	7:30 AM	-	7:50 AM	8:00 AM	8:05 AM	-	8:30 AM
Shuttle 1	8:30 AM	-	8:50 AM	9:00 AM	9:05 AM	-	9:30 AM
Shuttle 1	9:30 AM	-	-	-	-	-	-

Monday through Friday Service (Excluding Holidays)

	Southbound				*Northbound*		
Bus	**Finch GO**	**-**	**SJR**	**Bayview**	**Finch GO**	**SJR**	**Finch GO**
Shuttle 3	7:00 AM	-	7:07 AM	7:40 AM	8:00 AM	-	-
Shuttle 3	8:00 AM	-	8:07 AM	8:50 AM	9:10 AM	-	-
Shuttle 3	9:10 AM	-	9:17 AM	9:55 AM	10:15 AM	-	-
Shuttle 3	10:15 AM	-	10:22 AM	10:45 AM	11:05 AM	-	-
Shuttle 3	11:05 AM	-	11:10 AM	11:30 AM	11:50 AM	-	-
Shuttle 3	11:50 AM	-	11:57 AM	12:15 PM	12:35 PM	-	-
Shuttle 3	12:35 PM	-	12:42 PM	1:00 PM	-	-	-
Shuttle 3	-	-	-	3:45 PM	4:25 PM	4:32 PM	4:40 PM
Shuttle 3	4:40 PM	-	-	5:10 PM	5:50 PM	5:57 PM	6:05 PM
Shuttle 3	6:05 PM	-	-	6:30 PM	7:10 PM	7:17 PM	7:25 PM

Please note that poor weather, road and traffic conditions may cause shuttle delays

WIFI

Day1: Ontario Power Generation doesn't require a login

Day 2: Odette Cancer Centre

- ID: SW_Guest
- Password: SunnybrookGuest

June 21, 2018

Welcome to Technological Innovations in Prostate Cancer Radiation Therapy.

Prostate cancer management has improved significantly over the past decade. Enhanced understanding of risk stratification has led to treatment better tailored to the clinical situation and the introduction of more effective treatment and treatment combinations.

Radiotherapy has greatly benefited from recent advances in planning systems, tumour imaging and treatment delivery technologies and the introduction of on-line volumetric imaging, and these have opened an unparalleled opportunity to explore new horizons in prostate cancer radiation therapy. High-precision radiotherapy techniques now allow for safe delivery of much shorter treatment courses, and the effective use of brachytherapy alone or in combination with EBRT provides unpresented levels of local control.

Novel imaging modalities will play an essential role in future management algorithms. Prostate MRI provides the first opportunity to define the GTV within the gland and the possibility of tailoring the delivery of prostate radiotherapy to an unprecedented level. PSMA-PET may provide the first highly sensitive and specific staging investigation for prostate cancer, and if confirmed could lead to a paradigm shift in management strategies.

New technologies provide us with unparalleled opportunity and complexity. The contribution of imagers, therapists and physicists in planning and delivery of a safe and effective treatment plan has never been greater. The understanding of roles and development of effective teamwork is essential to good outcomes.

We are delighted to welcome you to our Prostate Course. The Program Committee recruited superb faculty who will bring their vast knowledge and experience to you. Our goal is to introduce you to the technological innovations in prostate cancer radiotherapy that you are likely to encounter in the near future, and to provide some context as to how they may change practice. We will learn together with didactic sessions, small group discussion, case presentations and a hands on session, and at completion we expect you to have a better understanding of how our discipline is evolving, and what opportunities exist to improve care.

We wish you a pleasant and instructive couple of days in our hospitals and in Toronto.

Sincerely,

Charles Catton, MD, FRCPC
Co-Chair

Ewa Szumacher, MD, FRCPC, MEd
Co-Chair

Co-Chairs

Charles Catton

Ewa Szumacher

Planning Committee

Tim Craig

Kitty Chan

Melanie Davidson

Nicole Harnett

Joelle Helou

Nafisha Lalani

Bayani Macute

Gita Maharaj

Tara Maher

Merrylee McGuffin

Emily Milne

Gerard Morton

Alena Wasney

Rebecca Wong

Accreditation

CAMRT

RCPSC

Guest Faculty

Robert Timmerman

Glenn Bauman

Faculty

Paul Boutros

Charles Catton

Patrick Cheung

Hans Chung

Tim Craig

Melanie Davidson

Darby Erler

Sangeet Ghai

Robert Hamilton

Joelle Helou

Vickie Kong

Nafisha Lalani

Andrew Loblaw

Ur Metser

Gerard Morton

Chirag Patel

Ananth Ravi

Program Schedule

THURSDAY, JUNE 21, 2018 Princess Margaret Hospital - Ontario Power Generation, 700 University Avenue, 6th floor		
8:30 - 9:00	Breakfast and sign in	
9:00 – 9:10	Welcome	Rebecca Wong MD
9:10 – 9:30	Course overview and case introduction	Ewa Szumacher MD, Charles Catton MD
9:30 – 10:15	Keynote address: Technological innovation in the treatment of prostate cancer (including protons)	Robert Timmerman MD
10:15 – 10:25	Discussion	
10:25 – 10:40	Break	
SESSION 1: TECHNIQUES TO TRACK AND MONITOR PROSTATE CANCER		
10:40 – 11:10	MP-MRI: Opportunities to assess and predict treatment response	Sangeet Ghai MD
11:10 - 11:40	Molecular imaging and novel tracers	Ur Metser MD
11:40 – 12:10	PSMA	Glenn Bauman MD
12:10 – 12:30	Evolving role of biomarkers in prostate cancer	Paul Boutros PhD
12:30 – 12:40	Discussion	
12:40 - 1:30	Lunch	
1:30 – 2:50	Workshops	
	Contouring (The Skills Lab, Princess Margaret Hospital, floor 2B)	Chirag Patel MD, Hans Chung MD Moderators: Nafisha Lalani MD, Robert Timmerman MD, Ewa Szumacher MD
	Hitting the Mark: Strategies for Physicists (Cobalt Lounge: Conference Room A, Princess Margaret Hospital, floor 2B)	Melanie Davidson PhD, Tim Craig PhD
	Image matching for prostate radiotherapy (Red Room, Princess Margaret Hospital, floor 1B, Room 615)	Kitty Chan, MRT(T), Winnie Li MRT(T), Vickie Kong MRT(T)
2:50 – 3:05	Break	
SESSION 2: SURGERY VS RADIOTHERAPY FOR HIGH RISK PROSTATE CANCER		
3:05 – 3:35	Comparison of surgery and radiotherapy for high risk prostate cancer - the urologist's perspective	Robert Hamilton MD
3:35 – 3:45	Discussion	
3:45 – 4:15	Comparison of surgery, EBRT, brachytherapy – RO perspective	Joelle Helou MD

4:15 – 4:25	Discussion	
4:25 – 4:30	End of day wrap up	Ewa Szumacher MD, Charles Catton MD
5:30	Course dinner and social - Adega Restaurant - 33 Elm Street	
FRIDAY, JUNE 22 2018 Sunnybrook Odette Cancer Centre, 2075 Bayview Avenue, Jenkins Auditorium TB21 (basement)		
8:30 – 9:00	Breakfast and sign in	
SESSION 3: WHAT IS NEW IN BRACHYTHERAPY?		
9:00 – 9:30	Technological innovations - LDR/HDR and MR-guided brachytherapy	Gerard Morton MD
9:30 – 9:45	Salvage brachytherapy	Hans Chung MD
9:45 – 10:05	Technical aspects and innovations in brachytherapy delivery	Ananth Ravi PhD
10:05 – 10:20	Discussion	
10:20 – 10:30	Break	
10:30 – 11:45	Brachytherapy case discussion	Gerard Morton MD, Joelle Helou MD
11:45 – 12:30	Lunch and tour of MR brachy suite	
SESSION 4: HYPOFRACTIONATION AND SBRT TECHNOLOGY		
12:30 – 12:50	Moderate hypofractionation	Charles Catton MD
12:50 – 1:20	SBRT /extreme /hypofractionation/ robotics	Andrew Loblaw MD
1:20 – 1:30	Discussion	
SESSION 5: PRACTICAL CONSIDERATIONS – PATIENT AND PLANNING		
1:30 – 1:40	Overview of practical considerations	Melanie Davidson PhD
1:40 – 2:30	External beam radiotherapy – standard course	Tim Craig PhD, Vickie Kong MRT(T)
2:30 – 2:45	Break	
2:45 – 3:35	External beam radiotherapy – SBRT	Melanie Davidson PhD, Darby Erler MRT(T)
3:35 – 3:45	Discussion	
SESSION 6: SYNTHESIS		
3:45 – 4:05	Patient reported outcomes in men treated for prostate cancer	Joelle Helou MD
4:05 – 4:45	Case discussion panel	All faculty
4:45 – 5:05	Prostate cancer treatment in the future	Patrick Cheung MD
5:05 – 5:15	End of day /evaluation	

Session Descriptions

Thursday, June 21 – Princess Margaret Hospital (Ontario Power Generation, 700 University Avenue, 6th floor)

Keynote Address

Technological innovation in the treatment of prostate cancer (including protons)
Robert Timmerman MD

Historically, improved technologies were used primarily to deliver a higher total dose of radiotherapy (RT) for prostate cancer. For lower risk groups, such protracted RT is well tolerated but inconvenient and costly. These same risk groups migrated to surgery in the 1990s with the promise of preserving potency with the "nerve-sparing prostatectomy." Long term data shows potency is far from preserved with surgery. More recently, many higher risk patients have also migrated to surgery justified by the notion that RT cannot control high grade tumor. We'll discuss how current shortcomings constitute future opportunities. Clinical research has shown that shorter RT courses are just as effective. Even ablative radiation can be safely delivered with ultimate convenience and potential to address high risk disease. Indeed, better delineation of anatomy and shaping of dose might actually deliver a true, potency preserving treatment. Improved technologies such as image guidance and protons could achieve even more if used prudently.

SESSION 1: TECHNIQUES TO TRACK AND MONITOR PROSTATE CANCER

MP-MRI: Opportunities to assess and predict treatment response
Sangeet Ghai MD

Multiparametric magnetic resonance imaging (MRI) is routinely used in diagnostics, treatment planning and assessment of therapeutic efficacy. During the past decade, functional imaging techniques like diffusion-weighted (DW) MRI and dynamic contrast-enhanced (DCE) MRI have increasingly been included into imaging protocols, allowing extraction of intratumoral information of underlying vascular, molecular and physiological mechanisms, not available in morphological images. Diffusion-weighted MRI (DW-MRI) holds promise for use as a cancer treatment response biomarker as it is sensitive to macromolecular and microstructural changes which can occur at the cellular level earlier than anatomical changes during therapy. Separately, pre-treatment and early changes in functional parameters obtained from DWMRI and DCEMRI have shown potential in predicting therapy response. The presentation will discuss feasibility of using MRI to predict treatment response in patients with prostate cancer following focal therapy or those undergoing radiation therapy.

Molecular imaging and novel tracers
Ur Metser MD

Objectives for this session are to review:

- Normal biodistribution of PSMA tracers (PSMA-PET)
- PSMA - PET/CT vs PET/MR in prostate cancer
- Potential pitfalls
- Advantages and limitations of PSMA PET

- Role of PSMA PET in staging and restaging of patients with prostate cancer (general overview). Cases examples will be reviewed

Prostate-Specific Membrane Antigen (PSMA)
Glenn Bauman MD

This session will describe the background and clinical rationale for molecular imaging in prostate cancer with a specific focus on the role of PET imaging using PSMA directed probes.

Evolving role of biomarkers in prostate cancer
Paul Boutros PhD

Molecular diagnostics are routine in some tumour types, but not yet in prostate cancer. However, a series of assays are seeing gradual increases in adoption rate, and several of these show the potential to improve stratification of patients with localized disease into groups with distinct risks of relapse. This session will overview these, distinguishing the relative roles of germline and somatic markers, and highlighting the future development efforts that will be needed to bring them into routine usage. We also discuss how genomic assays may be layered with pathology, radiology and other prognostic tests.

SESSION 2: SURGERY VS RADIOTHERAPY FOR HIGH RISK PROSTATE CANCER

Comparison of surgery and radiotherapy for high risk prostate cancer - the urologist's perspective
Robert Hamilton MD

This session will review surgical and radiation options for high risk, clinically localized prostate cancer. We will review evidence in support of both modalities and look at factors to help decide which treatment is best for which patients. We conclude by looking at long term outcomes for these patients.

Comparison of surgery, external beam radiotherapy (EBRT), brachytherapy – Radiation oncologist perspective
Joelle Helou MD

This session will offer a comparison of surgery, EBRT, brachytherapy for high risk prostate cancer a radiation oncologist's perspective, to complement the urologist's perspective.

SESSION 3: WHAT IS NEW IN BRACHYTHERAPY?

Friday, June 22 – Sunnybrook Odette Cancer Centre (2075 Bayview Avenue, Jenkins auditorium TB21 - basement)

Technological innovations - Low-dose rate(LDR)/High-does rate(HDR) and MR-guided brachytherapy
Gerard Morton MD

Attendees will evaluate the rationale for prostate brachytherapy, compare and contrast HDR and LDR, be able to describe brachytherapy techniques, and cite evidence for brachytherapy as both monotherapy and as a boost. The format is didactic, with opportunity for audience interaction and questions. Case-based discussions will be used to illustrate concepts. Practical steps to optimize process, improve efficiency, assure quality and minimize toxicity will be discussed. Ongoing clinical trials will be described and opportunities to incorporate new and evolving technologies will be discussed.

Salvage brachytherapy
Hans Chung MD

Local failures after dose-escalated external-beam radiotherapy are not uncommon. Salvage options include prostatectomy, brachytherapy, cryotherapy and high-intensity focused ultrasound. This session will review the role of salvage brachytherapy.

Technical aspects and innovations in brachytherapy delivery
Ananth Ravi PhD

This session will discuss the following:

- Practical strategies for incorporating MR in a prostate brachytherapy workflow
- Novel technologies that enable MR guided prostate brachytherapy
- Technical innovations for quality assurance of prostate brachytherapy treatments

SESSION 4: HYPOFRACTIONATION AND SBRT TECHNOLOGY

Moderate hypofractionation
Charles Catton MD

Three recently reported large randomized trials have demonstrated an advantage to moderate hypofractionation for low and intermediate risk prostate cancer. This session will review the level one evidence for moderate hypofractionation for prostate cancer.

Stereotactic Body Radiotherapy (SBRT) /extreme /hypofractionation/ robotics
Andrew Loblaw MD

Brachytherapy +/- external beam radiation (EBRT) is the evidence-based standard of care for localized prostate cancer patients requiring treatment. Stereotactic ablative body radiation (SABR) is a novel, non-invasive, high-precision EBRT technique that appears to have similar efficacy and possible fewer side effects compared to brachytherapy.

For patients with de novo or metastatic disease on relapse, there is much enthusiasm regarding the use of SABR in the setting of oligometastatic prostate cancer. SABR appears to be feasible to deliver, well tolerated and may delay the next line of therapy.

SABR is cheaper and uses fewer resources than any other radiation technique. Given the healthcare resource challenges (including financial resources), SABR would be a welcomed addition if studies show non-inferiority to other radiation techniques.

SESSION 5: PRACTICAL CONSIDERATIONS – PATIENT AND PLANNING

Overview of practical considerations – patient and planning

Tim Craig PhD, Vickie Kong MRT(T), Melanie Davidson PhD and Darby Erler MRT (T)

Prostate treatment can be optimized by using good practices at all stages of planning. This session will describe practical approaches to simulation, treatment planning techniques, image-guided delivery and quality assurance for standard fractionation and SBRT. The common issues that appear in each stage and strategies to address them will be highlighted. The different considerations when moving from mild hypofractionation to SBRT will also be discussed.

SESSION 6: SYNTHESIS

Patient reported outcomes in men treated for prostate cancer

Joelle Helou MD

This session will focus on the importance of patient-reported outcomes and particularly health-related quality of life (HRQoL) measurement in men treated with prostate cancer. In addition to the description and comparison of HRQoL reported after contemporary treatment offered particularly in the setting of favourable-risk prostate cancer.

Prostate cancer treatment in the future

Patrick Cheung MD

Prostate cancer treatment is shifting away from “conventional” methods with regards to the use of local ablative therapies such as surgery and radiotherapy, both in the localized and metastatic settings. There is a strong trend towards decreasing the number of radiotherapy fractions (HDR brachytherapy monotherapy, hypofractionation, SBRT) directed to the prostate. There is also increasing efforts to study the use of radical RT in the setting of metastatic disease. Both of these trends will likely mean a dramatic shift in how we use radiotherapy in the future for both localized and metastatic prostate cancer.

Workshops

Thursday, June 21 - Princess Margaret Hospital

Workshop 1: Are your prostate plans hitting the mark? Strategies for physicists
Melanie Davidson PhD, Tim Craig PhD

(Cobalt Lounge: Conference Room A, Princess Margaret Hospital, floor 2B)

This workshop will use an interactive approach to case based discussions on the following topics:

- Including advanced imaging information in planning
- Establishing/evaluating image-guided radiation therapy (IGRT) (criteria, guidelines, adherence to guidelines)
- Assessing/deriving planning target volumes (PTVs)
- Metrics to better assess plan quality (beyond traditional dose-volume criteria)

Workshop 2: Contouring for prostate cancer treatment planning
Chirag Patel MD, Hans Chung MD
Moderators: ***Ewa Szumacher MD, Nafisha Lalani MD, Robert Timmerman MD***

(The Skills Lab, Princess Margaret Hospital, floor 2B)

This workshop will use a combination of didactic and case-based hands-on format to allow participants to:

- Integrate anatomical and imaging knowledge to the delineation of dominant intraprostatic lesions (DIL)
- Practice margin design in different scenarios
- Use registration and fusion capabilities to their maximum advantage

Workshop 3: Image guidance in prostate cancer radiotherapy
Kitty Chan, MRT(T), Winnie Li MRT(T), Vickie Kong MRT(T)

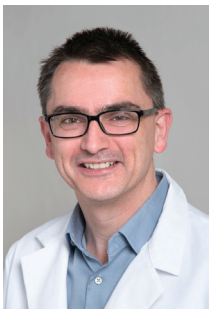
(Red Room, Princess Margaret Hospital, floor 1B, room 615)

By the end of this case-based discussion session, participants will be able to:

- Compare and contrast various approaches to image guidance for prostate cancer including the advantages and limitations of each
- Identify irregular situations faced in online image guidance and suggest ways to resolve these situations
- Describe the importance of dietary preparation for these patients especially related to dose accumulation

Faculty Biographies

GUEST FACULTY



Glenn Bauman is a Radiation Oncologist specializing in genitourinary and central nervous system malignancies. He is also the Professor and Chair/Chief of the Department of Oncology at the Schulich School of Medicine and Dentistry, University of Western Ontario in London, Ontario and is an Associate Scientist, Lawson Health Research Institute. Dr. Bauman's primary areas of research interest are multi-modality image guided radiotherapy and cancer imaging.

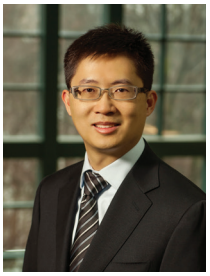
Robert Timmerman is Professor of Radiation Oncology and Neurosurgery, and Effie Marie Cain Distinguished Chair in Cancer Therapy Research at the University of Texas Southwestern Medical Center in Dallas, Texas, where his primary practice involves the treatment of adult and children with brain tumors. Dr. Timmerman graduated from Iowa State University with a Bachelor of Science degree in Nuclear Engineering and from the University of Tennessee with a Master of Science degree in Reactor Physics. After finishing medical school in his home state of South Dakota, he completed a residency in Radiation Oncology at The Johns Hopkins Hospital. He was the Principal Investigator or Co-Investigator on several prospective trials designed to evaluate the efficacy and toxicity of stereotactic body radiation therapy in lung, liver, spine, and pelvic sites. He is the national principal investigator of Radiation Therapy Oncology Group (RTOG) trials using this therapy in patients with early stage lung cancer.

FACULTY

Paul Boutros began his career as a Chemist at the University of Waterloo, before moving into Medical Biophysics and ultimately computational oncology at the University of Toronto. He is now a Principal Investigator at the Ontario Institute for Cancer Research and an Associate Professor at the University of Toronto. His research program focuses on the development of diagnostic, prognostic and predictive assays for urological cancers, and in this context he leads the Canadian Prostate Cancer Genome Network.

Charles Catton is a Radiation Oncologist who has been on staff at the Princess Margaret Cancer Centre in Toronto since 1989. He has a particular interest in the development of high-precision radiotherapy techniques for prostate cancer. He lead an OCOG-sponsored international trial that investigated hypofractionated radiotherapy for intermediate risk prostate cancer and is the Canadian PI for a multinational trial co-sponsored by CCTG and MRC-UK investigating multimodality post-operative treatment of prostate cancer. Dr Catton is Professor of Radiation Oncology at the University of Toronto. He has served as the GU Oncology Site Leader at The Princess Margaret Cancer Centre and an executive member of the GU disease site Committee of the CCTG.

Patrick Cheung is a Radiation Oncologist specializing in genito-urinary and thoracic cancers at the Sunnybrook Odette Cancer Centre. His clinical interests include the use of hypofractionation and SBRT for prostate, kidney, lung, and metastatic tumours. He is an Associate Professor in the Department of Radiation Oncology at the University of Toronto. His academic interests include studying the use of SBRT in oligometatatic and oligoprogressive cancers. He is the co-chair of the national CCTG phase 3 randomized trial evaluating the use of local ablative therapy in the setting of hormone sensitive oligometastatic prostate cancer.



Hans Chung is an Assistant Professor, Department of Radiation Oncology, University of Toronto, and practices at the Sunnybrook Odette Cancer Centre. He specializes in prostate brachytherapy and his research interest is in salvage prostate HDR brachytherapy.

Tim Craig is an Assistant Professor in the University of Toronto Department of Radiation Oncology and a Physicist in the Radiation Medicine Program at PMH since 2005. He completed his PhD in Medical Biophysics at the University of Western Ontario. His research interests include the development of planning target volume margin calculator software tools and modeling the impact of geometric uncertainties in radiation therapy.

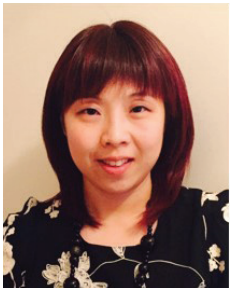
Melanie Davidson completed her PhD in Medical Biophysics with a focus in x-ray imaging at Western University in London, Ontario followed by a residency in Medical Physics at the London Regional Cancer Program. Melanie is an active member of the Odette Cancer Centre (OCC) brachytherapy team at the Sunnybrook Health Sciences Centre, and she is currently the Physics Lead for OCC's GU and Gynae site teams for external beam radiotherapy. Much of her clinical work involves the development and implementation of treatment planning protocols and scripts to enhance standardized practices and plan quality. Melanie has also led the treatment planning and technical development for in-house clinical trials in prostate SBRT and was a member of the Canadian leadership team for the PACE trial. Melanie is an Associate Professor in the University of Toronto's Department of Radiation Oncology.

Darby Erler is the Clinical Specialist Radiation Therapist for the Stereotactic Body Radiation Therapy (SBRT) Program at the Odette Cancer Centre at Sunnybrook and an Instructor with the Department of Radiation Oncology, University of Toronto. She graduated from the University of Toronto's Master of Health Science in Medical Radiation Sciences program in 2015. As a Clinical Specialist Radiation Therapist, Darby's goal is to enhance radiation therapy practice and patient outcomes for those undergoing SBRT through an expanded patient focus. Her research areas of interest include assessing clinical outcomes associated with the use of SBRT, evaluating innovations in treatment delivery and improving the patient experience with the use of patient reported outcomes.

Sangeet Ghai is an Associate Professor in the Joint Department of Medical Imaging (JDMI) at University Health Network (Toronto General Hospital- Princess Margaret Hospital) – Mount Sinai Hospital – Women's College Hospital, University of Toronto, Canada. His main areas of interest and research include prostate imaging and intervention. He is actively involved in prostate MRI techniques, High resolution ultrasound imaging of prostate, and in-bore focal treatment for intermediate risk prostate cancer.

Robert Hamilton is a Urologic Oncologist at Princess Margaret Cancer Centre, in Toronto, Canada. His clinical and research interests are in prostate cancer and testicular cancer. In prostate cancer, he is exploring the role of pharmacogenomics to personalize chemoprevention, with a particular interest in statin medications. He has interest in oligometastatic disease and molecular imaging modalities. Dr. Hamilton trained at the University of Toronto; completed a Master of Public Health at The University of North Carolina at Chapel Hill and a research fellowship at Duke University. He completed fellowship at Memorial Sloan-Kettering Cancer Centre.

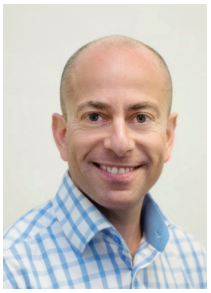
Joelle Helou is a Radiation Oncologist at the Princess Margaret Cancer Centre and an Assistant Professor at the University of Toronto. She completed her medical school in Lebanon and her radiation oncology training at the Institut Gustave Roussy in France before coming to Toronto for a fellowship at the Odette Cancer Centre with a focus on GU malignancies particularly prostate brachytherapy and SBRT. She holds a master's in basic sciences from the Saint Joseph University in Beirut, Lebanon and completed a MSc in Clinical Epidemiology at the University of Toronto in 2017. Her clinical and research focuses are on prostate brachytherapy, patient reported outcomes with an emphasis on quality of life measurement and health economics.



Vickie Kong is a Clinical Specialist Radiation Therapist in the Radiation Medicine Program since 2002. She is a graduate of the Medical Radiation Sciences BSc/Diploma program offered jointly by the University of Toronto Department of Radiation Oncology and the Michener Institute, and received her MSc in Radiotherapy Planning in 2016. Currently, she is focusing on the development of dose reconstruction and adaptive strategy, and engaging in various investigations with the aim of improving treatment quality for patients. She is also active in providing supervision for undergraduate students on their research projects, and a contributing member of various committees locally and nationally.

Nafisha Lalani completed her medical and residency training at the University of Toronto, followed by a Master of Public Health at Harvard University. Currently, she is working as a Radiation Oncologist at the Princess Margaret Cancer Centre with a specific focus on the management of genitourinary, breast and thoracic malignancies. She is the recipient of the Canadian Urologic Oncology Group Young Investigator Award and has published in the areas of GU survivorship, bladder preservation and the use of kidney SBRT.

Andrew Loblaw is a Radiation Oncologist, Clinician Scientist, and Professor in the Department of Radiation Oncology at Sunnybrook Health Sciences Centre. Dr Loblaw's clinical practice and research interest focus on improving outcomes for men with prostate cancer and the healthcare system. He has authored over 200 peer-reviewed papers and has been awarded grant funding of over $35M.



Ur Metser is the Division Head of Molecular Imaging and a Staff Radiologist at the Joint Department of Medical Imaging (UHN, Mount Sinai Hospital and Women's College Hospital) and holds the position of Associate Professor of Radiology, Department of Medical Imaging at the University of Toronto. He is also the clinical lead in the core of Radiochemistry and Nanotechnology at the Techna Institute and chairs the Ontario Provincial Positron Emission Tomography Steering Committee at Cancer Care Ontario, responsible for the evidence-based introduction of PET in Ontario. He graduated from the Faculty of Medicine at the Technion (Haifa) and completed his residency training at the Sourasky Medical Center (affiliate of Tel Aviv University) and fellowship programs in abdominal imaging at the University of Toronto, and PET imaging at McMaster University.

Gerard Morton is a Radiation Oncologist at the Sunnybrook Odette Cancer Centre and Associate Professor at the University of Toronto. His clinical and academic focus is on prostate cancer treatment and on the use of brachytherapy in particular. He is a recognized international expert in prostate brachytherapy. He chairs the Brachytherapy Area of Focused Competence Committee at the Royal College, is a former Board Member of the American Brachytherapy Society, and is North American Editor of Clinical Oncology. He currently chairs several ongoing clinical trials of prostate brachytherapy.

Chirag Patel is an Assistant Professor in the Department of Medical Imaging, University of Toronto. He is an Abdominal Radiologist and Head of the Abdominal Imaging Division in the Department of Medical Imaging, Sunnybrook Health Sciences Centre and Site Lead for the Abdominal Imaging Fellowship program, at the University of Toronto. Dr. Patel has subspecialist training in abdominal imaging and interventional radiology, having obtained his undergraduate and postgraduate qualifications in London, UK. His expertise is in hepato-pancreatic biliary and genitourinary imaging and he is involved in research and education in these areas.

Ananth Ravi is the Lead for Brachytherapy Physics and Clinical Operations of the Brachytherapy Program at the Odette Cancer Centre. Ananth's research focus is improving image-guided brachytherapy and exploring novel technologies to achieve customised patient-specific brachytherapy treatments.

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