

# Curriculum Vitae

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**Education**

Year	Degree (Honors)	Field of Study	Institution
1986	B.A.	Biology	Barnard College, Columbia University, NY
1990	M.D.	Medicine	Columbia University College of Physicians & Surgeons

**Postdoctoral Training**

Year	Title	Specialty/Discipline	Institution
1990-1991	Intern	Surgery	Univ. Of California, San Francisco
1991-1998	Resident	Surgery	Univ. of California, San Francisco
1992-1995	Fellow	Molecular Medicine	Univ. of California, San Francisco
1994-1995	Research Fellow	Surgical Research	Children's Hospital, Boston
1993-1995	Fellow	Research	Whitehead Institute, Boston

**Faculty Academic Appointments**

<b>Year</b>	<b>Academic Title</b>	<b>Department</b>	<b>Academic Institution</b>
1998-2001	Instructor	Surgery	Harvard Medical School
2001-2010	Assistant Professor	Surgery	Harvard Medical School
2010-	Associate Professor	Surgery	Harvard Medical School

**Hospital or Affiliated Institution Appointments:**

<b>Year</b>	<b>Position Title</b>	<b>Department</b>	<b>Institution</b>
1998-	Staff Surgeon	Surgery	Beth Israel Deaconess Medical Center
2000-	Staff Surgeon	Surgery	Mount Auburn Hospital
2001-	Surgical Director	Surgery	Beth Israel Deaconess Medical Center, Thyroid Center
2002-	Staff Surgeon	Surgery	Needham Campus of Beth Israel Deaconess Medical Center
2007-	Staff Surgeon	Surgery	New England Baptist Hospital
2007-	Staff Surgeon	Surgery	Massachusetts General Hospital, Associate Visiting Surgeon

**Major Administrative Responsibilities:**

<b>Year</b>	<b>Position Title</b>	<b>Institution</b>
2000-2006	Director of Surgical Grand Rounds	Beth Israel Medical Deaconess Center
2000-2006	Director of General Surgery Staff Scheduling	Beth Israel Medical Deaconess Center
2001-2004	Surgical Director	BIDMC Thyroid Nodule Clinic
2005-2007	Surgical Director	BIDMC Thyroid Center
2001-2007	Attending Surgeon	BIDMC Thyroid and Parathyroid Center's
2013-current	Fellowship Director	MGH Endocrine Surgery Fellowship

**Committee Service:**

<b>Year</b>	<b>Name of Committee</b>	<b>Institution</b>
2000-2003	Member of Housestaff Education Committee	Beth Israel Medical Deaconess Center
2002-2007	Member of Subcommittee for Women, Committee for Faculty Development	Beth Israel Medical Deaconess Center
2004-2005	Technologies Liaison Committee	BIDMC
2012-2014	Temporary Member of Scientific Review Panel for 4 Study Sections: ICER, MCE, P01, SPORE	National Institute of Health

2012	Mentor member in Program in	Massachusetts General Hospital
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Faculty Development and  
Mentoring

2011-2013 Grant Reviewer Italian Association for Cancer  
Research (AIRC)

**Professional Societies:  
Years of Membership**

	<b>Society Name</b>
1998-	Fellow, American College of Surgeons
1998-	Member Naffzinger Society
1999-2002	Association for the Advancement of Science
2000-	American Association for Cancer Research
2001-	Fellow of the American College of Surgery
2007-	Member Scholarships Committee
2001-	Member of the Massachusetts Chapter of the American College of Surgeons
2002-	Member Society for Surgical Oncology
2002-	Member American Association of Endocrine Surgeons
• 2008-2012	• Member of Scholarship Committee with grant review responsibilities
• 2010-2013	• Chair, Education and Research Committee
• 2010-2013	• Council Member
• 2013-2016	• Member Information Technologies Committee
2002-	Member International Association of Endocrine Surgeons
2002-	Member American Thyroid Association
• 2005-2009	• Member of the Membership committee
• 2010-	• Member of the ATA Thyroid Research Funding Task Force
2004-	Member Boston Surgical Society
2006-	Member of The Association of Women Surgeons
• 2006-2008	• Vice Chair AWS Grants & Awards Committee
• 2008-2010	• Chair of the AWS Grants & Awards Committee with grant review responsibilities
• 2010-2012	• Chair Database Development committee
2014-2016	• Treasurer
2011-	Member Society Of University Surgeons
2012-	Member International Thyroid Oncology

		Group
		<ul style="list-style-type: none"> <li>Member of Anaplastic thyroid cancer taskforce</li> </ul>
2006-		Member American Association of Clinical Endocrinologist
	<ul style="list-style-type: none"> <li>2012-2015</li> </ul>	<ul style="list-style-type: none"> <li>Member of Thyroid Scientific Committee</li> </ul>
2013		Member International Society of Oncoplastic Endocrine Surgeons
	<ul style="list-style-type: none"> <li>2013-2015</li> </ul>	<ul style="list-style-type: none"> <li>Member of the Board</li> </ul>
2012		Member Surgical Biology Club

### Editorial Activities

Year	Role	Journal Name
2003-	Ad Hoc Reviewer	Clinical Cancer Research
2004-	Ad Hoc Reviewer	Cancer Research
2005-	Ad Hoc Reviewer	Molecular Therapeutics
2005-	Ad Hoc Reviewer	Surgery
2005-	Ad Hoc Reviewer	Cancer
2005-	Ad Hoc Reviewer	Journal of Surgical Oncology
2006-	Ad Hoc Reviewer	World Journal of Surgery
2011-	Ad Hoc Reviewer	Laryngoscope
2012-	Ad Hoc Reviewer	Cancer Immunology Immunotherapy
2011-	Ad Hoc Reviewer	British Journal of Cancer
2012-	Ad Hoc Reviewer	Thyroid
2013-	Member of Editorial Board	VideoEndocrinology (ATA journal)

### Honors and Prizes

Year	Name of Honor/Prize	Awarding Organization	Achievement for which awarded
1986	Magna Cum laude	Phi Beta Kappa	Academic achievement
1987	Deans NIH	Columbia University College of Physicians and Surgeons	Research Award
1990	S.W. Rover and L. Rover Award	Columbia University College of Physicians and Surgeons	Physiology and Cellular Biophysics
1991	Burroughs Welcome	Burroughs Welcome	Research Award
1992	Molecular Medicine	UCSF	Research Fellowship

1993 1997	Naffzinger Surgical Alpha Omega Alpha Honor Society	UCSF UCSF Medical Students	Research Award Student teaching award for best resident teacher
2009	Eleanor and Miles Shore 50 <sup>th</sup> year anniversary fellow award winner	Harvard Medical School and MGH Department of Surgery	Faculty Development

**Report of Funded and Unfunded Projects**

*Past – Funded Projects*

<b>Year(s) funded</b>	<b>Role on Project</b>	<b>Funding Source</b>	<b>Total direct cost</b>
1992-1995	Principal Investigator	Burroughs Wellcome Research Award for Molecular Medicine	\$30,000 per year
	<u>Title:</u> Antiangiogenic therapy in a transgenic model carcinogenesis Investigate combinatorial antiangiogenic therapies in transgenic islet cell tumors of the pancreas		
1999-2001	Principal Investigator	Medical Foundation/Dolphin Trust Grant	\$100,000
	<u>Title:</u> Antiangiogenic therapy, a novel therapy for pancreatic cancer Looked at the role of antiangiogenic therapies in orthotopic mouse models of pancreatic cancer		
2001-2003	Principal Investigator	American College of Surgeons Faculty Research Fellowship	\$80,000
	<u>Title:</u> Antiangiogenic gene therapy in a mouse model of pancreatic cancer Tested Adenoassociated adenoviral gene therapy vectors in pancreatic cancer.		
2001-2003	Co-Investigator	American Cancer Society Grant	
	<u>Title:</u> Role of IGF I Receptor in Pancreatic Cancer Looked at the role of IGF-1 receptor in pancreatic cancer invasion		
2002-2007	Co-PI on Project 3	National Cancer Institute	
	<u>Title:</u> P01, NCI-Program Project Grant, Temporal and Spatial Regulation of Angiogenesis, Project 3: “Inhibition of Angiogenesis by Thrombospondin – 1” Looked at the role of TSP-1 in endothelial apoptosis and pancreatic tumor regression		
2002-2007	Principal Investigator	National Cancer Institute 1 K08 CA88965-01A1	\$122,000 per year
	<u>Title:</u> Antiangiogenic therapy of pancreatic cancer Looked at the role of various antiangiogenic therapies both in vitro and in vivo		

2004-2006	Principal Investigator	American Thyroid Assoc. Thy Ca Award	\$25,000
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Title: Antiangiogenic Therapy of Thyroid Cancer  
Testing of antiangiogenic therapies in a novel animal model of papillary thyroid cancer

**Current – Funded Projects**

<b>Year(s) funded</b>	<b>Role on Project</b>	<b>Funding Source</b>	<b>Total direct cost</b>
2008-2013	Co-Principal	Amelia Peabody Charitable Foundation	
<u>Title:</u> Endocrine Tissue Repository and Molecular Diagnostic Laboratory Developed and used Tissue Banking protocols and database for banking of endocrine tissues from patients undergoing endocrine surgeries at the MGH			
2009-2013	Principal Investigator	Polsky Family Fund	\$50,000/year
<u>Title:</u> BRAF and thyroid cancer invasion Investigate the role of BRAF V600 mutation in thyroid cancer cell invasion and metastasis			
2009-2010	Principal Investigator	Eleanor and Miles Shore 50 <sup>th</sup> year HMS/MGH Department of Surgery Faculty Development Award	\$50,000
<u>Title:</u> BRAF Mutations and thyroid cancer invasiveness Effects of knockdown of BRAF on in vivo thyroid cancer invasion			
2009-2013	Co-investigator	NIH-NCI R01 R01CA130895-01A2 (PI, Lawler)	186,750 per year
<u>Title:</u> Inhibition of Angiogenesis by Thrombospondin-1 Role of TSP-1 in endothelial apoptosis when combined with TRAIL inhibitors in vivo.			
2010-2015	Principal Investigator	NIH-NCI R01 1R01CA149738- 01A1	250,000 per year
<u>Title:</u> The role of BRAF mutation in thyroid cancer invasion			
2010 – Current	Principal Investigator	Quest Diagnostics	65,000 total cost
<u>Title:</u> Use of a novel Thyroglobulin assay in patients with thyroid cancer			
2012-2014	Principal Investigator	NCCN	100,000 for two years
<u>Title:</u> Accurate Modeling of Resistance to BRAF inhibition in an orthotopic animal model of thyroid cancer progression”			

*Unfunded Projects:* **Clinical Research:**

<b>Year(s) funded</b>	<b>Role on Project</b>	<b>Funding Source</b>
2001 – 2003	Sub Investigator	Adolor/GlaxoSmithKline Corporation Title: Phase 3 Trial of Alvimopan in Postoperative Ileus and Opioid bowel dysfunction- completed
2003 –2007	Co-Investigator	BIDMC Department of Pathology Title: Use of Multiplex Reverse Transcriptase Polymerase Chain Reaction (MRT – PCR) and BARCODE Analysis to Assist the Diagnosis of Thyroid Lesion on Fine Needle Aspirations
2004 -2006	Principal Investigator	BIDMC Clinical funds Title: Use of PET/CT scanning in patients with thyroid nodules. Demonstrated novel use of PETCT scanning as a diagnostic tool in patients with indeterminate fine needle aspirations of thyroid nodules completed
	Principal Investigator	MGH Departmental support
2006 – 2008	Principal Investigator	BIDMC Departmental support Title: Intraoperative Rapid Parathyroid Hormone Assay, completed
2007 – 2008	Principal Investigator	MGH Departmental support Title: Studying morbidity and mortality rates in octogenarians undergoing thyroid surgery at Massachusetts General Hospital, completed
2008 – 2009	Co- Investigator	MGH Departmental support Title: Studying use of surgical drains in patients undergoing neck dissection for papillary cancer at the Massachusetts General Hospital, completed
2009 – 2011	Principal Investigator	MGH Departmental support Title: Calcitonin secretion in small Medullary Carcinomas, completed
2005 –Current	Co-Investigator	MGH Departmental support Title: Detecting positive and negative regulators of angiogenesis in blood and urine of patients with pancreatic cancer
2009 – Current	Principal Investigator	MGH Departmental support Title: Looking at BMI and thyroid malignancy using the NSQIP data on thyroid and surgery in the US
2009 – Current	Principal Investigator	MGH Departmental

support  
 Title: BRAF mutation status in good prognosis vs poor prognosis  
 papillary cancers  
 Principal Investigator MGH Departmental  
 support

**Report of Local Teaching and Training**

*Teaching at the University of California, San Francisco*

<b>Year</b>	<b>Title</b>	<b>Level of effort</b>
1996 – 1998	Basic Science Review, preparation of fellow residents at the University of California, San Francisco for the Surgery In-service (ABSITE) exam.	Contact time: 46 Hours per year Role: Course Organizer
24 Surgical Residents		
1997 – 1998	Clinical Surgical Lecture, taught one hour clinical correlation lectures to UCSF third year medical students, once per week. Won resident teaching award for 1997 4 UCSF third year medical students	Contact time: 2 hours per year  Role: Lecturer

*Teaching at HMS: Medical School Courses, Harvard Medical School*

<b>Year</b>	<b>Title</b>	<b>Level of effort</b>
1998-2002	Introduction to Clinical Medicine (Patient-Doctor II) for physical diagnoses, history talking, and oral presentations, introduction to the operating room	Contact time: 18 hrs. per year  Role: Preceptor for 3 HMS II Students per year
1998-2000	Advanced Biomedical Sciences Course – Biology of Solid Tumor progression	Contact time: 6 hours per year Role: Preceptor for 8 HMS II students per year
1998-2000	Advanced Biomedical Sciences Course – Biology of Solid Tumor progression	Contact time: 6 hours per year
1998-2000	Core Clerkship in Surgery Basics in suturing techniques	Contact time: 6 hours per year Role: Preceptor for 10 -15 HMS II students per yr



1998 – 2006	Surgical Clerkship Examination at BIDMC	Contact time: 8 hours per year Role: Examiner two times yearly, 4 medical students each 4 students per year
1998 – 2007	Core Clerkship in Surgery at BIDMC	Contact time: 100 hours per yr Role: Preceptor for one on one teaching and mentoring during their 4 weeks surgery general surgery rotation, including direct teaching during outpatient care of the surgical patient and in the operating room. Concentrated effort on teaching medical students about surgical diseases of the endocrine organs
2000 – 2007	Core Clerkship in Surgery for HMS students at BIDMC and the BWH	Contact time: 8 hours per year Role: Lecturer on Hyperthyroidism and Thyroid Cancer for 16 HMS III students per year Two hour session, 4 times per year
2000 – 2007	Core Clerkship in Surgery for HMS Students at BIDMC and the BWH	Contact time: 8 hours per year Role: Lecturer on Hyperparathyroidism for 16 HMS students per year
2004 – 2006	Core Clerkship in Surgery/Live Video Teaching at BIDMC and the BWH, Live Broadcast Thyroid and Parathyroid surgery Live	Contact time: 4 hours per year Role: Lecturer for 12 HMS III students
2004 – 2006	Core Clerkship in Surgery/Live Video Teaching at BIDMC and	Contact time: 2 hours per year Role: Lecturer for 12 HMS III

	the BWH, Live Broadcast inguinal hernia surgery	students
2007 – Current	Core Clerkship in Surgery for HMS students at Massachusetts General Hospital Baker 7 service	Contact time: 42 hours per yr Role: Attending surgeon on Endocrine surgery service. Teaching and mentoring during their 4 weeks surgery general surgery rotation, including direct teaching during outpatient care of the surgical patient and in the operating room. Concentrated effort on teaching medical students about surgical diseases of the endocrine organs. For 6 HMS IV student per year
2012-2013	Pursuing Inquiry in Medicine (PIM) Course	Contact time: 2 hours per week Role: Mentor for one HMS/HDS student to work on preparing a HMS Scholars in Medicine project for summer of 2013 on development of an orthotopic medullary thyroid cancer mouse model.

**Formal Teaching of Residents, Clinical Fellows and Research Fellows**

<b>Year</b>	<b>Title</b>	<b>Level of effort</b>
1998 – 2002	Advanced Trauma Live Support Course	Contact time: 16 hours per year Role: Lecturer and Hand on Instructor for 15 Residents, faculty, and outside students
2000 – 2007	Attending Surgeon, Thyroid Nodule Clinic, BIDMC. Have role in teaching ultrasound and fine needle aspiration technique in the care of patients with diseases of the thyroid in a multidisciplinary fashion	Contact time: 2 hours of direct teaching per week Role: Attending Surgeon for One medicine resident, one endocrine fellow per year

2000 – 2006	Director of Surgical Grand Rounds, BIDMC. Total time spent with each resident on preparation 10 min to three hrs.	Contact time: 18 hours per yr Role: Organize a total of 36 yearly talks by surgical residents or surgical fellows. Help prepare residents choose an appropriate topic and mentor for a 20 minute talk to surgical ground rounds. Each talk is reviewed prior to presentation for content. Encourage residents to publish these talks. For 36 BIDMC surgical residents and surgical fellows
2002 – 2007	BIDMC Core Curriculum Conference	Contact time: 2 hours per year Hyperparathyroidism, adrenal tumors; 3 hour interactive lectures/case presentations Role: Lecturer on hyperparathyroidism 28 BIDMC Surgical Residents
2002 – 2007	BIDMC Core Curriculum Conference	Contact time: 2 hours per year Role: Lecturer on Thyroid nodules and Thyroid cancer 28 BIDMC surgical residents
2002 – 2007	BIDMC Core Curriculum Conference	Contact time: 2 hours per year Role: Lecturer on Pheochromocytomas and other adrenal tumors 28 BIDMC surgical residents
2003	Clinical Pathologic Correlation Lecture Hurthle cell tumors of the Thyroid	Contact time: 2 hours Role: Lecturer with Dr. Sharifi of pathology 12 BIDMC surgical residents
2003	Clinical Pathologic Correlation Lecture Hurthle cell tumors of the Thyroid	Contact time: 2 hours Role: Lecturer with Dr. Sharifi of pathology 12 BIDMC surgical residents
2005 – 2007	Core Curriculum Conference	Contact time: 2 hours per year Role: Lecturer on neck masses

2005	BIDMC Endocrine Curriculum Retreat	12 BIDMC surgical residents Contact time: 4 hours total Role: Curriculum development. Helped the BIDMC Endocrine Division (Department of Medicine) develop an accurate and up to date curriculum involving surgical treatment of endocrine diseases and the use of ultrasound and fine needle aspiration techniques by medicine residents doing their endocrine rotation and by endocrine fellows
2005 – 2007	Seminars in operative skills at BIDMC Surgical Skills Lab	Contact time: 6 hours per year Prep. time: 2 hours per year Role: Lecturer and had on demonstration of Head and Neck Ultrasound: lecture, case presentation and hands on teaching of ultrasound and ultrasound guided fine needle aspiration for a mixed audience of 8 HMS students, 25 surgical residents and 3 endocrinology fellows
2005	BIDMC Endocrinology Clinical conference	Contact time: 1 hours per year Role: Mentor an endocrine fellow to present talk on Neurofibromatosis and Parathyroid cancer 3 BIDMC medicine residents 6 Endocrine fellows
2006	BIDMC Pathology Core Curriculum Conference	Contact time: 2 hours per year Role: Lecturer on Animal models of tumor progression 8 BIDMC pathology residents
2007 – Present	MGH Baker 7 Endocrine Surgery Core Curriculum Conference	Contact time: 6 hours per year Role: Lecturer on Thyroid Ultrasound, normal neck

		anatomy 3 MGH Surgical Residents and interns
2008	Diabetes Neuroendocrine Thyroid Curriculum Conference	Contact time: 1 hours per year Role: Lecturer on Surgery of the thyroid and parathyroid glands 8 MGH Endocrinology fellows and Endocrine Surgery Fellows
2010	MGH Surgical Resident Didactic Teaching curriculum	Contact time: 6 hours per year Role: Lecturer on Work up of Thyroid Nodules and Thyroid Ultrasound 32 MGH Surgical Residents

### **Clinical Supervisory and Training Responsibilities**

<b>Year</b>	<b>Type of Responsibility</b>	<b>Institution</b>	<b>Level of Effort</b>
1998 – 2007	BIDMC General Surgery team.	Beth Israel Deaconess Medical Center	Operating room teaching Three surgical residents, Twelve months per year. Ten hours of direct teaching per week including operating room teaching
2000 - 2007	Attending Surgeon Thyroid Nodule Clinic	Beth Israel Deaconess Medical Center	One (1) Resident, One (1) fellow per year; 6 hours of direct Teaching per month, including performing and teaching ultrasound and fine needle aspiration technique to medical residents, surgical resident as well as the Endocrine fellow, 12 (12) months per year
2001 -2004 2005 -2007	Surgical Director and supervising attending	BIDMC Thyroid Center, Thyroid Nodule Clinic	8 hours per month, Twelve (12) months per year, Scheduling of clinic, Clinic space allocation, Thyroid

2007 - current	Clinical Supervisor for two Baker 7 Surgical residents and one Endocrine Surgery Fellow	Massachusetts General Hospital	Center database supervision, purchase and maintenance of Ultrasound for use at the Thyroid Center, Maintenance of updated print and web based material for patient education used at the thyroid center. One (1) fellow per year; 6 residents per year, 8 hours of direct Teaching per week, including work up of endocrine surgery patients as well as performing thyroid, parathyroid and adrenal surgical procedures, teaching ultrasound and details on performance of fine needle aspiration technique 12 months
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**Laboratory and Other Research Supervisory and Training Responsibilities**

<b>Year</b>	<b>Type of Responsibility</b>	<b>Institution</b>	<b>Level of Effort</b>
1998 - current	Laboratory Principal Investigator, Surgical	BIDMC MGH	One (1) research assistant, and One postdoctoral fellow, Twenty (20) hours per week including daily didactic meetings

**Formally Supervised Clinical and Research Trainees**

2003-2006	Melanie Edwards, MD Surgical Resident at BIDMC	Currently an Attending Thoracic Surgeon, LSU
2003-2006	Served as formal academic advisor Amy Evenson, MD Surgical Resident at BIDMC	Currently an Attending Surgeon, Transplant Surgery BIDMC
	Served as formal academic advisor, wrote 2 papers together	
2004-2006	Jamie Mitchell, MD Surgical Resident at BIDMC	Currently an Attending Surgeon, Endocrine Surgery and General

Surgery at the Cleveland Clinic

Served as unofficial academic advisor, wrote 4 papers together

2004-2006	Melanie Goldfarb, MD Surgical Resident at BIDMC	Assistant Professor of Surgery, University of Southern California, Endocrine Surgeon
	Served as unofficial academic advisor, wrote 2 papers together	
2004-2006	Caitlin Connolly, BA	Medical student at the University of Massachusetts, Medical School
2004-2007	XueFeng Zhang, MD PhD	Assistant Professor of Pathology at Duke University
	Postdoctoral fellowship, 7 basic science papers	
2005-2006	Lingge Lu, MD, PhD	Postdoctoral fellow, Children's Hospital Boston, Division of Plastic Surgery
	Research technician, 2 basic science papers, went onto medical school	
2007-2009	Michal Mekel, MD	Attending Surgeon BAM BAM Hospital, Tel Aviv, Israel
	Endocrine Surgery Fellow, 3 basic science and clinical papers Have helped her prepare and submit 3 research grants	
2008- current	Carrie Lubitz MD	Assistant surgeon at MGH, Harvard Medical School
	Endocrine Surgery Fellow, Our work together has yielded one clinical presentation and one abstract. Have helped her prepare and submit 3 research grants, including an NIH K07	
2008-2011	Sushruta Nagarkatti, MD	Thoracic surgery non accredited Fellow at BWH
	Looking at Urinary Biomarkers of malignancy, have submitted two accepted abstracts to ATA together, and published one paper so far. He was accepted into surgical residency in a preliminary position at the University of Connecticut in Hartford	
2008- 2010	Maria Hassan, BA	Database supervisor
	Endocrine Surgery Database Development, she was accepted to medical school at Wayne State in Michigan, and is now a resident in	
internal medicine 2008- 2010	Matthew A Nehs MD	BWH Endocrine Surgery, Instructor in Surgery
	Endocrine Surgery Research Fellow, supervised his T32 funded research time. His work has been presented at the AAES meetings and he has submitted multiple papers.	
2007-2011	Carmelo Nucera MD PhD	Assistant Professor of Pathology
	Postdoctoral research fellow in my laboratory, working on BRAF inhibitors in thyroid cancer, published extensively and now has	

An R01 and an R21.

2011-2012	Joseph Varnau Indiana University medical student, worked in my lab and presented Two abstracts, published one paper. Accepted into his first choice family practice residency at Ball Memorial FM	Medical student
2012-2013	Endocrine Surgery Fellow, Our work together has yielded one clinical presentation and one abstract. Helped him prepare and submit papers and plan his laboratory set up as new faculty	Assistant Professor of Surgery, Johns Hopkins University
2011-current	Shohreh Varmeh PhD Postdoctoral research fellow in my laboratory, working on DNA damage repair pathways in thyroid cancer	Postdoctoral fellow
2011-current	Pierre Vanden Borre PhD Postdoctoral research fellow in my laboratory, working on DNA metastasis pathways in thyroid cancer	Postdoctoral fellow Currently at Foundation Medical
2013-current	Anthony Testa Dental student worked in my laboratory, working on medullary thyroid cancer, decided to switch to medical School, currently applying to medical school	Harvard Dental Student
2011-2013	Roy Phitayakorn, MD, MEduc Endocrine Surgery Fellow, Our work together has yielded one clinical presentation and numerous papers. Continue to mentor him here at MGH	Instructor in Surgery, Harvard Medical School
2011-2012	Dana Yip, MD PhD	Assistant Professor of Surgery, Stanford University



Endocrine Surgery Fellow, Our work together has yielded one clinical presentation and one abstract. Helped her prepare and submit papers and plan her next career steps

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2012-2013	Travis McKenzie  Endocrine Surgery Fellow	Attending in Endocrine Surgery Mayo Clinic
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**Formal Teaching of Peers (CME and other Educational Courses):**

**Local Invited Presentations**

<b>Year</b>	<b>Title of Presentation</b>	<b>Type of Presentation</b>
2000	Tumor Progression and angiogenesis	Beth Israel Deaconess Medical Center, Surgical Grand Rounds
2000	Animal models of pancreatic cancer	Beth Israel Deaconess Medical Center, Radiology Research
2002	Imaging angiogenesis in an orthotropic animal model of pancreatic cancer	Beth Israel Deaconess Medical Center, Radiology Research Seminar 4/02
2003	Asked to speak as part of a panel of Women in Academics	American Medical Women's Association (AMWA)
2004	as an Academic surgeon	Sponsored Event HMS 12/03 and 11/04
2005	Minimally Invasive Parathyroid and Adrenal Surgery	Mt. Auburn Hospital, Cambridge, MA Surgical Grand Rounds
2005	Minimally Invasive Endocrine Surgery	Deaconess Glover Hospital Medical Grand Rounds, Needham, MA
2005	Novel Horizons in Thyroid Cancer	Invited Speaker at Deaconess Glover Hospital Medical Grand Rounds, Needham, MA
2008	Incidental Thyroid Nodules	Speaker at New England Baptist Hospital, Medicine Grand Rounds, Boston, MA
2008	Thyroid Surgery, More or Less Surgery	Speaker at the Harvard Advances in Cancer

2008	Office Based Ultrasound, Obstacles to Getting Started	Management for the Surgeon Course, Boston, MA Speaker at the Harvard Course on Surgery of the Thyroid and Parathyroid Glands, Boston, MA
2009	Thyroid Surgery, Questions frequently asked by patients	Speaker at MGH: Diabetes, Thyroid, Neuroendocrine Conference, Boston, MA
2009	Thyroid nodules, thyroid cancer and indications for surgery	Speaker and panelist at Mt. Auburn Hospital Medicine Grand Rounds Boston, MA
2009	Recent Advances in parathyroid surgery	Speaker and panelist at the Harvard Advances in Cancer Management for the Surgeon Course, Boston, MA
2010	Parathyroid surgery: Have we made a simple procedure more complicated?	Speaker at Mt. Auburn Hospital Surgical Grand Rounds Boston, MA
2010	Preoperative Sestamibi scanning	Speaker at the Harvard Course on Surgery of the Thyroid and Parathyroid Glands, Boston, MA
2012	Preoperative Sestamibi scanning	Speaker at the Harvard Course on Surgery of the Thyroid and Parathyroid Glands, Boston, MA

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

### **Regional Invited Presentations and Courses**

<b>Year</b>	<b>Title of Presentation</b>	<b>Type of Presentation</b>
1999	Angiogenesis and Pancreatic Tumor Progression	New England Surgical Society Spring Meeting, 5/8/99
2000	New and Old in the treatment of primary hyperparathyroidism	Caritas Good Samaritan Medical Center 5/24/00
2005	Incidentally detected thyroid nodules, an epidemic	Invited speaker at Milton Hospital Milton, MA
2005	Incidentally detected thyroid nodules, an epidemic	Speaker at St. Luke's Hospital, New Bedford, MA
2006	The epidemic of incidentally detected thyroid nodules"	Speaker at Beverly Hospital, Beverly, MA
2009	Planning your career in academic surgery	Speaker at Career Development Day for Women

in Surgery, Boston, MA

### National Invited Presentations and Courses

1994	Chromosomal deletions in early stages of tumor progression: Search for a novel tumor suppressor or angiogenesis suppressor gene	Invited Speaker, American College of Surgeons, Surgical Forum October 1994 Chicago, IL
1995	Chromosomal deletions in early stages of tumor progression: Tumor suppressor loci on mouse chromosomes 9 and 16 are lost at distinct stages of tumorigenesis in a transgenic model of islet cell carcinoma	Invited to give podium presentation at <i>Society for University Surgeons</i> , Colorado, Jan 1995
1995	Treatment of transgenic mice with a regimen of angiogenesis inhibitors impairs tumor development	Invited to give podium presentation at <i>American Association for Cancer Research</i> , Toronto, Canada March 1995
1999	Antiangiogenic therapy with thrombospondin reduces tumor volume in an orthotopic model of pancreatic cancer in SCID mice	Invited Speaker, American College of Surgeons, Surgical Forum October 1999 San Francisco, CA
2001	Gene therapy with a recombinant adenoassociated virus (rAAV) in an orthotopic model of pancreatic cancer in SCID mice	Invited Speaker, American College of Surgeons, Surgical Forum October 2001 New Orleans, LA
2002	Requirement of Insulin Like Growth Factor –I for Autocrine-induced Proliferation, Invasion and VPF/VEGF Expression in Pancreatic carcinoma	Invited Speaker, American College of Surgeons, Surgical Forum October 2002 San Francisco, CA
2004	Comparison of antiangiogenic therapy with thrombospondin type I repeats and	Invited Speaker, American College of Surgeons, Surgical Forum October 2004

	gemcitabine in an orthotopic model of pancreatic cancer in SCID mice.	New Orleans, LA
2004	Antiangiogenic therapy using Thrombospondin – 1 in novel animal models of pancreatic cancer	Invited speaker; American College of Surgeons surgical Biology club III, 10/04
2004	Proapoptotic and survival signaling pathways plays a role in Thrombospondin type I repeat mediated apoptosis in human microvascular endothelial cells.	Source of compensation: None Invited Speaker, American College of Surgeons, Surgical Forum October 2004 New Orleans, LA
2005	Ultrasound Normal Anatomy of the Head and Neck	Invited Instructor American College of Surgeons Annual Meeting, San Francisco, CA
2005	Hands on Teaching, Ultrasound demonstration	Invited Instructor and Course Examiner American College of Surgeons Annual Meeting, San Francisco, CA
2006	Ultrasound Normal Anatomy of the Head and Neck	Invited Instructor American College of Surgeons Annual Meeting, New Orleans, LA
2005	Hands on Teaching, Ultrasound demonstration	Invited Instructor and Course Examiner American College of Surgeons Annual Meeting, New Orleans, LA
2007	Ultrasound Normal Anatomy of the Head and Neck	Invited Instructor American College of Surgeons Annual Meeting, Chicago, IL
2007	Hands on Teaching, Ultrasound demonstration	Invited Instructor and Course Examiner American College of Surgeons Annual Meeting, Chicago, IL
2008	Ultrasound Normal Anatomy of the Head and Neck	Invited Instructor American College of Surgeons Annual Meeting, San Francisco, CA

2008	Hands on Teaching, Ultrasound demonstration	Invited Instructor and Course Examiner American College of Surgeons Annual Meeting, San Francisco, CA
2008	Obstacles to office based ultrasound for head and neck surgeons	Speaker and panelist at the American College of Surgeons, San Francisco, CA
2008	Thyroid Surgery, More or Less Surgery	Speaker at the Harvard Advances in Cancer Management for the Surgeon Course, Boston, MA
2008	Office Based Ultrasound, Obstacles to Getting Started	Speaker at the Harvard Course on Surgery of the Thyroid and Parathyroid Glands, Boston, MA
2009	Thyroid Incidentalomas: What to do about this epidemic	Speaker at BayState Medical Center, Springfield, MA Source of compensation: Baystate Medical School Speaker's Bureau
2009	Parathyroid Surgery	Speaker at the Harvard Advances in Cancer Management for the Surgeon Course, Boston, MA
2009	Thyroid Surgery, Vocal Cord Paralysis and nerve monitoring	Speaker at the ThyCa National Annual Meeting, Danvers, MA
2009	Frequently asked questions about thyroid surgery	Speaker at the ThyCa National Annual Meeting, Danvers, MA
2009	Ultrasound Normal Anatomy of the Head and Neck	Invited Instructor American College of Surgeons Annual Meeting, Chicago, IL
2009	Hands on Teaching, Ultrasound demonstration	Invited Instructor and Course Examiner American College of Surgeons Annual Meeting, Chicago, IL
2009	Obstacles to office based ultrasound for head and neck surgeons	Speaker and panelist at the American College of Surgeons, Chicago, IL
2010	BRAF and animal models of thyroid cancer	Speaker and panelist at Molecular Markers Workshop at the American Association of Endocrine Surgeons,

2010	Ultrasound Normal Anatomy of the Head and Neck	Pittsburgh, PA Invited Instructor American College of Surgeons Annual Meeting, Washington DC
2010	Hands on Teaching, Ultrasound demonstration	Invited Instructor and Course Examiner American College of Surgeons Annual Meeting, Washington DC
2010	Obstacles to office based ultrasound for head and neck surgeons	Speaker and panelist at the American College of Surgeons, Washington DC
2010	Intraoperative PTH: Pitfalls	Speaker and panelist at the American College of Surgeons, Chicago, IL
2011	BRAF and thyroid cancer	Invited speaker American Thyroid Association, Palm Springs, CA
2011	Ultrasound Normal Anatomy of the Head and Neck	Invited Instructor American College of Surgeons Annual Meeting, San Francisco, CA
2011	Hands on Teaching, Ultrasound demonstration	Invited Instructor and Course Examiner American College of Surgeons Annual Meeting, San Francisco, CA
2011	Obstacles to office based ultrasound for head and neck surgeons	Speaker and panelist at the American College of Surgeons, San Francisco, CA
2012	Use of more active single agent targeted therapies when first line agents fail	Speaker and panelist at Endocrine Society Meeting, Houston, Texas
2013	Ultrasound Normal Anatomy of the Head and Neck	Invited Instructor ACS Exported course to AAES, Chicago, IL
2013	Setting up office based ultrasound	Invited Instructor ACS Exported course to AAES, Chicago, IL
2014	Hands on Station for Laryngeal Ultrasound	Course director, AAES Boston, MA
2014	Use of novel mouse models of aggressive thyroid cancer for preclinical testing	International Thyroid Oncology Group meeting , Boston MA ( Meeting co-director)

#### **International Invited Presentations and Courses**

<b>Year</b>	<b>Title of Presentation</b>	<b>Type of Presentation</b>
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2005	Prognostic Factors in Thyroid Cancer “Novel Horizons in Thyroid Cancers”	Millennium Hospital, Ecuador
2009	Novel Techniques in Thyroid Surgery	Speaker at Union Hospital, Wuhan, China
2013	Molecular targeting: lessons learned from the lab	Plenary session Speaker at Oncoplastic Endocrine Surgery Symposium, Seoul National University, Seoul, Korea
2014	Treating aggressive thyroid cancers	Visiting Professor in Surgery, University of Wisconsin
2014	Surgeons Performed Ultrasound: Lessons Learned by Surgeons	Ethicon Lecturer, International Society of Oncoplastic Endocrine Surgery, Busan, Korea
2014	Association of Women Surgeons Visiting Professor	Tulane University, New Orleans

## **Report of Clinical Activities and Innovations**

### Current licensure and Certifications:

1992	Diplomate, National Board of Medical Examiners
1992	License, California Board of Registration
1993	Federal Controlled Substances Registration Certificate
1995	License, Massachusetts Board of Registration
1998/2008	Massachusetts Controlled Substances Registration
1998	Advanced Trauma Life Support Instructor Certificate
1999	Diplomate, American Board of Surgery, Certificate
2003	Recertified in Basic Ultrasound and Head and Neck Ultrasound, American College of Surgeons
2004	Certified as Instructor by the National Ultrasound Faculty of the American College of Surgeons, for the purpose of teaching ultrasound to staff and residents.

### Current Practice Activities

Type of Activity	Setting of Practice	Name & Location of Practice	Level of Activity
Endocrine Surgery	Outpatient Clinic	Endocrine Surgery, Wang 460	One session per week
Endocrine Surgery	Outpatient Clinic	Boston Thyroid Center, Longwood Medical Area	One session per week
Endocrine Surgery Endocrine Surgery	Outpatient Clinic Operating Room	Mt. Auburn Hospital MGH Operating Room	One session per week One session per week Approx 180 endocrine cases last year total
Endocrine Surgery	Operating Room	Mount Auburn Operating Room	One session per week

### Clinical Innovation

Date Initiated/ Date Implemented	Title	Scope of project
2000/2002-2005	BIDMC Thyroid Center Co-founded with Dr. Anthony Hollenberg of Endocrinology	BIDMC Thyroid Center , instrumental role in creating a “one stop shopping” model for treatment of the increasingly common “thyroid nodules”. Multidisciplinary streamline approach to patient with thyroid nodules rather than disparate care from different medical specialties such as surgery, medicine, endocrinology, pathology and cytology. Lessons learned from this approach yielded innovative tools for curriculum development in other hospital settings where a high concentration of multidisciplinary teaching was employed.
2002/2003	BIDMC Thyroid Center Web site developed and implemented with BIDMC Marketing	Developed a web site for the Thyroid Center at Beth Israel Deaconess Medical Center, <a href="http://www.bidmc.harvard.edu/thyroidcenter">www.bidmc.harvard.edu/thyroidcenter</a>
Updated in 2006		Widely used by endocrine patients at BIDMC for a one stop educational resource
2008/2009	MGH Endocrine Surgery Tissue Bank and Molecular Diagnostics Program	Conceived and built new IRB approved prospective database for MGH Endocrine Surgery Tissue Bank using access database. Implemented as an



MGH hospital wide resource for endocrinologist, surgeons and pathologist interested in used patient tissue for research and molecular diagnostics.

## **Report of Education of Patients and Service to the Community**

### **Activities**

<b><u>Year(s)</u></b>	<b><u>Role</u></b>	<b><u>Organization or institution</u></b>
2006	Instructor Body Works Exhibit	Museum of Science
2009	Instructor in metabolic bone disease	Beaver Country Day School

Educational Material for Patients and the Lay Community:

*Patient educational material:*

<b><u>Developed and published</u></b>	<b><u>Title</u></b>
2003-2004	“Thyroid Surgery at Beth Israel Deaconess: Information for patients and families” Prepared for and produced and distributed by the Beth Israel Deaconess Learning Center
2003-2004	“Thyroid Surgery: Discharge Instructions” Prepared for and produced and distributed by the Beth Israel Deaconess Learning Center
2005	“Thyroid disease is More Prevalent Among Women, Thyroid nodules and Thyroiditis” Prepared for Women’s Health News, Published by Beth Israel Deaconess Medical Center
2009	“Papillary thyroid cancer” section for patient education of the American Association of Endocrine Surgeons Website Report of Scholarship
2012	Frequently asked Questions for the American Association of Endocrine Surgeons Website

## **Report of Scholarship**

### **Publications**

*Peer reviewed Publications:*

*Research Investigations:*

1. Shea C., Glass D.J., **Parangi S.** and Van der Ploeg L.H.T. Variant Surface Glycoprotein gene expression site switches in *Trypanosoma brucei*. *J. Biologic Chemistry*, 1986; 261(Pt 13): 6056-6063.
2. Wong S.M.E, Lindeman R.P., **Parangi S.** and Chase H.S. Role of calcium in mediating Carbachol's action in T84 cell. *Am. J. of Physiology*, November 1990; 257: C976-C985.
3. Oz M.C., Chuck R.S., Johnson J.P., **Parangi S.**, Bass, L.S., Nowygrod R., and Treat M.R. Indocyanine green dye-enhanced welding with a diode laser *Surgical Forum XL*, October 1989: 317-318.
4. Oz M.C., Johnson J.P, **Parangi S.**, Chuck R.S. and Treat M.R. Tissue soldering by use of Indocyanine green dye enhanced fibrinogen with the near infrared diode laser. *J. of Vascular Surgery*, May 1990; 11: 718-725.
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6. Oz M.C., Johnson J.P, **Parangi S.**, Chuck R.S. and Treat M.R. Strength of laser vascular fusion- preliminary observations on the role of thrombus *Lasers in Surgery and Medicine*, 1990; 10: 393-395.
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9. Klauber N., **Parangi, S.**, Hamel E., and D'Amato R.J. Growth suppression of a human breast carcinoma in vivo and inhibition of angiogenesis in vivo by the endogenous estrogen metabolite 2-methoxyestradiol *Surgical Forum XLVI*, October 1995: 470-472.
10. **Parangi S.**, Dietrich W., Christofori G., Lander E.S., and Hanahan D. Tumor suppressor loci on mouse chromosomes 9 and 16 are lost at distinct stages of tumorigenesis in a transgenic model of islet cell carcinoma *Cancer Research*, December 15 1995; 55: 6071-6076.
11. **Parangi S.**, O'Reilly M.O., Christofori G., Holmgren L., Grosfeld J., Folkman J., and Hanahan D. Antiangiogenic therapy of transgenic mice impairs de novo tumor growth *Proc. Natl. Acad. Sci* March 1996; 93: 2002-2007.
12. Klauber N., **Parangi S.**, Flynn E., Hamel E., and D'Amato R.J. Inhibition of angiogenesis and breast cancer in mice by the microtubule inhibitors 2 Methoxyestradiol and Taxol *Cancer Research* January 1997 ; 57: 81-86.
13. Arbiser J., Moses M.A., Fernandez, C., Ghiso N., Cao, Y., Klauber N., Frank, D., Brownlee M., Flynn E., **Parangi S.**, Byers R. and Folkman J. Oncogenic H-ras stimulates tumor angiogenesis by two distinct pathway *Proc. Natl.Acad.Sci* February 1997; 94: 861-866.
14. Evans C.P., Elfman F., **Parangi S.**, Conn M., Cunha G., Shuman M.A., Inhibition of prostate cancer neovascularization and growth by urokinase plasminogen activator receptor blockade *Cancer Research* August 1997; 57: 3594-3599.

15. **Parangi S.**, Matthews,J.B., Delic, M., Duquette,M., and Lawler,J Antiangiogenic therapy with thrombospondin reduces tumor volume in an orthotopic model of pancreatic cancer in SCID mice *Surgical Forum* October 1999 Volume L.: 87-88
16. **Parangi S.**, Delic M., Lawler J., and Terwilliger E., “Gene therapy with a recombinant adenoassociated virus (rAAV) in an orthotopic model of pancreatic cancer in SCID mice” *Surgical Forum* October 2001 Volume : 131-132
17. Zeng H, Datta K, Neid M, Li J, **Parangi S**, and Mukhopadhyay D.; “Requirement of different signaling pathways mediated by insulin-like growth factor-I receptor for proliferation, invasion, and VPF/VEGF expression in a pancreatic carcinoma cell line” *Biochem Biophys Res Commun.* 2003 Feb 28; 302(1):46-55
18. Mitchell J. and **Parangi, S**; “Laparoscopic adrenalectomy for pheochromocytoma” *Current Surgery.* November 2003; 60: 561-566
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20. Mitchell J. and **Parangi, S**; “Angiogenesis in Benign and Malignant Thyroid Disease”, Mitchell J. and **Parangi, S**; “Angiogenesis in Benign and Malignant Thyroid Disease”, *Thyroid*, Volume 15 (6) 494-510, June 2005
21. Zhang XF, Galardi E Duquette M, Delic, M Lawler J, and **Parangi, S**: “Anti-angiogenic treatment with Thrombospondin-1 Three type I repeat recombinant proteins in an Orthotopic Human Pancreatic Cancer model” *Clinical Cancer Research*, Mar 15; 11(6):2337-44; 2005
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28. Zhang, XF, Xu J, Lawler J, Terwilliger E and **Parangi S**: Adeno-Associated Virus-Mediated Antiangiogenic Gene Therapy with Thrombospondin-1 Type 1 Repeats and Endostatin.” *Clinical Cancer Research* 2007 Jul 1; 13(13):3968-76

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30. Demirjian AN, Grossman JM, Chan JL and **Parangi S.**: “Parathyroid carcinoma and neurofibromatosis.” *Surgery* 2008; 827-829
31. Nucera C, Goldfarb M, Hodin R and **Parangi S.**: “Role of B-Raf<sup>v600E</sup> in differentiated thyroid cancer and preclinical validation of compounds against B-Raf<sup>v600E</sup>.” *BBA Reviews on Cancer*, 2009 Apr; 1795(2):152-61.
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34. Oneal P, Poylin, V, Mowschenson P, **Parangi S**, Horowitz G and Hasselgren PO: When initial post excision PTH levels do not fall during parathyroidectomy: What to do next, *World Journal of Surgery*, May 4 2009
35. Mekel M, , Stephen A. E., Gaz R. D., Hodin R. A., and **Parangi S**: “Thyroid surgery in octogenarians is associated with higher complication rates.” *Surgery*, *Surgery*. 2009 Jul 10.
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- Poorly-Localized Patients with Primary Hyperparathyroidism, Surgery. 2010 Dec;148(6):1129-37; discussion 1137-8.
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  45. Nucera C, Lawler J, and **Parangi, S**: BRAF<sup>V600E</sup> and microenvironment in thyroid cancer: a functional link to drive cancer progression. Cancer research in press
  46. Nucera C, Lawler J, Hodin RA, and **Parangi, S** The BRAF<sup>V600E</sup> mutation: what is it really orchestrating in thyroid cancer? Oncotarget, 2010 Dec;1(8):751-6.
  47. Nucera C, Nehs MA, Nagarkatti SS, Sadow PM, Mekel M, Fischer AH, Lin PS, Bollag GE, Lawler J, Hodin RA, and **Parangi S**. : Targeting BRAF<sup>V600E</sup> with PLX4720 displays potent anti migratory and invasive activity in preclinical models of human thyroid cancer, Oncologist. 2011 Feb 25.
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  51. Barbesino G, Godlfarb M, **Parangi S**, Yang J, Ross D, and Daniels G: Lobe ablation with radioactive iodine as an alternative to completion thyroidectomy after hemithyroidectomy in patients with follicular thyroid cancer: long-term follow-up. Thyroid. 2012 Mar 2. [Epub ahead of print] PMID: 22385290
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**Peer reviewed publications (Meta-analysis, meeting proceedings with full manuscript, case reports etc..)**

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8. Mitchell J. and **Parangi,S** "Thyroid Incidentalomas: A New Epidemic," *Current Surgery*. November 2004; Volume 61(6), 545-51.
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10. Kim, Min P, Vin, Yael and **Parangi, S**: Image of the month "Gallstone Ileus" *Archives of Surgery*, 2005
11. Warren, AG. and **Parangi, S** : Image of the month "Acute and Chronic Cholecystitis". *Archives of Surgery*, January 2006
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13. **Parangi S.**, Levine D., Henry A, Isakovich N, and Pories S: "Surgical gastrointestinal disorders during pregnancy" *American Journal of Surgery*, 2007 Feb; 193(2):223-32
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15. Lubitz CC, Faquin WC, Gaz R, **Parangi S**, Randolph GW, Hodin RA, Stephen AE. Metastatic Melanoma to Thyroid: A Case Report and Institutional Reveiw. *World Journal of Endocrine Surgery*. 2010 May-Aug; 2 (2): 97-100.
16. Cabot RC, Harris NL, Shepard JA, Rosenberg ES, Cort AM, Peters CC, Misra M, **Parangi S**, Ross DS, Shailam R and Sadow PM: Case records of the Massachusetts General Hospital: Case 38-2010: A 13 year old girl with an enlarging neck mass, *NEJM CPC*: December 2010 In press *N Engl J Med*. 2010 Dec 16;363(25):2445-54

*Non-peer reviewed scientific or medical publications*

*Reviews, Book chapters, Monographs, Editorials*

1. **Parangi S.**, Hodin R. "Laparoscopic appendectomy". In: Bland, K, editor. The Practice of General Surgery. W.B. Saunders, 2000,
2. **Parangi S.**, Hodin R. "Abdominal Cavity: Anatomy, Structural Anomalies and Hernias". In Yamada,T, Editor " Textbook of Gastroenterology" 4<sup>th</sup> edition, Lippincott Williams &Wilkins, 2001.
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4. **Parangi S.** and Pories, S. "Surgical Problems in the Pregnant Patient" in Monograph titled: Gastrointestinal Disorders during Pregnancy, Published by the American College of Gastroenterology, 2003
5. **Parangi S.** and Hodin R. Chapter 58: "Intestinal Obstruction", Published in Therapy of Gastrointestinal Disorders, Second edition, 2004
6. Mitchell J., Hollenberg A., and **Parangi, S**; : "The Role of the Endothelium in Normal and Pathologic Thyroid Function" Chapter published in Endothelial Biomedicine , 2006 ,
7. **Parangi, S**; and Lawler, J: The Thrombospondins", Chapter published in Endothelial Biomedicine , 2006 ,
8. **Parangi S.** "Thyroid " "Pineal Gland" and "Hashimoto's" in World Book Encyclopedia 2007 and 2008
9. Mekel M, and **Parangi S.** "Endocrine surgery" and "Head and Neck" chapter published in Oxford American Handbook of Surgery, edited by David Berger, Oxford University Press, New York, 2009 .
10. Nucera, C, Parker J.A., and **Parangi S.** "Thyroid Imaging" Chapter published in Endocrine Surgery (Springer Specialist Surgery Series) Edited by Johnathan G H Hubbard, William B. Inabnet, and Chung-Yau Lo 2009
11. **Parangi, S**: "Thyroid Nodules" and "Hyperthyroidism" Modules for the American Board of Surgery educational project of the Surgical Council on Resident Education (SCORE) 2009



12. Perrier ND and **Parangi S** “ Minimally invasive single gland parathyroid exploration” published in Surgery of the Thyroid and Parathyroid Glands, Second edition, 2013
13. McKenzie, T and **Parangi, S** “ Prophylactic Central node dissection for papillary thyroid carcinoma” for Clark: Textbook of Endocrine Surgery, third edition 2013

***Books***

1. Phitayakorn and **Parangi, S** Book “ Thyroid Disease” in series Biography of Diseases. Published by ABC-Clio 2010

**Professional Educational Materials or Reports, in print or other media**

*Print Material:*

1. BIDMC Surgical Residency Core Curriculum in Endocrine Surgery Syllabus Syllabus of Educational Material and Case presentations for the BIDMC Surgical Residency Core Curriculum in Endocrine Surgery, Thyroid Neoplasms, Parathyroid Disorders and Adrenal masses

***Non Print Material:***

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|------|---|
| 2002 | Developed a web site for the Thyroid Center at Beth Israel Deaconess Medical Center, <a href="http://www.bidmc.harvard.edu/thyroidcenter">www.bidmc.harvard.edu/thyroidcenter</a> . |
| 2005 | Updated and revised new web site for BIDMC Thyroid Center   |
| 2009 | Conceived and revised new database for MGH Endocrine Surgery Tissue Bank  |
| 2012 | Frequently asked questions section for the American Association of Endocrine Sections website and Sharecare   |

***Abstracts (since 2005):***

1. Grant F.D., Mitchell J.C.; Evenson A.R.; Parker J. A., Hasselgren PO; and **Parangi, S.:** Pre-Operative Evaluation of Thyroid Nodules with. *American Association of Endocrine Surgeons April, 2005, Cancun, Mexico*
2. Zhang XF, Galardi E Duquette M Lawler J , and **Parangi, S:** Comparison of thrombospondin type I repeats antiangiogenic therapy with gemcitabine in an orthotopic pancreatic cancer model. Poster at the American Association of Cancer Research April, 2005, Anaheim, CA
3. Grant F.D., Mitchell J.C.; Evenson A.R.; Parker J. A., Hasselgren PO; and **Parangi, S. :** Pre-Operative Evaluation of Thyroid Nodules and identification of thyroid cancer by <sup>18</sup>F-FDG-PET/CT. Society of Nuclear Medicine, 52<sup>nd</sup> Annual Meeting, May 2005

4. Evenson, A, Mitchell, J.C, Wei, W, Poylin, V, **Parangi, S**; and Hasselgren P.O.: The Gene expression of Calpains and the Muscle Wasting –Associated Ubiquitin Ligases Atrogin-1 and Murf-1 is not Altered in Patients with Primary Hyperparathyroidism. Oral Presentation at the 52<sup>nd</sup> Annual Meeting of The Massachusetts Chapter of the American College of Surgeons, 11/19/2005
5. Mitchell, J.C, Grant F, Evenson, A, Parker, A, Hasselgren P.O. and **Parangi, S** : The Utility of Fluorine-18-Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography in the Pre-operative Evaluation of Thyroid Nodules. 52<sup>nd</sup> Annual Poster Presentation at Meeting of The Massachusetts Chapter of the American College of Surgeons, 11/19/2005
6. Zhang, X.F. Connolly C, Duquette, M Lawler J, and **Parangi, S.** :Continuous Administration of the Three Thrombospondin-1 Type 1 Repeats Recombinant Protein Improves the Potency of Therapy in an Orthotopic Human Pancreatic Cancer Model. Antiangiogenesis and Drug Delivery to Tumors, Bench to Bedside AACR Meeting November 2005, Boston
7. Xuefeng Zhang, Jianfeng Xu, Jack Lawler, Ernest Terwilliger, and **Sareh Parangi** “Adeno-Associated Virus-Mediated Anti-Angiogenic Gene Therapy with Thrombospondin-1 Type 1 Repeats and Endostatin” February 2007, Center for Vascular Biology Annual Retreat, Podium talk, winner of postdoctoral fellow presentation award.
8. Mekel M, MD, Stephen A. E. MD, Gaz R. D. MD, Hodin R. A. MD, and **Parangi S, MD**: “Thyroid surgery in octogenarians is associated with higher complication rates.” Podium Talk American Thyroid Association, Chicago September 2008
9. Nucera C, Porrello A, Zhang X, Giordano T, Jarzab B, Trimarchi F, Pontecorvi A, Nose’ V, Lawler J, and **Parangi S**: “Identification of new BRAF<sup>V600E</sup> activated pathways by Gene Set Enrichment Analysis (GSEA) of human papillary thyroid cancers (PTCs) gene microarray platform” Podium Talk American Thyroid Association, Chicago September 2008
10. Goldfarb M and Parangi S: “Prevalence of neck and back injury in endocrine surgeons”. New England Surgical Society , Boston, MA September 2008
11. Nucera C, Porrello A, Antonello, Z Zhang X, Giordano T, Jarzab B, Trimarchi F, Pontecorvi A, Nose’ V, Lawler J, and **Parangi S**: “Thrombospondin-1 is modulated by the B-Raf<sup>V600E</sup> pathway in papillary thyroid cancer ” Abstract US and Canadian Academy of Pathology Meeting, March 2009, Boston
12. Zhang X, **Parangi S** and Lawler J: “Regulation of VEGF-induced vascular permeability and VEGFR2 signaling by thrombospondin-1”. Abstract US and Canadian Academy of Pathology Meeting, March 2009, Boston

13. Lubitz CC, Faquin WC, Yang J, Hodin RA, Gaz RD, **Parangi S**, Randolph G and Stephen AE “Clinical and Cytological Features Predictive of Malignancy in Follicular Neoplasms” Poster Competitions for the American Association of Endocrine Surgeons May 2009, Madison, WI
  
14. Nehs M, Mekel M, Pontecorvi A, Nose' V, Lawler J, Hodin RA., and **Parangi S** “Inhibition of B-Raf<sup>V600E</sup> oncoprotein prevents cell cycle progression, tumor growth and invasion of thyroid cancer cells in vitro and in an orthotopic model of thyroid cancer.” Winner of the basic science Poster Competitions for the American Association of Endocrine Surgeons May 2009, Madison, WI
  
15. Mekel M, Stephen AE, Gaz, RD, Randolph GW, Lubitz CC, Nehs MA, **Parangi S**, Hodin RA. “Surgical drains can be safely avoided in modified radical neck dissections for thyroid cancer” Poster Presentation at the American Association of Endocrine Surgeons May 2009, Madison, WI
  
16. Goldfarb M, Mekel M, Hodin RA and **Parangi S**: Comparing perioperative surgical outcomes in patients undergoing thyroid surgery for benign or malignant diseases using the American College of Surgeons National Surgical Quality Improvement Program (NSQIP). Podium presentation at the World Congress on Thyroid Cancer, Toronto August 2009
  
17. Nucera C, Porrello A, Antonello, Mekel M, Nehs M, Giordano T, Priolo C, Gerald D, J Efisio Puxeddu, Pontecorvi A, Nose' V, Lawler J, and **Parangi S**: A Robust B-Raf<sup>V600E</sup> Genome-Wide Signature in Papillary Thyroid Cancer. Podium Talk American Thyroid Association, West Palm Beach September 2009.
  
18. Michal Mekel, Goldfarb M, Perry Z, Hutter M, Hodin RA, and **Parangi S** : Body Mass Index and Thyroid Cancer Risk. Poster Presentation American Thyroid Association, West Palm Beach September 2009.
  
19. Nagarkatti SS, Faquin WC, Mekel M, Perry Z, Hodin RA, Barbesino G, Ross DS, Daniels GH, and **Parangi S**: The management of thyroid nodules with atypical cytology on fine needle aspiration biopsy. Poster Presentation American Thyroid Association, West Palm Beach September 2009
  
20. Barbesino G, Goldfarb, **Parangi S**, Yang, J, Ross DS, and Daniels GH. Remnant Lobe Ablation with I 131 is an effective alternative in follicular thyroid cancer: Long term follow up of 39 cases. Poster Presentation American Thyroid Association, West Palm Beach September 2009
  
21. Nagarkatti SS, Lubitz CC, Korngold E, Samir A, Arellano H, Yang J, Gaz RG, **Parangi S**, Randolph GW, Hodin RA, and Stephen AE: Doppler flow in thyroid follicular neoplasms: is it useful? Poster Presentation American Thyroid Association, West Palm Beach September 2009

22. Nehs MA, Nagarkatti S, Nucera C, Hodin RA, and **Parangi S**: Thyroidectomy with neoadjuvant PLX4720 extends survival and decreases tumor burden in an orthotopic mouse model of anaplastic thyroid cancer. Winner of the best basic science resident research oral presentation award at the American Association of Endocrine Surgeons, Pittsburgh, PA in April 2010.
23. Nehs MA, Nucera C, Nagarkatti S, Hodin RA, and **Parangi S**: Dacarbazine inhibits cell cycle progression and reduces tumor growth in an orthotopic model of anaplastic thyroid cancer. Abstract poster at the American Association of Endocrine Surgeons, Pittsburgh, PA April 2010.
24. Goldfarb M, Gondek S, Hodin RA and **Parangi S**: Resident / Fellow Assistance in the Operating Room for Endocrine Surgery in the Era of Fellowships. Podium presentation at the American Association of Endocrine Surgeons, Pittsburgh, PA April 2010
25. Lubitz CC, Hunter GJ, Hamberg LM., **Parangi S**, Ruan D, , Gawande A, Gaz RD, Randolph GW, Moore FD, Jr., Hodin RA, and Stephen AE: Accuracy of 4D-CT in Poorly-Localized Patients with Primary Hyperparathyroidism. Podium presentation at the American Association of Endocrine Surgeons, Pittsburgh, PA April 2010
26. Phitayakorn R, Hodin RA, **Parangi S**, Sagnwaiya MJ, and Stephen A: Do patients with incidentally discovered adrenal masses get the recommended biochemical testing and follow up? Abstract poster at the American Association of Endocrine Surgeons, Pittsburgh, PA April 2010.
27. Nucera C, Porrello A, Nehs M, Nehs M Giordano T, Puxeddu E, Jarzab B, Pontecorvi A, Nose' V, Hodin RA, Lawler J, and **Parangi S**: A novel for for B-Raf<sup>V600E</sup> in Thyroid Cancer Progression: from a robust Genome-Wide Analysis to an orthotopic mouse model. Oral Highlight in plenary session on thyroid cancer, Italian Endocrinology Meeting (GEP) June 12, 2010 Pisa, Italy.
28. Nehs MA, Nagarkatti S, Nucera C, Sadow, PM, Hodin RA, and **Parangi S**: PLX4720 reverses cachexia, induces regression and extends survival in a mouse model of late stage anaplastic thyroid cancer. Podium presentation and winner of the best resident paper , American College of Surgeons, October 2010
29. Nucera C, Nehs MA, Nagarkatti S, Sadow, PM, Mekel MM, Fischer AH, Lawler J , Hodin RA, and **Parangi S**: PLX4720 inhibits cell proliferation and migration/invasion in human thyroid cancer cells, and inhibits tumor growth and metastasis in an orthotopic mouse model of anaplastic thyroid cancer harboring B-Raf<sup>V600E</sup>. American Thyroid Association International Thyroid Congress, Paris September 2010. Winner of the best basic science presentation.

30. Nehs MA, Nagarkatti S, Nucera C, Sadow, PM, Hodin RA, and **Parangi S**: PLX4720 reverses cachexia and induces regression of anaplastic thyroid cancer. Podium presentation and winner of the best resident paper , Massachusetts Chapter of the American College of Surgeons, December 2010
31. Yip D, Hassan M, Ruan D, Gawande A, Gaz RD, Moore FD, Hodin RA, Stephen AE, Daniels G, Randolph GW, **Parangi S**, and Lubitz C: Preoperative basal calcitonin level and not extent of surgery predicts postoperative calcitonin levels in patients undergoing initial surgical management of medullary thyroid carcinoma. Oral presentation at the American Association of Endocrine Surgeons April 2011, Houston TX
32. Phitayakorn R, **Parangi S**, Hodin RA, Sofferman RA, Randolph G, and Stephen AE: Ultrasound Use by Endocrine Surgeons. Poster presentation at the American Association of Endocrine Surgeons April 2011, Houston TX
33. Morales-Garcia D, Nagarkatti S, Bhojraj TS, Gaz RD, Lubitz C, Randolph G, Stephen AE, Sadow PM, Hodin RA and **Parangi S**: Changes in surgery for Graves' disease over a 26 year period. Poster presentation at the American Association of Endocrine Surgeons April 2011, Houston TX
34. Phitayakorn R, Hodin RA, Gaz RD , Randolph G, **Parangi S**, Stephen AE, Morales-Garcia D, and Ehrenfeld JM: Factors associated with hemodynamic instability during total thyroidectomy. Abstract submitted to the American College of Surgeons 2011
35. Prescott JD., Sadow PM., Hodin RA, Le LP, MD, Gaz RD, Randolph GW., Stephen AE, **Parangi S**, Daniels GH, and Lubitz C: BRAF V600E status adds incrementally to current risk classifications systems in predicting papillary thyroid carcinoma recurrence Oral presentation at the American Association of Endocrine Surgeons, Iowa 2012
36. Phitayakorn R, Wanderer J, Ehrenfeld JM, Morales-Garcia D, Daniels GH, Carrie Lubitz C, Gaz RD, Stephen AE, Randolph G, **Parangi S**, Hodin RA, Graves' disease revisited, when is it safe to operate? Poster presentation at the American Association of Endocrine Surgeons, Iowa 2012
37. Phitayakorn R, Wanderer J, Carrie Lubitz C, Daniels GH, Ehrenfeld JM, **Parangi S**, Stephen AE, , Hodin RA, Phenoxybenzamine: Still a Good Match for Pheochromocytoma? Poster presentation at the American Association of Endocrine Surgeons, Iowa 2012
38. Prescott JD., Dhyani M, Samir A, Arellano H, Hodin RA, Gaz RD, Randolph GW., Randolph G, Zurakowski D, Finkelstein DM, **Parangi S**, and: Stephen AE, The

role of shear wave ultrasound elastography in estimating cancer risk and determining the extent of surgery in patients with indeterminate thyroid nodules. Oral snapshot poster presentation at the American Association of Endocrine Surgeons, Iowa 2012

39. Gunda V, Bucur J, Varnau J, Lawler R., Khosravi-Far, R and **Parangi S**: TRAIL induced apoptosis is enhanced by inhibition of the MAPK and PI3K/AKT pathways in thyroid cancer cells. Oral presentation at The Academic Surgical Congress, New Orleans 2013

40. Gunda V, Cogdill AP, Wargo, JA and **Parangi S**: Potential role of 5-aza-2'-deoxycytidine induced MAGEA4 expression in immunotherapy for anaplastic thyroid cancer. Oral presentation at the American Association of Endocrine Surgeons, Chicago, 2013

41. Duquette M, Sadow P, Fischer, A Priolo C, Hodin, RA, **Parangi S**, Lawler J and Nucera C : Investigating an orally available small-molecule inhibitor (Vemurafenib) of BRAF<sup>V600E</sup> in a novel preclinical model of human papillary thyroid cancer , Poster presentation at ASCO 2013

42. Lubitz C **Parangi S**, Faquin B and Sadow PM : Hobnail variant, a new aggressive subtype of papillary thyroid cancer. Poster presentation at the World Thyroid Congress, Toronto 2013

43. Carrie C. Lubitz, Sareh Parangi, M. Jordana Bernasconi, Aislyn P. Schalck, Dennie T. Frederick, Hyunsuk Suh, Samuel E. Donovan, Lori Wirth, Ryan J. Sullivan, and David J. Panka. **Detection of Circulating BRAF<sup>V600E</sup> in Patients with Papillary Thyroid Carcinoma, American Thyroid Association, San Diego, October 2014**

## Narrative Report

### Short Bio

Dr. Parangi is a busy endocrine surgeon at Massachusetts General Hospital, Harvard Medical School in Boston, with a particular interest and expertise in thyroid and parathyroid tumors. She focuses her clinical efforts on endocrine surgery and applies her basic science knowledge and expertise to tumor progression in thyroid cancer. She performs over 300 endocrine surgery operations per year, many for thyroid cancer utilizing the latest technologies including recurrent laryngeal nerve monitoring. She has been in practice for 15 years. She has been a council member for the most prestigious organization of endocrine surgeons in the US, The American Association of Endocrine Surgeons, and a member of the American Thyroid Association. She has won numerous awards nationally and at Harvard Medical School for her research in the role of BRAF oncoprotein in thyroid cancer invasion. Her active research focuses on understanding why some patients with thyroid cancer do worse than others and how to help them. She has been one of the Boston surgeons named in Best Doctor and her excellent in both

research and her clinical expertise have earned her a national reputation. She is one of a handful of thyroid surgeons with expertise in molecular biology and has over 70 publications, many on thyroid cancer therapeutics in premier journal.

### ***Research, Teaching and Clinical Contribution***

My overall goal as a surgical faculty member at MGH and Harvard Medical School is to combine my training as a clinician/surgeon and scientist in order to treat patients with endocrine disorders using state of the art cutting edge intervention. In addition to providing the highest quality of care and performing excellent translational research, I strive to help the resident and clinical fellows learn how to apply research to everyday patient care.

My research interest in animal models of tumor progression and use of antiangiogenic/stromal modulators has been the cornerstone of my research interest. My research thus far has been supported by primary grants from the NIH in the form of a 5 year K08 Mentored Clinician Researcher Award, NIH R01 funding, as well as awards from the American College of Surgeons and American Thyroid Association. My research has focused on tumor angiogenesis, with special emphasis on molecular mechanisms of antiangiogenic drugs, the role of endothelial apoptosis in thyroid and pancreatic tumor progression and novel animal models of thyroid cancer. A new research area in my laboratory is to characterize how a common genetic mutation in aggressive thyroid cancer BRAF (V600E) leads to thyroid cancer cell invasion, migration and metastasis. We have started to characterize genomic and molecular changes that occur as a result of the BRAF mutation in human thyroid cancer cell in culture, our novel preclinical mouse model of thyroid cancer and in human urine and tissue samples. BRAF mutation appears to lead to direct changes in expression levels of various stromal molecules such as Thrombospondin-1 and integrins which then lead to the invasive and aggressive behavior of cells with this mutation. I have used a novel orthotopic model of aggressive thyroid cancer to test for the first time effects of novel inhibitors of mutant BRAF on the invasive behavior of these tumors, work which has been published in the *Proceedings of the National Academy of Sciences* and *Oncologist*. This research was the basis for NCI R01 funding granted to the laboratory. Our lab's work helped demonstrate how BRAF<sup>V600E</sup> mutation helps orchestrate the aggressive behavior of thyroid cancer cells and treatment with the selective BRAF<sup>V600E</sup>-inhibitor PLX4720 results in impressive decreases in tumor volume and metastasis in an orthotopic mouse model of ATC. These findings, combined with data from others, led to clinical trials with BRAF inhibitors such as Vemurafenib/Dabrafenib in patients with progressive PTC and ATC. Based on my lab findings, protocols have been developed in collaboration with the MGH Department of Pathology to evaluate all thyroid fine needle aspirations in addition to all surgically excised tissue at the MGH for this BRAF mutation and a large number of other mutations using hotspot mutational analysis. This new research effort will help understand whether known preoperative molecular markers are reliable predictors of lymph node involvement or recurrence in papillary thyroid cancer. Preoperative mutational analysis of thyroid tumor fine needle aspirations will help identify those with thyroid cancers that have a higher chance for aggressive clinical behavior and help discover novel thyroid cancer-

specific molecular biomarkers, which in the future might allow “personalized” thyroid cancer surgery. We are hoping to complete or participate in a seminal randomized clinical trial looking at the role of central node dissection in thyroid cancer care and will add a molecular diagnostic component which should ultimately “personalize” thyroid cancer surgery and substantially improve patient care. This work exemplifies my dedication to translating bench work directly to the care of patients with endocrine diseases.

In addition, I have established the MGH Endocrine Tumor Tissue Repository in 2008 and the molecular diagnostics laboratory is has been combined with other translational research efforts at the MGH including the Endocrine Surgery Clinical Database under the auspices of the Codman Center for Clinical Effectiveness and basic science laboratory research to improve translational research in thyroid cancer. I have also been instrumental in helping target two innovative clinical approaches to thyroid and parathyroid patients with direct impact on the day to day care of patients at Harvard and nationally. In addition, during my time as surgical director of the BIDMC Thyroid Center I was instrumental in creating a “one stop shopping” model for treatment of the increasingly common “thyroid nodules”. This model allowed physicians from different specialties with up to date knowledge of thyroid diseases but variable skills (such as endocrinologist, surgeons and radiologist) to be harnessed not only for superb patient care but also for graduate and undergraduate medical education. With this streamlined approach patient care improved and the collaborative curriculum/model helped make this helping make an interesting and sought after ambulatory clinical rotation for surgery/pathology/medical residents, cytology/endocrinology fellows and medical students. Lessons learned from this approach yielded innovative tools for curriculum development in other hospital settings where a high concentration of multidisciplinary teaching was employed.

As a surgical faculty I have always been involved with teaching HMS students during their surgical rotations as well as in formal surgical core curriculum courses. I am also deeply involved in teaching both surgical residents and fellows about endocrine surgery at a weekly endocrine surgery conference and as part of our ACS Score based teaching curriculum for residents. My interest in surgeon performed ultrasound has culminated in my direct involvement in development of a comprehensive nationally recognized head and neck ultrasound curriculum which has been used at the American College of Surgeons for teaching surgeons use of this technology for their practices. The ultrasound curriculum I helped develop has been used to teach both surgical residents and fellows both at BDIMC, MGH and nationally important basic ultrasound skills.