

**University of Maryland Department of Radiation Oncology
 Annual Report for FY 2024 (July 1, 2023 – June 30, 2024)
 Proton- and FLASH-Related Publications & Presentations**

Proton- and FLASH- related publications	20
Hyperthermia-related publications	1
Proton- and FLASH-related <i>presentations</i>	50
Hyperthermia-related <i>presentations</i>	10
Local & other proton- FLASH- and hyperthermia-related presentations (not at scientific meetings)	17

Proton- and FLASH- related publications (20 total)

FY 2024 1H: July 2023 – December 2023

1. Alexander GS, Pollock AE, Arons D, Ferris MJ, Molitoris JK, Regine WF, Witek ME. [Post-treatment PET/CT for p16-positive oropharynx cancer treated with definitive proton therapy](#). *J Clin Imaging Sci*. 2023 Sep 29;13:31.
2. Chang L, Shaaban SG, Gogineni E, Page B, Quon H, Li H, Ger R. [Daily Head and Neck Treatment Assessment for Optimal Proton Therapy Planning Robustness](#). *Cancers (Basel)*. 2023 Jul 22;15(14):3719.
3. Jiang Z, Wang S, Xu Y, Sun L, Gonzalez G, Chen Y, Wu QJ, Xiang L, Ren L. [Radiation-induced acoustic signal denoising using a supervised deep learning framework for imaging and therapy monitoring](#). *Phys Med Biol*. 2023 Nov 29;68(23).
4. Miles D, Sforza D, Wong JW, Gabrielson K, Aziz K, Mahesh M, Coulter JB, Siddiqui I, Tran PT, Viswanathan AN, Rezaee M. [FLASH Effects Induced by Orthovoltage X-Rays](#). *Int J Radiat Oncol Biol Phys*. 2023 Nov 15;117(4):1018-1027. Epub 2023 Jun 25.
5. Pollock AE, Risher H, Berger M, Roque DM, Rao G, Nichols EM, Mohindra P. [Clinical outcomes of intensity modulated proton therapy reirradiation for gynecologic malignancies](#). *Adv Radiat Oncol*. eCollection 2023 Jul-Aug.
6. Sabouri P, Molitoris J, Ranjbar M, Moreau J, Simone CB 2nd, Mohindra P, Langen K, Mossahebi S. [Dosimetric Evaluation and Reproducibility of Breath-hold Plans in Intensity Modulated Proton Therapy: An Initial Clinical Experience](#). *Adv Radiat Oncol*. 2023 Oct 21;9(3):101392.
7. Spruijt K, Mossahebi S, Lin H, Lee E, Kraus J, Dhabaan A, Poulsen P, Lowe M, Ayan A, Spiessens S, Godart J, Hoogeman M. [Multi-institutional consensus on machine QA for isochronous cyclotron-based systems delivering ultra-high dose rate \(FLASH\) pencil beam scanning proton therapy in transmission mode](#). *Med Phys*. 2023 Dec 16. Online ahead of print.
8. Yang AH, Urrunaga NH, Siddiqui O, Wu A, Schliep M, Mossahebi S, Shetty K, Regine WF, Molitoris JK, Lominadze Z. [Proton beam stereotactic body radiotherapy and hypofractionated therapy with pencil beam scanning is safe and effective for advanced hepatocellular carcinoma and intrahepatic cholangiocarcinoma: A single center experience](#). *J Radiosurg SBRT*. 2023;9(1):43-52.
9. Yao W, Farr JB, Mossahebi S, Yi B, Chen S. [Technical note: Determination of proton linear energy transfer from the integral depth dose](#). *Med Phys*. 2023 Dec 3. Online ahead of print.
10. Yi B, Jatzcak J, Deng W, Poirier YP, Yao W, Witek ME, Molitoris JK, Zakhary MJ, Zhang B, Biswal NC, Ferris MJ, Mossahebi S. [Is noncoplanar plan more robust to inter-fractional variations than coplanar plan in treating bilateral HN tumors with pencil-beam scanning proton beams?](#) *J Appl Clin Med Phys*. 2023 Nov 16:e14186. Online ahead of print.

Proton- and FLASH-related publications

FY 2024 2H: January 2024 – June 2024

11. Biswal NC, Zhang B, Nichols E, Witek ME, Regine WF, Yi B. [Cone-beam CT images as an indicator of QACT during adaptive proton therapy of extremity sarcomas](#). *Int J Part Ther*. 2024 Apr 26;12:100017.



12. **Byrne KE, Poirier Y, Xu J, Gerry A, Foley MJ, Jackson IL, Sawant A, Jiang K.** [Technical note: A small animal irradiation platform for investigating the dependence of the FLASH effect on electron beam parameters.](#) *Med Phys.* 2024 Jan 11. Online ahead of print.
13. **Krc R, Mendes W, Molitoris J, Ferris M, Song Y, Shetty A, Mehra R, Papadimitriou JC, Hatten K, Taylor R, Wolf J, Sun K, Bentzen S, Regine W, Tran P, Witek M.** [Proton therapy re-irradiation outcomes and genomic landscape of patients with recurrent head and neck cancer.](#) *Oral Oncol.* 2024 Jun 1;154:106875. Ahead of print.
14. **Meiller TF, Fraser CM, Grant-Beurmann S, Humphrys M, Tallon L, Sadzewicz LD, Jabra-Rizk MA, Alfaifi A, Kensara A, Molitoris JK, Witek M, Mendes WS, Regine WF, Tran PT, Miller RC, Sultan AS.** [A longitudinal metagenomic comparative analysis of oral microbiome shifts in patients receiving proton radiation versus photon radiation for head and neck cancer.](#) *J Cancer Allied Spec.* 2024 Jan 22;10(1):579.
15. **Mossahebi S, Molitoris JK, Poirier Y, Jatczak J, Zhang B, Mohindra P, Ferris M, Regine WF, Yi B.** [Clinical implementation and dosimetric evaluation of a robust proton lattice planning strategy using primary and robust complementary beams.](#) *Int J Radiat Oncol Biol Phys.* 2024 Jun 25:S0360-3016(24)00742-9. Online ahead of print.
16. **Mumaw DA, Hazy AJ, Vayntraub A, Quinn TJ, Salari K, Chang JH, Kalman N, Katz S, Urbanic J, Press RH, Thukral AD, Tsai H, Laramore GE, Molitoris J, Vargas C, Patel SH, Stevens C, Deraniyagala.** [Low contralateral failure rate with unilateral proton beam radiotherapy for oropharyngeal squamous cell carcinoma: A multi-institutional prospective study from the Proton Collaborative Group.](#) *Radiother Oncol.* 2024 Jan;190:109977.
17. **Rahimi R, Emert F; PTCOG Treatment Efficiency Subcommittee.** [Introducing the good clinical proton practice \(GCPP\) initiative for enhancing proton therapy standards.](#) *J Appl Clin Med Phys.* 2024 Jun 18:e14436. Online ahead of print.
18. **Rahimi R, Taylor M, Li X, Chen KL, MacLennan G, Murdoch E, Chang L, Parniani A, Wang P, Chawla A, Fan J, Kim D.** [Fetal dose assessment in a pregnant patient with brain tumor: A comparative study of proton PBS and 3DCRT/VMAT radiation therapy techniques.](#) *J Appl Clin Med Phys.* 2024 Jun 17:e14394. Online ahead of print.
19. **Yi B, Mossahebi S, Jatczak J, Mundis M, Houser T, Alicia D, Han D, Gonzalez R, Olis S, Zakhary M.** [Optimal minimum MU for intensity-modulated proton therapy with pencil-beam scanning proton beams.](#) *J Appl Clin Med Phys.* 2024 Jun 23:e14435. Online ahead of print.
20. **Zarinshenas R, Campbell P, Sun K, Molitoris JK, Patel AN, Witek ME, Cullen KJ, Mehra R, Hatten KM, Moyer KF, Taylor RJ, Vakharia KT, Wolf JS, Ferris MJ.** [Disease and toxicity outcomes for a modern cohort of patients with squamous cell carcinoma of cutaneous origin involving the parotid gland: Comparison of volumetric modulated arc therapy and pencil beam scanning proton therapy.](#) *Radiother Oncol.* 2024 Feb 1:110112. Online ahead of print

Hyperthermia-related publications: FY 2024: July 2023 – June 2024 (1):

1. **Wan S, Rodrigues DB, Kwiatkowski J, Khanna O, Judy KD, Goldstein RC, Overbeek Bloem M, Yu Y, Rooks SE, Shi W, Hurwitz MD, Stauffer PR.** [Evaluation of a balloon implant for simultaneous magnetic nanoparticle hyperthermia and high-dose-rate brachytherapy of brain tumor resection braincavities.](#) *Cancers (Basel).* 2023 Dec 1;15(23):5683.

Proton- and FLASH-related presentations: FY 2024: July 2023 – June 2024 (50)

1. **Alicia D, Manuel E, Zhang B, Cherng H-R, Mogilnay R, Sun K, Zakhary MJ, Yi BY, Mohindra P, Ferris MJ, Rana Z, Biswal NC.** Predictive planning parameters for adaptive proton therapy of thoracic cancer patients. Presentation at: AAMD Annual Meeting; June 9-12, 2024; St. Louis, MO.
2. **Biswal N, Mossahebi S, Yao W, Zhang H, Regine W, Tran P, Mishra M, Kunaprayoon D, Mohindra P, Kwok Y, Rana Z, Ferris M, Witek M, Molitoris J, Nichols E, Yi B, Zakhary M.** Streamlining treatment plan evaluations on QACTs in adaptive proton radiotherapy using standardized review criteria. Poster presentation at: PTCOG-NA; October 28-30 2023; Seattle, WA.
3. **Biswal N, Zhang B, Jatzcak J, Vasam S, Nichols E, Yao W.** Evidence of LET-dependent RBE on acute radiation dermatitis in Caucasian and African-American breast cancer patients undergoing proton beam therapy. Oral presentation at: PTCOG-NA; October 28-30 2023; Seattle, WA.
4. **Biswal NC, Jatzcak J, Zhang B, Vasam S, Nichols E, Yao W.** LET-dependent RBE dose as predictor for acute skin toxicity in breast cancer patients undergoing proton beam therapy. ePoster presentation: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.
5. **Biswal NC, Zhang B, Jatzcak J, McAvoy S, Lee SW, Yi BY, Nichols EN, Yao W.** LET-dependent RBE as evidence for acute radiation dermatitis in Caucasian and African-American breast cancer patients undergoing proton beam therapy. Oral presentation at: PTCOG 62; June 10-15, 2024; Suntec, Singapore.
6. **Byrne K, Bhandary B, Poirier Y, Davies E, Foley M, Sawant A, Jiang K.** Real-Time, Target-Proximal In Vivo FLASH Dosimetry Using an Inorganic Scintillation Detector. Oral presentation at: FLASH Radiotherapy and Particle Therapy Conference; December 5-7, 2023; Toronto, Canada.
7. **Byrne K.** Quality Assurance and Real-Time Dosimetry for FLASH RT Measurement. Session co-chair: FLASH Radiotherapy and Particle Therapy Conference; December 5-7, 2023; Toronto, Canada.
8. **Chen KL, Rahimi R, Fan J, Khan R.** Dosimetric response characterization of radiochromic EBT4 films in clinical proton and photon beam. ePoster presentation at: PTCOG 62; June 10-15, 2024; Suntec, Singapore.
9. **Cherng HR, Alexander GS, Mohindra P, Alicia D, Redell D, Eggleston C, Van Eck R, Kunaprayoon D, Vyfhuis MAL, Patel AN, Molitoris JK, Ferris MJ, Rana Z.** Relationship between spatial distribution tumor location and dosimetric outcomes in patients receiving definitive proton therapy for locally advanced lung cancer. Poster presentation: ASTRO Annual Meeting; October 1-4, 2023; San Diego, CA.
10. **Chowdhury DD, Imada E, Connis N, Nguyen T, Chang J, Council D, Lafargue A, Rezaee M, Tran PT, Marchionni L, Hann CL.** TNIK-induced Chemoradiation Resistance in Small Cell Lung Cancer. Presentation at: AACR Annual Meeting; April 5-10, 2024; San Diego, CA.
11. **Daartz J, Mossahebi S.** Advances in proton therapy. Moderator at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.
12. **Deng W, Han D, Byrne K, Jiang K, Mossahebi S, Bhandary B, Shukla H, Poirier Y, Xu J, Sawant A.** Achieving sub 1-mm accuracy in proton flash studies using a stand-alone small-animal image-guided irradiator. Poster presentation at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.

13. Griffiths L, **Byrne K, Jiang K, Poirier Y**, Foley M. Inorganic scintillator-based optical fiber dosimetry for UHDR electron beams on a FLASH-enabled linac. Presentation at: Annual Meeting of International Academy of Perinatal Medicine (IAPM); June 26-30, 2024; New York, NY. Winner of the ASM Xiel Bursary Award.
14. **Hamza M, Biswal C, Assif JW, Yi BY, Zhang B, Alicia D, Redell D, Eggleston C, Van Eck R, Ferris MH, Mohindra P, Rana Z**. Patterns of adaptive replanning in proton therapy for thoracic malignancies. Poster presentation at: ASTRO Annual Meeting; October 1-4, 2023; San Diego, CA.
15. **Hamza M, Rodrigues DB**, Cohen J, Chen L, **Mossahebi S, Biswal NC, Zakhary M, Kunaprayoon D, Rana Z, Molitoris JK**. Clinical Outcomes of Re-irradiation Using Concurrent Deep Hyperthermia and Proton Therapy for Prostate Cancer. Oral presentation at: European Society for Hyperthermic Oncology (ESHO) Annual Meeting; September 26-29, 2023; Cologne, Germany.
16. Hu L, Huynh K, Parniani A, **Rahimi R**, Matthews A, Chawla A, Fan J, Wang P. Scripting facilitated downtime management in a proton-photon therapy center. ePoster presentation at: PTCOG 62; June 10-15, 2024; Suntec, Singapore.
17. **Jaczak J, Houser T, Chen S, Ferris MJ, Yi BY, Biswal NC**. Dosimetric evaluation of an efficient skin marker for marking scars, sarcomas and larger treatment areas during proton therapy. Poster presentation at: AAMD Annual Meeting; June 9-12, 2024; St. Louis, MO.
18. **Jiang K, Byrne K, Poirier Y, Mossahebi S, Davies E, Carrier F, Sawant A**. A High-throughput Platform for Murine Subcutaneous Tumor Irradiation with UHDR Electron Beam at Variable Dose Rates. Presentation at: FLASH Radiotherapy and Particle Therapy Conference; December 5-7 2023; Toronto, Canada.
19. **Jiang K, Byrne K, Poirier YP, Mossahebi S**. A high-throughput collimator for murine subcutaneous tumor model irradiation with electron flash radiotherapy. Oral presentation at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.
20. Jiang Z, Polf JC, Barajas CA, Gobbert MK, **Ren L**. Enhanced prompt gamma imaging using deep learning for proton range verification. Oral presentation at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.
21. **Krc R, Mendes W, Molitoris J, Ferris M**, Song Y, **Shetty A**, Mehra R, Papadimitriou J, Hatten K, Taylor R, Wolf J, **Sun K, Bentzen S, Regine W, Tran P, Witek M**. Outcomes and Genomic Landscape of Patients Treated with Re-Irradiation for Recurrent Head and Neck Cancer Using Pencil Beam Scanning Proton Therapy: The Maryland Proton Treatment Center Experience. Presentation at: ASTRO Multidisciplinary Head and Neck Cancers Symposium; February 29 - March 2, 2024; Phoenix, AZ.
22. **Krc R, Mendes W, Molitoris J, Ferris M, Yang S, Shetty A**, Mehra R, Papadimitriou J, Hatten K, Taylor R, Wolf J, **Sun K, Bentzen S, Regine W, Tran P, Witek M**. Outcomes of patients treated with re-irradiation for recurrent head and neck cancer using pencil beam scanning proton therapy. Poster presentation at: ASTRO Annual Meeting; October 1-4, 2023; San Diego, CA.
23. Lang Y, Jiang Z, Sun L, Xiang L, **Ren L**. Hybrid-supervised deep learning for protoacoustic image reconstruction for in vivo proton dose verification in 3D. Oral presentation at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.

24. Lang Y, Jiang Z, Sun L, Xiang L, **Ren L**. Phys 5: Motion and imaging. Hybrid-supervised deep learning for proton-acoustic reconstruction for 3D in vivo proton dose verification. Moderator at: ASTRO Annual Meeting; October 1-4, 2023; San Diego, CA.
25. **Lee SW, Mundis M, Vadnais P, Mossahebi S, Xu H, Gopal A, Mille M, Lee C, Saha M, Cheston S**. Dosimetric evaluation of critical organ doses in breast radiotherapy based on patient positioning and treatment modality: Photon (supine and prone) vs. proton supine. ePoster presentation at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.
26. **Mossahebi S, Byrne K, Jiang K, Therriault-Proulx F, Sawant A, Poirier YP**. Direct dose rate measurements of ultra-high dose rate proton beams in the Bragg peak show the Bragg peak may undermine the Flash effect. ePoster presentation at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.
27. **Mossahebi S, Byrne K, Therriault-Proulx F, Sawant A, Y Poirier**. Influence of the Bragg peak on average vs instantaneous dose rate for proton FLASH biological studies. Poster presented at: International Congress of Radiation Research meeting; August 27-30, 2023; Montreal, Canada.
28. **Mossahebi S, Jatzcak J, Zhang B, Molitoris J, Mohindra P, Yi B**. Clinical implementation of robust proton lattice planning strategy. Poster presentation at: PTCOG-NA; October 28-30 2023; Seattle, WA.
29. **Mossahebi S, Sabouri P, Koroulakis A, Cusatis D, Lehman K, Wohlfahrt P, Shah J, Nichols E, Molitoris JK**. Dosimetric comparison of breast proton treatment plans using single energy and dual energy computed tomography simulation methods presenting author. ePoster presentation at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.
30. **Mossahebi S**. Combining Proton Flash and Spatially Fractionated Radiotherapy — Initial Dosimetric Characterization. Presentation at: FLASH Radiotherapy and Particle Therapy Conference, December 5-7, 2023; Toronto, Canada.
31. **Mossahebi S**. Spatially-fractionated proton GRID therapy. Oral presentation at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.
32. **Nichols EM**. Intensity-Modulated Proton Therapy (IMPT) for the Definitive Adjuvant Management of Women with Breast Cancer: A Single-Institutional Experience of 5-Year Oncologic Outcomes. Presentation at: San Antonio Breast Cancer Symposium; December 7, 2023; San Antonio, TX.
33. **Nichols EM**. The Future of Proton Therapy – Bringing Value to the Healthcare Value Equation. Presentation at: National Association for Proton Therapy (NAPT) Annual Meeting; April 6-9, 2024; Boston, MA.
34. **Poirier Y, Amos R, Dal Bello R, Gallagher KJ, Mossahebi S, Oh K, Praestegaard LHH, Rutar F, Smith W, Tanadini-lang S, Xu J, Zhou S**. Recommendations from the Varian Consortium e-FLASH Radiation Safety Working Group. FLASH Radiotherapy and Particle Therapy Conference; December 5-7, 2023; Toronto, Canada.
35. **Poirier Y**. Consensus recommendations from the FlashForward Consortium, FLASH Radiation Safety Working Group: FLASH Radiotherapy and Particle Therapy Conference, December 5-7, 2023; Toronto, Canada.
36. **Poirier Y**. DNA dosimetry for FLASH. Oral presentation at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.

37. **Rahimi R**, Castro J, D'Souza K, Chen KL, Nie W, Fan J, Li X. 3D-printed materials for proton treatments. ePoster presentation at: PTCOG 62; June 10-15, 2024; Suntec, Singapore.
38. **Rana Z, Cherng H-R, Alicia D, Manuel E, Hamza MA, Zhang B, Mogilnay R, Sun K, Yi BY, Mohindra P, Ferris MJ, Biswal NC**. Treatment planning parameters as predictors for adaptive re-planning for thoracic cancer patients undergoing proton therapy. ePoster presentation at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.
39. **Rana Z**, Rao M, **Redell D, Alicia D**, Mohindra P. Toxicity and outcomes from intensity modulated proton therapy for thymic malignancies. Poster presentation: PTCOG-NA; October 28-30 2023; Seattle, WA.
40. Rao M, **Rana Z**, Redell D, **Alicia D**, Glass E, Burrows W, Friedberg J, Scilla K, Mehra R, Rolfo C, Simone CB, Mohindra P. Cardiopulmonary toxicity from intensity modulated proton therapy for thymic malignancies. Poster presentation at: ASTRO Annual Meeting; October 1-4, 2023; San Diego, CA.
41. Sabouri P, Koroulakis A, **Cusatis D, Lehman K**, Wohlfahrt P, Shah J, **Mishra M, Regine W, Molitoris JK, Mossahebi S**. Evaluation of treatment plan dose differences of single energy and dual energy computed tomography simulation methods for proton therapy of intracranial patients. ePoster presentation at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.
42. Sabouri P, Koroulakis A, **Cusatis D, Lehman K**, Wohlfahrt P, Shah J, **Molitoris J, Mossahebi S**. Dosimetric disparities between single-energy and dual-energy CT in breast cancer patients undergoing intensity modulated proton therapy. Oral presentation at: PTCOG-NA; October 28-30 2023; Seattle, WA.
43. Sabouri P, Koroulakis A, **Cusatis D, Lehman K**, Wohlfahrt P, Shah J, **Molitoris J, Mossahebi S**. Quantifying dosimetric differences between SECT and DECT in brain malignancy patients undergoing IMPT: Mitigating proton range uncertainties. Poster presentation: PTCOG-NA; October 28-30 2023; Seattle, WA.
44. Sabouri P, Koroulakis A, **Cusatis D, Lehman, K**, Wohlfahrt, Shah J, **Molitoris JK, Mossahebi S**. Pelvis treatment plan dose comparison for proton therapy using single energy and dual energy computed tomography simulation methods. Poster presentation at: ASTRO Annual Meeting; October 1-4, 2023; San Diego, CA.
45. Sabouri P, **Molitoris J ... Mossahebi S**. Dosimetric benefits of breath-hold technique in intensity-modulated proton therapy: Evaluating target motion mitigation and organ dose reduction. Oral presentation at: PTCOG-NA; October 28-30 2023; Seattle, WA.
46. **Sawant A**, Zhang R. FLASH therapy delivery, motion management and dosimetry. Moderator at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.
47. **Yao W, Biswal NC, Mossahebi S, Yi BY**. A strategy of Proton Treatment Planning to mitigate RBE dose of the brainstem. ePoster presentation at: PTCOG 62; June 10-15, 2024; Suntec, Singapore.
48. **Yao W, Zhang B, Yi BY**. Correlation of proton beam range changes calculated from CT and cone beam CT: Prostate and pelvis cases. ePoster presentation: Presentation at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.
49. **Yi B, Jatzcak J, Houser T, Mundis M, Han D, Biswal N, Yao W, Mossahebi S**. A practical guideline for minimum monitor units (mMU) for pencil beam proton treatments. ePoster presentation at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.

50. **Zarinshenas R**, Campbell P, **Molitoris J** ... **Ferris M**. Superiority of proton beam therapy for a modern cohort of patients with cutaneous squamous cell carcinoma involving the parotid gland. Oral presentation: PTCOG-NA; October 28-30 2023; Seattle, WA.

Hyperthermia-related presentations: FY 2024: July 2023 – June 2024 (10)

1. De Lazzari, **Rodrigues D**, Curto S, Seabra CC, Marder D, Dobsicek-Trefna H. Supporting the design of quality assurance phantoms for deep hyperthermia devices using computational modeling. Oral presentation at: Annual Meeting of the European Society for Hyperthermic Oncology; September 26-29, 2023; Cologne, Germany.
2. De Lazzari, Seabra CC, Marder D, **Rodrigues D**, Curto S, Dobsicek-Trefna H. Design of a multi-institutional study on Deep Hyperthermia QA assessment. Oral presentation at: Annual Meeting of the European Society for Hyperthermic Oncology; September 26-29, 2023; Cologne, Germany.
3. **Guerrero M, Rodrigues D**. Linear-quadratic model for hyperthermia biological effect derived from kinetic equations of DNA damage production and repair. ePoster presentation at: AAPM Annual Meeting & Exhibition; July 23-27, 2023; Houston, TX.
4. **Hamza M**, Cohen JD, Chen L, **Rodrigues D**, **Mossahebi S**, **Biswal NC**, **Zakhary M**, **Kunaprayoon D**, **Rana Z**, **Molitoris JK**. Concurrent radiation and deep hyperthermia therapy for the treatment of recurrent prostate cancer. Poster presentation at: ASTRO Annual Meeting; October 1-3, 2023; San Diego, CA.
5. **Hamza M**, **Rodrigues D**, Chen L, Cohen J, **Mossahebi S**, **Biswal N**, **Zakhary M**, **Kunaprayoon D**, **Rana Z**, **Molitoris JK**. Clinical outcomes of re-irradiation with concurrent deep hyperthermia therapy for prostate cancer. Oral presentation at: Annual Meeting of the European Society for Hyperthermic Oncology (ESHO); September 26-29, 2023; Cologne, Germany.
6. **Molitoris JK**, **Mossahebi S**, **Biswal N**, **Zakhary M**, **Kunaprayoon D**, **Rana, Z**, **Rodrigues DB**. Clinical outcomes of re-irradiation with concurrent deep hyperthermia therapy for lower gastrointestinal malignancies – Long term follow up. Oral presentation at: Society for Thermal Medicine (STM) Annual Meeting; May 12-16, 2024; Houston, TX.
7. **Rodrigues DB**, Bhowmik A, **Poirier Y**, **Davies E**, **Ren L**, Ellsworth J, Turner P, **Molitoris J**, **Mishra M**, Badjatia N, Woodworth G. Novel microwave applicator for hyperthermia treatment of brain lesions. Oral presentation at: Annual Meeting of the European Society for Hyperthermic Oncology (ESHO); Sep 26-29, 2023; Cologne, Germany.
8. **Rodrigues DB**, De Lazzari M, Seabra CC, Lamprecht U, Schmidt M, Marder D, Curto S, Dobsicek-Trefna H, **Molitoris JK**. Numerical feasibility of delivering deep hyperthermia to lateral tumors opposite to metallic hip implants. Oral presentation at: Society for Thermal Medicine (STM) Annual Meeting; May 12-16, 2024; Houston, TX.
9. Straube W, Crezee J, Dewhirst M, Zoberi I, Altman M, **Molitoris JK**, **Rodrigues DB**. 40 years of Clinical Hyperthermia and 30 years of clinical development stagnation: A review of the current state of hyperthermia in the United States Oral presentation at: Society for Thermal Medicine (STM) Annual Meeting; May 12-16, 2024; Houston, TX.
10. Wan S, **Rodrigues DB**, Kwiatkowski J, Khanna O, Judy K, Bloem, Goldstein R, Bloem MO, Yu Y, Rooks SE, Shi W, Hurwitz M, Stauffer, P. Evaluation of a Balloon Implant for Simultaneous Magnetic Nanoparticle Hyperthermia and High-Dose-Rate Brachytherapy of



Brain Tumor Resection Cavities. Poster presented at: Society for Thermal Medicine (STM) Annual Meeting; May 12-16, 2024; Houston, TX.

Other Proton- FLASH- and Hyperthermia- Related Presentations in FY 2024 (not at national conferences/ or scientific meetings) (17)

1. **Biswal NC.** Advances in Proton Therapy. Invited speaker at: Center for Medical and Radiation Physics, National Institute of Science Education and Research (NISER); February 16, 2024; Bhubaneswar, Odisha, India.
2. **Carrier F.** Efficacy study to evaluate the normal tissue effect of FLASH proton therapy compared to conventional dose-rate proton therapy in mouse models of hemi-thoracic irradiation-induced pneumonitis/fibrosis. Presentation at: Varian FLASH Forward Consortium; November 15, 2023; virtual.
3. **Jiang K.** FLASH & CONV Experimental Setup at Maryland Proton Treatment Center. Presentation at: Varian FlashForward™ Consortium Speaker Series; 2024.
4. **Jiang K.** Nonclinical efficacy screen for ultra-high dose rate proton therapy in age- and sex-matched CBA/J and C57BL/6J mouse models of hemi-thoracic irradiation-induced pneumonitis/fibrosis. Presentation at: Varian Oncology Research Symposium; 2023; Munich, Germany.
5. **Molitoris JK.** Principles of Hyperthermia in Cancer Treatment. Invited radiobiology lecture to Medical Residents at: Thomas Jefferson University; 2024; virtual.
6. **Mossahebi S.** Introduction to Pencil Beam Scanning Proton Therapy. Presentation at: San Diego State University; October 2023; San Diego, CA.
7. **Mossahebi S.** Proton Beam Therapy. Oral presentation at: UM Dr. Karl L. Prado Physics & Radiobiology Review Course; May 30, 2024, Baltimore, MD (virtual).
8. **Mossahebi S.** Spatially Fractionated Proton Therapy and FLASH RT at the University of Maryland. Oral presentation at: Universidad Complutense de Madrid; May 2024; Madrid, Spain.
9. **Poirier Y.** FLASH dosimetry and DNA-based dosimetry. Symposium given at: NIST; Nov 2023; virtual.
10. **Poirier Y.** eFLASH Working Group and Research Updates. Presentation at: Electron FLASH Radiation Safety Working Group, FlashForward™ Consortium e-FLASH Speakers Series; Sept 2023; virtual.
11. **Poirier Y.** The impact of spatial and temporal dose distributions on achieving the FLASH effect for scanning proton beams. Presentation at: Council of Ionizing Radiation Measurement Standards (CIRMS) hosted by the National Institute of Standards and Technology (NIST); May 2024; Gaithersburg, MD.
12. **Poirier Y.** Ultra-high dose rate and FLASH dosimetry using DNA dosimeters and plastic scintillators. Oral presentation at: NIST Radiation Physics Division Seminar; 2024.
13. **Rahimi R,** Emert F, Chen KL, Batin E, Li X, **Zakhary M,** Bolsi A. Good Clinical Proton Practice. Oral presentation at: PTCOG Subcommittee meeting; 2024; Singapore.
14. **Ren L.** AI in Medical Imaging for Proton Therapy. Invited talk at: Mayo Clinic 2nd Proton Therapy Research Workshop; New Frontiers in Proton Therapy; April 25 - 26, 2024; Phoenix, AZ.



15. **Rodrigues DB.** Deep Hyperthermia therapy. Invited talk at: National Hyperthermia Annual Meeting and the 7th China-Japan Medical Technology Exchange Association Hyperthermia Professional Committee Seminar on New Progress in Hyperthermia Clinical Practice; May 27-28, 2023; Dalian, Liaoning Province, China.
16. **Rodrigues DB.** Drexel University Virtual Career Panel session. Panel member at: Steinbright Career Development Center; July 20, 2023; Philadelphia PA (virtual).
17. **Rodrigues DB.** Thermal Therapy course: Target-Specific Multiphysics Modeling Electromagnetic-based hyperthermia therapy for treatment of brain cancer. Lecture at: University of Tennessee; April 26, 2024; Knoxville, TN.