**Harvard Medical School**

**Curriculum Vitae**

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| Date Prepared: | May 22, 2018 |
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| Work Fax: | 617-724-9532 |
| Place of Birth: | Boston, MA |

[Education](http://cv.hms.harvard.edu/index.php?page=education)

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| 1996 | B.S. | Biology | Boston College |
| 2001 | M.D. | Medicine | Loyola University Stritch School of Medicine |

[Postdoctoral Training](http://cv.hms.harvard.edu/index.php?page=postdoc)

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| 6/2001-6/2002 | Intern | Internal Medicine | Mount Auburn Hospital |
| 6/2002-6/2006 | Resident | Radiation Oncology | New York University |
| 6/2004-6/2006 | Chief Resident | Radiation Oncology | New York University |

[Faculty Academic Appointments](http://cv.hms.harvard.edu/index.php?page=academic_appt)

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| 2001-2002 | Clinical Fellow | Medicine | Harvard Medical School |
| 2006-2008 | Instructor | Radiation Oncology | Harvard Medical School |
| 2008-2014  2014-Present | Assistant Professor  Associate Professor | Radiation Oncology  Radiation Oncology | Harvard Medical School  Harvard Medical School |

[Appointments at Hospitals/Affiliated Institutions](http://cv.hms.harvard.edu/index.php?page=hospital_appt)

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| 07/06 – present  02/2018 –  present  02/2018 –  present  02/2018 –  present | Physician  Affiliate  Affiliate  Affiliate | Radiation Oncology  Radiation Oncology  Radiation Oncology  Radiation Oncology | Massachusetts General Hospital  Brigham and Women’s Hospital  Boston Children’s Hospital  Dana Farber Cancer Institute |

Administrative Leadership Positions

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| 2010- 2016  2016 –  Present | Radiation Oncology Medical Student Clinical Clerkship  Director of Breast Radiation Oncology | Massachusetts General Hospital, Course Director; time commitment approximately 5 hours per week  Massachusetts General Hospital, Department of Radiation Oncology |

2018- MGH/DFCI/BCH Proton Therapy Liaison Massachusetts General Hospital/Boston

Present Children’s Hospital/Dana Farber Cancer

[Committee Service](http://cv.hms.harvard.edu/index.php?page=service)

Local

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| 2006 -2008 | Cancer Care Committee | Newton Wellesley Hospital |
| 2010-present  2014-present | Residency Selection Committee for  Harvard Radiation Oncology Residency  Program  Harvard Radiation Oncology Program Evaluation Committee | Massachusetts General Hospital/Harvard Medical School  Harvard Medical School |
| 2013-2014  2018 –  present | Center for Global Medicine - Radiation oncologist for efforts to bring radiation therapy to Rwanda (Director, Lawrence N Shulman, MD)  Board of Directors, Christopher’s Haven | Dana Farber Cancer Institute Center  Massachusetts General Hospital |

Regional

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| --- | --- | --- |
| 2010 - 2012 | Massachusetts Board of Medicine Expert Panel on Breast Reconstruction | Massachusetts Board of Medicine |

National and International

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| 2007 - 2009 | Breast Nodal Atlas Sub-Committee | Radiation Therapy Oncology Group |
| 2007 – 2010  2008 – 2011 | Breast IMRT Committee  A Breast Review Committee | Radiation Therapy Oncology Group  Association for Therapeutic Radiology and  Oncology |
| 2011-present | Germ Cell Tumor Committee; Chair, Radiation Oncology | Children’s Oncology Group |
| 2012-present | Neuroblastoma Committee | Children’s Oncology Group |
| 2012-2016 | Representative for the American Society of Radiation Oncology (ASTRO) to the National Accreditation Program for Breast Centers (NAPBC) Board | National Accreditation Program for Breast Centers |
| 2013-2014 | International Germ Cell Tumor Conference Scientific Committee | International Germ Cell Tumor Conference (3rd & 4th) |

2015- Annual Meeting Educational Committee American Society for Radiation Oncology

present

2016 – Central Nervous System Committee Children’s Oncology Group

present

2016 – High Grade Glioma Committee Children’s Oncology Group

present Chair, Radiation Oncology

2016 – Breast Committee, Chair Proton Therapy Oncology Group

present

2018 - 2019 ACRO Scientific Program American College of Radiation Oncology

present Committee Member

[Professional Societies](http://cv.hms.harvard.edu/index.php?page=societies)

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| 2002- present | Association for Therapeutic Radiology and Oncology (ASTRO) |  |
| 2008 - present | Children’s Oncology Group (COG) |  |
| 2006 - present | Radiation Therapy Oncology Group (RTOG) |  |
| 2008 – 2009 | Pediatric Brain Tumor Consortium (PBTC) |  |
| 2008 - 2011 | American College of Radiology (ACR) Breast Appropriateness Criteria Panel |  |
| 2009-present | Pediatric Radiation Oncology Society (PROS) |  |
| 2012-present | American Society of Clinical Oncology  (ASCO) |  |
| 2014-  present | The Society for NeuroOncology (SNO) |  |
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[Grant Review Activities](http://cv.hms.harvard.edu/index.php?page=grant)

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| 2010-2011 | Federal Share Proton Grants | Grant Reviewer |
| 2012-present | John McNicholas Foundation for Pediatric Brain Tumors | Grant Reviewer for annual scholar award of approximately 100K per year |
| 2012-present | Christopher Brandle Joy of Life Foundation | Grant Reviewer |

[Editorial Activities](http://cv.hms.harvard.edu/index.php?page=editorial)

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| Ad-Hoc Reviewer | |
| Cancer  International Journal of Radiation  Oncology, Biology, Physics  Radiotherapy and Oncology  Cochrane Breast Cancer Group  Radiation Oncology  British Journal of Radiology  Breast Cancer Research  Pediatric Blood & Cancer  **Other Editorial Activities** |

2013 Irish Cooperative Oncology Research Group Peer Review Panel for Protocols

2013-present International Journal of Particle Therapy Editorial Board

2015-present International Journal of Radiation Oncology\* Senior Associate Editor

Biology\*Physics

[Honors and Prizes](http://cv.hms.harvard.edu/index.php?page=honors)

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| 2004 | Methods in Clinical Cancer Research Protocol Writing Workshop Scholarship | American Association of Cancer Research (AACR)/American Society of Clinical Oncology (ASCO) | Scholarship to attend 1 week intensive protocol writing workshop |
| 2005 | Howard H. Wong Scholarship | American College of Radiation Oncology (ACRO) | Scholarship to study proton radiation at MGH |
| 2009 | MGH Physician Leadership Development Program | MGH Physician’s Organization | Selected for leadership 2 year course run by MGPO & HBS |
| 2011 | Partners in Excellence Award | Partners Healthcare | Individual award for excellence in clinical care |
| 2011 | MGH 100 Award | Massachusetts General Hospital Cancer Center | Individual award for excellence in clinical care |
| 2011 | Capstone Leadership | MGH Physician’s Organization | Goal of improving the selection process for proton therapy and improving efficiency and utilization of this resource. Helped to devise algorithm to select appropriate patients for proton therapy |
| 2012 | Teacher of the Year Award | Association of Residents in Radiation Oncology (ARRO) | Harvard Radiation Oncology Program |
| 2012 | The Red Journal Outstanding Reviewer Award | International Journal of Radiation Oncology Biology Physics | Received for quantity and quality of manuscript review |

**Report of Funded and Unfunded Projects**

[Funding Information](http://cv.hms.harvard.edu/index.php?page=funded)

Current Unfunded

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| 2013-present | Risk of Brainstem Necrosis for Patients Treated with Proton Radiation for Medulloblastoma and Ependymoma  Protocol 2013P002177  Retrospective review of patients treated with proton beam radiation to localize areas of radiographic treatment change and CNS toxicity. Goal is to report rates of toxicity and to correlate with Linear Energy Transfer(LET) and Radiobiological Effectiveness (RBE) |
| 2013-present  2013-present  2013-present  2012-present  2012-present  2012-present  2012-present  2012-present  2012-present | Proton Beam Radiation Therapy for Pediatric Craniopharyngioma  Protocol 2013P001763  Retrospective review to report outcomes for pediatric Craniopharyngioma  Proton Radiotherapy for Optic Gliomas  Protocol 2013P000652  Retrospective review to report outcomes for pediatric Optic Gliomas  Retrospective Study of Radiation Therapy for Choroidal Hemangiomas in Pediatric Patients  Protocol 2013P000351  Retrospective review to report technique and outcomes for treatment  Retrospective Review of Outcomes for Pediatric Patients Treated with Proton Therapy for CNS Tectal Gliomas  Protocol 2012P001987  Retrospective review to report outcomes for pediatric Tectal Gliomas  Retrospective Review of Secondary Malignancies among Retinoblastoma Patients Treated with Protons  Protocol 2012P001688  Retrospective Review for pediatric retinoblastoma patients, also opened at MEEI and CHB  Retrospective Review for Patients Treated with Proton Radiation for CNS Germ Cell Tumors  Protocol 2012P001519  Report outcomes, patterns of relapse and implications of early versus late diagnosis  Patterns of Relapse for Patients Treated with Proton Radiation for Medulloblastoma  Protocol 2012P001518  Retrospective Review to reports patterns of failure and correlate with LET/RBE  Retrospective Review of Vertebral Body Growth in Patients Treated with Spinal Proton Therapy  Protocol 2012P001000  Intent to provide data for delivery of proton craniospinal radiation with sparing of the vertebral bodies and determine algorithm for predicting growth after RT  Retrospective Review of Outcomes for Neuroblastoma  Protocol 2010P001706  Review outcomes of patients treated prior to opening of prospective clinical trial |

Current Funded

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| 10/01/2015-  01/01/2021  10/01/08-  12/312015 | The Radiotherapy Comparative Effectiveness (RADCOMP) Consortium Trial Pragmatic Randomized Trial of Proton vs. Photon Therapy for Patients with non-Metastatic Breast Cancer, Patient-Centered Outcomes Research Institute (PCORI), (Bekelman, JE, University of Pennsylvania, PI).  $11.8mn; 10% effort. Role in grant: Study Co-Chair:  This study is a multi-center pragmatic randomized clinical trial of proton vs. photon therapy for patients with locally advanced breast cancer.  NIH/NCI Federal Share Program Income - C06 CA059267 (DeLaney PI) (total direct costs $ 9,862,878). I serve as a co-investigator on this trial. Under this umbrella, I serve as the site PI for three clinical trials.  1) Proton Radiation for Pediatric Germ Cell Tumors Phase II Clinical Trial 09-263.  The major goals of this project are to determine efficacy and document toxicity of proton radiation for CNS germ cell tumors in children |
| 4/15/2013-  4/14/2015  9/25/2014-8/21/2019 | 2) Proton Radiation for Locally Advanced Breast Cancer Following Mastectomy Phase II Clinical Trial 10-205. The major goals of this project are to determine efficacy and document toxicity of proton radiation for Locally Advanced Breast Cancer following Mastectomy  3) Proton Radiation for Neuroblastoma Phase II Clinical Trial 13-443. The major goals of this project is to determine the efficacy and document toxicity of proton radiation for pediatric neuroblastoma  Development of IMPT technique and MRI dose verification method for vertebral body sparing to mitigate growth delay in children  Spiro Grant (MacDonald PI) ($ 50,000)  Improving Clinical Effectiveness and Understanding of the Biophysical Basis of Proton Therapy. Co-investigator under U19 CA021239-35 (DeLaney PI) (total direct costs $3,100,454). Role as co-investigator is to lead prospective clinical trials for pediatric medulloblastoma with technique developed for sparing vertebral bodies to allow for growth following craniospinal radiation and to lead further investigations using proton therapy for breast cancer patients. |
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**Report of Local Teaching and Training**

[Teaching of Students in Courses](http://cv.hms.harvard.edu/index.php?page=students)

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| 2010- 2015 | Diagnostic Radiology | Massachusetts General Hospital |
| 2010-2015 | Radiation Oncology Medical Student Clinical Clerkship | Massachusetts General Hospital, Course Director |

[Formally Supervised Trainees](http://cv.hms.harvard.edu/index.php?page=residents)

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| 2012-2013 | Roshan Sethi, MSIV Doris Duke Fellowship | Supervised for one year of clinical research through Doris Duke Foundation; served as sole mentor for multiple research projects involving proton radiation for pediatric patients; Additional responsibilities included mentorship for participation in clinic and conferences; Roshan Sethi’s work was chosen for oral presentation at the Doris Duke Foundation conference. He published three first author original publications and contributed to additional manuscripts and chapters. He continues to complete research projects under my guidance during his internship year at Brigham & Women’s Hospital and will join Harvard Radiation Oncology Residency Program in 2015. |
| 2012-2013 | Raymond Mailhot, MSIV Conquer Cancer Foundation of ASCO Medical Student Rotation for Underrepresented Populations and ASTRO Minority Summer Fellowship Award. | Mentored for two projects involving the cost effectiveness of proton radiation for pediatric malignancies and breast cancer. Supervised for one year as an intern. Raymond Mailhot has published one first author publication and has one in press. We continue to work together on ongoing research projects. |
| 2010-2014 | Rachel Jimenez, MD | Mentored during clinical rotations for 6 months and for several research projects. Continue to mentor as junior faculty. Radiation Oncologist, Instructor, at the Massachusetts General Hospital |

[Formal Teaching of Residents, Clinical Fellows and Research Fellows](http://cv.hms.harvard.edu/index.php?page=residents)

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| 2008-2010 | Shane Cotter, MD, PhD | Radiation Oncologist, Cancer Center of Saint Barbara, CA |
| 2009-2010 | Barbara Rombi, MD | Radiation Oncologist, Provincial Agency for Proton Therapy & APSS, Trento, Italy |
| 2009-2012 | Jona Hattangadi, MD, PhD | Chief of CNS Tumor Service, Radiation Oncologist, Assistant Professor, University of California Health Systems, San Diego, CA |
| 2011-2014 | Ayal Aizer, MD | Radiation Oncologist, Instructor, Brigham & Women’s Hospital, Boston, MA |
| 2011-2012 | Karen Bernstein, MD | Radiation Oncologist, Instructor, Massachusetts General Hospital, Boston, MA |
| 2012-2014 | Matthew Ladra, MD | Director of Pediatric Radiation Oncology, Provision Center of Proton Therapy, Knoxville, TN |
| 2013 | Jonathon Schoenfeld, MD, MPH | Instructor, Harvard Medical School, Radiation Oncologist, Dana Farber Cancer Institute and Brigham & Women’s Hospital, Boston, MA |
| 2013 | Kent Mouw, MD, PhD | Resident, Harvard Radiation Oncology Program, Radiation Oncology Resident, Massachusetts General Hospital, Boston, MA |
| 2013 | Ann Radlow, MD | Resident, Harvard Radiation Oncology Program, Radiation Oncology Resident, Massachusett General Hospital, Boston, MA |
| 2012 | Shyam Tanguturi, MD | Resident, Harvard Radiation Oncology Program, Radiation Oncology Resident, Massachusett General Hospital, Boston, MA |
| 2012 | Kristina Mirabeau-Beale, MD | Clinical Fellow, Harvard Radiation Oncology Program, Radiation Oncology Fellow, Brigham & Women’s Hospital, Boston, MA |
| 2011 | Jennifer Pretz, MD | Clinical Fellow, Harvard Radiation Oncology Program, Radiation Oncology Fellow, Brigham & Women’s Hospital, Boston, MA |
| 2011 | Alexander Spektor, MD | Clinical Fellow, Harvard Radiation Oncology Program, Radiation Oncology Fellow, Brigham & Women’s Hospital, Boston, MA |
| 2011 | Raymond Mak, MD | Assistant Professor, Harvard Radiation Oncology Program, Assistant Professor, Radiation Oncology, Brigham & Women’s Hospital, Boston, MA |
| 2010 | Stephanie Krejacarek Childs, MD | Radiation Oncologist, Internal Medicine, Rochester, MN |
| 2010 | Joseph Mancias, MD, PhD | Instructor, Radiation Oncologist, Beth Israel Deaconess Medical Center, Boston, MA |
| 2010 | David Miyamoto, MD | Instructor in Radiation Oncology, Harvard Medical School, Attending Radiation Oncologist, Massachusetts General Hospital, Boston, MA |
| 2007 | Lia Halasz, MD | Assistant Professor, Department of Radiation Oncology & Neurological Sciences, University of Washington Medical Center, Radiation Oncologist, University of Washington Medical Center, Seattle, Washington |
| 2007 | Akash Nanda, MD | Director, Department of Radiation Oncology, Dr. P. Phillips Hospital and Health Central Hospital, Orlando, FL |
| 2007  2006 | Jennifer Wo, MD  Neil Martin, MD | Assistant Professor, Harvard Radiation Oncology Program, Attending, Radiation Oncology, Massachusetts General Hospital, Boston, MA  Assistant Professor in Radiation Oncology, Harvard Medical School, Instructor in Radiation Oncology, Harvard Medical School, Attending Radiation Oncologist, Dana Farber Cancer Institute |

[Clinical Supervisory and Training Responsibilities](http://cv.hms.harvard.edu/index.php?page=clinical)

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| 2008- present | Breast Cancer Radiation Oncology Rotation/ Massachusetts General Hospital | One-on-one direct interaction with resident for 350 hours/year. |
| 2008- present | Pediatric Cancer Radiation Oncology Rotation/ Massachusetts General Hospital | One-on-one direct interaction with resident for 750 hours/year. |

[Local Invited Presentations](http://cv.hms.harvard.edu/index.php?page=presentations_local)

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| 2007 | Proton Therapy for Breast Cancer/ Breast Cancer Grand Rounds |
|  | Massachusetts General Hospital Cancer Center |
| 2007 | The Potential for Proton Radiation for Breast Cancer/Seminar |
|  | Massachusetts General Hospital |
| 2008 | Using LN-MRI to Help Define Lymphatic Volumes for RT Planning/Breast Cancer Grand Rounds |
|  | Massachusetts General Hospital |
| 2009 | Added Complexities in Proton Radiation /Seminar |
| 2009 | Pediatric Neurooncology in the Proton Era/Harvard Course, Cambridge, MA  Protons for Pediatric Protocols/Seminar  Pediatric Neurooncology in the Proton Era/Harvard Course, Cambridge, MA |
| 2010 | Partial Breast Irradiation/Seminar |
|  | Harvard University Breast Cancer Course, Boston, MA |
| 2011 | Proton Radiation for Pediatric Malignancies/Pediatric Residency Program |
|  | Massachusetts General Hospital |
| 2011 | Proton Radiation for Pediatric Malignancies and the Impact on Neuroendocrine Structures |
|  | Massachusetts General Hospital |
| 2011 | Proton Radiation for Pediatric Malignancies/Seminar |
|  | Massachusetts College of Pharmacy, Boston, MA |
| 2012  2013  2014  2015  2016  2016  2016  2016  2018 | Proton Beam Therapy/Pediatric Endocrine Didactic Conference  Massachusetts General Hospital  Post-Mastectomy Radiation Using Proton Beam Radiation/Breast Cancer Grand Rounds  Massachusetts General Hospital  The Use of Protons for Locally Advanced Breast Cancer/Physics & Dosimetry Conference  Massachusetts General Hospital  PCORI and Breast Contouring Presentation/Resident Breast Foundation Lecture Series  Massachusetts General Hospital  Proton Radiation for Locally Advanced Breast Cancer: Exploring the Potential Benefit of Protons versus Photons for Cardiac Sparing on a Randomized Controlled Trial/MGH Cardiology Grand Rounds  Massachusetts General Hospital  RADCOMP: Randomized Trial Comparing Proton to Photon Therapy for Non-Metastatic Breast Cancer; A PCORI Sponsored Trial  Massachusetts General Hospital  How does the Axillary Nodal Status Affect Recommendations for Radiation Therapy and Proton Therapy for Breast Cancer  Advances in Surgical Oncology Conference 2016  Massachusetts General Hospital  RadComp: Pragmatic Radomized Trial Comparing Protons to Photons for Patients with Non-Metastatic Breast Cancer Receiving Regional Nodal Radiation  MGH Multidisciplinary Breast Rounds  Massachusetts General Hospital  How does the axillary nodal status affect recommendations for XRT?  Advances in Surgical Oncology Conference 2018  Massachusetts General Hospital |

**Report of Regional, National and International Invited Teaching and Presentations**

[Invited Presentations and Courses](http://cv.hms.harvard.edu/index.php?page=presentations)

Regional (no presentations sponsored by outside entities)

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| --- | --- |
| 2007 | Partial Breast Irradiation/Grand Rounds/Invited Speaker |
|  | Lowell General Hospital, Lowell, MA |
| 2012 | Proton Radiation for Pediatric Malignancies/*Visiting Professorship* |
|  | Tufts Medical Center Cancer Center, Boston, MA |

National (no presentations sponsored by outside entities)

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| 2006 | Protons for Pediatric Brain Tumors/Invited Speaker |
|  | Children’s Brain Tumor Foundation, Montefiore Hospital, New York, NY |
| 2008 | Proton Radiation for Pediatric Solid Tumors/Seminar/Invited Speaker |
|  | Mount Kisco, NY |
| 2008 | Breast Cancer Scientific Session/Moderator |
|  | ASTRO Annual Meeting, Boston, MA |
| 2009 | Proton Radiation for Pediatric Malignancies/Invited Speaker |
|  | Practical Aspects on IMRT and Proton Therapy Symposium, Chandler, AZ |
| 2010 | Added Complexities of Proton Radiation/Invited Speaker |
|  | New York University Radiation Oncology, New York, NY |
| 2010 | Added Complexities of Proton Radiation/*Visiting Professorship* |
|  | University of Pennsylvania, Philadelphia, PA |
| 2010 | Proton Radiation for Pediatric Malignancies/Point Counterpoint Presentation and Discussion/Invited Speaker |
|  | New York Roentgen Society Annual Meeting, New York, NY |
| 2010 | Breast Cancer Scientific Session/Moderator |
|  | ASTRO Annual Meeting, San Diego, CA |
| 2011 | Partial Breast Irradiation/Invited Speaker |
|  | Holy Cross Hospital, Fort Lauderdale, FL |
| 2011 | American Radium Society Breast Session/Moderator |
|  | American Radium Society, West Palm, FL |
| 2011 | Proton Radiation for Pediatric Malignancies/*Visiting Professorship* |
|  | Columbia University Department of Radiation Oncology, New York, NY |
| 2011 | Radiation Therapy for Pediatric Malignancies/*Visiting Professorship* |
|  | New York University, New York, NY |
| 2011 | Pediatric Radiation Scientific Session/Moderator |
|  | ASTRO Annual Meeting, Miami, FL |
| 2012 | Breast Cancer Session/Moderator |
|  | ASTRO Annual Meeting, Boston, MA |
| 2013 | Three Dimensional Planning for Breast Cancer; The Use of Established Contouring Guidelines/Invited Speaker |
|  | ASTRO Cancer Imaging and Radiation Therapy Symposium, Orlando, FL |
| 2013 | Pediatric Malignancies: MGH Experience using Protons  Cancer Grand Rounds/*Visiting Professorship* |
|  | UMDNJ-Robert Wood Johnson Medical School and The Cancer Institute of New Jersey, New Brunswick, NJ |
| 2013  2013  2014  2014  2014  2014  2014 | Pediatric Malignancies/Invited Speaker  ASTRO 2013 Spring Refresher Course, Chicago, IL  Protons for Pediatric CNS Malignancies: Clinical Experience & Future Promise/Invited Speaker  St. Jude Children’s Research Hospital, Memphis, TN  Proton Radiation for Children: Indications, Access & Cost Effectiveness/*Visiting Professorship*  Tufts Medical Center Cancer Center, Boston, MA  Proton Beam Radiation; MGH Experience/Invited Speaker  Mayo Clinic Arizona, Scottsdale, AZ  Modern Radiation for Breast Cancer/Invited Speaker  ACRO Annual Meeting, Orlando, FL  Radiation Therapy Contraindications and Safety Concerns Panel/Invited Speaker  ASTRO 2014 Spring Refresher Course, New Orleans, LA  The Management of Pediatric Malignancies/Invited Speaker  ASTRO 2014 Spring Refresher Course, New Orleans, LA |
| 2014  2014  2014  2015  2015  2015  2015  2015  2015  2015  2015  2015  2015  2016  2016  2016  2016  2016  2016  2016  2017  2017  2017  2017  2017  2017  2017  2017  2017  2017  2017  2017  2018  2018  2018  2018  2018 | The Role of Protons in the Management of Breast Cancer – Present and Future/Invited Expert Speaker for Proton Consortium Practice Guidelines Series  University of Maryland Medical Center, Baltimore, MD  Proton Radiation for Locally Advanced Breast Cancer/*Visiting Professorship*  University of Washington, Seattle, WA  Pediatric Brain Tumors Educational Session/Invited Speaker  ASTRO Annual Meeting, San Francisco, CA  Cardiotoxicity of Radiation Therapy Remains a Current and Future Problem/Invited Speaker/Debate  American College of Cardiology, San Diego, CA  Proton Beam Therapy in Pediatric CNS Tumors/*Visiting Professorship*  Memorial Sloan-Kettering Cancer Center, New York, NY  Advances in Ependymoma/Invited Speaker  2015 Pediatric Neuro-Oncology Basic & Translational Research Conference, San Diego, CA  Breast Education Session/Invited Speaker  54th Annual Conference of the Particle Therapy Co-Operative Group, San Diego, CA  Breast Session/Moderator  54th Annual Conference of the Particle Therapy Co-Operative Group, San Diego, CA  Pediatric Brain Tumor Education Session/Invited Speaker  ASTRO’s 57th Annual Meeting, San Antonio, TX  NRG Oncology/RTOG 2014: 1 Year Toxicity Report From a Phase II Study of Repeat Breast Preserving Surgery and 3-D Conformal Partial-Breast Reirradiation (PBrl) for In-Breast Recurrence/Moderator  ASTRO’s 57th Annual Meeting, San Antonio, TX  Pediatric Sarcomas and Hodgkin Lymphoma Educational Session/Invited Speaker  ASTRO’s 57th Annual Meeting, San Antonio, TX  Pro: Cardiotoxicity in Breast Cancer is a Major Concern/Invited Speaker/Debate  ASTRO’s 57th Annual Meeting, San Antonio, TX  Pediatric Central Nervous System Malignancies/*Visiting Professorship*  Johns Hopkins Hospital, Baltimore, MD  Proton Radiation Outcomes and LET/RBE Correlations for Medulloblastoma and Ependymoma/*Visiting Professorship*  University of Miami Miller School of Medicine Sylvester Comprehensive Cancer Center, Miami, FL  Pediatric Medulloblastoma and Ependymoma; Outcomes & LET/RBE Correlations/*Visiting Professorship*  Yale School of Medicine, New Haven, CT  Pediatric Brain Tumors: Educational Session  ASTRO’s 58th Annual Meeting, Boston, MA  Breast Cancer ePoster Session/Discussant  ASTRO’s 58th Annual Meeting, Boston, MA  Cardiac Toxicity: Lessons Learned While Curing Breast Cancer – Is Proton the Answer – Yes  ASTRO’s 58th Annual Meeting, Boston, MA  Practical Aspects of Delivering Proton Therapy/Invited Speaker  Sibley Hospital, Washington, DC  Humbling Advances in Technology: Protons & Brainstem Necrosis/Invited Speaker  Children’s National Hospital, Washington, DC  Protons for Locally Advanced Breast Cancer; Early Experience and the Radcomp Randomized Trial Comparing Proton to Photons for LABC/*Visiting Professorship*  MD Anderson Cancer Center, Houston, TX  Humbling Advances in Technology: Protons and Brainstem Injury/*Visiting Professorship*  MD Anderson Cancer Center, Houston, TX  Incidence of Optic Nerve Involvement in Pediatric Intracranial Germ Cell Tumors/Invited Speaker  5th International CNS Germ Cell Tumor Symposium, Columbus, Ohio  Radiation Oncology Practice/Co-Chair  5th International CNS Germ Cell Tumor Symposium, Columbus, Ohio  Update on Current Management of Germ Cell Tumors/Invited Speaker  2017 Paediatric Radiation Oncology Society, New York, NY  Promising Developments in Radiation Techniques for Childhood Cancers/*Visiting Professorship*  Cedar-Sinai Hospital, Los Angeles, CA  Brainstem Injury in Pediatric Brain Tumor Patients: Recent Photon and Proton Experience/Session Moderator & Invited Speaker  ASTRO’s 59th Annual Meeting, San Diego, CA  Pediatric Brain Tumors/Educational Session  ASTRO’s 59th Annual Meeting, San Diego, CA  ARRO Poster Walk/Pediatric – Pediatric Walk with the Professor  ASTRO’s 59th Annual Meeting, San Diego, CA  RADCOMP: Successful Enrollment on a Randomized Trial/Invited Speaker  ASTRO’s 59th Annual Meeting, San Diego, CA  Modern Radiation Treatment for Locally Advanced Breast Cancer/*Visiting Professorship*  Georgetown University Hospital, Washington, DC  Modern Proton Radiation for Pediatric Malignancies/*Visiting Professorship*  Georgetown University Hospital, Washington, DC  NRG Oncology: PCORI RADCOMP Breast Randomized Trial of Photons versus Protons/ Invited Speaker  Proton Work Group, Phoenix, AZ  Practical Aspects of Proton Therapy/*Visiting Professorship*  Tufts Medical Center Cancer Center, Boston, MA  Breast Education Session/Invited Speaker  ASTRO 2018 Spring Refresher Course, Fort Lauderdale, FL  Breast, Physics and Gynegologic Q&A/Invited Speaker  ASTRO 2018 Spring Refresher Course, Fort Lauderdale, FL  Proton Therapy for Breast Cancer Educational Session/Invited Speaker  PTCOG 2018 Annual Meeting, Cincinnati, OH |

International (Those presentations below sponsored by an outside entity are so noted by the sponsors name in parenthesis)

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| 2006  2008 | Update on Breast Radiation Therapy/Invited Lecture  Bermuda, Partners International/Tuberculosis and Cancer Center of Bermuda  Reduction in Secondary Tumors with Protons compared to Photons at Symposium: Clinical Aspects and Potential Benefits of Proton Radiation/Invited Lecture |
|  | Groningen (Netherlands), University Medical Center Groningen |
| 2009 | Proton Radiation for Pediatric Malignancies/Invited Lecture |
|  | Arab Health Conference, Dubai, UAE; (Ion Beam Associates) |
| 2010 | Proton Radiation for Pediatric CNS Malignancies: The MGH Experience/Invited Lecture |
| 2010 | Paul Scherer Institute, Villigen, Switzerland  Proton Therapy for Childhood CNS Ependymoma: Clinical Outcomes for a Cohort of 49 Patients (*Abstract oral presentation*)  Vienna, Austria |
| 2012 | Proton Radiation for Pediatric Malignancies/Invited Lecture |
|  | Boldrini Hospital Sau Paulo, Brazil, (Elektra) |
| 2012 | Proton Radiation for Breast Cancer: Post-Mastectomy Radiation/Invited Lecture |
| 2012 | EAFO Global Oncology Forum Moscow, Russia  Partial Breast Irradiation/Invited Lecture and Moderator  EAFO Global Oncology Forum Moscow, Russia |
| 2012 | What is New in the Treatment of Intracranial Tumors: North American Approach/  Invited Lecture  Pediatric Radiation Oncology Society 2012 Annual Meeting, London, UK |
| 2013  2013  2013 | The Treatment of Relapsed Germ Cell Tumors/ Panel Member  3rd International Germ Cell Tumor Conference, Protons for Pediatric Germ Cell Tumors, Cambridge, UK  Should Proton Radiation be used for Pediatric CNS Germ Cell Tumors/ Debate  3rd International Germ Cell Tumor Conference, Protons for Pediatric Germ Cell Tumors, Cambridge, UK  Bifocal intracranial tumors of nongerminomatous germ cell etiology: Diagnostic and therapeutic implications (*Abstract oral presentation*)  3rd International Germ Cell Tumor Conference, Protons for Pediatric Germ Cell Tumors, Cambridge, UK |
| 2013  2014  2014  2014  2014  2014  2015  2016  2016  2016  2016  2017  2017 | Radiation Therapy for CNS Germ Cell Tumors/Invited Speaker  45th Congress of the International Society of Paediatric Oncology, Hong Kong, China  Breast Cancer Educational Session/Invited Speaker  Proton Therapy Oncology Group, Shanghai, China  Breast Cancer and Proton Therapy/Invited Speaker  Third Swedish Postgraduate Course in Proton Therapy, Uppsala, Sweden, (Ion Beam Associates)  Paediatric Cancer and Proton Therapy/Invited Speaker  Third Swedish Postgraduate Course in Proton Therapy, Uppsala, Sweden, (Ion Beam Associates)  Patient Selection for Proton Therapy/Invited Speaker  Third Swedish Postgraduate Course in Proton Therapy, Uppsala, Sweden, (Ion Beam Associates)  Dose Constraints in Pediatric Practice/CNS Tumours/Invited Speaker  Pediatric Radiation Oncology Society/ SIOP Meeting, Toronto, Canada  Proton Therapy in Childhood Brain Tumours/Current Status/ Invited Speaker  2015 Paediatric Radiation Oncology Society, Ljubljana, Slovenia  Breast Cancer Session/Chair  2016 Particle Therapy Co-Operative Group, Prague, Czech Republic  Breast Radiotherapy/Educational Session  2016 Particle Therapy Co-Operative Group, Prague, Czech Republic  PROS: What is New for Medulloblastoma  Pediatric Radiation Oncology Society/SIOP Meeting, Dublin, Ireland  PROS: Proton Therapy Session  Pediatric Radiation Oncology Society/SIOP Meeting, Dublin, Ireland  Proton Therapy for Pediatrics; Proton Therapy Practical Aspects and Proton Therapy for Breast Cancer/*Visiting Professorship*  King Chulalongkorn Memorial Hospital, Bankok, Thailand  Breast Education Session  2017 Particle Therapy Co-Operative Group, Chiba, Japan |
| 2017 | Proton Therapy Experience in the United States/Invited Speaker  Symposium On Proton & Heavy Ion Radiotherapy On Cancer In Vietnam, Hanoi, Vietnam |

**Report of Clinical Activities and Innovations**

[Current Licensure and Certification](http://cv.hms.harvard.edu/index.php?page=licensure)

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| 2005-present | Massachusetts Registered Physician |
| 2007-present | American Board of Radiology |
| 2007-present | New Hampshire Registered Physician |

[Practice Activities](http://cv.hms.harvard.edu/index.php?page=practice)

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| 2006 - present | Consultation, Treatment | Pediatric Radiation Oncology | 24 hours per week |
| 2006 - present | Consultation, Treatment | Breast Radiation Oncology | 16 hours per week |

**Report of Scholarship**

[Publications](http://cv.hms.harvard.edu/index.php?page=publications)

[Peer reviewed scientific or medical publications in print , book chapters, or other media](http://cv.hms.harvard.edu/index.php?page=peer_review)

Research investigations

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| 1. | Balkema GW, **MacDonald SM**. Increased absolute light sensitivity in Himalayan mice with cold-induced ocular pigmentation. Vis Neurosci. 1998;15(5):841-849. |
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| 4. | **MacDonald SM**, Ahmad S, Kachris S, Vogds B, DeRouen M, Gittlemnam A, DeWyngaert K, Vlachaki MT. Intensity modulated radiation therapy versus three-dimensional conformal radiation therapy for the treatment of high grade glioma; a dosimetric comparison. J Appl Clin Med Phys. 2007; Apr 19;8(2):47-60. |
| 5. | **MacDonald SM**, Desai N, Heller G, Rolnitzky L, Allen JC. MRI changes in the "normal" pineal gland following chemotherapy for suprasellar germ cell tumors. Pediatr Hematol Oncol. 2008;25(1):5-15. |
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| 7. | **MacDonald SM**, Safai S, Trofimov A, Wolfgang J, Fullerton B, Yeap BY, Bortfeld T, Tarbell NJ, Yock T. Proton radiotherapy for childhood ependymoma: Initial clinical outcomes and dose comparisons. Int J Radiat Oncol Biol Phys. 2008;71(4):979-986. |
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| 9. | **MacDonald SM**, Abi-Raad RF, Alm El-Din MA, Niemierko A, Kobayashi W, McGrath JJ, Goldberg SI, Powell S, Smith B, Taghian AG. Chest wall radiotherapy: Middle ground for treatment of patients with one to three positive lymph nodes after mastectomy. Int J Radiat Oncol Biol Phys. 2009;75(5):1297-1303. |
| 10. | Recht A, Ancukiewicz M, Alm El-Din MA, Lu XQ, Martin C, Berman SM, Hirsch AE, Kachnic LA, Katz A, **MacDonald SM**, Nedea EA, Stevenson MA, Powell SN, Taghian AG. Lung dose-volume parameters and the risk of pneumonitis for patients treated with accelerated partial-breast irradiation using three-dimensional conformal radiotherapy. J Clin Oncol. 2009;27(24):3887-3893. |
| 11. | **MacDonald SM**, Yock TI. Proton beam therapy following resection for childhood ependymoma. Childs Nerv Syst. 2010;26(3)285-291. (*peer reviewed review article*) |
| 12. | **MacDonald SM**, Trofimov A, Safai S, Adams J, Fullerton B, Ebb D, Tarbell NJ, Yock TI. Proton radiotherapy for pediatric central nervous system germ cell tumors: Early clinical outcomes. Int J Radiat Oncol Biol Phys. 2011;79(1):121-129. |
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| 16. | Abi-Raad R, Boutrus R, Wang R, Niemierko A, **MacDonald SM**, Smith B, Taghian AG. Patterns and risk factors of locoregional recurrence in T1-T2 node negative breast cancer patients treated with mastectomy: Implications for postmastectomy radiotherapy. Int J Radiat Oncol Biol Phys. 2011;81(3):e151-157. |
| 17. | Rombi B, Delaney TF, **MacDonald SM**, Huang MS, Ebb DH, Liebsch NJ, Raskin KA, Yeap BY, Marcus KJ, Tarbell NJ, Yock TI. Proton radiotherapy for pediatric Ewing's Sarcoma: initial clinical outcomes. Int J Radiat Oncol Biol Phys. 2012;82:1142-1148. |
| 18. | Bellon JR, Harris EE, Arthur DW, Bailey L, Carey L, Goyal S, Halyard MY, Horst KC, Moran MS, **MacDonald SM**, Haffty BG. ACR Appropriateness Criteria(®) conservative surgery and radiation - stage I and II breast carcinoma: Expert panel on radiation oncology: Breast. Breast J. 2011;17(5):448-455. |
| 19. | **MacDonald SM**, Harris EE, Arthur DW, Bailey L, Bellon JR, Carey L, Goyal S, Halyard MY, Horst KC, Moran MS, Haffty BG. ACR Appropriateness Criteria locally advanced breast cancer. Breast J. 2011;17:579-585. |
| 20. | Moran MS, Bai HX, Harris EE, Arthur DW, Bailey L, Bellon JR, Carey L, Goyal S, Halyard MY, Horst KC, **MacDonald SM**, Haffty BG. ACR Appropriateness Criteria(®) ductal carcinoma in situ. Breast J. 2012;18(1):8-15. |
| 21. | Halyard MY, Wasif N, Harris EE, Arthur DW, Bailey L, Bellon JR, Carey L, Goyal S, Horst KC, Moran MS, **MacDonald SM**, Haffty BG. ACR Appropriateness Criteria® local-regional recurrence (LR) and salvage surgery: Breast Cancer. Am J Clin Oncol. 2012;35(2):178-182. |
| 22. | Kuhlthau KA, Pulsifer MB, Yeap BY, Rivera Morales D, Delahaye J, Hill KS, Ebb D, Abrams AN, **MacDonald SM**, Tarbell NJ, Yock TI. Prospective study of health-related quality of life for children with brain tumors treated with proton radiotherapy. J Clin Oncol. 2012;30(17):2079-2086. |
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| 24. | Hattangadi JA, Rombi B, Yock TI, Broussard G, Friedmann AM, Huang M, Chen YL, Lu HM, Kooy H, **MacDonald SM**. Proton radiotherapy for high-risk pediatric neuroblastoma: Early outcomes and dose comparison. Int J Radiat Oncol Biol Phys. 2012;83(3):1015-1022. |
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| 26. | **MacDonald SM**, Jimenez R, Paetzold P, Adams J, Beatty J, Delaney TF, Kooy H, Taghian AG, Lu HM. Proton radiotherapy for chest wall and regional lymphatic radiation; dose comparisons and treatment delivery**.** Radiat Oncol. 2013; 8:71;1-7. |
| 27. | Aizer AA, Sethi RV, Hedley-Whyte ET, Ebb D, Tarbell NJ, Yock TI, **MacDonald SM**. Bifocal intracranial tumors of nongerminomatous germ cell etiology: Diagnostic and therapeutic implications. Neuro Oncol. 2013;15:955-960. |
| 28. | **MacDonald SM**, Patel SA, Hickey S, Specht M, Isakoff SJ, Gadd M, Smith BL, Yeap BY, Adams J, Delaney TF, Kooy H, Lu HM, Taghian AG. Proton therapy for breast cancer after mastectomy: early outcomes of a prospective clinical trial**.** Int J Radiat Oncol Biol Phys. 2013;86:484-490. |
| 29. | Yonekawa Y, **MacDonald SM**, Shildkrot Y, Mukai S. Standard fractionation low-dose proton radiotherapy for diffuse choroidal hemangiomas in pediatric sturge-weber syndrome**.** J AAPOS.2013;17:318-322. |
| 30. | Jimenez RB, Goma C, Nyamwanda J, Kooy HM, Halabi T, Napolitano BN, McBride SM, Taghian AG, Lu HM, **MacDonald SM**. Intensity modulated proton therapy for postmastectomy radiation of bilateral implant reconstructed breasts: a treatment planning study. Radiother Oncol. 2013;107:213-217. |
| 31. | Jimenez RB, Sethi RV, Depauw N,Pulsifer M, Adams J, McBride S, Ebb D, Fullerton BC, Tarbell NJ, Yock TI, **MacDonald SM.** Proton radiation therapy for pediatric medulloblastoma and supratentorial PNET: Outcomes for very young children treated with upfront chemotherapy.Int J Radiat Oncol Biol Phys. 2013;87:120-126. |
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| 36. | Aizer AA, Ancukiewicz M, Nguyen PL, **MacDonald SM**, Yock TI, Tarbell NJ, Shih HA, Loeffler JS, Oh KS. Very favorable natural history of WHO Grade II supratentorial ependymomas after gross total resection: Results from a population-based study. J Neuro Oncol. 2013;15:955-960. |
| 37. | Warren LE, Miller CL, Horick N, Skolny MN, Jammallo LS, Sadek BT, Shenouda MN, O’Toole JA, **MacDonald SM**, Specht MC, Taghian AG. The Impact of radiation therapy on the risk of lymphedema after treatment for breast cancer: A prospective cohort study. Int J Radiat Oncol Biol Phys. 2013;88:565-571. |
| 38.  39.  40.  41.  42.  43.  44.  45.  46.  47.  48.  49.  50.  51.  52.  53.  54.  55.  56.  57.  58.  59.  60.  61.  62.  63.  64.  65.  66.  67.  68.  69.  70.  71.  72.  73.  74.  75.  76.  77.  78.  79. | Sethi RV, Giantsoudi D, Raiford M, Malhi I, Niemierko A, Rapalino O, Caruso P, Yock TI, Tarbell NJ, Paganetti H, **MacDonald SM**. Patterns of failure following proton therapy in medulloblastoma;  Linear energy transfer distributions and RBE associations for relapses. Int J Radiat Oncol Biol Phys. 2013;88: 655-663.  Galland-Girodet S, Pashtan I, **MacDonald SM**, Ancukiewicz M, Hirsch AE, Kachnic LA, Specht M, Gadd M, Smith BL, Powell SN, Recht A, Taghian AG. Long-term cosmetic outcomes and toxicities of proton beam therapy compared with photon-based 3-dimensional conformal accelerated partial-  breast irradiation: A phase 1 trial. Int J Radiat Oncol Biol Phys. 2014;90(3): 493-500.  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Early cognitive outcomes following proton radiation in pediatric patients with brain and central nervous system tumors. Int J Radiat Oncol Biol Phys. 2015;93(2):400-7.  Depauw N, Batin E, Daartz J, Rosenfeld A, Adams J, Kooy H, **MacDonald SM**, Lu HM. A novel approach to postmastectomy radiation therapy using scanned proton beams. Int J Radiat Oncol Biol Phys. 2015;91(2):427-34.  Braunstein LZ, Galland-Girodet S, Goldberg s, Warren LE, Sadek BT, Shenouda MN, Abi-Raad RF, **MacDonald SM**, Taghian AG. Long-term outcomes among breast cancer patients with extensive regional lymph node involvement: implications for locoregional management. Breast Cancer Res Treat. 2015;154(3):633-9.  Eaton BR, **MacDonald SM**, Yock TI, Tarbell NJ. Secondary malignancy risk following proton radiation therapy. Front Oncol. 2015;5:261.  Giantsoudi D, Sethi RV, Eaton BR, Beow YY, Ebb D, Caruso PA, Rapalino O, Chen YL, Adams J, Yock TI, Tarbell NJ, Paganetti H, **MacDonald SM**. 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J Pediatr Hematol Oncol. 2016;38(8):e286-E290.  **MacDonald SM**, Rapalino O, Sherry NA, Cohen AB, Ebb DH, Tarbell NJ, Oakely DH. Case 32-2016: A 20-year-old man with gynecomastia. N Engl J Med. 2016;375:1567-79.  Giantsoudi D, Seco J, Eaton BR, Simeone FJ, Kooy H, Yock TI, Tarbell NJ, DeLaney TF, Adams J, Paganetti H and **MacDonald SM.** Evaluating intensity modulated proton therapy relative to passive scattering proton therapy for increased vertebral column sparing in CSI in growing pediatric patients. Int J Radiat Oncol Biol Phys. 2017;98(1):37-46.  Braunstein LZ, Taghian AG, Niemierko A, Salama L, Capuco A, Bellon JR, Wong JS, Punglia RS, **MacDonald SM**, Harris JR. Breast-cancer subtype, age, and lymph node status as predictors of local recurrence following breast-conserving therapy. Breast Cancer Res Treat. 2017;161(1):173-179.  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Int J Radiat Oncol Biol Phys. 2017;99(3):634-641.  Patel SA, Lu HM, Nyamwanda JA, Jimenez RB, Taghian AG, **MacDonald SM**, Depauw N. Postmastectomy radiation therapy technique and cardiopulmonary sparing: A dosimetric comparative analysis between photons and protons with free breathing versus deep inspiration breath hold. Pract Radiat Oncol. 2017;7(6):e377-e384.  **MacDonald SM**, Laack NN, Terezakis S. Protons, brainstem necrosis, and the self-driving car. Int J Radiat Oncol Biol Phys. 2017;97(2):216-219.  Ventura LM, Grieco JA, Evans CL, Kahlthau KA, **MacDonald SM**, Tarbell NJ, Yock TI, Pulsifer MB. Executive functioning academic skills, and quality of life in pediatric patients with brain tumors post-proton radiation therapy. Int J Radiat Oncol Biol Phys. 2017;97(2):216-219.  Haas-Kogan D, Indelicato D, Paganetti H, Esiashvili N, Mahajan A, Yock TI, Flampouri S, **MacDonald SM**, Fouladi M, Kry S, Kalapurakal J, Terezakis S, Kooy H, Grosshans D, Makrigiorgos M, Mishra K, Poussaint TY, Cohen K, Fitzgerald T, Gondi V, Liu A, Michalski J, Mirkovic D, Mohan R, Perkins S, Wong K, Vikram B, Buchsbaum J, Kun LE. NCI workshop on proton therapy for children: considerations regarding brainstem injury. Int J Radiat Oncol Biol Phys. 2017;101(1):152-168.  Giantsoudi D, Adams J, **MacDonald SM**, Paganetti H. Can differences in linear energy transfer and thus relative biological effectiveness compromise the dosimetric advantage of intensity-modulated proton therapy as compared to passively scattered proton therapy? Acta Oncologica. 2018 (in press)  Kamran S, Goldberg SI, Kuhlthau KA, Lawell MP, Weyman EA, Gallotto SL, Hess CB, Huang MS, Friedmann AM, Abrams AN, **MacDonald SM**, Pulsifer M, Tarbell NJ, Yock T. Quality of life in proton-treated pediatric medulloblastoma: results of a prospective assessment with 5-year follow-up. Cancer. 2018 (in press) |

Other peer reviewed publications

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| 1. | **MacDonald SM**, DeLaney TF, Loeffler JS. Proton beam radiation therapy. Cancer Invest. 2006;24(2)199-208. (*peer reviewed review article*) |
| 2. | Wong JM, Chi SN, Marcus KJ, Levine BS, Ullrich NJ, **MacDonald SM**, Lechpamer M, Goumnerova LC. Germinoma with malignant transformation to nongerminomatous germ cell tumor. J Neurosurg Pediatr. 2010;6:295-298. (case report and review) |

[Non-peer reviewed scientific or medical publications in print , book chapters, or other media](http://cv.hms.harvard.edu/index.php?page=peer_review)

**Chapters**

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