

CURRICULUM VITAE Date 2/4/20**NAME:** Richard J. Barth Jr.**ADDRESS:**Home9 Orchard Hill
Hanover, NH 03755OfficeSection of General Surgery
Dartmouth-Hitchcock Medical Center
Lebanon, NH 03756**PERSONAL:**

Date of Birth:

July 7, 1959

Married:

Kathleen Marie Barth

Children:

Erik 3/15/90

Matthew 11/14/92

Brendan 4/1/95

EDUCATION:DATEINSTITUTIONDEGREE

1981

Princeton University

AB, Biochemical Sciences
Summa cum Laude

1985

Harvard Medical School

MD

POSTDOCTORAL TRAINING:DATEINSTITUTIONSPECIALTY

1985-88

New England Deaconess
Harvard Surgical Service

Surgery Resident

1988-90

Surgery Branch,
National Cancer Institute

Surgical Oncology Fellow

1991-92

New England Deaconess
Harvard Surgical Service

Surgery Resident

ACADEMIC APPOINTMENTS:DATEINSTITUTIONTITLE

1993-8

Geisel School of Medicine
at Dartmouth

Assistant Professor of Surgery

1999-2013

Geisel School of Medicine
at Dartmouth

Associate Professor of Surgery

2014-20

Geisel School of Medicine
at Dartmouth

Professor of Surgery

INSTITUTIONAL LEADERSHIP ROLES:

Department of Surgery, Dartmouth-Hitchcock Medical Center

2003-20 Chief, Section of General Surgery
2002-15 Chief, Division of Surgical Oncology

Norris Cotton Cancer Center:

2018 Director, Strategic Planning Committee
2014-15 Director, Melanoma Oncology Program
2002-9 Co-Director, Immunology and
Cancer Immunotherapy Research Program
2002-4 Chairman, Clinical Cancer Care Committee
1996-2004 Director, Gastrointestinal Oncology Program

LICENSURE AND CERTIFICATION:

<u>DATE</u>	<u>LICENSURE/CERTIFICATION</u>
1992	Medical license, New Hampshire 8817
1994	Certified, American Board of Surgery
2004, 2014	Re-certified, American Board of Surgery

HOSPITAL/CLINIC APPOINTMENTS:

<u>DATES</u>	<u>INSTITUTION</u>	<u>POSITION</u>
1993-2020	Dartmouth-Hitchcock Medical Center	Clinical Staff

TEACHING ACTIVITIES:

A. UNDERGRADUATE MEDICAL EDUCATION:

1993-2020 Clinical Faculty, Geisel School of Medicine at Dartmouth
Core Clerkship in Surgery
1993-2020 Clinical Faculty, Geisel School of Medicine at Dartmouth
Advanced Clerkship in Surgical Oncology

1999-2001, 2019 Lecturer, Geisel School of Medicine at Dartmouth
Oncology course: Breast cancer

2018-20 Lecturer, Geisel School of Medicine "On Doctoring" course,
Doctor-patient relationship, life threatening illness

1996-2020 Lecturer, Geisel School of Medicine at Dartmouth
Scientific Basis of Medicine, GI block:
Appendicitis, Diverticulitis, Acute abdominal conditions

B. GRADUATE MEDICAL EDUCATION:

1994-2020 Surgery resident teaching of the art and science of surgery, daily
1995-2020 Surgical Oncology Rounds, weekly surgery resident conference

C. UNDERGRADUATE COLLEGE:

2011 Lecturer, Dartmouth College course,
Intermediate Biomedical Engineering, "Techniques in Liver Surgery"
2018-20 Lecturer, ENGS 5. Healthcare and Biotechnology in the 21st century.

D. CONTINUING MEDICAL EDUCATION:

2008 Certifying Examiner, American Board of Surgery

STUDENT/FELLOW ADVISING/MENTORING:

Research trainees:

2019	Brook Byrd, BS
2018-19	Ravinder Kang, MD
2018	Chris Louie, BS
2017	Kristina Mathis, BS
2017	Christina Angeles, MD
2016	Michelle McMahon, BS
2016-18	Ryland Stucke, MD
2016	Khushboo Jhala, BS
2016	Rebecca Grad, Yong Jeon, Hee Sun Kim, Tuck FYP
2016	John Trujillo, Shawn Ahmad, Tuck FYP
2015-16	David Qian, MD, PhD
2013-14	Austin Schenk, MD, PhD
2013-18	Maureen Hill, MD
2011-13	Matthew Pallone, PhD
2012	Bryan Payne Stanifer, MD
2011	Edmund Tsui, BS

2010	Justin Reeves, MD
2008	Sarah Greer, MD
2007	John Gorechlad, MD
2003-4	Elsa Valsdottir, MD
2000-1	Cheryl Guyre, PhD
2000-1	Christopher Alessi, MD
1999-2000	Glen Gibson, MD
1998-2000	Laura Lambert, MD
1998	Thomas Schwaab, BS
1997	Matthew Mackey, PhD
1997	James Feeney, BS
1996-7	Patrick Ting, MD
1995	Teresa Martuscello, BS
1994-5	Benjamin Camp, MD
1993-4	Sonya Dyhrman, BS

RESEARCH FUNDING:

A. Current

1. 2R44CA210810-02

Breast Cancer Locator

Phase 2 SBIR grant to CairnSurgical, Inc.

Co-investigator, 0.1 FTE

\$2,000,000

8/1/17-12/31/20

This grant supports the clinical and business development of the Breast Cancer Locator.

2. R01CA192803

Optical Scatter Imaging (Paulsen, PI)

Co-investigator, 0.05 FTE

\$391,000

8/1/19-8/1/20

This grant supports a clinical trial to evaluate the combination of detection of differential light scattering properties of tumor cells and micro-CT to evaluate breast tumor specimen margins.

3. Norris Cotton Cancer Center Developmental Grant

" A prospective study of partial breast adjuvant radiation therapy after resection of
borderline and malignant phyllodes tumors".

Co-Principal Investigator with Dr. Lesley Jarvis

\$50,000

1/1/14- 1/1/21.

B. Past

1. American Cancer Society Institutional Research Grant, IRG 1571 .
"Effects of interleukin-10 on the murine anti-tumor immune response".
Principal investigator
\$18,300
6/93 - 6/94.

2. Hitchcock Foundation Research Grant 250-186.
"Cytokine gene expression in human colon and breast cancer in situ".
Principal investigator
\$6500
6/94 - 6/95.

3. American Cancer Society Career Development Award.
"Cytokine production in situ by lymphocytes in human malignancies".
Principal investigator
\$90,000
7/95 - 6/98.

4. Association for Surgical Education Grant.
"Can behavioral intervention improve communication skills in surgical residents".
Principal investigator
\$3500
11/95- 11/96.

5. Norris Cotton Cancer Center Interactive Pilot Project Grant.
"Evaluation of immune deficits in freshly isolated tumor infiltrating lymphocytes".
Co-investigator
\$25,000
6/96 - 6/97.

6. Hitchcock Foundation research grant.
"Studies of the route of administration of dendritic cell vaccines",
Co-investigator, mentor to Laura Lambert, MD
\$15,000
7/99-7/00.

7. National Cancer Institute 1R29CA776612-01 ,
"Mechanisms underlying CD40L's role in tumor immunity".
Principal investigator

\$350,000
7/98-7/2004.

8. Center of Biological Research Excellence (COBRE) P20 RR16437 (William Green,PI)
“A trial of a CD40 activated dendritic cell vaccine in patients with resected colorectal
cancer”.

Principal Investigator, Project 5
\$168,000 per year
9/30/01- 12/31/04.

9. National Institutes of Health 2 PO1 CA080139-06A1 (Paulsen, Keith, PI)
“Alternative Breast Cancer Imaging Modalities”
Co-investigator, 5-10% effort
9/05-2011.

10. 2 P30 CA023108-27 (Israel, Mark A., P.I.)
Norris Cotton Cancer Center Support Grant
Co-Director, Immunotherapy Research Program
10% effort
\$1,828,696 Total Award
12/1/2003-12/1/2009.

11. Norris Cotton Cancer Center Research Grant.
“A pilot study of US guided cryoablation of small unifocal invasive ductal breast cancer
using MRI to evaluate tumor viability and immunologic assays to identify and
characterize a cryoablation induced immune response.”
Principal Investigator
\$20,000
5/07-5/08.

12. Dartmouth Center for Clinical and Translational Science Grant.
“A study to evaluate the use of supine MRI images in breast conserving surgery”.
Principal Investigator
\$34,599
6/10-6/11.

13. Norris Cotton Cancer Center Developmental Grant
"Preclinical studies to determine the combinatorial efficacy of VISTA-blockade and DC
vaccines in animal tumor models",
Co-Principal Investigator with Dr. Lili Wang
\$50,000
1/1/14-1/1/15.

14. Synergy Clinician Entrepreneur Fellowship
Bringing a new device to improve the accuracy of surgery for non-palpable breast
cancer to the market.

Principal Investigator
0.2 FTE
9/1/15-4/1/17.

15. R43 CA210810
Breast Cancer Locator
Phase 1 SBIR grant to CairnSurgical, LLC
Co-investigator. \$167,669, 7/1/16-7/1/17.
This grant is assisting with development of the technical aspects of the Breast Cancer Locator

16. Norris Cotton Cancer Center Clinical Trial Grant
“A Randomized Phase II Study of the Effect of a Low Calorie Diet on Patients Undergoing Liver Resection”.
Principal Investigator
\$100,000
2/12-12/17.
This grant supported a randomized prospective clinical trial evaluating the effect of a low calorie low fat diet on bleeding during liver surgery.

17. 1.R21 CA182956-01 NCI research grant.
“Image guided surgery in non-palpable breast cancer with coregistered supine MRI”.
Principal Investigator
\$786,477.
9/1/14-7/1/18.
This grant supported a randomized prospective clinical trial of a new method of breast conserving surgery using supine MRI guidance compared to standard of care

18. R01 CA214062
Targeting VISTA eradicates large established PD-1/CTLA-4 resistant tumors
Co-investigator
0.05 FTE
4/1/17-4/1/19
This grant supports work to elucidate the prognostic importance of the checkpoint inhibitor VISTA in human colorectal cancer.

19. Department of Defense Breast Cancer Research Program W81XWH-14-1-0356
Non-invasive label-free detection of micrometastases in the lymphatics with ultrasound-guided photoacoustic imaging.
Co-investigator
0.05 FTE
1/1/17-9/1/18
This grant supports a pilot study to use US guided photoacoustic imaging to localize breast cancer in axillary lymph nodes

XI. PROGRAM DEVELOPMENT:

During the past 17 years my main administrative responsibilities have focused on the Section of General Surgery. As Section Chief, I have expanded our Section from 10 to 24 surgical faculty. I was chair of the search committees for many of these surgeons. I have successfully launched several initiatives. I initiated a Division of Colorectal Surgery 10 years ago which now has 3 busy full time colorectal surgeons and a physician's assistant. I expanded and transformed our Acute Care/Trauma Division to be available in-house 24/7 for urgent surgical patients. In addition, I initiated a mutually beneficial collaboration with four local community hospitals whereby DHMC general surgeons operate and provide care to patients at these local hospitals.

XII. ENTREPRENEURIAL ACTIVITIES:

Patent: "Systems and methods for guiding tissue resection"
International Application No. PCT/US2016/037043, filed June 10, 2016.

CairnSurgical, Inc. Co-founder, 2015. Chief Medical Officer 2015-20

XII. MAJOR COMMITTEE ASSIGNMENTS:

National

2003	NCI Program Project Grant Review team member, Mt Sinai School of Medicine
2003, 6	NCI Program Project Grant Review team member, Univ. of Michigan
2005	Cancer Therapy Evaluation Program (CTEP) Concept Review Committee
2018	Center for Disease Control (CDC) Special Panel on Opioid Prescribing for Acute Pain, member
2019	Expert presenter, Applying Clinical Practice Guidelines to Prescribing Opioids for Acute Pain workshop. National Academy of Medicine, Washington, DC February 4, 2019

State

2019-20

State of New Hampshire Opioid Prescribing Advisory
Council

Institutional

Norris Cotton Cancer Center:

2018	Director, Strategic Planning Committee
2014-5	Director, Melanoma Oncology Program
2002-9	Co-Director, Immunology and Cancer Immunotherapy Research Program
2002-4 1999-2005	Chairman, Clinical Cancer Care Committee Clinical Cancer Care Committee
2002-12	Executive Committee
1996-2004	Director, Gastrointestinal Oncology Program
1993-2002	Clinical Cancer Research Committee

Department of Surgery

2003-20	Chief, Section of General Surgery
2002-15	Chief, Division of Surgical Oncology
	Chair of Search Committees:
2004	Surgical Oncology
2007	Breast Surgery
2008	Colorectal Surgery
2009	Surgical Oncology
2010	Dermatology Section Chief
2011	Alice Peck Day/DHMC General Surgery
2012	New London Hospital/DHMC General Surgery
2012	Mount Ascutney Hospital/DHMC General Surgery
2013	Acute Care Trauma Surgeon
2013	Surgical Oncology
2017	Colorectal Surgery
2017	Surgical Oncology
2019	Surgical Oncology AP

2019	Surgical Oncology
2014-16	Chairman, Promoting Professionalism Committee
2019	Member, Dept. of Surgery Promotions Committee
2015	Member, DH Compensation Committee
2015	Member, Academic Council Committee on Academic Compensation
1994-2000	Residency Advisory Committee
1995-9	Surgery Advisory Committee on Education

Geisel School of Medicine at Dartmouth

2017 Appointed by Provost of Dartmouth College to serve as a Research Misconduct Committee member

XIV. MEMBERSHIPS, OFFICE AND COMMITTEE ASSIGNMENTS IN PROFESSIONAL SOCIETIES:

New England Surgical Society

2018-19	President
2017-18	President-elect
2015-16	Vice President
2009-15	Recorder
2003-20	Program Committee
2008	Program Committee Chair
2008-20	Executive Committee
2012-15	Publication Committee Chair
2020	Nominating Committee
2000-3	New England Cancer Society, Executive Committee
1998-2001	Cancer and Leukemia Group B, Surgery Committee

Memberships

Aesculapian Club
 Alpha Omega Alpha
 American Association for the Advancement of Science
 American Association for Cancer Research
 American Society of Breast Surgeons

American Surgical Association
Association for Surgical Education
Faculty of American College of Surgeons
New England Surgical Society
New Hampshire Medical Society
Phi Beta Kappa
Sigma Xi
Society for Immunotherapy of Cancer
Society of Surgical Oncology
Society of University Surgeons

XV. EDITORIAL BOARDS:

1997-2014	Journal of Immunotherapy
2003-9	Annals of Surgical Oncology

XVI. JOURNAL REVIEWER ACTIVITY:

Multiple

XVII. AWARDS AND HONORS:

Princeton University:

1981	Academic Excellence Award, Biochemical Sciences
1980	Leopold Schepp Foundation Scholarship
1978	Class of 1883 English Prize
1978	Freshman First Honor Prize (awarded to the student with the highest GPA in the class after Freshman year)

Harvard Medical School:

1992	Administrative Chief Resident Deaconess-Harvard Surgical Service
------	---

Geisel School of Medicine at Dartmouth:

1995	American Cancer Society Career Development Award
1998	Surgery Chief Residents' Award for Teaching Excellence
1998	Alma Hass Milham Award

Awarded by the clinical faculty of Dartmouth Medical School for clinical excellence and compassion in patient care

- 1999 Alpha Omega Alpha
Elected by Dartmouth Medical students for strength of character, academic accomplishment and dedication to teaching
- 1999 Society of University Surgeons
- 2000 Chairman's Award
Awarded by the surgical faculty of Dartmouth Medical School for combining excellence in clinical care, research and teaching
- 2001 The Arthur Naitove Distinguished Teaching Award
Awarded by the residents in the Dept. of Surgery
- 2002 The Dartmouth-Mosenthal Surgical Fellowship
Awarded by Dartmouth Medical School students for contributions to DMS as a surgeon, teacher, scholar and friend
- 2005 Finalist, Leonard Tow Humanism in Medicine Award 2006
- 2005 Mentor to Sarah Greer, MD, First Place Resident Presentation Award, New England Surgery Society Annual Meeting
- 2006 Dartmouth Medical School Excellence in Teaching Award
Awarded by medical students in the core surgery clerkship
- 2008 Leading Physician, Breast Surgery, NH Magazine
- 2010 My paper on adjuvant radiation therapy for phyllodes tumors selected as one of the ten most influential papers on breast cancer in 2009 at the American Society of Breast Surgeons annual meeting
- 2012 Granite Tiger Award
In recognition of a Princeton alumnus who has made outstanding contributions to the educational, environmental, commercial, and/or political life of New Hampshire and demonstrated lifelong devotion to the University.

- 2013 Mentor to Bryan P. Stanifer, Best Poster Award, New England Surgical Society Annual Meeting
- 2014 Nominee, Schwarz Center Compassionate Caregiver Award
- 2014 Mentor to Maureen Hill, MD, First Place Resident Presentation Award, New England Surgical Society Annual Meeting
- 2014 Department of Surgery Care Path Award Enhanced Recovery after Surgery
- 2015 Vice President, New England Surgical Society
- 2016 Mentor to Maureen Hill, MD, Second Place Resident Research Award, STARS symposium
- 2016 Mentor to Maureen Hill, MD. Best Paper award, New England Surgical Society Resident Research Day
- 2016 Currier Scholar, Norris Cotton Cancer Center Awarded for patient accrual to investigator-initiated clinical trials
- 2016 Award for Excellence, Norris Cotton Cancer Center
- 2017 Mentor to Maureen Hill, MD First Place Resident Research Award, STARS Symposium
- 2017 Mentor to Maureen Hill, MD First Place Resident Presentation Award, New England Surgical Society Annual Meeting
- 2017-2019 Top Doctor, General Surgery, NH Magazine
- 2019 American Surgical Association membership

XVIII. BIBLIOGRAPHY:

Original articles:

1. **Barth RJ.** The health effects of diesel emissions. *The Princeton Journal of Arts and Sciences* 1982, 77-97.
2. **Barth RJ,** Mule JJ, Bock S, Rosenberg SA. Generation of rapidly proliferating tumor infiltrating lymphocytes with cytolytic specificity and therapeutic efficacy in mice. *Surg Forum* 1989, 431-432.
3. **Barth RJ,** Bock S, Mule JJ, Rosenberg SA. Unique murine tumor-associated antigens identified by tumor infiltrating lymphocytes. *J Immunol* 1990, 144:1531-1537.
4. **Barth RJ,** Mule JJ, Speiss PJ, Rosenberg SA. Interferon gamma and tumor necrosis factor have a role in tumor regressions mediated by murine CD8+ tumor infiltrating lymphocytes. *J Exp Med* 1991, 173:647-658.
5. **Barth RJ,** Danforth DN, Venzon DJ, et al. Level of axillary involvement by lymph node metastases in breast cancer is not an independent predictor of survival. *Arch Surg* 1991, 126:574-577.
6. **Barth RJ,** Venzon DJ, Baker AR. The prognosis of melanoma patients with metastases to two or more lymph node areas. *Ann Surg* 1991, 214:125-130.
7. **Barth RJ,** Baker AR. Pedunculated lipoma of the thigh. *Surg Rounds* 1991, 14:449-450.
8. **Barth RJ,** Mule JJ, Asher AL, Sanda MG, Rosenberg SA. Unique murine tumor-associated antigens identified by tumor infiltrating lymphocytes: tumor specific secretion of interferon gamma and tumor necrosis factor. *J Immunol Methods*, 1991, 140:269-279.
9. Restifo N, Esquivel F, Asher A, Stotter H, **Barth RJ,** et al. Defective presentation of endogenous antigens by a murine sarcoma: implications for the failure of an anti-tumor immune response. *J Immunol* 1991, 147:1453-1459.
10. Kaiser CW, McAuliffe JD, **Barth RJ,** Lynch JD. Hypoprothrombinemia and hemorrhage in a surgical patient treated with Cefotetan. *Arch Surg* 1991, 126:524-525.
11. **Barth RJ,** Merino MJ, Solomon D, Yang JC, Baker AR. A prospective study of the value of core needle biopsy and fine needle aspiration in the diagnosis of soft tissue masses. *Surgery* 1992, 112:536-543.
12. Valone, F, Kaufman, P, Guyre, P, Lewis, L, Memoli, V, Ernstoff, M, Wells, W, **Barth, R,** Deo, Y, Fisher, J. Clinical trials of bispecific antibody MDX-210 in women with advanced breast or ovarian cancer that over-expresses HER-2/neu. *J Hematother* 1995, 4:471-5.

13. Camp BJ, Dyhrman ST, Memoli VA, Mott LA and **Barth RJ**. In situ cytokine production by breast cancer tumor infiltrating lymphocytes. *Annals of Surgical Oncology* 1996, 3:176-84.
14. **Barth RJ**, Coppola MA and Green WR. The in vivo effects of locally secreted IL-10 on the murine anti-tumor immune response. *Annals of Surgical Oncology* 1996, 3: 381-6.
15. **Barth RJ**, Camp BJ, Martuscello T, Mott LA and Memoli VA. The cytokine microenvironment of human colon cancer: lymphocyte production of TNF and IL-4 predicts improved survival. *Cancer* 1996, 78:1168-78.
16. Steinthorsson G, Perry A and **Barth RJ**. Cutaneous fibrous histiocytoma with osteoclast-like giant cells. *Annals of Plastic Surgery* 1996, 37:217-9.
17. **Barth, RJ**, Rowland-Morin, PA, Mott, LA, and Burchard, KW. Communication effectiveness training improves surgical resident teaching ability. *J. Amer. Coll. Surgeons* 1997; 185: 516-19.
18. Mackey M, Gunn J, Ting P, Kikutani H, Dranoff G, Noelle R and **Barth RJ**. Protective immunity induced by tumor vaccines requires interaction between CD40 and its ligand, CD154. *Cancer Research* 1997, 57:2569-74.
19. **Barth RJ**, Burchard K, Tosteson A, Sutton J, Colacchio T, Henriques H, Howard R, Steadman S. Short-term outcome after mesh or Shouldice herniorrhaphy: a randomized, prospective study. *Surgery* 1998, 123:121-6.
20. Mackey M, Noelle R, **Barth RJ**. The role of CD40/CD154 interactions in the priming, differentiation and effector function of helper and cytolytic T cells. *J Leukocyte Biology* 1998, 63: 418-28.
21. Mackey M, Gunn J, Maliszewski C, Kikutani H, Noelle R, **Barth RJ**. Dendritic cells require maturation via CD40 in vivo to generate protective anti-tumor immunity, *J. Immunology* 1998, 161:2094-8.
22. **Barth RJ**. Histologic features predict local recurrence after breast conserving therapy of phyllodes tumors, *Breast Cancer Research and Treatment* 1999, 57:291-5.
23. **Barth RJ**, Schwaab T. Influence of the cytokine microenvironment on dendritic cell infiltration in colon cancer. *Surg Forum* 1999, 302-4.
24. Lambert L, Colacchio T, **Barth RJ**. Interval hepatic resection of colorectal metastases improves patient selection, *Archives of Surgery* 2000, 135:473-80.

25. Lambert L, Gibson G, **Barth RJ**. Intranodal immunization with a dendritic cell tumor vaccine is more effective than subcutaneous or intravenous routes, Surg Forum 2000.
26. Schwaab T, Weiss J, Schned A, **Barth RJ**. Influence of the cytokine microenvironment on dendritic cell infiltration in colon cancer, J Immunotherapy 2001, 24: 130-7.
27. Lambert L, Gibson G, Maloney M, Durell B, Noelle R, **Barth RJ**. Intranodal immunization with tumor lysate-pulsed dendritic cells enhances protective anti-tumor immunity, Cancer Res 2001, 61: 641-6.
28. Lambert L, Gibson G, Maloney M, **Barth RJ**. Equipotent generation of protective anti-tumor immunity by various methods of dendritic cell loading with whole cell tumor antigens, J Immunotherapy 2001, 24: 232-6.
29. Pipas J, Mitchell S, **Barth RJ**, Vera-Gimon R, Rathmann J, Meyer L, Wagman R, Lewis L, McDonnell C, Colacchio T, Perez R. A phase I study of twice weekly Gemcitabine and concomitant external beam radiation therapy in patients with adenocarcinoma of the pancreas, Int. J. Rad Onc Biol Physics 2001, 50: 1317-22.
30. Gibson G, Lesnikoski B, Yoo J, Mott L, Cady B, **Barth RJ**. A comparison of ink directed and traditional whole cavity re-excision for breast lumpectomy specimens with positive margins, Annals of Surgical Oncology 2001, 8:693-704.
31. Guyre C, Fisher J, Waugh M, Wallace P, Tretter C, Ernstoff M, **Barth RJ**. Advantages of hydrophobic culture bags over flasks for the generation of monocyte-derived dendritic cells for clinical applications, J. Immunological Methods 2002, 262:85-94.
32. Frleta D, Lin J, Quezada S, Wade T, **Barth R**, Noelle R, Wade W. Differential maturation of in vitro and in vivo CD40-matured dendritic cells, J. Immunotherapy 2003, 26: 72-84.
33. Killoran T, Wells W, **Barth RJ**, Goodwin D. Leiomyosarcoma of the popliteal vein, Skeletal Radiology 2003, 32:174-8.
34. Ahonen C, Doxsee C, McGurran S, Riter T, Wade, W, **Barth RJ**, Vasilakos J, Noelle R and Kedl R. Adjuvant effects of combined TLR and CD40 Triggering on cell mediated immunity are dependent on type 1 IFN, J Exp Med 2004, 199: 775-784.
35. **Barth RJ**, Gibson G, Carney P, Mott L, Becher R, Poplack S. Detection of breast cancer by screening mammography allows patients to be treated with less toxic therapy, Am J Roentgenology 2005, 184: 324-9.

36. Pipas, JM, **Barth RJ**, Zaki B, Tsapakos M, Bettmann M, Cates J, Suriawinata A, Ripple G, Sutton J, Gordon S, McDonnell C, Perez R, Redfield N, Meyer L, Marshal J, Cole B, Colacchio T. Docetaxel/gemcitabine followed by Gemcitabine and external beam radiotherapy in patients with pancreatic adenocarcinoma, *Ann Surg Onc* 2005, 12: 1-10.
37. Siegel A, Alvarado M, **Barth RJ**, Brady M, Lewis J. Parameters in the prediction of the sensitivity of parathyroid scanning. *Clin Nucl Med* 2006; 31:679-82.
38. Ernstoff M, Crocenzi T, Seigne J, Crosby N, Cole B, Fisher J, Uhlenhake J, Mellinger D, Foster C, Farnham C, Mackay K, Szczepiorkowski Z, Webber S, Schned A, Harris R, Noelle R, **Barth R**, Heaney J. Developing a rational tumor vaccine therapy for renal cell carcinoma: immune yin and yang. *Clinical Cancer Research* 2007. 13: 733s-740s.
39. Valsdottir E and **Barth RJ**. Induction of humoral immune responses in colorectal cancer patients with a dendritic cell vaccine. *Icelandic Med J* 2007. 93:314.
40. Greer S, Pipas J, Sutton J, Zaki B, Tsapakos M, Colacchio T, Gibson J, Wiener, D, Ripple,G, **Barth RJ**. Effect of neoadjuvant therapy on local recurrence after resection of pancreatic adenocarcinoma. *J Am Coll Surg* 2008, 206: 451-7.
41. Gorechlad J, McCabe E, Higgins J, Likosky D, Lewis P, Rosenkranz K, **Barth RJ**. Screening for Recurrences in Patients Treated with Breast Conserving Surgery: Is there a Role for MRI? *Annals of Surgical Oncology* 2008, 15:1703-9.
42. Szafranska A, Doleshal M, Edmunds H, Gordon S, Luttges J, Mundingv J, **Barth R**, Gutmann E, Siriawinata A, Pipas M, Tannapfel A, Korc M, Hahn S, Labourier E, Tsongalis G. Analysis of microRNAs in pancreatic fine needle aspirates can classify benign and malignant tissues, *Clinical Chemistry* 2008, 54: 1716-24.
43. Collins E, Moore C, Clay K, Kearing S, O'Connor A, Llewellyn-Thomas H, **Barth R**, Sepucha K. Can women with early stage breast cancer make an informed decision for mastectomy?, *J Clin Oncology* 2009, 27:519-25.
44. Halter R, Zhou T, Meaney P, Hartov A, **Barth R**, Rosenkranz K, Wells W, Kogel C, Borsic A, Rizzo E, Paulsen K. Correlation of in vivo and ex vivo tissue dielectric propoerties to validate electromagnetic breast imaging: initial clinical experience. *Physiological Measurement* 2009, 30:S121-136.
45. Schwaab T, Crocenzi T, Seigne J, Crosby N, Cole B, Fisher J, Uhlenhake J, Mellinger D, Foster C, Carlson C, Mackay K, Szczepiorkowski Z, Webber S, Schned A, Harris R, **Barth R**, Schwarzer A, Heaney J, Noelle R, Ernstoff M. Autologous Intranodal Dendritic Cell Vaccine with Aldesleukin and Inteferon□

- Therapy in Metastatic Renal Cell Carcinoma Patients, *Clinical Cancer Research* 2009, 15:4986-92.
46. **Barth R**, Wells W, Mitchell S, Cole B. A prospective, multi-institutional study of adjuvant radiation therapy after resection of malignant phyllodes tumors, *Ann Surg Onc* 2009, 16: 2288-94.
 47. Bauman, L, **Barth R**, Rosenkranz K. Breast conservation in women with multifocal-multicentric breast cancer: is it feasible?, *Ann Surg Onc* 2010, 17: S325-S329.
 48. Wang, J, Jiang S, Li Z, diFlorio-Alexander R, **Barth R**, Kaufman P, Pogue B, Paulsen K. *In vivo* quantitative imaging of normal and cancerous breast tissue using broadband diffuse optical tomography, *Medical Physics* 2010, 37(7) 3715-24.
 49. **Barth R**, Fischer D, Wallace P, Channon J, Noelle R, Gui J, Ernstoff M. A randomized trial of ex vivo CD40L activation of a dendritic cell vaccine in colorectal cancer patients: tumor-specific immune responses are associated with improved survival, *Clin Cancer Res* 2010, 16:5548-56.
 50. Gardner T, **Barth R**, Zaki B, Boulay B, McGowan M, Sutton J, Ripple G, Colacchio T, Smith K, Byock I, Call M, Suriawinata A, Tsapakos M, Mills J, Srivastava A, Stannard M, Gordon S, Pipas J. The effect of initiating a multidisciplinary care clinic on access and time to treatment in patients with pancreatic adenocarcinoma. *J Onc Practice* 2010, 6:288-292.
 51. Davis, K, **Barth R**, Gui J, Dann E, Eisenberg B, Rosenkranz K. The use of MRI in the pre-operative planning for women with newly diagnosed DCIS: risk or benefit? *Annals of Surgical Oncology* 2012, 19: 3270-4.
 52. Pipas J, Zaki B, McGowan M, Tsapakos M, Suriawinata A, Ripple G, Tsongalis G, Colachio T, Gordon S, Tarczewski S, Sutton J, Srivastava A, Smith K, Gardner T, Davis T, Korc M, MacKenzie T, **Barth R**. A phase II trial of cetuximab, twice-weekly gemcitabine, and intensity modulated radiotherapy in patients with pancreatic adenocarcinoma, *Annals of Oncology* 2012; 23: 2820-7.
 53. Laughney A, Krishnashwamy v, Rizzo E, Schwab M, **Barth R**, Pogue B, Paulsen K, Wells W. Spectroscopic imaging distinguishes morphological patterns that inform pathology in tissues relevant to surgical margin assessment, *Clinical Cancer Research* 2012, 18: 6315-25.
 54. Rosenkranz K, Tsui E, McCabe E, Gui J, Underhill K, **Barth R**. Increased rates of long term complications after MammoSite brachytherapy compared to whole breast radiation therapy, *J Am Coll Surg* 2013; 217: 497-502.

55. Laughney A, Krishnaswamy V, Rice T, Cuccia D, **Barth R**, Tromberg B, Paulsen K, Pogue B, Wells W. System analysis of spatial frequency domain imaging for quantitative mapping of surgically resected breast tissues, *J Biomed Optics* 2013; 036012 1-11.
56. Laughney A, Krishnaswamy V, Rizzo E, Schwab M, **Barth R**, Cuccia D, Tromberg B, Paulsen K, Pogue B, Wells W. Spectral discrimination of breast pathologies in situ using spatial frequency domain imaging. *Breast Cancer Research* 2013; 15: R61.
57. McGowan M, Eisenberg B, Lewis L, Froehlich H, Wells W, Eastman A, Kuemmerle N, Rosenkranz K, **Barth R**, Schwartz G, Li Z, Tosteson T, Kinlaw W. A proof of principle clinical trial to determine whether conjugated linoleic acid modulates the lipogenic pathway in human breast cancer tissue. *Breast Cancer Research and Treatment* 2013; 138: 175-83.
58. Reeves, J, Ng D, Suriawinata A, Gui J, Mills J, **Barth R**. Short term preoperative diet modification decreases steatosis and steatohepatitis in patients undergoing hepatic resections. *Surgery* 2013; 154:1031-7.
59. Gardner, T, Pipas, J, Glass L, **Barth R**, Smith K, Colacchio T, Zaki B, Gordon S, Ripple G, Hourdequin K, Suriawinata A. Pancreatic cyst prevalence and the risk of mucin-producing adenocarcinoma in United States adults, *Am J Gastroenterology* 2013; 108: 1546-50.
60. Xue, Y, Abou Tayoun A, Abo K, Pipas, J, Gordon S, Gardner T, **Barth R**, Suriawinata A, Tsongalis G. MicroRNAs as diagnostic markers for pancreatic ductal adenocarcinoma and its precursor, pancreatic intraepithelial neoplasm, *Cancer Genetics* 2013; 206: 217-21.
61. **Barth R**. Margin negative breast conserving resection: adequate for benign phyllodes tumors, but inadequate therapy for borderline and malignant phyllodes tumors. *Breast Can Res Treat.* 2013; 142: 463-4.
62. Pallone M, Poplack S, Avutu, H, Paulsen K, **Barth R**. Supine breast MRI and 3D optical scanning: an approach to improve tumor localization for breast conserving surgery. *Ann Surg Onc* 2014; 21: 2203-8.
63. Krishnaswamy V, Elliott J, McClatchey D, **Barth R**, Wells W, Pogue B, Paulsen K. Structured light scatteroscopy. *J Biomedical Optics* 2014; 19: 070504, 1-4.
64. Liu X, Mody K, de Abreu F, Pipas J, Peterson J, Gallagher T, Suriawinata A, Ripple G, Hourdequin K, Smith K, **Barth R**, Colacchio T, Tsapakos M, Zaki B, Gardner T, Gordon S, Amos C, Wells W, Tsongalis G. Molecular profiling of appendiceal epithelial tumors using massively parallel sequencing to identify somatic mutations, *Clinical Chemistry* 2014; 60: 1004-11.

65. Tichauer K, Samkoe K, Gunn J, Kanick S, Hoopes J, **Barth R**, Kaufman P, Hasan T, Pogue B. Quantitative imaging of cancer receptors in lymph nodes with a dual-tracer technique reveals microscopic burden level with macroscopic measurement. *Nature Medicine* 2014, 20: 1348-53.
66. Erkmen C, **Barth R**, Raman V. Case report: Successful treatment of recurrent chordoma and bilateral pulmonary metastases following an 11 year disease-free period. *International Journal of Surgery Case Reports* 2014; 5: 424-7.
67. Gardner T, Hessami N, Smith K, Ripple G, **Barth R**, Klibansky D, Colacchio T, Zaki B, Tsapakos M, Suriawinata A, Putra J, Tsongalis G, Mody K, Gordon S, Pipas J. The effect of neoadjuvant chemoradiation on pancreatic cancer associated diabetes mellitus. *Pancreas* 2014, 43:1018-21.
68. Dsouza A, Elliott J, Gunn J, **Barth R**, Samkoe K, Tichauer K, Pogue B. Nodal flow quantified with afferent vessel input function allows differentiation between normal and cancer bearing nodes. *Biomedical Optics Express* 2015; 6: 1304-17.
69. Poplack S, Levine G, Henry L, Marquart A, Wells W, Heinemann S, Snyder L, Coleman C, Tosteson T **Barth R**. A pilot study of ultrasound guided cryoablation of < 15 mm invasive ductal carcinoma with magnetic resonance imaging follow-up and subsequent surgical resection, *Am J Roentgenology* 2015, 204:1100-8.
70. Muller K, Tafe L, Wells W, **Barth R**, Marotti J. Benign phyllodes tumor of the breast recurring as a malignant phyllodes tumor and spindle cell metaplastic carcinoma, *Human Pathol.* 2015, 46: 327-33.
71. McClatchey D, Krishnaswamy V, Kanick S, Elliott J, Wells W, **Barth R**, Paulsen K, Pogue B. Molecular dyes used for surgical specimen margin orientation allow for intraoperative optical assessment during breast conserving surgery. *Journal of Biomedical Optics* 2015; 20: 040504.
72. Halter R, Hartov A, Poplack S, di_Florio-alexander R, Wells W, Rosenkranz K, **Barth RJ**, Kaufman P, Paulsen K. Real-time electrical impedance variations in women with and without breast cancer. *IEEE Transactions on Medical Imaging* 2015; 34: 38-48.
73. Alloway R, Fischer D, Gardner T, Gordon S, **Barth R**, Colacchio T, Wood M, Kacssoh B, de Abreu F, Hamilton J, Choi J, Lange J, Peterson J, Padmanabhan V, Tomlinson C, Tsongalis G, Suriawinata A, Greene C, Sanchez Y, Smith K. Fine needle biopsy patient derived xenografts as tools for drug discovery and individualized therapy for pancreatic cancer, *Oncotarget* 2016; 7: 17087-102.

74. Hill M, Holubar S, Garfield Legare C, Luurtsema C, **Barth R**. Peri-operative bundle decreases post-operative hepatic surgery infections, *Ann Surg Onc* 2015, 22:S1140-6.
75. Bean J, Hosford S, Symonds L, Owens P, Dillon L, Yang W, Schwartz G, Marotti J, Rosenkranz K, **Barth R**, Shee, K, Chen V, Agarwal V, Miller T. Characterization of the PI3K/mTor dual inhibitor P7170 and the CDK1/4/9 inhibitor P1446A-05 for the treatment of endocrine resistant ER+ breast cancer, *Breast Cancer Res Treat*. 2015, 149:69-79.
76. Louie, R, **Barth R**, Rosenkranz K. Complete blood counts, liver function tests and chest X-rays as routine screening in early stage breast cancer- value added or just cost?, *Breast Cancer Res Treat*. 2015; 154: 99-103.
77. Liu J, Yuan Y, Chen w, Putra J, Suriawinata A, Schenk A, Miller H, Guleria I, **Barth R**, Huang Y, Wang L. Immune checkpoint proteins VISTA and PD-1 non-redundantly regulate murine T cell responses, *PNAS* 2015; 112: 6682-7.
78. Gardner T, Byanova K, Pipas J, Ripple G, Spangler C, Klibansky D, Rockacy M, Levenick J, Smith K, Colacchio T, **Barth R**, Zaki B, Tsapakos M, Gordon S. Cost effectiveness and clinical efficacy of biliary stents in patients undergoing neoadjuvant therapy for pancreatic adenocarcinoma in a randomized controlled trial. *Gastrointestinal Endoscopy* 2016; 84: 460-6.
79. Qian D, Xiao X, Byun J, Suriawinata A, Her S, Amos C, **Barth R**. PI3K/Akt/mTOR signaling and plasma membrane proteins are implicated in responsiveness to adjuvant dendritic cell vaccination for metastatic colorectal cancer. *Clin Cancer Research* 2016, 23:399-406.
80. Hill M, McMahon M, Stucke R, **Barth R**. Wide variation and excessive dosage of opioid prescriptions for common general surgical procedures. *Ann Surg* 2017,265:709-14.
81. Faries, M, Thompson J, Cochran A, Andtbacka R, Mozzillo N, Zager J, Jahkola T, Bowles T, Testori A, Beitsch P, Hoekstra H, Moncrieff M, Ingvar C, Wouters M, Sabel M, Levine E, Agnese D, Henderson M, Dummer R, Rossi C, Neves R, Trocha S, Wright F, Byrd D, Matter M, Dillon L, Hsueh E, MacKenzie-Ross A, Johnson D, Terheyden P, Berger A, Huston T, Wayne J, Smithers M, Neuman H, Schneebaum S, Gershenwald J, Ariyan C, Desai D, Jacobs L, Lewis J, McMasters K, Gesierich A, Hersey P, Bines S, Sardi A, Kane J, **Barth R**, et al. Multicenter Selective Lymphadenectomy Trial (MSLT)-II: Completion Lymph Node Dissection versus Observation in Patients with Melanoma Sentinel Lymph Node Metastases. *NEJM* 2017, 376: 2211-22.

82. Hill M, Beeman J, Jhala K, Holubar S, Rosenkranz K, **Barth R Jr.** Relationship of Breast MRI to Recurrence Rates in Patients Undergoing Breast-Conservation Treatment, *Breast Cancer Res Treat* 2017, 163: 615-22.
83. Hill M, Stucke R, McMahon M, Beeman J, **Barth R.** An educational intervention decreases opioid prescribing after general surgery operations. *Ann Surg* 2018, 267: 468-72.
84. **Barth R,** Krishnaswamy V, Paulsen K, Rooney T, Wells W, Rizzo E, Angeles C, Marotti J, Zuurbier R, Black C. A patient specific 3D printed form accurately transfers supine MRI-derived tumor localization information to guide breast conserving surgery. *Ann Surg Onc* 2017, 24:2950-6.
85. Nutter E, Weiss J, Marotti J, Eliassen M, **Barth R,** Goodrich M, Petersen C, Onega T. Personal history of proliferative breast disease with atypia and risk of multifocal breast cancer, *Cancer* 2018, 124: 1350-57.
86. Hill, M, Stucke R, Billmeier S, Kelly J, **Barth R.** A guideline for discharge opioid prescriptions after inpatient general surgical procedures. *JACS* 2018, 226: 996-1003.
87. **Barth R.** Invited commentary to Fujii M et al. Post-discharge opioid prescribing and use after common surgical procedure. *JACS* 2018; 226: 1012-13.
88. Maloney B, McClatchey D, Paulsen K, Wells W, Pogue B, **Barth R.** Review of methods for intraoperative margin detection for breast conserving surgery. *J. Biomed Optics* 2018, 23: 1-19.
89. Stucke R, Kelly J, Mathis K, Hill M, **Barth R.** Impact on prescribing habits for elective surgical patients following mandatory prescription drug monitoring program use, *JAMASurgery* 2018, 153: 1105-1110.
90. **Barth R,** Mills J, Suriawinata A, Putra J, Tosteson T, Axelrod D, Freeman R, Whalen G, Lafemina J, Tarczewski S, Kinlaw, W. A short-term pre-operative diet decreases bleeding after partial hepatectomy: results from a multi-institutional randomized controlled trial. *Annals of Surgery* 2019, 269: 48-52.
91. Kang R, Seath B, Huang V, **Barth R.** Impact of autologous blood transfusion on survival and recurrence for patients undergoing hepatectomy for colorectal cancer liver metastases. *JACS* 2019, 228: 902-9.
92. **Barth R,** Krishnaswamy V, Paulsen K, Rooney T, Wells W, Angeles C, Zuurbier R, Rosenkranz K, Poplack S, Tosteson T. A Randomized Prospective Trial of Supine MRI Guided vs Wire Localized Lumpectomy for Breast Cancer, *Ann Surg Onc* 2019, 26: 3099-3108.

93. LeBlanc R, Barton D, **Barth R**, Shirai K, Angeles C, Wong S, Yan S. Small and Isolated Immunohistochemistry-Positive Cells in Melanoma Sentinel Lymph Nodes are Associated with Disease Specific and Recurrence Free Survival Comparable to that of Sentinel Lymph Nodes Negative for Melanoma, *Am J Surg Path* 2019, 43: 755-65.
94. Louie C, Kelly J, **Barth R**. Decreased post-surgical opioid prescribing does not affect provider satisfaction scores, *JAMASurgery* 2019, 154: 1049-54.
95. **Barth R**. Borderline and malignant phyllodes tumors: how often do they locally recur and is there anything we can do about it? *Ann Surg Onc* 2019, 26: 1973-5.
96. Auffenberg G, Smith A, Averch T, **Barth R**, et al. Opioid stewardship in Urology, Submitted for publication, *Urology Practice*.
97. Byrd B, Krishnaswamy V, Gui J, Rooney T, Zuurbier R, **Barth R**. J. Am Coll Surg. The Shape of Breast Cancer, *Ann Surg Oncol* 2020, in press.
98. Kang R, Reed J, Glaser A, **Barth R**. Eliminating Opioids from Breast Conserving Surgery: a Peri-operative Pain Management Pathway, *J. Am Coll Surg*, 2020, in press.
99. **Barth R**, Waljee J. This should be a “never-event”. *JAMASurgery* 2020, in press.
100. **Barth R**. Profiles of Surgical Entrepreneurs. *J. Am Coll Surg* 2020, in press.
101. Durand M-A,...**Barth R**...,Elwyn G. What matters most: randomized controlled trial of breast surgery conversational aid across socioeconomic strata. Submitted for publication.
102. Smith K, **Barth R**, Colacchio T, Angeles C, Chevalier J, Bergmann L, Purich E, Gardner T. Intra-operative secretin stimulation to prevent post-operative pancreatic fistula formation: a double-blind,randomized,placebo-controlled trial. Submitted for publication.
103. Wells J, Miller T, Chamberlin M, Shee K, Bean J, Marotti J, Wells W, Trask H, Kolling F, Bhatt A, Kaufmann P, Schwartz G, **Barth R**, Arrick B, Gui J. Plasma DNA as a “liquid biopsy” incompletely complements tumor biopsy for identification of mutations in patients with oligometastatic breast cancer. Submitted for publication.

Book chapters:

1. **Barth RJ.** Lymphocyte cytokine secretion in response to tumors. In: Chang AE and Shu S, ed. Immunotherapy of Cancer with Sensitized T Lymphocytes. R. G. Landes Co., Austin, TX., 1994, p. 79 - 89.
2. **Barth RJ** and Mulé JJ. Cytokine gene transfer into tumor cells: animal models. In: Moen R and Brenner M , ed. Gene Therapy in Cancer. Marcel Dekker, Inc., NY, NY, 1996, p. 73- 93.
3. **Barth RJ** and Mule, JJ. Interleukin-2: Preclinical trials. In: Rosenberg SA, ed. Biologic Therapy of Cancer: Principles and Practice. Lippincott Williams and Wilkins, Phil. PA, 2000, p. 19-31.
4. **Barth RJ** and Dietrich, A. Colorectal Cancer. In: Rose M, DeVita V, Lawrence T and Rosenberg S ed. Oncology for the Primary Care Provider. Lippincott Williams and Wilkins, Phil PA, 2013, p. 303-7.
5. **Barth RJ.** The use of opioids in the post-operative period. Cameron’s textbook of Surgery 2019.

Major media events

3/7/17 Washington Post article. “Surgeons were told to stop prescribing so many painkillers. The results were remarkable.”

3/17 NH Public Radio interview on opioid prescribing research.

6/6/17 Jack Heath radio interview on our opioid prescribing research.

6/13/17 Atlantic LIVE. Pulse: On the Front Lines of Health Care. Opioid prescribing research.

12/5/17 NH Public Radio live interview on inpatient opioid prescription guidelines.

12/6/17 WCAX TV interview on inpatient opioid prescription guidelines.

12/7/17 WNTK “First Look” morning talk show interview on inpatient opioid prescription guidelines.

12/19/17 WPTZ Burlington, VT. TV interview on inpatient opioid study

3/30/18 STAT First Opinion. Trump wants to reduce opioid prescriptions by one third. We can start now.

6/5/18 NH National Public Radio (NPR) guest on “The Exchange” with Laura Kanoy to discuss the drop in opioid prescribing in NH in 2017.

6/11/18 NH Union Leader. Front page feature article about our research on opioid prescribing.

6/19/18 NY Times. Feature article: Prescribing Opioids: how many are too many?

2/18/19 NBC television. “The State of Addiction”. Interview on our research findings on opioid prescribing.

Abstracts Presented at Regional or National Meetings:

1. **Barth RJ**, Mule J, Bock S, and Rosenberg S. Generation of rapidly proliferating tumor infiltrating lymphocytes with cytolytic specificity and therapeutic efficacy in mice. Presented: Surgical Forum, American College of Surgeons, 1989.
2. **Barth RJ**, Mule J, and Rosenberg S. TIL with in vitro cytolytic specificity are specifically therapeutic in vivo. Presented: American Association of Cancer Research, 1990.
3. **Barth RJ** and Coppola, M. Lack of an immunosuppressive effect of IL-10 on the murine anti-tumor immune response. Presented: Society of Biologic Therapy, 1994.
4. Camp B, Memoli V and **Barth RJ**. In situ cytokine secretion by breast cancer TIL. Presented: Society of Surgical Oncology, 1995.
5. **Barth RJ** and Coppola, M. Lack of an immunosuppressive effect of IL-10 on the murine anti-tumor immune response. Presented: Society of Surgical Oncology, 1995.
6. **Barth RJ** Cytokine production in situ by lymphocytes infiltrating human tumors. Presented: Frederick Collier Society meeting, 1995.
7. Kaufman P, Valone F, Gerke G, Guyre P, Memoli V, **Barth R**, Phipps K, Lewis L, Deo Y and Fanger M. Immunological stimulation of bispecific antibody (BsAb) MDX-210 (Anti-Fc γ R1 X Anti-HER-2/neu) in patients with breast or ovarian cancer that overexpress HER-2/neu is schedule dependent. Presented: American Society of Clinical Oncology, 1995.
8. **Barth RJ** and Memoli,V. TNF and IL-4 produced in situ by colon cancer tumor infiltrating lymphocytes predicts survival. Presented: Society of Surgical Oncology, 1996.

9. **Barth RJ**. Cytokine production in situ by lymphocytes infiltrating human tumors. Presented: Eastern Surgical Society, 1996.
10. Anthony S, Ihnat M, Ernstoff M, Kaufman P, Lewis L, **Barth R**, Memoli V, Dain B, Arvizu C, MacKay K, Daly-Finn L, and Hamilton J. Suppression in expression of P-glycoprotein and other proteins associated with multidrug resistance (MDR) by mitomycin C in metastatic breast cancer patients: preliminary results from a pilot clinical trial. Presented: American Association for Cancer Research, 1996.
11. **Barth, RJ**, Burchard, K, Sutton, J, Tosteson, A, Colacchio, T, Henriques, H, Howard, R, and Steadman, S. Short-term outcomes following mesh or Shouldice herniorrhaphy: a randomized, prospective study. Presented: New England Surgical Society, 1996.
12. Kaufman PK, Lewis LD, **Barth RJ**, et. al. Bispecific antibody 520C9 X 22 and interferon gamma is an immunologically active treatment for patients with metastatic adenocarcinomas that overexpress Her-2/neu. Presented: San Antonio Breast Cancer Symposium, 1996.
13. Mackarem, G, Roche, C, **Barth, R**, Ting, P, Hughes, K. Does mammography benefit women in their forties? Presented: New England Cancer Society, 1996.
14. Kaufman P, Guyre P, **Barth R**, Lewis L, Memoli V, Curnow R, Deo Y, Harris R, Valone F, Wallace P, Wells W, Schned A, Fisher J, Waugh M, Phipps K, MacKay K, Fanger M, Ernstoff M. Phase I trial of interferon gamma and MDX 210 in patients with metastatic carcinomas that overexpress her-2/neu. American Society of Clinical Oncology 1997.
15. **Barth, RJ**, Mackey, M, Gunn, J, Ting, P, Noelle, R. CD40/CD40L interactions have a critical role in T cell priming induced by tumor vaccines. Presented: American Association for Cancer Research, 1997.
16. **Barth, RJ**, Rowland-Morin, PA, Mott, LA, Burchard. KW. Communication effectiveness training improves surgical resident teaching ability. Presented: Association for Surgical Education, 1997.
17. **Barth, RJ**, Mackey M, Gunn J, Noelle R. Dendritic cells require activation via CD40 in vivo to generate protective anti-tumor immunity, Presented: Society of Surgical Oncology 1998.
18. Lambert L, Colacchio T, **Barth RJ**. Interval hepatic resection of colorectal metastases improves patient selection. Presented: New England Surgical Society 1999.

19. **Barth RJ** and Schwab T, Influence of the cytokine microenvironment on dendritic cell infiltration in colorectal cancer. Presented: American College of Surgeons Surgical Forum 1999.
20. Kaufman P, Lewis L, Nervi A, **Barth R**, Cole B, Anthony S, Hermann D, Ernstoff M, Hamilton J. Phase I trial of mitomycin c down regulation of multidrug resistance proteins and mitomycin c and paclitaxel combination therapy. Proc Am. Soc. Clin. Oncology 1999.
21. Tretter C, Schwaab T, Heaney J, **Barth R**, Perry A, Cole B, Schned A, Phillips D, Fisher J, Waugh M, Ernstoff M. Increase in T cell precursor frequency in patients with renal cell carcinoma and melanoma treated with autologous tumor vaccine plus GM-CSF. ASCO, 2000.
22. **Barth RJ**. Discussant: Universal helper peptides augment dendritic cell based anti-tumor vaccines, New England Surgical Society, 2000.
23. Lambert L, Gibson G, **Barth RJ**. Intranodal immunization with a dendritic cell tumor vaccine is more effective than subcutaneous or intravenous routes. Presented: American College of Surgeons Surgical Forum 2000.
24. **Barth RJ**, Mitchell S, Wells W. A prospective study of adjuvant radiation therapy after resection of borderline and malignant phyllodes tumors: interim report. Presented: New England Cancer Society, 2000.
25. Gibson G, Lesnikoski B, Yoo J, Cady B, **Barth RJ**. A comparison of ink directed and whole cavity re-excision for breast lumpectomy specimens with positive margins. Presented: Society of Surgical Oncology, 2001.
26. **Barth RJ**. Treatment of patients with metastatic colon cancer with a dendritic cell vaccine. Presented: New England Cancer Society, 2002.
27. Pipas, J.M., **Barth RJ**, Zaki B, Colacchio T, Gordon S, Bettman M, Sutton J, Perez R, Meyer L, McDonnell C, Cole B. Docetaxel/Gemcitabine followed by Gemcitabine and Radiotherapy in Patients with Pancreatic Carcinoma. Am Soc Clin Onc, 2003.
28. Siegel A, Alvarado M, **Barth RJ**, Brady M, Lewis J. Can parathyroid hormone level predict the outcome of parathyroid scintigraphy?. Am Roentgen Ray Society meeting 2004.
29. Pipas, J.M., **Barth RJ**, Zaki B, Colacchio T, Gordon S, Bettman M, Sutton J, Perez R, Meyer L, McDonnell C, Cole B. Docetaxel/Gemcitabine followed by Gemcitabine and Radiotherapy in Patients with Pancreatic Carcinoma. Am Soc Clin Onc, 2004.

30. **Barth RJ**, Wallace P, Fischer D, Smith, J, Noelle R. Treatment of metastatic colorectal patients with a tumor lysate pulsed dendritic cell vaccine: a randomized evaluation of ex vivo CD40L activation.
International Society for the Biological Therapy of Cancer, 2004.

31. Valsdottir, E and **Barth RJ**. Induction of humoral immune responses in colorectal cancer patients with a dendritic cell vaccine.
American Society of Colorectal Surgeons, 2005.

32. Greer S and **Barth RJ**. Neoadjuvant therapy and local recurrence in pancreatic carcinoma.
New England Surgical Society, 2005.

33. Valsdottir, E, Sorensen M, Butterly L and **Barth RJ**. Barriers to screening for colorectal cancer, *The Icelandic Medical Journal*, 4/2007.

34. Gorechlad J, McCabe E, Higgins J, Likosky D, Lewis P, Rosenkranz K and **Barth RJ**. Screening for recurrences In patients treated with breast conserving surgery: Is there a role for MRI?,
New England Surgical Society, 2007.

35. Edmunds H, Szafranska A, Gordon S, Doleshal M, Barth R, Gutman E, Suriawinata A, Korc M, Labourier E, Tsongalis G. Analysis of pancreatic microRNA biomarker candidates In fine needle aspirates preserved In *RNA Retain* .
Association for Molecular Pathology, 2007.

36. Barth R, Wells W, Mitchel S, Cole B. A prospective, multi-institutional study of adjuvant radiation therapy after resection of malignant phyllodes tumors.
Society of Surgical Oncology, 2009.

37. Bauman L, **Barth R**, Rosenkranz K. Breast conservation in women with multicentric breast cancer: is it feasible?
Am Soc Breast Surgeons, 2010.

38. **Barth R**, Fischer D, Wallace P, Channon J, Noelle R, Gui J, Ernstoff M. A randomized trial of ex vivo CD40L activation of a dendritic cell vaccine in colorectal cancer patients: tumor-specific immune responses are associated with improved survival.
Am Assoc Cancer Research, 2010.

39. **Barth R**, Fischer D, Channon J, Wells W, Levine G, Poplack S. T cell immune responses after cryotherapy of breast cancer.
New England Surgical Society, 2010.

40. Reeves J, Ng D, Suriawinata A, Gui J, Mills J, **Barth R**, Short term preoperative diet modification decreases steatosis and steatohepatitis in patients undergoing hepatic resections.
New England Surgical Society, 2010.
41. Tsui E, Rosenkranz K, McCabe E, Underhill K, Gui J, **Barth R**. Increased rates of long term complications after Mammosite brachytherapy compared to whole breast radiation therapy.
New England Surgical Society 2011.
42. Tiger J, Barth R. Melanoma masquerading as atypical squamous proliferation.
American Academy of Dermatology, 2012.
43. Davis K, **Barth R**, Gui J, Dann E, Rosenkranz K. The use of MRI in the pre-operative planning for women with newly diagnosed DCIS: risk or benefit?
American Society of Breast Surgeons 2012.
44. Stanifer B, Suriawinata A, Gui J, **Barth R**. Colon cancer metastases are not infiltrated by favorably prognostic T cells: evidence for the escape phase of the cancer immunoediting hypothesis in humans.
New England Surgical Society 2012.
45. Xue Y, Abou Tayoun AN, Abo KM, Pipas JM, Gordon SR, Gardner TB, Barth RJ Jr, Suriawinata AA, Tsongalis GJ. MiRNA-148a as a diagnostic marker for pancreatic ductal adenocarcinoma. *J Molec Diagn* 2012;14(6):710 (ST53).
Association for Molecular Pathology, Long Beach, CA.
46. Pallone M, Paulsen K and **Barth R**. Improved tumor localization for breast conserving surgeries using supine breast MRI and 3D optical scanning.
New England Surgical Society 2013.
47. Ma H, Marotti J, Goodney P, Barth R, Eisenberg B, Holubar S, Rosenkranz K. Papillary carcinoma of the breast: is nodal staging indicated?
New England Surgical Society 2013.
48. Hill M, Holubar S, Garfield Legare C, Luurtsema C, **Barth R**. Peri-operative bundle decreases post-operative hepatic surgery infections.
New England Surgical Society 2014.
49. **Barth R**. An Improved method for tumor localization for breast conserving surgery.
Northeast Medical Association 2014.
50. DSouza A, Elliott J, Gunn J, **Barth R**, Samkoe K, Tichauer K, Pogue B. Accounting for lymphatic delivery differences during fluorescence imaging of

lymph nodes reveals differences between normal and tumor-bearing nodes.
SPIE Photonics West 2015.

51. Louie R, Cheung M, Bostok I, Gordon S, Gardner T, Sutton J, Colacchio T, **Barth R**, Smith K. Utility of intra-operative bile cultures to predict postoperative infectious complications following pancreaticoduodenectomy.
New England Surgical Society 2015.
52. Louie R, Tonneson J, **Barth R**, Rosenkranz K. Liver function tests in the diagnostic work-up of newly diagnosed stage III breast cancer: added value or just an additional test?
New England Surgical Society 2015.
53. David C. Qian, Xiangjun Xiao, Jinyoung Byun, Arief A. Suriawinata, Stephanie C. Her, Christopher I. Amos, **Richard J. Barth Jr.** PI3K/Akt/mTOR signaling and plasma membrane proteins are implicated in responsiveness to adjuvant dendritic cell vaccination for metastatic colorectal cancer.
American Assoc of Cancer Research 2016.
54. Hill M, McMahon M, Stucke R, **Barth R**. Wide variation and excessive dosage of opioid prescriptions for common general surgical procedures.
New England Surgical Society 2016.
55. Hill M, Beeman J, Jhala K, Rosenkranz K, **Barth R**. Relationship of breast MRI to recurrence rates in breast conservation treatment.
New England Surgical Society 2016.
56. **Barth R**, Mills J, Suriawinata A, Putra J, Tosteson T, Whalen G, LaFemina J, Kinlaw W, Tarczewski S. A short-term pre-operative diet decreases bleeding in liver surgery: results from a multi-institutional randomized clinical trial.
Society of Surgical Oncology, 2017.
57. **Barth R**, Krishnaswamy V, Paulsen K, Rooney T, Wells W, Rizzo E, Angeles C, Marotti J, Zuurbier R, Black C. A patient-specific 3-D printed form accurately transfers supine MRI derived tumor localization information to guide breast conserving surgery.
American Society of Breast Surgeons, 2017.
58. Hill M, Stucke R, Billmeier S, Beeman J, **Barth R**. A guideline for discharge opioid prescriptions after inpatient general surgical procedures.
New England Surgical Society, 2017.
59. Louie C, Kelly J, **Barth R**. . Decreased post-surgical opioid prescribing does not affect provider satisfaction scores. New England Surgical Society 2018.

60. Kang R, Seath B, Huang V, **Barth R**. Impact of autologous blood transfusion on survival and recurrence for patients undergoing hepatectomy for colorectal cancer liver metastases. New England Surgical Society 2018.
61. **Barth R**, Krishnaswamy V, Paulsen K, Rooney T, Wells W, Angeles C, Zuurbier R, Rosenkranz K, Poplack S, Tosteson T. A Randomized Prospective Trial of Supine MRI Guided vs Wire Localized Lumpectomy for Breast Cancer. American Society of Breast Surgeons, 2019.
62. Byrd B, Krishnaswamy V, Rooney T, Zuurbier R, **Barth R**. The Shape of Breast Cancer. New England Surgical Society 2019.
63. **Barth R**. Appropriate opioid prescribing after general surgery operations. Eastern Surgical Society 2019.
64. **Barth R**. Profiles of Surgical Entrepreneurs. Presidential Address, New England Surgical Society 2019
65. Myers L, Chamberlin M, **Barth R**. A modified tumor board as a capstone to a seven week foundations of medical science course. Northeast Group on Educational Affairs 2020

XIX. Clinical Trials

Clinical trials I designed, wrote and executed as Principal Investigator:

- | | |
|------|--|
| 1990 | A prospective study of the value of core needle biopsy and FNA in the diagnosis of soft tissue masses. |
| 1993 | A randomized prospective study of mesh vs Shouldice herniorrhaphy. |
| 1998 | A prospective multi-institutional study of adjuvant radiation therapy after resection of malignant phyllodes tumors. |
| 2001 | A randomized trial of ex vivo CD40L activated dendritic cell vaccine therapy for patients with metastatic colorectal cancer. (FDA IND# 9554) |
| 2004 | Alternative breast imaging modalities: correlation with local tissue property measurements and histopathologic indices in palpable masses. |
| 2006 | A pilot study of ultrasound guided cryoablation of small unifocal invasive ductal breast cancer using contrast |

enhanced MRI to evaluate tumor viability and immunologic assays to identify and characterize a cryoablation induced immune response.

- 2009 A study of the use of supine MRI Images in breast conserving surgery.
- 2009 A prospective study of partial breast adjuvant radiation therapy after resection of malignant phyllodes tumors.
- 2012 A randomized phase II study of the effect of a low calorie diet on patients undergoing liver resection.
- 2015 A study to evaluate the accuracy of a breast cancer locator in patients with palpable cancers
- 2016 D16196 A pilot multi-institutional study to evaluate the accuracy of the Breast Cancer Locator in patients with palpable cancers
- 2017 D17168 The prone to supine breast MRI trial
- 2018 The Excess Opioid study
- 2019 D19160 Lumpectomy specimen margin evaluation with tomography and structured light imaging
- 2019 A randomized prospective trial of Breast Cancer Locator guided vs wire localized partial mastectomy for breast cancer

Clinical trials, co-investigator

- 2001 A phase I study of twice weekly gemcitabine and concomitant radiation therapy in patients with adenocarcinoma of the pancreas.
- 2005 Docetaxel/gemcitabine followed by gemcitabine and radiation therapy in patients with pancreas cancer.
- 2010 Ultrasound evaluation of sentinel lymph nodes in melanoma patients and in patients with melanocytic tumors of unknown metastatic potential or atypical spitz nevi: a prospective database.

2012 A phase II trial of cetuximab, twice weekly gemcitabine and intensity modulated radiation therapy in patients with pancreas cancer.

National Clinical trials, institutional Principal Investigator

2000 ACOSOG Z10 A prognostic study of sentinel node and bone marrow micrometastases in women with clinical T1 or T2 NO breast cancer.

2000 ACOSOG Z11 A randomized trial of axillary node dissection in women with clinical T1 or T2 NO breast cancer who have a positive sentinel node.

2009 MSLT-2 A phase III multicenter trial of sentinel lymphadenectomy and complete lymph node dissection vs sentinel lymphadenectomy alone in cutaneous melanoma patients.

XX. INVITED PRESENTATIONS (2008-present):

2/6/08 Catholic Medical Center Grand Rounds
Minimizing local recurrences: Clinical studies of three different tumors

3/12/08 Dartmouth conference on PET scanning
PET scans and colorectal cancer: A surgical oncologist's perspective

9/24/08 New England Surgical Society
Moderator, panel discussion: When states ensure health care: lessons from Maine, Massachusetts and Vermont

1/15/09 Rutland Hospital Grand Rounds
Three breast cancer studies: MRI, phyllodes tumors and cryotherapy

1/22/09 Springfield Hospital Grand Rounds
Three breast cancer studies: MRI, phyllodes tumors and cryotherapy

1/23/09 Dartmouth-Hitchcock Medical Center Dept of Surgery Grand Rounds
Two Dartmouth breast cancer studies: phyllodes tumors and cryoablation

3/7/09 Dartmouth conference on PET scanning
PET scans and colorectal cancer: A surgical oncologist's perspective

5/5/09 Wisconsin Surgical Club
Two Dartmouth breast cancer studies: phyllodes tumors and cryoablation

- 9/21/09 Dartmouth GI conference
Effect of neoadjuvant therapy on local recurrence after resection of pancreatic cancer
- 10/13/09 Massachusetts General Hospital Breast Program Grand Rounds
Two Dartmouth breast cancer studies: phyllodes tumors and cryoablation
- 10/19/09 Mary Imogene Bassett Hospital Grand Rounds
Two Dartmouth breast cancer studies: phyllodes tumors and cryoablation
- 3/4/10 Norris Cotton Cancer Center Grand Rounds
Two Dartmouth Clinical Studies: Phyllodes tumors of the breast and a vaccine for colon cancer
- 3/7/10 Dartmouth conference on PET scanning
PET scans and colorectal cancer: A surgical oncologist's perspective
- 3/5/11 Dartmouth conference on PET scanning, Stowe, VT
PET scans: their use in colorectal and pancreatic cancer
- 4/6/11 Dartmouth-Hitchcock Medical Center Dept of Surgery Grand Rounds
Colon cancer and the immune system
- 4/8/11 The Peter J. Mozden Visiting Professorship in Surgical Oncology, Boston Medical Center
Towards a personalized vaccine for colorectal cancer and
A surgeon's quest for no local recurrences
- 1/19/12 Rutland Regional Medical Center Grand Rounds
Advances in Liver Surgery
- 3/4/12 Dartmouth conference on PET scanning, Stowe, VT
PET scans: their use in colorectal and pancreatic cancer
- 4/11/12 Dartmouth-Hitchcock Medical Center, Current Concepts in the Treatment of Colorectal Cancer. Stage IV Colorectal Cancer- Curative Treatment Options.
- 5/9/12 Visiting Professor. Maine Medical Center
Frontiers in the Treatment of Patients with Colorectal Metastases to the Liver
- 6/10/12 Maine/NH Chapter American College of Surgeons Annual Meeting
Frontiers in the Treatment of Patients with Colorectal Metastases to the Liver

- 2/12/13 Maine General Medical Center
Frontiers in the Treatment of Patients with Colorectal Metastases to the Liver
- 11/22/13 DHMC Department of Surgery Grand Rounds
Smorgasbord
- 10/10/14 DHMC Hepatobiliary Conference
Multidisciplinary Treatment of Pancreatic Cancer
- 5/8/15 Northeastern Breast Cancer Symposium
Image-directed breast surgery
- 10/24/15 Northern New England Clinical Oncology Society
Treatment of Hepatic Metastases from Colorectal Cancer
- 12/8/15 DH Value Institute Grand Rounds
Infection Prevention Bundles Lead to Decreased Infections in Liver, Colorectal and Pancreatic Patients
- 10/7/16 DHMC Hepatobiliary Conference
Liver surgery: how to make it safer and easier
- 1/31/17 Norris Cotton Cancer Center Grand Rounds
Breast MRI: new perspectives
- 10/4/17 State of Washington Medical Society Annual Meeting. Opioid Prescribing after General Surgical Procedures.
- 11/5/17 NH Medical Society Annual Meeting. Opioid Prescribing after General Surgical procedures.
- 2/8/18 Visiting Professor, John's Hopkins Combined Anesthesia/Surgery conference. Appropriate opioid prescribing after general surgical procedures.
- 2/13/18 National Drug Abuse Treatment Clinical Trials Network Steering Committee webinar. Appropriate opioid prescribing after general surgical procedures.
- 5/19/18 Maine Chapter American College of Surgeons annual meeting. Appropriate opioid prescribing after general surgical procedures.
- 9/6/18 Honored Guest Speaker. New England Section of the American Urologic Association Annual Meeting. Opioid Prescribing after Surgery

- 10/23/18 Keynote speaker. New Hampshire Hospital Association annual meeting
Appropriate opioid prescribing after surgery
- 12/8/18 Invited speaker, American Urologic Association Quality summit on Opioid
Prescribing
- 2/20/20 Eichler '57 Foundations in Medicine and Humanities Seminar
The Breast Cancer Locator: a new device to increase the accuracy of
breast conserving surgery

XXI. Personal Statement:

I had the good fortune to do a research fellowship during my surgical residency in Steve Rosenberg's lab, Surgery Branch, NCI. This provided me with the training and insight to pursue my core research efforts in immunotherapy and the immune response to cancer. As a research fellow I made seminal observations about adoptive immunotherapy with tumor infiltrating lymphocytes (TIL). Using low dose IL-2, I was able to culture tumor specific TIL (JI 1990), a principle utilized when TIL were subsequently cultured in clinical trials. I also discovered that the mechanism whereby TIL caused tumor regressions was not necessarily direct cytotoxicity (the prevailing concept in the lab at the time), but through secretion of cytokines like IFN- γ and TNF (J Exp Med 1991).

I maintained an active immunotherapy lab at Dartmouth for 15 years. In collaboration with Randy Noelle (and funded with an NCI R29 award) we made the novel observation that anti-tumor immunity required signaling between CD40, on dendritic cells, and CD40 ligand, on T cells (Ca Res 1997). I proceeded to embark on several studies of dendritic cell (DC) immunotherapy in mice. Our most important finding was that injection of DCs directly into lymph nodes (compared to sc or iv routes that others were utilizing) resulted in the development of much more potent T cell immune responses (Ca Res 2001). This finding was confirmed by others in a clinical trial. In a classic example of translational research, we then utilized the insights from our murine studies to design a DC vaccine trial in patients. This is the most significant study I have conducted. I obtained an IND from the FDA and was funded as a project PI on the Dartmouth Immunology COBRE grant. We performed a first in man trial of an adjuvant DC vaccine using a whole cell source of antigen in patients with metastatic colorectal cancer (Clin Ca Res 2010). We were able to induce immune responses against the patient's own tumor in 2/3 of the patients we immunized and observed that the patients who developed an immune response were much more likely to be recurrence free 5 years later. I then worked with the NCC Genomics Shared Resource to deep sequence the tumors and evaluated the T cell immune response present *in situ* in liver metastases of these patients to try to understand why some responded to vaccination and others did not (Clin Ca Res 2017). My expertise in the field of immunotherapy has led me to be appointed to the Editorial Boards of Annals of Surgical Oncology and the Journal of Immunotherapy.

I have also performed several clinical studies which have yielded novel results and have changed patient care. While a surgical oncology fellow I designed a study which was the first in the US to show that core needle biopsy could be used to diagnose sarcomas (Surgery 1992). The standard of care for biopsy of soft tissue masses soon changed from incisional biopsy to core needle biopsy. In collaboration with one of my surgical mentors, Dr. Cady, we published that a novel method of inking breast cancer specimens after lumpectomy allowed us to minimize the amount of tissue removed when re-excision was performed to obtain negative margins (Ann Surg Onc 2001). This practice is now the standard of care at Dartmouth and many other institutions. I have been integrally involved in several clinical trials of neoadjuvant chemoradiotherapy for pancreatic cancer patients. These trials have been designed and executed by our multidisciplinary GI tumor group at Dartmouth. We have uniquely demonstrated a specific benefit of administering chemoradiation therapy prior to surgery: a decreased rate of subsequent local recurrence (J Am Coll Surg 2008). I am quite fond of my study of patients with phyllodes tumors, an unusual type of breast cancer. The local recurrence rate after margin negative lumpectomy for these patients is 25%. In the only prospective study ever performed on patients with phyllodes tumors, we demonstrated that adding radiation therapy to lumpectomy resulted in no local recurrences in 46 patients (Ann Surg Onc 2009). This paper was selected as one of the 10 most influential papers of the year by the American Society of Breast Surgeons and has changed the standard of care of treatment for these patients. Building on our novel observation that a short term low calorie diet prior to liver resection greatly decreased hepatic steatosis and decreased the risk of bleeding during liver surgery, I designed and obtained funding for a prospective clinical trial to evaluate the effectiveness of this diet on clinical outcomes after liver resection. We have shown that the use of a pre-op diet can decrease blood loss in hepatic surgery by 50% and makes it much easier for the surgeon to manipulate the liver intra-operatively (Ann Surg 2019). Another set of very interesting clinical studies we have recently completed was motivated by the nation's opioid epidemic. We evaluated 650 patients undergoing common general surgical operations at Dartmouth and showed that there was very wide variability in opioid prescription practices. Furthermore, opioids are being way over-prescribed: only 25% of the pills are being used by patients (Ann Surg 2017). By merely educating surgeons about this problem and providing a guideline for rational opioid prescribing we were able to cut opioid prescriptions by over 50% and still take care of patients' pain (Ann Surg 2018). We have also found that the number of opioids prescribed to surgical inpatients the day prior to discharge is the best predictor of outpatient opioid use, and used this to develop a general guideline for opioid prescription after discharge (JACS 2018). I am currently PI on a prospective clinical trial at Dartmouth that focuses on maximizing disposal of excess opioid pills after surgery.

Another line of research has led me to co-found a company to develop a new device designed to improve the precision of breast conserving surgery. In collaboration with engineers Keith Paulsen and Venkat Krishnaswamy we have shown in a funded pilot study that obtaining a breast MRI in the supine position (rather than the standard prone position) allows us to accurately localize breast cancers in the operating room. We received a NIH R21 grant to fund a randomized prospective clinical trial which we accrued 138 patient to at Dartmouth. This study showed that the positive margin rate

was cut in half: from 23% to 12%, using supine MRI guided surgery (Ann Surg Onc 2019). Pushing this technology to the next level, I invented a 3-D printed device called the Breast Cancer Locator, which we have tested in a pilot clinical trial (Ann Surg Onc 2017). We formed a company, CairnSurgical, Inc., to develop this device. We received SBIR phase 1 and 2 grants and are actively accruing to a second pilot clinical trial to demonstrate its feasibility at sites outside of Dartmouth. We have submitted an IDE application to the FDA, have secured series A investor funding and are poised to begin a pivotal randomized prospective trial of the Breast Cancer Locator vs standard of care localization at a dozen medical centers.

Teaching has been an important priority for me throughout my career. I initiated, organized, and taught in a weekly clinical teaching conference for senior surgical residents from 1993-2007. Twenty five residents, medical and PhD students have been involved in research projects with me that have resulted in presentations at national meetings and publications. Two have gone on to faculty appointments in surgical oncology at academic medical centers. I have received 5 teaching awards from medical students and surgery residents, including the Arthur Naitove Award, the Surgery Chief Resident's Award for teaching excellence, the Dartmouth Mosenthal Surgical Fellowship, the DMS Excellence in Teaching Award and election to AOA by medical students. Outside of Dartmouth I have been honored to serve on the Program Committee of the New England Surgical Society (NESS) from 2003 to the present. In 2008, as Chair of that committee, I was responsible for organizing and leading the annual scientific meeting. As Recorder of the NESS (a 5 year senior leadership position in the Society) I initiated a "Paper of the Year Award" and a Publications Committee. I was elected Vice-President of the Society in 2015 and served as President of the NESS in 2019.

I have held major administrative positions in both the Norris Cotton Cancer Center and the Department of Surgery. For 8 years I was Director of the GI Oncology Program, a multidisciplinary group of physicians who meet on a weekly basis to determine the treatment of individual patients, and also develop, prioritize and accrue patients to clinical research studies. For 3 years I chaired the Clinical Cancer Care Committee, the committee that oversees the workings of all of the NCCC clinical oncology programs. I co-directed the Immunology and Cancer Immunotherapy Research Program (one of the 6 core research programs of the NCCC) for 7 years, facilitating interactions between clinical and basic science investigators. I recently helped direct a strategic planning effort for the NCCC.

During the past 16 years my main administrative responsibilities have focused on the Section of General Surgery. As Section Chief, I have expanded our Section from 10 to 24 surgical faculty. I have successfully launched several initiatives. We initiated a Division of Colorectal Surgery 8 years ago and now have 3 busy full time colorectal surgeons and a physician's assistant. We have expanded and transformed our Acute Care/Trauma Division to be available in-house 24/7 for urgent surgical patients. In addition, I initiated a mutually beneficial collaboration with four local community hospitals whereby DHMC general surgeons operate and provide care to patients at these local hospitals.

Clinical care comprises the majority of my time (55%), with about 20% in research, 5% in teaching and 20% in administration. I perform approximately 250

operations and see over 1000 patients in the clinic annually. I take general surgery call for emergency patients. I receive regional referrals of patients with breast cancer, melanoma, pancreas cancer and metastatic liver tumors. Over 95% of my patients rate my overall care as excellent. I have been recognized as a Leading Physician in Breast and General Surgery by physician colleagues in NH Magazine. As an oncologist, I am particularly grateful for being recognized by my physician colleagues for compassionate patient care, twice as a finalist for the Leonard Tow Humanism in Medicine Award and for receiving the Alma Hass Milham Award for clinical excellence and compassionate patient care.

On a personal note, I have been happily married for 32 years to my wife Kathy. We have 3 wonderful boys, Erik (Bates 2012), Matthew (Skidmore 2015) and Brendan (Dartmouth 2017). I enjoy hiking, tennis, biking, skiing and sailing.