

Annual report 2018

Department of Radiation Oncology
Dalhousie University



Foreword

The department of Radiation Oncology at Dalhousie University has four sites in the Three Maritimes Provinces of Canada. It is a major player in Canada, involving 43 faculty members from various disciplines, equipped with 13 Linacs and ensuring the radiotherapy delivery to over 5,000 patients annually. It strives to improve the patient's care through implementation and development of innovative radiotherapy techniques, the education of the next generation of academic leaders, and a redefinition of the role of radiation therapists, nurses, medical physicists and radiation oncologists.

In 2018 there has been significant changes in the department with the recruitment of a new Chair and the development of a strategic research plan for 2019-2024 with a departmental retreat held on December 14th in Halifax. The retreat aimed at group building, branding Dalhousie Radiation Oncology, breaking silos between sites and disciplines, improving communication between department staffs, defining the research opportunities for the Maritimes, identifying the area where investment should be made, brainstorming on collaborative research ideas, changing the department culture placing the highest priority on research, and convincing ourselves that we are a large group capable of competing with the world bests.

In this document, we report the academic achievements in terms of peer reviewed publications, grant funding and education hours.

The academic executive committee
Amanda Caissie, Dave Bowes, Karen Watts, James Robar, Jean-Philippe Pignol

Faculty and Learners

Faculty:

<u>Halifax, NS</u>		
Tetteh Ago, Professor	Lara Best, Assistant Professor	David Bowes, Associate Professor
Amanda Cherpak, Assistant Professor	Krista Chytyk-Praznik, Assistant Professor	Slawa Cwajna, Assistant Professor
Carol-Anne Davis, Lecturer	Helmut Hollenhorst, Associate Professor	Robin Kelly, Assistant Professor
Thalat Monajemi, Assistant Professor	Kathryn Moran, Lecturer	Liam Mulroy, Associate Professor
Maureen Nolan, Assistant Professor	Patricia Oliver, Lecturer	Nikhilesh Patil, Assistant Professor
Jean-Philippe Pignol, Professor	Murali Rajaraman, Associate Professor	James Robar, Professor
Rob Rutledge, Associate Professor	Mike Sattarivand, Assistant Professor	Jason Schella, Lecturer
Alasdair Syme, Assistant Professor	Christopher Thomas, Assistant Professor	Derek Wilke, Assistant Professor
Mammo Yewondwossen, Asst.Professor		
<u>Sydney, NS</u>		
Kwamena Beecham, Assistant Professor	Ashraf Mahmoud-Ahmed, Asst.Professor	Waseem Sharieff, Assistant Professor
Sandra Wajstaub, Assistant Professor	Heping Xu, Assistant Professor	
<u>Saint John, NB</u>		
Margot Burnell, Associate Professor	Amanda Caissie, Assistant Professor	Holly Campbell, Assistant Professor
Congwu Cui, Assistant Professor	Edward Lawrence, Lecturer	MD Mohiuddin, Assistant Professor
Farah Naz, Assistant Professor	Rob Thompson, Assistant Professor	Todd Stevens, Assistant Professor
<u>Charlottetown, PEI</u>		
Anthony Landry, Assistant Professor	Grant MacNiven, Lecturer	Larry Pan, Assistant Professor
Eric Reynard, Lecturer		

Learners:

<u>Residents</u>		
Stefan Allen	Hannah Dahn	Michael Ha
Michael Kim	Arpita Sengupta	
<u>Graduate Students</u>		
Jennifer Borsavage	Brendan Brady	Cody Church
Eric Courtney Henry	Miriam Hewlett	Allan Hupman
John Lincoln	Oliver Marriot	Allister Mason
Mary Miedema	Cassidy Northway	Sarah Reeve
Ethan Ruiz	Parisa Sadeghi	Matthew Strugari

Peer reviewed publications

Caissie A, Brown E, Olson R, Barbera L, Davis C-A, Brundage M, Milosevic M. Improving Patient Outcomes and Radiotherapy Systems: A Pan-Canadian Approach to Patient Reported Outcome Use. *Med Phys* 2018; 45(10):e841-e844. PMID: 30144083

Matuszak M, Fuller C, Yock T, Hess C, McNutt T, Jolly S, Gabriel P, Mayo C, Thor M, **Caissie A**, Rao A, Owen D, Smith W, Palta J, Kapoor R, Hayman J, Waddle M, Rosenstein B, Miller R, Choi S, Moreno S, Herman J, Feng M. Performance/Outcomes Data and Physician Process Challenges for Practical Big Data Efforts in Radiation Oncology. *Med Phys* 2018; 45(10):e811-e819. PMID: 30229946

Korzeniowski M, Crook J, **Bowes D**, Gaztanaga M, Ots A, Rose J, Jaswal J, Pilote L, Tetrault-Laflamme A, Halperin R, Kim D, Petrie D, Araujo C, Bachand F. A Phase II trial of degarelix for prostate volume reduction: efficacy and hormone recovery. *Brachytherapy* 17(3):530-536,2018.

Liu SL, O'Brien P, **Zhao Y**, Hopman WM, Lamond N, Ramjeesingh R. Adjuvant treatment in older patients with rectal cancer: a population-based review. *Curr Oncol*. 2018 Dec;25(6):e499-e506. doi: 10.3747/co.25.4102.

Darvish-Molla S, Reno MC, **Sattarivand M**. Patient-specific pixel-based weighting factor dual-energy x-ray imaging system using a priori CT data. *Med Phys*. 2018 Dec 24. doi: 10.1002/mp.13354.

Struik GM, Godart J, Verduijn GM, Kolkman-Deurloo IK, de Vries KC, de Boer R, Koppert LB, Birnie E, Ghandi A, Klem TM, **Pignol JP**. A randomized controlled trial testing a hyaluronic acid spacer injection for skin toxicity reduction of brachytherapy accelerated partial breast irradiation (APBI): a study protocol. *Trials*. 2018 Dec 17;19(1):689. doi: 10.1186/s13063-018-3035-3.

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Struik GM, de Jongh FW, Birnie E, **Pignol JP**, Klem TM. Development and psychometric evaluation of a Dutch-translated shorter Breast Cancer Treatment Outcome Scale (Dutch BCTOS-13). *J Patient Rep Outcomes*. 2018 Dec 3;2(1):60. doi: 10.1186/s41687-018-0085-y.

Struik GM, **Pignol JP**, Kolkman-Deurloo IK, Godart J, Verduijn GM, Koppert LB, Birnie E, Ghandi A, Klem TM. Subcutaneous spacer injection to reduce skin toxicity in breast brachytherapy: A pilot

study on mastectomy specimens. *Brachytherapy*. 2018 Dec 5. pii: S1538-4721(18)30552-X. doi: 10.1016/j.brachy.2018.11.003.

Ilie G, Wickens CM, Ialomiteanu A, Adlaf EM, Asbridge M, Hamilton H, Mann RE, Rehm J, **Rutledge R**, Cusimano MD. Traumatic brain injury and hazardous/harmful drinking: Concurrent and single associations with poor mental health and roadway aggression. *Psychiatry Res*. 2018 Dec 13;272:458-466. doi:10.1016/j.psychres.2018.12.069.

Giddings A, Nica L, French J, **Davis CA**, Smoke M, Bolderston A. Patterns of Practice in Canadian Radiation Treatment Centres: Results of a National Survey. *J Med Imaging Radiat Sci*. 2018 Mar;49(1):23-30. doi: 10.1016/j.jmir.2017.10.004.

Karkada M, Costa AF, Imran SA, Hart RD, Bullock M, Ilie G, **Rajaraman M**. Incomplete Thyroid Ultrasound Reports for Patients With Thyroid Nodules: Implications Regarding Risk Assessment and Management. *AJR Am J Roentgenol*. 2018 Dec;211(6):1348-1353. doi: 10.2214/AJR.18.20056.

MacDonald RL, **Thomas CG**, Ward L, **Syme A**. Intra-arc binary collimation algorithm for the optimization of stereotactic radiotherapy treatment of multiple metastases with multiple prescriptions. *Med Phys*. 2018 Dec;45(12):5597-5607. doi: 10.1002/mp.13224.

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Dahn H, **Watts K**, **Best L**, **Bowes D**. Transition to practice: creation of a transitional rotation for radiation oncology. *Can Med Educ J*. 2018 Jul 27;9(3):e89-e96.

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Marginean C, Asmis T. Eastern Canadian Colorectal Cancer Consensus Conference 2017. *Curr Oncol*. 2018 Aug;25(4):262-274. doi: 10.3747/co.25.4083.

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Monajemi TT, **Ruiz EA**. Application of plastic scintillating fibres to surface dosimetry in megavoltage photon and electron beams: considerations for Cerenkov correction. *Phys Med Biol*. 2018 Sep 10;63(18):185003. doi: 10.1088/1361-6560/aad9b6.

Cherpak AJ, **Monajemi T**, Chytyk-Praznik K, **Mulroy L**. Energy-dependent OAR sparing and dose conformity for total marrow irradiation of obese patients. *J Appl Clin Med Phys*. 2018 Sep;19(5):532-538. doi: 10.1002/acm2.12413.

Moran K, Sinclair L, Freire S, Peters L, **Bowes D**, **Best L**, **Cherpak A**, Darling M, Day T, Trask J, Ilie G. Describing a Process for Creating a Patient Visible Quality Educational Display to Increase Patient Engagement in Radiation Oncology Throughout the Canadian Maritimes Provinces. *J Cancer Educ*. 2018 Jul 25. doi: 10.1007/s13187-018-1402-0.

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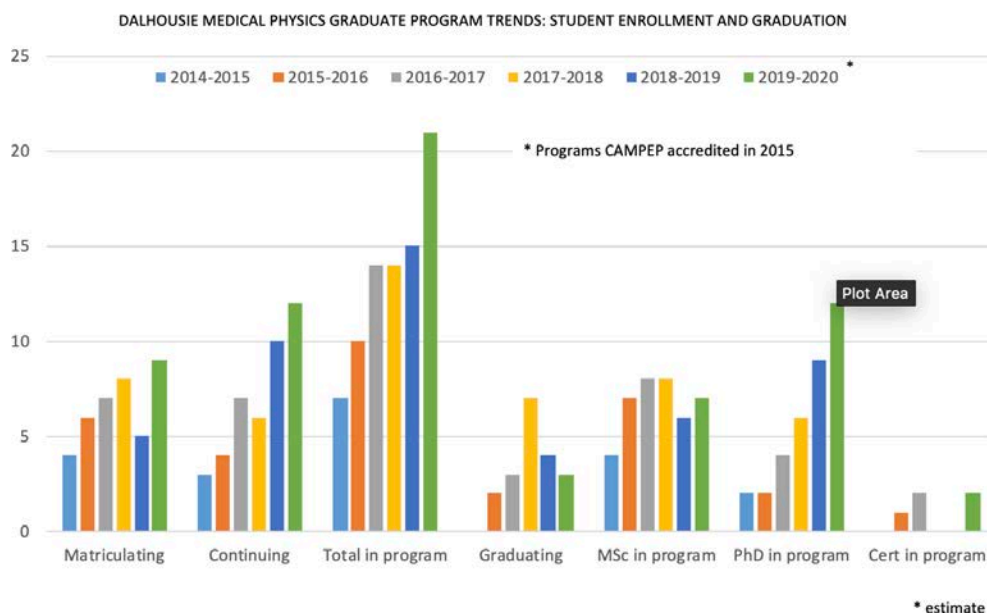
Stewart SA, **Rajaraman M**, Costa AF. Web-Based Tool for Standardized Reporting of Thyroid Ultrasound Studies. *AJR Am J Roentgenol.* 2018 Jan;210(1):39-42. doi: 10.2214/AJR.17.18375.

Funding

ACOA AIF and Brainlab	Development of novel technologies for treatment of cancer with precision radiotherapy	April 2017 – April 2021	CDN 3.64M (including industry and government contributions)
Varian Medical	Improved low-Z target imaging for the TrueBeam platform	March 2018 - March 2020	US 157,750
NSERC Discovery Grant	Exploration of organic electronics as radiation detectors	2014 - 2019	CDN 145,000
NSHA/Adaptiiv (Formerly 3D Bolus)	3D Printing and Immobilization and In Vivo Dosimetry	April 2017 – Nov 2019	CDN 128,000
Dalhousie Medical Research Foundation	Development of a zebrafish model for testing of gold nanoparticle mediated tumor killing using a prototype low Z target generated Linac beam	Jan 2017 - Dec2018	CDN 6,000
Dalhousie Medical Research Foundation	Dosimetry using plastic scintillation fibers	Jan 2017 – Dec 2018	CDN 5,940
Beatrice Hunter Cancer Research Institute	Preliminary investigation of the radiation dosimetry of radio-opaque 90Y labeled glass microspheres	2016 - 2018	CDN 10,000

Teaching

The department delivered over 10,000 hours of teaching for medical students and taught eight, three credit hour graduate classes for Medical Physics students during the year. Our post-graduate physics program is CAMPEP accredited and saw a continuous and dramatic increase of research students over the years.



Department of Radiation Oncology
Medical Education Program
Teaching Hours July 2017 - June 2018

LAST UPDATED: Aug 3, 2018

			TA	EL	KB	SC	HH	LB	PJ	LM	MN	NP	MR	RR	DB	DW	Total
Shadowing / Med I Students																	
Vivian Tan																	3.5
Bartosz Orzel	June 21, 27											3			3		6
			0	0	0	0	0	0	0	0	0	3	0	0	6.5	0	9.5
Electives/Shadowing - Med II																	
Ege Babadagli	July 3-28 & June 25		12			2.5	6		2.5	5		15.5		3.5	6	2.5	55.5
Sabrina Tang							3	2.5							3		6
Tina Kim							3	2.5		1	2.5	3					12
			0	12	0	2.5	9	5.5	2.5	6	2.5	18.5	0	3.5	9	2.5	73.5
MEAD - Med II																	
Dal Med 2 students			2			9	9	9		14	8.5	13	8.5	10.5	16		90.5
			2	0	0	9	0	9	0	14	8.5	13	8.5	10.5	16	0	90.5
Med III Students																	
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electives - Med IV																	
Afnan Didi					6.5		9	6.5	8	2.5		3.5	6	3.5	2.5	2.5	50
Amaris Hui					3.5	4.5	6	6	12	5.5	3		2.5	12	6		61
Heather McFadgen					25	5.5	9	10.5	8.5	12	7.5	3		12	13	5	111
Jonathan Wood					6.5	3	6	6	2.5	2.5	5.5	9			5.5		46.5
Max LeBlanc					3.5	9.5	5	3	11	13.5				6.5	5.5		63.5
			0	0	45	22.5	26	34.5	42.5	36	21	21	3.5	27	39.5	13.5	332
Longitudinal Med 1 & Med II Students (3hrs/wk)																	
Fiona Warde						11.5				12							23.5
Jun Feng Pan (Alex)												27	4		6		37
			0	0	0	11.5	0	0	0	12	0	27	4	0	6	0	60.5
CARO-CROF Summer Elective																	
Hsin-pei Hu (Spencer)	June 11-July 20		6			9.5	8	12		10	10.8	23.5	14.5	8.5	7.5	11.5	121.8
			6	0	0	9.5	8	12	0	10	10.8	23.5	14.5	8.5	7.5	11.5	121.8
Medical Physics Resident																	
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UGME Teaching																	
ProComp1	Tuesdays, 2-4pm	Sep 5, '17-May 18, '18	56					4			6						66
Clinical Skills	Thursdays, 9-12.30	Sep 7, '17-Apr 10, '18						7			125						132
Med2 OSCE Examiners	7.30-2pm & 1-7.30pm	May 22, 2018	6									6					12
PIER 3	1-3pm	Sep 19 & 26, 2017						2						2			4
Shadow a physician		Sep 5, 2017													7		7
Clinical case study	Trisha Daigle-Maloney	4hrs															0
ICE case 1 & 5	Hannah Dahn	4hrs															0
			62	0	0	0	0	13	0	0	131	6	0	2	7	0	221
RO Resident Rotations - regular 1 block rotation (in hrs)*																	
Trisha Daigle-Maloney	PGY5				350		420		350						280	280	1820
Yizhou Zhao	PGY5					280	280			280	280	140			280	140	1680
Arpita Sengupta	PGY4				28	252				280	280	112			280	308	1540
Michael Ha	PGY3				280	140	70			280	280	252	238				1540
Hannah Dahn	PGY2				280										140		420
Stefan Allen	PGY1														140		140
Intro to RO rotation	PGY1/2				6	3	10		6		12.5	5.5			23	2.5	68.5
*calculated @ 7hrs/day x 5days x 4wks for each rotation			0	0	0	916	451	1032	0	636	560	992.5	509.5	238	1143	730.5	7208.5
External Resident Rotations - regular 1 block rotation (in hrs)*																	
Ian MacDonald	PGY1 Radiology		103			7	21		2						7		140
Lesley Latham	PGY1 Radiology													140			140
Valerie Taylor	PGY1 Pathology															140	140
Alia Cloutier-Bosworth	PGY2 Dermatology					3			137								140
Erin Westby	PGY2 Dermatology								140								140
Yaw Amoako-Tuffour	PGY1 Radiology								12								112.5
Marshall Dunn	PGY1 Radiology										128	6		6			140
Alexander Froc	PGY1 Radiology										140						140
David Salgado	PGY1 Radiology					3	35	21					32		7		98
Magdalen Maung	PGY1 Radiology					35		105									140
Jennifer Melvin	PGY5 MedOnc					140											140
Myuran Thana	PGY4 MedOnc								70					70			140
Jenna McNeil	PGY3 Palliative Med						70										70
Kathryn Whittemore	PGY5 Resp			7	2.5	3			5					3.5			21
Alyson Wong	PGY5 Resp							2.5		4.5				3			10
Jeff Himmelman	PGY5 Urology								3.5							7.5	11
Kyle Lehmann	PGY5 Urology															10	15
*1 block = 7hrs/day x 5days x 4wks			103	0	7	9.5	275	37.5	420.5	79.5	268	11.5	130	210	28.5	157.5	1737.5
Other Learners																	
Stanley Koko	July 17-Aug 6, 2017	Observership		11.5		2.5		3.5	29	3		18.5	4	3.5			75.5
Deanna	Oct 6, 201	Nuclear Med Student											3.5				3.5
Hilary	Oct 13, 2017	Nuclear Med Student											3.5				3.5
Maddison Currie	Jan 26, 2018	Nuclear Med Student											3.5				3.5
Nicole Lever	Feb 16, 2018	Nuclear Med Student											3.5				3.5
Kara Doucett	March 2, 2018	Nuclear Med Student											3.5				3.5
Kate Hurley	March 23, 2018	Nuclear Med Student											3.5				3.5
Sarah Grant	Sep 12-Jan 16	BDH student											25		5		30
Amelia Wilson	Sep 26-Oct 17	BDH student											7.5				7.5
Emilie Devost	Oct 24-Feb 27	BDH student					2.5						7.5				10
Katie Power	Jan 23-Apr 17	BDH student											2.5			2.5	5
			0	11.5	0	2.5	0	6	29	3	0	18.5	67.5	3.5	0	7.5	149
GRAND TOTAL:			173	23.5	52	983	769	1149.5	494.5	796.5	1001.8	1134.5	737.5	503	1263	923	10003.8