
Matthew L. Scarpelli

Curriculum Vitae

CONTACT INFORMATION

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Purdue University School of Health Sciences
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CURRENT POSITION

2021 – Current Assistant Professor, Purdue University School of Health Sciences

EDUCATION

2018 Ph.D. in Medical Physics, University of Wisconsin-Madison
2016 M.S. in Medical Physics, University of Wisconsin-Madison
2013 B.S. in Nuclear Engineering, University of Michigan, *Summa Cum Laude*

PRIOR RESEARCH POSITIONS

2018 - 2021 Postdoctoral Fellow, Barrow Neuroimaging Innovation Center, Barrow Neurological Institute
2018 Image Analyst, Radiology and Digital Pathology Team, Tempus
2013 - 2018 Research Assistant, Department of Medical Physics, University of Wisconsin-Madison
2013 Research Fellow, Department of Radiation Oncology, Harvard Medical School/MGH
2012 - 2013 Research Assistant, Department of Radiology, University of Michigan
2011 - 2013 Research Assistant, Department of Nuclear Engineering, University of Michigan
2009 - 2010 Research Assistant, Department of Physics, University of Michigan

PRIOR TEACHING POSITIONS

2012 Teaching Assistant, Introduction to Nuclear Engineering Course, Department of Nuclear Engineering, University of Michigan, solo lecturing to approximately 20 students
2011 - 2012 Teaching Assistant, Introduction to Classical Mechanics Course, Department of Physics, University of Michigan
2011 - 2012 Physics Help Lab, Department of Physics, University of Michigan, one-on-one instruction

PROFESSIONAL MEMBERSHIPS/ASSOCIATIONS

2022 - current Purdue Center for Cancer Research
2022 - current Radiation Research Society
2015 - current American Association of Physicists in Medicine (AAPM)

AWARDS AND RECONGNITION

2018 - 2021 Barrow Neuroimaging Fellowship, Barrow Neurological Institute
2018 Science Council Associates Mentorship Program (SCAMP), AAPM
2016 Finalist Early-Career Investigator Symposium (3rd place), AAPM Annual Meeting
2014 Publication awarded Physics in Medicine and Biology Highlight of 2014
2013 American Association of Physicists in Medicine's Summer Fellowship
2012 University of Michigan College of Engineering SURE Fellowship
2010 William J. Branstom Freshman Prize, University of Michigan

SERVICE TO THE FIELD

2018 - current Manuscript Peer Review (including Frontiers in Oncology, British Journal of Cancer)
2018 - 2020 AAPM Working Group on Research Funding
2013 Foundation for International Medical Relief of Children Volunteer (FIMRC)
2012 - 2013 Interventional Radiology Operating Room Volunteer, University of Michigan

GRANTS

2021 Barrow Neurologic Foundation Pilot Grant – Award Amount \$108,902.30
Grant title: *¹⁸F-Fluciclovine PET imaging for distinguishing tumor progression from treatment-related effects (pseudoprogression) in glioblastoma patients undergoing radiochemotherapy*
2015 AAPM Expanding Horizons Travel Grant

PUBLICATIONS

Peer-Reviewed Journal Articles

Scarpelli ML, Healey DR, Mehta S and Quarles CC. Imaging Glioblastoma With ¹⁸F-Fluciclovine Amino Acid Positron Emission Tomography. *Front. Oncol.*2022. doi: 10.3389/fonc.2022.829050

Victor Santoro-Fernandes, Daniel T Huff, **Mathew L Scarpelli**, Timothy G Perk, Mark R Albertini, Scott Perlman, Stephen S F Yip, Robert Jeraj. Development and validation of a longitudinal soft-tissue metastatic lesion matching algorithm. *Phys Med Biol.* 2021. doi: 10.1088/1361-6560/ac1457

Scarpelli ML, Healey DR, Mehta S, Kodibagkar VD, Quarles CC. A practical method for multimodal registration and assessment of whole-brain disease burden using PET, MRI, and optical imaging. *Sci Rep.* 2020, 10(1):17324. doi: 10.1038/s41598-020-74459-1

Scarpelli M, Whelan B, Farahani K. Domain Classification and Analysis of National Institutes of Health Funded Medical Physics Research. *Med Phys.* 2020 Online ahead of print. doi: 10.1002/mp.14469

Scarpelli ML, Healey DR, Fuentes A, Kodibagkar VD, Quarles CC. Correlation of tumor hypoxia metrics derived from ¹⁸F-fluoromisonidazole positron emission tomography and pimonidazole fluorescence images of optically cleared brain tissue. *Tomography.* 2020, 6(4): 379–388. doi: 10.18383/j.tom.2020.00046

Matthew Scarpelli, Christopher Zahm, Scott Perlman, Douglas G. McNeel, Robert Jeraj and Glenn Liu. FLT PET/CT imaging of metastatic prostate cancer patients treated with pTVG-HP DNA vaccine and pembrolizumab. *J Immunother Cancer*. 2019, 7(1):23. doi: 10.1186/s40425-019-0516-1

Matthew Scarpelli, Urban Simoncic, Scott Perlman, Glenn Liu, and Robert Jeraj. Dynamic ¹⁸F-FLT PET imaging of spatiotemporal changes in tumor cell proliferation and vasculature reveals the mechanistic actions of anti-angiogenic therapy. *Phys Med Biol*. 2018, 63(15):155008. <https://doi.org/10.1088/1361-6560/aad1be>

Matthew Scarpelli, Murtuza Rampurwala, Jens Eickhoff, Lakeesha Carmichael, Jennifer Heideman, Kimberly Binger, Jill Kolesar, Scott Perlman, Kim Harrow, Gary Dukart, Chris Liang, Robert Jeraj, Glenn Liu, and Justine Yang Bruce. Pharmacodynamic study using FLT PET/CT in advanced solid malignancies treated with a sequential combination of X-82 and docetaxel. *Cancer Chemotherapy and Pharmacology*. 2018, 82:211-219. <https://doi.org/10.1007/s00280-018-3599-3>

Matthew Scarpelli, Jens Eickhoff, Enrique Cuna, Scott Perlman, Robert Jeraj, Optimal transformations leading to normal distributions of positron emission tomography standardized uptake values. *Phys Med Biol*. 2018, 63:035021. doi: 10.1088/1361-6560/aaa175

Matthew Scarpelli, Justine Yang Bruce, Lakeesha Carmichael, Jens Eickhoff, Jill Kolesar, Scott Perlman, Robert Jeraj, Glenn Liu. ¹⁸F-FLT PET/CT imaging in patients with advanced solid malignancies treated with axitinib on an intermittent dosing regimen. *Cancer Chemotherapy and Pharmacology*. 2016, 78:1245-1252. doi: 10.1007/s00280-016-3183-7

Yuting Lin, Stephen McMahon, **Matthew Scarpelli**, Harold Paganetti, Jan Schuemann. Comparing gold nanoparticle enhanced radiotherapy with proton, megavoltage photons and kilovoltage photons: a monte carlo simulation. *Phys Med Biol*. 2014, 59:7675-7689. doi: 10.1088/0031-9155/59/24/7675

S.F. Naeem, **M. Scarpelli**, E. Miller, S.D. Clarke, S.A. Pozzi. Response of liquid scintillator assemblies as a function of angular orientation. *Nuclear Instruments and Methods in Physics Research A*, 2014, 749:35-41. <https://doi.org/10.1016/j.nima.2014.02.050>

Conference Proceedings

Zheqi Chu, Stephen. Z. Pinter, Jie Yuan, **Matthew L. Scarpelli**, Oliver D. Kripfgans, J. Brian Fowlkes, Neb Duric, and Paul L. Carson. Temperature imaging with ultrasonic transmission tomography for treatment control. *AIP Conference Proceedings* 1816, 050003 (2017); <https://doi.org/10.1063/1.4976601>

Acknowledged Contribution to Peer-Reviewed Journal Articles

Damijan Valentinuzzi, Urban Simončič, Katja Uršič, Martina Vrankar, Maruša Turk, and Robert Jeraj. Predicting tumour response to anti-PD-1 immunotherapy with computational modelling. *Phys Med Biol*. 2019, 64:025017. doi: 10.1088/1361-6560/aaf96c

Che Zhe-Qi, Yuan Jie, Stephen Pinter, Oliver Kripfgans, Wang Xue-Ding, Paul Carson, Liu Xiao-Jun. Temperature imaging with speed of ultrasonic transmission tomography for medical treatment control: A physical model-based method. *Chin. Phys. B*, 2015, 24:104303. <https://doi.org/10.1088/1674-1056/24/10/104303>

CONFERENCE PARTICIPATION

Oral Conference Presentations

Babak Moghadas, **Matthew Scarpelli**, Christopher Rock, Alberto Fuentes, Debbie Healey, Chad Quarles, and Vikram D. Kodibagkar. Mapping hypoxia in brain tumors using GdDO3NI: validation with PET and IHC. *ISMRM Annual Meeting 2020*.

*1st place at ISMRM's MRI of Cancer Study Group Meeting

M Scarpelli, D Healey, S Mehta, C Quarles. Integration of Ex Vivo Optical Reporter Imaging with In Vivo Radiologic Imaging: A Practical Multiscale Method for Measuring Whole Brain Disease Burden. Oral Presentation, *AAPM Annual Meeting 2020*.

Matthew Scarpelli, Tyler Bradshaw, Lisa Forrest, Daniel Huff, Samantha Loeber, David Vail, and Robert Jeraj. Utilization of 18F-FDG PET/MR and 18F-FLT PET/CT to assess effects of immunotherapy in canines. Oral Presentation, *AAPM Annual Meeting 2017*.

M Scarpelli, U Simoncic, S Perlman, G Liu, R Jeraj. Dynamic FLT PET for Investigating Potential Synergistic Therapeutic Targets During Anti-Angiogenic Treatment. Oral Presentation, *AAPM Annual Meeting 2016*.

*3rd Place at AAPM's Early-Career Investigator Symposium

M Scarpelli, J Eickhoff, S Perlman, R Jeraj. The Universality of the Lognormal Behavior of [F-18]FLT PET SUV Measurements. Oral Presentation, *AAPM Annual Meeting 2016*.

A Weisman, S Harmon, T Perk, **M Scarpelli**, G Liu, R Jeraj. Quantification of Bone Flare On [F-18] NaF PET/CT in Metastatic Prostate Cancer. Oral Presentation, *AAPM Annual Meeting 2016*.

Matthew Scarpelli, Scott Perlman, Stephanie Harmon, Timothy Perk, Peter Scully, Justine Bruce, Glenn Liu, Robert Jeraj. Characterization of tumor proliferation during successive cycles of antiangiogenic therapy using [F-18]FLT PET/CT. Oral Presentation, *AAPM Annual Meeting 2015*.

Poster Conference Presentations

R Castillo, J Rankin, B Whelan, J Pollard-Larkin, **M Scarpelli**, K Farahani. Diversity in Medical Physics Research Leadership: Quantifying the Representation of Racial, Cultural, and Sex Identity Minority Groups. *American Radium Society 103rd Annual Meeting 2021*.

M Scarpelli, B Whelan, K Farahani. Domain Classification and Analysis of National Institutes of Health Funded Medical Physics Research. *AAPM Annual Meeting 2020*.

M Scarpelli, D Healey, E Melendez, S Mehta, C Quarles. Evaluating the Potential of 18F-Fluciclovine Positron Emission Tomography to Detect Whole Brain Tumor Burden: A Preclinical Study. *Society of Neuro-Oncology Annual Meeting 2019*.

T Perk, **M Scarpelli**, T Bradshaw, S Chen, R Jeraj. Whole Skeleton Statistical Appearance Models Applied to the Detection of Abnormal Bone in NaF PET/CT Images. *AAPM Annual Meeting 2018*.

G Harmon, M M Rampurwala, **M Scarpelli**, J C Eickhoff, L Carmichael, J Kolesar, K Binger, J Heideman, S Perlman, C Liang, G Dukart, R Jeraj, G Liu, J Y Bruce. Pharmacodynamic phase I study using FLT PET/CT in advanced solid malignancies treated with a sequential combination of X-82 and docetaxel. *American Society of Clinical Oncology Annual Meeting 2017*.

Douglas G. McNeel, Jens C. Eickhoff, Robert Jeraj, Mary Jane Staab, Jane Straus, **Matthew Scarpelli**, Brian T. Rekoske, Glenn Liu. DNA Vaccine with Pembrolizumab Elicits Anti-Tumor Responses in Patients with Metastatic, Castration-Resistant Prostate Cancer (mCRPC). *Society for Immunotherapy of Cancer Annual Meeting 2016*.

S. Taneja, L Che Fru, V Desai, J Lentz, C Lin, **M. Scarpelli**, E Similie, A Trestail, B Bednarz. Development of a radiation monitoring device using a low-cost CCD camera following radionuclide therapy. *AAPM Annual Meeting 2015*.

Ludimila Cavalcante, **Matt Scarpelli**, Lakeesha Carmichael, Jennifer Heideman, Scott Perlman, Robert Jeraj, Glenn Liu, Justine Yang Bruce. Pharmacodynamic (PD) assessment using FLT-PET/CT imaging in patients treated with an interrupted high-dose axitinib schedule. *American Society of Clinical Oncology Annual Meeting 2015*.

Y.Lin, **M.Scarpelli**, H.Paganetti, J.Schuemann. Quantification of gold nanoparticle induced microscopic dose enhancement using protons. *Radiotherapy and Oncology Volume 111, Supplement 1, 2014, Page S40*

Carson, P.L., **M.L. Scarpelli**, S.Z. Pinter, O.D. Kripfgans, J. Yuan, and N. Duric, Temperature imaging with ultrasonic transmission tomography for treatment control. *13th Int. Symp. Therapeutic Ultrasound 2013*.

Cesar Palma, **Matthew Scarpelli**, Scott Kramer. Development of high-field pulsed electromagnet. *22 Annual Undergraduate Research Conference Butler University 2010*