Curriculum Vitae

Yannick Poirier, PhD

Assistant Professor, Department of Radiation Oncology

University of Maryland School of Medicine,

**Date** February 12th 2020

**Contact Information**

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Email: yannick.poirier@umm.edu

Foreign Languages: French (native)

**Education**

2007 B.S., Physics (Honors), Université de Moncton

2009 M.Sc., Medical Physics & Applied Radiation Sciences, McMaster University,

Thesis advisor: Dr. Orest Ostapiak

*“The effect of small cylindrical air cavities on circumferential dose distributions due to small 6 MV photon fields”*

2014 Ph.D., Physics, University of Calgary (CAMPEP Accredited)

“*A clinically feasible characterization of a novel method for kV dose computation”*

Thesis Advisor – Dr. Mauro Tambasco Co-advisor: Dr. Wendy Smith

**Post Graduate Education and Training**

2013 - 2015 Radiation Oncology Physics Residency, CancerCare Manitoba (CAMPEP-accredited)

**Certifications**

2016 Member, Canadian College of Physicists in Medicine, Therapeutic Physics (MCCPM)

2019 Diplomate, American Board of Radiology, Therapeutic Physics (DABR)

**Licensure**

Active Authorized user for HDR Brachytherapy, Maryland

**Employment History**

**Academic Appointments**

2016-Present Assistant Professor, University of Maryland School of Medicine

Department of Radiation Oncology

Division of Medical Physics & Division of Translational Research Sciences

**Other Employment**

2009-2013 Physics Assistant, Tom Baker Cancer Center, Calgary AB Canada

2015-2016 Physicist, Tom Baker Cancer Center, Calgary AB Canada

Pr**ofessional Society Membership**

2011-present General Member, Canadian Organization of Medical Physicists (COMP)

2012-present General Member, American Association of Physicsts in Medecine (AAPM)

2017-present Early Career Investigator, Radiation Research Society (RRS)

**Honors And Awards**

2005 ACFAS-FESR third prize for best oral presentation, awarded during a regional undergraduate and graduate multi-disciplinary research competition.

2004 NSERC Undergraduate Research Scholarship, Université de Moncton, awarded for high level of academic achievement and research potential

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2007 NSERC Undergraduate Research Scholarship, Université de Moncton, awarded for high level of academic achievement and research potential

2010 Queen Elizabeth II Scholarship, University of Calgary, awarded for academic and research excellence during graduate studies

2011 Queen Elizabeth II Scholarship, University of Calgary, awarded for academic and research excellence during graduate studies

2013 Queen Elizabeth II Scholarship, University of Calgary, awarded for academic and research excellence during graduate studies

2014 Finalist at the John Cunningham Young Investigators Symposium, Canadian Organization of Medical Physicists, awarded for high-quality oral presentation as part of the 2014 Canadian Organization of Medical Physicist (COMP) annual scientific meeting in Banff, AB

2016 Best Paper in Imaging Physics 2016, Journal of American Clinical Medical Physics (JACMP), awarded for best quality paper in the imaging physics subcategory of JACMP in 2016

2018 Early Career Investigator Travel Award, Radiation Research Society, awarded to promising early career investigators (within 10 years of obtaining terminal degree) who have recently are in the process of establishing an independent research laboratory.

2018 COMP Oral Presentation First place, presented at the CARO/COMP/CAMRT Joint Scientific Meeting Montreal, Quebec, September 12-15, 2018.

2019 Educator of the Year Award (“Golden Apple”), presented by the medical and physics radiation oncology residents for excellence in teaching and enthusiastic support of residency training during the academic year 2018-2019.

**Clinical Activities**

**Clinical Expertise**

Clinical Physicist working clinical practice since 2015, board certified since 2016 (MCCPM) and 2019 (DABR).

**Scope of Clinical Practice:**

2009-2013 Tom Baker Cancer Centre (~2900 patients/yr)

Clinical Linear Accelerator Monthly Quality Assurance

Xstrahl 300 Orthovoltage Monthly and Annual Calibration

Development of quality assurance tests for linear accelerators, orthovoltage x-ray therapy unit

Patient-specific IMRT measurements using MapCheck, EPID-based portal dosimetry

2013-2015 CancerCare Manitoba, Radiotherapy Clinic, Winnipeg MB (~3000 patients/yr)

Clinical Linear Accelerator Annual and Monthly Calibration and Quality Assurance

Gamma Knife Monthly and Annual Calibration and Quality Assurance

Xstrahl 300 Orthovoltage Monthly and Annual Calibration

Treatment plan review and verification for photon, electron radiation treatments (~400 patients)

Development of quality assurance tests for linear accelerators, ion chambers

Early commissioning of Varian Edge linear accelerator

Post-implant dosimetry for I-125 permanent seed prostate brachytherapy (~60 patients)

2015-2016 Tom Baker Cancer Center, Calgary AB, (~2900 patients/yr)

Clinical Linear Accelerator Annual and Monthly Calibration and Quality Assurance

Treatment plan review and verification for photon (MV and kV) and electron radiation treatments.

Treatment plan development, verification of patient setup for stereotactic surgery (Brainlab iPlan)

On-board imager annual and monthly calibration and quality assurance.

Commissioning SRS VMAT on TrueBeam linear accelerators

2016- Present University of Maryland Medical Center, Baltimore MD

Clinical Linear Accelerator Annual and Monthly Calibration and Quality Assurance

Treatment plan review and verification for photon and electron radiation treatments.

On-board imager annual and monthly calibration and quality assurance.

Physics support for high dose-rate brachytherapy using Nucleotron remote afterloader, including cervical, vaginal intracavitary treatments, and breast and cervical interstitial treatments.

Physics support for internal radiation delivery of Y-90 to the Liver, (both SIRS and Therasphere systems)

Creation and verification of radiation treatment plans for cranial SRS using Varian Edge and 6-degree of freedom table, including implementation of single-isocenter multi-target SRS.

**Development of any Clinical Programs:**

2014 Commissioning of Oncentra treatment-planning system for HDR cervical and vaginal brachytherapy at CancerCare Manitoba

2015 Development and implementation of VMAT technique for extremity sarcomas at CancerCare Manitoba

2016 Commissioning of 6DOF tests for daily, monthly and annual quality assurance, filmless daily Winston-Lutz test for Truebeams at Tom Baker Cancer Center

2017 Created QA program for SRS Edge, including commissioning of tests for daily, monthly and annual quality assurance, filmless daily Winston-Lutz test for Varian Edge at University of Maryland Medical Center

Development and oversight of treatment planning program for SRS at University of Maryland Medical Centre. Lead physicist and sole point of contact for all treatment planning concerns for linac-based SRS at University of Maryland Medical Centre.

2018 Development of single-isocenter multiple-target VMAT for intracranial metastases SRS at University of Maryland Medical Centre.

2019 Commissioning and implementation of the Varian Hyperarc package for single-isocenter multiple-target VMAT technique for intracranial metastases SRS at University of Maryland Medical Centre

**Administrative Service**

Institutional Service

2016-Present **Director**, *Pre-clinical physics*

Oversees one full-time DTRS staff physicist, oversees the physics and dosimetry of all radiobiological studies completed at DTRS, writes contributing scientist reports, contributes to study proposals and reports

2017-Present **Member**, *Medical Physics Residency Program Committee*

**Subject** **Matter** **Expert** for *Physics & Dosimetry for the Division of Translational Radiation Services*

2018-2019 **Member**, *Communication Committee*, Radiation Oncology Department

National Service

2013-Present **Reviewer**, *Medical Physics* (4x/yr)

2017-Present **Reviewer**, *Journal of Applied Clinical Medical Physics* (1x/yr)

**Reviewer**, *Radiation Research* (1x/yr)

**Abstract** **reviewer**, *Canadian Organization of Medical Physicists Annual Meeting*

2019-Present **Oral Session Moderator**, *American Association of Physicists in Medicine Annual Meeting*

**AAPM Working Group Committee Member**, *Working Group for Conformal Small Animal Irradiators, American Association of Physicists in Medicine*

**AAPM Task Group 319 Member**, *Task Group on Guidelines for Accurate Dosimetry in Radiation Biology Studies, American Association of Physicists in Medicine*

**Reviewer**, *Physica Medica* (1x/yr)

**Abstract reviewer**, *American Association of Physicists in Medicine Annual Meeting*

**Moderator,** *American Association of Physicists in Medicine Annual Meeting*

2020-Present **Moderator**, *Small animal Precision Image-Guided Radiotherapy conference in Munich*

**Panel Discussion**, *Small animal Precision Image-Guided Radiotherapy conference*

**Reviewer**, *Physics in Medicine and Biology (1x/yr)*

**Reviewer,** *International Journal of Radiation Oncology, Biology, Physics (1x/yr)*

**Reviewer,** *Advances in Radiation Oncology (1x/yr)*

**Reviewer**, *Public Library of Science (PLOS) One (2x/yr)*

**Teaching Service**

Undergraduate Student Teaching

2004-2007 **Teaching assistant**, Department of Physics & Astronomy Université de Moncton- lab demonstration & marking of lab reports and assignments for various undergraduate courses. ~4 hours a week, 30 students per class

2007-2009 **Teaching assistant**, Department of Physics & Astronomy, Department of Mathematics, Department of Medical Physics at McMaster University – Lab demonstration, tutoring, exam and assignment markings for various undergraduate courses. ~10 hours a week, 30 students per class

2009-2013 **Teaching assistant**, Department of Physics & Astronomy – Lab demonstration, exam and assignment markings for various undergraduate courses. Role of “super-teaching assistant” for one section, leading discussion and training of other teaching assistants. ~10 hours a week, 30 students per class

2015 **Mentor**, Department of Physics & Astronomy – Co-mentored undergraduate student in the context of undergraduate thesis project on the energy sensitivity of OSLDs and TLDs, the results of which have been published as a peer-reviewed article.

Resident teaching

2017-2018 **Advanced Treatment Planning Rotation Mentor**: Mentor physics residents during the Advanced Treatment Planning Rotation, 2017 and 2018 (~2 hours a week, 10 weeks).

2017-2019 **First-year resident advisor**: Advise first-year physics resident throughout their rotations, coordinate between residency mentors, etc.. (~0.5 hour a week, 52 weeks).

**Board Preparation Facilitator**: Gave physics review course to prepare radiation oncology residents for board exams. (~2 hours a week, 12 weeks, 2017-2019).

**Radiation Physics for Radiation Oncology & Physics Residents**: Taught lectures on patient simulation, immobilization, and localization. (2 lectures, 1 hour per lecture, 2018-2019).

**Radiation Physics for Medical Dosimetrists**: Taught lectures on MU hand-calculations for classical photon and electron treatments. (2 lectures, 1.5 hour per lecture, 2018)

**Radiation Biology Review Course**: Taught the Radiation Detectors portion of the nationally-acclaimed radiation biology review course, (~1.5 hour lecture, 2017 and 2018).

Post-Graduate Teaching

2015 **PHYS 7370 Lecturer** – Radiotherapy Physics (Khan) for graduate students. Created and marked all course material, assignments, and relevant exam material. Four 2-h lectures for six graduate students.

**PHYS 7380** **Lecturer** – Radiation Biology (Hall) for graduate students. Two 2-h lectures for eight graduate students.

**PHYS 7470** **Lecturer** – Methods of Medical Physics for graduate students. Created and marked all course material and assignments. Lab instructor for two 4-h laboratory sessions (Absolute dosimetry & Gamma Knife) for two graduate students.

**CSD 52 Lecturer** – Radiation Protection for the School of Radiation Therapy. Guest lecturer for one lecture (TLD) and instructor for two laboratory sessions (TLD, Gamma Knife, 2015). Created and marked all course material and assignments for six radiotherapy undergraduate students.

2016 **MDPH 623** **Lecturer** – Radiological physics and radiation dosimetry (Attix). Taught two one-hour lectures for two graduate students. Created and marked all course material and assignments.

2017-2019 **Medical Dosimetry Lecturer**: Taught lectures on MU calculations for photons and electrons (2 lectures, 2 hours per lecture, 2017 and 2018) and SBRT for dosimetrists (1 lecture, 2 hours per lecture (2019).

Students Mentored

2012 **Christopher Johnstone** and **Mitch Sommerville**, two MSc students starting their thesis projects. Outcome: successful MSc thesis, two co-authored publications in JACMP

2016 **Svetlana Kuznetsova**: Summer undergraduate physics student completing her honors thesis and a summer internship. Outcome: successful BSc thesis, one first authored publication in Med Phys

2017 **Emily Draeger**: Research Physicist at DTRS, supervised in my role as Director of Preclinical Physics. Outcome: Placed in Medical Physics Residency at Yale University, First-prize Oral presentation, Senior-authored publication in Red Journal, two co-authored publications in Rad Res and Int J Rad Biol

2018 **Christopher Johnstone**: Research Physicist at DTRS, supervised in my role as Director of Preclinical Physics. Outcome: Placed in Medical Physics Residency at Princess Margaret University, co-authored one publication in Red Journal, one in Med Phys.

2019 **Dawn Smyth**: Dosimetry Student at University of Maryland Medical Centre, supervised her end of training research project comparing the Raystation and Eclipse inverse planning algorithms in the context of single-isocenter multiple-target SRS for intracranial metastases. Outcome: Student successfully graduated, project informed clinical practice.

2020 **Andrew Gerry**: Research Physicist at DTRS, supervised in my role as Director of Preclinical Physics.

**Grant support (ongoing)**

BARDA HHSO10033001T Vujaskovic/Jackson 8/2/16-8/31/20 3.6 Cal. Months

RTOR-RadNuc-1002 $1,889,476

*Establishment of a Rabbit Model of Ionizing Radiation-induced Thrombocytopenia, Coagulopathies and Measures of Associated Vascular and Organ Injury*

The objective is to establish a disease progression model for total body irradiation-induced thrombocytopenia, vascular injury and associated etiologies (ex. consumption coagulopathy) in White New Zealand rabbits across a radiation dose-range to induce the hematopoietic acute radiation syndrome (H-ARS).

Role: Co-Investigator

BARDA HHSO10033002T Vujaskovic/Jackson 9/26/16-3/31/18 1.8 Cal. Months

RTOR-RADNUC-1005 $886,751

*A Non-Human Primate Model Study of Host Biomarker Expression Due to In-homogeneous*

*Ionizing Radiation Exposure*

The objective is to irradiate NHPs using four irradiation geometries: 1) bilateral (parallel-opposed) TBI, 2) unilateral (single-field) TBI, 3) upper-torso unilateral (single-field) partial-body irradiation (PBI), and 4) lower torso unilateral (single-field) PBI. Blood samples will be collected at the prescribed time points and shipped to five BARDA designated laboratories for biodosimetric analysis.

Role: Co-Investigator

Jackson/Poirier 7/1/2017-6/30/2018

UMB SOM/Radiation Oncology Departmental Seed Award $13,800

*FDG microPET-CT region-of-interest visualization, evaluation, and image registration (ROVER) quantification of acute lung injury in a rabbit model utilizing ipsilateral lung irradiation.*

Role: Co-Principal Investigator

HHSN272201700011C NIAID Jackson 2/1/17-1/3/19 1.2 Cal. Months

Sub with Chrysalis BioTherapeutics $733,327

*A Non-Human Primate Model Study of Host Biomarker Expression Due to In-homogeneous*

*Ionizing Radiation Exposure*

TP508: A Novel Nuclear Countermeasure Targeting Endothelial Cells and Stem Cells to Combat ARS and Delayed Multiple Organ Dysfunction The goal of the study is to obtain efficacy data, pathophysiological and pharmocometric data in established murine and porcine models of acute and delayed effects of acute radiation to support Animal Rule IND and licensure of TP508 and to take steps necessary to initiate pivotal animal studies at the end of this project

Role: Co-Investigator

BARDA HHSO10033003T Vujaskovic/Jackson 10/1/17-9/30/19 1.2 Cal. Months

RTOR-RADNUC-1006 $1,927,020

*Evaluation of Coagulation Pathway-Targeting Drugs in the Rabbit Model of Acute Radiation Syndrome (ARS) for Potential New Indications as ARS Medical Countermeasures*

The objective of this task order is to assess MCM efficacy through the design of an adequate and well-controlled study, with appropriate randomization and blinding, conducted in compliance with a quality plan that adheres to FDA GLP regulations. The basic protocol calls for male NZW rabbits to be exposed to a single TBI dose sufficient to induce lethality in 50%–70% of animals within the first 30-d post-exposure.

Role: Co-Investigator

HHSN272201800011C          Jackson 4/1/18-3/31/21 1.2 Cal Months

Sub with Humanetics Corporation (prime NIH/NIAID) $1,300,590

*A NHP Efficacy Study of Bio300 for the Mitigation of DEARE-Induced Pneumonitis and Pulmonary Fibrosis*

This contract focuses on the protection of healthy tissue from supratherapeutic radiation exposures using the proprietary pharmaceutical, BIO300, and promises a synergistic effort to address the significant challenge to saving lives in the aftermath of a nuclear/radiological accident or attack.

Role: Co-Investigator

BARDA HHSO10033004T Vujaskovic (PI) 6/18/18–6/18/20 1.2 Cal Months

RTOR RADNUC 1007 $2,135,634

*Evaluation of coagulation pathway targeting drugs in the minipig model of ARS*

Objectives: Blinded and well-controlled studies will be conducted to: 1) evaluate the survival benefit of roposed MCMs in the minipig animal model when administered 24 hours after total body irradiation (TBI), under minimal supportive care (please see definition, below), 2) determine the principle cause of mortality for each animal (i.e., sepsis, respiratory distress, renal failure, hemorrhage, disseminated intravascular coagulation (DIC)) and compare between treatment groups, and 3) assess the survival benefit under relevant CONOPs and resource limited supportive care conditions, including (but not limited to) the inclusion of prophylactic antibody treatment, co-administration with approved drugs, and delayed administration.

Role: Co-Investigator

**Publications**

**Peer-reviewed journal articles**

1. **Y Poirier**, A Kouznetsov, M Tambasco, *A simplified approach to characterizing a kilovoltage source spectrum for accurate dose composition*, Med. Phys. **39**, 3041–50 (2012).

2. C Kirkby, E Ghasroddashti, **Y Poirier**, M Tambasco, RD Stewart, *RBE of kV CBCT radiation determined by Monte Carlo DNA damage simulations*, Phys. Med. Biol. **58**, 5693–5704 (2013).

3. J Grafe, **Y Poirier**, F Jacso, R Khan, HW Liu, JE Villareal-Barajas, *Assessing the deviation from Inverse square law for orthovoltage beams with close-ended applicators*, J. Appl. Clin. Med. Phys. **15**, 356–366 (2014).

4. **Y Poirier**, A Kouznetsov, B Koger, M Tambasco, *Experimental validation of a simplified kV imaging source model*, Med. Phys. **41**, 041915/1–11 (2014).

5. C Johnstone, R LaFontaine, **Y Poirier**, M Tambasco, *Modeling a superficial radiotherapy x-ray source for relative dose calculations*, J. Appl. Clin. Med. Phys. **16**, 118–130 (2015).

6. M Sommerville, **Y Poirier**, M Tambasco, *Using HVL and kVp to portray an x-ray source for dose calculations in CT*, J. Appl. Clin. Med. Phys. **16**, 386–400 (2015). *This publication won the best paper in imaging physics for 2016.*

7. **Y Poirier**, M Tambasco, *Experimental validation of a kV dose computation method for CBCT imaging in an anthropomorphic phantom*, J. Appl. Clin. Med. Phys. **17**, 155–171 (2016).

8. C Johnstone, P Lindsay, E Graves, E Wong, J Perez, **Y Poirier**, Y Ben-Bouchta, T Kanesalingam, R Haijian, A Rubinstein, K Sheng, M Bazalova-Carter, *Multi-institutional MicroCT image comparison of image-guided small animal irradiators*, Phys Med Biol **62**, 5760–5776 (2017).

9. **Y Poirier**, S Kuznetsova, E-J Villarreal-Barajas, *Characterization of nanoDot optically stimulated luminescence detectors and high-sensitivity MCP-N thermoluminescent detectors in the 40-300 kVp energy range*, Med Phys **45**, 402–413 (2018).

10. A Anvari, **Y poirier**, A Sawant, *Development and implementation of EPID-based quality assurance tests for the small animal radiation research platform (SARRP)*, Med Phys **45**(7), 3246–3257 (2018).

11. K Martell\*, **Y Poirier\***, T Zhang, A Hudson, D Spencer, Ferenc Jacso, R Hayashi, R Banerjee, R Khan, N Wolfe, and J-P Voroney, *Radiation therapy for deep periocular cancer treatments when protons are unavailable: Is combining electrons and orthovoltage therapy beneficial?*, Journal of Radiation Research **59**(5), 593–603 (2018).\*: Contributions from these authors are equal and they should be considered as co-first authors

12. A Anvari, **Y poirier**, A Sawant, *Kilovoltage transit and exit dosimetry for a small animal image-guided radiotherapy system using built-in EPID*, Med Phys **45**(10), 4642–4651 (2018).

13. **Y Poirier**, C Johnstone, C Kirkby, *Effect of thin x-ray filter design in modern image-guided small animal irradiators on x-ray dosimetry and radiation biological effectiveness*, Br J Radiol **92** (1095): 1–8 (2019).

14. J Cohen, A Anvari, S Samanta, **Y Poirier**, A Alexander, M Ranjbar, R Pavlovic, A Zodda, IL Jackson, J Mahmood, Z Vujascovic, A Sawant, *Localized mild hyperthermia for radiosensitization in an orthotopic prostate tumor model in mice*, Br J Radiol **92** (1095): 1–10 (2019).

15. A Anvari, **Y Poirier**, A Sawant, *A comprehensive geometric quality assurance framework for preclinical microirradiators*, Med Phys **46**(14): 1840–1851 (2019).

16. IL Jackson, A Gibbs, **Y Poirier**, L Wathen, J Eley, E Draeger, M Gopalakrishnan, B Benjamin, Z Vujaskovic, *Hematological effects of non-homogeneous ionizing radiation exposure in a non-human primate model*, Rad Res **191**(5): 4528-438 (2019).

17. SJ Becker, Y Niu, Y Mutaf, K Prado, S Chen, **Y Poirier**, E Nichols, BY Yi, *Development and validation of a comprehensive patient-specific quality assurance program for a novel stereotactic radiation delivery system for breast lesions,* J Appl Clin Med Phys **20**(12); 138-148 (2019).

18. E Draeger, A Sawant, C Johnstone, B Koger, S Becker, Z Vujaskovic, I-L Jackson, **Y Poirier**, *A Dose of Reality: How 20 years of incomplete physics and dosimetry reporting in radiobiology may have contributed to the reproducibility crisis*, Int J Radiat Oncol Biol Phys **106**(2): pp.243-252 (2020).

19. **Y Poirier**, C Johnstone, A Anvari, N P Brodin, M Dos Santos M Bazalova-Carter, A Sawant, *A Failure Modes and Effects Analysis quality management framework for image-guided small animal irradiators: A change in paradigm for radiation biology*, Med Phys **47**(4); 2013-2022 (2020).

20. JS Remick, E Kowalski, R Khairnar, K Sun, E Morse, HRR Cherng, **Y Poirier**, N Lamichhane, S Becker, S Chen, A Patel, Y Kwok, E Nichols, P Mohindra, G Woodworth, WF Regine, MV Mishra, *A multi-center analysis of single-fraction versus hypofractionated stereotactic radiosurgery for the treatment of brain metastasis,* Radiat Oncol **15**, 128 (2020).

21. **Y Poirier**, M Belley, M Dewhirst, T Yoshizumi, J Down, *Transitioning from Gamma Rays to Xrays for Comparable Biomedical Research Irradiations: Energy Matters*, accepted by Radiation Research & published ahead of press (<https://doi.org/10.1667/RADE-20-00039.1>).

22. S Becker, W Culberson, **Y Poirier**, Y Mutaf, Y Niu, E Nichols, B Yi, *Dosimetry evaluation of the GammaPod stereotactic radiosurgery device based on established AAPM and IAEA protocols*, Accepted by Med Phys & published online ahead of press (https://doi.org/10.1002/mp.14197).

23. IL Jackson, G Gurung, **Y Poirier**, M Gopalakrishnan, E Cohen, T-S Donohue, M Cohen, D Newman, Z Vujaskovic*, A New Zealand White Rabbit Model of Thrombocytopenia and Coagulopathy Following Total Body Irradiation Across the Dose Range to Induce the Hematopoietic-Subsyndrome of Acute Radiation Syndrome*, published online ahead of print by Int J Radiat Biol, DOI: 10.1080/09553002.2019.1668981

24. **Y Poirier**, C Prado, K Prado, E Draeger, I L Jackson, Z Vujaskovic, *Use of modern CT simulation and 3-D radiation therapy planning system to develop and validate a total-body irradiation technique for the New Zealand White Rabbit*, accepted by Int J Radiat Biol and in press

25. IL Jackson, G Gurung, E Ayompe, **Y Poirier**, E Cohen, M Cohen, D Newman, M Gopalakrishnan, J Gobburu, Z Vujaskovic, *Characterization of the Severe Hemorrhagic Syndrome in the New Zealand White Rabbit Model Following Total Body Irradiation*, accepted by Int J Radiat Biol and in press

**Submitted or In-revision Peer-reviewed journal articles**

1. I-L Jackson, M Gopalakrishnan, A Gibbs, G Gurung, J Piegols, A Zodda, D Newman, **Y Poirier**, J Gobburu, E Cohen, Z Vujaskovic, *Multi-species comparison of total body irradiation-induced acute radiation sickness: a single institution experience*, submitted to Cancers & in review

2. E Kowalski, JS Remick, R Khamar, K Sun, E Morse, H Cherng, **Y Poirier**, N Lamichhane, SJ Becker, S Chen, JK Molitoris, Y Kwok, WF Regine, MV Mishra, *Immune Checkpoint Inhibition in Patients Treated with Stereotactic Radiation for Brain Metastases,*  submitted to Practical Radiation Oncology & in review

3. P Parekh, E Solano-Gonzalez, X Ma, K Tighe, A Casildo, A Zodda, C Johnstone, **Y Poirier**, J Mahmood, K Bhalla, S Li, R Lapidus, F Carrier, *Investigating Chemopotentiation by Low-Dose Fractionated Radiation Therapy for disseminated intra-abdominal gastric cancer*, submitted to Rad Res & in review

4. **Y Poirier**, S Becker, C Decesaris, W Culberson, Emily Draeger, C Johnstone, Z Vujaskovic, I-L Jackson, *The Impact of Radiation Energy on Dose Homogeneity and Organ in the Gottingen Minipig Total Body Irradiation Model*, submitted to Radiation Research & in review

5. CM DeCesaris, A Pollock, B Zhang, **Y Poirier**, E Kowalski, K Paulosky, MV Mishra, E Nichols, *Assessing the Need for Adjusted Organ-at-Risk Planning Goals for Patients Undergoing Adjuvant Radiotherapy for Locally Advanced Breast Cancer with Proton Radiation*, submitted to Int Rad Onc Biol Phys & in review

**In preparation Peer-reviewed journal articles**

1. **Y Poirier**, A Anvari, C Johnstone, A Sawant, *Commissioning of the Xstrahl SARRP image-guided small animal irradiator in µRaystation*, In preparation for submission to Med Phys

2. **Y Poirier**, S Becker, S Mossahebi, N Lamichhane, A Sawant, *Alara in a Flash – Radiation shielding and safety implications following linac conversion to an electron FLASH-RT unit*, technical note in preparation for submission to Med Phys

3. **Y Poirier**, E Draeger, S Becker, A Sawant, *The Importance of Renewed Physics Support in the Evolving Landscape of Radiation Biology*, Submitted to Med Phys & in Review

4. M Bazalova-Carter, **Y Poirier**, et al., S Kry. *Report of AAPM Task Group 319: Dosimetric considerations for radiobiology studies with cabinet irradiators*, in preparation for submission to Med Phys

**Peer-reviewed abstracts/conference proceedings**

1. **Y Poirier**, O Ostapiak, *The effects of small cylindrical air cavities on circumferential dose distributions due to small 6 MV photon fields*, Med. Phys. **36,** 4318 (2009).

2. **Y Poirier**, A Kouznetsov, M Tambasco, *Characterization of the parameters defining a kilovoltage source for accurate dose computation*, Med. Phys. **38**, 3411 (2011).

3. **Y Poirier**, A Kouznetsov, M Tambasco, *Experimental validation of a novel approach to fast and accurate kilovoltage dose computation*, Med. Phys. **38**, 3728 (2011).

4. C Kirkby, E Ghasroddashti, **Y Poirier**, M Tambasco, R Stewart, *Monte Carlo DNA Damage Simulations of kV CBCT “Image Guidance” Radiation*, Med. Phys. **39**, 4645 (2012).

5. **Y Poirier**, A Kouznetsov, M Tambasco, *Characterizing the spatially varying fluence and spectra of a kV imaging source for dose calculations*, Med. Phys. **39**, 4643 (2012).

6. **Y Poirier**, A Kouznetsov, M Tambasco, *Validation of a kV dose computation method for CBCT imaging procedures*, Radiother Oncol **106** (Sup. 2), S306-S307 (2013).

7. C Kirkby, E Ghasroddashti, **Y Poirier**, M Tambasco, R Stewart, *Monte Carlo simulations of relative DNA Damage from kV CBCT radiation,* Med. Phys. **40**, 319 (2013)

8. M Sommerville, **Y Poirier**, A Kouznetsov, M Tambasco, *Using HVL and kVp to portray an x-ray source for dose calculations in CT*), Med. Phys. **40**, 404 (2013).

9. C Johnstone, **Y Poirier**, A Kouznetsov, M Tambasco, *Validation of in-house dose calculation software for superficial therapy*, Radiother Oncol **108** (Sup. 2), S114 (2013).

10. F Jacso, **Y Poirier**, J Gräfe, I Nygren, R Khan, E Villarreal-Barajas, *Orthovoltage dosimetry using ion chambers, Gafchromic EBT3 film and kV dose computations*, Radiother Oncol **108** (Sup. 2), S56 (2013).

11. **Y Poirier**, A Kouznetsov, M Tambasco, *Experimental validation of a kV dose computation method for CBCT imaging in an anthropomorphic phantom*, Radiother Oncol **108** (Sup. 2), S60 (2013).

12. **Y Poirier**, M Sommerville, CD Johnstone, J Grafe, I Nygren, R Khan, JE Villareal-Barajas, F Jacso, M Tambasco, *Validation of a general empirically-based beam model for kV x-ray source*, Med. Phys. **41**, 3 (2014).

13. M Sommerville, **Y Poirier**, M Tambasco, *Validation of a CT X-ray source characterization technique for dose computation using an anthropomorphic phantom*, Med. Phys. **42**, 3642 (2015).

14. K Nakonechny, M Tran, D Sasaki, J Beck, **Y Poirier**, K Malkoske, *Improving inter-linac DMLC IMRT dose precision by fine tuning of MLC leaf calibration*, Med. Phys. **43**, 4949 (2016).

15. **Y Poirier**, S Kuznetsova, E Villareal-Barajas, *Characterization of the energy dependence of high-sensitivity MCP-N TLD and Al2O3:C OSLD in-vivo dosimetry systems for 40-100 kVp energies*,Med. Phys. **43**, 4941 (2016).

16. J.P. Voroney, A. Hudson, **Y. Poirier**, D, Spencer, F. Jasco, K. Martell, *A practical energy modulation technique to avoid enucleation for advanced periocular cancers*, Radiotherapy and Oncology**120**, S61 (2016).

17. S Kuznetsova, **Y Poirier**, JE Villareal-Barajas, *Characterization of two high-sensitivity dosimetry systems (MCP-N TLD and nanoDot OSLD) in the low energy X-ray domain,* Med. Phys. **44**, 4390-4391 (2017).

18. **Y Poirier**, K Martell, R Khan, T Zhang, A Hudson, N Wolfe, D Spencer, J-P Voroney, *Mixed orthovoltage and electron treatments offer an inexpensive alternative to protons in treating peri-ocular lesions*, Med. Phys. **44**, 3206 (2017).

19. **Y Poirier**, M Bazalova-Carter, C Johnstone, A Anvari, A Sawant, *FMEA quality management framework for small animal image-guided radiotherapy based on the TG-100 methodology*, Med. Phys. **44**, 3063 (2017).

20. A Anvari, **Y Poirier**, A Sawant, *Robust and quick EPID-based quality assurance procedures for small animal image-guided radiation therapy systems*, Med. Phys. **45**, E601 (2018).

21. A Anvari, **Y Poirier**, A Sawant, *EPID dosimetry for kilovoltage x-ray beam in pre-clinical radiation research studies*, Med. Phys. **45**, E601 (2018).

22. S Becker, Y Mutaf, **Y Poirier**, Y Niu, C Yu, B Yi, S Feigenberg, E Nichols, *Dosimetric results of the first GammaPod clinical trial, GCC 1202: A 8 Gy Boost to the Lumpectomy Cavity*, Med. Phys. **45**, E168 (2018).

23. S Becker, Y Niu, Y Mutaf, C Yu, **Y Poirier**, S Feigenberg, E Nichols, B Yi, *Patient-specific quality assurance for GammaPod: A novel dedicated breast stereotactic radiosurgery device*, Med. Phys. **45**, E591-E592 (2018).

24. E Draeger, A Sawant, I-L Jackson, Z Vujaskovic, **Y Poirier**, *A review of the current state of physics and dosimetry reporting in radiation biology research*, Radiother & Oncology 129 Supplement 1, S33 (2018).

25. C Kirkby, C Johnstone, **Y Poirier**, *Effect of thin x-ray filter design in modern image-guided small animal irradiators on x-ray dosimetry and radiation biological effectiveness*, Radiother & Oncology 129 Supplement 1, S45 (2018).

26. E Draeger, A Sawant, C Johnstone, B Koger, S Becker, I-L Jackson, Z Vujaskovic, **Y Poirier**, *Two Decades of Physics and Dosimetry Reporting in Radiobiological Studies: A Potential Factor of the Reproducibility Crisis*, Med. Phys. **46**(6), E175 (2019).

27. S Chen, B Agyepong, **Y Poirier**, N Lamichhane, S Becker, B Zhang, A Gopal, E Nichols, P Mohindra, B Yi, J Molitoris, M Mishra, *Optimization of Image Guidance Clinical Workflow for Frameless Linac-Based Stereotactic Radiosurgery (SRS) Using Three Dimensional Surface Imaging Monitoring System*, Med. Phys. **46**(6), E102 (2019).

28. R McCaroll, P Sabouri, N Lamichhane, **Y Poirier**, B Yi, S Chen, M Guerrero, *Commissioning of Mobius3D for Linac-Based SRS and Determination of the Dosimetric-Leaf-Gap*, Med. Phys. **46**(6), E612 (2019).

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30. E Kowalski, J Remick, R Khairnar, E Morse, **Y Poirier**, N Lamichhane, S Becker, M Mishra, *Immune Checkpoint Inhibition and the Risk of Radionecrosis in Patients Treated with SRS for Brain Metastases*, Int J Radiat Onc Biol Phys 105(1S), E113 (2019).

31. J Remick, E Kowalski, R Khairnar, E Morse, E Khairnar, **Y Poirier**, N Lamichhane, S Becker, S Chen, A Patel, E Nichols, P Mohindra, Y Kwok, M Mishra, *A comparison of single-fraction versus multiple-fraction stereotactic radiosurgery in the treatment of brain metastasis: A multicenter Analysis*, Int J Radiat Onc Biol Phys 105(1S), E88 (2019).

32. S Samanta, P Damron, **Y Poirier**, S Mao, N Lamichhane, S Dahiya, J Yared, A Rapoport, N Hardy, J Molitoris, A Kaiser, B Yi, P Mohindra, *Dose to lungs and kidneys during total body irradiation: Are we delivering the expected dose?*, submitted to ASTRO

33. GS Alexander, JS Remick, E Kowalski, K Sun, **Y Poirier**, J Stewart, N Lamichhane, H Eisenberg, RG Slawson, GF Woodworth, WF Regine, MV Mishra, *GammaKnife versus linac-based stereotactic radiosurgery for the treatment of brain metastases: Clinical outcomes and toxicity analysis*, submitted to ASTRO

34. **Y Poirier**, A Anvari, R Nilsson, A Gerry, CD Johnstone, A Sawant, *Commissioning of an Xstrahl SARRP in the µ-RayStation Treatment Planning System*, submitted to AAPM-COMP

35. **Y Poirier**, S Becker, S Mossahebi, N Lamichhane, A Sawant, *Alara in a Flash – Radiation shielding and safety implications following linac conversion to an electron FLASH-RT unit*, sumbmitted to AAPM-COMP

**Major Invited Speeches**

International

1. **Y Poirier**, *Practical considerations in commissioning an XRAD-320 cabinet biological irradiator and designing robust biological experiments*, invited talk at the *Experimental Radiobiology: Physics meets Biology and Medicine* Workshop organized by the Heidelberg Centre Latin America held in Santiago Chile, March 2020.
2. **Y Poirier**, *Modeling kilovoltage x-ray sources for computational dose simulations and validation using EPID dosimetry*, invited talk at the *Experimental Radiobiology: Physics meets Biology and Medicine* Workshop organized by the Heidelberg Centre Latin America held in Santiago Chile, March 2020.
3. **Y Poirier**, *The Potential of Automated QA in Radiation Biology Using Comprehensive EPID-Based QA Tools for Image-Guided Small Animal Irradiators*, invited SAM Workshop Talk at joint COMP-AAPM virtual meeting held online, Jul 2020.

National

1. **Y Poirier**, *Radiation Measurements, Detections and Calibrations*, lecture for the University of Maryland School of Medicine *Physics and RadioBiology Review Course*, Baltimore MD March 2017.

2.E Draeger, A Sawant, I-L Jackson, Z Vujaskovic, **Y Poirier**, The current state of radiation biology physics and dosimetry reporting, *Presented at the Council of Ionizing Radiation Measurement Standards (CIRMS) hosted by the National Institute of Standards and Technology (NIST),* Gaithersburg MD, April 2018

3. **Y Poirier**, *Radiation Measurements, Detections and Calibrations*, lecture for the University of Maryland School of Medicine *Physics and RadioBiology Review Course*, Baltimore MD April 2018.

4. **Y Poirier**, *Radiation Measurements, Detections and Calibrations* and *Radiation Producing Machines*, lectures for the University of Maryland School of Medicine *Karl Prado Physics and RadioBiology Review Course*, Baltimore MD April 2019.

5. **Y Poirier***, A review of kV Orthovoltage X-ray Irradiators*, Invited talk at the Health Physics Society held in Capital Harbor, MD, July 2020.

6. **Y Poirier**, *Radiation Measurements, Detections and Calibrations* and *Radiation Producing Machines*, lectures for the University of Maryland School of Medicine *Karl Prado Physics and RadioBiology Review Course*, Baltimore MD August 2020.

Local

1. **Y Poirier**, A Kouznetsov, M Tambasco, *Imaging dose in daily image-guided radiation therapy,* invited at the 2013 Alberta Imaging Symposium, Calgary (June 2013).

2. **Y Poirier**, *An x-ray source model and characterization method for computing kV radiation dose*, invited oral presentation at the Tom Baker Cancer Centre Grand Rounds (Dec 2013).

3. E Draeger, A Sawant, I-L Jackson, Z Vujaskovic, **Y Poirier**, *A review of the current state of physics and dosimetry reporting in radiation biology research*, Visiting Professor presentation at McGill University*,* McGill University Montreal, January 2019.

4. E Draeger, A Sawant, I-L Jackson, Z Vujaskovic, **Y Poirier**, *Two Decades of Physics and Dosimetry Reporting in Radiobiological Studies: A Potential Factor of the Reproducibility Crisis*, Visiting Professor presentation at San Diego State University, Nov 2019.

5. E Draeger, A Sawant, I-L Jackson, Z Vujaskovic, **Y Poirier**, *Two Decades of Physics and Dosimetry Reporting in Radiobiological Studies: A Potential Factor of the Reproducibility Crisis*, Visiting Professor presentation at University of California San Diego, Nov 2019.

**Proffered Communications***(presenting author)*

International

1. **Y Poirier**, A Kouznetsov, M Tambasco, *Characterization of the parameters defining a kilovoltage source for accurate dose computation*, Poster presentation at joint COMP & AAPM Annual Scientific Meeting held in Vancouver, BC (September 2013).

2. **Y Poirier**, A Kouznetsov, M Tambasco, *Experimental validation of a novel approach to fast and accurate kilovoltage dose computation*, COMP & AAPM Annual Scientific Meeting held in Vancouver, BC (September 2013).

3. **Y Poirier**, A Kouznetsov, M Tambasco, *Validation of a kV dose computation method for CBCT imaging procedures*, Poster presentation at the ESTRO 2nd Forum scientific meeting in Geneva, Switzerland (May 2013).

4. **Y Poirier**, D Sasaki, D Courtney, M Akra, *Dosimetric comparison between RapidArc and 3D-CRT planning in extremity soft tissue sarcoma*, Poster presentation at the 2015 COMP/World Congress scientific meeting in Toronto, ON (July 2015).

5. **Y Poirier**,S Kouznetsova, E Villareal-Barajas, *Energy Sensitivity of Al2O3:C OSLDs and MCP-N TLDs at 40-300 kVp ranges*, Oral presentation at the Xstrahl SARRP symposium in Philadelphia, PA (April 2017).

6. **Y Poirier**, K Martell, R Khan, T Zhang, A Hudson, N Wolfe, D Spencer, J-P Voroney, *Mixed orthovoltage and electron treatments offer an inexpensive alternative to protons in treating peri-ocular lesions*, Electronic Poster Presentation at AAPM Annual Scientific Meeting in Denver CO (July 2017).

7. **Y Poirier**, M Bazalova-Carter, C Johnstone, A Anvari, A Sawant, *FMEA quality management framework for small animal image-guided radiotherapy based on the TG-100 methodology*, Short Oral Presentation at AAPM Annual Scientific Meeting in Denver CO (July 2017).

8. **Y Poirier**, K Prado, C Prado, I-L Jackson, Z Vujaskovic, *Implementation of a new technique for total body irradiation in rabbits,* Poster presentation at the Radiation Research Society annual scientific meeting in Cancun, Mexico (October 2017).

9. C Kirkby, C Johnstone, **Y Poirier**, *Dosimetric consequences of the use of thin filters in modern image-guided small animal irradiators*, Oral presentation at the *Fourth Conference on small animal precision image-guided radiotherapy* in Lisbon, Portugal (February 2018).

10. A Anvari, **Y Poirier**, A Sawant, *Investigating the use of the portal imager as a quality assurance tool for the small animal radiation research platform (SARRP)*, Oral presentation at the *Fourth Conference on small animal precision image-guided radiotherapy* in Lisbon, Portugal (February 2018).

11. E Draeger, A Sawant, I-L Jackson, **Y Poirier**, *A review of the current state of physics and dosimetry reporting in radiation biology research*, Poster presentation at the Radiation Research Society meeting in Chicago, IL (September 2018).

12. C Kirkby, C Johnstone, **Y Poirier**, *Effect of thin x-ray filter design in modern image-guided small animal irradiators on x-ray dosimetry and radiation biological effectiveness*, Poster presentation at the Radiation Research Society meeting in Chicago, IL (September 2018).

13. A Anvari, **Y Poirier**,A Sawant,*Development and validation of comprehensive EPID-based QA tools for the SARRP*, Oral presentation at the Xstrahl User Workshop preceding the International Congress of Radiation Research meeting in Manchester, UK (August 2019)

14. E Draeger, A Sawant, C Johnstone, B Koger, S Becker, I-L Jackson, Z Vujaskovic, **Y Poirier**, *A Dose of Reality: How 20 years of incomplete physics reporting may have contributed towards poor reproducibility in radiobiology studies*, Poster presentation at the International Congress of Radiation Research meeting in Manchester, UK (August 2019).

15. E Draeger, A Sawant, C Johnstone, B Koger, S Becker, I-L Jackson, Z Vujaskovic, **Y Poirier**, *The current state of physics and dosimetry reporting in radiation biology*, Oral Presentation at the Fifth Conference on Precision Image-Guided Small Animal RadioTherapy, to be held at Munich (August 2020)

16. **Y Poirier**, A Anvari, R Nilsson, S Becker, B Zhang, A Sawant, *Preliminary commissioning results of an Xstrahl SARRP for the µ-RayStation Treatment Planning System*, Poster Presentation at the Fifth Conference on Precision Image-Guided Small Animal RadioTherapy, to be held at Munich (August 2020)

National

1. **Y Poirier**, O Ostapiak, *The effects of small cylindrical air cavities on circumferential dose distributions due to small 6 MV photon fields*, Oral presentation at COMP Annual Scientific Meeting held in Victoria, BC (July 2009).

2. **Y Poirier**, A Kouznetsov, M Tambasco, *Experimental validation of a novel approach for computing image dose for 80, 100 and 125 kVp x-ray energies,* Oral presentation at the COMP Annual Scientific Meeting in Calgary, AB (June 2012).

3. **Y Poirier**, A Kouznetsov, M Tambasco, *Characterizing the spatially varying fluence and spectra of a kV imaging source for dose calculations*, Oral presentation at COMP Annual Scientific Meeting held in Halifax, NS (July 2012).

4. F Jacso, **Y Poirier**, J Gräfe, I Nygren, R Khan, E Villarreal-Barajas, *Orthovoltage dosimetry using ion chambers, Gafchromic EBT3 film and kV dose computations*, Electronic poster discussion at joint COMP & CARO Annual Scientific Meeting held in Montreal QC (September 2013).

5. **Y Poirier**, A Kouznetsov, M Tambasco, *Experimental validation of a kV dose computation method for CBCT imaging in an anthropomorphic phantom*, Poster presentation at joint COMP & CARO Annual Scientific Meeting held in Montreal, QC (September 2013).

6. **Y Poirier**, M Sommerville, CD Johnstone, J Grafe, I Nygren, R Khan, JE Villareal-Barajas, F Jacso, M Tambasco, Young Investigators oral presentation at COMP Annual Scientific Meeting held in Calgary, AB (July 2014).

7. **Y Poirier**, S Kuznetsova, E Villareal-Barajas, Characterization of the energy dependence of high-sensitivity MCP-N TLD and Al2O3:C OSLD in-vivo dosimetry systems for 40-100 kVp energies, Poster presentation at COMP Annual Scientific Meeting held in St-John’s NL (July 2015).

8. E Draeger, A Sawant, I-L Jackson, Z Vujaskovic, **Y Poirier**, *A review of the current state of physics and dosimetry reporting in radiation biology research*, Oral presentation at the joint COMP/CARO/CAMRT Annual Scientific Meeting held in in Montreal, QC (September 2018).

9. C Kirkby, C Johnstone, **Y Poirier**, *Effect of thin x-ray filter design in modern image-guided small animal irradiators on x-ray dosimetry and radiation biological effectiveness*, Poster presentation at the joint COMP/CARO/CAMRT Annual Scientific Meeting held in Montreal, QC (September 2018).

Regional

1. **Y Poirier**, J Hahn, [*A possible origin of the high-inclination population of the Kuiper Belt*], Oral presentation at the annual regional conference ACFAS-FESR in Moncton, N-B (Summer 2007).

2. **Y Poirier**, A Kouznetsov, M Tambasco, *Sensitivity analysis of the influence of beam quality on the accuracy of dose computation for kVp imaging x-rays,* Poster presentation at the annual Banff Cancer Conference in Banff, AB (Nov 2010).

3. **Y Poirier**, A Kouznetsov, M Tambasco, *Characterization of a kV imaging source for patient-specific dose computation,* Oral presentation at the annual WESCAN scientific meeting in Abbotsford, BC (Apr 2011).

4. **Y Poirier**, A Kouznetsov, M Tambasco, *Experimental validation of a kilovoltage X-ray dose computing method for cone-beam CT imaging,* Poster presentation at the annual Banff Cancer Conference in Banff, AB (Nov 2012).