

# Bryan P. Bednarz, Ph.D.

Professor w/ Tenure  
Department of Medical Physics  
University of Wisconsin  
Wisconsin Institutes for Medical Research  
1111 Highland Avenue, Room 7109  
Madison, WI 53705-2275  
Tel: 608-262-5225; Fax: 608-276-4832; Cell: 734-678-2346  
Email: [bbednarz2@wisc.edu](mailto:bbednarz2@wisc.edu)  
Lab Website : <https://redlab.wiscweb.wisc.edu/>

---

## EDUCATION

<u>Degree</u>	<u>Year</u>	<u>Institution</u>	<u>Department/Organization</u>
BSE	2004	University of Michigan, Ann Arbor, MI	Nuclear Engineering and Radiological Sciences (w/ distinction)
MSE	2005	University of Michigan, Ann Arbor, MI	Nuclear Engineering and Radiological Sciences (w/ distinction)
PhD	2008	Rensselaer Polytechnic Institute, Troy, NY	Nuclear Engineering and Science (w/ distinction)

## EMPLOYMENT HISTORY

<u>Dates</u>	<u>Title</u>	<u>Department/Organization</u>
2008-2010	Postdoctoral Research Fellow	Department of Radiation Oncology, Massachusetts General Hospital and Harvard Medical School, Boston, MA
2010-2016	Assistant Professor	Department of Medical Physics, University of Wisconsin, Madison, WI
2016-2023	Associate Professor (w/ Tenure)	Department of Medical Physics, University of Wisconsin, Madison, WI
2023-	Professor (w/ Tenure)	Department of Medical Physics, University of Wisconsin, Madison, WI
2011-	Affiliate Professor	Department of Engineering Physics, University of Wisconsin, Madison, WI
2021-	Affiliate Professor	Department of Human Oncology, University of Wisconsin, Madison, WI
2021-	Affiliate Professor	Department of Radiology, University of Wisconsin, Madison, WI

---

2016- Co-Founder and Chief Scientific Officer Voximetry, Inc, Middleton, WI

## TEACHING & MENTORSHIP

### A. Course Instructor or Teaching Assistant

<u>Dates</u>	<u>Course Title</u>	<u>Role</u>	<u>Department/Organization</u>
Spring 2011-	MP/NE 569: Health Physics and Biological Effects of Radiation	Lead Instructor	Department of Medical Physics, University of Wisconsin, Madison, WI
Fall 2011-	MP 664: Radiation Lab – Health Physics	Lead Instructor	Department of Medical Physics, University of Wisconsin, Madison, WI
Summer 2017	UW/China Summer Program, Health Physics and Biological Effects	Co-Instructor	Department of Medical Physics, University of Wisconsin, Madison, WI
Fall 2017-	MP 671: Targeted Radionuclide Therapy	Co-Instructor	Department of Medical Physics, University of Wisconsin, Madison, WI
Fall 2019-	MP 510: Cellular, Molecular, and Radiation Biology	Lead Instructor /Co-Creator	Department of Medical Physics, University of Wisconsin, Madison, WI

### B. Guest Lectures

<u>Dates</u>	<u>Course Title</u>	<u>Department/Organization</u>
Fall 2009	Intro to Medical Physics	Department of Radiation Oncology Residency Program, Harvard Medical School, Boston, MA
Spring 2010	PHYS 4623: Medical Physics	Northeastern University, Boston, MA
Spring 2012	NE 506: Practicum in Monte Carlo Radiation Transport	Department of Engineering Physics, University of Wisconsin, Madison, WI
Fall 2013	MP 671: Targeted Radionuclide Therapy	Department of Medical Physics, University of Wisconsin, Madison, WI
Spring 2014	MP 566: Physics of Radiotherapy	Department of Medical Physics, University of Wisconsin, Madison, WI
Spring 2011, 2018, 2020-	NE 408: Ionizing Radiation	Department of Engineering Physics, University of Wisconsin, Madison, WI
Spring 2018	HO 510: Radiobiology	Department of Human Oncology, University of Wisconsin, Madison, WI
Spring 2021	Nuclear Medicine Residency Basic Science Lecture Series	Department of Radiology, University of Wisconsin, Madison, WI
Fall 2021-	Mol. & Env. Tox. 625: Radiation Toxicology	Molecular and Environmental Toxicology Graduate Program, University of Wisconsin, Madison, WI
Spring 2022-	PHS 471: Intro to Environmental Health	Department of Population Health Sciences, University of Wisconsin, Madison, WI

### C. Teaching Assistant

<u>Dates</u>	<u>Course Title</u>	<u>Role</u>	<u>Department/Organization</u>
Fall 2005	MANE 4260: Design of Mechanical Systems	TA	Department of Mechanical, Aerospace and Nuclear Engineering, Rensselaer Polytechnic Institute, Troy, NY
Fall 2008	MANE 4470: Radiological Engineering	TA	Department of Mechanical, Aerospace and Nuclear Engineering, Rensselaer Polytechnic Institute, Troy, NY

#### **D. Student Thesis Supervision**

##### **Degrees Completed**

##### **a) Masters**

1. **Paul Wickre**, May 2014  
Thesis Title: NA  
Current Position: Voximetry Inc., Middleton, WI
2. **Steve Ellefson\***, Spring 2016  
Thesis Title: The Development of a ViewRay-Compatible Corrections Algorithm for the ArcCHECK-MR Diode Array  
Current Position: Medical Physicist, St. Joseph's Hospital and Medical Center, Phoenix, AZ  
\*co-advised with John Bayouth, Ph.D.
3. **Kory Byrnes**, Summer 2023  
Thesis Title: NA  
Current Position: Dosimetrist, St. Luke's Hospital, Duluth, MN

##### **b) Doctoral**

1. **Tyler Fowler\***, **Ph.D.**, May 2015  
Thesis Title: A Novel High-throughput Irradiator for in vitro Radiation Sensitivity Bioassays  
Residency: Stanford University, Palo Alto, CA  
Current Position: Chief Medical Physicist, Community Cancer Center, Roseburg, OR  
\*co-advised with Randy Kimple, M.D., Ph.D.
2. **Youming Yang**, **Ph.D.**, Fall 2015  
Thesis Title: Concurrent Monte Carlo Transport and Fluence Optimization, Theory, Development and Applications  
Post-Doc: Stanford University, Palo Alto, CA  
Current Position: Clinical Assistant Professor, University of California Los Angeles, Los Angeles, CA
3. **Abigail Besemer**, **Ph.D.**, Spring 2016  
Thesis Title: Development, Validation and Implementation of a Patient-Specific Monte Carlo 3D Internal Dosimetry Platform  
Residency: University of Wisconsin, Madison, WI  
Current Position: Clinical Assistant Professor, University of Wisconsin, Madison, WI
4. **Andrew Shepard**, **Ph.D.**, Summer 2018  
Thesis Title: An ultrasound-based motion management system utilizing 2D/3D real-time tracking for use in radiotherapy  
Residency: University of Wisconsin, Madison, WI  
Current Position: Assistant Professor, University of Wisconsin, Madison, WI
5. **Charles Matrosic\***, **Ph.D.**, Spring 2019

Thesis Title: Development of a liver gel-dosimetry motion phantom for real-time image-guided radiotherapy verification

Residency: University of Michigan, Ann Arbor, MI

Current Position: Assistant Professor, University of Michigan, Ann Arbor, MI

\*co-advised with Prof. Wes Culberson

6. **Muhammed Emin Bedir\***, Ph.D., Winter 2020  
Thesis Title: Design, Development and Characterization of a Hand-Held Radiation Detector for Radio-Guided Surgery  
Current Position: Assistant Professor, Karamanoglu Mehmetbey University, Turkey  
\*Co-Advised with Bruce Thomadsen
7. **Ian Marsh**, Ph.D., Fall 2021  
Thesis Title: Treatment Planning for Immunomodulatory Radiopharmaceutical Therapy  
Current Position: Medical Physics Resident, Johns Hopkins University, Baltimore, MD
8. **David Adam, Ph.D.**, Fall 2022  
Thesis Title: Combining external beam radiotherapy dosimetry for recurrent head and neck cancer treatment  
Current Position: Medical Physics Resident, Johns Hopkins University, Baltimore, MD
9. **Sydney Jupitz, Ph.D.**, Fall 2022  
Thesis Title: Development of an Ultrasound-based Image Guidance Radiotherapy System for Motion Management in the Liver  
Current Position: Postdoctoral Research Fellow, OnLume Inc., Middleton, WI
10. **Antonia Wuschner\*, Ph.D.**, Fall 2022  
Thesis Title: Quantifying Radiation-Induced Changes in Perfusion for Improved Functional Avoidance Lung Cancer Therapy  
Current Position: Medical Physics Resident, University of California - San Diego, San Diego, CA  
\*served as Interim Advisor
11. **Sabrina Hoffman\*, Ph.D.**, Spring 2023  
Thesis Title: Investigation of a DNA Damage Response Protein Targeted Meitner-Auger Electron Emitting Theranostic for Ovarian Cancer  
Current Position: Clinical Medical Physicist, Chicago, IL  
\*co-advised with Prof. Paul Ellison
12. **Eric Walle\*, Ph.D.**, Spring 2023  
Thesis Title: Improving the efficacy of functional lung avoidance radiation therapy  
Current Position: Medical Physics Resident, University of Wisconsin, Madison, WI  
\* served as Interim Advisor

### **Degrees in Progress**

#### **a) Masters**

1. Adedamola Adeniyi (Expected Graduation 2026)

#### **b) Doctoral**

1. Nadeem Shaheen (Expected Graduation Spring 2025)
2. Akire Trestrail (Expected Graduation Spring 2024)
3. Ohyun Kwon (Expected Graduation Spring 2026)
4. Lauren Wehner, Molecular & Environmental Toxicology (Expected Graduation 2027), co-advised with Prof. Reinier Hernandez

5. Campbell Haasch (Expected Graduation 2028)
6. Jordan Teague (Expected Graduation 2027)

#### **Doctoral Thesis Committee Reading Member**

1. Patrick Hill, "Fan-Beam Intensity Modulated Proton Therapy," Advisor: Rock Mackie (Spring, 2011)
2. Timothy Szczykutowicz, "Intensity Modulated Computed Tomography," Advisor: Chuck Mistretta (Winter, 2012)
3. Heming Zhen, "Improving Patient-Specific Pre-Treatment Quality Assurance," Advisor: Wolfgang Tome (Spring, 2012)
4. Regina K. Fulkerson, "Dosimetric characterization of surface applicators for use with high dose rate  $^{192}\text{Ir}$  and electronic brachytherapy sources," Advisor: Larry DeWerd (Fall, 2012)
5. Laura Bartol, "Spectroscopic characterization of high-energy and high fluence rate photon beams," Advisor: Larry DeWerd (Fall, 2012)
6. Mariela A. Porrás-Chaverri, "Patient-oriented Breast Imaging Dosimetry," Advisor: John Vetter (Summer, 2014)
7. Andrew Ellis, "Radiotherapy for Subvolumes in a Moving Target: Methods to Overcome Breathing Variability in Planning and Delivery," Advisor: Wolfgang Tome (Spring, 2013)
8. Martha Malin, "Energy-Based Dosimetry of Low-Energy, Photon-Emitting Brachytherapy Sources," Preliminary Exam, Advisor Larry DeWerd (Fall, 2012)
9. Jeremy Gordon, "Improved Acquisition Efficiency for Hyperpolarized  $^{13}\text{C}$  MRI: Application to Brain Metabolism," Advisor: Sean Fain (Spring, 2013)
10. Jialu Yu, "Is Dose Accumulation Required? Implications on Adaptive Dose Guidance," Advisor: Wolfgang Tome (Spring 2013)
11. Stephanie Junell, "Dosimetry for Small and Nonstandard Fields," Advisor: Larry DeWerd (Spring 2013)
12. Alex Robinson, "Development of a Monte Carlo code system with continuous energy adjoint transport capabilities for neutrons and photons," Preliminary Exam, Advisor: Douglass Henderson (Summer, 2013)
13. Jessica Miller, "Characterization and optimization of microionization chambers," Advisor: Larry Dewerd (Fall, 2013)
14. David Campos, "Radiation Promptly Alters Cancer Live Metabolic Fluxes", Preliminary Exam, Advisor: Michael Kissick (Summer, 2014)
15. Mariajose Bedoya, "Techniques Enhancing Microwave Ablation" Preliminary Exam, Advisor: Christopher Brace (Fall, 2014)
16. Areli Zuniga, "Generalized Tumor Dose for Treatment Planning Decision Support," Advisor: Bhudatt Paliwal (Fall, 2014)
17. Travis McCaw, "Characterization of the interplay effect in step-and-shoot intensity-modulated radiation therapy in the lung," Advisor: Larry DeWerd (Spring, 2015)
18. Tyler Bradshaw, "Target Definition in Biologically Conformal Radiation Therapy," Advisor: Robert Jeraj (Spring, 2015)
19. Benjamin Rosen, "Advanced radiochromic film methodologies for quantitative dosimetry of small and nonstandard fields," Advisor: Larry Dewerd (Spring, 2015)
20. Joshua Reed, "Improved Dosimetry and New Directions for Low-Energy Photon-Emitting Elongated Brachytherapy Sources," Advisor: Larry DeWerd (Summer, 2015)
21. Surendra Prajapati, "Development of small animal radiotherapy within the design of integrated small animal imaging and therapy system: an open-source medical devices (OSMD) initiative," Advisors: Rock Mackie and Robert Jeraj (Summer, 2015)
22. Yue Yan, "Soft-Spectrum-Filter (SPECTER) for Flattening-Filter-Free Beams from TrueBeam System," Advisor: Bhudatt Paliwal (Summer, 2015)
23. Megan Hyun (Formerly Wood), "Improving Dose Determination Accuracy in Nonstandard Fields of the Varian TrueBeam Accelerator", Advisor: Larry DeWerd (Spring, 2016)

24. Luke Kersting, “Electron Upgrade of a Forward-Adjoint Continuous Energy Monte Carlo Code,” Preliminary Exam, Advisor: Douglass Henderson (Spring, 2016)
25. Elliot Biondo, “Hybrid Monte Carlo/Deterministic Neutron Transport for Shutdown Dose Rate Analysis of Fusion Energy Systems,” Advisor: Paul Wilson (Summer, 2016)
26. Michael Lawless, “Kilovoltage X-ray dosimetry for cone beam computed tomography,” Larry DeWerd (Spring, 2016)
27. Akire Trestrail, “Directional HDR Brachytherapy,” Preliminary Exam Advisor: Bruce Thomadsen (Spring, 2016 retake Summer, 2016)
28. Sabrina Hoffman, “Investigation of Auger electrons from bromine isotopes as a viable therapeutic agent for cancer therapy” Preliminary Exam, Advisor: Bruce Thomadsen (Fall, 2016)
29. Hector Valdovinos, “Production, labeling and in vivo studies with the theranostic positron-emitting radiometals  $^{44}\text{Sc}$ ,  $^{55/58\text{m}/55\text{g}}\text{Co}$ ,  $^{61/64}\text{Cu}$ ,  $^{86}\text{Y}$  and  $^{69}\text{Ge}$ ,” Advisor: Jerry Nickles (Spring, 2017)
30. Jessica Fagerstrom, “Optimized Orthovoltage Stereotactic Radiosurgery,” Advisor: Wes Culberson (Spring, 2017)
31. Stephanie Harmon, “Bridging the Gap: connecting imaging phenotypes and cellular genotypes” Advisor: Robert Jeraj (Spring, 2017)
32. David Dunkerley, “Development of a 3D device guidance platform for the Scanning-Beam Digital X-ray (SBDX) system”, Advisor: Michael Speidel (Spring, 2017)
33. Wenjun Yang, Monitoring Microwave Ablation Treatment for Liver Tumors Using Ultrasound Elastography,” Advisor: Tomy Varghese (Summer, 2017)
34. Jon Hansen, “Development of a Convex Windowless Extrapolation Chamber to Measure Surface Dose Rate from Episcleral Plaques”, Advisor: Larry DeWerd (Spring, 2018)
35. Kai Ludwig, “Development and Validation of MRI Techniques for Cellular Tracking and Imaging of Organ Function,” Advisor: Sean Fain (Spring, 2018)
36. Daniel Gomez Cardona, “Low Radiation Dose Computed Tomography: Technology Development and Assessment,” Advisor: Guang-Hong Chen (Spring, 2018)
37. Sameer Taneja, “A Characterization of Spectral Variations Resulting from Intensity Modulation for High Energy, High Fluence Photon Beams,” Advisor: Larry DeWerd (Spring, 2018)
38. Taylor Patton, “Quantifying and Modeling Radiation Therapy-Induced Ventilation Changes and Investigating the Robustness of 4DCT-Based Functional Avoidance”, Advisor: John Bayouth (Summer, 2018)
39. Eric Simiele, “Characterization of Signal Changes in Light Guides Used for Scintillation Dosimetry in the Presence of a Magnetic Field,” Advisor: Larry DeWerd (Spring, 2019)
40. Vimal Desai, “Towards an Objective Determination of Plan-Class Specific Reference Fields for Nonstandard Linear Accelerator Treatments,” Advisor: Wesley Culberson (Spring 2019)
41. Michael Taylor, “Characterization of a Compact Neutron Generator and 2-Dimensional Neutron Detection Platform for Thermal Neutron Radiography,” Advisors: Douglass Henderson and Paul Deluca (Spring, 2019)
42. Chelsea D'angelo, “Variance Reduction for Multi-physics Analysis of Moving Systems,” Advisor: Paul Wilson (Spring 2019)
43. Moataz S. Harb, “Propagation of Statistical Uncertainty in Mesh-Based Shutdown Dose Rate Calculations,” Advisor: Paul Wilson (Spring 2019)
44. Eli Moll, “Forward and Adjoint Thermal Neutron Methods Development For Use With a Forward-Adjoint Continuous Energy Monte Carlo Code,” Advisor: Douglass Henderson (Spring 2019)
45. Leonard Chu Fru, “Measurement of hemoglobin oxygen saturation in tissue with an optical device,” Advisor: Larry DeWerd (Summer 2019)
46. Natalie Viscariello, “Toward Dosimetry Standardization in Radiobiology X-ray Irradiators,” Advisor: Larry DeWerd (Summer, 2019)
47. Carla Winterhalter, “Protons do play dice: Validating, implementing and applying Monte Carlo techniques for proton therapy,” ETH Zurich, Advisor: Anthony Lomax (Summer 2019), **\*Professional appraisal of thesis**

48. Blake Smith, "Dosimetry of a Novel Dynamic Collimation System for Intracranial Pencil Beam Scanning Proton Therapy," Advisor: Wes Culberson (Fall 2019)
49. Peter Ferjancic, "Probabilistic Incorporation of Uncertainties in Radiation Therapy," Preliminary Exam, Advisor: Robert Jeraj (Fall 2019)
50. Muhammed Bedir, "An Improved 3D Image-Guidance Methodology for Breast Tumor Localization with an Intra-Operative Handheld Gamma Probe," Advisor: Bruce Thomadsen (Spring 2020)
51. Chris Kutyreff, "Improved production of and novel radiolabeling strategies for  $^{69/71}\text{germanium}$ ," Preliminary Exam, Advisor: Jon Engle (Spring 2020)
52. Leah Turner, "Development of a Plan-Specific QA System Utilizing 3D Gel Dosimetry for SARRP Mouse Treatments," Preliminary Exam, Advisor: Larry Dewerd (Spring 2020)
53. Dongyoul Lee, "Enhancing the Therapeutic Efficacy of Peptide Receptor Radionuclide Therapy For Neuroendocrine Tumors," Advisor: Michael Schultz, University of Iowa (Spring 2020)
54. Lindsay Bodart, "Real-Time Three-Dimensional Image Guidance Platform Using Transthoracic Echocardiography and X-ray Fluoroscopy," Advisor: Michael Speidel (Spring, 2021)
55. Philip Britt, "Angular Importance Sampling for Forward and Adjoint Monte Carlo Radiation Transport," Preliminary Exam, Advisor: Douglass Henderson/Paul Wilson (Fall 2021)
56. Daniel Huff, "Towards a risk-benefit optimized clinical decision support framework for immune-checkpoint inhibitor-treated metastatic melanoma", Advisor: Robert Jeraj (Spring/Summer 2022)
57. Emily King, "Development and Characterization of Absolute Dosimeters for Kilovoltage and Higher Energy Radiation," Advisor: Wesley Culberson (Spring 2022)
58. Autumn Walter, "Characterization of the effects of filtration on the Xofigo Source," Advisor: Larry DeWerd (Spring 2022)
59. Sean Jollota, "Relationship between Activity and Absorbed Dose for Alpha-Emitting Radionuclides", Advisor: Larry Dewerd (Summer 2023)
60. Tommy Stasko, "Development of Tungsten-Anode Mammography Calibration Beams With Applications In Low-Energy Solid-State Dosimetry", Advisor: Wes Culberson (Fall 2022)
61. Jacob Lambeck, "Construction and Testing of a Solid Nine-Voxel Calorimeter Array for Absolute Dose Measurements of Megavoltage Photon Beams," Preliminary Exam Advisor: Larry Dewerd (Fall 2022)
62. Karsten Wake, "Development of Collimated Proton Arcs Using a Dynamic Collimation System for Pencil Beam Scanning Proton Therapy," Preliminary Exam, Advisor: Wes Culberson (Fall 2023)
63. Maxwell Kiernan, "Carotid Strain Imaging Augmented by Deep Learning Segmentation for Quantitative Health Assessment," Preliminary Exam Advisor: Tomy Varghese (2023)
64. Andrew Bertinetti, Physical Dosimetry Methods for Monte Carlo Benchmarking of Beta-Emitting Targeted Radionuclide Therapy Agents," Advisor: Wesley Culberson (Spring 2023)
65. Jocelyn Jackson, "Dosimetry of electron-irradiated dielectrics at conventional and ultra-high dose rates," Preliminary Exam, Advisor: Wesley Culberson (Spring 2024)
66. Helana Koniar, "Dosimetry and Biodistribution of Actinium Radiopharmaceuticals for Targeted Alpha Therapy," University of British Columbia, Advisor: Carlos Uribe **\*professional appraisal of thesis**
67. Cynthia Choi, "Title TBD", Advisor: Jamey Weichert
68. Yadira Medina-Guevara, "Title TBD" Advisor: Reinier Hernandez
69. Nancy Granda Duarte, "Title TBD" Advisor: Paul Wilson (Summer 2024)
70. Rachel Minne, "Title TBD", Advisor: Randy Kimple
71. Xin Tie, "Artificial Intelligence in Lymphoma Imaging: Incorporating Longitudinal Awareness," Preliminary Exam Advisor: Tyler Bradshaw (Spring 2024)
72. Marcus Lindsey, "Title TBD," Advisor: Reinier Hernandez
73. Dianna Thompson, "Title TBD", UMass Lowell, Advisor Erin Bertelsen

#### E. Post Docs, Research Scientist, and Staff

1. Joseph Grudzinski, Ph.D., Associate Research Scientist (Fall 2016-2019)
2. Paul Wickre, MS, Senior Programmer (Fall 2018-2020)

3. Adedamola Adeniyi, BS, Instrumentation Engineer (Spring 2021-)
4. Sydney Jupitz, Ph.D., Post-Doc (Fall 2023-Spring 2024)

#### **F. Undergraduate Student Trainees**

1. Arjun Dhillon, Department of Physics, Princeton University, Princeton NJ (Summer, 2012, “Investigation of NK-cell interactions with surface ligands using the Metropolis Monte Carlo method”
2. Kai Ludwig, Department of Biochemistry, University of Wisconsin, WI (Summer, 2012), “Exploring autophagy signaling pathways in engineered cell lines post irradiation”
3. Andrew Shepard, Department of Engineering Physics, University of Wisconsin, Madison, WI, AAPM Summer Undergraduate Research Fellowship (Summer, 2013), “A Novel Small Animal MC Framework for Preclinical Trials of TRT Agents”
4. Daniel Giffin, Department of Atmospheric and Oceanic Science, University of Wisconsin, Madison WI (Spring, 2014) , “Inducing ‘danger signals’ on cancer cells with radiation,”
5. Ian Marsh, Department of Engineering Physics, University of Wisconsin, Madison WI, (Spring, 2014), “Modeling a miniature gamma camera”
6. Grant Meadows, Department of Engineering Physics, University of Wisconsin, Madison, WI (Summer, 2016-Fall, 2016), “Biological Effects of Low Dose Exposures Literature Review”
7. Robert Moskwa, Department of Mathematics, Applied Mathematics, Engineering and Physics Program, University of Wisconsin, Madison WI, (Summer, 2017), “Development of a fast contour propagation technique”
8. Noah Schweitzer, Department of Engineering Physics, University of Wisconsin, Madison, WI, (Spring, 2018), “Monte Carlo modeling of dose enhancement due to gadolinium-labeled alkyl-phospholipid ethers in tumors”
9. Alexander Antonovich Strunets, Biology Major, (Fall 2019), “Microscopic Imaging of Phospholipid Ethers in Cancer Cells”
10. Sam Garcia, Department of Engineering Physics, University of Wisconsin, Madison, WI, (Summer 2021), “Radiation Space Shielding for Human Missions to the Moon and Beyond”
11. Fengwei Lui, Department of Engineering Physics, University of Wisconsin, Madison, WI, (Spring, 2023), “Imaging Cherenkov Radiation following Radioactive Decay”
12. Quintan Lynne, Department of Engineering Physics, University of Wisconsin, Madison, WI, (Summer 2024), “AI-based Segmentation of Mouse Anatomy and Tumors”

#### **G. Staff and Faculty Mentoring Committees**

1. James Holmes, Ph.D., Scientist II, Department of Radiology, UW-Madison (2017-2021)  
Current Position: Clinical Assistant Professor, University of Iowa
2. Tyler Bradshaw, Ph.D., Scientist II, Department of Radiology, UW-Madison (2017-present)
3. Patrick Hill, Ph.D., Assistant Professor (CHS), Department of Human Oncology (2018-present)
4. Reinier Hernandez, Ph.D., Assistant Professor (Tenure Track), Department of Medical Physics, UW-Madison (2020-present)

#### **PATENTS**

1. P160396US01 “Radioiodinated Agents for In Situ Immune Modulated Cancer Vaccination,” by J. Weichert, P. Sondel, A. Pinchul, Z. Morris, **B. Bednarz**, 10736949, Date Issued: 8/11/2020

2. P160397US01 “Targeted Radiotherapy Chelates for In Situ Immune Modulated Cancer Vaccination,” by J. Weichert, P. Sondel, A. Pinchul, Z. Morris, **B. Bednarz**, 10751430, Date Issued: 8/25/2020
3. PUS010921395B2 “Image-Guided Biopsy Techniques,” TKF Foo, J Mitra, B Wang, LS Smith, DM Mills, W Lee, J Holmes, **B. Bednarz**, R Strigel, Date Issued: 2/16/2021
4. P160325US01 “Phospholipid Ether Analogs for Imaging and Targeted Treatment of Pediatric Solid Tumors,” by M. Otto, **B. Bednarz**, J. Weichert, and D. Baiu, Date Issued: 10/19/2021
5. US20210251611A1 “Identification of respiratory phases in a medical procedure,” Jhimli Mitra, Sudhanya Chatterjee, Thomas Kwok-Fah Foo, Desmond Teck Beng Yeo, Bryan Patrick Bednarz, Sydney Jupitz. Date Filed February 2020 Pending
6. P230293 Compositions and Methods for Targeting Cell Surface Markers Induced by Radiation Therapy for the Purpose of Quantitative Molecular Imaging or Cancer Therapy”, Z. Morris, Reinier Hernandez, Q. Sodji, A. LeBeau, **B. Bednarz** Date Filed January 2024

## **RESEARCH SUPPORT**

### **A. Ongoing Research Support**

#### **a. University of Wisconsin**

T32 CA0090206 08/01/1978-05/31/2023  
NIH/NCI NRSA

##### ***UW Radiological Training Grant***

**Description of goals:** To support Ph.D. and postdoctoral research related to cancer. The goal of this training program is to prepare physicists and engineers for research careers in radiological physics and dosimetry as well as in functional, anatomical, and interventional medical imaging as it applies to the detection and treatment of cancer.

**Role: PI and Mentor**

SPORE CA196513-01 08/01/2022-07/30/2027  
NIH/NCI \$10,000,000

##### ***The Wisconsin Head and Neck SPORE***

**Description of goals:** The Wisconsin Head and Neck SPORE seeks to identify and translate new scientific discoveries into significant and durable treatment advances for patients with HNC. These advances strive to increase HNC cure rates and diminish normal tissue toxicities.

**Role: Co-I**

R01CA266879 01A1 08/15/2022-7/31/2027  
NCI \$3,869,612

##### ***Simultaneous MRI/US for real-time liver ablation guidance and confirmation***

**Description of goals:** This project will evaluate the use of a MR compatible ultrasound probe to help guide and confirm liver microwave ablation.

**Role: Co-I**

R21 EB033618-01 08/01/2022-7/31/2024  
NIBIB \$414,305

##### ***Development and Validation of an Artificial Intelligence-Based Clinical Decision Support Tool for Videofluoroscopic Swallowing Studies***

**Description of goals:** This project will allow for development and validation of an artificial neural network-based software that will segment and track clinically important swallowing structures on a frame-by-frame basis within swallowing videos, thereby providing real-time objective information to support clinical decision-making specific to dysphagia management.

**Role: PI**

DREAM (Dysphagia REsearch and Education to IMprove Swallowing) Fund 02/01/2022-1/31/2025  
University of Wisconsin Department of Medicine \$59,727

##### ***Development and Validation of an Artificial Intelligence-Based Clinical Decision Support Tool for Videofluoroscopic Swallowing Studies***

**Description of goals:** This project will allow for development and validation of an artificial neural network-based software that will segment and track clinically important swallowing structures on a frame-by-frame basis within swallowing videos, thereby providing real-time objective information to support clinical decision-making specific to dysphagia management.

**Role: PI**

P01 CA250972-01 09/14/2020 – 05/31/2025  
NIH/NCI \$15,055,340 (\$3,929,832 as Leader or Co-Leader)

***Molecular Targeted Radionuclide Therapy for Tumor Immunomodulation and Enhancing Immunotherapy Response***

**Description of goals:** The goal of this project is to uncover and exploit therapeutic mechanisms whereby TRT may enhance the rate and/or depth of response to immunotherapies could deliver enormous improvements in the survival of patients with metastatic cancers.

**Role: Project Co-Leader & Core Leader**

Department Research Grant 08/01/2019-07/30/2021  
Department of Radiology \$86,238

***Clinical Dosimetry Protocol for Personalized Therapeutic Nuclear Medicine at UW Madison***

**Description of goals:** The Wisconsin Head and Neck SPORE seeks to identify and translate new scientific discoveries into significant and durable treatment advances for patients with HNC. These advances strive to increase HNC cure rates and diminish normal tissue toxicities.

**Role: Co-I**

**b. Voximetry, Inc**

**B. Completed Research Support**

**a. University of Wisconsin**

U01 CA233102-01 09/01/2018 – 08/31/2023  
NIH/NCI \$3,817,050

***Immunomodulation of the Tumor Microenvironment with Molecular Targeted Radiotherapy to Facilitate an Adaptive Anti-Tumor Immune Response to Combined Modality Immunotherapies***

**Description of goals:** The goal of this project is to develop a new approach, representing a dramatic shift in the treatment of metastatic cancer, utilizing immune responses to recognize and destroy cancer (known as immunotherapy) in combination with low-dose radiation therapy, which substantially improves the anti-tumor potency of the immunotherapy regimens that are created.

**Role: Co-I**

Graduate School Fall Competition 07/01/2021-06/30/2022  
University of Wisconsin Graduate School \$48,112

***SwallowVision: An AI-based Clinical Decision Support Software for Videofluoroscopic Swallowing Studies***

**Description of goals:** Develop and validate an artificial neural network-based software that will segment and track clinically important swallowing structures on a frame-by-frame basis within swallowing videos.

**Role: PI**

Pandemic Affected Research Continuation Initiative (PARCI) 01/01/2021-12/31/2021  
University of Wisconsin Graduate School \$42,052

***Real-time Tumor Localization and Guidance for Radiotherapy Using US and MR Continuation***

**Description of goals:** COVID-19 relief funding to complete R01 clinical trial.

**Role: PI**

SPORE CA196513-01 08/01/2016-07/30/2021  
NIH/NCI \$10,800,205

***The Wisconsin Head and Neck SPORE***

**Description of goals:** The Wisconsin Head and Neck SPORE seeks to identify and translate new scientific discoveries into significant and durable treatment advances for patients with HNC. These advances strive to increase HNC cure rates and diminish normal tissue toxicities.

**Role: Co-I**

NASA Innovative Advanced Concepts (NIAC) Phase I Award 03/01/2022-12/31/2022  
NASA \$175,000

***CREW HaT: Cosmic Radiation Extended Warding using the Halbach Torus***

**Description of goals:** This project will develop the CREW HaT, a new concept for a Halbach Torus (HaT), which consists of light, deployable, mechanically supported magnetic coils activated by a new generation of high-temperature superconducting tapes which have recently become available. This configuration produces an enhanced external magnetic field that diverts cosmic radiation particles, complemented by a suppressed magnetic field in the astronaut's habitat.

**Role: Collaborator**

Hyundai Hope on Wheels 09/01/2019-08/31/2021  
Hyundai \$250,000

***Towards Improving Outcomes In Relapsed/Refractory Childhood Leukemia: Molecular Targeted Radiotherapy With Alkyl Phosphocholine Analogs***

**Description of goals:** Investigate the use of the second-generation APC analog <sup>90</sup>Y-NM600 for re-induction therapy in preparation for HSCT, and potentially at other stages of leukemia treatment as well.

**Role: Co-I**

R01 CA190298-01A1 07/01/2015-06/30/2020  
NIH/NCI \$3,085,270

***Real-time Tumor Localization and Guidance For Radiotherapy Using U/S and MRI***

**Description of goals:** The goal of this project is to develop and validate a robust, non-invasive, and cost-effective image-guidance platform to directly track tumor motion using a 4D planar ultrasound transducer during radiation therapy that is coupled to a pre-treatment calibration training image set consisting of a simultaneous 4D ultrasound and 4D MRI acquisition.

**Role: PI**

Department Research Grant 07/01/2018-6/30/2019  
UW Dept. of Radiology \$30,034

***Preliminary Evaluation of MRI Respiratory Gating using MRI Compatible Ultrasound***

**Description of goals:** This exploratory proposal investigates the use of simultaneous MRI and 4D ultrasound imaging for motion management in MRI with aims completed in a study of 12 healthy human subjects.

**Role: Co-I**

Childhood Cancer Research Grant 07/1/2018-06/30/2019  
St. Baldrick's Foundation \$100,000

***Improving Anti-Cancer Immune Responses to Targeted Radionuclide Therapy***

**Description of goals:** To test a drug in combination with radiotherapy that has shown to reduce or deplete immunosuppressive cells from tumors, and lead to increased numbers of cancer killing immune cells in the cancer tissue. In mouse models of pediatric cancer, we will combine this drug with a particular form of radiotherapy, called radionuclide therapy that uses radioactive substances which are injected into the bloodstream to carry their radioactive load directly to tumor cells.

**Role: Co-I**

UW2020: WARF Discovery Initiative 08/01/2016-07/30/2018  
Wisconsin Alumni Research Foundation \$288,189

***Combining Radiotherapeutic with Antitumor Antibody and IL2 to Create a Potent In Situ Cancer Vaccine***

**Description of goals:** This project brings together two very distinct cutting-edge disciplines in cancer treatment research: 1) systemically administered targeted radiotherapy and 2) locally-directed, antibody-mediated, cancer immunotherapy. Our preliminary data suggest that powerful synergy should result from combining these approaches. The goal of this work is destruction of visible macroscopic tumor in a way that enables the destroyed cancer cells to function as a potent in situ vaccine that creates tumor-specific T cell immunity able to eradicate persistent residual metastatic disease, potentially for any type of tumor in any location.

**Role: Co-PI**

STTR-Virtual Phantoms, Inc. 12/01/2015-11/30/2018  
NIH/NCI \$50,224

***Archer – An Extremely Fast Monte Carlo Radiation Dose Computing Software***

**Description of goals:** The goal of this project is to develop very fast treatment planning capabilities using state-of-the-art GPU/CPU technology.

**Role: Sub Contract-PI**

Carbone Cancer Center Pilot Award 09/13/2012-03/31/2013  
UW Carbone Cancer Center \$49,999

***Autophagy in the Tumor Microenvironment: A Potential Target for Radiation Sensitization***

**Description of goals:** The goals of this research are to determine the conditions under which radiation induces autophagy in head and neck cancer and how this process is modulated by HPV and to examine the relationship between autophagy and tumor microenvironment in HPV+ and HPV- HNC tumorgrafts.

**Role: Co-PI**

Carbone Cancer Center Pilot Award 07/01/2012-06/30/2014  
UW Carbone Cancer Center \$48,942

***Monitoring of <sup>19</sup>F-labeled NK Cell Trafficking for Cancer Immunotherapy Using MRI***

**Description of goals:** To optimize NK cell infusions by first making them visible by MRI using a nonradioactive isotope of fluorine, <sup>19</sup>F, and then tracking them in vivo and to test whether local irradiation of a tumor causes the tumor to present “danger signals” that attract NK cells after infusion and makes tumors more susceptible to NK cells

**Role: Co-I**

Graduate School Fall Competition 07/01/2013-06/30/2014  
University of Wisconsin Graduate School \$34,635

***A Novel Small Animal Dosimetry Platform to Facilitate Preclinical Trials for Targeted Radionuclide Therapy***

**Description of goals:** The goal of this research is to develop a Monte Carlo-based small animal dosimetry platform to facilitate the evaluation of a variety of ongoing and forthcoming preclinical trials at UW.

**Role: PI**

R01 CA158800-04 09/12/2011-07/31/2015  
NIH/NCI \$1,453,960

***PET/CT Imaging of Malignant Brain Tumors with <sup>124</sup>I-NM404***

**Description of goals:** This project investigates the utility of a new tumor imaging agent, NM404, to more accurately characterize malignant brain tumors in humans.

**Role: Co-I**

SBIR Phase I/II Fast Track - Collectar 10/01/2015-12/31/2016  
NIH/NCI \$86,050

***I-125-CLR1404 as a (Neo)adjuvant Treatment Option for Triple-Negative Breast Cancer***

**Description of goals:** The goal of this project is to investigate the use of I-125-CLR1404 as a (neo)adjuvant treatment option for triple-negative breast cancer. This project will address the unmet clinical need for an efficacious therapy for TNBC that will significantly improve the quality of life and increase long-term survival. Multi-scale dosimetry will be performed to investigate the effectiveness of the proposed treatment.

**Role: Sub-Contract-PI**

R21 CA198392-01 07/01/2015-6/30/2017  
NIH/NCI \$420,750

***A cancer-targeted phospholipid ether analog for molecular radiotherapy of pediatric solid tumors***

**Description of goals:** The goal of this project is to investigate the highly tumor selective phospholipid ether analog CLR1404 as scaffold for delivery of radioiodine isotopes for molecular radiotherapy and personalized dosimetry in pre-clinical rodent models of pediatric solid cancers. The project has a strong potential to increase the dismal survival rate of children with these particularly deadly tumors.

**Role: PI**

Graduate School Fall Competition 07/01/2016-06/30/2017  
University of Wisconsin Graduate School \$41,823

***A concurrent Monte Carlo dose calculation and fluence optimization platform with low memory footprint***

**Description of goals:** The goal of this research is to develop a Monte Carlo-based treatment planning solution that performs dose calculation and optimization concurrently.

**Role: PI**

UW SEED Grant 07/1/2018-06/30/2020  
UW Graduate School \$148,041

***RAPID: an extremely fast Monte Carlo dose computing software for nuclear medicine***

**Description of goals:** This project aims to develop a low-cost MC-based RT dosimetry system optimized for heterogeneous GPU/CPU computing and to demonstrate the performance advantage of RAPID against established methods used at UW-Madison using clinical PET/CT datasets.

**Role: PI**

Department Research Grant 01/01/2018-12/31/2019  
UW Dept. of Radiology \$42,827

***First-in-Human Study of <sup>51</sup>MnCl<sub>2</sub> PET***

**Description of goals:** To perform the first-in-human imaging study of <sup>51</sup>MnCl<sub>2</sub> for imaging functional  $\beta$ -cell mass.

**Role: Co-I**

**b. Voximetry, Inc**

R44 CA221491 (Voximetry, Inc.) 09/01/2020 – 08/31/2021  
NIH/NCI \$1,747,514

***One-click Automated 3D Treatment Planning for Radiopharmaceutical Therapy***

**Description of goals:** The specific aims that will be accomplished in the proposal are to (1) develop GPU-accelerated deformable image registration and contour propagation within the Torch workflow, (2) develop GPU-accelerated pharmacokinetic modeling for voxel-level time activity curve integration, and (3) validate Torch through beta testing using computational phantoms and patient data. The successful completion of these aims will support a commercially viable product that is ready for clinical use.

**Role: Co-I**

R44 CA221491 (Voximetry, LLC)

09/01/2020 – 08/31/2021

NIH/NCI

\$289,727

**RAPID: An Extremely Fast Monte Carlo Dose Computing Software for Nuclear Medicine**

**Description of goals:** Our solution, Torch, will be the first commercialized desktop Monte Carlo radionuclide dosimetry system. It will utilize a heterogeneous CPU/GPU (Graphical Processing Units) architecture that will minimize the computational complexity stemming from problems encountered in RT dosimetry. RAPID will provide accurate radiation dosimetry results within a clinically acceptable timeframe of less than 5 minutes.

**Role: Co-PI**

**C. Research Support Summary**

	<b>Award</b>	<b>Year</b>	<b>PI/Lead</b>	<b>Other</b>
<b>Federal</b>	NIH/NCI R01	2015	\$3,085,270	
	NIH/NCI SPORE	2016		\$10,800,205
	NIH/NCI STTR	2015	\$50,224	
	NIH/NCI U01	2018		\$3,817,050
	NIH/NCI R01	2011		\$1,453,960
	NIH/NCI SBIR	2015	\$86,050	
	NIH/NCI R21	2015	\$420,750	
	NIH/NCI P01	2020	\$3,929,832	\$11,125,508
	NASA IAC	2022		\$175,000
	NIBIB	2022	\$414,305	
	NIH/NCI R01	2022		\$3,869,602
	NIH/NCI SPORE	2022		\$10,000,000
<b>State/University</b>	WARF UW2020	2016	\$288,189	
	Radiology R&D			\$30,034
	Radiology R&D			\$42,827
	WARF SEED	2018	\$148,041	
	UWCCC	2012	\$49,999	
	UWCCC	2012		\$48,942
	UW Graduate School	2013	\$34,635	
	UW Graduate School	2018	\$41,823	
	UW PARCI	2021	\$42,052	
	UW Graduate School	2021	\$48,112	
	Radiology R&D	2019		\$86,238
	Medicine DREAM		\$59,727	
	UW H&N SPORE Pilot	2024	\$50,000	
	WPP CHSP	2024		\$600,000
	<b>Private</b>	St. Baldricks	2018	
Hyundai		2019		\$250,000

<b>Sum</b>	\$8,749,009	\$42,399,376
<b>Total Grant Revenue</b>		\$51,148,385

## PUBLICATIONS

### A. Books and Books Chapters

1. **B. Bednarz**, "Chapter 15: Applications of Computational Phantoms," in *The Phantoms of Medical and Health Physics, The Phantoms of Medical and Health Physics, Devices for Research and Development*, Springer, (2014)
2. **B. Bednarz** and J. Vetter, Chapter 2: Quality and Safety in Medical Imaging," *Quality and Safety in Medical Imaging*, Edited by J. P. Kanne, Wolters-Kluwer (2016)
3. S. Kry, **B. Bednarz**, R.M. Howell, "Chapter 22: Dose outside the treatment volume in external beam therapy," *3D Dosimetry Clinical Dosimetry in Modern Radiation Therapy*, Edited by B. Mijnheer, CRC Press (2016)
4. P. Deluca and **B. Bednarz**, *Principles of Radiation Protection, Medical Physics Publishing, in preparation* (2021)
5. **B. Bednarz**, A. Besemer, I. Marsh, and J. Grudzinski, "RAPID – A Monte Carlo Dosimetry Platform for Radiopharmaceutical Therapy," *Monte Carlo Calculations in Nuclear Medicine: Therapeutic Applications* (2nd Edition), Edited by H. Zaidi, Institute of Physics (2021)
6. **B. Bednarz**, "Multiple Timepoint Image Registration," *AAPM Summer School Book*, Edited by Robert Hobbs, Medical Physics Publishing (2023)
7. **B. Bednarz**, "Uncertainties in Dose Calculation," *Radiotheranostics: A Primer for Medical Physicists*, Edited by Cari Borrás, CRC Press (2024)

### B. Peer-Reviewed and Archived Journal Papers

(students marked with \*)

1. P. Charland, I. Chetty, L. Paniak, **B. Bednarz**, and B. Fraass, "Enhanced spectral discrimination through the exploitation of interface effects in photon dose data," *Med. Phys.* **31**, 264-276, (2004)
2. J. Zhang, **B. Bednarz**, and X.G. Xu, "An investigation of voxel geometries for MCNP-based radiation dose calculations," *Operational Radiat. Safety*, **91** Suppl. 2, S59-S65 (2006)
3. **B. Bednarz** and X.G. Xu, "A feasibility study to calculate unshielded fetal doses to pregnant patients in 6-MV photon treatments using Monte Carlo methods and anatomically realistic phantoms," *Med. Phys.* **35**, 3054-3061 (2008)
4. J. Gu, **B. Bednarz**, X.G. Xu, and S. Jiang, "Assessment of patient organ doses and effective doses using the VIP-Man adult male phantom for selected cone-beam CT imaging procedures during image guided radiation therapy," *Radiat. Prot. Dosim.* **131**(4), 431-443 (2008)
5. Xu XG, Bednarz B, Paganetti H. A review of dosimetry students on external beam radiation treatment with respect to second cancer induction. *Phys. Med. Biol.* **53**: R193-R241. 2008. **Among the top-10 most cited papers in Physics in Medicine and Biology (PMB) in two years ending July 2010**
6. B. Han, **B. Bednarz**, Y. Danon, R. Block, and X.G. Xu, "Evaluation of the Nuclear Activation of Tungsten Plates for Future Modeling of a Medical Accelerator Target," *Proceedings in Nuclear Technology*, **168**, 576-579 (2009)
7. **B. Bednarz**, B. Han, and X.G. Xu, "Comparison of photoneutron yields in MCNPX using different photonuclear cross section data for typical radiation therapy energy ranges," *Proceedings in Nuclear Technology*, **168**, 270-273 (2009)

8. B. Han B., **B. Bednarz**, X.G. Xu, "A study of the shielding used to reduce leakage and scattered radiation in a pregnant patient treated with a 6-MV external x-ray beam," *Health Physics Journal* 97, 6, 581-589 (2009)
9. J. Gu, **B. Bednarz**, P. Carracappa, X.G. Xu, "The development, validation and application of a multidetector CT (MDCT) scanner model for assessing pregnant patient organs doses using Monte Carlo methods," *Phys. Med. Biol.* **54**, 2699-2717 (2009)
10. **B. Bednarz** and X.G. Xu, "Monte Carlo modeling of a 6- and 18-MV Varian Clinac medical accelerator for in-field and out-of-field dose calculations: development and validation," *Phys. Med. Biol.* **54**, N43-N57 (2009)
11. **B. Bednarz** and X.G. Xu, "Calculated organ doses from selected prostate treatment plans using Monte Carlo simulations and an anatomically-realistic computational phantom," *Phys. Med. Biol.* **54**, 5271-5286 (2009)
12. B. Han, X.G. Xu, and **B. Bednarz**, "Applications of a Monte Carlo computational framework of a medical accelerator used for radiation treatment," Proceedings of the International Conference on Mathematics, Computational Methods and Reactor Physics, Saratoga Springs, May 3-7, on CD-ROM, (2009)
13. H. Paganetti, B. Athar, **B. Bednarz**, "Dose rate effects when estimating risks for second malignancies: In regard to Fontenot et al (Int. J. Radiat. Oncol. Biol. Phys. 2009;74:616-22)," *Int. J. Radiat. Oncol. Biol. Phys.* 75 (5) 1623-1625 (2009)
14. B. Athar, **B. Bednarz**, J. Seco, C. Hancox, and H. Paganetti "Comparison of out-of-field photon doses in 6-MV IMRT and neutron doses in proton therapy for adult and pediatric patients," *Phys. Med. Biol.* 55, 2879-2891 (2010)
15. **B. Bednarz**, B. Athar, X. G. Xu, "A comparative study on the risk of second primary cancers in out-of-field organs associated with radiotherapy of localized prostate carcinoma using Monte Carlo-based accelerator and patient models," *Med. Phys.* 37 (5), 1987-1994 (2010)
16. **B. Bednarz**, J. Daartz, H. Paganetti, "Dosimetric accuracy of planning and delivering small proton therapy fields," *Phys. Med. Biol.* 55, 7425-7438 (2010)
17. **B. Bednarz**, H-M Lu, M. Engelsman, H. Paganetti, "Uncertainties and correction methods when modeling passive scattering proton therapy treatment heads with Monte Carlo," *Phys. Med. Biol.* 56, 2837-2854 (2011)
18. B Han, XG Xu, M Davidson, **B. Bednarz**, GC Sharp, GTY Chen Monte Carlo Simulation of Performance of a Time-Resolved Range Telescope Using Selected Image Quality Assurance Phantoms, *Nuclear Technology* 175, 58-62 (2011)
19. N. Depauw, S Danto, **B. Bednarz**, H Paganetti, Y Fink, J Seco Preliminary Study of Proton Radiography Imaging Qualities Using GEANT4 Monte Carlo Simulations, *Nuclear Technology* 175, 6-10 (2011)
20. **B. Bednarz**, GTY Chen, H Paganetti, B Han, A Ding, XG Xu, "Comparison of Particle-Tracking Features in GEANT4 and MCNPX Codes for Applications in Mapping of Proton Range Uncertainty," *Nuclear Technology* 175, 2-5 (2011)
21. U. Titt, **B. Bednarz**, H. Paganetti, "Comparison of MCNPX and Geant4 proton energy deposition predictions for clinical use," *Phys. Med. Biol.* 57, 6381-6393 (2012)
22. Y.M. Yang\* and **B. Bednarz**, "Consistency evaluation between EGSnrc and Geant4 charged particle transport in an equilibrium magnetic field for clinical use," *Phys. Med. Biol.* 58, N47-N58 (2013)
23. A. Besemer\*, H. Paganetti, **B. Bednarz**, "Clinical impact of uncertainties in the mean excitation energy of human tissues during proton therapy," *Phys. Med. Biol.* 58, 887-902 (2013)

24. T.L. Fowler\*, R.K. Fulkerson, J.A. Micka, R.J. Kimple, **B. Bednarz**, “A novel high-throughput irradiator for in vitro radiation sensitivity bioassays,” *Phys. Med. Biol.*, 59(6), 1459-1470 (2014)
25. L. Su, Y.M. Yang\*, **B. Bednarz**, X. Du, T. Lu, W. J. E. Sterpin, X.G. Xu, “ARCHERRT – A GPU-based and photon-electron coupled Monte Carlo dose computing engine for radiation therapy: Software development and application to helical tomotherapy,” *Med. Phys.*, 41, 071709-1 (2014)
26. Y.M. Yang\*, M Geurts, J B Smilowitz, E Sterpin, and **B. Bednarz**, “Investigation of dose perturbations in clinical Tomotherapy® treatments due to an equilibrium magnetic field”, *Med. Phys.*, 42(2), (2015)
27. T.L. Fowler\*, **B. Bednarz**, R.J. Kimple, “High-throughput detection of DNA double-strand breaks through image cytometry,” *Biotechniques*, 58(1), 37-39 (2015)
28. T. Brand, M. Iiada, A.P. Stein, K.L. Corrigan, C.M. Braverman, J. Coan, H.E. Pearson, H. Bahrar, T.L. Fowler\*, **B. Bednarz**, S. Saha, D. Yang, P.S. Gill, M.W. Lingen, V. Saloura, R. Salgia, R.J. Kimple, D.L. Wheeler, “AXL is a logical molecular target in head and neck squamous cell carcinoma,” *Clin. Can. Res.*, Published Online First March 12, 2015 (2015)
29. Z. S. Morris, J. P. Weichert, J. Saker, E. A. Armstrong, A. Besemer\*, **B. Bednarz**, R. J. Kimple, P. M. Harari, “Therapeutic combination of radiolabeled CLR1404 with external beam radiation in head and neck cancer,” Published Online First 6/26/2015 *Radiotherapy and Oncology*, (2015)
30. K. Cao, **B. Bednarz**, L.S. Smith, T.K. Foo, K.A. Patwardhan, “Respiration induced fiducial motion tracking in ultrasound using an extended SFA approach,” *Proc. SPIE, Medical Imaging*, 9419 (2015)
31. C. Matrosic\*, W. Culberson, B. Rosen, E. Madsen, G. Frank, **B. Bednarz**, “Initial characterization of a gel patch dosimeter for in vivo dosimetry,” *Phys. Med. Biol.*, 61(10), N240-248 (2016)
32. M. Bouchlaka, K. Ludwig, J.W. Gordon, M.R. Olsen, M.P. Kutz, **B. Bednarz**, S. B. Fain, C. M. Capitini, “<sup>19</sup>F-MRI for monitoring human NK cells in vivo,” *Oncoimmunology*, 5(5), (2016)
33. Y. M. Yang\*, M. Svatos, C. Zankowski, **B. Bednarz**, “Concurrent Monte Carlo Transport and Fluence Optimization with Fluence Adjusted Scalable Transport Monte Carlo,” *Med. Phys.* 43, 3034, (2016)
34. **B. Bednarz** and A. Besemer\*, “Radiation-Induced Second Cancer Risk Estimates from Radionuclide Therapy,” *EPJ – Web Conf.* 153 (2017)
35. H. Lin, T. Liu, L. Su, **B. Bednarz**, P.F. Caracappa, X.G. Xu, “Modeling of Radiotherapy Linac Source Terms Using ARCHER Monte Carlo Code: Performance Comparison for GPU and MIC Parallel Computing Devices,” *EPJ – Web Conf.* 153 (2017)
36. C. Matrosic\*, A. McMillan, J. Holmes, **B. Bednarz**, W. Culberson, “Dosimetric comparison of DEFGEL and PAGAT formulae paired with an MRI acquisition,” *Journal of Physics: Conference Series* 847, 012012, (2017)
37. S. Ellefson, W. Culberson, **B. Bednarz**, L. DeWerd, J. Bayouth, “A ViewRay-compatible corrections algorithm for the ArcCHECK-MR diode array,” *Journal of Applied Clinical Medical Physics*, 18 (4) (2017)
38. L. Hall, B. Titz, I. Robbins, S. Howard, **B. Bednarz**, S. Perlman, J. Weichert, J Kuo, “PET/CT Imaging of the Diapuetic Alkylphosphocholine Analog <sup>124</sup>I-CLR1404 in High and Low-Grade Brain Tumors,” *AJNMMI*, 7(4) (2017)
39. A. Besemer\*, L. Hall, B. Titz, J. Grudzinski, J. Weichert, **B. Bednarz**, “Impact of PET and MRI threshold-based tumor volume segmentation on targeted radionuclide therapy patient-specific dosimetry using CLR1404,” 62 (15), 6008 *Phys. Med. Bio.* (2017)
40. A. Shepard\*, B. Wang, T. Foo, B. Bednarz, “A block matching based approach with multiple simultaneous templates for the real-time 2D ultrasound tracking of liver vessels,” *Med. Phys.* 44(2017)

41. **B. Bednarz**, I. Marsh\*, J. Grudzinski, D.C. Baiu, A. Besemer\*, M. Otto, "Murine-specific internal dosimetry for preclinical investigations, 114(4), 450-458, *Health Physics* (2017)
42. W. Lee, H. Chan, P. Chan, T. Fiorillo, E. Fiveland, T. Foo, D. Mills, A. Patel, J. Sabatini, D. Shoudy, S. Smith, **B. Bednarz**, "A Magnetic Resonance Compatible E4D Ultrasound Probe for Motion Management of Radiation Therapy," *IEEE International Ultrasonics Symposium (IUS)* (2017)
43. S. F Kry, **B. Bednarz**, R.M. Howell, L.T. Dauer, D.S. Followill, E.E. Klein, H. Paganetti, B. Wang, C-S Wu, X. G. Xu, "AAPM TG 158: Measurement and calculation of doses outside the treated volume from external-beam radiation therapy," *Med. Phys.* 44 (10) (2017)
44. J. Grudzinski, B. Titz, M. Longino, K. Kozak, K. Lange, J. Larrabee, I. Marsh\*, J. Jeffery, **B. Bednarz**, "I-125-CLR1404 Auger electrons for the targeted radiotherapy of triple-negative breast cancer," *Cancer Biother. Radiopharm.* 33(3), 87-95. (2017)
45. T.L. Fowler\*, A.M. Bailey, M.M. Fisher, **B. Bednarz**, and R.J. Kimple, "Biological validation of a high-throughput irradiator for in vitro assays," *PLoS ONE* 12(12): e0189494. (2017)
46. D.C. Baiu, I. Marsh\*, A.E. Boruch, A.S. De, S. Bhattacharya, J. Jeffery, Q. Zhao, L. Hall, J. Weichert, **B. Bednarz**, M. Otto, "Targeted molecular radiotherapy of pediatric solid tumors using radioiodinated CLR1404 alkyl-phospholipid ether, *J. Nuc. Med.* 59(2), 244-250 (2018)
47. M.Y. Elsaid, E.A. Armstrong, A. Shahi, D.C. Baiu, S. Singhal, C. Li, L. Werner, L.T. Hall, J.P. Weichert, **B. Bednarz**, P.M. Harari, M. Otto, "Enhanced Radiosensitivity in Solid Tumors using a Tumor-Selective Alkyl Phospholipid Ether Analog," *Molecular Cancer Therapeutics* 17(11), 2320-2328 (2018)
48. A.E. Besemer, Y. Yang, J.J. Grudzinski, L.T. Hall, **B. Bednarz**, "Development and validation of RAPID: A patient-specific Monte Carlo 3D internal dosimetry platform," *Cancer Biother. Radiopharm.* 3(4):155-165 (2018)
49. A.J. Shepard\*, C.K. Matrosic\*, J. Radtke, S.A. Jupitz\*, W.S. Culberson, **B.P. Bednarz**, "Technical Note: Characterization of Clinical Linear Accelerator Triggering Latency for Motion Management System Development," *Med. Phys.* 45(11) 4816-4821 (2018)
50. A. Besemer, J.J. Grudzinski, J. Weichert, L. Hall, **B. Bednarz**, "Pre-treatment CLR 124 PET accurately predicts CLR 131 3D dosimetry in triple negative breast cancer patient" *Cancer Biother. Radiopharm* 34(1), 13 (2018)
51. C.M. Matrosic\*, S. Holmes, **B. Bednarz**, W. Culberson, "Evaluation of a Clinical Dose Accumulation Algorithm using Deformable Gel Dosimetry," *Journal of Physics: Conference Series* 1305 012002 (2018)
52. Lee D, Li M, **Bednarz B**, and Schultz MK. Modeling Cell and Tumor-Metastasis Dosimetry with the Particle and Heavy Ion Transport Code System (PHITS) Software for Targeted Alpha-Particle Radionuclide Therapy. *Rad Research* Vol 190, No. 3 236-247 (2018)
53. Marsh IR\*, Grudzinski JJ, Baiu DC, Besemer AE\*, Hernandez R, Jeffery JJ, Weichert JP, Otto M, **Bednarz B**, "Preclinical pharmacokinetics and dosimetry studies of [124I/131I]-CLR1404 for treatment of pediatric solid tumors in murine xenograft models," *J Nucl Med*, 60(10), 1414 (2019)
54. Grudzinski JJ, Hernandez R, Marsh I, Patel R, Aluicio-Sarduy E, Engle J, Morris Z, **Bednarz B**, Weichert JP., Preclinical Characterization of 86/90Y-NM600 in a variety of murine and human cancer tumor models. *J Nucl Med*. 2019 Epub ahead of print PMID: 30954941
55. P. Ellison, A. Olson, T. Barnhart, S. Hoffman\*, S. Reilly, M. Makvandi, J. Burkemper, D. Murali, O. DeJesus, S. Lapi, **B. Bednarz**, R. Nickles, R.H. Mach, J. Engle, "Improved production of <sup>76</sup>Br, <sup>77</sup>Br and <sup>80m</sup>Br via CoSe cyclotron targets and vertical dry distillation," *Nuclear Medicine and Biology* doi: 10.1016/j.nucmedbio.2019.09.001. [Epub ahead of print] (2019)

56. C. Matrosic\*, J. Hull, B. Palmer, W. Culberson, and **B. Bednarz**, “Deformable Abdominal Phantom for the Validation of Real-Time Image Guidance and Deformable Dose Accumulation,” *J. App. Clin. Med. Phys.* 20(8), 122 (2019)
57. S. Jupitz\*, A. Shepard\*, P. Hill, **B. Bednarz**, “Investigation of Tumor and Vessel Correlation in the Liver,” *J. App. Clin. Med. Phys.* 21(8): 183-190 (2019)
58. A. Cravo Sa, A. Barateiro, **B. Bednarz**, et al., “Assessment of Out-of-Field Doses in Radiotherapy Treatments of Pediatric Patients using Monte Carlo Methods and Measurements,” *Phys. Medica* 71:53-61. (2020)
59. D. Adam\*, T. Liu, P. Caracappa, **B. Bednarz**, and X.G. Xu, “New capabilities of the Monte Carlo dose engine ARCHER-RT: clinical validation of the Varian TrueBeam machine for VMAT external beam radiotherapy,” *Med Phys.* 47(6):2537-2549. (2020)
60. M. E Bedir, **B.P. Bednarz**, B.R. Thomadsen, “Development and characterization of a handheld detector for radio-guided surgery,” *Radiation Measurements* 135: 106362 (2020)
61. C. Matrosic\*, **B. Bednarz**, and W. Culberson, “An Improved Abdominal Phantom for Intrafraction Image Guidance Validation” *Phys. Med. Biol.* 65(13) (2020)
62. S. St James, **B. Bednarz**, S. Benedict, et al. Current Status of Radiopharmaceutical Therapy [published online ahead of print, 2020 Aug 14]. *Int J Radiat Oncol Biol Phys.* 2020; S0360-3016(20)34125-0. doi:10.1016/j.ijrobp.2020.08.035
63. E. Roncali, J. Capala, S. H Benedict, G. Akabani, **B. Bednarz** et al “Overview of the First NRG-NCI Workshop on Dosimetry of Systemic Radiopharmaceutical Therapy (RPT),” *J Nucl Med* jnumed.120.255547 published ahead of print December 4, 2020 (10.2967/jnumed.120.255547).
64. Y. Xiao, E. Roncali, R. Hobbs, S. St. James, **B. Bednarz**, S. Benedict, Y.Dewaraja, E. Frey et al, “Towards individualized voxel-level dosimetry for radiopharmaceutical therapy”, *Int J Radiation Oncol Biol Phys*; 109(4): 902-904, 2021 , <https://doi.org/10.1016/j.ijrobp.2020.08.026>
65. C. Matrosic, W. Culberson, A. Shepard, S. Jupitz, **B. Bednarz**, “3D Dosimetric Validation of Ultrasound-Guided Radiotherapy with a Dynamically Deformable Abdominal Phantom,” *Physica Medica* 84:159-167 (2021)
66. **B. Bednarz**, et al, “First-in-human Imaging Using a MR-compatible e4D ultrasound probe for motion management of radiation therapy,” *Physica Medica* Aug;88:104-110 (2021)
67. Patel R, Hernandez R, Carlson P, Grudzinski J, Bates A, Jagodinski J, Erbe A, Marsh I\*, Aluicio-Sarduy E, Rakhmilevich A, Vail D, Engle J, Kim K, **Bednarz B**, Sondel P, Weichert J, and Morris Z. “Low-dose targeted radionuclide therapy renders immunologically “cold” tumors responsive to immune checkpoint blockade.” *Sci Transl Med* 13, 602 (2021)
68. K. Magee, M.M. Turek, I. Marsh\*, J. Grudzinski, E. Aluicio-Sarduy, J.W. Engle, I.D. Kurzman, C.L. Zuleger, E.A. Oseid, C. Jaskowiak, M.R. Albertini, **B. Bednarz**, P.M. Sondel, J.P. Weichert, Z.S. Morris, Reinier Hernandez, D.M. Vail, “Safety and feasibility of an in situ vaccination and theranostic targeted radionuclide combination immuno-radiotherapy approach in a comparative (companion dog) setting,” *PLOS* 16(8) (2021)
69. J.C. Jagodinsky, A. M. Bates, I. Chakravarty, I. S. Arthur, L. M. Zangl, R. J. Brown, E. J. Nystuen, S. E. Emma, C. Kerr, W. Jong Jin, P.M. Carlson, J. W Engle, E. Aluicio-Sarduy2, T.E. Barnhart, R. Hernandez, J.J. Grudzinski, I.R. Marsh\*, **B.P. Bednarz**, J.P. Weichert, R.B. Patel, and Z.S. Morris, “Temporal analysis of type 1 interferon activation in tumor cells following external beam radiotherapy or targeted radionuclide therapy,” *Theranostics* 11(13): 6120-6137 (2021)
70. Clark PA, Sriramaneni RN, Bates AM, Jin WJ, Jagodinsky JC, Hernandez R, Le T, Jeffery JJ, Marsh IR\*, Grudzinski JJ, Aluicio-Sarduy E, Barnhart TE, Anderson BR, Chakravarty I, Arthur IS, Kyung-

- Mann K, Engle JW, **Bednarz B**, Weichert JP, and Morris ZS. “Low dose radiation potentiates the propagation of anti-tumor immunity against melanoma tumor in the brain following in situ vaccination at a tumor outside the brain,” *Radiat Res.* Apr 7. doi: 10.1667/RADE-20-00237.1. Online ahead of print. (2021)
71. Keiss AP, Hobbs RF, **Bednarz B**, Knox SJ, Meredith R, Escorcía FE, ASTRO’s Framework for Radiopharmaceutical Therapy Curriculum Development for Trainees, *Rad. Onc. Bio. Phys.*, published ahead of print March 20, <https://doi.org/10.1016/j.ijrobp.2022.03.018> (2022)
  72. Adam DP\*, Grudzinski J., Bormett I., Cox BL, Marsh IR\*, Bradshaw TJ, Harari P, **Bednarz B**, “Validation of Monte Carlo Iodine-131 radiopharmaceutical dosimetry workflow using a 3D printed anthropomorphic head and neck phantom,” *Med. Phys.* DOI: 10.1002/mp.15699 (2022)
  73. Grudzinski, J.J.; Hall, L.T.; Cho, S.; Liu, G.; Traynor, A.; Lee, M.H.; Longino, M.; Pinchuk, A.; Jaskowiak, C.; **Bednarz, B**; Weichert, J.; Kuo, J.S. Clinical Imaging and Dosimetry of a Pan-Cancer Targeting Alkylphosphocholine Analog, [124I]I-NM404. *Radiation*, 2, 215-227 (2022)
  74. Adam DP\*, **Bednarz B**, Frigo S., “Static MLC transmission simulation using two-dimensional ray tracing,” *J. Applied Clin Med Phys* First published: 20 May 2022 <https://doi.org/10.1002/acm2.13646> (2022)
  75. A. Cravo Sa, A. Barateiro, **B. Bednarz**, et al., "Comparison of 3DCRT and IMRT out-of-field doses in pediatric patients using Monte Carlo simulations with treatment planning system calculations and measurements," *Frontiers Oncol* Aug 5;12:879167. doi: 10.3389/fonc.2022.879167 (2022)
  76. Potluri H, et al, “Anti-Tumor Efficacy of 90Y-NM600 Targeted Radionuclide Therapy and PD-1 Blockade is Limited by Regulatory T Cells in Murine Prostate Tumors,” *Journal for ImmunoTherapy of Cancer* Aug;10(8):e005060. doi: 10.1136/jitc-2022-005060 (2022)
  77. Carlson PM, et al. “Radiation to all macroscopic sites of tumor permits greater systemic anti-tumor response to in situ vaccination,” *Journal for ImmunoTherapy of Cancer*;11:e005463. doi: 10.1136/jitc-2022-005463 (2023)
  78. Allen KJH, Kwon O, Hutcheson MR, Grudzinski JJ, Cain SM, Cruz FA, Vinayakamoorthy RM, Sun YS, Fairley L, Prabakaran CB, Dickinson R, MacDonald-Dickinson V, Uppalapati M, **Bednarz BP**, Dadachova E. Image-Based Dosimetry in Dogs and Cross-Reactivity with Human Tissues of IGF2R-Targeting Human Antibody. *Pharmaceuticals (Basel)*;16(7):979. doi: 10.3390/ph16070979. PMID: 37513891; PMCID: PMC10384855. (2023)
  79. I.R. Marsh\*, C. Li, J. Grudzinski, J. Jeffery, C. Longhurst, D.P. Adam, R. Hernandez, J.P. Weichert, P.M. Harari, and **B.P. Bednarz**, “Targeting of Head and Neck Cancer by Radioiodinated CLR1404 in Murine Xenograft Tumor Models with Partial Volume Corrected Theranostic Dosimetry,” *Cancer Biotherapy and Radiopharmaceuticals*, doi: 10.1089/cbr.2022.0084. Online ahead of print. (2023)
  80. D.P. Adam\*, C.G. Hammer, J. Ziege Malyshev, W.S. Culberson, T.J. Bradshaw, J.J. Grudzinski, P.M. Harari, **B. Bednarz**, “Creation of waterproof, TLD probes for dose measurements to validate image-based radiopharmaceutical therapy dosimetry workflow,” *Biomedical Engineering Express*, DOI 10.1088/2057-1976/accf22 (2023)
  81. Shaheen N\*, Burdick R, Peña-Chávez R, Ulmschneider C, Yee J, Kurosu A, Rogus-Pulia N, **Bednarz BP**. Use of Deep Learning to Segment Bolus During Videofluoroscopic Swallow Studies. *Biomed Phys Eng Express*. Epub ahead of print. PMID: 37948874 (2023)
  82. **B. Bednarz**, Theranostics and Patient-Specific Dosimetry, *Seminars in Radiation Oncology*, INVITED, 33(3):317-326 (2023)
  83. J. Mitra, C. Bhushan, S. Ghose, D. Mills, A. Patel, H. Chan, M. Tarasek, T. Foo, S. Wells, S. Jupitz\*, **B. Bednarz**, C. Brace, J. Holmes, D. Yeo, “A hybrid deformable registration method to generate motion-

- compensated 3D virtual MRI for fusion with interventional real-time 3D ultrasound,” *International Journal of Computer Assisted Radiology and Surgery*, published ahead of print <https://doi.org/10.1007/s11548-023-02833-1>
84. Sodji QH, Forsberg MH, Cappabianca D, Kerr CP, Sarko L, Shea A, Adam DP\*, Eickhoff JC, Ong IM, Hernandez R, Weichert J, **Bednarz BP**, Saha K, Sondel PM, Capitini CM, Morris ZS. Comparative Study of the Effect of Radiation Delivered by Lutetium-177 or Actinium-225 on Anti-GD2 Chimeric Antigen Receptor T Cell Viability and Functions. *Cancers (Basel)*. 2023 Dec 30;16(1):191
  85. Hoffman SLV\*, Mixdorf JC, Kwon O\*, Johnson TR, Makvandi M, Lee H, Aluicio-Sarduy E, Barnhart TE, Jeffery JJ, Patankar MS, Engle JW, **Bednarz BP**, Ellison PA. Preclinical studies of a PARP targeted, Meitner-Auger emitting, theranostic radiopharmaceutical for metastatic ovarian cancer. *Nucl Med Biol*. 2023 Jul-Aug;122-123:108368.
  86. Sá AC, Barateiro A, **Bednarz BP**, Almeida P, Vaz P, Madaleno T. Corrigendum: Comparison of 3DCRT and IMRT out-of-field doses in pediatric patients using Monte Carlo simulations with treatment planning system calculations and measurements. *Front Oncol*. 2023 Oct 9;13:1293922. doi: 10.3389/fonc.2023.1293922. Erratum for: *Front Oncol*. 2022
  87. DP. Adam\*, JJ. Grudzinski, IR. Marsh\*, PM. Hill, SY. Cho, TJ. Bradshaw, J Longcor, A Burr, JY. Bruce, PM. Harari, **BP. Bednarz**, “Voxel-level dosimetry for combined Iodine-131 radiopharmaceutical therapy and external beam radiotherapy treatment paradigms of head and neck cancer, *International Journal of Radiation Oncology\*Biological\*Physics*, (2024)
  88. Kwon O\*, Hoffman SL, Ellison PA, **Bednarz BP**, “Monte Carlo-Based Nanoscale Dosimetry Holds Promise for Radiopharmaceutical Therapy Involving Auger Electron Emitters,” *Cancers* 16, 2349 (2024)
  89. Juptiz S\* et al. “Ultrasound Image Quality Assessment for E4D Interventional Imaging Probe” to be submitted to *Medical Physics* (2024)
  90. Bruce JY, Burr A, Kimple RJ, Adam D\*, Yu M, Piaskowski S, Trask D, Oliver K, Longcor J, Rogus-Pulia N, Cho SY, **Bednarz B**, Harari P, “Safety and Toxicity of Iopofosine I-131 (CLR 131) with External Beam Radiation Therapy (EBRT) in Recurrent or Metastatic Head and Neck Cancer (HNC): Results of a Phase 1 Study,” submitted to *Lancet Oncology*
  91. CP Kerr, WJ Jin, AJ Oñate, O Kwon\*, HC Rojas, PA Clark, M Hyun, CA Ferreira, MB Idrissou, Md M Rahman, J Sheehan-Klenk, T Chen, JC Jagodinsky, E Nystuen, LM Zangl, AN Pinchuk, K Kim, R Hernandez, **BP Bednarz**, JP Weichert1, MB Kastan, TM Gilmer, ZS Morris, “Enhanced response to radiopharmaceutical therapy in preclinical tumor models with XRD-0394, a dual inhibitor of ATM kinase and DNA-PKcs,” submitted to ...
  92. C. de A. Ferreira, H. K. Potluri, C. Massey, J. J. Grudzinski, A. Carston, N. Clemons, M. B. Idrissou, A. Thickens, Z. Rosenkrans, C. Choi, C. Kerr, A. Pinchuk, O. Kwon\*, J. J. Jeffery, **B. Bednarz**, Z. Morris, J. Weichert, D. G. McNeel, R. Hernandez, ““Enhanced Immunomodulation and Potent Antitumor Activity of 225Ac-NM600 in Murine Prostate Cancer,” submitted to *European Journal of Nuclear Medicine and Molecular Imaging* (2024)
  93. C.P. Kerr, W. J. Jin, P. Liu, J. J. Grudzinski, C. A. Ferreira, H. C. Rojas, A. J. Oñate, O. Kwon\*, M. Hyun, M. B. Idrissou, R. W. Schwartz, J. M. Vera, P. A. Clark, M. Takashima, A. K. Erbe, A. G. Shea, M. Powers, A. N. Pinchuk, C. F. Massey, C. Choi, R. Hernandez, **B. P. Bednarz**, I. M. Ong, J. P. Weichert, Z. S. Morris, “Tumor immunity following radiopharmaceutical + checkpoint blockade varies with treatment sequence, radioisotope, and tumor immunogenicity,” submitted to ...
  94. C.P. Kerr, J. Sheehan-Klenk, J. J. Grudzinski, D. P. Adam\*, T. P. T. Nguyen, C. A. Ferreira, A. M. Bates, W. J. Jin, O. Kwon, A. P. Olson, W. Lin, M. Hyun, J. C. Jagodinsky, M. Powers, R. N. Sriramaneni, P. A. Clark, A. G. Shea, H. C. Rojas, C. Choi, C. F. Massey, L. M. Zangl, A. N. Pinchuk, E. Aluicio-Sarduy, K. Kim, J. W. Engle, R. Hernandez, **B. P. Bednarz**, J. P. Weichert, Z. S. Morris, “Influence of clinically

relevant radionuclides on the activation of a type I interferon response by radiopharmaceuticals in syngeneic murine tumor models,” submitted to ...

95. S.P. Jollota, D. E. Bergeron, R. M. Verkouteren, S. Nour, R. P. Fitzgerald, O. Kwon\*, J. Radtke, **B. P. Bednarz**, B. W. Miller, L. A. DeWerd, “Gravimetric drop-on-demand inkjet deposition for imaging phantoms with traceable activity,” in preparation (2024)

### C. Conference Abstracts

1. J. Hanlon, M. Oakley, **B. Bednarz**, and X.G. Xu, “Development of patient-specific lung phantoms using 3D imaging and rapid prototyping,” presented at the American Association of Physicists in Medicine Annual Meeting, Orlando, FL (2006)
2. M. Furler, **B. Bednarz**, and X.G. Xu, “The use of Computer Aided Design (CAD) to assist in the development of IMRT geometries in MCNP,” presented at the Health Physics Society Annual Meeting, Providence, RI (2006)
3. X.G. Xu, **B. Bednarz**, and B. Wang, “Measured and simulated organ doses for IMRT and 3D-CRT,” transactions of the American Nuclear Society, **95**, 613-614 (2006)
4. **B. Bednarz**, B. Wang, and X.G. Xu, “Calculation of secondary neutron dose from a medical linear accelerator,” presented at the Health Physics Society Annual Meeting, Providence, RI (2006)
5. **B. Bednarz**, B. Wang, and X.G. Xu, “Measured and simulated non-target whole-body dose for selected IMRT and 3D-CRT treatment plans,” presented at the American Association of Physicists in Medicine Annual Meeting, Orlando, FL (2006)
6. **B. Bednarz** and X.G. Xu, “The need for detailed Monte Carlo studies of medical accelerators,” **INVITED**, presented at the ANS Annual Meeting, Boston, MA, (2007)
7. J. Hanlon, **B. Bednarz**, X.G. Xu, “A study of the impact of X-ray energy and angular distributions produced from 6- and 18-MV medical linear accelerators on non-target exposures,” presented at the American Association of Physicists in Medicine Annual Meeting, Minneapolis, MN (2007)
8. **B. Bednarz** and X.G. Xu, “Monte Carlo based calculations of neutron activation in a medical linear accelerator,” presented at the Health Physics Society Annual Meeting, Portland, OR (2007) **winner of the H. Wade Patterson Award Best Student Accelerator Presentation**
9. **B. Bednarz**, V. Taranenko, and X.G. Xu, “Characterization of activation products in a medical linear accelerator using Monte Carlo modeling,” presented at the American Association of Physicists Annual Meeting, Minneapolis, MN (2007)
10. **B. Bednarz**, V. Taranenko, C.Y. Shi, and X.G. Xu, “Radiation safety of pregnant patients during radiation treatment: a detailed modeling of the accelerator, patient anatomy, and non-target doses,” presented at the American Association of Physicists in Medicine Annual Meeting, Minneapolis, MN (2007)
11. B. Han, **B. Bednarz**, Y. Danon, R. Block, and X.G. Xu, “Preliminary evaluation of nuclear activation of tungsten inside a medical accelerator,” presented at International Conference of Radiation Shielding, Atlanta, GA (2008)
12. **B. Bednarz**, B. Han, and X.G. Xu, “Comparison of photoneutron yields in MCNPX using different photonuclear cross section data for typical radiation therapy energy ranges,” presented at International Conference on Radiation Shielding, Atlanta, GA (2008)
13. B. Han, **B. Bednarz**, Y. Danon, X.G. Xu, “Evaluation of photon and neutron activations during radiation treatments.” presented at the Health Physics Society Annual Meeting, Pittsburg, PA (2008)

14. J. Gu, V. Taranenکو, **B. Bednarz**, P. Caracappa, X.G. Xu, “A preliminary study to assess dose to pregnant females and fetuses undergoing CT examinations,” presented at the Health Physics Society Annual Meeting, Pittsburg, PA (2008)
15. **B. Bednarz** and X. G. Xu, “Methods to calculate organ doses due to scattered radiation from external beam radiation treatment using various patient phantoms and Monte Carlo simulations,” presented at the American Association of Physicists Annual Meeting, Houston, TX (2008)
16. B. Han, A. Dorgue, **B. Bednarz**, X.G. Xu, “ATOM phantom measurement and Monte Carlo simulations for organ doses from IMRT” presented at the American Association of Physicists Annual Meeting, Anaheim, CA (2009)
17. U. Titt, **B. Bednarz**, H. Paganetti, R. Mohan, “Comparing Geant4 and MCNPX for joint research to minimize uncertainties in proton therapy,” presented at the American Association of Physicists Annual Meeting, Anaheim, CA (2009)
18. **B. Bednarz** and X.G. Xu, “A novel approach for determining radiation-induced second cancer risks from selected prostate treatments using Monte Carlo simulations and an anatomically-realistic computational phantom” presented at the American Association of Physicists Annual Meeting, Anaheim, CA (2009)
19. **B. Bednarz** and X.G. Xu, “A novel approach for determining radiation-induced second cancer risks from selected prostate treatments using Monte Carlo simulations and an anatomically-realistic computational phantom” presented at the American Association of Physicists Annual Meeting, Anaheim, CA (2009)
20. **B. Bednarz**, C. Hancox, and H. Paganetti, “Comparison of dose volume histograms from selected proton therapy treatments between Geant4.5.0 and Geant4.9.0 Monte Carlo simulations with and without dynamic densities” presented at the American Association of Physicists Annual Meeting, Anaheim, CA (2009)
21. N. Depauw, S. Danto, **B. Bednarz**, H. Paganetti, Y. Fink, J. Seco, “Preliminary study of proton radiography imaging qualities using GEANT4 Monte Carlo simulations,” presented at the RPSD/ANS Topical Meeting, Las Vegas, NV (2010)
22. M. Davidson, **B. Bednarz**, N. Depauw, J. Seco, H. Paganetti, J.C. Yanch, X.G. Xu, and G.T.Y. Chen, “Monte Carlo simulation of performance of a time-resolved range telescope,” presented at the RPSD/ANS Topical Meeting, Las Vegas, NV (2010)
23. B. Han, X.G. Xu, A. Dorgu, D. Pavord, and **B. Bednarz**, “Measurement and Monte Carlo calculations of out-of-field organ doses from IMRT plans for head and neck involving the Varian Clinac (TRILOGY) and TomoTherapy Hi-Art II system,” presented at the RPSD/ANS Topical Meeting, Las Vegas, NV (2010)
24. **B. Bednarz**, G.T.Y. Chen, B. Han, A. Ding, and X.G. Xu, “Comparison of particle tracking features in Geant4 and MCNPX codes for applications in mapping of proton range uncertainty,” to be presented at the RPSD/ANS Topical Meeting, Las Vegas, NV (2010)
25. X.G. Xu, H. Paganetti, B. Athar, **B. Bednarz**, “Uncertainty about biological effects of high-energy secondary neutrons and how it affects the understanding of cancer risk” presented at PTCOG 49, Japan (2010)
26. X.G. Xu, B. Han, A. Ding, **B. Bednarz**, H. Paganetti, and GTY Chen, “Progress report on time-resolved proton range telescope: Monte Carlo simulations,” presented at PTCOG 49, Japan (2010)
27. **B. Bednarz**, J. Daartz, M. Engelsman, H. Paganetti, “Reducing uncertainties in the dose distributions of small proton fields using Monte Carlo simulations,” presented at PTCOG 49, Japan (2010)
28. B. Han, A. Ding, X.G. Xu, **B. Bednarz**, GC Sharp, NC Choi, GTY Chen, KV Riper. Evaluation of Performance of a Conceptual Time-Resolved Proton Range Telescope for In-Room Respiration

- Monitoring Using Monte Carlo Simulations and 4DCT Patient Data, Presented at AAPM Annual Meeting, Philadelphia, PA (2010)
29. **B. Bednarz**, D. Mirkovic, U. Titt, H. Paganetti, “A joint research investigation comparing MCNPX and Geant4 Monte Carlo codes to reduce the range uncertainties in proton therapy,” presented at AAPM Annual Meeting, Philadelphia, PA (2010)
  30. **B. Bednarz**, H-M Lu, M. Engelsman, H. Paganetti, “Improving the achievable accuracy of Monte Carlo spread-out Bragg peak treatment head models using beam current modulation optimization, presented at AAPM Annual Meeting, Philadelphia, PA (2010)
  31. X.G. Xu, B. Han, A. Ding, **B. Bednarz**, G.T.Y. Chen, D. Riper. Monte Carlo Simulations and Particle Tracking for Optimization of a 4D Time-Resolving Range Telescope in Proton Treatment. The Joint International Conference of the 7th Supercomputing in Nuclear Application and the 3rd Monte Carlo (SNA + MC2010), Tokyo, Japan (2010)
  32. Y.M. Yang\* and **B. Bednarz**, “Monte Carlo Investigation on dose perturbations in the lung due to constant magnetic fields during MRIgRT,” presented at AAPM Annual Meeting, Vancouver, BC (2011)
  33. **B. Bednarz**, T.R. Mackie, D.M. Polans, N. Sheibani, “A dedicated small animal proton delivery system for AMD research,” presented at the ANS Winter Meeting, Washington, D.C. (2011)
  34. **B. Bednarz**, A. Besemer\*, Y.M. Yang\*, “A Monte Carlo-based small animal dosimetry platform for pre-clinical trials: proof of concept,” presented at the AAPM Annual Meeting, Charlotte, NC (2012)
  35. A. Besemer\*, H. Paganetti, **B. Bednarz**, “Clinical impact of uncertainties in the mean excitation energy of human tissues during proton therapy,” presented at the AAPM Annual Meeting, Charlotte, NC (2012)
  36. Y.M. Yang\*, **B. Bednarz**, “A Monte Carlo feasibility study for calculating dose perturbations in patient geometries due to homogenous magnetic fields from MRIgRT,” presented at the AAPM annual meeting, Charlotte, NC (2012)
  37. M.N. Bouchlaka, M.R. Olsen, J.W. Gordon, D.J. Niles, **B. Bednarz**, S.B. Fain, C.M. Capatini, “Optimizing <sup>19</sup>F-MRI for monitoring of adoptive cellular therapies in vivo,” presented at the International Conference on Immunotherapy in Pediatric Oncology, Frankfurt, Germany (2012)
  38. T.W. Speer, P. Bernhardt, **B. Bednarz**, P. Harari, J. Saker, B. Thomadson, “Feasibility of the Systemic Cure of Cancer with Targeted Radionuclide Therapy (TRT),” presented at the American Society of Therapeutic Radiation Oncology annual meeting, Boston, MA (2012)
  39. J. Saker, E. Armstrong, **B. Bednarz**, A Besemer\*, M. Farhoud, J. Weichert, P. Harari, Combination external beam and internal radiation via CLR1404 in the treatment of head and neck squamous cell carcinoma xenografts,” presented at the American Association for Cancer Research annual meeting, Washington, D.C. (2013)
  40. T.F. Fowler\*, K. Ludwig\*, R. Djavadian, **B. Bednarz**, R.J. Kimple, “A delicate balance between radiation-induced autophagy and apoptosis in HPV-positive head and neck cancer,” presented at the American Association for Cancer Research annual meeting, Washington, D.C. (2013)
  41. **B. Bednarz**, J. Grudzinski, B. Titz, A. Besemer\*, “Monte Carlo-based Radiation Dosimetry for Preclinical Trials of Radiohalogenated Pharmaceuticals,” presented at the American Nuclear Society annual meeting, Atlanta, GA (2013)
  42. T.F. Fowler\*, R. Fulkerson, J. Micka, R. Kimple, **B. Bednarz**, “A fully automated micro-irradiator for in vitro radiobiology research,” presented at the Health Physics Society annual meeting, Madison, WI (2013)

43. D. Riley, Y.M. Yang\*, D. Campos, P. Wickre\*, T.F. Fowler\*, and **B. Bednarz**, “Hot Cell Shielding Design for 124I-NM404: A novel PET imaging agent,” presented at the Health Physics Society annual meeting, Madison, WI (2013)
44. **B. Bednarz**, “A Pilot Project-based Learning Course in Health Physics at the University of Wisconsin – Madison,” presented at the Health Physics Society annual meeting, Madison, WI (2013)
45. **B. Bednarz**, J. Gordon, S. Fain, M. Bouchlaka, C. Capitini, “Monitoring of <sup>19</sup>F-Labeled Immune Cell Trafficking During Radiotherapy Using MRI,” presented at the American Association of Physicists in Medicine annual meeting, Indianapolis, IN (2013)
46. T Fowler\*, R. Fulkerson, J. Micka, R. Kimple, **B. Bednarz**, “Development of a Novel High-Throughput Variable Dose Rate Irradiator for in Vitro Radiobiology Research,” presented at the American Association of Physicists in Medicine annual meeting, Indianapolis, IN (2013)
47. A. Besemer\*, J. Grudzinski, B. Titz, P. Wickre, L. Hall, J. Weichert, **B. Bednarz**, “Towards Personalized Dosimetry Using Diapeutic Radiopharmaceuticals,” presented at the American Association of Physicists in Medicine annual meeting, Indianapolis, IN (2013)
48. Y M Yang\*, M. Geurts, J. B. Smilowitz, E. Sterpin, **B. Bednarz**, “Exploiting the Rotational Symmetry of Tomotherapy to Reduce Dose Perturbations From MRI-Guided Radiotherapy: A Monte Carlo Investigation,” presented at the American Association of Physicists in Medicine annual meeting, Indianapolis, IN (2013)
49. **B. Bednarz**, S. Fain, J. Gordon, M. Bouchlaka, C. Capitini, “Immune cell trafficking during radiation therapy – a potential predictive marker for therapeutic response,” presented at the Radiological Society of North America annual meeting, Chicago, IL (2013)
50. L. Su, Y. M. Yang\*, **B. Bednarz**, X. Du, T. Liu, E Sterpin, X. G. Xu, “ARCHERRT – A GPU-based Monte Carlo Radiotherapy Dose Calculation Engine and its Application to Helical Tomotherapy,” presented at SNA&MC 2013 Conference, Paris, France (2013)
51. A. Shepard\*, T.F. Fowler\*, A. Besemer\*, **B. Bednarz**, “A Highly Focused Small Animal Irradiator For Preclinical Trials of Low Energy Sources,” presented at the American Nuclear Society Winter Meeting, Washington D.C. (2013)
52. K. Ludwig, J.W. Gordon, M.N. Bouchlaka, C.M. Capitini, **B. Bednarz**, S. B. Fain, “In-vivo tracking of <sup>19</sup>F-labeled natural killer cells with MRI in lymphoid tumor model at 4.7T,” to be presented at International Society for Magnetic Resonance in Medicine Annual Meeting, Milan Italy (2014)
53. A. Besemer\*, L. Hall, B. Titz, J. Grudzinski, J. Weichert, **B. Bednarz**, “Impact of PET and MRI Threshold-based Tumor Volume Segmentation on Targeted Radionuclide Therapy Dosimetry,” presented at the Society for Brain Mapping and Therapeutics (SBMT) Congress, Sydney Australia (2014)
54. K. Ludwig, M. Bouchlaka, J. Gordon, **B. Bednarz**, C. Capitini, S. Fain, “Quantifying <sup>19</sup>F-Labeled Human Natural Killer Cell-Trafficking with MRI,” presented at the American Association of Physicists in Medicine annual meeting, Austin, TX (2014)
55. Y. M. Yang\*, C. Zankowski, M. Svatos, **B. Bednarz**, “Towards a passively optimized phase-space Monte Carlo (POPMC) treatment planning method: a proof a principle,” presented at the American Association of Physicists in Medicine annual meeting, Austin, TX (2014)
56. T.F. Fowler\*, J. Martin, A. Shepard\*, A. Bailey, K. Nickel, R Kimple, **B. Bednarz**, “Biological validation of a novel high-throughput irradiator for predictive radiation sensitivity bioassays,” presented at the American Association of Physicists in Medicine annual meeting, Austin, TX (2014)
57. L. Su, Y.M. Yang\*, **B. Bednarz**, E Sterpin, X. Du, T. Liu, X.G. Xu, “Application of ARCHERRT – A GPU-based Monte Carlo dose engine for radiation therapy – to tomotherapy and patient-independent

- IMRT,” presented at the American Association of Physicists in Medicine annual meeting, Austin, TX (2014)
58. A. Besemer\*, B. Titz, J. Grudzinski, J. Weichert, L. Hall, **B. Bednarz**, “Optimizing the combination of targeted radionuclide therapy agents using a multi-scale patient-specific Monte Carlo dosimetry platform,” presented at the American Association of Physicists in Medicine annual meeting, Austin, TX (2014)
  59. A. Besemer\* and **B. Bednarz**, “Validation of a patient-specific Monte Carlo targeted radionuclide therapy dosimetry platform,” presented at the American Association of Physicists in Medicine annual meeting, Austin, TX (2014)
  60. **B. Bednarz**, K. Ludwig, S. Fain, “In vivo monitoring of fluorinated inhalational anesthetics using <sup>19</sup>F MRI: a pilot study,” presented at the American Association of Physicists in Medicine annual meeting, Austin, TX (2014)
  61. M. Bedir, B. Cox, S. Graves, S. Hoffman, K. Pedersen, A. Schroeder, N. Weisse, **B. Bednarz**, “Dosimetric assessment of radium-223 radionuclide therapy using whole body pharmacokinetic modeling,” presented at the 8<sup>th</sup> International Conference on Isotopes meeting, Chicago, IL (2014)
  62. **B. Bednarz**, A. Besemer\*, J. Grudzinski, B. Titz, P. Wickre, J. Weichert, L. Hall, “Towards multiscale personalized dosimetry for diapaetic radiopharmaceuticals,” **INVITED**, presented at the 8<sup>th</sup> International Conference on Isotopes meeting, Chicago, IL (2014)
  63. **B. Bednarz**, “Overview of the forthcoming AAPM TG-158 Report, “Measurements and calculations of doses outside the treatment volume from External Beam Radiation Therapy,” **INVITED**, presented at the ANS RPSD Meeting, Knoxville, TN (2014)
  64. I. Marsh\* and **B. Bednarz**, “Towards “Virtual” Intra-operative SPECT or PET Guided Surgery: Advances in Image Reconstruction and Registration Using Deterministic Radiation Transport Simulation,” presented at the ANS Winter Meeting, Anaheim, CA (2014)
  65. M. Bouchlaka, J. Gordon, K. Ludwig, D. Niles, B. Bednarz, S. Fain, C. Capitini, “<sup>19</sup>F-MRI for tracking NK cells after adoptive transfer,” Proceedings of the Immunology 2014 Meeting, J. Immun. 192 (1 Supplement) (2014)
  66. A. Bailey, T. L. Fowler\*, K. P. Nickel, **B. Bednarz**, R. Kimple, “Biological validation of a novel high-throughput irradiator for predictive radiation sensitivity bioassays,” presented at the American Association of Cancer Research Meeting, Philadelphia, PA (2015)
  67. K. Cao, **B. Bednarz**, L.S. Smith, T.K. Foo, K.A. Patwardhan, “Respiration induced fiducial motion tracking in ultrasound using an extended SFA approach,” presented at the SPIE Ultrasonic Imaging and Tomography Meeting, Orlando, FL (2015)
  68. T. Liu, N. Wolfe, L. Su, C.D. Carothers, **B. Bednarz**, X.G. Xu, “Near real-time GPU and MIC-based Monte Carlo code ARCHER for radiation dose calculations in voxelized and mesh phantoms,” presented at the 5<sup>th</sup> International Workshop on Computational Human Phantoms, Seoul, South Korea (2015)
  69. C. Matrosic\*, W. Culberson, B. Rosem, E. Madsen, G. Frank, **B. Bednarz**, “Initial characterization of a gel patch dosimeter for in vivo dosimetry,” presented at the American Association of Physicists in Medicine annual meeting, Anaheim, CA (2015)
  70. S. Taneja, L.C. Fru, V. Desai, J. Lentz, M. Scarpelli, E. Simiele, A. Trestrail, **B. Bednarz**, “Development of a radiation monitoring device using a low-cost CCD camera following radionuclide therapy,” presented at the American Association of Physicists in Medicine annual meeting, Anaheim, CA (2015)
  71. S. Ellefson\*, W. Culberson, **B. Bednarz**, L. DeWerd, J. Bayouth, “Analysis of ArcCHECK Diode Array Performance for ViewRay Quality Assurance,” presented at the American Association of Physicists in Medicine annual meeting, Anaheim, CA (2015)

72. A. Besemer\*, J. Grudzinski, B. Titz, **B. Bednarz**, “Evaluation of dosimetric uncertainties in individualized targeted radionuclide therapy (TRT) treatment planning using pre-clinical data,” presented at the American Association of Physicists in Medicine annual meeting, Anaheim, CA (2015)
73. Y.M. Yang\*, M. Svatos, C. Zankowski, **B. Bednarz**, “Demonstration of a concurrent Monte Carlo dose calculation and fluence optimization platform with low memory footprint,” presented at the American Association of Physicists in Medicine annual meeting, Anaheim, CA (2015)
74. **B. Bednarz**, “Calculation techniques (including Monte Carlo) for determining Non-target photon, electron and neutron doses,” **INVITED**, presented at the American Association of Physicists in Medicine annual meeting, Anaheim, CA (2015)
75. **B. Bednarz**, “First Update on a Real-time Tumor Localization and Guidance Platform for Radiotherapy Using US and MRI, presented at the American Nuclear Society Winter Meeting, Washington DC (2015)
76. D. Adam\* and **B. Bednarz**, “Assessment of the Proton Boron Fusion Reaction or Practical Radiation Therapy Applications Using MCNP6, presented at the American Association of Physicists in Medicine annual meeting, Washington D.C. (2016)
77. A. Besemer\*, I. Marsh\*, **B. Bednarz**, “Impact of Temporal Image Coregistration Methods on 3D Internal Dose Calculations in Targeted Radionuclide Therapy,” presented at the American Association of Physicists in Medicine annual meeting, Washington D.C. (2016)
78. H. Petroccia, E. Ogluin, W. Culberson, **B. Bednarz**, N. Mendenhall, W. Bolch, “A Monte Carlo Study of Out-of-Field Doses From Cobalt-60 Teletherapy Units Intended for Historical Correlations of Dose to Normal Tissue,” presented at the American Association of Physicists in Medicine annual meeting, Washington D.C. (2016)
79. M. Aima, N. Viscariello, T. Patton, **B. Bednarz**, “Radioactive Seed Localization for Breast Lumpectomy,” presented at the American Association of Physicists in Medicine annual meeting, Washington D.C. (2016)
80. C. Matrosic\*, A. McMillan, J. Holmes, **B. Bednarz**, W. Culberson, “Investigation of DEFGEL Dosimetry Using MRI,” presented at the American Association of Physicists in Medicine annual meeting, Washington D.C. (2016)
81. S. Prajapati, X. Mo, **B. Bednarz**, M. Lawless, C. Hammer, R. Flynn, D. Westerly, R. Jeraj, T. Mackie, “Development and Validation of Dose Calculation for An Open-Source kV Treatment Planning System for Small Animal Radiotherapy,” presented at the American Association of Physicists in Medicine annual meeting, Washington D.C. (2016)
82. A. Shepard\* and **B. Bednarz**, “Development of a Learning Based Block Matching Algorithm for Ultrasound Tracking in Radiotherapy,” presented at the American Association of Physicists in Medicine annual meeting, Washington D.C. (2016)
83. A. Shepard\*, C. Matrosic\*, J. Zagzebski, **B. Bednarz**, “Development of a Programmable Motion Testbed for the Validation of Ultrasound Tracking Algorithms,” presented at the American Association of Physicists in Medicine annual meeting, Washington D.C. (2016)
84. I. Marsh\*, M. Otto, J. Weichert, D. Baiu, **B. Bednarz**, “Pre-Clinical Radionuclide Therapy Dosimetry in Several Pediatric Cancer Xenografts,” presented at the American Association of Physicists in Medicine annual meeting, Washington D.C. (2016)
85. T. Liu, H. Lin, C. Shi, X. Tang, **B. Bednarz**, X.G. Xu, “Modeling of Radiotherapy Linac Source Terms Using ARCHER Monte Carlo Code: Performance Comparison of GPU and MIC Computing Accelerators,” presented at the American Association of Physicists in Medicine annual meeting, Washington D.C. (2016)

86. **B. Bednarz** and A. Besemer, “Radiation-Induced Second Cancer Risk Estimates from Radionuclide Therapy,” International Conference on Radiation Shielding (ICRS) 13 and RPSD 2016, Paris, France (2016)
87. **B. Bednarz**, I. Marsh, D.C. Baiu, A.E. Boruch, A.S. De, S. Bhattacharya, J. Jeffery, Q. Zhao, L. Hall, J. Weichert, M. Otto, “Demonstration of a Correlation Between Tumor Absorbed Dose and Response in Several Pediatric Tumor Xenografts Treated With Radioiodinated CLR1404 Alkyl-phospholipid Ether,” American Nuclear Society Annual Meeting, San Francisco CA (2017)
88. A. Shepard\*, B. Wang, D. Mills, R. Darrow, H. Chan, T. Foo, **B. Bednarz**, “A Real-Time 3D Ultrasound Tracking Algorithm with Simultaneous Templates for Use in Radiotherapy,” presented at the American Association of Physicists in Medicine annual meeting, Denver, CO (2017)
89. A. Shepard\*, C. Matrosic\*, J. Zagzebski , **B. Bednarz**, “Use of a Deformable Ultrasound Phantom for Tracking Algorithm Development and Validation,” presented at the American Association of Physicists in Medicine annual meeting, Denver, CO (2017)
90. C. Matrosic\*, I. Marsh\*, W. Culberson, B. Bednarz, “Evaluation of Dose Redistribution Due to Deformation with 3D MRI Gel Dosimetry,” presented at the American Association of Physicists in Medicine annual meeting, Denver, CO (2017)
91. I. Marsh\*, J. Grudzinski , A. Besemer , J. Weichert , P. Harari , **B. Bednarz**, “Towards Integrated Treatment Planning of Combined External Beam Radiotherapy and Targeted Radionuclide Therapy,” presented at the American Association of Physicists in Medicine annual meeting, Denver, CO (2017)
92. H. Lin, T. Liu, L. Su, C. Shi, X. Tang, D. Adam\*, **B. Bednarz**, X.G. Xu, “Monte Carlo Modeling and Simulation of the Varian TrueBeam LINAC Using Heterogeneous Computing,” presented at the American Association of Physicists in Medicine annual meeting, Denver, CO (2017)
93. D. Adam\*, A Besemer, I Marsh\*, K. Kloeppeing, L. Hall, J. Grudzinski, J. Weichert, M. Otto, **B. Bednarz**, “Towards Patient-Specific Treatment Planning of External Beam Radiotherapy Involving Radiosensitizers Using Nuclear Medicine Imaging,” presented at the American Association of Physicists in Medicine annual meeting, Denver, CO (2017)
94. **B. Bednarz**, W Lee, D Mills, D Shoudy, H Chan, J Sabatini, E Fiveland, B Wang, J Mitra, R Darrow, W Culberson, A Shepard\*, C Matrosic\*, A McMillan\*, J Holmes\*, J Zagzebski\*, S Smith\*, T Foo, “A Hands-Free MR-Compatible Volumetric Ultrasound Probe for Real-Time Motion Management During External Beam Radiotherapy,” presented at the American Association of Physicists in Medicine annual meeting, Denver, CO (2017)
95. PM Carlson, C Heinze, J Grudzinski, R Hernandez, SD Gillies, H Loibner, AL Rakhmilevich, M Otto, **B. Bednarz**, J Weichert, PM Sondel, ZS Morris, “Molecular targeted radiotherapy facilitates in situ vaccination in a syngeneic murine melanoma model” submitted to Society of Immunotherapy for Cancer Annual Meeting (2017)
96. S Veerankutty, PM Carlson, DC Baiu, C Heinze, AE Boruch, AK Erbe, JJ Grudzinski, R Hernandez, **B. Bednarz**, JP Weichert, PM Sondel, ZS Morris, M Otto, “Molecular-targeted radiotherapy with an alkyl-phosphocholine analog leads to immunomodulation in a syngeneic murine melanoma model,” submitted to Society of Immunotherapy for Cancer Annual Meeting (2017)
97. LT Hall, B Titz, SB Perlman, HT Robins, **B. Bednarz**, J Grudzinski, et al., “PET/CT Imaging of the Alkylphosphocholine Analog 124I-CLR1404 in High and Low-Grade Brain Tumors,” RSNA, Chicago, IL (2017)
98. W. Lee, H. Chan, P. Chan, T. Fiorillo, E. Fiveland, T. Foo, D. Mills, A. Patel, J. Sabatini, D. Shoudy, S. Smith, **B. Bednarz**, “A Magnetic Resonance Compatible E4D Ultrasound Probe for Motion Management of Radiation Therapy,” presented at IEEE UFFC Symposium (2017)

99. LT Hall, B Titz, SB Perlman, HT Robins, **B. Bednarz**, J. Weichert, J. Kuo, “PET/CT Imaging of the Alkylphosphocholine Analog 124I-CLR1404 in Brain Tumors,” World Federation of Nuclear Medicine and Biology (2017)
100. I.R. Marsh\*, B. Titz, J. J. Jeffery, R. Moskwa, **B. Bednarz**, J. J. Grudzinski, “Targeted I-125 Auger electron radiotherapy for the treatment of triple-negative breast cancer,” Society of Nuclear Medicine and Molecular Imaging Annual Meeting, Philadelphia, PA (2018)
101. I.R. Marsh\*, J.J. Jeffery, J.J. Grudzinski, C. Li, B.L. Cox, R. Hernandez, P.M. Harari, **B. Bednarz**, “Impact of phantom-based partial volume corrections on *in vivo* dosimetry of theranostic molecularly targeted radionuclide therapy in patient-derived xenograft murine models,” Society of Nuclear Medicine and Molecular Imaging Annual Meeting, Philadelphia, PA (2018)
102. R. Hernandez, R. Patel, J.J. Grudzinski, P. Carlson, R. Sriramaneni, R. Brown, **B. Bednarz**, P. Sondel, Z. Morris, J. Weichert, “Combination of Targeted Radionuclide Therapy and Checkpoint Blockade Augments Therapeutic Response in a Syngeneic Murine Model of Melanoma,” Society of Nuclear Medicine and Molecular Imaging Annual Meeting, Philadelphia, PA (2018)
103. A Shepard\*, C Matrosic , J Radtke , W Culberson , **B Bednarz**, “The Dosimetric Effect of Motion Management System Latency On Radiotherapy Treatments”, presented at the American Association of Physicists in Medicine annual meeting, Nashville, TN (2018)
104. S Graves, D Hyer, R Flynn, **B Bednarz**, “Dose Kernels in Water for More Than 700 Radioisotopes,” presented at the American Association of Physicists in Medicine annual meeting, Nashville, TN (2018)
105. D Adam\*, H Lin, T Liu P Caracappa, X Xu, **B Bednarz**, “Implementation of Heterogeneous Computing Methods and Development of An EGSnrc-Based External Beam Dose Engine for Validating a GPU-Based Monte Carlo Code, ARCHER”, presented at the American Association of Physicists in Medicine annual meeting, Nashville, TN (2018)
106. S Jupitz\*, A Shepard, P Hill, **B Bednarz**, “Correlation Between Tumor and Vessel Motion in the Liver,” presented at the American Association of Physicists in Medicine annual meeting, Nashville, TN (2018)
107. C Matrosic\*, I Marsh, B Palmer , J Hull , **B Bednarz** , W Culberson, “Deformable Anthropomorphic Abdominal Phantom for the Validation of Deformable Dose Accumulation Algorithms and Intrafractional Motion Management Systems,” presented at the American Association of Physicists in Medicine annual meeting, Nashville, TN (2018)
108. A Shepard\*, C Matrosic, S Jupitz , J Radtke , W Culberson , **B Bednarz**, “Linac Triggering Latency Quantification for Consideration in Intra-Fraction Motion Management Systems,” presented at the American Association of Physicists in Medicine annual meeting, Nashville, TN (2018)
109. H Lin, D Adam\*, T Lui, P Caracappa, **B Bednarz**, XG Xu, “Development of ARCHER towards clinical use: modeling and simulating of Varian LINAC for radiation therapy dose calculations,” ANS RPSD-2018, Sante Fe, NM (2018)
110. **B. Bednarz** et al, “Simultaneous MR and Ultrasound Image Acquisition in a Human Using a Hands-Free, MR-compatible, Volumetric Ultrasound Transducer for Image Guided Radiation Therapy,” RSNA, Chicago, IL (2018)
111. Li C, Mylin JM, Weichert JP, Jeffery JJ, Weichmann AM, Nickel KP, Abel LJ, Hernandez R, Grudzinski JJ, Marsh I\*, **Bednarz BP**, Piaskowski SM, Harari PM. Therapeutic combination of radiolabeled CLR1404 with external beam radiation in head and neck cancer murine xenograft models. AACR Annual Meeting; Chicago IL (2018)
112. D Adam\*, T Liu , P Caracappa , X Xu, **B Bednarz**, “Implementation and Benchmarking of Volumetric Modulated Arc Therapy (VMAT) Modeling in the GPU-Based High-Performance Monte Carlo Code

- ARCHER,” presented at the American Association of Physicists in Medicine annual meeting, San Antonio, TX (2019)
113. D Adam\*, N Schweitzer , S Hoffman , B Thomadsen , **B Bednarz**, “Initial Benchmarking of a Monte Carlo-Based Microdosimetry Platform for the Analysis of Targeted Radionuclide Therapy Agents In-Vitro,” presented at the American Association of Physicists in Medicine annual meeting, San Antonio, TX (2019)
  114. S Jupitz\*, J Holmes , A Shepard, J Mitra, T Foo, **B Bednarz**, “Evaluation of Simultaneous MR and Ultrasound Image Acquisition Using Liver Vessels,” presented at the American Association of Physicists in Medicine annual meeting, San Antonio, TX (2019)
  115. I Marsh\*, R Hernandez, M Turek, J Grudzinski, J Weichert, Z Morris, D Vail, B Bednarz, “Dosimetric Impact of Prolonged [Y-86]-NM600 PET/CT Imaging for Immunomodulatory Molecular Radiotherapy with [Y-90]-NM600,” presented at the American Association of Physicists in Medicine annual meeting, San Antonio, TX (2019)
  116. C Matrosic\*, W Culberson, **B Bednarz**, “Benchmarking of An Anthropomorphic Deformable Abdominal Phantom for Image Guided Radiotherapy Validation,” presented at the American Association of Physicists in Medicine annual meeting, San Antonio, TX (2019)
  117. I Marsh\*, A Besemer\*, **B Bednarz**, “Patient-specific alpha particle dosimetry using Radiopharmaceutical Assessment Platform for Internal Dosimetry (RAPID),” to be presented at the ASTRO annual meeting, Chicago, IL (2019)
  118. D Adam\*, S Hoffman\*, **B Bednarz**, “Development of a Monte Carlo-based microdosimetry platform for the analysis of targeted radionuclide therapy agents in vitro,” presented at the ASTRO annual meeting, Chicago, IL (2019)
  119. S. Jupitz\*, **B Bednarz**, “Feasibility Study of Simultaneous MR and 4D Ultrasound Imaging for IGRT,” presented at the ASTRO annual meeting, Chicago, IL (2019)
  120. J. Weichert, **B. Bednarz**, R. Hernandez, J. Grudzinski, R. Patel, P. Sondel, Z. Morris, “Combining Low Dose, Targeted Radionuclide Therapy with Immunotherapy for the Treatment of Solid Tumors,” presented at Radiation Research Society Annual Meeting, San Diego, CA (2019)
  121. R. Brown, R. Hernandez, J.J. Grudzinski, L. Zangl, I. Arthur, A. Pieper, I.R. Marsh\*, **B. Bednarz**, J. Weichert, P.M. Sondel, “Ability of Molecular Targeted Radionucleotide Therapy and Anti-CTLA-4 to Prevent Spontaneous Metastases in a Preclinical Lewis Lung Carcinoma Model,” presented at ASTRO, Chicago, IL (2019)
  122. J. Grudzinski, K. Sorensen, M. Gracz, **B. Bednarz**, P. Wickre. “Torch: A Treatment Planning System for Personalized Radiopharmaceutical Therapy.” 32nd Annual Congress of the European Association of Nuclear Medicine, Oct. 12-16, Barcelona, Spain (2019)
  123. J. Grudzinski, R. Hernandez, I. R. Marsh\*, R. B. Patel, E. Aluicio-Sarduy, J. Engle, Z. Morris, **B. Bednarz**, J. Weichert, “NM600, a theranostic alkylphosphocholine chelate, shows promise as a universal tumortargeting agent,” 32nd Annual Congress of the European Association of Nuclear Medicine, Oct. 12-16, Barcelona, Spain (2019)
  124. I. R. Marsh\*, J. J. Grudzinski, R. Hernandez, J. P. Weichert, M. Otto, **B. P. Bednarz**, “Direct Comparison of Theranostic [124/131I]-NM404 and [124/131I]-MIBG Dosimetry in a Murine Xenograft Model of Neuroblastoma,” 32nd Annual Congress of the European Association of Nuclear Medicine, Oct. 12-16, Barcelona, Spain (2019)
  125. **B. Bednarz**, “Modeling the biological effectiveness of nonuniform dose distributions delivered from selective internal radiation therapy,” 32nd Annual Congress of the European Association of Nuclear Medicine, Oct. 12-16, Barcelona, Spain (2019)

126. I. R. Marsh\*, R. Hernandez, M. Turek, E. Aluicio-Sarduy, J. J. Grudzinski, R. Patel, P. Carlson, M. Otto, P. M. Sondel, J. W. Engle, Z. Morris, J. P. Weichert, D. Vail, **B. P. Bednarz**, “Prospective Theranostic Treatment Planning for Patient-Specific Low-Dose Molecularly Targeted Radiotherapy to Enhance Immunotherapeutic Response,” 32nd Annual Congress of the European Association of Nuclear Medicine, Oct. 12-16, Barcelona, Spain (2019)
127. **B. Bednarz**, “A Geant4-based Voxel S-value Generator For Radiopharmaceutical Therapy,” 32nd Annual Congress of the European Association of Nuclear Medicine, Oct. 12-16, Barcelona, Spain (2019)
128. Massey C, Hernandez R, Grudzinski JJ, Marsh IR\*, Aluicio-Sarduy E, Turek M, Engle JW, Morris Z, **Bednarz B**, Vail D, Weichert J. Preliminary evaluation of a broad-scope tumor targeting alkylphosphocholine chelate in canines with spontaneous tumors. SNMMI Annual Meeting; Jun 13-16, 2020; New Orleans, LA.
129. Grudzinski J, Bates AM, Hernandez R, Sosa GA, Nystuen E, Emma S, Sumiec EG, Pieper A, Patel R, Aluicio-Sarduy E, Engle J, Marsh I\*, **Bednarz B**, Weichert J, Morris Z. Targeted Radionuclide Therapy Combined with IL-2 Immunotherapy Improves Response to Immune Checkpoint Inhibition in a Syngeneic Murine Model of Head and Neck Cancer. SNMMI Annual Meeting; Jun 13-16, 2020; New Orleans, LA.
130. Vail DM, Hernandez R, MaGee K, Turek MM, Marsh I\*, **Bednarz B**, Weichert JP, Sondel PM, Albertini MR, Kurzman ID, Morris ZS. A multimodality radioimmunotherapy approach to treating advanced stage cancer in companion dogs. European Society of Veterinary Oncology Annual Meeting; May 27-30, 2020; Siracusa, Italy.
131. Sosa GA, Bates AM, Nystuen E, Emma S, Sumiec G, Pieper A, Patel R, Hernandez R, Grudzinski J, **Bednarz B**, Marsh I\*, Weichert J, Morris Z. In Vivo Efficacy of NKTR-214, Immune Checkpoint Inhibition, and Targeted Radionuclide Therapy in Syngeneic Murine Models of Head and Neck Cancer. AACR Annual Meeting; Apr 25, 2020; San Diego, CA. Poster.
132. Jagodinsky JC, Arthur IS, Castillo JS, Chakravarty I, Zangl LM, Brown RJ, Patel RB, Jin W, Carlson PM, Hernandez R, Grudzinski JJ, Marsh IR\*, Weichert JP, **Bednarz BP**, Morris ZS. Comparing type 1 interferon response activation in tumor cells following external beam radiotherapy versus targeted radionuclide therapy. AACR Annual Meeting; Apr 24-29, 2020; San Diego, CA.
133. Bates AM\*, Patel R, Hernandez R, Grudzinski JJ, Sosa GA, Marsh I\*, **Bednarz B**, Pieper A, Nystuen E, Sarah S, Sumiec EG, Weichert JW, Morris Z. 90Y-NM600 targeted radionuclide therapy combined with bempedaldesleukin (NKTR-214) and immune checkpoint inhibition enhances the immune response in a syngeneic murine model of head and neck cancer. Immuno-Oncology Young Investigators’ Forum; Apr 16-18, 2020; Houston, TX.
134. Bates AM\*, Patel R, Hernandez R, Grudzinski JJ, Sosa GA, Marsh I\*, **Bednarz B**, Pieper A, Nystuen E, Emma S, Sumiec EG, Weichert J, Morris Z. 90Y-NM600 targeted radionuclide therapy combined with bempedaldesleukin (NKTR-214) and immune checkpoint inhibition enhances the immune response in a syngeneic murine model of head and neck cancer. RRS Winter Workshop: Challenges & Solutions in the Era of Targeted Radionuclide-Based Therapy; Mar 4-6, 2020; Big Sky, MT.
135. Carlson PM, Patel R, Rodriguez M, Xun C, Hernandez R, Grudzinski J, Rakhmilevich A, Kim K, Birstler J, Marsh I\*, **Bednarz B**, Weichert JP, Sondel PM, Morris ZS. Low dose targeted radionuclide therapy enhances propagation of the antitumor response following in situ vaccination in a syngeneic murine melanoma model. RRS Winter Workshop: Challenges & Solutions in the Era of Targeted Radionuclide-Based Therapy; Mar 4-6, 2020; Big Sky, MT.
136. D Adam\*, J Grudzinski, **B Bednarz**, “A Comparison of External Beam Radiotherapy and Radiopharmaceutical Lineal Energy Distributions Using Monte Carlo Track Structure Simulations,” presented at the American Association of Physicists in Medicine annual meeting, Vancouver, CA (2020)

137. D Adam\*, I Marsh\*, T Bradshaw, P Hill, B Cox, J Grudzinski, P Harari, **B Bednarz**, “Patient-Specific Partial Volume Corrections Using a 3D Printed Anthropomorphic Head and Neck Phantom,” presented at the American Association of Physicists in Medicine annual meeting, Vancouver, CA (2020)
138. I Marsh\*, J Grudzinski, **B Bednarz**, “The Dosimetric Impact of Deformable Registration On Multi-Timepoint Internal Dosimetry Studies,” presented at the American Association of Physicists in Medicine annual meeting, Vancouver, CA (2020)
139. A Bertinetti, **B Bednarz**, B Palmer, R Hernandez, B Smith, C Hammer, J Grudzinski, W Culberson, “Determination of Absorbed-Dose-To-Water From Common Targeted Radionuclide Therapy Agents,” presented at the American Association of Physicists in Medicine annual meeting, Vancouver, CA (2020)
140. S Jupitz\*, J Zagzebski, J Holmes, D Mills, W Lee, H Chan, A Patel, L Smith, **B Bednarz**, “Image Quality Assessment of a MR-Compatible E4D Ultrasound Probe for Image Guided Radiation Therapy,” presented at the American Association of Physicists in Medicine annual meeting, Vancouver, CA (2020)
141. Q Cheng, H Yang, Y Xu, X Pei, L Mao, Q Ren, A Wu, D Adam\*, **B Bednarz**, P Caracappa, X Xu, “Modeling and Testing of a Virtual Source Model for An Independent Monte Carlo Radiation Dose QA Software with the Magnetic Field Option,” presented at the American Association of Physicists in Medicine annual meeting, Vancouver, CA (2020)
142. K Magee, R Hernandez, MM. Turek, I Marsh, **B Bednarz**, J Grudzinski, JP Weichert, PM. Sondel, MR Albertini, ZS Morris, DM Vail, “A multimodality radioimmunotherapy approach to treating advanced stage cancer in companion dogs,” Veterinary Cancer Society Annual Meeting, Daytona Beach, FL (2020)
143. Adam D\*, Grudzinski J, Cox B, Marsh I\*, Bradshaw T, Hill P, Harari P, and **Bednarz B**. Development of a 3D printed anthropomorphic head and neck phantom for patient-specific partial volume corrections. EANM Annual Meeting; Vienna, Austria (virtual due to Covid-19). Cutting Edge Science Track - Top Rated Oral Presentation (2020)
144. Marsh IR\*, Grudzinski JJ, Hernandez R, Turek MM, Vail DM, Morris Z, Weichert J, and **Bednarz B**. The dosimetric impact of deformable image registration on multi-timepoint internal dosimetry studies. EANM Annual Meeting; Vienna, Austria (virtual due to Covid-19). Cutting Edge Science Track - Top Rated Oral Presentation (2020)
145. N. Shaheen\*, R.Pena-Chavez, C. Ulmschneider,, R. Burdick, **B. Bednarz**, N. Rogus-Pulia, “Algorithmic Hyoid Tracking and C2-C4 Length Measurement on Artificial Intelligence Predicted Segmentations,” Dysphagia Research Society Annual Meeting (2021)
146. N. Shaheen\*, R.Pena-Chavez, C. Ulmschneider,, R. Burdick, N. Rogus-Pulia, **B. Bednarz** “Auto Segmentation of the Hyoid Bone, Bolus, and C2-C4 Vertebrae Length on Videofluoroscopic Swallow Studies,” Dysphagia Research Society Annual Meeting (2021)
147. D Adam\*, I Marsh, J Grudzinski, T Bradshaw, P Hill, S Cho, C Hullett, A Burr, P Harari, **B Bednarz**, “Tumor Dosimetry and Radiobiological Modeling of Combined Radiopharmaceutical Therapy and External Beam Radiotherapy for Recurrent Head and Neck Cancer,” AAPM Virtual Annual Meeting (2021)
148. D Adam\*, I Marsh, J Grudzinski, T Bradshaw, P Hill, **B Bednarz**, “Uncertainty Propagation Methods for Personalized, Image-Based 131-Iodine SPECT/CT Radiopharmaceutical Therapy Dosimetry,” AAPM Virtual Annual Meeting (2021)
149. N Shaheen\*, R Peña-Chávez, C Ulmschneider, R Burdick, J Yee, A Kurosu, N Rogus-Pulia, **B Bednarz**, “Autosegmentation of Videofluoroscopic Swallow Studies Using U-Net for Improved Analysis of Radiation Induced Dysphagia in Head and Neck Cancer Patients,” AAPM Virtual Annual Meeting (2021)

150. S Jupitz\*, J Holmes, **B. Bednarz**, “4D MR Reconstruction Based On Real-Time 3D Ultrasound for Image-Guided Radiotherapy,” AAPM Annual Meeting (2021)
151. A Strunets\*, D Adam, J Jeffery, **B. Bednarz**, “A Dosimetric Evaluation of <sup>223</sup>Ra-Dichloride Using a Realistic Model of the Metastatic Castrate-Resistant Prostate Cancer Microenvironment and Whole-Body Pharmacokinetics,” AAPM Virtual Annual Meeting (2021)
152. O Kwon\*, D Adam, **B. Bednarz**, “Microdosimetry of Radionuclides Using Geant4 Simulation Considering the Auger Electron Contribution,” AAPM Virtual Annual Meeting (2021)
153. O. Kwon\* and **B. Bednarz**, “Nanodosimetric evaluation of direct action from radioisotopes on or near DNA,” Radiation Research Society Annual Meeting (2021)
154. Adam D\*, Grudzinski J, Bradshaw T, Marsh I, Hill P, Cho S, Hullett C, Burr A, Harari, P, **Bednarz B**, “Tumor dosimetry and radiobiological modeling of combined radiopharmaceutical therapy and external beam radiotherapy for recurrent head and neck cancer,” SNMMI Annual Meeting, Vancouver CA (2022)
155. O. Kwon\*, J. Grudzinski, D. Adam\*, PA Clark, RN Sriramaneni, C. Ferreira, J. Jeffery, C. Massey, C. Kerr, Z. Morris, R. Hernandez, J. Weichert, and **B. Bednarz**, “Voxel-wise preclinical dosimetry of <sup>177</sup>Lu-NM600 using the Monte Carlo-based platform RAPID,” SNMMI Annual Meeting, Vancouver CA (2022)
156. Adam D, Grudzinski J, Bradshaw T, Perlman, S, Cho, S, Bednarz, B, “Clinical <sup>177</sup>Lu-DOTATATE voxel-level dosimetry for patient with reduced kidney function undergoing hemodialysis,” SNMMI Annual Meeting Vancouver CA (2022)
157. D. Adam\*, J. Grudzinski, P. Hill, T. Bradshaw, S. Cho, A. Burr, P. Harari, **B. Bednarz**, “Combining Monte Carlo Voxel-Level External Beam Radiotherapy and Iodine-131 SPECT Based Radiopharmaceutical Therapy Dosimetry Using Deformable Registration and Radiobiological Quantities,” AAPM Annual Meeting, Washington D.C. (2022)
158. D. Adam\*, J. Grudzinski, P. Hill, T. Bradshaw, S. Cho, A. Burr, P. Harari, **B. Bednarz**, “CT Metallic Artifacts Affect Clinical, SPECT Image-Based, Iodine-131 Radiopharmaceutical Therapy Dosimetry” AAPM Annual Meeting, Washington D.C. (2022)
159. S. Jupitz\* and **B. Bednarz**, “Stability of a Hands-Free Ultrasound Probe During Free-Breathing Imaging with Applications to Motion Management in IGRT,” AAPM Annual Meeting, Washington D.C. (2022)
160. S. Jupitz\* and **B. Bednarz**, “3D Ultrasound to 3D MR Image Registration for Motion Management in the Liver Using Novel MR-Compatible Ultrasound Probe,” AAPM Annual Meeting, Washington D.C. (2022)
161. IR Marsh\*, TJ Bradshaw, JJ Grudzinski, R Hernandez, E Aluicio-Sarduy, **B. Bednarz**, “A Method for Partial Volume Correction of Dose Distributions Derived From PET-Based Theranostic Dosimetry,” AAPM Annual Meeting, Washington D.C. (2022)
162. D Coleman\*, J Meudt, D Shanmuganayagam, J Shah, A McMillan, A Pirasteh, J Miller, **B. Bednarz**, M Lawless, “Active Bone Marrow Delineation in a Swine Model Via Proton Density Fat Fraction MRI and Multi-Energy CT,” AAPM Annual Meeting, Washington D.C. (2022)
163. O Kwon\*, **B. Bednarz**, “Computational Benchmarking of Nanoscale Dosimetry in DNA Damaged by <sup>125</sup>I Decay,” AAPM Annual Meeting, Washington D.C. (2022)
164. O Kwon\*, J Grudzinski, D Adam, P Clark, R Sriramaneni, C Ferreira, J Jeffery, C Massey, C Kerr, Z Morris, R Hernandez, J Weichert, **B. Bednarz**, “Voxel-Wise Preclinical Dosimetry of <sup>177</sup>Lu-NM600 Using the Monte Carlo-Based Platform RAPID,” AAPM Annual Meeting, Washington D.C. (2022)
165. **B. Bednarz**, Caroline Kerr, Joseph Grudzinski, Carolina Ferriera, Ohyun Kwon\*, Jamey Weichert, Reinier Hernandez, Zachary Morris, “Organ and tumor dosimetry analysis of <sup>225</sup>Ac-NM600 in

immunocompetent mice with B78 wild-type tumor xenografts,” TAT-12 International Symposium, Cape Town, South Africa (2023)

166. **B. Bednarz**, Adedamola O Adeniyi\*, Fengwei Lui\*, Joseph Grudzinski, Ohyun Kwon\*, Paul Clark, Caroline Kerr, Cythia Choi, Jamey Weichert, Zachary Morris, Reinier Hernandez, “Bridging the dosimetry scales in targeted alpha particle therapy using the iQID alpha camera,” TAT-12 International Symposium, Cape Town, South Africa (2023)
167. **B. Bednarz** and Ohyun Kwon, “Dosimetric modeling of alpha particles at the nanoscale,” TAT-12 International Symposium, Cape Town, South Africa (2023)
168. O. Kwon and **B. Bednarz**, “Nanodosimetric evaluation of direct and indirect action from clinical radioisotopes on or near DNA,” International Conference on Radiation Research, Montreal CA (2023)
169. N. Shaheen, E. Balsiger, R.J. Burdick, J. Wu, **B. Bednarz**, N.Rogus-Pulia, “A comparison of Landmark Identification and Bolus Events on Convolutional Autoencoder Modified VFSS,” DRS Annual Meeting, Puerto Rico (2024)
170. Kwon O\*, Hoffman SL, Ellison PA, **Bednarz BP** “Nanoscale Dosimetry for DNA Damage Assessment of a PARP Targeted Auger Electron Emitter through Geant4-DNA Simulation with Previous Benchmarking Data,” Gordon Research Conference, Newry, ME (2024)
171. O. Kwon\*, D. Adam\*, T. Bradshaw, C. Hammer, J. Grudzinski, **B. Bednarz**, “TLD Measurements to Validate Image-Based Radiopharmaceutical Therapy Dosimetry,” AAPM Annual Meeting, Los Angeles, CA (2024)
172. O. Kwon\*, S. Jollota, A. O Adeniyi\*, and **B. Bednarz**, “Calibration and characterization of the iQID digital autoradiography camera,” AAPM Annual Meeting, Los Angeles, CA (2024)
173. C. Haasch\*, S. Jupitz\*, Malick BIO IDRISOU, A. Parks, A. Weichmann, B. Pogue, H. Hernandez, **B. Bednarz**, “In Vivo Cherenkov Imaging of Actinium-225 daughter re-localization in targeted alpha-particle therapy,” AAPM Annual Meeting, Los Angeles, CA (2024)

#### D. Statistics

##### Google Scholar

	All
Citations	2720
h-index	24
i10-index	47

##### ResearchGate

	All
Citations	2,161
h-index	21
Research Interest Score	1,076

##### Web of Science

	All
Citations	1,599

h-index	21
Citing Patents	13

## **SERVICES**

### **A. Invited Professional and Public Lectures**

1. "Proton Monte Carlo," PTCOG 49 Educational Workshop, Chiba, Japan, May 2010
2. "Forum on the Nuclear Emergency in Japan," University of Wisconsin Energy Institute, Madison, WI, March 2011
3. "Update of the Nuclear Emergency in Japan," University of Wisconsin Energy Institute, Madison, WI, May 2011
4. "The LNT Hypothesis – Implications in Science, Policy and Society," Department of Engineering Physics, Madison, WI, November 2011
5. "Overview of the forthcoming TG-158 Report on measurements and calculations of doses outside the treatment volume from external beam radiation therapy," Department of Medical Physics, Madison, WI, December 2011
6. "The Uses of Ionizing Radiation in Medicine," Congressional Briefing hosted by the ANS, Washington D.C., August 1, 2012
7. "Motion Management In Radiotherapy," GE Global Research Center, Niskayuna, NY, September 2013
8. "The Value of Radiopharmaceutical Dosimetry," Collectar Biosciences, Madison, WI, September 2014
9. "Replacing the Manikin: From Model- to Patient-based Radionuclide Therapy Dosimetry," Argonne National Laboratory, Lemont, IL, November 2014
10. "The Future of Radiological Engineering in Oncology (And Why Its Important)" Department of Medical Physics, Madison, WI, January 2016
11. "Image Guided Radiotherapy for Liver," MR and PET/MR Research Review, GE Healthcare, Waukesha, WI, March 2016
12. "Imaging and Dosimetry of CLR1404 in Mice and Humans," Jack Fowler Symposium, UW School of Medicine and Public Health, Madison, WI February 2017
13. "Selective Targeting of the Cell Membrane; Attacking the Tumour House of Cards," Plenary Lecture at the European Association of Nuclear Medicine, Vienna, Austria October 2017
14. "The Role of Radiation Dosimetry in Theranostic Medicine," University of Iowa, Iowa City, Iowa November 2017
15. "A Hands-Free MR-Compatible Volumetric Ultrasound Probe for Real-Time Motion Management During External Beam Radiotherapy," Massachusetts General Hospital, Boston, MA November 2017
16. "Image Guided Radiotherapy for Liver," MR and PET/MR GE Research Review, University of Wisconsin, Madison, WI, March 2018
17. "The Rationale for Dosimetry in Systemic Radiopharmaceutical Therapy," NCI Workshop on SRT Dosimetry, National Cancer Institute, Rockville, MD, April 2018
18. "ICRU Stakeholder – Perspective from a Small US Start-Up," ICRU Stakeholders Meeting, Reykjavic, Iceland, August 2018
19. "The Promise – and Perils – of Radiation Dosimetry in Theranostic Medicine," Mayo Clinic, Rochester, MN, November 2018
20. "Radionuclide Therapy for Pediatric Patients: MIBG and Beyond," Mayo Clinic, Rochester, MN, November 2018

21. "A Hands-Free MR-Compatible Volumetric Ultrasound Probe for Real-Time Motion Management During External Beam Radiotherapy," Quantitative Imaging in Radiation Therapy Working Group, National Cancer Institute (NCI), Web Presentation, November 2018
22. "Implications of Heterogeneous Dose Distributions for Radiopharmaceutical Therapy Revisited" CIRMS Annual Meeting, Gaithersburg, MD, April 2019
23. "Multi-scale radiation transport modeling for radiopharmaceutical therapy," Computational Modeling and Image Processing of Biomedical Problems Symposium, Houghton, MI, June 2019
24. "FDA-Approved (and Upcoming) Dosimetry Software," AAPM Annual Meeting, July 2019
25. "Theranostic Treatment Planning for Precise Radiopharmaceutical Therapy," Targeted Radionuclide Therapy Conference, Madison, WI, September 2019
26. "Radiation Dosimetry for CLR 131 Pediatric Patients," Medical Advisory Meeting for Collectar Biosciences, Jersey City, New Jersey, September 2019
27. "Optimizing Dosimetry Workflows in Nuclear Medicine," SNMMI Therapeutics Meeting, New Orleans, Louisiana, March 2022
28. "The role of dosimetry and radiobiology in clinical radiopharmaceutical therapy," University Health Network (UHN), Toronto, ON, March 2022 (virtual)
29. "Building a Radiopharmaceutical Therapy Dosimetry Infrastructure: Experiences and Lessons Learned at UW" North Central Chapter AAPM Spring Meeting, Madison, WI, April 2022
30. "Multi-scale Dosimetry for Radiopharmaceutical Therapy" Massachusetts General Hospital Physics Forum, Massachusetts General Hospital, Boston, MA, April 2022 (virtual)
31. Dosimetry – What is it and Why it Will Become Mainstream in Clinical RPT?" NCI MIB Presentation, April 2022 (virtual)
32. "Building a Clinical RPT Dosimetry Infrastructure," AAPM Annual Meeting, Washington, DC, July 2022
33. "Challenges and Opportunities in the Dosimetry of Alpha Emitter Therapy," Radionuclide Theranostics for the Management of Cancer, Gordon Research Conference, July 2022
34. "A Broader Perspective on Radiopharmaceutical Therapy Research at the UW," GE/UW Theranostics Meeting, Madison, WI, October 2022
35. "Bridging the Dosimetry Scales in Radiopharmaceutical Therapy," Mizzou Forward Plenary Talk, Columbia, MO, February 2023
36. "Multiple Timepoint Image Registration," AAPM Summer School, Minneapolis, MN, June 2023
37. "AI in Personalized RPT Debate," SNMMI Annual Meeting, Chicago IL, June 2023
38. "Alpha Particle Dosimetry," 7<sup>th</sup> Theranostics World Congress, Santiago Chile, March 2024
39. "Designing and Implementing a Clinical RPT Dosimetry Program from the Ground Up," North Central Chapter AAPM Spring Meeting, Rochester, MN, April 2024
40. "Voxel-level dosimetry for alpha emitters: challenges and opportunities," World Molecular Imaging Conference, Montreal, ON, September 2024
41. "Dosimetry in RPTs in Combination with Other Therapies Including Immunotherapy," SNMMI Therapeutics Conference, Bethesda, MD, September 2024

## **B. University, School and Departmental Committees**

### **UW-Madison/UW Health**

- University Radiation Safety Committee Member (Spring 2014-2015)
- UW Medical Radiation Research Center Advisory Committee Member (Spring 2014-2017)
- University Radiation Safety Executive Committee Vice Chair (2015-present)
- Biological Sciences Divisional Executive Committee “Success Story” Presenter at the New Faculty Workshop (2017)
- Co-Lead of the Working Group on Clinical RPT Dosimetry (2020-present)
- Member of Institute for Theranostics and Particle Therapy (ITPT) Executive Committee (2023-present)

### **UW Carbone Cancer Center**

- Member of UWCCC Imaging and Radiation Sciences Core (2011-present)
- Co-Founder and Co-Leader of the UW Carbone Cancer Center Theranostics Disease Oriented Team (DOT) (2022-present)

### **UW-Madison Medical Physics Department**

- UW Department of Medical Physics Admissions Committee Member (Fall 2010-present)
- UW Department of Medical Physics Curriculum Committee Member (Spring 2011-present)
- UW Department of Medical Physics Preliminary Exam and Dissertation Defense Policy/Procedural Working Group Member (Spring 2015-current)
- UW Department of Medical Physics Executive Committee Member (2016-present)
- UW Department of Medical Physics Oral Qualifier Examination Committee Member (2016-present)
- UW Department of Medical Physics Award Committee (2020-present)
- REDI Faculty Sponsor, Department of Medical Physics (2020-present)
- UW Department of Medical Physics Branding Committee Member (2021-present)

## **C. Professional Societies and Organizations**

### **American Association of Physicist in Medicine (AAPM) 2004-present**

- Co-Chair, Task Group 158 on “Measurements and Calculation of Doses Outside the Treatment Volume,” 2011-2016
- AAPM Summer Undergraduate Fellowship Advisor (2013)
- Session Co-Chair, Session: “Tumor Tracking”, 2016 AAPM Annual Meeting, Washington D.C.
- AAPM Annual Meeting Abstract Reviewer (2011, 2015, 2016, 2017)
- Session Co-Chair, Session: “Tracking and Image Guidance”, 2017 AAPM Annual Meeting, Denver, CO
- Session Co-Chair, Session: “Treatment Planning III”, 2017 AAPM Annual Meeting, Denver, CO
- Vice Chair, Ad Hoc Committee on Recommendations for Better Integrating Radionuclide Therapy, 2018-present
- Session Co-Chair, Session: “Treatment Implications of Motion Management”. 2018 AAPM Annual Meeting, Nashville, TN
- Co-Chair, AAPM Ad Hoc Committee on Recommendations for Better Integrating Radionuclide Therapy, 2018-2021
- Co-Chair, AAPM Radiopharmaceutical Therapy Sub-Committee\*, 2021-2024
- Writing Committee for the ACR–AAPM–ACNM–SNMMI–SPR Technical Standard for Therapeutic Procedures Using Radiopharmaceuticals.
- Session Chair, “Nuclear Medicine and PET”, 2021 AAPM Annual Meeting, Virtual
- Specialty Track Co-Organizer, “The New Era of Radiopharmaceutical Therapy,” AAPM Annual Meeting, Washington D.C., 2022
- Member, AAPM TG 381, APM Recommendations on imaging, dosimetry and quality assurance procedures for Lu-177-based radionuclide therapy, 2022

- Faculty Member, “Radiopharmaceutical Therapy & Dosimetry,” 2023 AAPM Summer School, Minneapolis, MN, 2023

#### **American Nuclear Society (ANS) 2001-2018**

- Student Vice President, University of Michigan Chapter, 2004
- Subcommittee on Radiological Release and Health Effects from the Fukushima Disaster, 2011
- Elected Member of the Executive Committee of the Biology and Medicine Division, 2012-
- Elected Vice-Chair of the Biology and Medicine Division, 2014-2015
- Elected Chair of the Biology and Medicine Division, 2015-2016
- Elected Secretary of the Biology and Medicine Division, 2016-2017
- ANS Biology and Medicine Division Awards Committee, 2014-
- Appointed Member of ANS Special Committee on Government Relations, 2016-
- Technical Committee, International Conference on Radiation Shielding/ANS Radiation Protection and Shielding Topical Joint Conference (RPSD2010), Las Vegas, 2010
- Session Co-Chair, Session: Therapeutic Beams – The Wider I/O Chain, ANS Winter Meeting, Washington D.C., 2011
- Session Co-Chair, Session: Biology and Medicine General, ANS Winter Meeting, San Diego, CA, 2012
- Session Organizer and Co-Chair, Session: New Horizons in Medical Health Physics, ANS Annual Meeting, Atlanta, GA, 2013
- Publication Co-Chair, 8<sup>th</sup> International Conference on Isotopes and Expos, Chicago, IL, 2014
- Technical Program Committee, Applications in Nuclear Medicine – Therapeutics and Production and Application of Alpha Emitters, 8<sup>th</sup> International Conference on Isotopes and Expos, Chicago, IL, 2014
- Technical Program Committee, 18<sup>th</sup> Topical Meeting of the Radiation Protection and Shielding Division of ANS, Knoxville, TN, 2014
- Session Organizer and Chair, Session: Radiation Transport Applications in Medicine, ANS Annual Meeting, New Orleans, LA, 2016
- Session Chair, Session: Biology and Medicine – General, ANS Annual Meeting, San Francisco, CA

#### **Health Physics Society (HPS) 2005-2008, 2012-2013**

- Co-Chair, Special Session on Low Dose Radiation Research, HPS Annual Meeting, Madison, WI, 2013

#### **American Society for Radiation Oncology (ASTRO)**

- Member, Radiopharmaceutical Curriculum Committee, 2021-present

#### **National Cancer Institute (NCI)**

- Early Career Reviewer Participant 2014-2019
- Member of the Quantitative Imaging in Radiation Therapy Working Group, 2018-present
- Member of the Radiopharmaceutical Therapy Dosimetry Working Group, 2018-present
- Member of the Radiopharmaceutical Therapy Working Group, 2019-present
- Member of the Neutron Capture Therapy Working Group. 2019-present

#### **D. Reviewer of Grants**

- Mail Reviewer, Special Emphasis Grant Panel – Oral and Dental Health (2015)
- Reviewer, Special Emphasis Panel - NCI Clinical and Translational Exploratory and Developmental Studies (2017)
- Reviewer, NCI Special Emphasis Panel, ZCA1 SRB-X (O1) S, NCI Clinical and Translational Exploratory and Developmental Studies (2017)
- Reviewer, NCI Special Emphasis Panel, Radiation Therapeutics and Biology Study Section, (2017)

- Reviewer, NCI Special Emphasis Panel, ZRG1 OTC-E (02) M, Radiation Therapeutics and Biology Study Section, (2018)
- Reviewer, NCI Special Emphasis Panel, ZRG1 OTC-E (02) M, Radiation Therapeutics and Biology Study Section, (2018)
- Reviewer, NCI Special Emphasis Panel, ZCA1 SRB-X (M1), Radiation Therapeutics and Biology Study Section, (2020)
- Reviewer, NIAID Special Emphasis Panel, Investigator Initiated Program Project Applications (P01) (2021)
- Reviewer, NCI Biology of Development and Aging Integrated Review Group, Radiation Therapeutics and Biology Study Section (2021)
- Reviewer, NIAID R13 Support for Conferences and Scientific Meetings, Immunology Review Branch (2023)

#### **E. Reviewer of Manuscripts**

- Guest Editor, *Medical Physics Journal*, (2020)
- Guest Editor, *Medical Physics Journal*, (2017)
- Reviewer, *Medical Physics Journal*, (2009-present)
- Reviewer, *International Journal of Radiation Oncology, Biology and Physics*, (2010-present)
- Reviewer, *Physics in Medicine and Biology*, (2010-present)
- Reviewer, *Proceedings of the IEEE*, (2011-present)
- Reviewer, *Computational and Mathematical Methods in Medicine*, (2012-present)
- Reviewer, *Journal of Radiological Protection*, (2013-present)
- Reviewer, *Journal of Applied Clinical Medical Physics* (2013-present)
- Reviewer, *Nuclear Inst. and Methods in Physics Research, A* (2014-present)
- Reviewer, *Radiation Measurements* (2014-present)
- Reviewer, *Radiation Physics and Chemistry* (2014-present)
- Reviewer, *Applied Physics Letters* (2014-present)
- Reviewer, *Journal of Radioanalytical and Nuclear Chemistry* (2014)
- Reviewer, *Nuclear Science and Engineering*, (2015-present)
- Reviewer, *Computer Methods and Programs in Biomedicine* (2015-present)
- Reviewer, *Radiotherapy and Oncology*, (2016-present)
- Reviewer, *Theranostics*, (2017-present)
- Reviewer, *Medical Image Analysis*, (2017-present)
- Reviewer, *Physics & Imaging in Radiation Oncology*, (2017-present)
- Reviewer, *Cancer Biotherapy and Radiopharmaceuticals*, (2019-present)
- Reviewer, *European Journal of Nuclear Medicine and Molecular Imaging Physics*, (2020-present)
- Reviewer, *BMC Veterinary Research*, (2020-present)
- Reviewer, *Journal of Physics D*, (2020-present)
- Reviewer, *Pediatric Blood & Cancer*, (2020-present)
- Reviewer, *Physica Medica*, (2021-present)
- Reviewer, *American Journal of Roentgenology*, (2024-present)

### **HONORS AND AWARDS**

#### **A. Personal**

- University of Michigan Club of Greater Lansing Scholarship (2000)
- University of Michigan Department of Nuclear Engineering and Radiological Science Undergraduate Merit Scholarship (2001)
- Alpha Nu Sigma Honors Society Inductee

- Health Physics Society Travel Grant (2006,2007)
- H. Wade Patterson Award for best student accelerator paper at the HPS Annual Meeting (2007)
- International Conference on Radiation Shielding Travel Grant (2008)
- American Nuclear Society Everitt P. Blizard Scholarship Award – declined (2008)
- Rensselaer Polytechnic Institute Founder’s Award (2008)
- Physics in Medicine and Biology Highlights of 2008 (2008)
- UW Graduate School Travel Grant (2013,2015)
- AAPM Town Hall Poster Selection, AAPM Annual Meeting (2013)
- ANS “Best of RPSD 2014” Selection, ANS Annual Meeting (2014)
- The Ride Scholar, UW Madison (2018)
- Medical Physics Journal Top 10 Downloaded Article 2017 (2018)
- Medical Physics Journal Top 20 Downloaded Article 2017-2018 (2019)

## **B. Students**

- UW Science and Medicine Research Scholar, Tyler Fowler (2011-2015)
- Standard Imaging AAPM Travel Award, Abby Besemer (2013)
- Igus® Young Engineer’s Support Program, Tyler Fowler (2013)
- ANS Student Travel Award, Abby Besemer (2013)
- Standard Imaging AAPM Travel Award, Tyler Fowler (2013)
- Standard Imaging AAPM Travel Award, Abby Besemer (2013)
- AAPM Young Investigator Competition Finalist, Abby Besemer (2013)
- UW Radiological Training Grantee, Ming Yang (2013-2015)
- AAPM Summer Undergraduate Fellowship, Andrew Shepard (2013)
- AAPM Young Investigator Competition Finalist, Kai Ludwig (co-author, 2014)
- UW Student Research Grants Competition Travel Award, Abby Besemer (2015)
- NCC-AAPM Meeting Young Investigator Competition, 2<sup>nd</sup> Place, Charlie Matrosic (2015)
- AAPM Young Investigator Competition Finalist, David Adam (2017)
- Standard Imaging AAPM Travel Award, David Adam (2017)
- Standard Imaging AAPM Travel Award, Andrew Shepard (2017)
- UW Radiological Training Grantee, Andrew Shepard (2017)
- The Ride Student Scholar Award, Ian Marsh (2018)
- SNMMI Annual Meeting Young Investigator Awards Symposium, Ian Marsh (2018)
- WISCIENCE Public Service Fellows Program, Sydney Jupitz (2018)
- UW Student Research Grants Competition Travel Award, Charlie Matrosic, (2018)
- 10<sup>th</sup> IC3DDose Best Student Paper Award, Charlie Matrosic, (2018)
- UW Radiological Training Grantee, Ian Marsh (2019-)
- SNMMI Alavi–Mandell Award, Ian Marsh (2020)
- ACR Medical Physics Graduate Student Travel Scholarship, Ian Marsh (2020)
- EANM Top Rated Oral Presentation, Cutting Edge Science Track, Ian Marsh (2020)
- EANM Top Rated Oral Presentation, Cutting Edge Science Track, David Adam (2020)
- UW Science and Medicine Research Scholar, David Coleman (2021-2025)
- AAPM John Cameron Early Career Scientist Competition Finalist, David Adam (2021)
- Radiation Research Society Scholar in Training Travel Grant, Ohyun Kwon (2021)
- AAPM John Cameron Early Career Scientist Competition Finalist, David Adam (2022)
- Radiation Research Society Scholar in Training Travel Grant, Ohyun Kwon (2022)
- Hilldale Undergraduate/Faculty Research Fellowship, Fengwei Lui (2023)
- The James A. Purdy Summer Research Fellowship, Washington University, Fengwei Lui (2023)
- AAPM John Cameron Early Career Scientist Competition Finalist, 3<sup>rd</sup> Place Prize, David Adam (2023)

- UW Radiological Training Grantee, Jordan Teague (2024)