

**BRIAN L. SPRAGUE
CURRICULUM VITAE**

Position: Professor
Department of Surgery

Address: 1 S. Prospect St., Room 4425
Department of Surgery
The Robert Larner, M.D. College of Medicine
University of Vermont
Burlington, VT 05401
Voice: (802) 656-4112
email: bsprague@med.uvm.edu
website: <https://contentmanager.med.uvm.edu/vbcss/bio?BioID=22952>

EDUCATION

| Year | Institution | Degree | Area of Degree, Accolades |
|-------------|--|-------------------------|---|
| 2009-2010 | University of Wisconsin Carbone Cancer Center | Postdoctoral Fellowship | Cancer Epidemiology |
| 2005-2009 | University of Wisconsin | PhD | Population Health Sciences |
| 1999-2002 | University of Minnesota | MS | Biomedical Engineering |
| 1995-1999 | Cornell University | BS | Agricultural and Biological Engineering |

LICENSES, CERTIFICATION - None

FACULTY POSITIONS HELD

| Years | Institution | Academic Title | Department |
|--------------|-----------------------|--|-------------------|
| 2022-present | University of Vermont | Green and Gold Professor of Surgical Research | Surgery |
| 2022-present | University of Vermont | Professor (Secondary Appointment) | Biochemistry |
| 2022-present | University of Vermont | Professor (Tertiary Appointment) | Radiology |
| 2016-2022 | University of Vermont | Associate Professor | Surgery |

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|-----------|-----------------------|--|--------------|
| 2016-2022 | University of Vermont | Associate Professor (Secondary Appointment) | Biochemistry |
| 2016-2022 | University of Vermont | Associate Professor (Tertiary Appointment) | Radiology |
| 2014-2016 | University of Vermont | Assistant Professor (Secondary Appointment) | Biochemistry |
| 2010-2016 | University of Vermont | Assistant Professor | Surgery |

OTHER POSITIONS AND MAJOR ADMINISTRATIVE POSITIONS HELD

| Years | Location/Program Name | Role |
|--------------|-------------------------------------|---|
| 2020-Present | University of Vermont Cancer Center | Program Leader, Cancer Control & Population Health Sciences |
| 2013-Present | UVM Graduate College | Graduate faculty |
| 2012-Present | UVM Vermont Mammography Registry | Director |
| 2013-2017 | University of Vermont Cancer Center | Program Leader, Cancer Control & Population Health Sciences |

HONORS AND AWARDS

| Year | Name of Award |
|-------------|--|
| 1997 | Scholarship, Cornell Alumni Association of Rochester |
| 1999 | Graduate Research Fellowship, Department of Biomedical Engineering, University of Minnesota |
| 1999 | Alpha Epsilon National Honor Society |
| 2005 | Paper of the Year (coauthor), Molecular Biology of the Cell |
| 2006 | 1 st Prize Poster, Poster Session II, Congress of Epidemiology |
| 2006 | Student Travel Award, Congress of Epidemiology |
| 2007 | Rankin-Skatrud Travel Award, Department of Population Health Sciences, University of Wisconsin |
| 2008 | Vilas Travel Grant, University of Wisconsin |
| 2008 | Presenter, National Institutes of Health National Graduate Student Research Festival |
| 2009 | Scholar-in-Training Travel Award, American Association for Cancer Research |
| 2009 | Cancer Prevention Research Fellowship, American Society of Preventive Oncology co-sponsored by the Susan G. Komen Foundation and the Prevent Cancer Foundation |
| 2012 | 1st Prize Poster (senior author), Vermont Cancer Center's Clinical & Translational Research Symposium: Exercise, Nutrition, and Cancer |
| 2012 | 1st Prize Poster (coauthor), Poster Session 1, Annual Meeting of the Society for Epidemiologic Research |
| 2013 | James E. Demeules Research Award for Dedication and Commitment to Excellence in Research, Department of Surgery, University of Vermont |
| 2015 | Article of the Year, American Journal of Epidemiology (Sprague et al., "Variation in breast cancer–risk factor associations by method of detection: results from a series of case-control studies"; one of 10 selections for best of 2015) |
| 2015 | Outstanding manuscript reviewer recognition, Annals of Internal Medicine |
| 2015 | James E. Demeules Research Award for Dedication and Commitment to Excellence in Research, Department of Surgery, University of Vermont |

- 2015 Gold-Merit Award for poster presentation (coauthor), Annual Meeting of the American College of Radiology
- 2016 Green and Gold Professorship in Surgical Research, University of Vermont College of Medicine
- 2018 Dean's Excellence in Research Award for Mid-Career Investigator, University of Vermont Larner College of Medicine
- 2018 Excellence in Research Award, Department of Radiology, University of Vermont Larner College of Medicine
- 2019 Outstanding manuscript reviewer recognition, Annals of Internal Medicine
- 2020 Selected as one of top publications for presentation in "Best of Cancer Epidemiology, Biomarkers, & Prevention" session at Annual Meeting of the American Society of Preventive Oncology
- 2021 2021 – Semifinalist for the Aunt Minnie Most Influential Radiology Researcher Award [AuntMinnie.com is the largest community web site for medical imaging professionals worldwide]

KEYWORDS/AREAS OF INTEREST

Breast cancer, cancer screening, mammography, breast density, risk assessment, tumor biomarkers, disease progression, epidemiology

SUMMARY OF PROFESSIONAL ACTIVITIES- OVERALL

I am a Professor in the Department of Surgery in the Larner College of Medicine at the University of Vermont. In addition, I have secondary appointments in the Departments of Biochemistry and Radiology, and I am affiliated with the Larner College of Medicine Office of Health Promotion Research. As an epidemiologist in a clinical department, the majority of my time is devoted to research (85%). In my research program I use observational clinical and population health data to evaluate breast cancer prevention, screening, diagnosis, and survivorship in real world settings. I direct the Vermont Mammography Registry, which collects patient, radiology, pathology, and cancer diagnosis data for all women undergoing breast imaging at radiology departments in Vermont. My research team integrates this data over time and across 12 different healthcare systems, along with data from the Vermont Department of Health, producing a valuable longitudinal database with rich clinical data with long term outcomes. The Vermont Mammography Registry and my research aims are externally funded by the National Cancer Institute and other federal and non-profit sources. I collaborate with numerous investigators from multiple departments at the University of Vermont and nationally with investigators from around the country, most notably including the Breast Cancer Surveillance System, which includes five other similar breast imaging registries.

In addition to scholarly activities, a portion of my effort (10%) is devoted to Service and Administrative leadership. Through the Vermont Mammography Registry, I provide quality assurance services to the 12 participating hospitals by delivering annual performance reports evaluating the quality of breast cancer screening and diagnostic imaging at their facilities and for each individual radiologist. I am Program Co-Leader of the University of Vermont Cancer

Center's program in Cancer Control and Population Health Sciences. I serve on the Surgical Research Committee within the Department of Surgery and the Research Committee within the Department of Radiology. I frequently serve on University faculty search committees and serve as a reviewer for prominent journals in my field.

I devote additional effort to teaching and mentoring (5%). I regularly mentor students and medical residents in independent research projects. I am the Course Director for an annual one-day Continuing Medical Education course on breast cancer screening and diagnosis for healthcare professionals. I lecture in a number of other CME courses and in the College of Medicine curriculum for medical residents in Surgery and Radiology.

SUMMARY OF ACCOMPLISHMENTS

I have published over 150 scientific manuscripts in peer-reviewed scholarly journals, including first author papers in prestigious journals including JAMA, Annals of Internal Medicine, and the Journal of the National Cancer Institute; h-index 50 indicates my work is highly cited.

My work has informed national policy on breast cancer screening including recommendations by the United States Preventive Services Task Force and the American Cancer Society.

I have a sustained record of NIH funding, including Principal Investigator of large R01, U01, and U54 grants.

I serve on the steering committees of two consortia funded by the National Cancer Institute: the Breast Cancer Surveillance Consortium and the Consortium for Molecular Characterization of Screen-Detected Lesions.

I direct the Vermont Mammography Registry, which partners with 12 hospitals and the Vermont Department of Health to evaluate the quality of breast cancer screening in Vermont.

I have mentored over 50 undergraduate students, medical students, graduate students, postdoctoral researchers, medical residents, and medical research fellows in independent research projects; these have led to more than 20 first author publications and more than 20 conference presentations for trainees.

I am Course Director for an annual one-day Continuing Medical Education course on breast cancer screening and diagnosis for healthcare professionals.

I co-lead the University of Vermont Cancer Center's program in Cancer Control and Population Health Sciences.

PROFESSIONAL SERVICE**DEPARTMENTAL SERVICE**

| Years | Department | Committee | Role |
|--------------|-------------------|---|-------------|
| 2011-Present | Surgery | Research Committee | Member |
| 2013 | Surgery | Faculty Search Committee: Molecular Epidemiologist, Research Professor | Chair |
| 2016-Present | Radiology | Research Committee | Member |
| 2016 | Surgery | Faculty Search Committee: Molecular Epidemiologist, Tenure-Track Professor | Member |
| 2016-2017 | Radiology | Faculty Search Committee: Breast Imaging Specialist, Clinical Scholar Professor | Member |
| 2016-2017 | Surgery | Faculty Search Committee: Surgical Oncologist, Tenure-Track Professor | Member |
| 2017-2018 | Radiology | Faculty Search Committee: Breast Imaging Specialist, Clinical Scholar Pathway | Member |
| 2016-2018 | Surgery | Surgical Senior Majors Research Committee | Member |
| 2019 | Radiology | Faculty Search Committee: Health Services Researcher, Tenure-Track Pathway | Member |
| 2019 | Radiology | Faculty Search Committee: Breast Imaging Specialist, Clinical Scholar Pathway | Member |
| 2020 | Radiology | Faculty Search Committee: Research Assistant/Associate Professor | Member |

COLLEGE SERVICES

| Years | Service Committee | Role |
|--------------------------|---|-------------------|
| 2013-2017 & 2020-Present | Cancer Control and Population Health Sciences Program, UVM Cancer Center | Program Co-Leader |
| 2014-2016 | LCOM Clinical Research Center Scientific Advisory Committee | Member |
| 2016-2018 | LCOM Health Services Research Working Group | Member |
| 2017-Present | Dean's Excellence in Research Awards Review Group | Member |
| 2017 | LCOM Strategic Faculty Committee for Academic Structure & Funding of Basic Science Research | Member |
| 2017-2018 | Faculty Search Committee: Health Services Researcher, Research Assistant Professor | Member |
| 2018-2021 | Health Services Research Center Advisory Committee | Member |
| 2018 | UVM Cancer Center Research Symposium Planning Committee, "Cancer Control in a Rural Environment" | Member |
| 2019 | Faculty Search Committee: Director of Medical Biostatistics, Research Associate Professor | Member |
| 2020-2021 | Faculty Search Committee: Director of the University of Vermont Cancer Center and Division Head for Hematology and Oncology | Member |

MEDICAL CENTER SERVICE - NoneUNIVERSITY SERVICE

| Years | Service Committee | Role |
|--------------|--------------------------|-------------------|
| 2014-2016 | Faculty Senate | Senator (Surgery) |

GOVERNMENT

| Years | Service Committee | Role |
|--------------|--|-------------|
| 2011-Present | Steering Committee, National Cancer Institute's Breast Cancer Surveillance Consortium | Member |
| 2012-2018 | Steering Committee, National Cancer Institute's PROSPR consortium (Population-based Research to Optimize Screening with Personalized Regimens) | Member |
| 2013 | Planning Committee for semi-annual meeting of the National Cancer Institute's PROSPR consortium (Population-based Research to Optimize Screening with Personalized Regimens) | Member |
| 2014 | Planning Committee for semi-annual meeting of the National Cancer Institute's PROSPR consortium (Population-based Research to Optimize Screening with Personalized Regimens) | Member |
| 2015-2021 | Steering Committee, National Cancer Institute's Consortium for Molecular Characterization of Screen-Detected Lesions | Member |
| 2016-2017 | Advisory Committee, National Cancer Institute's Geographic Management of Cancer Health Disparities Program, Region 1 North | Member |

SOCIETY MEMBERSHIPS

| Years | Society |
|--------------|---|
| 2008-Present | American Society of Preventive Oncology |
| 2007-2017 | Society for Epidemiologic Research |

SERVICE TO PROFESSIONAL ORGANIZATIONS

| Years | Service Committee | Role |
|--------------|---|-------------|
| 2008-2012 | Annual Meeting Abstract Review Committee, Society for Epidemiologic Research | Member |
| 2010 | Junior Members Career Development Seminar, American Society of Preventive Oncology Annual Meeting | Co-Chair |
| 2011 | Junior Members Career Panel, American Society of Preventive Oncology Annual Meeting | Co-Chair |
| 2012 | Junior Members Career Panel, American Society of Preventive Oncology Annual Meeting | Chair |

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| 2/17/2023 | | Brian Sprague |
| 2013 | Poster Judging Committee, Annual Meeting of the American Society of Preventive Oncology | Member |
| 2013 | Junior Members Interest Group, American Society of Preventive Oncology | Vice-Chair |
| 2013 | Program Committee, Annual Meeting of the American Society of Preventive Oncology | Member |
| 2014 | Poster Judging Committee, Annual Meeting of the American Society of Preventive Oncology | Member |
| 2014-2016 | Executive Committee, American Society of Preventive Oncology | Member |
| 2014-2016 | Junior Members Interest Group, American Society of Preventive Oncology | Chair |
| 2015 | Abstract Review Committee, Annual Meeting of the Society for Epidemiologic Research | Member |
| 2016 | Poster Judging Committee, Annual Meeting of the American Society of Preventive Oncology | Member |

SERVICE TO PROFESSIONAL PUBLICATIONS

| Years | Journal/Publication/Board |
|----------------------|---|
| 2008 | Quality of Life Research - Reviewer |
| 2008 | Journal of Clinical Epidemiology - Reviewer |
| 2009,2014-2022 | Cancer Epidemiology Biomarkers & Prevention - Reviewer |
| 2009,2019 | International Journal of Cancer - Reviewer |
| 2009,2012-2015 | Cancer Causes & Control - Reviewer |
| 2009 | European Journal of Cancer - Reviewer |
| 2009 | Carcinogenesis - Reviewer |
| 2009 | BMC Public Health - Reviewer |
| 2010,2018 | Breast Cancer Research - Reviewer |
| 2010,2011,2014, 2021 | Breast Cancer Research & Treatment - Reviewer |
| 2010-2012,2014 | American Journal of Epidemiology - Reviewer |
| 2010 | Canadian Medical Association Journal - Reviewer |
| 2012 | International Journal of Public Health - Reviewer |
| 2013 | British Medical Journal - Reviewer |
| 2014-2017,2019 | JAMA - Reviewer |
| 2014,2015,2017,2019 | Annals of Internal Medicine - Reviewer |
| 2014 | Women & Health - Reviewer |
| 2015,2016,2020,2022 | Journal of the National Cancer Institute |
| 2016,2018,2020-2021 | Cancer - Reviewer |
| 2018,2020 | JAMA Internal Medicine - Reviewer |
| 2018 | American Journal of Preventive Medicine - Reviewer |
| 2019 | JAMA Oncology - Reviewer |
| 2019 | New England Journal of Medicine - Reviewer |
| 2020 | Journal of the American College of Radiology - Reviewer |
| 2020 | JAMA Network Open - Reviewer |
| 2021 | British Journal of Cancer |
| 2021-2022 | Preventive Medicine |

PUBLIC SERVICE

| Years | Service Role |
|--------------|---|
| 2012-Present | Director, Vermont Mammography Registry |
| 2013-2016 | Member, Access to Care Task Force, Vermonters Taking Action Against Cancer |
| 2013-2018 | Member, Lake Champlain Cancer Research Organization Scientific Advisory Committee |

SUMMARY OF SERVICE ACTIVITIES

Within the University of Vermont, I serve as co-leader of the University of Vermont Cancer Center's program in Cancer Control and Population Health Sciences. I serve on the Research Committees within the Departments of Surgery and Radiology and I have also served on a large number of faculty search committees, including searches for the Director of Medical Biostatistics and Director of the University of Vermont Cancer Center.

I serve the medical and public health community of the state via my leadership of the Vermont Mammography Registry within UVM's Office of Health Promotion Research. I direct a staff of seven full time employees and several part-time employees who integrate breast cancer screening and diagnosis data from all radiology and pathology facilities in the state. We provide quality assurance reports to all breast imaging facilities regarding their performance in breast cancer screening and diagnosis, along with state and national benchmarks. These reports are used by the facilities to evaluate and improve the quality of breast imaging in Vermont, as well as to satisfy the auditing requirements for FDA approval and certification by professional organizations such as the American College of Radiologists. This work is synergistic with my research program which obtains funding for the Vermont Mammography Registry and utilizes the data in breast cancer research.

Nationally, I serve on the steering committee of two national consortia organized by the National Cancer Institute: the Breast Cancer Surveillance Consortium and the Consortium for Molecular Characterization of Screen-Detected Lesions. I also serve as a reviewer for a number of the leading scientific journals in my field, including JAMA, JAMA Oncology, the Journal of the National Cancer Institute, Annals of Internal Medicine, and Cancer Epidemiology Biomarkers & Prevention.

TEACHING**FORMAL SCHEDULED CLASSES**

| Year | Course Title | Course | | Hours | Number of Learners | Learner Level |
|------|--|--------|---|-------|--------------------|---------------|
| | | R | E | | | |
| 2011 | Psychology 380: Special Topics in Behaviors, Neurobiology , and Health | | x | 1 | 15 | G |
| 2017 | Health 107: Human Health & the Environment | | x | 1 | 50 | U |
| 2019 | Health 107: Human Health & the Environment | | x | 1 | 57 | U |

R-required; E-elective; Hours-approx. per semester; G-graduate studies (instruction as per the LCOM Teaching Academy Portfolio)

POSTGRADUATE AND OTHER COURSES

| Years | Department | Responsibility |
|-------|--|-----------------|
| 2011 | Vermont Mammography Registry Mammography Technologist Meeting, Office of Health Promotion Research (3 Continuing Education Credits; 35 health professional attendees, 6 hour workshop) | Course Director |
| 2012 | Vermont Mammography Registry Mammography Technologist Meeting, Office of Health Promotion Research (3 Continuing Education Credits; 49 health professional attendees, 6 hour workshop) | Course Director |
| 2013 | Vermont Mammography Registry Mammography Technologist Meeting, Office of Health Promotion Research (3 Continuing Education Credits; 50 health professional attendees, 6 hour workshop) | Course Director |
| 2013 | Lecture on “Breast Cancer Epidemiology and Medical Audits for Mammography”, Breast Imaging Curriculum for Radiology Residents and Fellows (25 medical residents/fellows, 1 hour) | Lecturer |
| 2014 | Vermont Mammography Registry Mammography Technologist Meeting, Office of Health Promotion Research (3 Continuing Education Credits; 45 health professional attendees, 6 hour workshop) | Course Director |
| 2015 | Vermont Mammography Registry Mammography Technologist Meeting, Office of Health Promotion Research (3 Continuing Education Credits; 42 health professional attendees, 6 hour workshop) | Course Director |
| 2015 | Lecture on “Interpreting and Critiquing Epidemiologic Studies”, Research Curriculum for Research Year Surgery Residents (5 surgery residents; 1 hour) | Lecturer |
| 2016 | Vermont Mammography Registry Mammography Technologist Meeting, Office of Health Promotion Research (3 Continuing Education Credits; 49 health professional attendees, 6 hour workshop) | Course Director |

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| 2016 | 4-lecture series on Epidemiology & Biostatistics, Research Curriculum for Research Year Surgery Residents (5 surgery residents; 4 hours) | Lecturer |
| 2016 | Lecture on “Fundamentals of Epidemiology I”, Research Curriculum for Surgery Residents (23 residents; 1 hour) | Lecturer |
| 2017 | Vermont Mammography Registry Mammography Technologist Meeting, Office of Health Promotion Research (3 Continuing Education Credits; 43 health professional attendees, 6 hour workshop) | Course Director |
| 2017 | Two lectures for Research Curriculum for Surgery Residents (23 residents, 2 hours) | Lecturer |
| 2018 | Vermont Mammography Registry Mammography Technologist Meeting, Office of Health Promotion Research (3 Continuing Education Credits; 42 health professional attendees, 6 hour workshop) | Course Director |
| 2017 | Two lectures for Research Curriculum for Surgery Residents (27 residents, 2 hours) | Lecturer |
| 2019 | Vermont Mammography Registry Mammography Technologist Meeting, Office of Health Promotion Research (3 Continuing Education Credits; 28 health professional attendees, 6 hour workshop) | Course Director |
| 2020 | Journal Club for Surgery Resident Didactics (31 surgery residents; 2 hours) | Faculty Co-Lead |
| 2023 | Lecture on “Fundamentals of Epidemiology”, Research Curriculum for Radiology Residents (26 residents, 1 hour) | Lecturer |

PREDOCTORAL STUDENTS SUPERVISED OR MENTORED

| Dates | Name | Program School | Role | Current Position |
|--------------|-----------------------|---|------------------|--|
| 2011 | Francesca Boulos | Medical student, UVM LCOM | Research Advisor | Physician, University of Maryland |
| 2011-2012 | Sarah Lowry | PhD student, Epidemiology, University of Washington | Research Advisor | Biostatistician, Seattle Children’s Hospital |
| 2011-2013 | Jue Wang | MS, Biostatistics, UVM College of Engineering and Mathematical Sciences | Research Advisor | Principal Statistical Scientist, Genentech |
| 2012-2015 | Kenyan Bolton | Post-baccalaureate Pre-Med trainee, UVM LCOM | Research Advisor | Medical Resident, UVM |
| 2012-2014 | Patricia Jewett | PhD student, Population Health Sciences, University of Wisconsin | Research Advisor | Research Associate, University of Minnesota |
| 2012-2103 | Priyanka Chilakamarri | Medical student, UVM LCOM | Research Advisor | Medical Fellow, UPenn |

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|-----------|------------------|--|------------------|--|
| 2013-2014 | Leanne Shulman | MS, Biostatistics, UVM College of Engineering and Mathematical Sciences | Research Advisor | Senior Programmer Analyst, UVM Medical Center |
| 2013-2015 | Mairin Jerome | Medical student, UVM LCOM | Research Advisor | Physician, Centeno-Schultz Clinic |
| 2013-2015 | John Hanley | PhD student, UVM LCOM and College of Engineering and Mathematical Sciences | Research Advisor | Analyst, UVM Integrative Genomics Resource |
| 2013 | Shana Wolfstein | Undergraduate Summer Internship, from Yeshiva University | Research Advisor | Pharmacy Resident, St. Barnabas Hospital |
| 2013 | Thomas Odde | Undergraduate Summer Internship, from University of Minnesota | Research Advisor | Data Architect, Celbridge Science |
| 2013 | Samuel Raszka | Undergraduate Independent Research, UVM Honors College | Member | Medical Student, UVM |
| 2013-2014 | Robin Megill | Post-baccalaureate Pre-Med trainee, UVM LCOM | Research Advisor | Medical Resident, UPenn Medicine |
| 2014-2017 | Jacqueline Wade | Medical student, UVM LCOM | Research Advisor | Medical Fellow, Beth Israel Deaconess Medical Center |
| 2014-2015 | Amy Berkman | Post-baccalaureate Pre-Med trainee, UVM LCOM | Research Advisor | Physician, Duke |
| 2015 | Xiaoyu Lu | Medical student, Summer Research Fellowship, UVM LCOM | Research Advisor | Medical Resident, University of Maryland |
| 2015 | Kathleen Olson | Medical student, Summer Research Fellowship, UVM LCOM | Research Advisor | Medical Resident, Mayo Clinic Scottsdale |
| 2015-2016 | Christopher Veal | Post-baccalaureate Pre-Med trainee, UVM LCOM | Research Advisor | Resident, Carle Foundation Hospital |
| 2016-2017 | Tessa Barclay | Medical student, UVM LCOM | Research Advisor | Medical Resident, Duke |
| 2016-2018 | Katherine Lantz | Medical student, UVM LCOM | Research Advisor | Medical Resident, Dartmouth-Hitchcock |
| 2016-2018 | Patrick Silveira | Medical student, UVM LCOM | Research Advisor | Medical Resident, Memorial Sloan Kettering |
| 2016 | Robin Leopold | Medical student, UVM LCOM | Research Advisor | Medical Resident, University of North Carolina |

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| 2017-2018 | Soraiya Thura | Medical student, UVM LCOM | Research Advisor | Medical Resident, UMass |
| 2018-2019 | Charles Nicoli | Medical student, UVM LCOM | Research Advisor | Medical Resident, Walter Reed National Military Medical Center |
| 2018-2019 | Stephen Shenouda | Medical student, UVM LCOM | Research Advisor | Medical Resident, Berkshire Medical Center |
| 2018-2019 | Yi-Chuan Yu | Advanced Undergraduate Research in Biological Sciences, UVM College of Agriculture and Life Sciences | Research Advisor | Graduate Student, University of Pittsburgh |
| 2018 | Eric Bolf | PhD student, Cellular Molecular and Biomedical Sciences, UVM Graduate College | Research Advisor | Postdoctoral Fellow, University of Colorado |
| 2018 | Caitlin Beaudet | MPH student, Applied Practice Experience, UVM LCOM | Research Advisor | Quality Control Specialist, Haematologic Technologies Inc. |
| 2019 | Sophie Mulrow | Undergraduate, Public Health Practicum, UVM College of Nursing and Health Sciences | Research Advisor | Disease Intervention Specialist, VT Dept of Health |
| 2019-2020 | Allison Verbyla | Volunteer Internship, from VT Dept of Health | Research Advisor | Public Health Analyst at VT Dept of Health |
| 2020 | Elena Dansky | Medical student, UVM LCOM | Research Advisor | Medical Student, UVM |
| 2020 | Dmitry Lakoba | Undergraduate, Public Health Practicum, College of Nursing and Health Sciences | Research Advisor | Medical Lab Scientist, Beth Israel Deaconess Medical Center |
| 2020 | Caitlin McGeary | High School student, STEM Internship, from Essex High School | Research Advisor | Senior, Essex High School |
| 2020 | Meredith Lackie | Medical student, Surgery Senior Major program, UVM LCOM | Research Advisor | Medical Student, UVM |
| 2021 | Mikaela Mohardt | Medical Student, UVM Cancer Center Summer Research Fellowship | Research Advisor | Medical Student, UVM |
| 2022 | Cate Odde | Undergraduate Summer Internship, from University of Minnesota | Research Advisor | Undergraduate, University of Minnesota |
| 2022 | Amy Chang | Medical Student, UVM LCOM | Research Advisor | Medical Student, UVM |

DISSERTATION/THESIS COMMITTEE MEMBERSHIP

| Dates | Name | Program School | Role | Current Position |
|--------------|--------------------------|---|-------------|--|
| 2012 | Erin Jackson | Honor's Thesis Committee, UVM Honors College | Member | Sustainable Food Systems Specialist, Alternative Energy Resources Organization |
| 2012-2014 | Vicki Hart | PhD Dissertation Committee, Epidemiology, UMass | Member | Assistant Professor, UVM |
| 2014-2017 | Oyewale Shiyانبola | PhD Dissertation Committee, Population Health Sciences, University of Wisconsin | Member | Medical Resident, University of Wisconsin |
| 2015-2016 | Mucahit Cevik | PhD Dissertation Committee, Industrial and Systems Engineering, University of Wisconsin | Member | Assistant Professor, Istanbul University |
| 2021-Present | Rebecca Ouellette-Morton | PhD Dissertation Committee, Clinical and Translational Sciences, UVM LCOM | Chair | PhD Student, UVM |

POSTDOCTORAL FELLOWS AND RESIDENTS DIRECTLY SUPERVISED OR MENTORED

| Dates | Name | Fellow | Faculty Role | Current Position |
|--------------|----------------------------|-------------------------|---------------------|---|
| 2011-2012 | Shaleen Theiler, PhD | Postdoctoral Fellow | Research Advisor | Unknown |
| 2011-2013 | Edress Othman, MD | Hem/Onc Research Fellow | Research Advisor | Chief of Medical Oncology, Southcoast Health |
| 2013-2015 | Sarah Persing, MD | Medical Resident | Research Advisor | Fellow, Johns Hopkins |
| 2014-2015 | Sherrie Khadanga, MD | Medical Resident | Research Advisor | Assistant Professor, UVM |
| 2014-2015 | Ogheneruona Apoe, MD | Hem/Onc Research Fellow | Research Advisor | Physician, Atrium Health |
| 2014-2015 | Samir Ambrale, MD | Medical Fellow | Research Advisor | Assistant Professor, University of Hawaii Cancer Center |
| 2014-2016 | Vicki McLaughlin Hart, PhD | Postdoctoral Fellow | Research Advisor | Assistant Professor, UVM |

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|-----------|------------------------|---------------------|------------------|---|
| 2015-2018 | Mayo Fujii, MD | Surgery Resident | Research Advisor | Medical Fellow, New York Presbyterian Weill Cornell |
| 2016-2018 | Alexandra White, PhD | Postdoctoral Fellow | Research Advisor | Investigator, National Institute of Environmental Health Sciences |
| 2018-2019 | Lucy Lane, MD | Radiology Resident | Research Advisor | Physician, Private Practice in Plattsburgh, NY |
| 2018-2020 | Alexander Rand, MD | Radiology Resident | Research Advisor | Radiology resident |
| 2018-2020 | Samantha Zuckerman, MD | Radiology Fellow | Research Advisor | Physician, UPenn |
| 2018-2020 | Serena Murphy, MD | Surgery Resident | Research Advisor | Surgery resident |
| 2019-2020 | Colleen Kerrigan, MD | Surgery Resident | Research Advisor | Surgery resident |

INFORMAL**Year One Sentence Description of Information Teaching**

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|------|---|
| 2011 | Lecture for CME credit, "Screening Mammography for Breast Cancer – Current Recommendations", Women's Health Conference, Burlington, VT |
| 2012 | Lecture for CME credit, "Predictors of recurrence after a DCIS diagnosis" Vermont Cancer Center 15 th Annual Breast Cancer Conference, Burlington, VT. |
| 2013 | Lecture for CME credit, "Predictors of recurrence after a DCIS diagnosis" Vermont Cancer Center 16 th Annual Breast Cancer Conference, Burlington, VT. |
| 2014 | Lecture for CME credit, "Predictors of recurrence after a DCIS diagnosis" Vermont Cancer Center 17 th Annual Breast Cancer Conference, Burlington, VT. |
| 2015 | Lecture for CME credit, "Predictors of recurrence after a DCIS diagnosis" Vermont Cancer Center 18 th Annual Breast Cancer Conference, Burlington, VT. |

FACULTY MENTORED

| Dates | Name | Position while Mentored | Faculty Role | Current Position |
|--------------|--------------------------|--|---|---|
| 2017-2020 | Thomas Ahern, PhD | Assistant Professor, LCOM Dept of Surgery | Project Mentor on P20 Center Grant Junior Faculty Project | Associate Professor with Tenure – July 2021 |
| 2017-Present | Nataniel Lester-Coll, MD | Assistant Professor, LCOM Radiation Oncology | Junior Faculty Research Mentor | Assistant Professor |
| 2021-Present | Sarah Nowak, PhD | Assistant Professor, LCOM Dept of Pathology | Junior Faculty Mentoring Committee | Assistant Professor |

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| 2021-present | Puyao Li, MD | Assistance Professor, LCOM Radiation Oncology | Junior Faculty Research Mentor | Assistant Professor |
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OTHER VISITING FACULTY SUPERVISED - None

TEACHING AIDS - None

TEACHING AWARDS AND NOMINATIONS

| Year | Award |
|------|---|
| 2016 | Postdoctoral fellow Vicki Hart was awarded the Dean's Excellence in Research Trainee Award for her published research manuscript I supervised. |
| 2017 | Medical student trainee Jacqueline Wade was awarded the 2 nd place prize at the Dept of Surgery Senior Major Scientific Program for her research project I supervised. |
| 2021 | Medical student trainee Meredith Lackie was awarded the 1st place prize at the Dept of Surgery Senior Major Scientific Program for her research project I supervised. |
| 2021 | Medical student trainee Mikaela Mohardt was awarded a 2021 Summer Student Fellowship in Cancer Research from the University of Vermont Cancer Center for her research project I supervised. |
| 2022 | Medical resident trainee was awarded the Dean's Excellence in Research award for Most Outstanding Research Publication by a resident for her published research manuscript I supervised. |

SUMMARY OF TEACHING ACTIVITIES

My teaching responsibilities primarily include the mentoring of graduate and medical students, medical residents, and other trainees in the development of research skills. My research program provides extensive opportunities for the involvement of undergraduates, medical students, graduate students, medical residents, and research fellows. Such trainees typically are introduced to research in my program via supportive tasks such as performing literature reviews or conducting statistical analyses. Those who come with adequate training or acquire sufficient skills under my supervision are encouraged to lead independent research projects that culminate in a manuscript prepared for publication in a scientific journal. I provide instruction and guidance in literature review, hypothesis development, study design, statistical analyses, and scientific writing. Most trainees gain experience in multi-disciplinary collaboration as my research program involves colleagues in many UVM departments and disciplines (Surgery, Radiology, Pathology, Medicine, Biostatistics, Psychology, etc.), as well as a number of external institutions, who provide consultation on my trainees' independent research projects. To date, my trainees have achieved over 20 first author publications under my supervision, and presented more than 20 conference abstracts.

I also participate in classroom instructional activities, such as lectures in College of Medicine courses and curriculum for residents. Since 2011 I have directed an annual one-day Continuing Medical Education course on breast cancer screening and diagnosis that is attended by 35-45 mammography technologists from around the state of Vermont (note that the 2020 workshop was canceled due to the COVID-19 pandemic). I have also given guest lectures in other UVM

courses and curriculum, and at the national level have organized career development workshops at the annual meeting of the American Society of Preventive Oncology.

RESEARCH AND SCHOLARLY ACTIVITIES

RESEARCH AWARDS AND GRANTS

Ongoing Research Support

R01 CA262023 PI: C. Lee 07/01/22 – 06/30/27

National Cancer Institute/National Institutes of Health

Subcontract to University of Washington

Population-based Evaluation of Artificial Intelligence for Mammography Prior to Widespread Clinical Translation

This study perform a population-based evaluation of FDA-approved artificial intelligence algorithms and determine their clinical- and cost-effectiveness for routine breast cancer screening.

Role: Co-Investigator, subcontract PI

Direct (UVM) Costs Year 1: \$25,758

Project Period Total (UVM) Costs: \$168,633

R01 CA266377 PI: C. Lee 06/01/21 – 05/31/26

National Cancer Institute/National Institutes of Health

Subcontract to University of Washington

Racial and Socioeconomic Disparities in Breast Cancer Diagnostic Work Up and Outcomes

This study will identify women who have less access to standard-of-care breast cancer diagnostic technologies and evaluate multi-level factors that affect diagnostic outcomes.

Role: Co-Investigator, subcontract PI

Direct (UVM) Costs Year 1: \$26,271

Project Period Total (UVM) Costs: \$204,915

R01 CA248068 PI: Sprague, Stout 03/01/20-02/28/25

National Cancer Institute/National Institutes of Health

Identifying Effective Risk-based Supplemental Ultrasound Screening Strategies for Women with Dense Breasts

In the absence of screening guidelines for women with dense breasts there has been a dramatic increase in ultrasound screening, though its effectiveness remains uncertain. Using data from the Breast Cancer Surveillance Consortium we will assess ultrasound screening performance within a new risk-based framework.

Role: Principal Investigator, Contact

Direct Costs Year 1: \$602,787

Project Period Total Costs: \$3,493,987

P01 CA154292 PI: Miglioretti, et al. 09/16/22 – 08/31/27

National Cancer Institute/National Institutes of Health

Subcontract to UC-Davis

Advancing equitable risk-based breast cancer screening and surveillance in community practice

This program renewal will provide evidence to improve the equity and effectiveness of breast cancer screening and surveillance. We will create risk prediction tools that perform well for all racial and ethnic groups and examine factors that influence the quality of breast imaging across

radiologist facilities to identify opportunities to improve care.

Role: Project co-leader, Registry lead, subcontract PI

Direct (UVM) Costs Year 1: \$337,441

Project Period Total (UVM) Costs: \$826,411

U01 CA253911 PI: Trentham-Dietz 09/01/20 – 08/31/25

National Cancer Institute/National Institutes of Health

Subcontract to University of Wisconsin

Comparative Modeling: Informing Breast Cancer Control Practice and Policy

To inform policy and clinical decisions, we will use six breast cancer simulation models to evaluate projected population mortality outcomes, harms, and costs of dissemination of evolving cancer control paradigms.

Role: Co-investigator, subcontract PI

Direct (UVM) Costs Year 1: \$27,079

Project Period Total (UVM) Costs: \$215,562

P20 GM103644 PI: Higgins 09/15/18 – 07/31/23

National Institute of General Medical Sciences/National Institutes of Health

Vermont Center on Behavior and Health

This Center brings together an interdisciplinary group of accomplished senior scientists and junior investigators to study relationships between personal behaviors and risk for chronic disease and premature death.

Role: Project Mentor (2018-2021), Co-Investigator (2021-2023)

Project Period Total Costs: \$20.3 million

Completed Research Support

U01 CA196383 PIs: Stein, Sprague & Weaver 09/09/15 – 08/31/22

National Cancer Institute/National Institutes of Health

Vermont Breast Cancer Molecular Characterization Laboratory

We aim to develop tumor microenvironment signatures that distinguish which screen-detected cancers are life threatening from those that are indolent, such that women can be spared aggressive treatments appropriately.

Role: Principal Investigator

Direct Costs Year 1: \$465,488

Project Period Total Costs: \$5,391,498

P01 CA154292 PI: Miglioretti, et al. 07/01/17 – 08/31/22

National Cancer Institute/National Institutes of Health

Subcontract to UC-Davis

Risk-Based Breast Cancer Screening and Surveillance in Community Practice

We will provide evidence on breast cancer screening and surveillance strategies tailored to individual woman characteristics so that the benefits of early detection are realized while the potential harms are minimized.

Role: Project co-leader, Registry lead, subcontract PI

Direct (UVM) Costs Year 1: \$298,818

Project Period Total (UVM) Costs: \$2,467,607

American College of Radiology PI: Burnside

07/28/20 – 7/27/22

Subcontract to University of Wisconsin

Algorithms for Accurate Adaptive Audit Methods (A4M) to Improve Breast Cancer Screening

This study is designed to develop new breast screening audit approaches that account for incomplete outcomes data capture.

Role: Co-investigator, Subcontract PI

Direct (UVM) Costs Year 1: \$36,459

Project Period Total (UVM) Costs: \$41,928

R01 CA248068-01S1

PI: Sprague, Stout

06/01/20 – 02/28/22

National Cancer Institute/National Institutes of Health

Estimating the impact of mammography screening disruptions during the COVID-19 pandemic

This supplemental funding augments our existing R01 CA248068 to evaluate the impact of the COVID-19 pandemic on breast cancer screening and diagnostic imaging.

Role: Principal Investigator, Contact

Direct Costs Year 1: \$115,385

Project Period Total Costs: \$180,000

PCS-1504-30370

PIs: Miglioretti, et al.

09/01/16 – 08/30/21

Patient Centered Outcomes Research Institute (PCORI)

Subcontract to UC-Davis

Comparative Effectiveness of Breast Cancer Screening and Diagnostic Evaluation by Extent of Breast Density

We used prospectively collected observational data to generate evidence on how breast density should be integrated into decision making around breast cancer screening and preoperative diagnostic work-up.

Role: Co-Investigator, Registry lead, subcontract PI

Direct (UVM) Costs Year 1: \$206,965

Project Period Total (UVM) Costs: \$698,494

HHSN 75N91019P00639

PI: Sprague

08/23/19 – 11/22/20

National Cancer Institute/National Institutes of Health

The Breast Radiology Evaluation and Study of Tissues (BREAST) Stamp Project: 10-Year Follow-up

This study collected 10-year follow-up data for women in the BREAST Stamp Project who underwent breast biopsy during 2007-2010, to assess the association between breast tissue factors and breast cancer risk.

Role: Principal Investigator, Contact

Direct Costs Year 1: \$29,181

Project Period Total Costs: \$45,522

R01 CA207361

PI: Braithwaite

01/01/17 – 12/31/20

National Cancer Institute/National Institutes of Health

Subcontract to Georgetown University

Comorbidity and screening outcomes among older women undergoing mammography

The goal of this proposal was to determine the consequences following screening in older women and compare benefits and harms across levels of advancing age, comorbid illness and functional status.

Role: Co-Investigator, Subcontract PI

Direct (UVM) Costs Year 1: \$22,564

Project Period Total (UVM) Costs: \$125,134

R03 CA223725

PI: Sprague, Conant

12/15/17 – 11/30/19

National Cancer Institute/National Institutes of Health

Multi-center evaluation of digital breast tomosynthesis with synthesized two-dimensional mammography for breast cancer screening

We evaluated the clinical performance of a breast cancer mammography screening approach in which digital breast tomosynthesis is used with synthetic 2D images instead of conventional 2D mammography.

Role: Principal Investigator, Contact

Direct Costs Year 1: \$62,865

Project Period Total Costs: \$172,110

U54 CA163303

PI: Sprague, Weaver

09/01/11 – 05/31/18

National Cancer Institute/National Institutes of Health

Vermont PROSPR Research Center

We studied the delivery of breast cancer screening by collecting integrated data on all women undergoing breast cancer screening and diagnostic imaging in the state of Vermont.

Role: Principal Investigator, Contact

Project Period Total Costs: \$6,405,662

P20 GM103644

PI: Higgins

2013-2018

National Institute of General Medical Sciences/National Institutes of Health

*Vermont Center on Behavior and Health**Project 5: Behaviors, Chronic Disease, and Quality of Life after Ductal Carcinoma in Situ*

Role: Project 5 Director

Project Period Total Costs: \$11,455,595

Radiology Research Grant

PI: Sprague

2017

UVM Department of Radiology

Developing ultrasound-guided fine needle aspiration and cytology diagnostic workup for breast cancer in underserved communities in Uganda

Role: Principal Investigator

Project Period Total Costs: \$10,000

LCCRO Pilot Project (032800)

PI: Sprague

2016-2017

UVM Cancer Center/Lake Champlain Cancer Research Organization

Evaluating the performance of digital breast tomosynthesis for breast cancer screening in Vermont

Role: Principal Investigator

Project Period Total Costs: \$65,000

P01 CA154292

PI: Miglioretti

2011-2017

National Cancer Institute/National Institutes of Health

Subcontract to Group Health Research Institute

Risk-Based Breast Cancer Screening in Community Settings

Role: Co-Investigator

Project Period Total (UVM) Costs: \$227,769

HHSN 261201100031C

PI: Miglioretti

2011-2016

National Cancer Institute/National Institutes of Health

Subcontract to Group Health Research Institute

Breast Cancer Surveillance Consortium Data Resource

Role: Co-investigator, subcontract Principal Investigator

Project Period Total (UVM) Costs: \$336,933

U01 CA152958 PI: Mandelblatt 2010-2015

National Cancer Institute/National Institutes of Health

Subcontract to University of Georgetown

Comparative Modeling: Informing Breast Cancer Control Practice & Policy

Role: Co-investigator, subcontract Principal Investigator

Project Period Total (UVM) Costs: \$81,461

Faculty Practice Research Award PI: Sprague, Wood 2012-2014

University of Vermont Medical Group Research Award Program

The influence of inflammation on breast cancer risk

Role: Co-Principal Investigator

Project Period Total Costs: \$49,997

BC102357 PI: Trentham-Dietz 2011-2013

Department of Defense Breast Cancer Research Program

Subcontract to University of Wisconsin

Tumor microenvironment and progression to invasion after a diagnosis of DCIS

Role: Co-investigator, subcontract Principal Investigator

Project Period Total (UVM) Costs: \$28,031

R01 CA067264 PI: Amy Trentham-Dietz 2013

National Cancer Institute/National Institutes of Health

Subcontract to University of Wisconsin

Breast Carcinoma In situ: Predicting Risk and Outcomes

Role: Co-investigator, subcontract Principal Investigator

Project Period Total (UVM) Costs: \$31,665

PCF-0596 PI: Trentham-Dietz 2010-2012

American Society of Preventive Oncology Research Fellowship

Sponsored by Prevent Cancer Foundation and the Susan Komen Foundation

Subcontract to University of Wisconsin

Modifiable risk factors for second breast cancer events after a diagnosis of DCIS

Role: Research Fellow

Project Period Total Costs: \$80,000

R03 CA139548 PI: Trentham-Dietz 2012

National Cancer Institute/National Institutes of Health

Subcontract to University of Wisconsin

The Vitamin D Pathway and Mammographic Breast Density in Postmenopausal Women

Role: Co-investigator, subcontract Principal Investigator

Project Period Total (UVM) Costs: \$17,829

Vermont Department of Health Educational Grant PI: Sprague 2012

Annual Mammography Technologist Workshop 2012

Role: Principal Investigator

Project Period Total Costs: \$1,792

BC062649 PI: Trentham-Dietz) 2010-2011
 Department of Defense Breast Cancer Research Program
 Subcontract to University of Wisconsin
Total Xenoestrogen Body Burden in Relation to Mammographic Density, A Marker of Breast Cancer Risk
 Role: Co-investigator, subcontract Principal Investigator
 Project Period Total (UVM) Costs: \$25,822

5U48DP001935 PI: Geller 2010-2011
 Centers for Disease Control and Prevention
Journey Forward Cancer Survivor Care Planning in the Rural Northeast
 Role: Co-Investigator
 Project Period Total Costs: \$128,764

Hologic, Inc. PI: Sprague 2011
Radiology Technologist Workshop 2011
 Role: Principal Investigator
 Project Period Total Costs: \$500

FAS0703857 PI: Trentham-Dietz 2007-2010
 Susan G. Komen for the Cure Breast Cancer Foundation
Xenoestrogens, Sex Hormones, and Breast Density
 Role: Co-Investigator
 Project Period Total Costs: \$215,427

Pending

SCHOLARSHIP

Peer Reviewed Publications

h-index: 47

Total citations: 9,089

Original Research (*denotes first author as student or trainee)

1. **Sprague BL**, Pearson CG, Maddox P, Bloom K, Salmon ED, Odde DJ. Mechanisms of microtubule-based kinetochore positioning in the yeast metaphase spindle. *Biophysical Journal* 84: 3529-3546, 2003.
2. Karpova TS, Chen TY, **Sprague BL**, McNally JG. Dynamic interactions of a transcription factor with DNA are accelerated by a chromatin remodeler. *EMBO Reports* 5:1064-1070, 2004.
3. **Sprague BL**, Pego RL, Stavreva DA, McNally JG. Analysis of binding reactions by fluorescence recovery after photobleaching. *Biophysical Journal* 86:3473-3495, 2004.

4. Gardner MK, Pearson CG, **Sprague BL**, Zarzar TR, Bloom K, Salmon ED, Odde DJ. Tension-dependent regulation of microtubule dynamics at kinetochores can explain metaphase congression in yeast. *Molecular Biology of the Cell* 16:3764-3775, 2005.
5. Laricchio-Robbio L, Tamura T, Karpova T, **Sprague BL**, McNally JG, Ozato K. Partner-regulated interaction of IFN regulatory factor 8 with chromatin visualized in live macrophages. *Proceedings of the National Academy of Sciences* 102:14368-14373, 2005.
6. **Sprague BL**, McNally JG. FRAP analysis of binding: proper and fitting. *Trends in Cell Biology* 15:84-91, 2005.
7. **Sprague BL**, Mueller F, Pego RL, Bungay PM, Stavreva DA, McNally JG. Analysis of binding at a single spatially localized cluster of binding sites by fluorescence recovery after photobleaching. *Biophysical Journal* 91(4):1169-1191, 2006.
8. **Sprague BL**, Trentham-Dietz A, Newcomb PA, Titus-Ernstoff L, Hampton JM, Egan KM. Lifetime recreational and occupational physical activity and risk of in situ and invasive breast cancer. *Cancer Epidemiology Biomarkers & Prevention* 16(2):236-243, 2007.
9. **Sprague BL**, Trentham-Dietz A, Garcia-Closas M, Newcomb PA, Titus-Ernstoff L, Hampton JM, Chanock SJ, Haines JL, Egan KM. Genetic variation in TP53 and risk of breast cancer in a population-based case-control study. *Carcinogenesis* 28(8):1680-1686, 2007.
10. Nichols HB, Trentham-Dietz A, **Sprague BL**, Hampton JM, Titus-Ernstoff L, Newcomb PA. Effects of birth order and maternal age on breast cancer risk: modification by whether women had been breast-fed. *Epidemiology* 19(3):417-423, 2008. PMID: PMC2782562.
11. Trentham-Dietz A, **Sprague BL**, Klein R, Klein BEK, Cruickshanks KJ, Fryback DG, Hampton JM. Health-related quality of life before and after a breast cancer diagnosis. *Breast Cancer Research and Treatment* 109(2):379-387, 2008.
12. **Sprague BL**, Warren Andersen S, Trentham-Dietz A. Thyroid cancer incidence and socioeconomic indicators of health care access. *Cancer Causes and Control* 19(6):585-593, 2008.
13. **Sprague BL**, Trentham-Dietz A, Egan KM, Titus-Ernstoff L, Hampton JM, Newcomb PA. Proportion of invasive breast cancer attributable to risk factors modifiable after menopause. *American Journal of Epidemiology* 168(4):404-411, 2008. PMID: PMC2727276.
14. **Sprague BL**, Trentham-Dietz A, Klein BEK, Klein R, Cruickshanks KJ, Lee KE, Hampton JM. Physical activity, white blood cell count, and lung cancer risk in a prospective cohort study. *Cancer Epidemiology Biomarkers & Prevention* 17(10):2714-2722, 2008. PMID: PMC2692679.
15. **Sprague BL**, Trentham-Dietz A, Terry MB, Nichols HB, Bersch AJ, Buist DSM. Fertility drug use and mammographic breast density in a mammography screening cohort of premenopausal women. *Cancer Epidemiology Biomarkers & Prevention* 17(11):3128-3133, 2008. PMID: PMC2621442.
16. **Sprague BL**, Trentham-Dietz A. Prevalence of breast carcinoma in situ. *JAMA* 302(8):846-848, 2009. PMID: PMC2884369.
17. Gardner MK, **Sprague BL**, Pearson CG, Cosgrove BD, Bicek AD, Bloom K, Salmon ED, Odde DJ. Model convolution: a computational approach to digital image

- interpretation. *Cellular and Molecular Bioengineering* 3(2):163-170, 2010. PMID: PMC2864900.
18. **Sprague BL**, Skinner HG, Trentham-Dietz A, Lee KE, Klein BEK, Klein R. Serum calcium and breast cancer risk in a prospective cohort study. *Annals of Epidemiology* 20(1):82-85, 2010. PMID: PMC2796253.
 19. **Sprague BL**, Trentham-Dietz A, Burnside ES. Socioeconomic disparities in the decline in invasive breast cancer incidence. *Breast Cancer Research and Treatment* 122(3):873-878, 2010. PMID: PMC2904433.
 20. **Sprague BL**, Trentham-Dietz A, Nichols HB, Hampton JM, Newcomb PA. Change in lifestyle behaviors and medication use after a diagnosis of ductal carcinoma in situ. *Breast Cancer Research and Treatment* 124(2):487-495, 2010. PMID: PMC2924938.
 21. **Sprague BL**, Trentham-Dietz A, Gangnon RE, Buist DSM, Burnside ES, Aiello Bowles EJ, Stanczyk FZ, Sisney GS. Circulating sex hormones and mammographic breast density among postmenopausal women. *Hormones and Cancer* 2:62-72, 2011. PMID: PMC3035325.
 22. **Sprague BL**, Trentham-Dietz A, Remington PL. The contribution of postmenopausal hormone use cessation to the declining incidence of breast cancer. *Cancer Causes & Control* 22(1):125-134, 2011. PMID: PMC3034386.
 23. **Sprague BL**, Trentham-Dietz A, Gangnon RE, Ramchandani R, Hampton JM, Robert SA, Remington PL, Newcomb PA. Socioeconomic status and survival after an invasive breast cancer diagnosis. *Cancer* 117(7):1542-1551, 2011. PMID: PMC3116955.
 24. *Lowry SJ, **Sprague BL**, Aiello Bowles EJ, Hedman CJ, Hemming J, Hampton JM, Burnside ES, Sisney GA, Buist DSM, Trentham-Dietz A. Mammographic breast density and serum phytoestrogen levels. *Nutrition and Cancer* 64(6):783-789, 2012. PMID: PMC4055295
 25. **Sprague BL**, Trentham-Dietz A, Gangnon RE, Buist DSM, Burnside ES, Aiello Bowles EJ, Stanczyk FZ, Sisney GS, Skinner HG. The vitamin D pathway and mammographic breast density among postmenopausal women. *Breast Cancer Research and Treatment* 131:255-265, 2012. PMID: PMC3250989.
 26. **Sprague BL**, Trentham-Dietz A, Cronin KA. A sustained decline in postmenopausal hormone use: results from NHANES 1999-2010. *Obstetrics & Gynecology* 120(3):595-603, 2012. PMID: PMC3607288.
 27. Hubbard RA, Zhu W, Horblyuk R, Karliner L, **Sprague BL**, Henderson L, Lee D, Onega T, Buist DS, Sweet A. Diagnostic imaging and biopsy pathways following abnormal screen-film and digital screening mammography. *Breast Cancer Research and Treatment* 138(3):879-897, 2013. PMID: PMC3640408.
 28. Batina NG, Trentham-Dietz A, Gangnon RE, **Sprague BL**, Rosenberg MA, Stout NK, Fryback DG, Alagoz OA. Variation in tumor natural history contributes to racial disparities in breast cancer stage at diagnosis. *Breast Cancer Research and Treatment* 138(2):519-528, 2013. PMID: PMC3610865.
 29. Dulko D, Pace CM, Dittus KL, **Sprague BL**, Pollack LA, Hawkins NA, Geller BM. Barriers and facilitators to implementing cancer survivorship care plans. *Oncology Nursing Forum* 40(6):575-580, 2013.
 30. *Wang J, Trentham-Dietz A, Hemming JDC, Hedman CJ, **Sprague BL**. Serum factors and clinical characteristics associated with serum E-Screen activity. *Cancer Epidemiology Biomarkers & Prevention* 22(5):962-971, 2013. PMID: PMC3726048.

31. **Sprague BL**, Dittus KL, Pace CM, Dulko D, Pollack LA, Hawkins NA, Geller BM. Patient satisfaction with breast and colorectal cancer survivorship care plans. *Clinical Journal of Oncology Nursing* 17(3):266-272, 2013.
32. **Sprague BL**, Trentham-Dietz A, Hedman CJ, Wang J, Hemming JDC, Hampton JM, Buist DSM, Aiello Bowles EJ, Sisney GS, Burnside ES. Circulating serum xenoestrogens and mammographic breast density. *Breast Cancer Research* 15(3):R45, 2013. PMID: PMC4053153.
33. **Sprague BL**, McLaughlin V, Hampton JM, Newcomb PA, Trentham-Dietz A. Disease-free survival by treatment after a DCIS diagnosis in a population-based cohort study. *Breast Cancer Research and Treatment* 141:145-154, 2013. PMID: PMC3915783.
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35. Munoz D, Near AM, van Ravesteyn NT, Lee SJ, Schechter CB, Alagoz O, Burnside E, Berry D, Chang Y, Chisholm G, de Koning HJ, Ergun MA, Heijnsdijk EAM, Huang H, Stout N, **Sprague BL**, Trentham-Dietz A, Mandelblatt JS, Plevritis SK. Effects of screening and adjuvant therapy on ER-specific US breast cancer mortality. *Journal of the National Cancer Institute* 106(8):dju289, 2014. PMID: PMC427102.
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37. Lee CI, Ichikawa L, Rochelle MC, Kerlikowske K, Miglioretti DL, **Sprague BL**, DeMartini WB, Wernli KJ, Joe BN, Yankaskas BC, Lehman CD. Breast MRI BI-RADS assessments and recall rates by clinical indication in U.S. community practices. *Academic Radiology* 21(11):1370-1376, 2014. PMID: PMC4194166.
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40. Munsell MF, **Sprague BL**, Berry DA, Chisholm G, Trentham-Dietz A. Meta-analysis of body mass index and breast cancer risk according to postmenopausal estrogen-progestin use and hormone receptor status. *Epidemiologic Reviews* 36:114-136, 2014. PMID: PMC3873844.
41. Trentham-Dietz A, **Sprague BL**, Hampton JM, Miglioretti DL, Nelson HD, Titus LJ, Egan KM, Remington PL, Newcomb PA. Modification of breast cancer risk according to age and menopausal status: A combined analysis of five population-based case-control studies. *Breast Cancer Research and Treatment* 145(1):165-175, 2014. PMID: PMC4112552.

42. Vatovec CV, Erten MZ, Kolodinsky J, Brown P, Wood M, James T, **Sprague BL**. Ductal carcinoma in situ: a brief review of treatment variation and impacts on patients and society. *Critical Reviews in Eukaryotic Gene Expression* 24(4):281-286, 2014. PMID: PMC4372113.
43. *Berkman A, Cole B, Ades PA, Dickey S, Higgins ST, Trentham-Dietz A, **Sprague BL**, Lakoski SG. Racial differences in breast cancer, cardiovascular disease, and all-cause mortality among women with ductal carcinoma in situ of the breast. *Breast Cancer Research & Treatment* 148(2):407-413, 2014. PMID: PMC4372117.
44. *Jewett PI, Trentham-Dietz A, Gangnon R, **Sprague BL**. Trends of postmenopausal estrogen plus progestin prevalence in the United States between 1970 and 2010. *Obstetrics & Gynecology* 124(4):727-733, 2014. PMID: PMC4172523.
45. *McLaughlin VH, Trentham-Dietz A, Hampton JM, Newcomb PA, **Sprague BL**. Lifestyle factors and the risk of a second breast cancer after ductal carcinoma in situ. *Cancer Epidemiology Biomarkers & Prevention* 23(3):450-460, 2014. PMID: PMC3951673.
46. *Bolton KC, Mace JL, Vacek PM, Herschorn SD, James TA, Tice JA, Kerlikowske K, Geller BM, Weaver DL, **Sprague BL**. Changes in the breast cancer risk distribution among Vermont women utilizing screening mammography. *Journal of the National Cancer Institute* 106(4):dju157, 2014. PMID: PMC4375382.
47. **Sprague BL**, Bolton KC, Mace JL, Herschorn SD, James TA, Vacek PM, Weaver DL, Geller BM. Trends in breast cancer screening mammography before and after the 2009 USPSTF recommendations. *Radiology* 270(2):354-361, 2014. PMID: PMC4118300.
48. **Sprague BL**, Gangnon R, Burt V, Trentham-Dietz A, Hampton JM, Kerlikowske K, Miglioretti DL. Prevalence of mammographically dense breasts in the United States. *Journal of the National Cancer Institute* 106(10):dju255, 2014. PMID: PMC4200066.
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Non-Peer Reviewed Publications

Books and Chapters

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Other Scholarly Publications

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Abstracts

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 34. **Sprague B**, Trentham-Dietz A, Cronin K. A sustained decline in postmenopausal hormone use: results from NHANES 1999-2010. Annual Meeting of the Society of Epidemiologic Research, 2012; Minneapolis, MN. *American Journal of Epidemiology* 175:S135.
 35. Wernli KJ, O'Meara ES, Kerlikowske K, Miglioretti D, Muller CY, Onega T, **Sprague B**, Yankaskas B, Brandzel S, Cohen-Cline H, Buist DSM. Is mammographic breast density a biomarker exposure for ovarian cancer? Biennial Marsha Rivkin Foundation Ovarian Cancer Research Symposium, 2012; Seattle, WA.
 36. Rochelle MC, Lee CI, Ichikawa L, Joe BN, **Sprague B**, Wernli K, DeMartini WB, Lehman CD. Variation in Breast MR Imaging BI-RADS assessment by clinical indication in U.S. Community Settings. Association of University Radiologists Annual Meeting, 2013; Los Angeles, CA.
 37. *Othman E, Wang J, **Sprague B**, Ji Y, Herschorn SD, Wood M. Comparison of false positive rates for screening breast MRI in high risk women when studies are done stacked versus alternating. American Society of Clinical Oncology Annual Meeting, 2013; Chicago, IL. *Journal of Clinical Oncology* 31(15 supplement):1512, 2013.
 38. *McLaughlin V, Trentham-Dietz A, Hampton JM, Newcomb PA, **Sprague BL**. Lifestyle factors and the risk of a second breast diagnosis after DCIS in the Wisconsin In Situ Cohort. Annual Meeting of the American Society of Preventive Oncology, 2013; Memphis, TN. *Cancer Epidemiology Biomarkers & Prevention* 22:472. *Cancer Epidemiology Biomarkers & Prevention* 22(3): 472, 2013.
 39. *Bolton K, Mace J, Geller B, Sprague B. Patterns in screening mammography utilization by socio-demographic and breast cancer risk factors between 2000 and 2012. Society for Epidemiologic Research Annual Meeting. June 18-21, 2013. Boston, MA. *Am J Epidemiol* 177(11 Suppl): S176, 2013.

40. Binder A, Hampton JM, **Sprague B**, Walsh MC, Newcomb PA, Trentham-Dietz A. Tumor markers in relation to disease-free survival among women with ductal carcinoma in situ of the breast. Society for Epidemiologic Research Annual Meeting. June 18-21, 2013. Boston, MA. *Am J Epidemiol* 177(11 Suppl): S121, 2013.
41. Onega T, Beaber E, Conant E, Marcus P, Sprague B. Breast cancer screening in an era of personalized regimens: a conceptual model for risk- and preference-based screening at a population level. Society for Epidemiologic Research Annual Meeting. June 18-21, 2013. Boston, MA. *Am J Epidemiol* 177(11 Suppl): S81, 2013.
42. Gangnon R, **Sprague B**, Stout N, Alagoz O, Trentham-Dietz. Challenges in age-period-cohort modeling of breast cancer incidence. Joint Statistical Meetings. August 3-8, 2013; Montreal.
43. Jewett PI, **Sprague BL**, Trentham-Dietz A, Gangnon RE. Estimating postmenopausal hormone use in the US 1970-2010. Annual meeting of the National Cancer Institute's Breast Cancer and the Environment Research Program. November 6-8, 2013. Madison, WI.
44. Trentham-Dietz A, Conklin MW, Gangnon RE, **Sprague BL**, Eliceiri KW, Bredfelt JS, Surachaicharn N, Campagnola PJ, Friedl A, Newcomb PA, Keely PJ. Alteration of stromal collagen fiber orientation in DCIS. San Antonio Breast Cancer Symposium, December 10-14, 2013; San Antonio, TX.
45. Trentham-Dietz A, Gangnon RE, **Sprague BL**, Conklin MW, Eliceiri KW, Hampton JM, Newcomb PA, Friedl A, Keely PJ. Collagen fiber alignment in relation to prognostic markers for DCIS. Annual Meeting of the American Society of Preventive Oncology, March 9-11, 2014; Arlington, VA. *Cancer Epidemiology Biomarkers & Prevention* 23:565, 2014.
46. *Bolton KC, Mace JL, Vacek PM, Geller BM, Weaver DL, **Sprague BL**. Changes in the breast cancer risk distribution among women utilizing screening mammography in Vermont between 2001 and 2012. Annual Meeting of the American Society of Preventive Oncology, March 9-11, 2014; Arlington, VA. *Cancer Epidemiology Biomarkers & Prevention* 23:564, 2014.
47. *Shulman LM, **Sprague BL**. Risk factors for second breast cancer events following DCIS diagnosis in Vermont. Annual Meeting of the American Society of Preventive Oncology, March 9-11, 2014; Arlington, VA.
48. *Hart V, Trentham-Dietz A, Hampton JM, Newcomb PA, **Sprague BL**. Quality of life by treatment choice after DCIS breast cancer. Annual Meeting of the American Society of Preventive Oncology, March 9-11, 2014; Arlington, VA.
49. Obadina ET, Bogart A, Lee CI, Hubbard RA, Hill DA, **Sprague BL**, Haas JS, Tosteson ANA, DeMartini WB, Lehman CD, Onega T. Variations in the availability of advanced breast imaging based on radiology facility characteristics. Annual Meeting of the Association of University Radiologists, April 1-4, 2014; Baltimore, MD.
50. *Persing S, **Sprague B**, James TA, Callas P, Mace J, Jerome M, Sowden M, Goodwin A, Weaver DL. Surgical margin reporting in breast conserving surgery: does compliance with guidelines affect re-excision and mastectomy rates? Annual Meeting of the American Society of Breast Surgeons, Las Vegas, NV, April 30-May 4, 2014; Las Vegas, NV.
51. Ichikawa L, Rochelle MC, Kerlikowske K, Miglioretti DL, **Sprague BL**, DeMartini WB, Wernli KJ, Joe BN, Yankaskas BC, Lehman CD. Breast MRI BI-RADS

- Assessments and Abnormal Interpretation Rates by Clinical Indication in U.S. Community Practices. 2014 AcademyHealth Annual Research Meeting, June 8-10, 2014, San Diego, CA.
52. Kachajian J, Heimann R, James T, Khan F, Mallory S, Naud S, **Sprague B**, Thompson L, Cranmer D, Johnson A. Access to Care in Vermont: Factors Linked with Time to Chemotherapy for Women with Breast Cancer. Annual Meeting of the North American Association of Central Cancer Registries. June 21-26, 2014; Ottawa, ON.
 53. Gangnon R, Jewett P, **Sprague B**, Stout N, Alagoz O, Trentham-Dietz A. Impact of postmenopausal hormone use on breast cancer incidence in the US. Society for Epidemiologic Research Annual Meeting, June 24-27, 2014; Seattle, WA.
 54. *Berkman A, Cole B, Ades PA, Dickey S, Trentham-Dietz A, **Sprague BL**, Lakoski SG. Breast Cancer and Cardiovascular Disease Mortality Among Black and White Women with Ductal Carcinoma In Situ of the Breast. American Heart Association Scientific Sessions, November 15-19, 2014; Chicago, IL.
 55. Carr FE, Hanley JP, Jackson E, Morrissey LA, Rizzo DM, **Sprague BL**, Sarkar IN. Geospatial and Temporal Analysis of Thyroid Cancer Incidence in a Rural Population. Annual Meeting of the Endocrine Society, March 5-8, 2015; San Diego, CA.
 56. Trentham-Dietz A, Ergun MA, Alagoz O, Stout NK, Gangnon RE, Dittus K, James TA, Vacek PM, Herschorn S, Weaver DL, **Sprague BL**. Comparative Effectiveness of Incorporating a Novel DCIS Prognostic Marker into Breast Cancer Screening. American Society of Preventive Oncology, Birmingham, AL, March 2015.
 57. *Hart V, Reeves KW, Sturgeon SR, Reich NG, Sievert LL, Kerlikowske K, Ma L, **Sprague BL**. The effect of weight change on volumetric measures of mammographic density. American Society of Preventive Oncology, Birmingham, AL, March 2015.
 58. **Sprague BL**, Herschorn S, Weaver DL. Variation in the distribution of mammographic breast density across radiologists. American Society of Preventive Oncology, Birmingham, AL, March 2015.
 59. Lee, AY, Ichikawa L, Lee JM, Lee CI, DeMartini WB, Joe BN, Herschorn SD, Wernli KJ, **Sprague BL**, Lehman CD. Concordance of MRI BI-RADS Assessments and Management Recommendations in Community Practice. American College of Radiology Annual Meeting; Washington, DC. May 2015.
 60. Valencia E, Ichikawa L, Lee JM, Miglioretti DL, Wernli KJ, Buist DS, Kerlikowske K, Henderson LM, **Sprague BL**, Onega T, Lehman CD. Performance Benchmarks for Screening Breast MRI in Community Practice. Society of Breast Imagers Symposium at the American College of Radiologists Annual Meeting. Washington, DC. May 2015.
 61. Henderson H, Hubbard R, Wernli K, Kerlikowske K, Buist DSM, **Sprague B**, Goodrich M, DeMartini W, Ozanne E, Zhu W, O'Donoghue C, Virnig BA, Tosteson ANA, Onega T. Are breast density and family history associated with pre-operative breast MRI use? American Society of Clinical Oncology Annual Meeting; Chicago, IL. May-June 2015.
 62. *Ambrale S, Rounds T, Sussman B, Rincon M, Kontos D, Ji Y, **Sprague B**, Wood ME. The influence of inflammation on mammographic breast density in women at increased risk of breast cancer. American Society of Clinical Oncology Annual Meeting; Chicago, IL. May-June 2015.

63. Conant EF, Beaber EF, Armstrong K, Haas J, Herschorn S, McCarthy A, Onega T, Poplack S, Schnall M, **Sprague B**, Tosteson ANA, Weaver D, and Barlow W. Breast cancer screening using tomosynthesis in combination with digital mammography compared to digital mammography alone within the PROSPR consortium. International Cancer Screening Network Meeting; Rotterdam, Netherlands. June 2015.
64. Haas JS, **Sprague BL**, Klabunde CN, Tosteson ANA, Chen J, Bitton A, Beaber EF, Onega T, Kim JJ, MacLean C, Harris K, Yamartino P, Howe K, Pearson L, Feldman S, Schapira M. US provider attitudes and practices for breast and cervical cancer screening. International Cancer Screening Network Meeting; Rotterdam, Netherlands. June 2015.
65. **Sprague BL**, Stout NK, Schechter C, van Ravesteyn NT, Cevik M, Alagoz O, Lee CI, van den Broek JJ, Miglioretti DL, Mandelblatt JS, de Koning H.J., Kerlikowske K, Lehman CD, Tosteson ANA. Benefits, harms, and cost-effectiveness of supplemental ultrasonography screening for women with dense breasts. International Cancer Screening Network Meeting; Rotterdam, Netherlands. June 2015.
66. Gangnon RE, Trentham-Dietz A, Conklin MW, **Sprague BL**, Eliceiri KW, Bredfeldt JS, Newcomb PA, Friedl A, Keely PJ. Stromal Collagen Fiber Orientation and Recurrent Breast Cancer in situ. Annual Meeting of the Society for Epidemiologic Research; Denver, CO. June 2015.
67. *Shiyanbola O, **Sprague BL**, Hampton JM, Dittus K, James T, Herschorn S, Gangnon RE, Weaver DL, Trentham-Dietz A. Variation in Patterns of Care for Ductal Carcinoma In Situ in the National Cancer Data Base. Annual Meeting of the Society for Epidemiologic Research; Denver, CO. June 2015.
68. Gangnon RE, Jewett P, **Sprague B**, Stout N, Alagoz O, Trentham-Dietz A. Incorporating Effects of Mammography Screening and Postmenopausal Hormone Use into Flexible Age-Cohort Models for Breast Cancer Incidence. 2015 International Society for Clinical Biostatistics (ISCB); Utrecht, the Netherlands. August 2015.
69. Wood ME, **Sprague BL**, Oustimov A, Synnsvedt MB, Cuke M, Conant EF, Kontos D. Aspirin use is associated with lower mammographic density in a large screening cohort. San Antonio Breast Cancer Symposium; San Antonio, TX. December 2015.
70. Wernli KJ, Arao RF, Hubbard RA, **Sprague BL**, Alford-Teaster J, Haas JS, Henderson L, Hill D, Lee CI, Tosteson ANA, Onega T. How have breast cancer screening intervals changed since the 2009 USPSTF guideline update? American Society of Preventive Oncology; Columbus, OH. March 2016.
71. *Veal CT, Hart V, Hampton J, Trentham-Dietz A, Gangnon R, Newcomb PA, Sprague B. Influence of health behavior on mortality in women diagnosed with ductal carcinoma in situ. American Society of Preventive Oncology; Columbus, OH. March 2016.
72. *Hart V, Berkman A, Ba Y, Fujii M, Veal C, Hampton J, Gangnon RE, Newcomb PA, Trentham-Dietz A, Sprague B. The association between post-diagnosis health behaviors and quality of life in survivors of ductal carcinoma in situ. American Society of Preventive Oncology; Columbus, OH. March 2016.
73. Yaghjian L, Arao R, Brokamp C, O'Meara E, **Sprague B**, Ghita G, Ryan. Association of PM2.5 and ozone exposure with mammographic breast density in the Breast Cancer Surveillance Consortium. Annual meeting of the American Association for Cancer Research; New Orleans, LA. April 2016.

74. Beaver EF, Tosteston ANA, Haas JS, Onega T, **Sprague BL**, Weaver DL, McCarthy AM, Doubeni CA, Quinn VP, Skinner CS, Zauber AG, Barlow WE. Breast cancer screening initiation after turning 40 years of age and recall patterns among first-time screeners within the PROSPR consortium. Annual meeting of the Society for Epidemiologic Research; Miami, OH. June 2016.
75. Rutter CM, Kim JJ, Meester RGS, **Sprague BL**, Burger EA, Zauber AG, Ergun MA, Campos NG, Doubeni CA, Trentham-Dietz A, Sy S, Alagoz O, Stout N, Lansdorp-Vogelaar I, Corley DA, Tosteson ANA. Effect of time to diagnostic testing for breast, cervical, and colorectal cancer screening abnormalities on screening efficacy: a modeling study. Annual meeting of the Society for Medical Decision Making; Vancouver, British Columbia, Canada. October 2016.
76. Johnson A, Shulman L, Kachajian J, **Sprague BL**, Khan F, James T, Cranmer D, Young P, Heimann R. Access to care in Vermont, factors linked with time to chemotherapy for women with breast cancer: a retrospective cohort study. Annual Meeting of the Northern New England Clinical Oncology Society; Bretton Woods, NH. October 2016.
77. Wernli KJ, Ichikawa L, Kerlikowske K, Bush M, Johnson D, Buist DSM, Brandzel SD, DeMartini WB, Henderson L, Nekhlyudov L, Onega T, **Sprague B**, Miglioretti DL. Comparative performance of surveillance mammography and breast MRI in women with a history of breast cancer. San Antonio Breast Cancer Symposium; San Antonio, TX. December 2016.
78. Lehman CD, Arao RF, **Sprague BL**, Lee JM, Buist DSM, Kerlikowske K, Henderson LM, Onega T, Tosteson ANA, Rauscher GH, Miglioretti DL. National performance benchmarks for modern screening digital mammography: update from the Breast Cancer Surveillance Consortium. Annual meeting of the Radiological Society of North America; Chicago, IL. December 2016.
79. **Sprague BL**, Arao R, Miglioretti DL, Lee JM, Kerlikowske K, Lehman CD, Henderson LM, Onega T, Tosteson ANA, Rauscher GH, Buist DSM. National performance benchmarks for modern diagnostic digital mammography: update from the Breast Cancer Surveillance Consortium. Annual meeting of the Radiological Society of North America; Chicago, IL. December 2016.
80. *Shiyanbola OO, Arao RF, Miglioretti DL, **Sprague BL**, Hampton JM, Stout NK, Kerlikowske K, Braithwaite D, Buist DSM, Egan KM, Newcomb P, Trentham-Dietz A. Emerging trends in family history of breast cancer and associated risk. Annual Meeting of the American Society of Preventive Oncology; Seattle, WA. March 2017.
81. *Fujii MH, Herschorn SD, Sowden M, Weaver DL, Hotaling EN, **Sprague BL**. Comparing diagnosis, detection, and likelihood of intervention between screening digital breast tomosynthesis and digital mammography. Annual Meeting of the American Society of Preventive Oncology; Seattle, WA. March 2017.
82. Mullooly M, Bejnordi BE, Palakal M, Vacek PM, Weaver DL, Shepherd JA, Fan B, Mahmoudzadeh AP, Wang J, Johnson JM, Herschorn SD, **Sprague BL**, Pfeiffer RM, Brinton LA, Sherman ME, Beck A, Gierach GL. Application of convolutional neural networks to breast biopsies to uncover tissue correlates of mammographic breast density. Annual Meeting of the American Association of Cancer Research; Washington, DC. April 2017.

83. Lee JM, **Sprague BL**, Kerlikowske K, Arao RF, Lehman CD, Smith R, Henderson LM, Rauscher GH, Miglioretti DL. Performance of Screening Ultrasound as an Adjunct to Screening Mammography in Women with Dense Breast Tissue. American College of Radiology Society of Breast Imaging Symposium; Los Angeles, CA. April 2017.
84. Haas JS, Barlow WE, Schapira MM, MacLean CD, Klabunde CN, **Sprague BL**, Beaver EF, Chen JS, Bitton A, Onega T, Harris K, Tosteson ANA. Primary care providers' beliefs and recommendations and use of screening mammography by their patients. Annual Meeting of the Society of General Internal Medicine; Washington, DC. April 2017.
85. Mullooly M, Bejnordi BE, Palaka M, Fan S, Hada M, Vacek PM, Weaver DL, Shepherd JA, Fan B, Mahmoudzadeh AP, Wang J, Johnson JM, Herschorn SD, **Sprague BL**, Pfeiffer RM, Brinton LA, Sherman ME, Beck A, Gierach GL. Using convolutional neural networks to delineate pathological correlates of mammographic breast density from diagnostic image-guided breast biopsies. 8th International Breast Density and Cancer Risk Assessment Workshop; San Francisco, CA. June 2017.
86. Lu X, Perusse K, **Sprague B**, Conant E, Herschorn S. Lessons learned from group review of false-negative mammograms. American College of Radiology Annual Conference on Quality and Safety; Boston, MA. October 2017.
87. Arasu VA, Miglioretti DL, **Sprague BL**, Buist DS, Henderson LM, Herschorn SD, Lee JM, Onega T, Wernli KJ, Lehman CD, Kerlikowske K. Population-based assessment of the effect of MRI background parenchymal enhancement on future primary breast cancer risk. Annual meeting of the Radiological Society of North America; Chicago, IL. November -December 2017.
88. Miglioretti DL, Kerlikowske K, **Sprague BL**. Risk-based strategies for supplemental breast cancer screening. 2018 European Congress of Radiology; Vienna, Austria. March 2018.
89. Arroyo NA, Hampton JM, Gangnon RE, **Sprague BL**, Stout NK, Alagoz O, Greenberg CC, Burnside ES, Trentham-Dietz A. Disparities in time to treatment in breast cancer patients in the National Cancer Database, 2004-2013. Annual Meeting of the American Society of Preventive Oncology; New York City. March 2018.
90. Demb J, Abraham L, Miglioretti DL, Buist DSM, **Sprague B**, Walter LC, O'Meara ES, Schousboe J, Henderson LM, Kerlikowske K, Braithwaite D. Cumulative incidence of non-breast cancer mortality and breast cancer risk by comorbidity and age among older women undergoing mammography screening: The Medicare-linked Breast Cancer Surveillance Consortium cohort study. Annual Meeting of the American Society of Preventive Oncology; New York City. March 2018.
91. Braithwaite D, Miglioretti DL, Zhu W, Demb J, Trentham-Dietz A, **Sprague B**, Tice JA, Onega T, Henderson LM, Buist DSM, Walter LC, Kerlikowske K. Breast density and risk of invasive breast cancer among older women undergoing mammography: the Breast Cancer Surveillance Consortium cohort study. Annual Meeting of the American Society of Preventive Oncology; New York City. March 2018.
92. **Sprague BL**, Vacek PM, Herschorn SD, James TA, Geller BM, Trentham-Dietz A, Stein JL, Weaver DL. Long term outcomes of ductal carcinoma in situ (DCIS) of the breast in a population-based cohort. Annual Meeting of the American Society of Preventive Oncology; New York City. March 2018.

93. *White AJ, Weinberg CR, O'Meara ES, Sandler DP, **Sprague BL**. Hazardous air toxics and breast density. Annual Meeting of the Society for Epidemiologic Research; Baltimore, MD. June 2018.
94. *Nicoli CD, **Sprague BL**, Lester-Coll NH. Association of rurality with survival and receipt of treatment in early-stage non-small cell lung cancer. Annual Meeting of the Northern New England Clinical Oncology Society; Bretton Woods, NH. November 2018.
95. Lowry K, Stout NK, Alagoz A, Burnside ES, Conant EF, Kerlikowske K, McCarthy AM, Miglioretti DL, **Sprague BL**, Tosteson AN, Yaffe MJ, Schechter C, Trentham-Dietz A. Integration of digital breast tomosynthesis into breast cancer screening practices in the United States: a comparative modeling analysis. Annual Meeting of the Radiological Society of North America; Chicago, IL. November 2018.
96. **Sprague BL**, Herschorn SD, Shenouda SV, Zuckerman SP, Weaver DL, Conant EF. Breast cancer screening outcomes on digital breast tomosynthesis with synthesized two-dimensional mammography. Annual Meeting of the American Society of Preventive Oncology; Tampa, FL. March 2019.
97. *Zuckerman S, **Sprague BL**, Weaver DL, Herschorn SD, Conant EF. Uptake of synthetic 2D mammography among radiologists using digital breast tomosynthesis in the screening setting. Society of Breast Imaging/American College of Radiology Breast Imaging Symposium; Hollywood, FL. April 2019.
98. Barlow WE, Beaber EF, Geller BM, Kamineni A, Zheng Y, Haas JS, Chao CR, Rutter CM, Zauber AG, **Sprague BL**, Halm EA, Weaver DL, Chubak J, Doria-Rose VP, Kobrin S, Onega T, Quinn VP, Schapira MM, Tosteson ANA, Corley DA, Skinner CS, Schnall MD, Armstrong K, Wheeler CM, Silverberg MJ, Balasubramanian BA, Doubeni CA, McLerran D, Tiro JA. Evaluating screening participation, follow-up and outcomes for breast, cervical and colorectal cancer in the PROSPR consortium. International Cancer Screening Network Conference; Rotterdam, the Netherlands. June 2019.
99. Bodelon C, Mullooly M, Pfeiffer RM, Fan S, Abubakar M, Vacek PM, Weaver DL, Herschorn SD, **Sprague BL**, Hewitt S, Shepherd J, Mahmoudzadeh AP, Wang J, Fan B, Malkov S, Keely P, Sherman ME, Conklin MW, Gierach GL. Mammary collagen architecture and its association with mammographic density and lesion severity among women undergoing diagnostic image-guided breast biopsy. 9th International Breast Density and Cancer Risk Assessment Workshop; O'ahu, HI. June 2019.
100. Miglioretti DL, Kerlikowske K, **Sprague BL**. Risk-based screening: when to start screening and when to use supplemental imaging based on breast density and risk. 9th International Breast Density and Cancer Risk Assessment Workshop; O'ahu, HI. June 2019.
101. Fan S, Mullooly M, Bejnordi BE, Abubakar M, Pfeiffer RM, Vacek PM, Weaver DL, Herschorn SD, **Sprague BL**, Hewitt S, Karssemeijer N, Beck A, van der Laak J, Sherman ME, Gierach GL. Relationships of measures of terminal ductal lobular unit involution with breast epithelial spatial arrangement in benign breast biopsies. Annual Meeting of the Society for Epidemiologic Research; Minneapolis, MN. June 2019.
102. Evans MF, Vacek PM, **Sprague BL**, Stein GS, Stein JL, Weaver DL. Microarray and RNA in situ hybridization assay for putative recurrence risk markers for breast

- carcinoma and ductal carcinoma in situ. Annual Meeting of the Japanese Cancer Association; Kyoto, Japan. September 2019.
103. Advani S, Abraham L, Buist DSM, O'Meara ES, Miglioretti DL, **Sprague BL**, Henderson LM, Onega T, Schousboe JT, Zhang D, Demb J, Walter LC, Kerlikowske K, Braithwaite D, for the Breast Cancer Surveillance Consortium. Breast biopsy patterns and findings among older women undergoing screening mammography: what is the impact of age and comorbidity? Annual Meeting of the American College of Epidemiology; Pasadena, CA. September 2019.
 104. Lester-Coll NH, Ades S, Yu JB, Atherly A, Wallace HJ, **Sprague BL**. Cost-effectiveness of prostate radiation therapy in men with newly diagnosed low burden metastatic prostate cancer. Annual Meeting of the American Society for Radiology Oncology; Chicago, IL. September 2019.
 105. Advani SM, Abraham L, Buist DB, O'Meara ES, Miglioretti DL, **Sprague BL**, Henderson LM, Onega T, Schousboe JT, Zhang D, Demb J, Walter LC, Kerlikowske K, Braithwaite D. Breast biopsy patterns and findings among older women undergoing screening mammography: what is the impact of age and comorbidity? Annual Meeting of the American Society of Preventive Oncology (held virtually due to Covid-19 pandemic, in lieu of planned Tucson, AZ location). March 2020.
 106. **Sprague BL**, Miglioretti DL, Lee CI, Perry H, Tosteson ANA, Kerlikowske K. New mammography screening performance metrics based on the entire screening episode. Annual Meeting of the American Society of Preventive Oncology (held virtually due to Covid-19 pandemic, in lieu of planned Tucson, AZ location). March 2020.
 107. *Kerrigan C, Murphy S, Sowden M, Sprague B. Access to minimally invasive breast biopsy in a rural state. Annual Meeting of the American Society of Breast Surgeons, held virtually due to the Covid-19 pandemic. May 2020.
 108. Smith RE, **Sprague BL**, Wernli KL, Henderson L, Kerlikowske K, Miglioretti DL, Nefertiti GJ, Johnson D, Onega T, Tosteson ANA. Breast density knowledge in women recently diagnosed with breast cancer. Annual Meeting of the Patient-Centered Outcomes Research Institute (PCORI), held virtually due to Covid-19 pandemic. September 2020.
 109. Harismendy O, Nachmanson D, Evans MF, Mori H, Officer A, Yau C, Steward J, Yao H, O'Keefe T, Hasteh F, Stein GS, Jepsen K, Campbell M, Weaver DL, Hirst GL, **Sprague BL**, Esserman LJ, Gordon JA, Borowsky A, Stein JL. The breast pre-cancer atlas illustrates the molecular and micro-environmental diversity of ductal carcinoma in situ. San Antonio Breast Cancer Symposium, held virtually due to the Covid-19 pandemic. December 2020.
 110. *Rand RE, Vacek PM, **Sprague BL**, Herschorn SD, Sussman BL, Watson EJ, Tsai EM, Hotaling EL, Perry H. Demographic determinants of compliance with BI-RADS 3 follow-up recommendation in a rural state. Annual Meeting of the Radiological Society of North America, held virtually due to the Covid-19 pandemic. December 2020.
 111. Zhang D, Abraham L, **Sprague BL**, Onega T, Advani S, Demb J, Miglioretti DL, Henderson LM, Wernli KJ, Walter LC, Kerlikowske K, Schousboe JT, Braithwaite D, Chrischilles E, O'Meara ES. Mammography adherence in relation to function-related indicators in older women. Annual Meeting of the American Society of Preventive Oncology, held virtually due to the Covid-19 pandemic. March 2021.

112. Nachmanson D, Evans MF, Steward J, Officer A, Yao H, O’Keefe TJ, Hasteh F, Stein GS, Jepsen K, Weaver DL, Hirst GL, **Sprague BL**, Esserman LJ, Borowsky A, Stein JL, Harismendy O. Mutational profiling of premalignant breast microbiopsies. Annual Meeting of the American Association for Cancer Research, held virtually due to the Covid-19 pandemic, April 2021.
113. Zhang D, Abraham L, Demb J, Miglioretti DL, Advani S, **Sprague BL**, Henderson LM, Onega T, Wernli KJ, Walter LC, Kerlikowske K, Schousboe JT, O’Meara ES, Braithwaite D. Function-related indicator and outcomes of screening mammography in older women from the BCSC-Medicare Cohort. Annual Meeting of the American Association for Cancer Research, held virtually due to the Covid-19 pandemic, April 2021.
114. Lester-Coll NH, Skelly J, Vacek PM, **Sprague BL**. Trends and costs of stereotactic body radiation therapy in metastatic non-small cell lung cancer. Annual Meeting of the American Society of Radiation Oncology; San Antonio, TX. October 2021.
115. Lester-Coll NH, Anker CJ, Atherly A, **Sprague BL**. Cost-effectiveness of intensity modulated radiation therapy vs. 3D conformal radiation therapy in stage III non-small cell lung cancer. Annual Meeting of the American Society of Radiation Oncology; San Antonio, TX. October 2021.
116. Lawson MB, Bissell MCS, Miglioretti DL, Eavey J, Chapman CH, Mandelblatt JS, Onega T, Henderson LM, Rauscher GH, Kerlikowske K, **Sprague BL**, Bowles EJA, Gard CC, Parsian S, Lee CI. Multilevel factors associated with time to biopsy after abnormal screening mammography. American College of Radiology Breast Imaging Symposium; Savannah, GA. May 2022.

Patents Issues for Pending - None

Other Creative Activities - None

Quality Improvement and Patient Safety Activities

- | | |
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| 2012- Present | <p>Director of the Vermont Mammography Registry</p> <ul style="list-style-type: none"> • Compile and distribute annual breast cancer screening and diagnostic imaging reports to all radiology facilities in Vermont performing breast imaging (N=15) and all individual radiologists interpreting breast imaging at Vermont radiology facilities (approximately 50 per year). These reports include statewide statistics that we generate and national statistics from the Breast Cancer Surveillance Consortium as benchmarks for comparison. Facilities and radiologists use these reports to monitor their performance and design interventions to increase cancer detection rates while maintaining low false positive rates. These reports are also used to meet accreditation and certification requirements by the Mammography Quality Standards Act, the FDA, and the American College of Radiology. |
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SUMMARY OF SCHOLARLY ACTIVITIES

As an epidemiologist, my research has broadly investigated breast cancer prevention, detection, and survivorship. I am currently Principal Investigator of NCI-funded studies investigating

supplemental ultrasound screening strategies and molecular characterization of screen-detected breast cancers. I am co-investigator on NCI- and PCORI-funded collaborative research within the Breast Cancer Surveillance Consortium (BCSC) as well as collaborative simulation modeling studies within the Cancer Intervention and Simulation Modeling Network (CISNET). My research largely leverages the longitudinal, observational clinical data that I collect through the Vermont Mammography Registry, which is pooled with similar data from other sites within the Breast Cancer Surveillance Consortium. I am also a co-investigator within the Vermont Center on Behaviors and Health, in which I collaborate on projects investigating mammography utilization, tobacco-associated cancers, and other health behaviors. My primary contributions to science to date include the following.

Evaluating mammography performance in community practice. There have been longstanding and highly publicized debates regarding mammography screening recommendations for the general population. My research program has provided evidence on mammography screening performance in community practice; our data have been pooled with similar data within the Breast Cancer Surveillance Consortium and directly informed USPSTF and American Cancer Society screening guidelines. Most recently, I published recommendations for new screening performance metrics that better capture outcomes from the complete screening episode.

Evaluating advanced technologies in breast imaging. In addition to mammography, my research has investigated the performance of advanced technologies including digital breast tomosynthesis, breast MRI, and breast ultrasound. This work has been done in collaboration with the BCSC and NCI's consortium for Population-based Research Optimizing Screening through Personalized Regimens (PROSPR). Most recently, I showed that while digital breast tomosynthesis is associated with overall improvements in cancer detection and reduction in false-positive rates, there is wide variability across radiologists.

Breast cancer screening for women with dense breasts. Mammographically dense tissue can obscure cancers or create artifacts requiring additional imaging. However, there remains sparse evidence regarding the comparative effectiveness of other screening strategies for women with dense breasts. I have used observational data and simulation modeling to estimate the prevalence of breast density in the United States, examine mammography performance in relation to breast density, and estimate the benefits and harms of ultrasound and digital breast tomosynthesis screening strategies for women with dense breasts.

Breast cancer risk prediction models. With BCSC collaborators I have contributed to the development of new breast cancer risk prediction models and sought to understand how screening utilization influences breast cancer risk estimation. These models aim to inform the development of new targeted strategies for primary prevention and personalized screening. The BCSC risk prediction model is publicly available and is increasingly used by women to assess their risk and make screening decisions.

The epidemiology of ductal carcinoma in situ (DCIS). Overdiagnosis has emerged as perhaps the most concerning harm associated with breast cancer screening. Concern is most elevated regarding ductal carcinoma in situ (DCIS) – the non-invasive form of breast cancer predominantly detected by screening, which now makes up more than 20% of breast cancer diagnoses. I have evaluated the burden of DCIS in the US, characterized the adverse impacts of a DCIS diagnosis on patient health-related behaviors, and evaluated DCIS disease-free survival and other outcomes in community settings. Most recently, I published a translational study

showing that collagen organization in the DCIS tumor microenvironment is a novel predictive marker for risk of recurrence.

INVITED PRESENTATIONS

Regional

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| 2009 | University of Wisconsin Department of Population Health Sciences 50 th Anniversary Symposium “The proportion of breast cancer cases attributable to modifiable risk factors” | Madison, WI |
| 2009 | University of Michigan Department of Epidemiology “The epidemiology of in situ breast cancer: a risk and benefit of screening mammography” | Ann Arbor, MI |
| 2010 | University of Vermont College of Medicine “The epidemiology of ductal carcinoma in situ” | Burlington, VT |
| 2011 | University of Vermont Cancer Center Grand Rounds “The epidemiology of in situ breast cancer” | Burlington, VT |
| 2012 | University of Vermont Cancer Center Clinical & Translational Research Retreat “Candidates for DCIS prognostic markers in the tumor microenvironment” | Burlington, VT |
| 2012 | University of Vermont Department of Surgery Grand Rounds “VT PROSPR: Improving Breast Cancer Screening by Developing DCIS Prognostic Markers” | Burlington, VT |
| 2012 | University of Vermont Center for Clinical and Translational Sciences “Improving breast cancer screening by developing prognostic markers for early stage breast cancer” | Burlington, VT |
| 2013 | Lake Champlain Cancer Research Organization “Research at the Vermont Breast Cancer Surveillance System” | Saratoga Springs, NY |
| 2013 | Annual Research Symposium of the University of Vermont Department of Obstetrics, Gynecology, and Reproductive Sciences “The Vermont Breast Cancer Surveillance System” | Burlington, VT |
| 2014 | University of Massachusetts School of Public Health and Health Sciences Biostatistics and Epidemiology Seminar Series “The Vermont Breast Cancer Surveillance System: Studying Breast Cancer Screening in Community Practice” | Amherst, MA |
| 2014 | University of Vermont Cancer Center Clinical & Translational Research Symposium “Risk-based breast cancer screening for the general population: are we getting there?” | Burlington, VT |
| 2015 | University of Vermont Clinical and Translational Science Seminar “Trends in Breast Cancer Screening in Vermont and Beyond” | Burlington, VT |
| 2015 | Northeastern Breast Cancer Conference, Dartmouth-Hitchcock Medical Center and Norris Cotton Cancer Center “Breast Cancer Screening for Women with Dense Breasts” | Lebanon, NH |

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| 2015 | University of Vermont Cancer Center Community Clerkship sponsored by the University of Vermont Medical Center Foundation and University of Vermont Foundation “Research for Screening and Prevention: the Vermont Breast Cancer Surveillance System” | Burlington, VT |
| 2018 | University of Vermont Department of Radiology Grand Rounds “The Vermont Breast Cancer Surveillance System: Studying Breast Cancer Screening in Vermont and Beyond” | Burlington, VT |
| 2018 | University of Vermont Department of Surgery Catamount Surgeon Award Educational Session “Breast cancer screening for women with dense breasts: who is at high risk of mammography screening failures?” | Burlington, VT |
| 2019 | University of Vermont Cancer Center, Cancer Control and Population Health Sciences Program Meeting “The Vermont Breast Cancer Surveillance System: A Platform for Population, Clinical, and Translational Research in Breast Cancer” | Burlington, VT |
| 2020 | University of Vermont College of Medicine Health Services Research and Population Health Research Slam “Health Services Research within the Vermont Breast Cancer Surveillance System” | Burlington, VT |
| 2021 | Vermonters Taking Action Against Cancer, Prevention and Detection Workgroup “The Impact of COVID-19 on Breast Cancer Screening and Diagnosis” | Virtual meeting |
| National | | |
| 2008 | Annual Meeting of the American Society of Preventive Oncology “Total xenoestrogen body burden and mammographic breast density, a marker of breast cancer risk” | Bethesda, MD |
| 2011 | Annual Meeting of the American Society of Preventive Oncology “Lifestyle factors and disease-free survival after a ductal carcinoma in situ diagnosis” | Las Vegas, NV |
| 2013 | 3rd Scientific Meeting of the National Cancer Institute’s PROSPR (Population-based Research Optimizing Screening through Personalized Regimens) Initiative “Modeling for comparative effectiveness research in breast cancer screening” | Dallas, TX |
| 2013 | Annual Meeting of the American Society of Preventive Oncology “The Breast Cancer Surveillance Consortium: A Research Resource” | Memphis, TN |
| 2013 | The National Cancer Institute’s Cancer Intervention and Surveillance Modeling Network 2013 Mid-Year Meeting “Modeling the impact of mammographic breast density legislation” | Ann Arbor, MI |

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| 2013 | Annual Meeting of the Breast Cancer Surveillance Consortium “Modeling the comparative effectiveness of screening ultrasound for women with dense breasts” | San Francisco, CA |
| 2013 | The National Cancer Institute’s Cancer Intervention and Surveillance Modeling Network Semi-Annual Meeting “Variation in breast cancer risk factors by mode of detection” | Bethesda, MD |
| 2015 | Annual meeting of the American Society of Preventive Oncology “Breast Cancer Screening for Women with Dense Breasts” | Birmingham, AL |
| 2015 | Semi-Annual Meeting of the National Cancer Institute’s consortium for Population-based Research Optimizing Screening through Personalized Regimens (PROSPR) “Variation in mammographic breast density assessment across radiologists” | Alexandria, VA |
| 2016 | Semi-Annual Meeting of the National Cancer Institute’s consortium for Population-based Research Optimizing Screening through Personalized Regimens (PROSPR) “The Vermont PROSPR Research Center: Lessons learned and next steps for optimizing the breast cancer screening process” | Seattle, WA |
| 2017 | Semi-Annual Meeting of the National Cancer Institute’s consortium for Population-based Research Optimizing Screening through Personalized Regimens (PROSPR) “The Vermont PROSPR Research Center: Breast cancer screening research highlights from the University of Vermont” | Seattle, WA |
| 2018 | Annual Meeting of the Breast Cancer Surveillance Consortium “Change in radiologist breast cancer screening outcomes after digital breast tomosynthesis adoption” | Seattle, WA |
| 2019 | Annual Meeting of the Breast Cancer Surveillance Consortium “New definitions for breast cancer screening performance metrics” | Seattle, WA |
| 2019 | Semi-Annual Meeting of the National Cancer Institute’s consortium for the Molecular and Cellular Characterization of Screen-detected Lesions “Structural organization of collagen in DCIS” | San Diego, CA |
| 2020 | Annual Meeting of the American Society of Preventive Oncology “Collagen Alignment as a Predictor of Recurrence after Ductal Carcinoma In Situ” | Held virtually due to COVID-19 pandemic |
| 2020 | 8th Annual Vermont Center on Behavior and Health Conference, University of Vermont “Breast Cancer Control in Rural Settings” | Held virtually due to COVID-19 pandemic |

International - None