

**BRIAN L. SPRAGUE  
CURRICULUM VITAE**

Position: Professor  
Department of Surgery

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**EDUCATION**

<b>Year</b>	<b>Institution</b>	<b>Degree</b>	<b>Area of Degree, Accolades</b>
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**

<b>Years</b>	<b>Institution</b>	<b>Academic Title</b>	<b>Department</b>
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

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**

<b>Years</b>	<b>Location/Program Name</b>	<b>Role</b>
2020-Present	University of Vermont Cancer Center	Program Leader, Cancer Population 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**

<b>Year</b>	<b>Name of Award</b>
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 <sup>st</sup> 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]
- 2023 Article of the Year, Journal of Biomolecular Techniques (Taates et al., "The Shared Core Resource as a Partner in Innovative Scientific Research: Illustration from an Academic Microscopy Imaging Center")

#### **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 among women undergoing breast imaging at radiology departments in Vermont. My research team integrates this data over time and across 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 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 Population 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 lecture in a number of CME courses and in the College of Medicine curriculum for medical residents in Surgery and Radiology.

## SUMMARY OF ACCOMPLISHMENTS

I have published over 200 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 56 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 have served on the steering committees of three consortia funded by the National Cancer Institute: the Breast Cancer Surveillance Consortium, the Consortium for Molecular Characterization of Screen-Detected Lesions, and the Consortium for Population-based Research to Optimize the Screening Process.

I direct the Vermont Mammography Registry, which partners with 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.

For nine years, I served as 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 Population Sciences.

**PROFESSIONAL SERVICE**

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**DEPARTMENTAL SERVICE**

<b>Years</b>	<b>Department</b>	<b>Committee</b>	<b>Role</b>
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, 2023	Surgery	Surgical Senior Majors Review 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**

<b>Years</b>	<b>Service Committee</b>	<b>Role</b>
2013-2017 & 2020-Present	Cancer Population 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
2023-2024	Faculty Search Committee: Global Population Health Faculty Position, Assistant/Associate Professor, Tenure Pathway, Department of Medicine	Member
2023-present	Pilot Grant Review Committee, UVM Cancer Center American Cancer Society Institutional Research Grant	Member
2024-present	Faculty Search Committee: UVM Cancer Center Associate Director for Rural Partnerships and Policy, Associate/Full Professor, Tenure Pathway, Department of Medicine	Member

### MEDICAL CENTER SERVICE - None

### UNIVERSITY SERVICE

<b>Years</b>	<b>Service Committee</b>	<b>Role</b>
2014-2016	Faculty Senate	Senator (Surgery)

### GOVERNMENT

<b>Years</b>	<b>Service Committee</b>	<b>Role</b>
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

<b>Years</b>	<b>Society</b>
2008-Present	American Society of Preventive Oncology

2007-2017

Society for Epidemiologic Research

SERVICE TO PROFESSIONAL ORGANIZATIONS

<b>Years</b>	<b>Service Committee</b>	<b>Role</b>
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
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

<b>Years</b>	<b>Journal/Publication/Board</b>
2008	Quality of Life Research - Reviewer
2008	Journal of Clinical Epidemiology - Reviewer
2009,2014-2023	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
2014-2017,2019,2023	JAMA - Reviewer
2014,2015,2017,2019	Annals of Internal Medicine - Reviewer
2014	Women & Health - Reviewer

2015,2016,2020,2022,2023	Journal of the National Cancer Institute - Reviewer
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
2020,2024	JAMA Network Open - Reviewer
2021	British Journal of Cancer – Reviewer
2021-2022	Preventive Medicine - Reviewer

## PUBLIC SERVICE

<b>Years</b>	<b>Service Role</b>
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 Population 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 five full time employees who integrate breast cancer screening and diagnosis data from 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 the Breast Cancer Surveillance Consortium, which is funded by the National Cancer Institute to evaluate breast cancer screening and diagnosis. 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 R	E	Hours	Number of Learners	Learner Level
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

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

<b>Dates</b>	<b>Name</b>	<b>Program School</b>	<b>Role</b>	<b>Current Position</b>
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
2012-2013	Priyanka Chilakamarri	Medical student, UVM LCOM	Research Advisor	Medical Fellow, UPenn

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

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 Beudet	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, UVM	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
2020-2022	Carmen Smotherman	PhD Student, University of Florida	Research Advisor	Biostatistician, Johnson & Johnson Vision
2021	Mikaela Mohardt	Medical Student, UVM Cancer Center Summer Research Fellowship	Research Advisor	Medical Student, UVM
2021-present	Olivia Sattayapiwat	PhD Student, University of California-Davis	Research Advisor	PhD Student, UC-Davis

2022	Cate Odde	Undergraduate Summer Internship, from University of Minnesota	Research Advisor	Undergraduate, University of Minnesota
2022-present	Rebecca Smith	PhD Student, Dartmouth	Research Advisor	PhD Student, Dartmouth
2022-present	Victoria Foster	Master's Student, University of Wisconsin	Research Advisor	Master's Student, University of Wisconsin
2022-2023	Amy Chang	Medical Student, UVM Cancer Center Summer Research Fellowship	Research Advisor	Medical Student, UVM
2024-present	Chloe Ruscilli	Medical Student, UVM LCOM	Research Advisor	Medical Student, UVM
2024-present	Kate O'Brien	Undergraduate research intern, UVM College of Engineering and Mathematical Sciences	Research Advisor	Undergraduate student, UVM

#### DISSERTATION/THESIS COMMITTEE MEMBERSHIP

<b>Dates</b>	<b>Name</b>	<b>Program School</b>	<b>Role</b>	<b>Current Position</b>
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 Shiyabola	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/Clinical Associate Professor, UVM
2023	Diego Adrianzen	Master's Degree Committee, Clinical and Translational Sciences, UVM LCOM	Chair	Assistant Professor of Medicine, UVM
2023-present	Jillian Giannini	Master's Degree Committee, Clinical Psychology, UVM College of Arts and Sciences	Chair	Master's student, UVM

POSTDOCTORAL FELLOWS AND RESIDENTS DIRECTLY SUPERVISED OR MENTORED

<b>Dates</b>	<b>Name</b>	<b>Fellow</b>	<b>Faculty Role</b>	<b>Current Position</b>
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
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
2020-2021	Marissa Lawson, MD	Radiology Breast Imaging Fellow	Research Advisor	Assistant Professor, University of Washington
2023-present	Carina Zhang, MD	Surgery Resident	Research Advisor	Surgery resident

INFORMAL

<b>Year</b>	<b>One Sentence Description of Information Teaching</b>
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 <sup>th</sup> Annual Breast Cancer Conference, Burlington, VT.
2013	Lecture for CME credit, "Predictors of recurrence after a DCIS diagnosis" Vermont Cancer Center 16 <sup>th</sup> Annual Breast Cancer Conference, Burlington, VT.
2014	Lecture for CME credit, "Predictors of recurrence after a DCIS diagnosis" Vermont Cancer Center 17 <sup>th</sup> Annual Breast Cancer Conference, Burlington, VT.
2015	Lecture for CME credit, "Predictors of recurrence after a DCIS diagnosis" Vermont Cancer Center 18 <sup>th</sup> Annual Breast Cancer Conference, Burlington, VT.

FACULTY MENTORED

<b>Dates</b>	<b>Name</b>	<b>Position while Mentored</b>	<b>Faculty Role</b>	<b>Current Position</b>
2017-2020	Thomas Ahern, PhD	Assistant Professor, LCOM Dept of Surgery	Project Mentor on P20 Center Grant Junior Faculty Project	Associate Professor with Tenure
2017-2022	Nataniel Lester-Coll, MD	Assistant Professor, LCOM Radiation Oncology	Junior Faculty Research Mentor	Associate Professor
2021-2022	Sarah Nowak, PhD	Assistant Professor, LCOM Dept of Pathology	Junior Faculty Mentoring Committee	Associate Professor
2021-present	Puyao Li, MD	Assistant Professor, LCOM Radiation Oncology	Junior Faculty Research Mentor	Assistant Professor
2024	Dominick Lemas, PhD	Assistant Professor, Department of Health Outcomes & Biomedical Informatics, University of Florida	External mentor, University of Florida College of Medicine Office of Research R01 Boot Camp	Assistant Professor

OTHER VISITING FACULTY SUPERVISED - None

TEACHING AIDS - None

TEACHING AWARDS AND NOMINATIONS

<b>Year</b>	<b>Award</b>
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 <sup>nd</sup> place prize at the Dept of Surgery Senior Major Scientific Program for her research project I supervised.

2019	Undergraduate trainee Yi-Chuan Yu was awarded the Distinguished Undergraduate Research Award by the UVM College of Agriculture and Life Sciences for his 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 Serena Murphy 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. During 2011-2019 I directed an annual one-day Continuing Medical Education course on breast cancer screening and diagnosis that was attended by 35-45 mammography technologists from around the state of Vermont. 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 CA282725

PI: Sprague, Weaver

09/19/23 – 08/31/28

National Cancer Institute/National Institutes of Health

*Clinical breast cancer risk prediction models for women with a high-risk benign breast diagnosis*

Our goal is to guide clinical recommendations for patients with high-risk breast lesions, by



generating new risk prediction models and estimating the potential population impact of their enactment.

Role: Contact PI

Direct Costs Year 1: \$685,903

Project Period Total Costs: \$3,757,540

U54GM115516-07S4

PI: Rosen, Stein

07/01/23 – 06/30/25

National Institutes of General Medical Sciences/National Institutes of Health

Subcontract to MaineHealth

*Northern New England Clinical and Translational Research Network: Enhancing NNE-CTR data science capacity to support clinical informatics applications in cancer control research.*

We propose to expand the data science capacity of the NNE-CTR's Biostatistics, Epidemiology, and Research Design Core to support complex investigator-led cancer database research projects, including the Vermont Breast Cancer Surveillance System (VBCSS).

Role: Co-investigator

Direct (UVM) Costs Year 1: \$236,110

Project Period Total (UVM) Costs: \$713,316

AGR00001213

PI: Burnside

09/01/23 – 08/31/24

American Cancer Society

Subcontract to the University of Wisconsin-Madison

*Accurate & Cost-Effective Sensitivity (ACES) Algorithm for Improved Breast Cancer Screening Metrics*

Our project seeks to improve the quality of mammography performance audits at radiology facilities by developing algorithms that adjust for woman-, mammogram-, and facility-level-factors associated with incomplete ascertainment of cancer diagnoses.

Role: Co-investigator, Subcontract PI

Direct (UVM) Costs Year 1: \$20,000

Project Period Total (UVM) Costs: \$24,000

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 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

## Completed Research Support

6648-00-S021 PI: Sprague 09/22/22 – 09/21/23

Westat/National Cancer Institute/National Institutes of Health

*The Breast Radiology Evaluation and Study of Tissues (BREAST) Stamp Project: Registry linkage for 10-year follow-up of study participants and procurement of formalin-fixed, paraffin-embedded pathology tissue blocks to evaluate molecular features of benign breast lesions that increase breast cancer risk*

This study is retrieving breast cancer specimens and collecting 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: \$43,267  
 Project Period Total Costs: \$67,496

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

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: 53*

*Total citations: 10,860*

### 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.
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  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.
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  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.
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- situ or atypical hyperplasia of the breast. *Breast Cancer Research and Treatment* 145(3):765-73, 2014. PMID: PMC4111461.
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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  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.
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  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.
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- Cancer Epidemiology Biomarkers & Prevention 23(3):450-460, 2014. PMID: PMC3951673.
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## Non-Peer Reviewed Publications

### Books and Chapters

1. **Sprague BL**, Trentham-Dietz A. In situ Breast Cancer. In: Breast Cancer Epidemiology, Li CI (ed), New York: Springer, 2010:47-72.
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## Abstracts

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  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.
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  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.

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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.
117. Lester-Coll NH, Ahmed SS, Wallace J, **Sprague BL**, Ades S. Cost-effectiveness of abiraterone acetate for high-risk non-metastatic prostate cancer. American Society of Clinical Oncology GU Cancers Symposium; San Francisco, CA. February 2023.
118. \*Smotherman C, **Sprague B**, Datta S, Braithwaite D, Qin H, Yaghjyan L. Association of air pollution with breast cancer risk in UK Biobank. Annual Meeting of the American Society of Preventive Oncology; San Diego, CA. March 2023.
119. Kerlikowske K, Chen S, Bissell MCS, Lee CI, Tice JA, **Sprague BL**, Miglioretti DL. Breast density, obesity, race and ethnicity, and advanced breast cancer risk. The 10<sup>th</sup> International Breast Density & Cancer Risk Assessment Workshop; Kailua-Kona, HI. June 2023.
120. \*Foster VM, Trentham-Dietz A, Stout NK, Lee CI, Ichikawa LE, Eavey J, Henderson L, Miglioretti DL, Tosteson ANA, Bowles EA, Kerlikowske K, **Sprague BL**. Supplemental breast cancer screening after negative mammography in US women with dense breasts. The 10<sup>th</sup> International Breast Density & Cancer Risk Assessment Workshop; Kailua-Kona, HI. June 2023.
121. Harris AR, Shaoqi F, Linville L, **Sprague B**, Vacek P, Weaver D, Sherman M, Abubakar M, Gierach G. Characterizing the immune microenvironment in benign and cancerous breast biopsy tissues in relation to mammographic density. The 10<sup>th</sup>

- International Breast Density & Cancer Risk Assessment Workshop; Kailua-Kona, HI. June 2023.
122. Fan S, Mullooly M, Chan A, Pfeiffer RM, Vacek PM, Weaver DL, Howes J, Tikhonov A, Hill M, Highnam R, Herschorn SD, **Sprague BL**, Gierach GL. Relationships between automated volumetric local and global breast density assessments among women undergoing diagnostic image-guided breast biopsy. The 10<sup>th</sup> International Breast Density & Cancer Risk Assessment Workshop; Kailua-Kona, HI. June 2023.
  123. Mullooly M, Fan S, Chan A, Pfeiffer RM, Vacek PM, Weaver DL, Shepherd JA, Howes J, Tikhonov A, Highnam R, Herschorn SD, **Sprague BL**, Sherman ME, Gierach GL. Examining associations of breast cancer risk factors with volumetric measures of breast density at increasing thresholds among women undergoing diagnostic image guided breast biopsy. The 10<sup>th</sup> International Breast Density & Cancer Risk Assessment Workshop; Kailua-Kona, HI. June 2023.
  124. Tice JA, Gard CC, Miglioretti DL, **Sprague BL**, Bissel MCS, Henderson LM, Kerlikowske K. Extending the Breast Cancer Surveillance Consortium Model (BCSC) of invasive breast cancer. The 10<sup>th</sup> International Breast Density & Cancer Risk Assessment Workshop; Kailua-Kona, HI. June 2023.
  125. \*Sattayapiwat O, Kerlikowske K, Weaver D, Borowsky A, Keegan T, **Sprague B**, Miglioretti DL. Advancing evidence of the associations between specific benign breast diagnoses and future breast cancer risk. The 10<sup>th</sup> International Breast Density & Cancer Risk Assessment Workshop; Kailua-Kona, HI. June 2023.
  126. Nowak S, Wilcock A, **Sprague B**. Spillover following mammography guideline change: evidence from state-level trends. Academy Health Annual Research Meeting; Seattle, WA. June 2023.
  127. \*Smotherman C, **Sprague B**, Datta S, Braithwaite D, Qin H, Yaghjyan L. DNA repair genes, air pollution, and breast cancer risk. American College of Epidemiology Annual Meeting; held virtually. September 2023.
  128. \*Sattayapiwat O, Kerlikowske K, Weaver D, Borowsky A, Keegan T, **Sprague B**, Miglioretti D. Advancing evidence of the associations between specific benign breast diagnoses and future breast cancer risk. The San Antonio Breast Cancer Symposium; San Antonio, TX. December 2023.
  129. **Sprague BL**, Ichikawa L, Eavey J, Lowry KP, Rauscher GH, O'Meara ES, Miglioretti DL, Lee JM, Herschorn SD, Perry H, Weaver DL, Kerlikowske K. Ultrasound screening performance among women with dense breasts by breast cancer risk. American Society of Preventive Oncology; Chicago, IL. March 2024.
  130. Foster VM, Trentham-Dietz A, Stout NK, Lee CI, Ichikawa LE, Eavey J, Henderson L, Miglioretti DL, Tosteson ANA, Bowles E, Kerlikowske K, **Sprague BL**. Breast density notification laws: impact on supplemental breast cancer screening. American Society of Preventive Oncology; Chicago, IL. March 2024.

**Patents Issues for Pending** - None

**Other Creative Activities** - None

**Quality Improvement and Patient Safety Activities**

2012-  
Present

Director of the Vermont Mammography Registry

- Compile and distribute annual breast cancer screening and diagnostic imaging reports to radiology facilities in Vermont performing breast imaging and individual radiologists interpreting breast imaging at Vermont radiology facilities. 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.

### SUMMARY OF SCHOLARLY ACTIVITIES

As an epidemiologist, my research has broadly investigated breast cancer prevention, detection, and survivorship. I am currently Principal Investigator of an NCI-funded R01 study investigating supplemental ultrasound screening strategies for women with dense breasts. I am co-investigator on NCI-funded collaborative research within the Breast Cancer Surveillance Consortium (BCSC) and 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.

## INVITED PRESENTATIONS

### **Regional**

2009	University of Wisconsin Department of Population Health Sciences 50 <sup>th</sup> 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

7/8/2024		Brian Sprague
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
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
2023	Vermont Center on Behavior & Health Monthly Lecture Series “Mammography screening utilization in Vermont and Beyond: Long-term trends and COVID-19 impacts”	Burlington, VT
2023	Vermonters Taking Action Against Cancer, Prevention and Detection Workgroup “Mammography Screening Trends in Vermont: Data from the Vermont Mammography Registry”	Virtual meeting
2023	Annual Cancer Summit, Vermonters Taking Action Against Cancer	Essex, VT

“Mammography Screening Trends in Vermont and Beyond”

**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
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)	Seattle, WA

	“The Vermont PROSPR Research Center: Breast cancer screening research highlights from the University of Vermont”	
2018	Annual Meeting of the Breast Cancer Surveillance Consortium	Seattle, WA
	“Change in radiologist breast cancer screening outcomes after digital breast tomosynthesis adoption”	
2019	Annual Meeting of the Breast Cancer Surveillance Consortium	Seattle, WA
	“New definitions for breast cancer screening performance metrics”	
2019	Semi-Annual Meeting of the National Cancer Institute’s consortium for the Molecular and Cellular Characterization of Screen-detected Lesions	San Diego, CA
	“Structural organization of collagen in DCIS”	
2020	Annual Meeting of the American Society of Preventive Oncology	Held virtually due to COVID-19 pandemic
	“Collagen Alignment as a Predictor of Recurrence after Ductal Carcinoma In Situ”	
2020	8th Annual Vermont Center on Behavior and Health Conference, University of Vermont	Held virtually due to COVID-19 pandemic
	“Breast Cancer Control in Rural Settings”	

**International** - None