

Harvard Medical School/Harvard School of Dental Medicine

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Place of Birth: Fontana, California

Education

1988	B.A. cum laude	Applied Mathematics	Harvard University
1997	Ph.D.	Electrical Engineering and Computer Science Advisor: James G. Fujimoto	Massachusetts Institute of Technology
1998	M.D. magna cum laude	Medicine	Harvard Medical School

Postdoctoral Training

1998-2001	Resident	Pathology	Massachusetts General Hospital
1999-2000	Clinical/Research Fellow	Pathology	Massachusetts General Hospital

Faculty Academic Appointments

2001-2004	Assistant Professor	Pathology	Harvard Medical School
2003-	Affiliated Faculty	Health Sciences and Technology	Harvard-MIT Division of Health Sciences and Technology
2004-2010	Associate Professor	Pathology	Harvard Medical School
2010-	Professor	Pathology	Harvard Medical School

Appointments at Hospitals/Affiliated Institutions

Past

2001-2004	Assistant Physicist	Dermatology	Massachusetts General Hospital
2001-2008	Assistant Pathologist	Pathology	Massachusetts General Hospital
2004-2012	Associate Physicist	Dermatology	Massachusetts General Hospital

2008-2012	Associate Pathologist	Pathology	Massachusetts General Hospital
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Current

2012-	Physicist	Dermatology	Massachusetts General Hospital
2012-	Pathologist	Pathology	Massachusetts General Hospital
2017-	Remondi Family Endowed MGH Research Institute Chair	MGH Research Institute	Massachusetts General Hospital

Other Professional Positions

1987-1991	Vice-president	Vanguard Imaging, Ltd.
1993-1994	Consultant	Signal Analytics
2000-2003	Consultant	Infraredx, Inc.
2005-2010	Consultant	Prescient Medical, Inc.
2005-2010	Consultant	Cambridge Research and Instrumentation
2007-2009	Consultant	Merck Research Laboratories
2009-	Consultant	NinePoint Medical
2010-2012	Consultant	Samsung Advanced Institute of Technology
2017-	Consultant	SpectraWave

Major Administrative Leadership Positions*Local*

2008-	Director	Wellman Center Photopathology Laboratory
2008-2012	Co-director of HST .035	Harvard-MIT Division of Health Sciences and Technology
2009-2013	Associate Director	Wellman Center for Photomedicine

Regional

2007-2010	Program Leader of Diagnostics	Center for Integration of Medicine and Innovative Technology (CIMIT)
2017-	Board Member	SpectraWave

Committee Service*Local*

2003-2004	Intellectual Property Committee <i>Chairman</i>	Wellman Center for Photomedicine, MGH
2003-2004	Search Committee for Director <i>Member</i>	Wellman Center for Photomedicine, MGH
2003-	Faculty Executive Committee <i>Member</i>	Wellman Center for Photomedicine, MGH
2007-	Faculty Search Committee <i>Chairman</i>	Wellman Center for Photomedicine, MGH, HST
2007-	HST MD Admissions Committee <i>Member</i>	Harvard Medical School, HST

2010-	MGH Pathology Research Committee of Professors <i>Member</i>	MGH Pathology Department
2013	MGH Pathology Research Strategic Planning Committee <i>Member</i>	MGH Pathology Department
2013-	Research Advisory Board <i>Vice-chair</i>	Institute for Aging Research (IFAR)
2013-	Scientific Advisory Board <i>Member</i>	Massachusetts Life Sciences Center (MLSC)
2013-	External Advisory Board <i>Chair</i>	Laser Biomedical Research Center at MIT
2013-	Commercialization Council <i>Member</i>	Partners Healthcare Innovation
2016-	Executive Committee on MGH Research (ECOR) <i>Member</i>	Massachusetts General Hospital
2016-	Committee for Development and Promotions <i>Member</i>	Wellman Center for Photomedicine
2016-	Committee for Promotions, Reappointments, and Appointments (P&R) <i>Member</i>	Harvard Medical School
<i>National</i>		
2008	Program Committee Technical Session <i>Chairman</i>	Gordon Research Conference
2009-2011	Vulnerable Plaque Working Group <i>Member</i>	National Heart Lung and Blood Institute (NHLBI)
2010-2012	Transformation M4 Emerging Technology <i>Team Leader</i>	College of American Pathologists
2012-	CAP IVM Committee <i>Founder and Vice-chair</i>	College of American Pathologists

International

2007	International Conference on Advances in Optics and Biotechnology <i>Co-chairman</i>	Engineering Conferences International
2008-	International Working Group on Intracoronary OCT Standardization and Validation <i>Founder and co-chairman</i>	International Committee on Intracoronary OCT Standardization and Validation

Professional Societies

1995-	SPIE – International Society for Optical Engineering <i>Member</i>	
1995-	Optical Society of America <i>Member</i>	
1998-2001	American Medical Association <i>Member</i>	
1998-2001	Massachusetts Medical Association <i>Member</i>	
2000-	Association for Eradication of Heart Attack <i>Member</i>	
2000-	American Heart Association <i>Member</i>	
2006-	SPIE – International Society for Optical Engineering, Cardiovascular Photonics Program Committee <i>Co-Chairman</i>	
2006-	SPIE – International Society for Optical Engineering, Endoscopic Microscopy Program Committee <i>Co-Chairman</i>	
2011-	American College of Cardiology <i>Fellow</i>	
2013-	College of American Pathologists <i>Fellow</i>	
2015-	National Academy of Inventors <i>Fellow</i>	

Grant Review Activities

2003	NIDDK Study Section <i>Ad hoc member</i>	National Institutes of Health
2005-2009	Microscopic Imaging Study Section	National Institutes of Health

Standing member

2013-	MSLC Study Section <i>Standing member</i>	Massachusetts Life Sciences Center
2014	Imaging and Biomarkers for Early Cancer Detection <i>Ad hoc member</i>	National Institutes of Health
2016-	MEDI Study Section <i>Ad hoc member 2016-2018;</i> <i>Standing member 2018-</i>	National Institutes of Health

Editorial Activities*Ad hoc reviewer*

1993-	Applied Optics
1998-	Optics Communications
1998-	Journal of the Optical Society of America
1993-	Optics Letters
2000-	Journal of Biomedical Optics
2001-	Optics Express
2001-	Applied Physics Letters
2003-	Circulation
2003-	Journal of the American College of Cardiology
2005-	Arteriosclerosis, Thrombosis, and Vascular Biology
2007-	Biomedical Optics Express
2007-	Nature
2011-	Science Translational Medicine

Other Editorial Roles

2001	Editor	<i>The Handbook of Optical Coherence Tomography</i> , Marcel Dekker
2005	Guest Editor	Journal of Biomedical Optics
2010	Editor	<i>Atlas of Intracoronary OCT</i> , Springer
2013	Guest Editor	Biomedical Optics Express
2015-	Associate Editor	Lasers in Surgery and Medicine

Honors and Prizes

1991 - 1996	NIH Fellowship	National Institute of General Medical Sciences (NIH)	Academic
1991-1998	MD/Ph.D. Fellowship	Harvard Medical School	Academic
1994	General Telephone & Electronics Engineering Fellowship	General Telephone & Electronics	Research
1995	Young investigator runner-up	American Heart Association	Research
1996	Student abstract prize runner-up	American Gastroenterology Association	Research
1996	MIT Research Laboratory of	Massachusetts Institute of	Research

	Electronics Award	Technology	
2000	Partners in Excellence Group Leader	Partners	Research
2004	Edward M. Kennedy Award for Health Care Innovation	Center for Integration of Medicine and Innovative Technology	Research
2007	International Academy of Science Technology of the Year Finalist	International Academy of Science	Research
2011	Terplin Lecturer	University of Arizona	Research
2012-	Mike and Sue Hazard Family MGH Research Scholar	Massachusetts General Hospital	Research
2013	Johns Hopkins Distinguished Professor of Pathology	Johns Hopkins	Research
2014	Top Translational Researcher in 2013 (ranked 3 rd)	Nature Biotechnology	Research
2015	NAI Fellow	National Academy of Inventors	Research
2017	Remondi Family Endowed MGHRI Chair	MGHRI	MGHRI

Report of Funded and Unfunded Projects

Funding Information

Past

2000-2003	PI	National Science Foundation (NSF) Research BES-0086709	\$270,000
		Endoscopic Confocal Microscopy by Spectral Encoding The goal of this work is to develop an endoscope compatible confocal microscope for identifying sub-cellular features diagnostic of early cancer and dysplasia.	
2001-2003	Co-PI	Advanced Cardiovascular Systems Research	
		Characterization of Coronary Plaques with OCT with Patient Event Follow-up The goal of this project is to build and analyze an OCT database of human coronary plaques and demonstrate the clinical potential of intracoronary OCT in patients.	
2002-2003	PI	Center for Innovative Minimally Invasive Technology Research	\$75,000
		Speckle Imaging for Plaque Characterization The goal of this project is to investigate a new method for characterizing atherosclerotic plaque structure and composition. The method is based on the temporal decorrelation of multiply scattered coherent light.	
2002-2005	PI	The Whitaker Foundation Research	\$236,289
		Spectrally Encoded Miniature Endoscopy	

The goal of this project is to investigate a new imaging technology for ultraminiature endoscopy and laparoscopy, permitting the diagnosis of disease in previously inaccessible areas of the body.

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|-----------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 2002-2006 | Investigator | National Institutes of Health
Research
R01HL70039 | |
| | | In-situ Measurement of Plaque Biomechanical Properties (Bouma)
This goal of this project is to validate and apply an optical coherence tomography (OCT) imaging method for assessing stress, strain and compliance in coronary vessels in vivo. | |
| 2003-2004 | PI | Center for Innovative Minimally Invasive
Technology
Research | \$25,000 |
| | | Low Coherence Interferometry System for Guidance in Lumbar Punctures
The goal of this project is to investigate the use of low coherence interferometry to provide interactive guidance of the lumbar puncture needle in real-time and identify adjacent tissue types before they are penetrated. | |
| 2003-2004 | PI | Center for Innovative Minimally Invasive
Technology
Research | \$75,000 |
| | | Polarization Sensitive OCT (PS-OCT) Assessment of Collagen in Atherosclerotic Plaques
The objective of this study is to investigate the measurement of collagen by quantifying birefringence in atherosclerotic plaques using PS-OCT. | |
| 2003-2008 | Investigator | National Institutes of Health
Research
R01RR19768 | |
| | | Fast OCT Technology for Comprehensive Diagnostic Imaging (deBoer)
The goals of this project are to develop a new, parallel detection form of OCT that provides vastly improved image acquisition rate and resolution. The new technology will be used for early detection and treatment of glaucoma, characterization of vulnerable plaques responsible for acute myocardial infarction, and for surveillance for esophageal neoplasia in patients with Barrett's esophagus. | |
| 2003-2008 | PI | Department of Defense, MFEL Program
Research
FA9550-04-1-0079 | \$299,488 |
| | | Low Coherence Interferometry Guided Fine Needle Aspiration
The goal of this project is to develop an optically guided needle for fine needle aspiration of palpable masses. | |
| 2003-2008 | PI | Department of Defense, MFEL Program
Research
FA9550-04-1-0079 | \$301,932 |
| | | Simultaneous Fluorescence Lifetime, Excitation, and Emission Spectral Measurement
The goal of this research is to develop a novel Fourier transform fluorescence spectroscopy technique for simultaneously detecting silicon quantum dots with unique excitation, emission, and lifetime properties. | |

2004-2006	PI	Center for Innovative Minimally Invasive Technology Research	\$75,000
Endoscopic Full-field Optical Coherence Microscopy System for Clinical Diagnostics The goal of this research is to develop a novel imaging technology that will enable endoscopic imaging of human tissue at resolution sufficient to visualize cellular substructure, thereby providing clinicians with a tool that will bring endoscopic optical biopsy closer to realization.			
2006-2008	PI	National Institutes of Health Research R21CA122161	\$208,644
Comprehensive Architectural and Cellular Endoscopic Microscopy The goal of this work is to develop an endoscopic confocal microscope for identifying sub-cellular features diagnostic of early cancer and dysplasia.			
2006-2008	PI	Prescient Medical Incorporated Research	\$973,852
Raman Spectroscopy of Coronary Atherosclerosis The goal of this study is to develop a state-of-the-art Raman spectroscopy system and 3.0 F intracoronary catheter for the chemical characterization of coronary plaque in the presence of intraluminal blood.			
2006-2008	PI	Center for Innovative Minimally Invasive Technology Research 2006A014969	\$79,814
Optical Frequency Domain Imaging for the determination of cerebral aneurysm rupture risk The goal of this research is to develop a high-resolution structural imaging method for imaging cerebral artery walls that is capable of discriminating rupture-prone from benign aneurysms.			
2007-2009	PI	Department Bridge Funding MFEL Research	\$120,000
Portable Smart Needle Device The goal of this research is to construct a miniature, battery-powered optical frequency domain imaging system for guidance of needle placement during vascular access.			
2007-2009	PI	Department Bridge Funding MFEL Research	\$120,000
Laser Speckle Imaging for Tissue Perfusion The goal of this project is to develop a laser speckle hand-held imaging system for determining depth-resolved tissue perfusion.			
2007-2009	PI	Department Bridge Funding MFEL Research	\$120,000
Simultaneous Fluorescence Lifetime, Excitation, and Emission Imaging The goal of this research is to develop a novel Fourier fluorescent technique for determining excitation, emission, and lifetime properties of biological samples.			

2007-2009	PI	Department Bridge Funding MFEL Research Laser Speckle Imaging for Evaluating Compartment Syndrome The goal of this project is to create a portable imaging device for diagnosing the early stages of compartment syndrome, prior to the occurrence of irreversible ischemia.	\$120,000
2007-2010	PI	National Institutes of Health STTR w/Physical Sciences Inc. Research 1R43CA114896 Smart Optical Probe for Guidance of Fine Needle Biopsy Validation of an optical method for improving the diagnostic yield of fine needle biopsy.	\$38,117
2007-2010	PI	Center for Innovative Minimally Invasive Technology (CIMIT) Research 200A052999 Program Leadership Award for Optical Diagnostics This fund supports Dr. Tearney's efforts to manage CIMIT's Optical Diagnostics Program	\$25,000
2007-2012	PI	National Institutes of Health Research R21EB007718-03 Miniature Laser Therapy Endoscope The goal of this project is to further research on effective ablation therapy through the development of an integrated miniature imaging/laser-ablation probe.	\$1,177,316
2008-2009	PI	Center for Innovative Minimally Invasive Technology Micro-mirror Based 3D-Endoscopy The goal of this project is to investigate the clinical utility of a newly developed MEMS scanning mirror for three-dimensional microscopic imaging inside the body	\$35,861
2008-2009	PI	MGH ECOR Formulaic Bridge Support Research Chemical Analysis of Coronary Atherosclerosis in Patients Development of an Intracoronary Raman Catheter System. This study will develop a state-of-the-art Raman spectroscopy system and 3.0 F intracoronary catheter for the detection of lipid beneath blood.	\$50,000
2008-2010	PI	Olympus Medical Research, Clinical Study Optical Frequency Domain Imaging of Gastrointestinal and Pulmonary Tracts The goal of this project is to determine the applications of endoscopic optical frequency domain imaging in the gastrointestinal and pulmonary tracts. Clinical feasibility studies will be conducted in the esophagus, bile duct, pancreas, duodenum, liver, and colon.	\$1,360,000
2008-2010	Mentor	National Institutes of Health Research	\$284,310

		K99 CA134920 (Suter)	
		Optical Imaging of the Pulmonary Airways in the Assessment of Lung Cancer The goal of this project is to develop an accurate screening and assessment tool, based on optical frequency domain imaging, for the detection and diagnosis of dysplastic changes and early squamous cell carcinoma within the bronchial mucosa.	
2008-2010	Mentor	National Institute of Health Research K99EB008737 (Peng)	\$180,000
		Density Multiplexed Fluorescence Imaging by Fourier Transform Fourier Transform Fluorometry The goal of this project is to develop a novel Fourier transform fluorescence technique for simultaneously detecting different fluorescent markers with unique excitation, emission, and lifetime properties.	
2008-2012	PI	National Institutes of Health Research R01HL093717-01	\$1,903,396
		Chemical Analysis of Coronary Atherosclerosis in Patients The goal of this project is to develop an intracoronary catheter for measuring the chemical and molecular composition of atherosclerotic plaques in living human patients.	
2008-2013	PI	American Air Liquide Inc. Research	\$1,250,000
		Optical Imaging for Pulmonary Microstructure, Function, and Gas Delivery The goal of this research is to determine the three-dimensional structure and function of mammalian alveoli.	
2009-2010	PI	MGH ECOR Interim Support Funds Research, Clinical Study	\$50,000
		Improving Screening & Surveillance in Barrett's Patients The goal of this project is to utilize probe based Optical Frequency Domain Imaging as a tool for screening and surveillance of patients with Barrett's Esophagus (BE).	
2009-2011	PI	National Institutes of Health Research R21CA141884-01	\$799,298
		Comprehensive Confocal Microscopy for Image Guided Biopsy The goal of this research is to develop and test a novel method for imaging entire epithelial tissue surfaces to diagnose cancer and subsequently mark these locations so that they may be biopsied.	
2010-2013	PI	MGH ECOR Formulaic Bridge Support Research, Clinical Study	\$50,000
		Transnasal Probe for Diagnosing Eosinophilic Esophagitis The goal of this project is to develop a transnasal probe to investigate the clinical utility of using Spectrally Encoded Confocal Microscopy (SECM) for diagnosing Eosinophilic Esophagitis	
2012-2014	PI	Merck Research Laboratories	\$91,872

Research

Intravascular Imaging of Atheroma of Inflammation and Structure

The goal of this project is to conduct microstructural and molecular imaging of rabbit atheroma and evaluate the inflammatory content in response to statin therapy.

2012-2015	Investigator	National Institutes of Health/Brigham and Woman's Hospital (PI: Aikawa) Research 1R01HL114805	\$250,000
		Murine Aortic Valve Micro-calcification Imaging Ex Vivo with 1- μ m Resolution OCT Develop temperature-controlled sample chamber for μ OCT imaging of the aortic valves ex vivo.	
2014-2016	PI	Collage Medical Imaging Research	\$240,000
		Needle-based Imaging Device for Comprehensive Microscopic Imaging of the Prostate The goal of this study is to develop a needle-based imaging device for comprehensive microscopic imaging of the prostate.	
2015-2017	PI	Ardea Biosciences Research	\$381,400
		Polarization Sensitive μ OCT for Uric Acid Crystal Detection in Coronary Arteries The major goals of this project are to construct a polarization-sensitive version of high-resolution Micro-Optical Coherence Tomography (μ OCT) that will enable the assessment of negatively birefringent uric acid crystals in fresh, unfixed cadaver coronary arteries, and utilize the technology to determine the prevalence of uric acid crystals in human coronary plaque <i>ex vivo</i> .	
2003-2017	PI	National Institutes of Health Research, Clinical Study R01CA103769-10	\$1,508,848
		Improving Screening and Surveillance in Barrett's Patients The goal of this project is to expand the current diagnostic capabilities of OCT, develop a standalone imaging method for systematically evaluating the distal esophagus, and test these new methods for screening and surveillance in patients.	
2004-2017	PI	National Institutes of Health (NHLBI) Research, Clinical Study R01HL076398	\$2,212,849
		Natural History of Vulnerable Coronary Plaques The goal of this project is to expand the current diagnostic capabilities of OCT to investigate the incidence, prevalence, and natural history of vulnerable plaques and determine the morphologic predictors of acute myocardial infarction	
2012-2017	PI	MGH Research Scholars Research	\$500,000

The goal of this research is to design and fabricate devices for imaging at nanoscale resolution within the body.

2012-2017	MPI	University of Alabama Research 1R01HL116213	\$2,080,197
		Functional Anatomic Imaging of CF Patients with Early Lung Disease Using μ OCT The major goals of this project are to develop a portable high-resolution μ OCT system for imaging the respiratory epithelium.	
2013-2017	PI	Air Force Office of Scientific Research (AFOSR) Research FA9550-13-1-0068	\$350,000
		Light-enhanced Portable Ultrasound for Early Management of Hemorrhagic Shock.	
<i>Current</i>			
2008-2019	PI	Cystic Fibrosis Foundation Research 2007A052878	\$430,066
		Development of Optical Coherence Tomography for Measuring of Mucociliary Clearance The goal of this project is to develop a high-resolution imaging modality for assessing respiratory epithelia cilia and the periciliary layer in Cystic Fibrosis patients in vivo.	
2008-2018	PI	Wellman Center for Photomedicine Internal Funding Photopathology / Microscopy Core Dr. Tearney is the director of Wellman Center's Photopathology and Microscopy core laboratory. The core laboratory provides histopathology and advanced microscopy services to Wellman Center investigators.	\$449,684
2017-2018	PI	iLumen Medical Research Endoscopic Imaging System The goal of this project is to develop an endoscope attachment that enables visualization of the luminal organ with a 360-degree angle field of view.	\$955,000
2012-2018	PI	Canon Research Ultraminiature Endoscope The goal of this project is to develop the world's smallest endoscopes for a variety of clinical applications.	\$1,939,900
2012-2021	PI	Canon Research Next Generation Molecular-microstructural Arterial Imaging System and Catheter The goal of this project is to design, fabricate and test a multimodality imaging for microstructural and molecular imaging of the coronary artery wall in vivo.	\$2,176,900
2011-2018 (NCE)	PI	National Institute of Health Research	\$3,602,339

R01DK091923

Transnasal Probe for Diagnosing Eosinophilic Esophagitis

The goal of this proposal is to provide an accurate and inexpensive diagnostic tool for Eosinophilic Esophagitis.

2013-2020	Investigator	National Institutes of Health/NHLBI (Parrish) Research 1U54HL119145-01 Boston Biomedical Innovation Center To establish the regional Boston Center for Accelerated Innovation in Therapeutics, Devices and Diagnostics for Heart, Lung, Blood, and Sleep Disorders (B-BIC, or the Boston Biomedical Innovation Center)	\$24,439
2014-2019	PI	National Institutes of Health Research NIH R01CA184102 Natural History of Barrett's Esophagus Using Capsule Endomicroscopy The goal of this study is will significantly contribute to the knowledge of Barrett's Esophagus (BE), allowing us to answer longstanding questions about its microscopic definition, its progression and clinical significance, and the effectiveness of ablative BE therapies.	\$3,417,402
2015-2019	PI	Bill & Melinda Gates Foundation Research, Clinical Study Capsule endoscopy for visualization and biopsy of the small intestine in children with Environmental Enteric Dysfunction (EED) The goal of this study is to provide a minimally invasive means for obtaining detailed information on infantile intestinal tissue that is needed for the development of effective EED interventions.	\$3,758,812
2014-2019	PI	National Institutes of Health Research NIH R01DK100569 Celiac Disease Diagnosis using Tethered Capsule Endomicroscopy The major goals of this project are to develop and clinically validate a novel, swallowable capsule that conducts spectrally-encoded confocal microscopy (SECM) to provide an accurate tissue diagnosis of celiac disease.	\$3,826,085
2016-2020	PI	National Institutes of Health Research NIH R01EB022077 In Vivo Laser Capture Microdissection The major goals of this project are to develop a new biopsy technology that obtains microscopic images of entire organs, identifies specific sites of diseased tissue based on tissue microstructure, and isolates these tissues by adhering them to the device in vivo.	\$2,669,293
2016-2018	MPI	Vertex Pharmaceuticals Research, Clinical Study	\$899,300

Phase 4, 2-part Exploratory Study to Assess the Feasibility of Using μ OCT and to Evaluate the Effect of Lumacaftor in Combination with Ivacaftor on the Nasal Epithelium Using μ OCT in Subjects With CF Who Are Homozygous for the F508del-CFTR Mutation
The major goal of this project is to utilize μ OCT compare measurements of nasal mucociliary clearance in CF subjects upon Orkambi administration.

2016-2018	PI	DL Meditech Research, Clinical Study	\$331,400
Light-enhanced transesophageal echocardiography (leTEE) The major goal of this project is to develop and clinically translate a photoacoustic esophageal probe that is capable of non-invasively measuring mixed venous oxygen saturation and pulmonary artery pressure.			
2014-2018	Investigator	National Institutes of Health (Jaffer) Research NIH R01HL122388	\$845,976
NIRF-OFDI of Inflammation in Atheroma Progression and Stent Complications The major goals of this project are to conduct preclinical studies using OCT-NIRF to study arterial pathology in diseased animal models.			
2016-2018	PI	American Partnership for Eosinophilic Disorders Research	\$50,000
Development of a small SECM endoscopic capsule for diagnosing EoE in children The goal of this work is to develop a small, swallowable, tethered capsule that can visualize esophageal eosinophils in vivo and diagnose eosinophilic esophagitis (EoE) in children.			
2018-2023	PI	John and Dotti Remondi Family Foundation Research	\$1,500,000
Primary Care Innovative Technologies Research Fund The primary goal of this work is to develop new technologies for primary care screening for esophageal cancers.			
2013-2017	PI	Wellman Discovery Fund Research	\$115,000
Tethered capsule endomicroscopy guided duodenal juice sampling for pancreatic cancer screening The primary goal of this work is to develop a swallowable, capsule-based technology for sampling pancreatic fluids.			
2014-2018	Investigator	National Institutes of Health (Rowe) Research NIH R01HL105487	\$556,008
Molecular Pathogenesis and Phenotype of Acquired CFTR Dysfunction in COPD The major goal of this project is to develop and utilize μ OCT to characterize mucociliary clearance diseased Ferret models of COPD.			

2017-2023	Subcontract PI	National Institutes of Health (Rowe) Research NIH R35HL135816 Translational Program in CFTR-Related Airway Diseases The major goals of this project are to provide technical support to the existing μ OCT technology in Rowe laboratory and Improve and develop μ OCT image processing and analysis software.	\$840,000
2016-2018 (NCE)	Subcontract PI	National Institutes of Health (Solomon) Research NIH R41HL130207 In Vitro Human Models for Individualized Response to CFTR Modulators The major goal of this project is to generate new computer methods and algorithms to quantify the function of cultured ciliated airway cells to minimize manual input for the purpose of improving throughput of measuring functional responses to CFTR modulator drugs.	\$65,561
2018-2023	PI	National Institutes of Health Research NIH R01HL140498 Unique Value of Real-time Shear Stress to Enhance Coronary Disease Management The major goal of this project is to generate new a new catheter-based technology for measuring coronary endothelial shear stress in the cardiac catheterization lab.	\$3,934,409
2018-2019	PI	Boston Scientific Company Research Tethered Capsule Tissue Capture and Microbiome Collection The major goal of this project is to develop a capsule-based technology for isolating targeted tissue while retaining micromorphology.	\$329,900
2018-2020	Project 4 PI	Air Force Office of Scientific Research Research Intravascular 3D Printing for Bleeding Control The major goal of this project is to develop a non-invasive technology for 3D printing devices in blood vessels.	\$600,000

Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs)

Wellman Center for Photomedicine, Massachusetts General Hospital, Harvard Medical School

1997- 50 (graduate students, postdoctoral, clinical fellows)	Wellman Tutorial Lecture Series	Lecturer	10 hours
2001- 50 (graduate students, postdoctoral, clinical fellows)	Wellman Photomedicine Lecture Series	Lecturer	10 hours
2002- 50 (graduate students, postdoctoral, clinical fellows)	Optical Diagnostics Tutorial Series	Lecturer	10 hours

2007- Wellman-HST Biomedical Optics Summer Institute
 30 (undergraduate students) Lecturer 5 hours

Laboratory and Other Research Supervisory and Training Responsibilities

Wellman Center for Photomedicine, Massachusetts General Hospital, Harvard Medical School

1997- Supervision of undergraduate, graduate, post- Daily mentorship since 2001
 doctoral research fellows

Formally Supervised Trainees

1997-1999 Stefan Brand, M.D. Staff gastroenterologist, University of Munich

Co-author on three manuscripts, one as first author (Endoscopy).

1998-2000 John Ponerros, M.D. Associate Professor, Columbia University Medical Center

Co-author on four manuscripts, two as first author (Gastroenterology and Gastrointestinal Endoscopy).

1998-2000 Kelly Schlendorf Emory Medical School Graduate

Co-author on four manuscripts.

1998-2003 George Asimellis, Ph.D. Scientist, Philips Electronics North America

As first employee of Tearney lab, assisted in developing first imaging probes.

1999-2001 Dong-Heon Kang, M.D., Ph.D. Staff cardiologist, Saint Mary's Medical Center, Seoul, Korea

Co-author on three manuscripts.

1999-2011 Milen Shishkov, Ph.D. Senior Research Scientist, Harvard Medical School

Co-author on twenty-two manuscripts. He has become one of the leading experts on developing optical imaging probes.

2000-2002 Chris Kauffman University of Indiana Medical School Graduate

Co-author on four manuscripts.

2000-2002 Hiroshi Yabushita, M.D. Staff cardiologist, Kinki University School of Medicine, Osaka, Japan

Co-author on four manuscripts, one as first author (Circulation).

2000-2005 Nicusor Iftimia, Ph.D. Leader of Biomedical Optical Technologies at PSI, Physical Sciences, Inc,

Co-author on thirteen manuscripts, three as first author (JBO, Optics Express, Rev. Sci. Instr.).

2001-2002 Costas Pitris, M.D., Ph.D. Associate Professor, EECS, Cyprus University

First author on one manuscript (Optics Express), graduated with honors from HMS.

2001-2002 Tina Helg, Ph.D. Post-doctoral Associate, University of

- Texas, Austin
- Co-author on one manuscript.
- 2001-2003 Masamichi Takano, M.D. Staff cardiologist, Nippon Medical School, Tokyo, Japan
- Co-author on five manuscripts. First author on a book chapter (Handbook of Vulnerable Plaque).
- 2002-2007 Caroline Boudoux, Ph.D. Professor, Director of Laboratory of Optical Diagnosis and Imaging, Polytechnique Montreal
- Co-author on seven manuscripts, three as first author.
- 2002-2007 Dvir Yelin, Ph.D. Associate Professor, Technion
- Co-author on fourteen manuscripts, nine as first author, one publication in Nature.
- 2002-2007 Alyx Chau, B.S. Graduate Student, EECS, MIT
- Co-author on four manuscripts, two as first author (JBO, Annals of Biomedical Engineering).
- 2002-2005 Briain MacNeill, M.D. Practicing Cardiologist, Galway Clinic
- Co-author on five manuscripts, two as first author (JACC and J. Nuclear Cardiology).
- 2003-2005 Andy Yun, Ph.D. Professor, Harvard Medical School
- Co-author on twenty-seven manuscripts, eight as first author, one publication in Nature Medicine.
- 2003-2006 Raymond Chan, Ph.D. Research Scientist, Philips Medical
- Co-author on five manuscripts, one as first author (Optics Express).
- 2003-2007 Ronit Yelin, Ph.D. Research Scientist, Technion
- Co-author on three manuscripts, one as first author (JBO).
- 2003-2008 Jason Motz, Ph.D. Research Scientist, Physical Sciences, Inc.
- Co-author on six manuscripts, one as first author (Optics Letters).
- 2003-2008 Seemantini Nadkarni, Ph.D. Associate Professor, Harvard Medical School
- Co-author on six manuscripts, five as first author, including Circulation and JACC.
- 2003-2009 Brian Goldberg, Ph.D. Principal Systems Engineer, Axsun Technologies
- Co-author on two manuscripts, one as first author (JBO).
- 2003- W. Matthew White, M.D. ENT Physician, NYU Langone
- Co-author on four manuscripts.
- 2003- John Evans, M.D. Gastroenterologist, Ochsner Medical Center
- Co-author on four manuscripts, two as first author.

- 2004-2008 Benjamin Vakoc, Ph.D. Associate Professor, Harvard Medical School
Co-author on nineteen manuscripts, four as first author.
- 2004-2009 William Oh, Ph.D. Associate Professor, Korea Advanced Institute of Science and Technology (KAIST)
Co-author on fifteen manuscripts, seven as first author.
- 2005-2007 Adrien Desjardins, Ph.D. Assistant Professor, University College, London
Co-author on thirteen manuscripts, four as first author.
- 2005- Alberto Bilenca, Ph.D. Scientist, Ben Gurion University
Co-author on ten manuscripts, five as first author.
- 2005- Melissa Suter, Ph.D. Assistant Professor, Harvard Medical School
Co-author on five manuscripts, two as first author (Gastrointestinal Endoscopy). Recipient of NIH K99/R00 award.
- 2005-2008 Leilei Peng, Ph.D. Assistant Professor, University of Arizona
First author on two manuscripts (Optics Express and Optics Letters). Recipient of NIH K99/R00 award.
- 2006-2007 Aydogan Ozcan, Ph.D. Professor, UCLA
Co-author on six manuscripts, three as first author, including Nano Letters.
- 2006- Patrick Yachimski, M.D. Gastroenterologist, Vanderbilt Medical Center
- 2006- Lida P. Hariri, MD, Ph.D. Instructor in Pathology, Massachusetts General Hospital
Co-author on four manuscripts, all as first author.
- 2007-2009 Priyanka Jillela, Ph.D. Graduate Student, University of Arizona
Co-author on one manuscript.
- 2007-2008 Amneet Gulati, Ph.D. Graduate Research Student, MIT
- 2007-2008 Max Colice, Ph.D. Technology Specialist, Hamilton, Brook, Smith and Reynolds
Co-author on one manuscript.
- 2007-2009 Lisa Bartlett Contract Analyst, Advisory Board Co.
Co-author on one manuscript.
- 2007-2017 Dong-Kyun Kang, Ph.D. Assistant Professor, University of Arizona
Co-author on eighteen manuscripts, eight as first author.

2007-2008	Michael Choma, M.D., Ph.D.	Associate Professor, Yale University
Co-author on two manuscripts, both as first author.		
2008-2008	Kendall Bate	Undergraduate Student, New York University
Established SOP's for intracoronary OCT core lab.		
2008-2010	Jing Yuan, Ph.D.	Post-doctoral Associate, Huazhong University of Sci. & Tech. (HUST)
First author on one manuscript		
2008-2012	Hongki Yoo, Ph.D.	Assistant Professor, Hanyang University, Korea
Co-author eight manuscripts, two as first author		
2008-2012	Linbo Liu, Ph.D.	Assistant Professor Nanyang Technological University
Co-author on fourteen manuscripts, three as first author, including Nature Medicine.		
2009-2010	Eman Namati, Ph.D.	VP, Product Development NinePoint Medical
Co-author on five manuscripts.		
2009-2011	Jacqueline Namati, Ph.D.	Director Center Development, Center for Biomedical OCT Research
2009-2012	Parama Pal, Ph.D.	Robert Bosch Centre for Cyber Physical Systems
2009-	Atsushi Tanaka, M.D.	Professor, Wakayama Medical University
Co-author on ten manuscripts, two as first author.		
2009-2015	Hao Wang, Ph.D.	Associate, Chinese FDA
Co-author on eight manuscripts, one as first author		
2009-2012	William Warger, Ph.D.	Research Scientist, Thor Labs
Co-author on four manuscripts.		
2010-2012	Christine Fleming, Ph.D.	Associate Professor, Department of Electrical Engineering Columbia University
Co-author on one manuscript as first author.		
2010-2012	Emmanuel Coron, M.D. Ph.D.	Associate Professor, University Hospital Nantes
Co-author on four manuscripts, one as first author.		
2010-2012	Simon Schlachter, Ph. D.	Clinical Systems Engineer, NinePoint Medical
Co-author on two manuscripts, one as first author.		

2010-2013 Paulino Vacas Jacques, Ph. D.

Co-author on two manuscripts

2010- Michalina Gora, Ph. D.

Assistant Research Professor,
University of Strasbourg

Co-author on eight manuscripts, four as first author, including one paper in Nature Medicine and one in Gastroenterology.

2011- Li Li, Ph.D.

Research Scientist, Massachusetts
General Hospital

2011-2013 Ehsan Hamidi, Ph.D.

Research Design Engineer, Intel Corp.

Co-author on four manuscripts.

2011-2012 Yaron Bromberg, Ph.D.

Postdoctoral Fellow, Yale University

Co-author on two manuscripts.

2012-2013 Tzahi Grunzweig, Ph.D.

Research Scientist, KLA Tencor Corp.

2012-2016 Ali Fard, Ph.D.

Research Scientist, Zeiss

Co-author on five manuscripts, one as first author.

2012-2013 Dora Juan Juan Hu, Ph.D.

Research Fellow, Imperial College

2012-2014 Nima Tabatabaei, Ph.D.

Assistant Professor, York University

Co-author on five manuscripts, one as first author.

2012-2015 Kengyeh (Ken) Chu, Ph.D.

Postdoctoral Fellow, Duke University

Co-author on nine manuscripts, two as first author.

2012-2013 Huan Ma, Ph.D.

Instructor, Nanyang Technological
University

2012-2013 Tao Wu, Ph.D.

Co-author on six manuscripts.

2010-2012 Kevin Gallagher

Graduate Student, Carnegie Mellon
University

Co-author on five manuscripts

2010-2013 Lauren Kava, B.S.

Medical Student, Wayne State School
of Medicine

Co-author on three manuscripts.

2011-2013	Eric Wilsterman, B.S.	Graduate Student, University of Massachusetts (Worcester)
	Co-author on six manuscripts.	
2011-2012	Bradford Diephuis, M.S.	Medical Student, Harvard Medical School
	Co-author on three manuscripts.	
2011-2013	Drew Carlton, B.S.	Medical Student, Hofstra University
	Co-author on one manuscript.	
2013-	Kanwarpal Singh, Ph.D.	Postdoctoral Fellow
	Co-author on two manuscripts, one as first author	
2013-2017	Timothy Ford, Ph.D.	Senior Systems Engineer, Axsun Technologies
	Co-author on two manuscripts.	
2013-2015	Giovanni Ughi, Ph.D.	Principal Scientist, Genuity
	Co-author on nine manuscripts, three as first author	
2013-2014	Yu Nomura, M.D.	Physician at Shonan Kamakura Hospital
	Co-author on one manuscript	
2010-2015	Carolin Unglert, Ph.D.	Graduate Student at Harvard-MIT Health Sciences and Technology
	Co-author on three manuscripts, two as first author	
2010-2014	Egidijus Aukorius, Ph.D.	Postdoctoral Fellow, INSERM
	Co-author on two manuscripts, one as first author	
2011-2014	Manabu Kashiwagi, M.D.	Cardiologist at Wakayama Medical University
	Co-author on two manuscripts, one as first author	
2012-2014	Minkyu Kim, M.S.	Graduate Research Student, Tokyo University
	Co-author on four manuscripts, one as first author	
2013-2014	Melissa Haskell, B.S.	Graduate Student, Harvard Biophysics
2013-2016	Diana Mojahed, B.S.	Graduate Student, Columbia University

2013-2014	Elena Quijano, B.S.	Graduate Student at Boston University
2013-2014	Andrew Quinn, M.D.	Staff Pathologist, Texas Southwestern
2013-2014	Timothy Vogel, M.D.	Visiting Scientist, University of Cincinnati
2013-2014	Lara Wurster, M.S.	Graduate Student, Vienna
2014-	Jing Dong, Ph.D.	Postdoctoral Fellow
Co-author on one manuscript.		
2014-2015	Christopher Garcia, M.D.	Pathology Fellow
2014-2016	Edouard Gerbaud, M.D.	Cardiologist, University of Bordeaux
Co-author on four manuscripts, one as first author.		
2014-	Chia-Pin Liang, Ph.D.	Postdoctoral Fellow
2014-	Biwei Yin, Ph.D.	Postdoctoral Fellow
Co-author on three manuscripts, two as first author.		
2014-	Mohini Lutchman, Ph.D.	Lecturer, Harvard Medical School
2015-2016	Dongyao Cui	Manager of Strategy Department at Country Garden, Nanyang Technological University
Co-author on five manuscripts, one as first author.		
2015-2015	Sanaz Alali, Ph.D.	Senior Design Engineer, ASML
2015-2015	Wolfgang Trasischker, Ph.D.	Consultant, McKinsey & Company
2015-2016	Dukho Do, Ph.D.	Postdoctoral Fellow
Co-author on one manuscript.		
2015-2015	Sabrina Lohmann, B.S.	Graduate Student, University Lübeck
2015-	Barry Vuong, Ph.D.	Postdoctoral Fellow
2015-	Kanwarpal Singh, Ph.D.	Postdoctoral Fellow

Co-author on four manuscripts, two as first author.

2015-2017 Rohith Reddy, Ph.D. Assistant Professor, University of Texas, Houston

Co-author on two manuscripts.

2016-2017 Yogesh Verma, Ph.D. Postdoctoral Fellow

2016- Adel Zeidan, Ph.D. Postdoctoral Fellow

2016-2017 Marine Lachenal, B.S. Graduate Student

2016- Hannah Levardon, B.S. Graduate Student

2016-2017 Lucille Queneherve, M.D. Gastroenterologist, University of Nantes Medical Center

Co-author on two manuscripts, one as first author.

2016- Huimin Leung, Ph.D. Postdoctoral Fellow

Co-author on four manuscripts.

2016- David Otuya, Ph.D. Postdoctoral Fellow

Co-author on one manuscript, as first author.

2016- Kensuki Nishimiya, M.D. Clinical Fellow

2016- Zhonglie Piao, Ph.D. Postdoctoral Fellow

2016- Gargi Sharma, Ph.D. Postdoctoral Fellow

Co-author on two manuscripts.

2017- Hany Osman, M.D. Clinical Fellow

2017- Omair Shakil, M.D. Clinical Fellow

2017- Anna Kimchenko, Ph.D. Postdoctoral Fellow

2017- Susan Yoon, B.S. Graduate Student

2017- Jiheun Ryu, Ph.D. Postdoctoral Fellow

Co-author on two manuscripts.

2017- Xiupin Wu, B.S. Graduate Student

Formal Teaching of Peers (e.g., CME and other continuing education courses)

2000-2001	Endoscopic Management of Tumors of the Upper Aerodigestive Tract	
2002	Clinical Applications of Optical Coherence Tomography	Partners Health Care
2003	Thrombosis and Thromboembolism: New Strategies for Improved Patient Care	Partners Health Care
2013	Imaging the Vulnerable Plaque	Partners Health Care
2013	Quantitative Medicine	Massachusetts General Hospital
2014	Translational Cardiovascular Research	Harvard Catalyst
2014	Medical Device Development	Harvard Catalyst
2014	In-vivo Microscopy	College of American Pathologists
2014	Frontiers in Medicine	Harvard-MIT Health Sciences and Technology
2015-	Introduction to IVM: Interpretation for Pathologists	College of American Pathologists

Local Invited Presentations

Prof. Tearney has presented over 100 local invited presentations.

Report of Regional, National and International Invited Teaching and Presentations

Prof Tearney has presented over 500 local, regional, national and international talks.

Report of Clinical Activities and Innovations

Current Licensure and Certification

2001- Board Certification, Anatomic Pathology

Practice Activities

Since completion of his residency in 2001, Dr. Tearney has devoted 100% effort to research.

Report of Technological and Other Scientific Innovations

Greater than 700 patents filed, and over 100 US patents issued.

Report of Scholarship

Peer-Reviewed Publications in print or other media

Research investigations

1. Kenet RO, Herrold EM, Hill JP, Wong KK, **Tearney GJ**, Borer JS. Coronary luminal morphology: Reconstruction from digital angiograms. *American Journal Cardiac Imaging* 1990;4:11-19.

2. Bouma BE, **Tearney GJ**, Boppart SA, Hee MR, Brezinski ME, Fujimoto JG. High resolution optical coherence tomographic imaging using a mode locked Ti:Al₂O₃ laser. *Optics Letters* 1995;20:1486-88.
3. Fujimoto JG, Brezinski ME, **Tearney GJ**, Boppart SA, Bouma BE, Hee MR, Southern JF, Swanson EA. Biomedical imaging and optical biopsy using optical coherence tomography. *Nature Medicine* 1995;1:970-72.
4. **Tearney GJ**, Brezinski ME, Southern JF, Bouma BE, Hee MR, Fujimoto JG. Determination of the refractive index of highly scattering human tissue by optical coherence tomography. *Optics Letters* 1995;20:2258-60.
5. Boppart SA, Brezinski ME, Bouma BE, **Tearney GJ**, Fujimoto JG. Investigation of developing embryonic morphology using optical coherence tomography. *Developmental Biology* 1996;177:54-63.
6. Boppart SA, Bouma BE, Brezinski ME, **Tearney GJ**, Fujimoto JG. Imaging developing neural morphology using optical coherence tomography. *Journal of Neuroscience Methods* 1996;70:65-72.
7. Bouma BE, **Tearney GJ**, Bilinsky IP, Golubovic B, Fujimoto JG. A self-phase-modulated Kerr-lens-modelocked Cr:forsterite laser source for optical coherence tomography. *Optics Letters* 1996;21:1839-41.
8. Brezinski ME, **Tearney GJ**, Bouma BE, Izatt JA, Hee MR, Swanson EA, Southern JF, Fujimoto JG. Optical coherence tomography for optical biopsy: properties and demonstration of vascular pathology. *Circulation* 1996;93:1206-13.
9. Brezinski ME, **Tearney GJ**, Boppart SA, Bouma BE, Hee MR, Swanson EA, Southern JF, Fujimoto JG. High-resolution vascular imaging with optical coherence tomography. *Journal of the American College of Cardiology* 1996;27:29.
10. Brezinski ME, **Tearney GJ**, Bouma BE, Boppart SA, Hee MR, Swanson EA, Southern JF, Fujimoto JG. Imaging of coronary artery microstructure with optical coherence tomography. *The American Journal of Cardiology* 1996;77:92-93.
11. Sadhwani A, Schomacker KT, **Tearney GJ**, Nishioka NS. Determination of Teflon thickness with laser speckle. I. Potential for burn depth diagnosis. *Applied Optics* 1996;35:5727-35.
12. **Tearney GJ**, Boppart SA, Bouma BE, Brezinski ME, Weissman NJ, Southern JF, Fujimoto JG. Scanning single-mode fiber optic catheter-endoscope for optical coherence tomography. *Optics Letters* 1996;21:1-3.
13. **Tearney GJ**, Bouma BE, Boppart SA, Golubovic B, Swanson EA, Fujimoto JG. Rapid acquisition of in vivo biological images by use of optical coherence tomography. *Optics Letters* 1996;21:1408-10.

14. **Tearney GJ**, Brezinski ME, Boppart SA, Bouma BE, Weissman NJ, Southern JF, Swanson EA, Fujimoto JG. Catheter-based optical imaging of a human coronary artery. *Circulation* 1996;94:3013.
15. Boppart SA, Bouma BE, Pitris C, **Tearney GJ**, Fujimoto JG. Forward-scanning instruments for optical coherence tomographic imaging. *Optics Letters* 1997;22:1618-20.
16. Bouma BE, Nelson LE, **Tearney GJ**, Jones DJ, Brezinski ME, Fujimoto JG. Optical coherence tomographic imaging at 1.55 μm and 1.8 μm using Er-and Tm-doped fiber sources. *Journal of Biomedical Optics* 1997;3:76-79.
17. Brezinski ME, **Tearney GJ**, Boppart SA, Swanson EA, Southern JF, Fujimoto JG. Optical biopsy with optical coherence tomography, feasibility for surgical diagnostics. *Journal of Surgical Research* 1997;71:32-40.
18. Brezinski ME, **Tearney GJ**, Weissman NJ, Boppart SA, Bouma BE, Hee MR, Weyman AE, Swanson EA, Southern JF, Fujimoto JG. Assessing atherosclerotic plaque morphology: comparison of optical coherence tomography and high frequency intravascular ultrasound. *Heart* 1997;77:397-403.
19. Golubovic B, Bouma BE, **Tearney GJ**, Fujimoto JG. Optical frequency domain reflectometry using rapid wavelength tuning of Cr⁴⁺ forsterite laser. *Optics Letters* 1997;22:1704-06.
20. Boppart SA, **Tearney GJ**, Bouma BE, Southern JF, Brezinski ME, Fujimoto JG. Noninvasive assessment of the developing xenopus cardiovascular system using optical coherence tomography. *Proceedings of the National Academy of Sciences* 1997;94:4256-61.
21. **Tearney GJ**, Bouma BE, Fujimoto JG. Phase and group delay relationships for the phase control rapid-scanning optical delay line. *Optics Letters* 1997;22:1811-13.
22. **Tearney GJ**, Brezinski ME, Bouma BE, Boppart SA, Southern JF, Fujimoto JG. Optical biopsy in human gastrointestinal tissue using optical coherence tomography. *American Journal of Gastroenterology* 1997;92:1800-1804.
23. **Tearney GJ**, Brezinski ME, Bouma BE, Boppart SA, Pitris C, Southern JF, Fujimoto JG. In vivo endoscopic optical biopsy with optical coherence tomography. *Science* 1997;276:2037-9.
24. **Tearney GJ**, Brezinski ME, Bouma BE, Boppart SA, Southern JF, Fujimoto JG. Optical Biopsy in human urologic tissue using optical coherence tomography. *Journal of Urology* 1997;157:1913.
25. Boppart SA, Bouma BE, Pitris C, **Tearney GJ**, Southern JF, Brezinski ME, Fujimoto JG. Intraoperative assessment of microsurgery with three-dimensional optical coherence tomography. *Radiology* 1998;208:81-86.
26. Brezinski ME, **Tearney GJ**, Bouma BE, Boppart SA, Pitris C, Southern JF, Fujimoto JG. Optical biopsy with optical coherence tomography. *Annals of the New York Academy of Sciences* 1998;838:64-8.

27. Fujimoto JG, Bouma BE, **Tearney GJ**, Boppart SA, Pitris C, Southern JF, Brezinski ME. New technology for high-speed and high-resolution optical coherence tomography. *Annals of the New York Academy of Sciences* 1998;838:95-107.
28. Pitris C, Brezinski ME, Bouma BE, **Tearney GJ**, Fujimoto JG. High resolution imaging of the upper respiratory tract with optical coherence tomography. *American Journal of Respiratory and Critical Care Medicine* 1998;157:1640-44.
29. **Tearney GJ**, Webb RH, Bouma BE. Spectrally encoded confocal microscopy. *Optics Letters* 1998;23:1152-54.
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31. Bouma BE, **Tearney GJ**. Power efficient, non-reciprocal interferometer and linear scanning fiber-optic catheter for optical coherence tomography. *Optics Letters* 1999;24:531-33.
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34. Brand S, Ponerros JM, Bouma BE, **Tearney GJ**, Compton CC, Nishioka NS. Optical coherence tomography in the gastrointestinal tract. *Endoscopy* 2000;32:796-803.
35. **Tearney GJ**, Jang IK, Kang DH, Aretz HT, Houser SL, Brady TJ, Schlendorf KH, Shishkov M, Bouma BE. Porcine coronary imaging in vivo by optical coherence tomography. *Acta Cardiologica* 2000;55:233-7.
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37. Jang IK, **Tearney GJ**, Bouma BE. Visualization of tissue prolapse between coronary stent struts by optical coherence tomography (OCT): Comparison with intravascular ultrasound. *Circulation* 2001;104:2754.
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39. Jang IK, Bouma BE, Kang DH, Park SJ, Park SW, Seung KB, Choi KB, Shishkov M, Schlendorf KH, Pomerantsev E, Houser SL, Aretz HT, **Tearney GJ**. Visualization of coronary atherosclerotic plaques in patients using optical coherence tomography. *Journal of the American College of Cardiology* 2002;39:604-09.

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45. Iftimia N, Bouma BE, **Tearney GJ**. Speckle reduction in optical coherence tomography by "path length encoded" angular compounding. *Journal of Biomedical Optics* 2003;8:260-63.
46. Pitris C, Bouma BE, Shishkov M, **Tearney GJ**. A GRISM-based probe for spectrally encoded confocal microscopy. *Optics Express* 2003;11:120-24.
47. **Tearney GJ**, Jang IK, Bouma BE. Evidence of cholesterol crystals in atherosclerotic plaque by optical coherence tomographic (OCT) imaging. *European Heart Journal* 2003;24:1462.
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50. Yelin D, Bouma BE, Iftimia N, **Tearney GJ**. Three-dimensional spectrally encoded imaging. *Optics Letters* 2003;28:2321-3.
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52. Yun SH, **Tearney GJ**, de Boer JF, Iftimia N, Bouma BE. High-speed optical frequency-domain imaging. *Optics Express* 2003;11:2953-63.
53. White B, Pierce M, Nassif N, Cense B, Park B, **Tearney GJ**, Bouma BE, Chen T, de Boer JF. In vivo dynamic human retinal blood flow imaging using ultra-high-speed spectral domain optical Doppler tomography. *Optics Express* 2003;11:3490-7.

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Books/Textbooks for the medical or scientific community

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Letters to the Editor

1. Baim D, Brady TJ, Casscells SW, Dunne M, Fayad Z, Fuster V, Gazelle S, Heldman A, Hatsukami T, Kinlay S, Lafont A, Lee R, Libby P, Meier B, Muller JE, Naghavi M, O'Donnell C, Perin E, Rekhter M, Rumberger J, Russell M, Schwartz R, Selwyn A, Strauss HW, **Tearney GJ**, Tomaru T, Tuzcu EM, Wasserman B. Thoughts on the role of the healing professions and the events of September 11, 2001. *Circulation*. 2002;105:1509-10.
2. **Tearney GJ**, Yabushita H, Houser SL, Aretz HT, Jang IK, Schlendorf KH, Kauffman CR, Shishkov M, Halpern EF, Bouma BE. Thermography to detect inflamed macrophage-rich plaques - Response. *Circulation* 2003;107:e112-13.

Thesis

1. **Tearney GJ**. Optical characterization of human tissues using low coherence interferometry [Master's dissertation]. Cambridge (MA): Massachusetts Institute of Technology; 1995.
2. **Tearney GJ**. Optical biopsy of in vivo tissue using optical coherence tomography [Doctoral dissertation]. Cambridge (MA): Massachusetts Institute of Technology; 1997.
3. **Tearney GJ**. Spectral encoding for confocal microscopy [MD honors dissertation]. Boston (MA): Harvard Medical School; 1998.

Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings:

(Over 500 abstracts presented at scientific meetings)

Narrative Report

My research interests are primarily focused on the development and validation of non-invasive, high-resolution optical imaging methods for disease diagnosis. I have conducted research to develop and establish a new imaging modality, termed "optical coherence tomography" (OCT), which provides cross-sectional images of tissue architectural microstructure at a resolution of 10 μm . I was the first to perform human imaging in the coronary arteries and gastrointestinal tract with this method, and my laboratory has imaged over 1000 patients to date. We have also recently developed a capsule that once swallowed, grabs three-dimensional microscopic images of the entire upper gastrointestinal tract. Additionally, I have developed a form of endoscopic confocal microscopy that can obtain images of entire luminal organs at a resolution of 1.0 μm . Images obtained by OCT and endoscopic confocal microscopy may be used to guide biopsies during screening procedures and may potentially allow for primary diagnosis at tissue sites where excisional biopsies are difficult to obtain. In my work, I have developed many other technologies, including an ultraminiature three-dimensional endoscope, a highly efficient form of near field scanning optical microscopy (NSOM), and other novel fluorescence spectroscopy and imaging techniques. I have successfully transitioned many of my inventions into the commercial sector.

My training as a pathologist has complemented my research by providing a foundation for the interpretation of images obtained by these new, non-invasive diagnostic modalities. During my research tenure, I have formed many collaborations within the Massachusetts General Hospital (MGH). These collaborations involve pathologists, clinicians, physicists and engineers, and include clinical studies in the fields of Gastroenterology, Cardiology, Pulmonology, and Otolaryngology. My work extends beyond MGH, as I currently direct multicenter, national, and international clinical studies to validate technologies developed in my laboratory. In addition, I have recently founded the International Working Group on Intracoronary OCT Standardization and Validation and the CAP In Vivo Microscopy Committee, groups that are dedicated to ensuring the widespread adoption of these imaging technologies.

With respect to teaching, I have actively participated in the development of a program to increase graduate student participation at the Wellman Center for Photomedicine. I have supervised Ph.D. theses research of many graduate students and have supervised M.D. honors theses conducted by Harvard Medical School students. Additionally, I helped found the graduate course on biomedical optics at MIT in the HST program (HST .569), was a co-director for the HST Human Pathology course (HST .035) and am a lecturer for the Wellman Biomedical Optics Summer Program. I also teach on the national level, including CME courses, training courses for interpreting optical images, and numerous presentations to the lay public relating the benefits of our imaging technology to health care.