

**MICHELLE SUZANNE LUDWIG, MD, MPH, PHD**  
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**PERSONAL STATEMENT**

My career goals are to improve the oncologic care of breast and gynecological cancer patients by studying and improving radiation treatment and training the next generation of learners.

**I. GENERAL BIOGRAPHICAL INFORMATION**

**A. Personal**

1. Full Name: Michelle Suzanne Ludwig
2. Citizenship: United States

**B. Education**

1. Undergraduate Education: Purdue University, W. Lafayette, IN, BS, With Honors, 1996 - 2000, Pharmaceutical Science/Health Science
2. Medical Education: Emory University School of Medicine, Atlanta, GA, MD, 2005, Medicine
3. Graduate Education
  - a. Emory Rollins School of Public Health, Atlanta, GA, MPH, 2003 - 2005, Cancer Epidemiology Thesis" "Defining the Optimal Number of Nodes Resected for Non-Small Cell Lung Cancer" Dr. Peter Johnstone and Dr. Michael Goodman
  - b. University of Texas Health Science Center, Houston, TX, PhD 2008 - 2013, Epidemiology Dissertation: "The role of hormone therapy in locally advanced prostate cancer treated with definitive radiation therapy" advisor: Dr. Xianglin L. Du
4. Postgraduate Training
  - a. Internship: Internal Medicine, University of Texas, Houston Medical Program and University of Texas M. D. Anderson Cancer Center, Houston, Mark Farnie, M.D., July 2005 – June 2006
  - b. Clinical Residency, Radiation Oncology, M. D. Anderson Cancer Center, Houston, Christopher Crane, M.D., July 2006 – June 2010

**C. Academic Appointments**

1. Faculty Position at University of Colorado: Professor, Department of Radiation Oncology, current
2. Faculty Position at Baylor College of Medicine: Professor, Department of Radiation Oncology, Baylor College of Medicine, 2013-7/2025
3. Faculty Educator at BCM: Learning Communities Mentor, 2016-current (0.1 FTE)
4. Faculty Position at The University of Texas MD Anderson Cancer Center: Assistant Professor, Department of Radiation Oncology, Division of Radiation Oncology, Houston, TX, 2010 - 2013
5. Adjunct Assistant Professor, Division of Epidemiology, Human Genetics & Environmental Sciences, UT School of Public Health, 2014 current

**D. Other Advanced Training/Experience**

1. Principles and Practice of Gamma Knife Radiosurgery Special Emphasis on Perfexion Training course at the University of Pittsburgh, March 21-25, 2011
2. Accelerated Partial Breast Irradiation advanced training workshop with SAVI applicator, March 15-17, 2012
3. Master's Teacher Fellowship Program, Baylor College of Medicine, 2019-2021
4. Cyberknife System Physician Training, October 12-15, 2020
5. ASTRO (American Society for Radiation Oncology) Pipeline Protégé program 2021-2023, Health Policy Committee
6. ACLS certified (exp 4/3/27)

## **E. Other Information**

1. Honors or Awards
  - a. Star Faculty Award for Excellence in Patient Care, February 2023
  - b. AOA, 2020
  - c. Norton Rose Fullbright Faculty Excellence Award in Teaching and Evaluation, July 2019
  - d. Association of Residents in Radiation Oncology (ARRO) Educator of the Year 2017-2018
  - e. Baylor College of Medicine Women of Excellence Honoree, March 2018
  - f. ASCO International Development and Education Award (IDEA) Mentor and Extended Tour Award Recipient, June 2017
  - g. Baylor College of Medicine Early Career Faculty Award for Excellence in Patient Care (May 2017)
  - h. Emory University School of Medicine Woodruff Scholar 2000-2005
2. Board Eligibility/Certification: American Board of Radiology, 60367, May 2011
3. Other Non-academic Positions
  - a. The Immunization Partnership Scientific Advisory Board, 2024-current
  - b. Lazarus House (funded by the Christopher and Dana Reeve Foundation) Medical Advisory Board 2013-2025
  - c. Pharmacy Intern, Walgreen's Pharmacy, Memphis, TN, 2000
  - d. St. Jude's Children's Research Hospital/Hospital Nacional de Niños Benjamin Bloom, San Salvador, El Salvador, NWTSIII Study Analyst and facilitator/instructor for the Latin American Center for Pediatric Oncology Nursing Education, 2001
  - e. Substitute Teacher, West Lafayette Community School Corporation, Indiana 1998-2000
  - f. Metabolic Infusion Support Systems team, St. Jude Children's Research Hospital, Memphis, TN, 1997

## **II. RESEARCH INFORMATION**

### **A. Research/Grant Support**

1. Title: Reducing Racial/Ethnic Disparities in Breast Cancer Screening: Expanding a Comprehensive HER-Based Patient Navigation Program  
Name of agency: Cancer Prevention & Research Institute of Texas (CPRIT)  
Dates: March 2025-August 2025  
Funding Amount: \$2,499,998  
Role: co-I: Ludwig (5% effort)
2. Title: Evaluating the Clinical Efficacy of Dermeprazole in Breast Cancer Patients at Risk of Radiation Dermatitis  
Name of agency: Baylor College of Medicine Breast SPORE DRP  
Dates: Jan 2021-July 2021.  
Funding Amount: \$50,000  
Role: PI: Ludwig
3. Title: Phase I/II Study of Niraparib with Radiotherapy for Treatment of Distantly Metastatic Invasive Carcinoma of the Cervix (ClinicalTrials.gov ID NCT03644342)  
Name of agency: GSK, Inc  
Dates: June 14, 2018-June 14, 2023.  
Funding Amount: \$488,809  
Role: PI: Ludwig (Investigator Sponsor)
4. Title: Topical Application of Esomeprazole for the Prevention of Radiation Dermatitis  
Name of agency: Dan L Duncan Cancer Center (NIH P30 CA125123)  
Dates: April 2017 - March 2018.  
Funding Amount: \$50,000  
Role: PI: Ludwig
5. Title: Transportation assistance for patient compliance with radiation therapy  
Name of Agency: Avon Foundation

Dates: April 1, 2015 – current  
 Funding Amount: \$7,500  
 Role: CO-I with Loretta Hanser

6. Title: Harris Health System Bus and Taxi Fare Voucher Program  
 Name of Agency: Pfizer  
 Dates: October 15, 2015  
 Funding Amount: \$10,000  
 Role: CO-I with Harris County Hospital District Foundation

7. Baylor College of Medicine Learning Communities. August 1, 2016 - current. This program is to provide improvement to the overall educational environment (0.1 FTE)

8. Title: Quality of Life and treatment compliance throughout cervical cancer chemoradiation Treatment (investigator initiated prospective clinical trial)  
 Name of Agency: Baylor College of Medicine  
 Dates: August 23, 2017  
 Funding Amount: Internally funded  
 Role: PI

9. Title: Patterns of Care and Optimal Management of Stage IV Cervical Cancer (NCDP Participant User File)  
 Name of Agency: American College of Surgeons Commission on Cancer  
 Dates: February 26, 2016  
 Funding Amount: internally funded  
 Role: PI

10. Title: Pattern and Effect on Survival of Prophylactic, Adjuvant, and Palliative Radiation Treatment in Small Cell Cancer of Colon and Rectum (NCDP Participant User File)  
 Name of Agency: American College of Surgeons Commission on Cancer  
 Dates: November 4, 2015  
 Funding Amount: internally funded by department  
 Role: PI

11. Title: Patterns of Survival for Patients with Brain Metastasis Treated with Stereotactic Radiosurgery for Definitive or Adjuvant Intent (NCDB Participant User File)  
 Name of Agency: American College of Surgeons Commission on Cancer  
 Dates: September 8, 2016  
 Funding Amount: internally funded  
 Role: PI

12. Title: Association of Metabolic Syndrome and the Risk of Endometrial Cancer Recurrence in a SEER-Medicare Linked Database  
 Name of Agency: SEER-Medicare  
 Dates: January 17, 2017  
 Funding Amount: Internally funded  
 Role: PI

## B. National Scientific Participation

1. Reviewer for:

- International Journal of Radiation Oncology, Biology and Physics editorial board gyn section October 2022-December 2025
- ASTRO Abstract Reviewer Annual Meeting Track-Gyn 2020-current
- ASTRO-BCRF grant reviewer
- Daniel Duncan Cancer Center grant reviewer
- San Antonio Breast Conference 2019
- Board review question writer for the American Radium Society, 2018-current
- International Journal of Radiation Oncology, Biology, and Physics, 2011 - current

- h. Practical Radiation Oncology, 2014 – current
- i. Journal of Radiation Oncology, 2013 - current
- j. Gynecologic Oncology, 2014 - current
- k. American Journal of Men's Health, 2014 - current
- 2. Professional Society Membership:
  - a. The American Society for Radiation Oncology (ASTRO), 2005 – current,
  - b. ASTRO Committee on Health Equity, Diversity and Inclusion 2019-current
  - c. ASTRO Health Policy Committee 2021-2022
  - d. ASTRO Early Career Committee 2021-2022
  - e. Radiological Society of North America (RSNA), 2005 - current
  - f. American Radium Society (ARS), 2005 - current
  - g. Southwest Oncology Group (SWOG), 2013 – current
  - h. American Society of Clinical Oncology (ASCO) International Volunteer Corps and International Speakers Bureau member 2013-current
  - i. 1836 Society Emory University School of Medicine 2010-current
- 3. Invited Lectures, Presentations, Research Seminars
  - a. Annual Breast Cancer JOC Symposium case presentation and "Best of Radiation Oncology" lecture September 5, 2025
  - b. Race for the Cure community lecture October 5, 2025
  - c. Trot for Tatas community presentation October 4, 2025
  - d. ASTRO ROCKS Promotion and Tenure Lecture, April 11, 2025
  - e. "Reach for the Stars" STEM Festival at Rice University for Middle School Girls - Radiation Oncology lecture, April 9, 2022
  - f. DEI in Action series lecture "Healthcare Inequality among Persons with Disabilities" to BCM Internal Medicine Residents, May 30, 2022
  - g. AMWA Panel Discussion for BCM students, March 22, 2022
  - h. "Setting Goals: Highlights of a Career in Medicine" lecture for Sugarland Girl Scout Troop April 9, 2018
  - i. "Social Determinants of Health" panel discussion for Baylor College of Medicine MS1 Patient, Physician, Society course, Houston, TX March 7, 2018
  - j. "Radiation Oncology for Gynecology Residents" Lecture to Baylor College of Medicine ob-gyn residents, Houston, TX (annually) 2018-current
  - k. "Radiation Oncology 101" Lecture to Baylor College of Medicine Medical Oncology fellows, Houston, TX (annually) 2018-current
  - l. "National Cancer Data Base Analysis of SBRT, IMRT, and Brachytherapy Boost for Cervical Cancer" presentation at ESTRO, Vienna May 5 2017
  - m. Telemundo interview for breast cancer awareness month, October 3, 2017 (interview in Spanish)
  - n. KPRC News Interview for radiation compliance, May 30, 2017
  - o. Emory University School of Medicine 1836 Society featured graduate July 24, 2017
  - p. Baylor Students Against Cancer group annual lecture (annually) "Radiation Oncology 101" 2014 – current
  - f. National Cancer Data Base Analysis of SBRT, IMRT, and Brachytherapy Boost for Cervical Cancer" presentation at Harris Health Cancer Committee May 20, 2016
  - g. "Management of the axilla" invited lecture by the National Cancer Hospital in Capiata, Paraguay September 24, 2014
  - h. "Management of gynecological malignancies" invited lecture by the National Cancer Hospital in Capiata, Paraguay September 25, 2014
  - i. "Breast cancer clinical setups" invited lecture by the National Cancer Hospital in Capiata, Paraguay September 25, 2014
  - j. "Wilms Tumor" invited lecture at Hospital Nacional de Ninos Benjamin Bloom/St. Jude Childrens Research Hospital July 2001
  - k. "Renal Pharmacology" invited lecture at Hospital Nacional de Ninos Benjamin Bloom/St. Jude

Childrens Research Hospital July 2001

1. Executive Women International keynote speaker for annual meeting, Memphis, TN, May 19, 2015
- m. Men's Health Cancer Prevention Harris County Hospital District Health Promotion Services, June 1, 2009
- n. MD Anderson Cancer Center Cancer Wise Speaker's Bureau, 16 community lectures given about cancer prevention, 2010-2013
- o. Guest Instructor, Medical Dosimetry 4211, 4212 2 hours per semester, 2006-2010
- p. Postoperative Survival and the Number of Lymph Nodes Sampled During Resection of Node-negative Non-small cell Lung Cancer. ASTRO podium presentation September 2005

## C. Publications

1. Jhavar S, Gomber G, Patel M, Klopp A, Farach A, Hubbard A, **Ludwig M.** Exploring access to brachytherapy for cervical cancer in Texas: Geographic availability and distribution. *Brachytherapy*. 2026 Jan-Feb;25(1):221-228. PubMed PMID: 41241636.
2. Hathout L, Leung E, Taunk NK, **Ludwig M**, Fields EC. From Supportive Care to Treatment De-Escalation: Sexual Health and Quality of Life Outcomes in Recent Gynecologic Cancer Trials. *Int J Radiat Oncol Biol Phys*. 2025 Nov 15;123(4):913-916. PubMed PMID: 41101867
3. Sapienza LG, Guitmann G, Morris CG, Okunieff PG, **Ludwig MS**, Gomes MJL, Benrubi ID, Hew KE. A Systematic Study on Local Failure Events Post Chemoradiation Therapy for Cervical Cancer: Understanding the Impact of Baseline Lateral Anatomic Compartment Involvement. *Int J Radiat Oncol Biol Phys*. 2026 Feb 1;124(2):366-375. PubMed PMID: 40972906
4. Definitive intensity-modulated radiotherapy for organ preservation in vulvar cancer: A multicenter study. Rishi A, Albuquerque KV, Jhingran A, Donovan EK, Horne ZD, **Ludwig MS**, Pathak P, Goldsberry R, Glaser SM, Garg A, Yin V, Fernandez DC, Beriwal S, Ahmed KA, Montejo ME. *Gynecol Oncol*. 2025 Jun 12;199:1-9. doi: 10.1016/j.ygyno.2025.05.024. PMID: 40513383
5. Yoder AK, Thomas RJ, Huang A, Mandalapu A, Roque DM, Bowles K, Albuquerque K, Son C, Ludwig MS, Levinson K, Coghill AE, Chiao EY, Lin LL. Cervical Cancer Outcomes in Women With HIV in the Age of Antiretroviral Therapy. *JAMA Netw Open*. 2025 Aug 1;8(8):e2527389. PubMed PMID: 40815516
6. Understanding Hydronephrosis Occurrence by an Individual-Kidney Level Analysis of all Events Postchemoradiation Therapy for Locally Advanced Cervical Cancer. Sapienza LG, Chapman CH, Jhavar S, Calsavara VF, **Ludwig MS**, Gomes MJL, Carvalho EF. *Int J Radiat Oncol Biol Phys*. 2025 May 8:S0360-3016(25)00430-4. doi: 10.1016/j.ijrobp.2025.04.033. PMID: 40348198
7. Hathout L, Leung E, Taunk N, **Ludwig M**, Fields E. Recent Landmark Trials in Gynecologic Cancer: Optimizing Combination or Sequencing of Systemic and Radiation Therapies. *Int J Radiat Oncol Biol Phys*. March 1, 2025
8. Fields E, Chino J, **Ludwig M**, Erickson B et al. Consensus Guidelines for Delineation of Clinical Target Volumes for Intensity-Modulated Radiotherapy for Intact Cervical Cancer. *Practical Radiation Oncology* 2025 Mar-Apr;15(2):171-179. PMID: 39547646
9. Marion S, Dalwadi S, Kuczmarska-Haas A, Gillespie E, Holliday E, **Ludwig M**, Thom B, Chino F, Lee Isolation, discrimination, and feeling "constant Guilt": A mixed-methods analysis of female physicians' experience with fertility, family planning, and oncology careers. *Cancer* 2024; 1-8.
10. **Ludwig M**, Taunk N, Chino J, Hathout L, Leung E, Fields E. Moving Toward Personalized Medicine in Gynecologic Cancers. *Int J Radiat Oncol Biol Phys*. 2024 May 1;119(1):1-5. PMID: 38631739
11. Andersen SN, Bonnen MD, **Ludwig MS**, Dalwadi SM. Quality Assurance for Stereotactic Body Radiation Therapy for Gynecologic Malignancies. *Cureus*. 2024 Feb 2;16(2):e53470. doi: 10.7759/cureus.53470. eCollection 2024 Feb. PMID: 38435154
12. **Ludwig M**, Taunk N, Chino J, Hathout L, Leung E, Fields E Moving Toward Personalized Medicine in Gynecologic Cancers. *Int J Radiat Oncol Biol Phys*. 2024 May 1;119(1):1-5. doi: 10.1016/j.ijrobp.2023.11.025. PMID: 38631739
13. Rane S, Hanania A, Arango E, Kumar K, Payne L, Dittmar S, Gomber G, Ugarte V, **Ludwig M**. A 3D-

Printable, Low-Cost Obturator for Less Invasive Gynecologic Brachytherapy. *Cureus*. 2023 Jun;15(6):e41162. doi: 10.7759/cureus.41162. eCollection 2023 Jun. PubMed PMID: 37525761; PubMed Central PMCID: PMC10387167

14. Dong E, Xu K, Kim JW, Hamstra D, **Ludwig M**, Hanania A. Apparent Diffusion Coefficient Values Predict Response to Brachytherapy in Bulky Cervical Cancer. *BMC Radiation Oncology* (preprint) March 27, 2023.
15. Fields E, Chopra S, **Ludwig M**, Taunk N, Chino J. Pivotal Science from the 2022 International Gynecologic Cancer Society Meeting “Oncoscan: IGCS 2022”. *Int J Radiat Oncol Biol Phys*. June 1, 2023.
16. Roy E, Chino F, King B, **Ludwig M**. Increasing Diversity of Patients in Radiation Oncology Clinical Trials. *Int J Radiat Oncol Biol Phys*. Volume 116, Issue 1, 1 May 2023, Pages 103-114. [PMID: 36526234](#)
17. Sapienza LG, Thomas JJ, Echeverria AE, Sharma SS, Hamstra DA, Hall TR, **Ludwig MS**. Predictors of follow-up non-compliance after definitive radiotherapy for locally advanced cervical cancer at a community cancer center. *Gynecologic Oncology Reports* 2022 December, 101091 Vol 44. [PMID: 36325116](#)
18. Lee A, Kuczmarska-Haas A, Dalwadi SM, Gillespie EF, **Ludwig MS**, Holliday E Jr, Chino F. Family Planning, Fertility, and Career Decisions in Female Radiation Oncologists. *Int J Radiat Oncol Biol Phys*. 2020 Dec 1;108(5):1400. doi: 10.1016/j.ijrobp.2020.09.023. Epub 2020 Nov 18. [PMID: 33427659](#)
19. Yoder AK, Dong E, Yu X, Echeverria A, Sharma S, Montealegre J, **Ludwig MS**. Impact of Quality of Life on Radiation Adherence for Cervical Cancer Patients in an Urban Safety Net Health System. *Int J Radiat Oncol Biol Phys*. 2022 Oct 10:S0360-3016(22)03439-3. doi: 10.1016/j.ijrobp.2022.10.013. [PMID: 36228745](#)
20. Nikzad N, Dalwadi SM, **Ludwig MS**. Analyzing factors associated with clinical trial publication in radiation oncology. *Contemp Clin Trials Commun*. 2022 Aug 12;29:100978. doi: 10.1016/j.conc.2022.100978. eCollection 2022 Oct. [PMID: 36033362](#)
21. Sapienza LG, Thomas JJ, Showalter TN, Echeverria AE, **Ludwig MS**, Chen AC, Jo E, Calsavara VF, Hilsenbeck SG, Jhingran A, Frumovitz MM, Baiocchi G. Endoscopic assessment of radiological Stage IVA cervical cancer: A bivariate meta-analysis supporting an evidence based staging algorithm proposal. *Gynecol Oncol*. 2022 Apr 8:S0090-8258(22)00208-6. doi: 10.1016/j.ygyno.2022.03.026. Online ahead of print. [PMID: 35410732](#)
22. Sapienza, L ; **Ludwig, M** ; Baiocchi, G. “US-guided versus US-assisted tandem insertion for cervical cancer: A nomenclature proposal. *Brachytherapy*, 2022-03, Vol.21 (2), p.260-261 [PMID: 34980567](#)
23. Shi F, Yoder AK, Mach C, Dalwadi S, Anderson ML, Hall TR, **Ludwig MS**. Impact of hematologic toxicities during concurrent chemoradiation for cervical cancer. *Obstet Gynecol Sci*. 2022 Mar;65(2):176-187. doi: 10.5468/ogs.21308. Epub 2022 Feb 22. [PMID: 35189679](#)
24. Shafaee MN, Makawita S, Lim B, Ellis MJ, **Ludwig MS**. Concurrent chemo-radiation as a means of achieving pathologic complete response in triple negative breast cancer. *Clin Breast Cancer*. 2021 Dec 14:S1526-8209(21)00352-9. doi: 10.1016/j.clbc.2021.12.001. Online ahead of print. [PMID: 35184934](#)
25. Sapienza LG, **Ludwig MS**, Mandel JJ, Nguyen DH, Echeverria AE. Could patients benefit from whole brain radiotherapy with unilateral hippocampus sparing. *Rep Pract Oncol Radiother*. 2021 Jun 9;26(3):454-456. doi: 10.5603/RPOR.a2021.0059. eCollection 2021. [PMID: 34277100](#)
26. Hebert KA, Jaramillo S, Yu W, Wang M, Veeramachaneni R, Sandulache VC, Sikora AG, Bonnen MD, Annapragada AV, Corry D, Kheradmand F, Pandita RK, **Ludwig MS**, Pandita TK, Huang S, Coarfa C, Grimm SL, Perera D, Miles G, Ghebre YT. Esomeprazole enhances the effect of ionizing radiation to improve tumor control. *Oncotarget*. 2021 Jul 6;12(14):1339-1353. doi: 10.18632/oncotarget.28008. eCollection 2021 Jul 6. [PMID: 34262645](#)
27. Brunnhoelzl D, Hanania AN, Sunde J, Tran C, Echeverria A, **Ludwig M**. “Paracervical Blocks Facilitate Timely Brachytherapy Amidst COVID-19” *Brachytherapy*. 2021 Jan-Feb;20(1):284-289. doi: 10.1016/j.brachy.2020.08.002. Epub 2020 Aug 7. [PMID 32891569](#)
28. Dalwadi S, Echeverria A, Jhaveri P, Bui T, Waheed N, Tran D, Bonnen M, **Ludwig M**. Non-invasive stereotactic ablative boost in patients with locally advanced cervical cancer. *Int J Gynecol Cancer*. 2020 Nov;30(11):1684-1688. doi: 10.1136/ijgc-2019-001104. Epub 2020 Jul 6. [PMID: 32636273](#)

29. Dalwadi SM, Bonnen MD, **Ludwig MS**. In regard to Albuquerque et al. International Journal of Radiation Oncology Biology Physics. March 15, 2020. PMID 32092346.
30. Dalwadi S, Mantz C, **Ludwig M**. Definitive chemoradiation followed by stereotactic body radiotherapy boost for inoperable endometrial cancer. Journal of Radiation Oncology. September 2019, pp 329-335.
31. Jin J, Dalwadi S, **Ludwig M**. Association between metabolic syndrome and endometrial cancer survival in a SEER-Medicare linked database. AJCO. March 20, 2020 PMID 32205571.
32. Dalwadi SM, Farach AM, **Ludwig MS**. Brachytherapy. JAMA Oncology Patient Page Feb 13 2020 PMID 32053134.
33. Hanania AN, Cook A, **Ludwig M**. Prevalence of Musculoskeletal Work-Related Injuries Among Radiation Therapists. Radiologic Technology. Radiol Technol. 2020 May;91(5):414-421. PMID: 32381659
34. Dalwadi SM, Dorman C, **Ludwig MS**. Risk of Thyroid Cancer after Therapeutic Irradiation in Adult Patients: An Age-based surveillance, epidemiology and end results analysis. Laryngoscope. 2020 Nov 20. PMID 31747075.
35. Hanania AN, Mainwaring W, **Ludwig M**. Radiation-Induced Lung Injury: Assessment and Management. Chest. 2019 July 156 (1): 150-162. PMID 30998908.
36. Pham N, **Ludwig M**, Ghebre Y. Topical Esomeprazole Mitigates Radiation-induced Dermal Inflammation and Fibrosis. Radiation Research. Radiat Res. 2019 Nov;192(5):473-482. doi: 10.1667/RR15398.1. Epub 2019 Aug 15. PMID: 31415221
37. **Ludwig M**, Hanania A. "Better Late than Never...Better Never than Late." The Grey Zone. International Journal of Radiation Oncology, Biology, Physics. 2019 Feb 1;103(2):293-294. PMID 30647002
38. Hanania AN, Myers P, **Ludwig M**. Inversely and adaptively planned interstitial brachytherapy: A single implant approach. Gynecol Oncol. 2019 Feb;152(2):353-360. PMID 30449720.
39. Mainwaring W, Bowers J, **Ludwig M**. Stereotactic Radiosurgery Versus Whole Brain Radiation Therapy: A Propensity Score Analysis and Predictors of Care for Patients With Brain Metastases From Breast Cancer. Clin Breast Cancer. 2018 Nov 12. PMID 30527350
40. Bronk, J.K., Myers, P.A., **Ludwig, M. S**. Acute toxicities after volumetric modulated arc therapy for craniospinal irradiation in adults. J Radiat Oncol (2018) 7: 317.
41. Fisher S, Cote J, **Ludwig M**, Lee J, Grubbs E. Genetic Characterization of Medullary Thyroid Cancer in Childhood Survivors of the Chernobyl Accident. Surgery. Surgery. 2019 Jan;165(1):58-63. doi: 10.1016/j.surg.2018.08.029. Epub 2018 Nov 2. PMID: 30392857
42. Shumway J, Ran R, McClusky J, Rafique Z, Dark C, Peacock F, **Ludwig M**. Impact of rescheduling hydrocodone combination products in an urban Texas county health care system. J Opioid Mgmt. July 2018.
43. Jalloul RJ, Sharma S, Ramondetta LM, Tung CS, O'Donnell BO, **Ludwig MS**. Patterns of care, health care disparities, and their impact on survival outcomes in Stage IVB Cervical Cancer. Int J Gynecol Cancer. June 28, 2018. PMID 29757872.
44. O'Donnell B, Shiao JC, Pezzi TA, Waheed N, Sharma S, Bonnen M, **Ludwig M**. Stereotactic Body Radiation Therapy, Intensity Modulated Radiation Therapy, and Brachytherapy Boost Modalities in Invasive Cervical Cancer – A Study of the National Cancer Database. Int J Gyn Cancer. March 28, 2018. PMID 29324547.
45. Pham N, Asper J, Bonnen M, Mok H, Wagner T, **Ludwig M**, Carpenter L, Jhaveri P. Pre-treatment peer review: enhancing value through increased efficiency and effectiveness of radiation oncology peer review. Journal of Radiation Oncology. March 2018.
46. Balasubramanyam S, O'Donnell B, Musher B, Jhaveri P, **Ludwig M**. Evaluating treatment patterns for small cell carcinoma of the colon using the national cancer database (NCDB). Journal of Gastrointestinal Cancer. January 22, 2018. PMID 29354876.
47. Yoder A, Dalwadi S, Dorman C, Hall T, Anderson M, **Ludwig M**. Patterns of Care and Outcomes in Early Stage Neuroendocrine Carcinoma of the Uterine Cervix. Cancer Research Frontiers, March 2017.
48. Shumway JW, Echeverria AE, Patel U, Asper J, Bonnen M, **Ludwig MS**. Effectiveness of Intensity Modulated Radiation Therapy with Simultaneous Integrated Boost in Cervical Cancer Patients with PET Positive Lymph Nodes. Journal of Radiation Oncology. June 2017: 6:167-173.

49. Echeverria AE, Manley BA, O'Donnell B, Bonnen M, **Ludwig MS**. Factors associated with radiation treatment compliance for women with cervical cancer in a safety net health system. *Int J Gynecol Cancer*. June 10, 2017. PMID 28604458.
50. Mach C, **Ludwig M**, Anderson M. Retrospective Evaluation of Furosemide and Mannitol for Prevention of Cisplatin-Induced Nephrotoxicity. *Journal of Clinical Pharmacy and Therapeutics*. February 1, 2017.
51. Hseih GL, Linesch S, Sajjad A, Macdonald A, Bonnen M, Anderson ML, **Ludwig MS**. Treatment compliance and outcomes for women with locoregionally advanced cervical cancer treated in a safety net health system. *Int J Gynecol Cancer*. November 25 (9): 1669-76. PMID 26270123
52. **Ludwig MS**, Kuban DA, Strom SS, Du XL, Lopez DS, Yamal JM. Assessing the Optimum Use of Androgen-Deprivation Therapy in High-Risk Prostate Cancer Patients Undergoing External Beam Radiation Therapy. *American journal of men's health*. January 2017. PMID 2581393.
53. Shaitelman SFS, Schlembach PJ, Arzu I, Ballo M, Bloom ES, Buchholz D, Chronowski GM, Dvorak T, Grade E, Hoffman KE, Kelly P, **Ludwig MS**, Smith BD, *JAMA Oncology: Acute and Short-term Toxic Effects of Conventionally Fractionated vs Hypofractionated Whole Breast Irradiation: A Randomized Clinical Trial*. American Medical Association; August 2015. PMID 26247543.
54. **Ludwig MS**, Kuban DA, Strom SS, Du XL, Lopez DS, Yamal JM. The role of androgen deprivation therapy on biochemical failure and distant metastasis in intermediate-risk prostate cancer: effects of radiation dose escalation. *BMC Cancer*. March 27, 2015; 15(1):190. PMID 25885406
55. Castillo R, Castillo E, Fuentes D, Ahmad M, Wood AM, **Ludwig MS**, Guerrero T. A reference dataset for deformable image registration spatial accuracy evaluation using the COPDgene study archive. *Phys Med Biol*. May 7, 2013; 58(9):2861-77. PMID 23571679.
56. Gebhardt, R., Kisling, K., Kirsner, S., Kosturakis, A., and **Ludwig MS**. Implanted Intrathecal Drug Delivery Systems and Radiation Treatment. *Pain Medicine* March 2013. PMID 23432925.
57. Cunliffe A, Al-Hallaq H, **Ludwig M**, Armato S. Lung texture in serial thoracic CT scans: assessment of change introduced by image registration. *Med Phys* August 2012. PMID 22894392.
58. Rasch C, Duppen JC, **Ludwig MS**, Steenbakkers RJ. Human-Computer Interaction in Radiotherapy Target Volume Delineation: A Prospective, Multi-Institutional Comparison of User Input Devices. *J Digital Imaging* October 2011; 24(5): 794-803.
59. **Ludwig MS**, McNeese MD, Buchholz TA, Perkins GH, Strom EA. The Lateral Decubitus Breast Boost: Description, Rationale, and Efficacy. *IJROBP* 76(1): 100-103, January 2010.
60. **Ludwig MS**, Strom EA. How to Boost the Tumor Bed? A Multidisciplinary Approach in Eight Steps. *Breast Diseases A Year Book Quarterly* December 2009; 20(1):92-93.
61. Schinkel CG, Strom EA, **Ludwig MS**, Buchholz TA. Use of a Compression Device to Improve Radiation Boost Dose Coverage of the Tumor Bed for Treatment of Breast Cancer. September 2008; *IJROBP* 72(1).
62. **Ludwig MS**, Goodman M, Miller DL, Johnstone PA. Postoperative Survival and the Number of Lymph Nodes Sampled During Resection of Node-negative Non-small cell Lung Cancer. *Chest* 128:1545-1550, September 2005. PMID: 16162756
63. Ringwald-Smith K, Hale G, Williams R, **Ludwig M**, Thompson A, Bowman L, Shochat S, Liu A, Barkley C. Comparison of Two Low Profile Gastrostomy Enteral Feeding Devices in Pediatric Oncology Patients. *Nutrition in Clinical Practice* 15: 189-192, August 2000.

**a. Book Chapters Written**

1. Colin Hill, **Michelle S. Ludwig**, Lisa Meeks, Christopher J. Moreland, Philip Zazove (2024). Deaf and Disabled Representation in the US Physician Workforce. In: Deville, C. (ed) **Physician Workforce Diversity: Trends, Barriers, and Solutions**. Springer, Cham, October 2024
2. **Ludwig M**, Garden AS, Gombos D. Management of Uveal Melanoma. In: *Ophthalmic*. Springer, 2009.
3. Das P, **Ludwig M**, Janjan NA, Crane CH. The Anal Canal. In: *Radiation therapy - Rationale, technique, results..* Ed(s) Cox, JD, Ang, KK. Mosby, 2009.

**D. Innovation and Commercialization**

1. Patents: Schering-Plough Pilot lab process for coating topical foot powder (patent held by company)
2. Development of a topical product for radiation dermatitis prevention using compounded esomeprazole magnesium powder, lipoderm, and vanishing cream, in preclinical testing currently under funded pilot project (US Provisional Patent BAYM.P0246US.P1)
3. Consultant for CytoViva nanoparticle imaging systems 2011-2012
4. IND 137284 approval (November 20, 2017) from FDA for Phase I/II investigator-initiated trial with Tesaro for clinical trial of a PARP inhibitor with pelvic radiation for metastatic cervical cancer patients
5. Development of the Universally Friendly Obturator “UFO” for Brachytherapy Treatment of Cervical Cancer. (U.S. Provisional Patent Application No. 63/125,546, filed December 15) An optimized 3D-printed gynecologic brachytherapy applicator designed to decrease the invasiveness of interstitial brachytherapy.
  - (a) Grand Prize at University of Minnesota - 2020 Design of Medical Devices Conference Student Design Showcase
  - (b) Innovation Award at 10th Annual Global Health Technologies Design Competition by Rice 360° Global Health Institute

### **III. TEACHING INFORMATION**

#### **A. Educational Leadership Roles**

1. Fellowship Program Director for the American Brachytherapy Society 300 in 10 Fellowship 2022-2025
2. Fellowship Program Director for the TMB Veteran Affairs Radiation Oncology Fellowship 2016-2020
3. Assistant Residency Program Director for radiation oncology, BCM. 2013 - 2015
4. Medical student clerkship director for clinical and research electives, radiation oncology, BCM. 2015 – 2025
5. Specialty Specific Mentor, Radiation Oncology 2018-2025
6. Faculty Operating Committee member of the Baylor MD/PhD Medical Scientist Training Program. 2018-2025
7. Baylor College of Medicine Inclusion and Excellence Council 2019-2023
8. Faculty advisor for Docapella (BCM acapella singing group) 2021-2025
9. Faculty advisor for Got Spoons (BCM group for students with disabilities) 2021-2025

#### **B. Didactic Coursework**

1. Courses Taught Within the Primary Department
  - a. Radiobiology for the Radiation Oncology residents; 4 hours per year, developed lectures
    - i. Dose-response relationships for normal tissue
    - ii. Retreatment after radiotherapy
    - iii. Alternative radiation modalities
    - iv. Biology of tumor hypoxia
  - b. Radiation Physics for Radiation Oncology residents; 2 hours per year, developed lectures
    - i. Clinical setups and hand calculations lecture
    - ii. Pacemaker evaluation lecture
  - c. Clinical lectures for residents; 6 hours per year, developed lectures
    - i. Breast cancer board review
    - ii. Gynecological cancer board review
2. Courses Taught to the Primary Department
  - a. APEX (4<sup>th</sup> year medical school class) course lecturer 6 hours per year 2014
  - b. Integrated Problem Solving (IPS) core medical student first year class small group preceptor for Baylor College of Medicine, meets weekly for 2 hours 2015 - 2018
  - c. Patient, Physician, Society (PPS) facilitator for first year medical students; 4 hours per week 2016 – 2019
  - d. Learning Communities advisor, Wellness Curriculum instructor 2016-current (0.1 FTE)

- e. Readings in Global Health lecturer October 2022
- 3. Courses Taught at Other Institutions
  - a. PH 2351 Cancer Epidemiology, University of Texas School of Public Health, summer course, 2 hours 2014 - 2025

### **C. Curriculum Development Work**

- 1. Oncoanatomy course for radiation oncology residents at BCM: developed and implemented course
- 2. Elective rotation in radiation oncology for medical oncology fellows at BCM: developed and implemented course
- 3. Elective research rotation for medical students interested in radiation oncology clinical and basic science research: developed curriculum and created the course
- 4. Mock oral boards for radiation oncology residents: developed and organized mock oral day for all residents

### **D. Non-didactic Teaching**

- 1. Resident Training 20 hours per week, 15 individual learners
- 2. Clinical Fellow Training
  - a. Fellowship director for VA Radiation Oncology fellow, (Dr. Shelly Sharma) July 2016 - current
  - b. Rotation supervisor for medical oncology fellow elective rotation in radiation oncology July 2016 - current (Dr. Kelash Fnu, Dr. Thiri Kin, Dr. Manisha Chandar, Dr Srijana Rai)
  - c. ASCO International Development and Education Award program mentor for breast and gynecological malignancies (Dr. Sandra Perez, mentee from Mexico City)
- 3. Graduate Student Training
  - a. University of Texas School of Public Health MPH Epidemiology program Practicum Supervisor for Alison Yoder (2017 - 2019)
  - b. Baylor College of Medicine Translational Biology Program PhD committee for Kassidy Hebert (2019-current)
- 4. Undergraduate Student Mentoring
  - a. Oshman Engineering Design Kitchen (OEDK), Sponsoring Physician Mentor, Rice University 2019 - 2020
  - b. Baylor Summer Internship program preceptor 20 hours per week in summer 2013-current (Sarah Linesch 2014, Haley Manley 2016, Vanessa Liu 2017, Aubrey Cook 2018, Gaurav Gomber 2019)
  - c. Department of Radiation Oncology intern (Zoe Davis 2017)
  - d. Baylor SMART program mentor Summer 2015, 20 hours per week (Luke Hebert 2015)
- 5. Medical Student Mentoring
  - a. Longitudinal Ambulatory Care Experience (LACE) 3<sup>rd</sup> year Medical Student preceptor 4 hours per week 2014 - 2017 (Parth Patel, John Shumway, Julianna Bronk)
  - b. Patient, Physician, Society clinical mentor for first year medical students, 4 hours per week 2016 - current (Emile Gleeson 2016, Kendall Wolkenstein 2017, Mariana Carretero 2018)
  - c. Baylor Summer Internship program preceptor 20 hours per week in summer 2013-current (Andrew MacDonald 2014, Barrett O'Donnell 2015, Jennifer Inofomoh 2021)
  - d. Mock interview committee for 4<sup>th</sup> year medical students (2013-current)

### **E. Lectures and Presentations**

- 1. International
  - a. "SBRT remote training for LMIC; SBRT for Cervical Cancer" virtual SRBT /SRS training sessions for radiation oncologists, medical physicists, dosimetrists and therapists in low and middle-income countries. November 7, 2024.
  - a. "Interstitial Brachytherapy with Bladder Involvement" presentation at ESTRO Brachytherapy review course, Madrid, Spain September 6, 2018.
  - b. "National Cancer Data Base Analysis of SBRT, IMRT, and Brachytherapy Boost for Cervical Cancer" presentation at ESTRO, Vienna May 5 2017

- c. "Management of the axilla" invited lecture by the National Cancer Hospital in Capiata, Paraguay September 24, 2014
- d. "Management of gynecological malignancies" invited lecture by the National Cancer Hospital in Capiata, Paraguay September 25, 2014
- e. "Breast cancer clinical setups" invited lecture by the National Cancer Hospital in Capiata, Paraguay September 25, 2014
- f. "Wilms Tumor" invited lecture at Hospital Nacional de Ninos Benjamin Bloom/St. Jude Childrens Research Hospital July 2001
- g. "Renal Pharmacology" invited lecture at Hospital Nacional de Ninos Benjamin Bloom/St. Jude Childrens Research Hospital July 2001

2. National

- a. "Improving recruitment of patients with diverse communication needs" Invited lecture for ASTRO October 2024
- b. Docs with Disabilities podcast with Dr Lisa Meeks, October 26, 2021
- c. "Stereotactic radiation for oligometastatic cervical cancer and systemic therapy sequencing" Invited lecture for ASTRO October 2021.
- d. Emory University School of Medicine 1836 Society featured graduate July 24, 2017
- e. Executive Women International keynote speaker for annual meeting, Memphis, TN, May 19, 2015
- f. "The Farmer and the Rancher" (management of head and neck cancer) University of Colorado invited lecture, April 29, 2013
- g. Postoperative Survival and the Number of Lymph Nodes Sampled During Resection of Node-negative Non-small cell Lung Cancer. ASTRO podium presentation September 2005

3. Regional

- a. Telemundo interview for breast cancer awareness month, October 3, 2017 (interview in Spanish)
- b. KPRC News Interview for radiation compliance, May 30, 2017
- c. Healthy Habits BCM Nutrition and Wellness Blog June 5, 2017

4. Local

- a. Rad Onc 101-CNS Edition, Rice University Neuroscience Department, November 7, 2024
- b. "Cancer Risk Reduction for Women" Champion Forest Baptist Church, August 11, 2011
- c. "Breast Cancer" Accenture, November 11, 2011
- d. "Skin Cancer Risk Reduction" Lonestar College, November 11, 2011
- e. "Breast Cancer for Health Care Professionals" Novartis Pharm, October 25, 2011
- f. "Cancer Risk for Women" Stovall Academy, September 29, 2011
- g. "Cancer Risk Reduction for Men" Accenture, March 11, 2011
- h. "Tobacco and Cancer Risk" Lonestar College, March 10, 2011
- i. "Reduce your Cancer Risks" Fashionistas for a Cause, November 14, 2010
- j. "Reduce your Cancer Risks" Houston Hearing Loss Association, November 13, 2010
- k. "Reduce your Cancer Risks" eCardio, November 12, 2010
- l. "Reduce your Cancer Risk for Women" Accenture, November 5, 2010
- m. "Breast Cancer Survivorship" Shadowbend YMCA Breast Cancer Survivors Group, October 20, 2010
- n. "Reduce your Cancer Risk" Houston Community Service Club, April 21, 2010
- o. "Cancer Risk Reduction for Men" Harris County Hospital District Health Promotion Services, June 1, 2009
- p. "Cancer Risk Reduction for Men" Technip, November 4, 2008
- q. Guest Instructor, Medical Dosimetry 4211, 4212 2 hours per semester, 2006-2010

## F. Visiting Professorships

1. University of Alabama, Birmingham, March 3, 2017 (invited)
2. Purdue University, October 3-5, 2021 (Invited)
3. University of Florida, March 28-29, 2024
4. University of Central Florida/Moffitt, Tampa Florida November 14, 2024

## **IV. MEDICAL & SERVICE INFORMATION**

### **A. Patient Care Responsibilities**

1. Department-wide: Call 1 week per month
2. Section or Specialty: Breast and gynecological malignancies, brachytherapy
3. Clinical Service: In clinic 4 full days per week, >10,000 RVUs annually

### **B. Voluntary Health Organization Participation**

1. Casa El Bueno Samaritano 2010 - 2018 (4 hours per month)
  1. Volunteer Women's Health Physician
  2. Women's Health QA committee
  3. Mentor to students in Medical/nursing/physician assistant school
2. ASCO Virtual Mentoring Program 2018 Participant
3. ASCO International Speakers Bureau and International Development Volunteer 2013-current
4. George R. Brown Convention Center medical volunteer for Katrina, Ike, and Harvey hurricane relief 2006-2017
5. Avon 39 Walk participant for BCM April 2015

### **C. Contributions, Initiatives, or Recognition Related to Patient Safety and Healthcare Quality**

1. Breast Cancer Best Practices committee, HHS/BCM 2014 - current: developed guidelines for breast cancer patient care pathway at Harris Health System
2. Breast Cancer Clinical Advisory Board: helped develop 3 point-of-care mammography videos for different populations (Hispanic, African-American, Vietnamese) and a full length play with a goal of improving breast cancer screening in Harris County as part of a CPRIT-funded project
3. ACOS Standards Cancer Review Committee for Harris Health System: (Standard 1.6 requires review of 10% of cases per calendar year)
4. Faculty Award for Excellence in Patient Care Review Panel for Star award
5. International Breast Tumor Board with BSLMC, radiation oncology representative
6. Radiation Safety Committee voting member 2021-current

### **D. Other Pertinent Information**

1. Full professional proficiency in Spanish
2. Limited working proficiency in American Sign Language
3. Art League Houston board member 2011-2014
4. Houston Grand Opera Opening Nights Advisory Board 2014-2015
5. Camp AOK (teen camp for pediatric cancer patients) volunteer counselor and tennis instructor 2009-2013
6. Coca-Cola Scholars Foundation Advisory Board 2006-2010, Emeritus Advisory Board 2017-current
7. Canine Companions Regional and National board member, 2021-current
8. Volunteer Airport Ranger at George Bush International Airport 2023-2025
9. American Medical Professionals with Hearing Loss (AMPHL) mentor 2023-current