CURRICULUM VITAE **Date prepared:** July 10-2018

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Place of Birth: New York, New York

Education:

1978	S.B.	Massachusetts Institute of Technology (Electrical Engineering and Computer Science)
1978	S.B.	Massachusetts Institute of Technology (Life Sciences: Applied Biology)
1979	S.M.	Massachusetts Institute of Technology (Bioelectrical Engineering)
1983	M.D.	Harvard Medical School
1984	Ph.D.	Massachusetts Institute of Technology (Medical Engineering and Medical Physics)

Postdoctoral Training:

Internship and Residency:

1984-1987 First, Second and Third Year Resident Physician
Brigham and Women's Hospital, Boston, MA

Clinical and Research Fellowships:

1984-1987 Clinical Fellow in Medicine, Harvard Medical School, Boston, MA
1987-1989 Research Fellow in Medicine, Harvard Medical School, Boston, MA
1987-1989 Research/Clinical Fellow in Medicine, Harvard Medical School, Boston, MA

Licensure and Certification:

1985 Diplomate, National Board of Medical Examiners
1987 Diplomate, American Board of Internal Medicine

1987	Massachusetts License Registration
1991	Diplomate, American College of Cardiology
1992	Fellow, American College of Cardiology
1998	Fellow, Cuncil on Arteriosclerosis, Thrombosis and Vascular Biology, American Heart Association

Faculty Academic Appointments:

1989-1991	Instructor in Medicine, Harvard Medical School, Boston, MA
1991-1995	Assistant Professor of Medicine, Harvard Medical School, Boston, MA
1993-1996	Hermann von Helmholtz Assistant Professor, Harvard-M.I.T. Division of Health Sciences and Technology, MIT, Cambridge, MA
1994	Senior Fellow, Program in Advanced Biological Sciences, Harvard Medical School, Boston, MA
1995-2005	Associate Professor of Medicine, Harvard Medical School, Boston, MA
1996-1997	Thomas D. and Virginia W. Cabot Associate Professor of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA
1997-2000	Associate Professor with tenure, Massachusetts Institute of Technology, Cambridge, MA
2000-Present	Thomas D. and Virginia W. Cabot Professor of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA
2005-Present	Professor of Medicine, Harvard Medical School, Boston, MA
2017-Present	Adjunct Professor, Tufts Clinical and Translational Science Institute, Boston, MA
2018-Present	Adjunct Professor Biomedical Engineering, NUI Galway, College of Engineering and Informatics, Ireland
2018-2023	Edward J. Poitras Professor in Medical Engineering and Science, Institute for Medical Engineering and Science, Massachusetts Institute of Technology

Hospital or Affiliated Institution Appointments:

1989-2006	Associate Physician, Brigham and Women's Hospital, Boston, MA
2006-Present	Senior Physician, Brigham and Women’s Hospital, Boston, MA
2006-2007	Director, ECI Laboratory, Brigham and Women’s Hospital, Boston, MA
2013-present	Consulting Staff, Dana Farber Cancer Institute, Department of Medical Oncology, Boston, MA

Other Professional Positions and Major Visiting Appointments:

1974-1979	Engineering Associate, MITRE Corporation, Bedford, MA
1985-1989	Visiting Scientist, Departments of Applied Biology and Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA
1985-1989	Associate in Engineering, Center for Biomedical Engineering, Massachusetts General Hospital, Boston, MA

2005-Present	Visiting Professor, Norwegian University of Science and Technology, Department of Biology
2007-Present	Member, Scientific Advisory Committee, MIT-Spain Collaborative Research Program

Hospital and Health Care Organization Service Responsibilities:

1989-Present	Attending Physician, Samuel Levine Coronary Care Unit
1989-Present	Reader electrocardiograms
1989-Present	Attending Physician, Cardiothoracic Surgical Service

Major Administrative Assignments:

1993-Present	Director, Harvard-MIT Biomedical Engineering Center
1998-Present	Chair, Harvard Medical School, Faculty and Fellows Internal Grant Program
2013-Present	Director, MIT Clinical Research Center
2015-2016	Director, Harvard-MIT Division of Health Sciences and Technology
2014-Present	Associate Director, Boston Biomedical Innovation Center (B-BIC)
2018-Present	Director, Institute for Medicine, Science and Engineering (IMES)

Major Committee Assignments:

National and Regional:

Year	Name of Committee	Role	Institution
1984-Present			Controlled Release Society
1991-Present			American Heart Association
1991-Present			American College of Cardiology
1994	Outcomes Based Clinical Research Committee		Society for Biomaterials
1997-2009	ASTM-F4 Committee		Co-Chairman on Interventional Devices
2005	NHLBI-Specialized Center for Clinically Oriented Research External Advisory Committee		The Children's Hospital of Philadelphia
2008	External Review Committee, Weldon School of Biomedical Engineering		Purdue University
2008-2010	Planning Committee Cancer, Stem Cell Biology and		Institute of Medicine of the

	Transplantation Interest Group(IG 13)	National Academies
2011-2014	Science Board of the Food and Drug Administration	Food and Drug Administration
2011	ORISE (Oak Ridge Institute for Science and Education) Fellowship	Food and Drug Administration - Entrepreneur-in-Residence
		Member Strategic Team
2014-present	Fritz J. and Dolores H. Russ Prize Committee	National Academy of Engineering

Academic:

Year	**Name of Committee**	**Role**	**Institution**
1974-1979	Committee on Educational Policy		Dept. of Electrical Engineering, M.I.T.
1979-1985, 1991-1993	Committee on Curriculum		Harvard-M.I.T. Division of Health Sciences and Technology
1984	Committee on Skills, New Pathway Program		Harvard Medical School
1992-present	Board of Advisors		Harvard-M.I.T. Division of Health Sciences and Technology
1993	Joint Faculty Committee		Harvard-M.I.T.
1993-1994, 1998-1999,	Search Committee		Harvard-M.I.T. Division of Health Sciences and Technology
1993-1997	Curriculum Committee		M.I.T. Program in Biomedical Engineering
1995-2007	Admissions Committee		Harvard-M.I.T. Medical Engineering/Medical Physics Program
1995-1999	Executive Board (Dept.)		M.I.T., Center for Biomedical Engineering
1997-2000	Lemelson Prize Selection Committee (Inst.)		M.I.T.

Year	Name of Committee	Role	Institution
1997	Executive Committee		Center for Innovation and Minimally Invasive Technology
1997	Committee on the Formation of the Division of Bioengineering and Environmental Health		School of Engineering
1997-present	Faculty Fellowship, Faculty of Medicine Committee		Harvard Medical School
1997-2000	HST/DEAS Bioengineering Committee		Harvard University
1998-2010	Committee on Biological Sciences (UCBS)		Harvard University
1999-present	Faculty Committee		Harvard-M.I.T. Division of Health Sciences and Technology
1999-2010	Board of Directors		M.I.T. Hillel Foundation
2000-2005	HMS Faculty Fellowship Subcommittee		Harvard Medical School
2000	Advanced Biomedical Sciences Program Committee		Harvard Medical School
2000-2005	The Schepens Eye Research Institute Scientific Advisory Board		Harvard Medical School
2003	Ad Hoc Faculty Search Committee: Biomedical Engineering		Harvard University
2005-present	MD Admissions Committee		Harvard-MIT Division of Health Sciences and Technology
2005, 2011	Admissions Committee		Massachusetts Institute of Technology
2005-present	Committee On Assessment of Biohazards		Massachusetts Institute of Technology
2005-present	Committee on Animal Care		Massachusetts Institute of Technology
2006-present	HMS Faculty Fellowship	Chair	Harvard Medical School

Year	Name of Committee	Role	Institution
2006	Ad Hoc Faculty Search Committee: Children's Hospital		Harvard Medical School
2006-present	Howard Hughes Medical Institute Graduate Education In Medical Science (GEMS)	Program Director	Massachusetts Institute of Technology
2007 - 2008	Clinical and Translational Science Centers, "Scientific Incubator Subcommittee		Harvard Medical School
2007 - 2008	Harvard University Bioengineering Planning Group		Harvard University
2007 – 2008	Harvard Medical School Executive Planning Tools and Technologies subcommittee	Co-Chair	Harvard Medical School
2008	Faculty Search Committee		Harvard University School of Engineering and Applied Sciences
2008	Search Committee for Director of the Vascular Biology Program		Children's Hospital Boston, Harvard Medical School
2009-present	Committee on the Use of Humans as Experimental Subjects		Massachusetts Institute of Technology
2009-2012	SEAS/Wyss Senior Faculty Search Committee in Engineered Biomaterials		Harvard University
2012-present	MEMP Board of Advisors		MIT
2013-present	Chair, FDA Outreach Committee		MIT
2013-present	President's Initiative on Innovation		MIT
2013-present	IMES Faculty Search Committee		MIT
2014-present	Harvard-MIT MD-PhD Program		Harvard and MIT
2016	Interim co-Director HST		MIT
2017-present	NAE Grand Challenge Scholars Program Steering Committee		National Academy of Engineering and MIT
	MIT Digital Medicine Steering		

Year	Name of Committee	Role	Institution
2017-present	Committee		MIT

Study Section:

1993	Swiss National Science Foundation
1994	National Institutes of Health - Technology and Applied Sciences
1994-present	Israel Science Foundation
1996	National Institutes of Health - Cardiovascular-A
1998-2002	American Heart Association - Cardiovascular Physiology & Pathophysiology
1999-2002	Massachusetts Affiliate, American Heart Association
1999-2003	American Heart Association – Affiliate Consortia Northeast 1 Research Peer Review Group
2002	National Institutes of Health – Chairman, Bioengineering Research Partnership Review
2004	National Institutes of Health—Reviewer, Bioengineering Science and Technology 50
2004	CVS J 50—Reviewer and Chairman, Cardiovascular Tissue Engineering Bioengineering Research Partnership Study Section
2006	National Institutes of Health—Reviewer, International and Cooperative Projects-1 Council
2012	National Institutes of Health—Reviewer, Gene and Drug Delivery (GDD) Study section
2013-present	National Institutes of Health—Reviewer, Gene and Drug Delivery (GDD) Study section, February
2013	American Heart Association--Bioengineering BSc2 Study section, April
2013	National Institutes of Health—Special Emphasis Panel, coded ZRG1 SBIB-X(02), June
2013-present	National Institutes of Health—Surgical Sciences, Biomedical Imaging and Bioengineering IRG (SBIB)
2016-present	National Institutes of Health—ZRG1 BDCN-W: Neurovirology, Neuroimmunology, Neurodevelopmental Disorders, and Anticancer Drugs

Professional Societies:

American Association of Physicians
American College of Cardiology
American Heart Association
American Institute for Medical and Biological Engineering
American Society of Clinical Investigators
American Society of Mechanical Engineers
Association of University Cardiologists
Controlled Release Society
Institute of Medicine
National Academy of Engineering

Society for Biomaterials

Community Service Related to Professional Work:

Editorial Boards:

2009-present	Acta Biomaterialia	Ad Hoc Reviewer
2006-Present	Acute Cardiac Care Journal	Editorial Board
2011-present	Advanced Materials	Ad Hoc Reviewer
1991-present	Am Heart Journal	Ad Hoc Reviewer
1990-Present	American Journal of Cardiology	Ad Hoc Reviewer
1988-Present	American Journal of Medicine	Ad Hoc Reviewer
2000-present	American Journal of Physiology	Ad Hoc Reviewer
2003-present	American Society of Nephology	Ad Hoc Reviewer
2010-present	Angiogenesis	Ad Hoc Reviewer
1988-Present	Annals of Biomedical Engineering:	Ad Hoc Reviewer
2010-present	Annals of Epidemiology	Ad Hoc Reviewer
1996-Present	Arteriosclerosis, Thrombosis and Vascular Biology	Ad Hoc Reviewer
1989-Present	Biomaterials	Editorial Board
2014-present	Biomaterials Research	Associate Editor
2006-Present	Biomedical Materials	Ad Hoc Reviewer
1994-Present	Biophysical Journal	Ad Hoc Reviewer
2010-present	Cancer Research	Ad Hoc Reviewer
2002-present	Cardiovascular Pathology	Ad Hoc Reviewer
1994-Present	Cardiovascular Radiation Medicine	Ad Hoc Reviewer
1999-Present	Cardiovascular Radiation Medicine	Editorial Board
2002-present	Cardiovascular Revascularization Medicine	Ad Hoc Reviewer
1996-Present	Catheterization and Cardiovascular Diagnosis	Ad Hoc Reviewer
1993-Present	Chest	Ad Hoc Reviewer
1998-Present	Circulation	Editorial Board
1989-Present	Circulation Research	Ad Hoc Reviewer
2009-present	Circulation, Intervention	Ad Hoc Reviewer
2000-present	CRT	Ad Hoc Reviewer
1995-Present	Drug Delivery	Editorial Board
2018-Present	eLife	Editor
2000-present	Elsevier	Ad Hoc Reviewer
2010-present	emedicine.com	Ad Hoc Reviewer
2010-present	Eurointervention	Ad Hoc Reviewer
2010-present	European Journal Of Cancer	Ad Hoc Reviewer
2007-present	Experimental cell Research	Ad Hoc Reviewer
1999-Present	Frontiers in Interventional Cardiology	Ad Hoc Reviewer
2009-present	heart.org	Ad Hoc Reviewer
2007-present	IOS Press	Ad Hoc Reviewer
2014-present	Journal of American College of Cardiology	Editorial Board
1989-Present	Journal of American Medical Association	Ad Hoc Reviewer
2000-present	Journal of Biomechanics	Ad Hoc Reviewer

1987-Present	Journal of Biomedical Materials Research	Ad Hoc Reviewer
2004-Present	Journal of Cardiac Failure	Ad Hoc Reviewer
2004-Present	Journal of Clinical Investigation	Editorial Board
1988-Present	Journal of Controlled Release	Ad Hoc Reviewer
2003-present	Journal of Histochemistry and Cytochemistry	Ad Hoc Reviewer
1989-present	Journal of Pharmaceutical Sciences	Ad Hoc Reviewer
2009-present	Journal of Royal Society Interface	Ad Hoc Reviewer
1996-Present	Journal of the American College of Cardiology	Ad Hoc Reviewer
2008-present	Journal of Theoretical Biology	Ad Hoc Reviewer
2009-present	Journal of thrombosis and hemostasis	Ad Hoc Reviewer
1999-Present	Journal of Vascular Research	Editorial Board
2000-present	Journal of Vascular Surgery	Ad Hoc Reviewer
1993-Present	Macromolecules	Ad Hoc Reviewer
2009-present	Medical Engineering & Physics	Ad Hoc Reviewer
1990-Present	Nature	Ad Hoc Reviewer
1999-Present	New England Journal of Medicine	Ad Hoc Reviewer
1985-present	Pharmacologic Research	Ad Hoc Reviewer
2010	PLOS-ONE	Ad Hoc Reviewer
1990-Present	Proceedings of the National Academy of Sciences	Ad Hoc Reviewer
2015-present	Regenerative Engineering and Translational Medicine	Editorial Board
1996-Present	REMEDICA	Editorial Board
2004-Present	SABioscience	Ad Hoc Reviewer
1990-Present	Science	Ad Hoc Reviewer
2009-2011	Science Translational Medicine	Senior advisor
2011-present	Science Translational Medicine	Chief Scientific Advisor
2000-present	Seminars in Immunology	Ad Hoc Reviewer
1990-Present	The Lancet	Ad Hoc Reviewer

Awards and Honors:

1973-1974	Harvard Book Prize Telluride Scholarship - semifinalist Citation of the Secretary of the Commonwealth of Massachusetts for Excellence in State Funded Research
1978	M.I.T. Undergraduate Research Opportunities Program Citation Research Excellence
1979	Sigma Xi
1980-1981	Kleberg Foundation Scholar in Health Sciences and Technology
1982-1983	Soma Weiss Award, Harvard Medical School
1983	*Cum laude* graduate, Harvard Medical School
1984-1985	Surdna Fellowship Award, M.I.T.
1989	Inaugural Address, 350th anniversary the University of Helsinki
1989-1991	Grant-in-Aid, American Heart Association

1989-1994	Physician-Scientist Award, National Institutes of Health
1990	Syntex Scholar Finalist
	Visiting Professor, Dept. of Vascular Surgery, Northwestern Medical School
1991	Katz Award, American Heart Association, Finalist
1992	Marcus Award, American Heart Association
1993-1996	Hermann von Helmholtz Chair, MIT
1993-1995	Johnson and Johnson Foundation Grant
1993-1996	Whitaker Foundation Young Investigator Grant in Biomedical Engineering
1994	Cardinal and Gray Lecturer, MIT
1994-1997	Whitaker Foundation Special Opportunity Award in Biomedical Engineering
1994-2002	Perivascular Drug Delivery, NIH-NIGMS (grant # 1R01-GM49039-06)
1994-1999	Burroughs Welcome Award in Experimental Therapeutics
	Development of the MIT Quantitative MICR
1995	Academic Research Infrastructure Grant, NSF, (grant # NSF BIR-9512316)
1996-1997	Thomas D. & Virginia W. Cabot Chair, MIT
1997	Tenure, MIT
1997	John F. and Virginia B. Taplin Award
1997	Tau Beta Pi Leonardo Da' Vinci Lecturer
1998	Honorary Member, Israel Society of Interventional Cardiology
1998	Visiting Professor, Thomas Jefferson University Hospital
1999-2002	Diabetes Mellitus and Vascular Repair, AHA: Established Investigator Award, (grant # AHA9940449U)
1999	Simon Dack Visiting Professor, Mount Sinai School of Medicine
1999	Visiting Professor, University of Pennsylvania, Institute of Medicine
1999-2004	Biology of Tissue Engineered Endothelial Implants
	NIH/NIGMS (grant # NIH 1R01HL60407-01A1)
2000	First Place, V.I.R. Category, National Society for Histotechnology Poster Session Special Recognition Award
2000	Thomas A. McMahon Mentoring Award, Harvard University / Massachusetts Institute of Technology Division of Health Sciences and Technology
2001	Fellow, American Institute for Medical and Biological Engineering
2001	Member, American Society for Clinical Investigation
2001	Hermann Lecturer and Visiting Professor, Dept. of Medicine, University of Texas, Galveston
2002	Scholar, Academy at Harvard Medical School
2005	Visiting Professor, Norwegian University of Science and Technology, Department of Biology-Molecular/Cellular
2005	Distinguished Speakers in Bioengineering, University of Toronto, Institute of Biomaterials and Biomedical Engineering.
2006	American Society for Testing and Materials (ASTM) Joseph S. Barr Award
2006	Fellow, Institute of Medicine, National Academies of Science
2007	Feigenbaum/Levine Lecture, Beth Israel Deaconess Hospital
2007-2008	A. Clifford Barger Excellence in Mentoring Award
2008	Hellenic Atherosclerosis Association 4th Scientific Conference Manuscript Recognition Award, Thessaloniki, Greece (Circulation 2008 117:993-1002)

2008	European Society of Cardiology Young Investigator Award (Y Chatzizisis et al, Circulation 2008 117:993-1002)
2008	Ioannis Vlyssidis Award, Academy of Athens (Circulation 2008 117:993-1002)
2009	Jeffrey M. Hoeg Arteriosclerosis, Thrombosis and Vascular Biology Award for Basic Science and Clinical Research
2009	European Society of Cardiology Young Investigator-Working Group Award (Y Chatzizisis et al Circulation 2011 123:621-30)
2010	Officer's Cross of the Civil Merit from the Spanish Government
2011	European Atherosclerosis Society Award for Best Paper in Clinical Research (Circulation 2011 123(6):621-630)
2011	Atherosclerosis Society of Northern Greece Award for Best Abstract of non-Hellenic origin (Koskinas KC et al. Book of Abstracts p. 36)
2011	Nominee, Harvard Medical School Donald O'Hara Faculty Prize for Excellence in Teaching (Years I & II)
2011	Plenary Lecture, American Society of Mechanical Engineering Annual meeting
2011	Dean's Distinguished Lecture, The Fu Foundation School of Engineering and Applied Science, Columbia University, New York, New York
2011	Lewis Katz Visiting Professorship in Cardiovascular Research, Columbia University
2011	European Society of Cardiology Young Investigator Award (M. Papafaklis et al European Heart Journal 2011 Abstract Supplement 32:156)
2011	Visiting Professor, Yale University
2012	Hollingsworth Distinguished Lecturer, University of Texas at Austin, Department of Biomedical Engineering, Cockrell School
2012	Fellow, National Academy of Engineering
2012	Fellow, American Association of Physicians
2012	Fellow, Association of University Cardiologists
2013	Keynote Address, Society for Biomaterials, 2013 Annual Meeting & Exposition, Boston, MA
2013	Keynote Address, 11th International Congress on Medical Librarianship, the 7th International conference of Animal Health Information Specialists and the 6th International Clinical Librarian Conference
2014	Clemson Award for Basic Research, The Society For Biomaterials
2014	Fellow, American Academy of Arts and Sciences
2014	Lifetime Achievement Award, International Conference on Innovation
2015	Fellow, National Academy of Inventors
2015	Dean's Distinguished Lecture, Weill-Cornell Medical School
2015	Massimo Calabresi Lecturer, Yale University
2015	Flexner Discovery Lecturer, Vanderbilt University Medical Center
2015	Keynote Lecture, Ninth course: Health Care Technological Innovation - From Idea to Commercialization, Tel Aviv University
2016	Plenary Lecture, Irish Royal Society, Galway, Ireland
2016	FDA/ Office of Regulatory Affairs (ORA) Honor Award - FDA/MIT Collaborative Stent Research Team

2016	Simon Dack Memorial Lecture, Mount Sinai School of Medicine Anandi L. Sharma Visiting Professorship, Mount Sinai School of Medicine
2016	Plenary speaker Woodrow Wilson Innovaton Mexico Summit, Boston
2016	Plenary speaker, MIT-Portugal Program, MassBio - Massachusetts Biotechnology Council
2017	Plenary presentation, Annual Meeting of the American Institute for Medical and Biological Engineering (AIMBE). National Academy of Sciences
2017	TCT Career Achievement Award, Cardiovascular Research Foundation
2018	Distinguished Scientist Award 2018, American College of Cardiology
2018	Giulio Natta Medal in Chemical Engineering 2018, Department of Chemistry, Materials and Chemical Engineering "Giulio Natta" of Milan Polytechnic
2018-2023	Edward J. Poitras Professor in Medical Engineering and Science, Institute for Medical Engineering and Science, Massachusetts Institute of Technology

Research, Teaching, and Clinical Contributions:

A. Narrative report

Prof. Edelman holds tenured faculty appointments in the Department of Medicine at Harvard Medical School, and in the Division of Health Sciences and Technology at the Massachusetts Institute of Technology. He is the director of the Harvard-MIT Biomedical Engineering Center and of MIT's Clinical Research Center, and the current occupant of the Thomas D. and Virginia W. Cabot Chair at MIT.

Elazer R. Edelman received Bachelors and Master's degrees in Electrical Engineering from the Massachusetts Institute of Technology, an M.D. degree with distinction from Harvard Medical School, and then his Ph.D. in Medical Engineering and Medical Physics from the Harvard-Massachusetts Institute of Technology Division of Health Sciences and Technology. His doctoral thesis concentrated on the definition and characterization of polymeric controlled drug release systems. After receiving his degrees he completed an internship and residency in Internal Medicine and fellowship in Cardiovascular Medicine, all at the Brigham and Women's Hospital in Boston. He is a fellow of the American College of Cardiology and currently serves as one of the Core Attending Physicians in the acute coronary care unit at the Brigham and Women's Hospital.

Prof. Edelman's research interests combine his scientific and medical training. His work integrates multiple disciplines including polymer based controlled and modulated drug delivery; growth factor biology and biochemistry; tissue engineering; biomaterials-tissue interactions and the vascular response to injury. He uses elements of continuum mechanics, digital signal processing and polymeric controlled release technology to examine the cellular and molecular mechanisms that produce accelerated atherosclerosis and transform stable coronary artery disease to unstable coronary syndromes. With this as a foundation the Edelman laboratory set the way for the development and optimization of most of the clinically approved bare metal and drug-eluting endovascular stents. His work on angiogenesis includes basic studies of endothelial cell and vascular biology, computational modeling of vessel formation, and creation and use of controlled angiogenic factor release devices in clinical trials. His most recent publications have focused on how tissue engineered cells might be used for the local delivery of growth factors and growth

inhibitors in the study of the vascular homeostasis and repair, cancer invasiveness and metastases and the homology between endothelial paracrine and angiocrine regulation in cancer and vascular diseases.

He has mentored more than 330 graduate students and postdoctoral fellows. Among Dr. Edelman's most important accomplishments are marrying his wife Cheryl, and surviving the increasingly adventurous childhood and young adulthood of his three boys, Alex, A.J. and Austin, which includes coaching their Bantam hockey team.

Dr. Edelman's research program falls in a variety of general categories:

POLYMER-BASED CONTROLLED AND MODULATED DRUG DELIVERY

Standard means of drug administration are unacceptable for the newer classes of drugs and many experimental compounds. Polymer-based controlled drug delivery is used to obtain sustained and modulatable drug delivery. There is a particular focus on the design and development of such systems, mathematical modeling of transport from these systems and the in vivo use of these devices in understanding their impact and potential use in a variety of disease states.

VASCULAR BIOLOGY, GLYCOBIOLOGY, and GROWTH FACTOR BIOCHEMISTRY

The endogenous analog of local drug delivery involves natural signaling within tissues and between cells. Accordingly the Edelman laboratory has for some many years defined cell-cell interactions, and especially the forces that determine and drive autocrine, paracrine and endocrine growth control. Polypeptide growth factors and their associated proteoglycan binding proteins have been shown to play a primary role in the physiology of normal cells and tissues. In addition, it has become increasingly appreciated that these factors may play a significant role in the pathophysiology of many diseases. Natural storage, binding, stabilization and release of these factors are being examined in hopes of understanding growth factor biology and how different diseases are affected by these growth mediators.

From this perspective the Edelman laboratory has defined the nature of endothelial cell control of vascular smooth muscle cells and monocyte-endothelial interaction with special attention to the local regulation of angiogenic growth factors and associated proteoglycans.

TISSUE ENGINEERING

The findings in vascular biology stimulated studies at defining tissue physiology on the one hand and in harnessing these insights to create synthetic constructs that possess bioregulatory function. Tissue engineering of vascular cells allows both for a controlled means of examining complex issues in tissue repair and as potential novel therapeutic modalities. Dr. Edelman uses the science of tissue engineering to examine whether mechanical structure must be completely recapitulated to regain full biochemical function of an injured blood vessel. In particular, he and his colleagues investigate the linkage between the mechanical and biochemical aspects of endothelial cell function. They have already shown that the endothelial cells need not reside at the luminal interface for the endothelium to impose its biochemical control on the artery. In this regard they have continued to use the complex architecture of the blood vessel wall, the controlled vascular injury induced by implantation of endovascular devices and their knowledge of cell and molecular vascular biology to examine autocrine and paracrine growth control. Of the most intriguing findings are that the form and nature of the supporting extracellular matrix – native and

synthetic – allows endothelial cells to not only become immune tolerated but also immunomodulatory. Preclinical findings have now been validated in five phase I and II clinical trials where tissue engineered allogenic endothelial cells have staved off vasoproliferative disease without engendering an immune response.

Most recently Edelman and his students have extended the angiocrine view of cancer control. They have shown now how endothelial state governs cancer invasiveness and metastases just as it does control of vascular repair. The have defined a spectrum of endothelial states – quiescent cells which offer structural support, reparative cells which inhibit cancer growth and metastases just as they control smooth muscle cell proliferation and intimal hyperplasia, and dysfunctional endothelial cells which promote these processes. Working with colleagues at the Brigham and Women's Hospital benchtop and animal experiments have been validated in clinical specimens.

BIOMATERIALS - TISSUE INTERACTIONS

Increasingly mechanical interventions and composite devices are being used to deal with complex disease. Using innovations in material science the Edelman laboratory has defined a set of materials with tissue specific adhesion, regulated cohesion and the highest form of contextual biocompatibility. Polymer based drug delivery systems, image analysis, molecular and cell biology, and histo- and immunocytochemistry are used to more fully appreciate the role of locally expressed growth mediators in the pathobiology of the tissue repair. Bench top work with isolated cells in culture or cells grown on synthetic materials is verified in models of disease of increasing complexity, including a range from small rodents to large animals.

DEVICE BIOLOGY

Edelman and his students have used their findings and resources in vascular biology and immunology, materials science and pharmacology to define the cardiovascular reactivity to implanted devices. Indeed, their basic work paved the way for modern endovascular stents and their drug-eluting counterparts and more recently endovascular valve-stents. Edelman's work served as the basis for regulatory guidelines and standards in this field.

TEACHING and CLINICAL WORK

Prof. Edelman is involved in a wide range of teaching programs at the Massachusetts Institute of Technology, Harvard Medical School, Harvard University and the Brigham and Women's Hospital. He directs HST090, Cardiovascular Pathophysiology, a 15 unit required course for all medical and graduate students in the Harvard-MIT Division of Health Sciences and Technology. This course uses a mechanistic focus and leverages quantitative sciences to explain fundamental physiology and applied pathology of the heart and vascular system. Instruction emphasizes hemodynamics, electrophysiology, gross pathology and clinical correlates of cardiovascular function in health and a variety of disease states. Special attention is given to congenital, valvular, myocardial, and arteriosclerotic coronary heart disease. The case method is emphasized in tutorial sessions. There is extensive use of computers in accessing data bases and in quantitative modeling of the circulation. Prof. Edelman also serves for 6-8 weeks per year as the teaching attending in the Levine Cardiac Unit, the cardiovascular intensive care unit of the Brigham and Women's Hospital. This ten bed unit provides clinical care for the most acutely ill patients with cardiovascular diseases in the hospital including advanced heart failure, cardiogenic shock, complicated myocardial infractions, refractory electrophysiologic disorders and complex

congenital heart disease in the adult. Dr. Edelman directs the care of these patients and the clinical teaching of seven house officers, clinical fellows in cardiovascular medicine and nurses and pharmacists. The latter involves education in the basic biology and physiology of disease, the practical means of caring for intensive and acutely ill patients and the technical and procedural aspects of such care including placement of central lines, pulmonary artery catheters, temporary pacemakers, and intraortic balloon devices, pericardial and pleurocentesis, and ventilator management.

Prof. Edelman is also Program Director of the MIT Graduate Education in Medical Sciences (GEMS) sponsored by HHMI, intended to provide graduate students at MIT with deep exposure to clinical sciences and applied biology. He routinely lectures as well in a range of MIT and Harvard Courses.

B. Funding Information:

1989-1997	Advanced Cardiovascular Systems	PI	Vascular Response to Endovascular Stents
1989-1991	American Heart Association: Massachusetts Affiliate Grant-in-Aid	PI	Vascular Response of Injury: Controlled Adventitial Heparin Delivery
1989-1994	National Institutes of Health: Physician Scientist Program Award	PI	Vascular Response of Injury: The Effects of the Controlled Release of Anti-proliferative Agents and Oxygen Free-Radical Scavengers
1992-1994	Glycomed, Inc.	PI	Adventitial control of vascular injury
1993-1995	Zynaxis, Inc.	PI	Cell Biology of Linker Compounds
1993-1995	Johnson and Johnson Foundation Grant	PI	
1993-1996	Whitaker Foundation Grant in Biomedical Engineering	PI	Controlled release of growth factors
1994-1999	Burroughs Welcome Fund	PI	Experimental Therapeutics Scholar Award
1995-1998	Whitaker Foundation Special Opportunities Grant	PI	Center for Biomedical Engineering Teaching Facility

1994-2002	R01, National Institutes of Health (grant # NIH 5R01-GM49039)	PI	Perivascular Drug Delivery
1995-1998	NSF Infrastructure Development Grant	PI	Quantitative Microscopy and Imaging Networks
1997-1998	Whitaker Foundation Grant in Biomedical Engineering	PI	Tissue engineered endothelial implants
1997-1998	Taplin Development Award	PI	Harvard/M.I.T. Biomedical Engineering Center
1997-1999	Center for Innovative and Minimally Invasive Technologies	PI	Smart Catheter
1999-2001	National Science Foundation	PI	
1999-2003	American Heart Association	PI	Established Investigator Award
2001-2005	DuPont-MIT Alliance Grant	Co-PI	A Biological Wireless Link
2001-2003	SCIOS/Nova	PI	Modulation of Kinase Signaling
2003-2004	Johnson and Johnson/MIT	PI	FKBP Binding Kinetics
1999-2003	R01, National Institutes of Health (grant # NIH 1R01HL60407-01A1)	PI	Biology of Tissue Engineered Endothelial Implants
2003-2006	R01, National Institutes of Health (grant # NIH HL67246	PI	Tissue and Cellular Pharmacodynamics of Vascular Growth
2008-2009	Center for Integration of Medicine and Innovative Technology	PI	High Throughput Flow System for the Generation of Thrombotic Fingerprints
2006-2009	DuPont-MIT Alliance Grant	PI	Bioadhesive Sealants
2007 – 2009	MIT Deshpande Center for Integration of Medicine and Innovative Technology	PI	Pericardial Inotropic Drug Delivery
2009-2011	R01 Supplement, National Institute of Health (grant # NIH R01HL049039)	PI	Vascular Drug Delivery

2010	Center for Integration of Medicine & Innovative Technology	PI	Tissue Engineering Therapies for Inhalation Injury
2010-2011	Deshpande Center for Technological Innovation	PI	Tissue Specific Adhesive Materials
2010-2011	Harvard Catalyst Pilot Grant	PI	Matrix Embedded Endothelial Cells for Vascular Therapy
2011- 2012	Medtronic Inc.,	PI	Implications of Valve Frame Fracture
2011-2017	Atrium Medical Corp	PI	Mechanistic Basis for Novel Drug Eluting Stents,
07/01/2012-05/31/2016	NIH R01GM049039-18	PI	Vascular Drug Delivery
2013-2014	Bonus Cellora	Collaborator	Harnessing the biology of resident adult cardiac stem cells for myocardial regeneration protocols
08/01/2013-12/31/2016	Minnesota Mining & Manufacturing Co. (3M)	PI	Development of Smart and Tunable Topical Adhesive
06/01/2015-04/13/2016	Medtronic Inc.	PI	Calcium Risk Score for Predicting Severe Adverse Events in TAVR
09/01/2014-12/31/2015	Deshphande MIT	PI	Drug-eluting platform device to locally treat pancreatic cancer
05/01/2014-4/30/2016	Queen Mary, University of London	PI	Hydrogel-nanoparticles patches as prophylactic scaffold agents for in vivo local gene/drug delivery in colorectal cancer tumors
07-08-2015-07/07/2016	Center for Integration of Medicine & Innovative Technology	PI	Optimizing tissue engineering therapies for airway injury in the battlefield
05/01/2015-10/31/2015	Harvard Medical School	PI	Clinical Translation Science Award (CTSA) MIT-CCR
01/01/2016 – 04/30/2017	American Heart Association	PI	Quantification and systematic differentiation of impact of paravalvular leaks following aortic valve replacement

Current:

ACTIVE

07/01/2017-05/31/2020	NIH R01GM049039-22	PI	Vascular Drug Delivery
04/19/15 - 09/15/2018	Edwards Life Sciences LLC	PI	Diagnosis and therapy of structural heart disease
11/14/2014 – 11/30/2018	Massachusetts General Hospital	PI	NIRF-OFDI in atheroma and stents
08-01-2015 – 12/31/2017	Boston Scientific	PI	The dynamics of bioerodable scaffolds
04/01/2016 – 03/31/2019	Cardiatis S.A.	PI	Hemodyanmics of multilaminate endovascular aortic grafts
07/01/2015 – 07/14/2018	Brigham & Women's Hospital/NIH	PI	Pilot Study on feasibility of lower extremity transplantation
05/01/2016 – 04/30/2020	Abiomed II	PI	Titrating mechanical support in heart failure
10/01/2016-07/31/2018	B-BIC	PI	Cell-based therapies for airway disease
01/01/2017-12/31/2022	One Brave Idea: AHA, Verily, Aztra Zeneca	PI	Deep Phenotyping in Coronary atherscleros is

PENDING

07/01/2014-06/30/2019	NIH-R01	PI	Vascular Response and Clinical Outcome in Endovascular Therapies
09/01/2015 – 08/31/2020	Mayo Clinic Rochester	PI	Regulatory gene-chemokine networks in the formation of hemodialysis AVF stenosis

C. Report of Current Research Activities:

Bench:

1. Paracrine and autocrine mechanisms of growth control
2. Vascular injury and repair
3. Cell-cell communication within the blood vessel wall
4. Transformation of stable atherosclerotic processes to unstable syndromes

5. Application of biomedical engineering and physics to cell and molecular biology
6. Biology and biochemistry of growth factors
7. Transvascular transport of therapeutic compounds and endogenous growth mediators
8. Controlled drug delivery
9. Tissue engineering
10. Hemodynamics predictors of reeponse to interventional therapies
11. Endothelial cell heterogeneity
12. Self-regulating mechanical support devices

Clinical:

D. Report of Teaching:

1. Local contributions

a. Medical School courses

Harvard-MIT Division of Health Sciences and Technology, Harvard Medical School, Boston

HST-050	*Quantitative Physiology*
1979	Tutor
	25 Medical students
	96 hours/year
HST-010	*Anatomy*
1980-present	Lecturer
	40 Medical and Graduate students
	4 hours/year
HST-090	*Cardiovascular Pathophysiology*
1980, 1982	Tutor
1991-1998	Core faculty member
1999-present	Director
	60 Medical and Graduate students
	60 hours/year
HST-150	*Pharmacology*
1989-1995	Founding and core faculty member
	40 Medical and Graduate students
	60 hours/year
HST-240	*Physician-Scientist Preceptorship*
1989-present	Founding faculty and course director
	40 Medical and Graduate students

required graduation 1 month elective

HST-521 *Biomaterials and Tissue Engineering in Medical Devices*
2005-present *and Artificial Organs*
Lecturer

HST-582 *Biomedical Signal & Image Processing*
2003-present Lecturer

HST-500 *Frontiers in (Bio) Medical Engineering and Physics*
2007-present Lecturer

HST.522J *Biomaterials - Tissue Interactions*
2016 Lecturer

Harvard Medical School, Boston
Metabolism and Function of Human Organ Systems
1988-present Lecturer
125 Medical Students
4 hours/year

Third Year Harvard Medical Student Rotation in Internal Medicine
1989-present 12 Medical Students
4 hours/year

Clinician-Scientist Preceptorship–MIT & HMS Teaching Hospitals
2006-present Graduate Students

Massachusetts Institute of Technology

1976	21.737	English Literature
1977	6.082	Acoustics
1978-1989	6.023J	Quantitative Physiology: Organs and Systems
1984	20.035	Pharmacoengineering
1984	HST-590	Biomedical Engineering
1995-1999	3.081	Materials Science Laboratory

b. Graduate medical courses

1989-1992 Introductory Course for First Year Cardiology Fellows, Brigham and Women's Hospital, Boston
Organizer and Lecturer

20 cardiology fellows, and faculty members
25 hours per year

2011-present — Medical Device Development
Harvard Catalyst progam
Lecturer
200 fellows

c. Local invited teaching presentations

d. Continuing medical education courses

1989-2000 — Cardiovascular Pathophysiology for Engineers and Scientists
Harvard-MIT Division of Health Sciences and Technology, Cambridge, summer professional program
Lecturer
100 engineers and biomedical technology professionals

1985-2005 — Intensive Review of Internal Medicine
Department of Internal Medicine, Brigham and Women's Hospital, Boston
Lecturer and case review
600 internists (Lecturer)

1985-2005 — Intensive Review of Cardiovascular Medicine
Cardiovascular Division, Brigham and Women's Hospital
Lecturer and case review
250 cardiologists/internists (Lecturer)
30 cardiologists/internists (Electrocardiograms)

e. Advisory and supervisory responsibilities in clinical and laboratory settings

1989-Present — Brigham and Women's Hospital, Boston
Coronary Care Unit and Cardiology consult service attending

1995-Present — Postdoctoral research supervisor
4-6 cardiology fellows/year
6-12 post-doctoral fellows/year
6-10 graduate students/year
4-6 medical students/year
4-8 undergraduate students/year

f. Teaching leadership role

1995-Present	Director, Biomedical Engineering Center, Harvard-MIT Division of Health Sciences and Technology
1997-2001	Executive Committee, Center for Innovation and Minimally Invasive Technology, Partner's in Health, Brigham and Women's and Massachusetts General Hospitals
1995-present	Director, HST090, Cardiovascular Pathophysiology
2005-present	Director, MIT Graduate Program of Excellence in Medical Sciences (GEMS), Howard Hughes Medical Institute

g. Names of advisees and trainees

Dates	Name	Current Status
1980-1982	Wayne Rubenstein, M.D.	Neurologist, Park Ridge, IL
1981-1984	John Taylor, M.D.	Practicing Physician
1985-1989	Anthony Fiorino, M.D., Ph.D.	EMF Portfolio Manager, Biotechnology Pequot Capital Management
1986-1988	Robert Silbergleit, M.D.	Assistant Professor, Dept. of Emergency Medicine, University of Michigan
1989-1992	Jonathan Stiber, M.D.	Cardiologist Duke University Medical Center
1990-1992	Oliver Chen, M.D.	Physician-Scientist
1990-1993	Matthew Nugent, Ph.D.	Professor, Biochemistry and Ophthalmology, Boston University School of Medicine
1990-1994	Campbell Rogers, M.D.	Chief Technology Officer, Johnson & Johnson-Cordis Corp. Associate Professor, Harvard Medical School
1991-1992	Afshin Farzenefar, M.D.	Physician-Scientist, United Kingdom
1991-1995	Anthony Patire	Engineer, MIT
1992-1993	Joshua Milner, M.D.	Laboratory of Immunology, NIAID, NIH, Bethesda, MD

Dates	Name	Current Status
1992-1994	Aruna Nathan, Ph.D.	Scientist, Johnson & Johnson
1992-1997	Anna Browne	Technical Assistant
1993-1995	Greg Zaharchuk, Ph.D.	Radiology Fellow, University of California-San Francisco
1993-1997	Iveta Dinbergs, Ph.D.	Assistant Professor, Middlesex Community College
1993-1997	Edward Koo, Ph.D.	Scientific Director, Cardiovascular System Program, GeneLogics
1994	Michael Jacknis	Engineer, Confidential Employer
1994-2006	Philip A. Seifert	Electron Microscopy Specialist, Schepens Eye Research Institute
1994-1996	Larry Brown, Sc.D.	Senior Vice President, Research and Development, EPIC
1994-1996	Martin Sirois, Ph.D.	Associate Professor, Montreal Heart Institute
1994-1997	Richard Han, M.D.	Cardiologist, Private Practice
1995-2000	David Ettenson, Ph.D.	Senior Scientist, Angiotech Pharmaceuticals.
1995-2005	Adam Groothuis, Ph.D.	Vice-President, Mitralign
1995-1998	Sohah Iqbal, M.D.	Interventional Cardiologist, New York University Medical Center
1995-1997	Michael Kjelsberg, M.D.	Cardiologist, Mt. Auburn Hospital; Instructor in Medicine, Harvard Medical School
1995-1997	David Tseng, Ph.D.	Senior Research and Development Engineer, Medtronic AVE, Inc.
1995-1997	James Squire, Ph.D.	Assistant Professor, Electrical Engineering at Virginia Military Institute
1995-1998	Frederick Welt, M.D.	Professor, University of Utah Medical Center

Dates	Name	Current Status
1996-1999	Anthony English, M.D.	Assistant Professor, Biomedical Engineering, University of Tennessee
1996-2001	Joseph Garasic, M.D.	Attending Physician, Cardiology, Massachusetts General Hospital; Instructor in Medicine, Harvard Medical School
1996-1997	James Januzzi, Jr., M.D.	Attending Physician, Cardiology, Massachusetts General Hospital; Associate Professor in Medicine, Harvard Medical School
1996-1997	Stephanie Nonas, M.D.	Fellow, John Hopkins, Division of Pulmonary and Critical Care
1996-1997	Helen Nugent, Ph.D.	Senior Director, Product Development, Pervasis Therapeutics Inc.
1996-1997	Toussaint Smith, M.D.	Cardiologist
1996-1999	Thanh-Nga Tran, Ph.D.	Clinical Fellow, Dermatology, Massachusetts General Hospital
1996-1998	Wade Wan, Ph.D.	Graduate Student, M.I.T
1996-2002	David Wu, M.D., Ph.D.	Resident in Pathology, Brigham and Women's Hospital
1996-2000	Chun Yu, Ph.D.	Senior Scientist, Medtronic, Author and Poet
1997-2000	Douglas Drachman, M.D.	Attending Physician, Cardiology, Massachusetts General Hospital; Professor in Medicine, Harvard Medical School
1997-1999	Omar Elmalak, Ph.D.	Projects Manager, Bio-Rest, Ltd.
1996-2004	Chao-Wei Hwang, M.D., Ph.D.	Assistant Professor, Johns Hopkins University, Cardiovascular Division
1997-2003 2010-	Kumaran Kolandaivelu, M.D. Ph.D.	Instructor, Harvard Medical School, Brigham and Women's Hospital,
1997-1999	Insup Noh, Ph.D.	Professor, Seoul National University of

Dates	Name	Current Status
		Technology
1997-2001	John Paolini, M.D., Ph.D.	Director, Clinical Cardiovascular Research, Merck & Co.
1998-1999	Chris Creel, M.D.	Radiologist, Private Practice Michigan
1998	Jacob Grunwald	Visiting Scientist
1998	Amy Lee, M.D.	Neurology Residency, University of California-San Francisco
1998	Alison Snyder	Executive Editorial Producer, Washington Post
1998-2001	Stefan Hesselberg	Histology Technician, MIT
1998-2005	Ernest Kornmehl	Surgeon, Kornmehl Laser Eye Associates
1998-2000	Audrey Marshall, M.D.	Attending Physician, Pediatric Cardiology, Boston Children's Hospital; Instructor, Harvard Medical School
1998-2000	Sahil Parikh, M.D.	Director of Endovascular Services, and Assistant Professor of Medicine at the Columbia University College of Physicians and Surgeons.
1998-1999	Venkatesh Raman, M.D.	Cardiology Fellow, Georgetown University
1998-1999	Cindy Richmond	Field Scientist, Massachusetts Fish and Wildlife
1998-2003	Yoram Richter, Ph.D.	Vice President of Research and Development, Biorest Ltd.
1998-2005	Vishal Saxena	Scientist, Orgill Lab, Brigham and Women's Hospital; Kohane Lab, Boston Children's Hospital
1998-2000	Raymond Szeto	Attorney
1998-2000	T. Cooper Woods, Ph.D.	Professor, Ochsner Hospital Department of Experimental Pharmacology and Therapeutics, LSU Health Sciences Center

Dates	Name	Current Status
1998-2000	Jane Yoo	Graduate Student, M.I.T.
1999-2006	Gilandokht Hashemi	Technical Assistant
1999-2009	Brinda Balakrishnan, M.D., Ph.D.	House Officer, Beth Israel-Deaconess Program
1999-present	Mercedes Balcells, Ph.D.	Principal Research Scientist, M.I.T. Professor, IQS
1999-2001	Fardad Hashemi	Graduate Student, M.I.T., Internal
1999-2008	Kha Le	Senior Research Scientist, Millennium Corp., Cambridge, MA
1999- present	Mark Lovich, Ph.D.	Attending Physician, Caritas Medical Center; Assistant Professor, Tufts University Medical School
1999-2001	Rosanne Rouf, M.D.	Cardiology Fellow, Johns Hopkins University
1999-2003	Mathew Walker, Ph.D.	Senior Research Scientist, Dept. of Pharmacology, Merck Research Laboratories
2000-2003 2014-2015	Haim Danenberg, M.D.	Professor, Hadassah Hospital, Hebrew University/Research Affiliate
2000-2003	Wen-hua Fan, Ph.D.	Senior Scientist, Sci-Tech, Inc.
2000-2001	Marta Fernandez-Suarez, Ph.D.	VP, Assay R&D at Daktari Diagnostics, Cambridge, US
2000-2005	Andrew Levin, Ph.D.	Principal, Tang Capital Management Co., San Diego, CA
2000-2006	Alisa Morss, Ph.D.	Professor, Drexel University
2000-2003	Colin Tso, M.D.	Senior Research Fellow, Heart Research Institute, Cardiologist, Sydney, Australia
2000-2007	Neda Vukmirovic, Ph.D.	Project Manager Regenerative Products, Institut Straumann AG, Zurich, Switzerland

Dates	Name	Current Status
2000-2007	Peter I-Kung Wu, Ph.D.	Stanford University Medical School student
2001-2006 2006 -2010	Aaron Baker, Ph.D.	Asst. Professor, Dept. of Biomedical Engineering, University of Texas, Austin
2001-2005	Michael Feldstein, M.D.	Orthopedic Surgery Resident-University of California San Francisco (UCSF)
2001-2002	Jack Morshedzadeh, M.D.	Cardiology Fellow, University of Utah
2001-2004	Collin Stultz, M.D., Ph.D.	Professor, IMES & Electrical Engineering, MIT
2001-2002	Ana Sala Roca	Regulatory Affairs Specialist at DePuy Synthes Companies of Johnson & Johnson, Zürich, Switzerland.
2001-2002	Blanca San Miguel Riva, Ph.D.	Research Manager - Cell Line Development, Abzena, Inc, Cambridge, UK
2002	Debra Doucette	Quality Assurance Specialist
2002	Miguel San Miguel	Visiting Scholar
2002-2003	Brad Carafino, MD	Orthopedic Surgical Resident, Yale
2002-2003	Maria Sotomayor	Country Head Kenya, Tanzania, Uganda & Rwanda at Sandoz
2002-2003	Maria Vasquez	Downstream MSAT Manager at Lonza, Spain
2002-2004	Chen Wen Huang	Graduate Student, M.I.T.
2002-2004	Leslie Arnold	Staff Attorney, North Carolina General Assembly
2002-2005	Max Cohen	Resident Physician, University of Washington
2002-2008	Rami Tzafriri, Ph.D.	Concord Biomedical Sciences and Emerging Technologies (CBSET), Lexington, MA.
2002-2007	Shai Schubert, Ph.D.	CEO, Moma Therapeutics
2003	Michael Brown	Research Assistant

Dates	Name	Current Status
2003	Maria Vazquez	Visiting Scholar
2003	Elsa Genove	Visiting Scholar
2003-2004	Vu Quan, M.D.	Visiting Scholar
2003-2005	Phyllis Itoka	Technical Assistant
2003-2009	Sylaja Murikipudi	Research Scientist, Smart Cells Inc., Beverly, MA
2003-2004	Ramon Salsas	Director of Business Development, Gene Therapy Program & Orphan Disease Center at the University of Pennsylvania
2003-2004	Blanca Molins	Principal investigator at Laboratory of Ocular Inflammation and Immunology, ICOF-IDIBAPS, Barcelona
2003-2006	Michael Jonas, M.D.	Senior Interventional Cardiologist, Catheterization Laboratory, Sheba Medical Center, Tel Aviv
2003-2006	Heiko Methe, M.D., Ph.D.	Assoc. Prof. and Cardiologist, University Hospital Grosshadern, Munich
2004-2005	Maria del Carmen Alegret	Project Engineer en Technip Iberia, Barcelona
2004	Ariadna Paz	Synthon Hispania , Analytical Group Quality Technician
2004	Merce Dalmau	Visiting Scholar
2004-2005 2007-2008	Rajesh Swaminathan, MD	Assistant Professor, Cornell-New York Presbyterian Hospital
2004-2005	Maria Tarragona	Disease Area Leader Ribociclib at Novartis, Barcelona
2004-2010	Li Yuan Mi, Ph.D.	Post-doctoral Associate
2004-2005	Mamorou Nanasoto, M.D.	Visiting Scientist
2004-2010	Tarek Shazly	Asst. Professor, Mechanical Engineering,

Dates	Name	Current Status
		University of South Carolina
2005	Alison Knauth	Director of the Adult Congenital Heart Program, Northern California Kaiser Permanente
2005	Jordi Canals	Visiting Scholar
2005	Jennifer Woo	M.D., Georgetown University
2005	Han Zhu	UROP Research Student
2005	David Elihu	Junior Associate, Ropes and Gray LLP, New York, New York
2005	Janne Ostvang	Assistant Professor, Norwegian University of Science and Technology
2005-2006	Gee T Wong	Technical Assistant
2005-2007	Javier Echenique, M.S.	Clinical Specialist, Medtronic, Inc., New York, New York
2005-2008	Hector Mobine	Scientist, Amgen Corp., Thousand Oaks, CA
2005-2009	Brett Zani, Ph.D.	Project Manager, Concord Biomedical Sciences and Emerging Technologies, (CBSET, Inc.) Lexington, MA
2005	Irina Alexander	Ph.D. Candidate, ETH-Zurich
2005	Sonsoles Olano	Visiting Scholar
2005-present	Natalie Artzi, Ph.D.	Postdoctoral Associate Principal Research Scientist, M.I.T. Assistant Professor, Harvard Medical School
2006-2007	Neal Kantak, M.D.	Resident, Internal Medicine
2006-2007	Nelson Moussazadeh, M.D.	Resident, Neurosurgery
2007-2008	Pavan Cheruvu, M.D.	Resident

Dates	Name	Current Status
2006-2010	Joseph Franses, Ph.D.	HMS student
2005-2006	Marina Santacana	Area manager, Morchem S.A.C., Barcelona, Spain
2005-2007	Alejandro Benarroch	Customer Relationship Team Leader - Novartis Oncology, Barcelona
2005-2008	Shmulik Hess, Ph.D.	CEO, Active P
2006	Hector Perea	Ph.D. Candidate, Institute for Medical Technology, Technical University, Munich
2006	Alba Sánchez	Visiting Scholar
2006	Saad Shaikh	Visiting Scholar
2006	Laura Martínez	Visiting Scholar
2006	Gemma Galván	Visiting Scholar
2006-2007	Roy Beigel, M.D.	Resident, Internal Medicine, Tel-Hashomer Hospital, Chaim Sheba Medical Center, Ramat Gan, Israel.
2006-2007	Cristina Crespo Roman	Manager, Commercial Leadership Development Program at Sanofi, Boston
2006-2007	Carla Olive Vinas	Brand & Customer Manager Lipids at Merck, Madrid
2006-2007	Isabel J. Bolero	Visiting Scholar
2006-2009	Yiannis S. Chatzizisis	Cardiologist, Brigham & Women's Hospital
2006-2011	Vijaya Kolachalama, Ph.D.	Scientist, Charles Stark Draper Laboratories
2007	Benjamin Cohen	Visiting Scholar
2007	Sara Minisini	Research Geophysicist, Shell
2007	Davis Arifin	Graduate Student, National University of Singapore
2007-2008	Alejandro Benarroach	Visiting Scholar

Dates	Name	Current Status
2007-2008	Cristina Puron Garcia-Tellez	Services Engineer at Inprocess Technology & Consulting Group, S.L, Barcelona
2007-2008	Juan Monter Solans	Product Manager at Hidro Nitro Española (Grupo FerroAtlántica), Huesca, Spain
2007	Jordi Torres Mallol	Regional Director Latin America @ Airbnb, Miami
2007	Marc Alumà	Visiting Scholar
2007-2010	Luismar Marques Porto, Ph.D.	Associate Professor of the Federal University of Santa Catarina (UFSC), Brazil
2007-2008	Fieta Boehning	Graduate student at RWTH Aachen University, Aachen, Germany
2008	Motta Golomb	Medical student, Hebrew University, Jerusalem
2008	Andriana Nikolova	Resident, Massachusetts General Hospital
2008	Ch	
2008-2009	Mallika Khandelwal	Visiting Scholar
2008-2015	Kay Everett	Physician Brigham & Women's Hospital, Boston, MA
2008-2015	Laura Indolfi, Ph.D.	CEO of PanTher Therapeutics
2008	William Hwang	Graduate Student, MIT Internal
2008	Claudia Soldevila	Visiting Scholar
2008-2011	Vipul Chitalia, M.D., Ph.D.	Postdoctoral Fellow
2008-2009	Adriana Bon Ramos	Graduate Student, University of Portland, Oregon
2008-2009	Jason Wu	Cardiology Resident, University of Michigan Medical System, Ann Arbor, MI
2008	Jose Antonio Bea Cascarosa, Ph.D.	Professor, University of Zaragoza, Spain

Dates	Name	Current Status
2008	Eduard Pereda	Visiting Scholar
2008	Agusti Panadés	Visiting Scholar
2008-2010	Eytan Abraham, Ph.D.	R&D Project Manager, Pluristem Therapeutics Inc.
2009-2015	Jordi Martorell	Assistant Professor, Institut Quimic de Sarria, ChemE department, Barcelona
2009	Agua Sobrino	Postdoc fellow en University of California Irvine
2009-2010	Dr. Laith Rabadi, M.D.	Visiting Scientist
2009-present	Alexis Turjman	CEO at Cognition Medical
2009	Miquel Duran	Post-Doctoral Researcher at IRB Barcelona
2009	Remi Jolibois-Quinot	Visiting Scholar
2009	Alex Nichols	Graduate Student, MIT Internal
2009-2010	Sagi Shitreet	Visiting Scholar
2009-present	Natalia Drosu	Graduate Student
2009-2017	Nuria Oliva	Postdoctoral Fellow at Brigham and Women's Hospital
2010	Helena Mateu	INSEAD MBA Candidate (Class of 2017) | Consultant at The Boston Consulting Group
2010-2013	Elisabet Rosas	Graduate student at Berkeley U, San Francisco Bay area
2010	Benjamin Oller	Postdoctoral Scientist at MRC-LMB and Research Associate at Homerton College, University of Cambridge, UK
2010-2013	Maria Carcole	Industrial Engineer and Materials Scientist, Dupont, Geneva, Switzerland
2010	Alfredo Palmes	Project Engineer at PES Ltd, London, UK

Dates	Name	Current Status
2010	Matthew Canver	M.D., Ph.D. student
2010-2012	Ayumi Miyakawa, Ph.D.	Assistant Professor, InCor, Brazil
2010	Miguel Duran	Visiting Scholar
2010-2012	Juliana Dreyfuss, Ph.D.	Assistant Professor, Molecular Biology, Federal University of Sao Paulo, Sao Paulo, Brazil (UNIFESP)
2011	Leticia Fernandez Carballo	PhD candidate Bioengineering, Institut Quimic de Sarria, Barcelona
2011	Helena De Puig	Visiting Scholar
2011	Begona Canovas Bilbao	Visiting Scholar
2011	Teresa Rodón	Visiting Scholar
2011	Maor Hadar	Visiting Scholar
2011	Ela Levy	Visiting Scholar
2011	Vladik Yushvaev	Visiting Scholar
2011	Alexander Hook	Visiting Scholar
2011	Pablo Santoma Oria	Visting Scholar
2011-2016	Ramon Partida, MD	Research Affiliate
2011-2012	Jay Wang	Harvard Medical School Student
2011-2012	Alina Freiman	Visiting Scholar
2011-2012	Zohar Shatsberg	Visiting Scholar
2011-2012	Moshe Beck	Visiting Scholar
2011-2012	Vinicius Bassanese	Visiting Scholar
2011-2012	Marc Mier Cervantes	Visiting Scholar
2011-2014	Carin King	Visiting Scholar

Dates	Name	Current Status
2011- 2014	Melissa St. Pierre	Research staff
2012-2014	Caroline O'Brien, PhD	Data Scientist at Commonwealth Bank, Australia
2012	Gabriel Cunha, PhD	Research Associate
2012	Shirley Galbiati	Visiting Scholar
2012-2013	Regina Kelmansky	Visiting Scholar
2012- 2014	Margarita Beckerman	Visiting Scholar
2012- 2014	Iris Sheu	Senior Associate, PwC Analytics Advisory, Boston
2012-2013	Maryam Zekavat	Associate Computational Biologist, Broad Institute
2012- 2015	Brett Boval	Biomedical R&D Engineer at Element Science, CA
2012- present	Jonathan Brown	Research Staff
2012-2015	Luccie Wo	HST MD PhD
2012-present	Mie Kunio	;Clinical Research Scientist - Canon USA Research Affiliate
2012-present	Ben Leiden	Research Staff
2011-2015	Michael Papafaklis, MD	Research Associate
2013	Carlos E. Semino	Visiting Professor
2013-present	Claire Conway, PhD	Lecturer, Biomedical Engineering, College of Engineering & Informatics, National University of Ireland, Galway; Research Affiliate
2013- present	Pedro Melgar, PhD	Hospital Clinic of Barcelona, Spain; Research Affiliate
2013-2015	Augusto Celso de Araujo Lopes Junior, MD	Cardiologist, Hospital Sao Carlos Brazil

Dates	Name	Current Status
2013-2017	Shimon Unterman, PhD	Post Doctoral Fellow
2013-2016	Sara Strecker, PhD	Secondary School Teacher, Marianapolis Preparatory School
2013-2016	Lyndon Charles, PhD	Senior Scientist, Elektrofi, Inc, Cambridge, MA
2013-2015	Christina Arnold	Post Doc Associate
2013-2015	Hyun Seok Song, PhD	Research Associate
2013-2017	Eric Yi, Phd	Post Doc Associate
2013	Brian Bergmark, MD	Research Affiliate
2013-present	Or Gadish	MEMP Graduate Student
2013	Nathaly Segovia	Postdoctoral Researcher at Institute de Ciencia de Materials de Barcelona (ICMAB - CSIC)
2013-2014	Denis Kramarenko	Visiting Scholar
2013-2014	Maria Pont	European Sales Manager at E. Bachiller B. SA, Barcelona
2013-2014	Sivan Selikter	Visiting Scholar
2013-2014	Fernando Garcia Polite	Postdoctoral Research Scholar at CBSET, Lexington
2013-2014	Ferran Guedea Ripoll	FO Commodities Consultant at Murex North America, NYC
2014-2016	Joao Castro Conde	Post Doc Fellow/Associate
2014 - present	Zahra Keshavarz-Motamed	Assistant Professor, McMaster University, Canada; Research Affliate
2014 - present	Farhad Rikhtegar Nezami	Post Doc Fellow
2014-2015	Adar Oren	Visiting Scholar
2014-2015	Dmitry Pivovarchik	Visiting Scholar

Dates	Name	Current Status
2014-2015	Mariana Atilano	Visiting Scholar
2014-2016	Mario Lopez Moya	PhD candidate at Institut Quimic de Sarria, Barcelona
2014-2015	Paula Del Rey Puech	Research associate at Daktari Diagnostics, Cambridge, US
2014	Samantha Stone	Visiting Scholar
2014-present	Efrat Marcus Goffer	MEMP Graduate Student
2014	Antonios P. Antoniadis	Research Affiliate
2014-2017	Ioannis Andreou	Research Affiliate
2014-present	Brian Chang	Graduate Student
2014-present	Aditya Kalluri	Graduate Student
2014-2016	Kenta Nakamura	Research Affiliate
2014	David Ede	Visiting Scholar
2014	Koki Shishido	Research Affiliate
2014-present	Peijiang Wang	Visiting Scholar
2014	Sina Salehi	Sarnoff Fellow
2014	Andres-Amador Garcia Granda	Visiting Scholar
2014-2015	Daniel Lee	Medical Student
2014-2017	Gerasimos Siasos	Assistant Professor of Medicine, Brigham & Women's Hospital, Boston, MA
2014-2016	Demet Guntas	Sr. Research Associate, Ribon Therapeutics, Inc, Lexington, MA
2015-present	Lambros Athanasiou	Post Doc Fellow
2015-present	Fiona MacLeod	Graduate Student
2015	Suk Joon Lee	Medical Student

Dates	Name	Current Status
2015-2017	Peter McHugh	Research Affiliate
2015-2016	Marina Zaromytidou	Research Affiliate
2015-present	Victoria Hoffman	Research Staff
2015-2017	Eyal Ben Assa	Clinical Research Fellow, Massachusetts General Hospital, Boston, MA
2015-present	Nicole Duggan	Sarnoff Fellow
2015	Michael O'Rourke	Visiting Scientist
2015	Marina Sanchez	Visiting Scholar
2015-2016	Achille Verheye	Visiting Scholar
2015	Daniel Fulop	Visiting Scholar
2015-2016	Estruch Enric	Visiting Scholar
2015-2016	Josep Maria Balaguer	Visiting Scholar
2015-2017	Gonzalo Munoz Taboada	Visiting Scholar
2015-2016	Nir Margalit	Visiting Scholar
2015-2016	Alvaro Sanchez Herrero	Visiting Scholar
2015-2017	Shani Elgin	Visiting Scholar
2016-2017	Jedidiah E. Phillips	Visiting Scholar
2016-present	Steven Keller	Research Affiliate
2016-2017	Harry Selker	Research Affiliate
2016-present	Mark Lovich	Research Affiliate
2016-2017	Jose M de la Torre Hernandez	Visiting Scientist
2016-2017	Mikhail Maslov	Research Affiliate
2016-2017	Calum MacRae	Research Affiliate

Dates	Name	Current Status
2016-present	Noam Josephy	Research Affiliate
2016-2017	Jenedh Amrute	Undergraduate Student
2016, 2018	Michael Murphy	Undergraduate Student
2016-2017	Judit Anton Francesch	Research Affiliate
2016-2017	Margarita Boixareu Fiol	Research Affiliate
2016-2017	Adria Romeu Coscolla	Research Affiliate
2016-2017	Maria Tomas Gracia	Research Affiliate
2016-2017	David Hurtado Niubò	Research Affiliate
2016-2018	Kui Wang	Research Affiliate
2016-present	Max Louis Olender	Graduate Student
2016-2017	David Gomez Jimenez	Visiting Student
2016-2017	Ferran Lozano	Visiting Student
2016-2017	Rosa Shine	Visiting Student
2016	Marc Carre Camps	Visiting Student
2017	Noemi Bala Palasi	Visiting Student
2017	Lucas Rotllant Daurella	Research Affiliate
2017	Diana Fondos Lopez	Research Affiliate
2017	Stephan Foianini	Research Affiliate
2017-present	Sophie-Charlotte Hofferberth	Research Affiliate
2017-present	Rowza Rumma	Research Affiliate
2017-2018	Megana Challa	Visiting Student
2017	Lauren Karolnik	Visiting Student
2017-2108	Oriol Bosch Sanz	Visiting Student

Dates	Name	Current Status
2017-2018	Paschalis Bizopoulos	Visiting Student
2017-2018	Anna Vybornova	Visiting Student
2017-2018	Daniel Seriy	Coop Student
2017-2018	Hanieh Hassanzadeh	Data Analyst
2017	Mitchell Maisel	Undergraduate Researcher
2017	Jin Kim	Undergraduate Researcher
2017	Cameron Korb	Undergraduate Researcher
2017	Katharine Pan	Undergraduate Researcher
2017	Ayse Guvenfir	Undergraduate Researcher
2017-2018	Samantha Russman	Undergraduate Researcher
2017-present	Kimberly Feng	Undergraduate Researcher
2017-present	Emily Liao	Undergraduate Researcher
2017-present	Elaine Ma	Undergraduate Researcher
2018	Francesca Berti	Visiting Student
2018	Aranda Alejandro	Visiting Student
2018	Jie Wang	Visiting Student
2018	Javier Pedreno	Visiting Scholar
2018	Samand Pashnen-Tala	Visiting Scholar
2018	Albert Ros Lloreta	Research Affiliate
2018	Shiran Ferber	Research Affiliate
2018	Shirin Bhaloo	Post Doctoral Associate
2018	Francesco Migliavacca	Research Affiliate
2018	Sophia Kloulaphides	Undergraduate Researcher

Dates	Name	Current Status
2018	Natasha Stark	Undergraduate Researcher
2018	Sabrina Ibarra	Undergraduate Researcher
2018	Ben Chu	Undergraduate Researcher

Theses Supervised:

Kinetic Profiles of Macromolecular Release from Polymer Matrices, Wayne Rubenstein, Bachelors Thesis in the Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, June, 1982

Dynamics of Macromolecular Release from Magnetically Modulated Polymer Matrices, John Taylor, Bachelors Thesis in the Department of Biology, Massachusetts Institute of Technology, May, 1984.

Controlled Release of Drugs from Surgical Suture, Aeseun Loh, Bachelors Thesis in the Department of Materials Science and Engineering, Massachusetts Institute of Technology, June, 1987.

Quantitative Image Analysis of Coronary Artery Disease, Robert Silbergleit, Bachelors Thesis in the Department of Applied Biological Sciences, Massachusetts Institute of Technology, May, 1988.

Determinants of Perivascular and Myocardial Neovascularization, Jonathan Stiber, Bachelors Thesis in the Department of Mechanical Engineering, Massachusetts Institute of Technology, June, 1992.

Perivascular Heparin Delivery Using Biodegradable Polymers, Marie Katada, Bachelors Thesis in the Department of Mechanical Engineering, Massachusetts Institute of Technology, May, 1994

Mechanics and dynamics of endovascular implants, James Squire, Master's Thesis in the Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, February, 1997.

Mathematical Determinants of Transvascular Transport of Macromolecules, Mark Lovich, Doctoral Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, June, 1997.

Quantification of the Distribution of Macromolecules in Vascular Tissue, Wade K. Wan, Master's Thesis in the Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, February, 1998.

Quantification of Myocardial Macromolecular Transport, Jeff Hosing, Master's Thesis, Massachusetts Institute of Technology, June, 2000.

A Better Guess for a Downhill Simplex Method, Raymond Li, Master's Thesis, Massachusetts Institute of Technology, June 2000.

In vivo determination of arterial resistance to heparin transport using a two-compartment model, Stephanie Nona's, M.D. Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, June 2000.

Distant hemodynamic impact of local geometric alterations in the arterial tree, Yoram Richter, Master's Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, June, 2000.

A finite element of study of different arteries, Vishal Saxena, Master's Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, June, 2000.

Dynamics of Endovascular Stent Expansion, James Squire, Doctoral Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, July, 2000.

Evaluation of Thrombotic Potential and Parameters of Intracoronary Prosthesis, Kumaran Kolandaivelu, Master's Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, October 2000.

The Ultra Structural Basis for Macromolecular Transport in Vascular Tissue, Chao-Wei Hwang, Master's Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, December, 2000.

A Novel Device for Subjecting Cells to Pulsatile Flow in Vitro: Frequency Response of Various Cell Types, Marta Fernández-Suarez, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, January 2001.

A Cellular Pacemaker Using Eel Giant Smooth Muscle Cells and Cardiomyocytes, Rosanne Rouf, Sarnoff Fellow, Duke University, 2001.

Evaluation of Thrombotic Potential and Parameters of Intracoronary Prosthesis, Kumaran Kolandaivelu, Doctoral Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, May, 2001.

Safety and Effectiveness of Carotid Angioplasty and Stenting Compared to Endarterectomy for the Treatment of Carotid Atherosclerotic Disease, Brian J. Wagner, Master's Thesis in the Field of History of Science, Harvard Extension School, Harvard University, June 2001.

Microengineering Surface based on Chemical Vapor Deposition (CVD) coating", Teresa Rodón, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, July 2001.

Effects of cellular and tissue pharmacologies on growth factor efficacy, David Wu, Doctoral Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, August, 2001.

Local Pharmacokinetics of Stent-Based Drug Delivery, Chao-Wei Hwang, Doctoral Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, April, 2002.

A FRET-based and Molecular Dynamics Study of Phosphate-induced Conformational Changes in Oligopeptides, Andrew D. Levin, Master's Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, May, 2002.

Extracellular Matrix And Mechanical Load Dependent Modulation of Endothelial Intercellular Communication and Response to Growth Factor Delivery, Aaron B. Baker, Master's Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, May, 2002.

Pharmacokinetics of Local Growth Factor Delivery in Myocardial Tissue, Kha N. Le, Master's Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, June, 2002.

Influence of Frequency on Endothelial Cells Subjected to Pulsatile Flow in Vitro: Biological responses, Miguel San Miguel, Master's Thesis in Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, December 2002.

Distant Hemodynamic Impact of Local Geometric Alterations in the Arterial Tree, Yoram Richter, Doctoral Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, May 2003.

Role of the Cell-To-Cell Communication in Dictating the Pharmacodynamics Response to Growth Factor Simulation, Ana Sala, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, May 2003.

Endothelial Cell Response to Flow Frequency Conditions, Maria Vazquez, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, July 2003.

CRP Stimulates Vascular Endothelial Cells", Maria Sotomayor, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, July 2003.

Self-Assembling Peptide Scaffolds as Extracellular Matrix Analogs: Application in Tissue Engineering, Elsa Genove, Master's Thesis in the Chemistry Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, July 2003.

Effect of Flow Frequency on Cell Proliferation and on Cell Adhesion Molecule Expression, Blanca Molins, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, September 2004.

Optimization of the Fed-Bath Fermentation of an Antibody Fragment-producing Pichia Pastoris Culture, Merce Dalmau, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, September 2004.

Molecular Basis of Collagen Stability and its Relationship to Collagen Diseases, Roman Salsas, Master's Thesis in the Chemistry Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, December 2004.

The Development of an In Vitro One–Pass, High–Throughput Model of Flow Dependent Thrombosis, Javier Jacobo Echenique, Bachelors Thesis in the Department of Mechanical Engineering , Massachusetts Institute of Technology, June, 2005.

Specific and General Binding in Arterial Drug Delivery, Andrew D. Levin, Doctoral Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, June, 2005.

Biphasic Polymer Nanocolloids, Sonsoles Olano, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, July 2005.

Growth Factor Regulation of Endothelial Receptor Expression and Gap Junctional Communication, Maria Tarragona, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, September 2005.

Flow Pattern Influence on Immunoregulatory Molecules Expression by Endothelial Cells, Maria del Carmen, Alegret Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, September 2005.

Design and Characterization of Metal Nanoparticles Aggregates to Control and Study Integrin Clustering, Jordi Canals, Master's Thesis in Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, September 2005.

Regulation of Specific Connexins Differentally Alters Gap Junction Permeability and Endothelial Cell Function, David Elihu, Master's Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, June 2006.

The Role of Heparan Sulfate Proteoglycans and Heparanase In The Control Of Vascular Remodeling, Aaron B. Baker, Doctoral Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, June 2006.

Endothelial Cells And Basement Membrane: A CO-Regulatory Unit For Fibroblast Growth Factor-2 In Hyperglycemic Stress, Alisa S. Morss, Doctoral Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, June 2006.

Functionalized Poly-p-xylylines for Atom Transfer Radical Polymerization (ATRP), Gemma Galván, Master's Thesis in the Chemistry Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, July 2006.

Differential Regulation of mTOR Pathway in Co-Cultured Endothelial and Smooth Muscle Cells Under Flow, Marina Santacana, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, September 2006.

Mechanistic Insights into Monocyte Induced Endothelial Cell Proliferation, Alejandro Benarroch, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, September 2006.

Site-Specific Protein Labeling in Live Cells Application to the Detection of Endogenous Protein-Protein Interactions, Laura Martínez, Thesis in the Chemistry Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, October 2006.

An Investigation of the Production of Collagen-Like Polymer During Continuous Culture of Recombinant Escherichia Coli, Alba Sánchez, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, October 2006.

Thrombotic Fingerprints for the Enhanced Prediction of Thrombosis, Javier Jacobo Echenique, Master's Thesis in the Department of Mechanical Engineering , Massachusetts Institute of Technology, June, 2007.

Quantitative Analysis and Modeling of Microembolic Phenomena, Michael Feldstein, Master's Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, June 2007.

Property Determinants of Dextran: Polyethylene Glycol Adhesive Sealants, Tarek Shazly, Master's Thesis in the Department of Materials Sciences, Massachusetts Institute of Technology, June 2007.

Computational Modeling of Local Intravascular Drug Delivery, Brinda Balakrishnan, Doctoral Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, June 2007.

Drug Deposition and Distribution in Health and Atherosclerotic Arteries and in Models of Atherosclerosis Following Bulk or Stent-Based Drug Delivery, Neda Vukmirovic, Doctoral Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, June, 2007.

Dewetting droplets onto CVD surfaces, Marc Alumà , Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, December 2007.

The Role of Flow in Vascular Recovery After Stenting, Carla Olive, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, January 2008.

Effect of Specific Growth Rate on Plasmid Loss in an E. Coli Culture Used to Produce Collagen Like Polymer, Claudia Soldevila, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, March 2008.

Development of PEG: Dextran Hydrogels as Candidate Substrates for Drug Delivery, Cristina Crespo, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, March 2008.

Effects of Mechanical Loading on Drug Transport in Muscle Tissue, Peter I-Kung Wu, Doctoral Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, June, 2008.

Production and Quantification of Monoclonal Antibodies, Eduard Pereda, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, November 2008.

Click Chemistry for Biomolecule Immobilization, Agusti Panadés, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, December 2008.

Evaluation of Monocyte-Endothelial Interactions (MEI) Under Inflammatory Conditions and Anti-Proliferative Drugs, Juan Monter, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, December 2008.

Pheochromocytoma-Induced Cardiomyopathy as a Model of Synergistic Effects of Multifactorial Tumor Secretions, Hector Mobine, Doctoral Thesis in the Department of Biological Engineering, Massachusetts Institute of Technology, December 2008.

Local Pharmacokinetics and Pharmacodynamics of Angiogenic Growth factors in Myocardial Tissue, Kha N. Le, Doctoral Thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, February 2009.

Development of a Drug Eluting, Biodegradable Sealant Based On Peg: Dextran Hydrogel, Cristina Purón, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, March 2009.

Tissue-Material Interactions: Bioadhesion and Tissue Response, Tarek Shazly, Doctoral thesis in the Department of Materials Science and Engineering, Massachusetts Institute of Technology, August 2009.

The Effect of Scaffold Physical Properties on Endothelial Cell Function, Sylaja Murikipudi, Doctoral thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, November 2009.

The Optimization of Firm R&D Decision Making: The Case of Medical Device Outsourcing into India and Singapore, Adam Groothuis, Doctoral Thesis in International Business in Southern New Hampshire University 2010

Abnormal Spectroscopic Properties of 9-amino-2,7,12,17-tetraphenylporphycene, Miguel Duran, Master's Thesis in the Chemistry Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, February 2010.

In Silico and In Vitro Study of Physical and Biological Effects of Stenting Complex Vascular Environments, Jordi Martorell, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, April 2010.

Regulatory Roles of Endothelial Cells in Cancer, Joseph W. Franses, Doctoral thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, June 2011.

In Silico and In Vitro Modeling of the Blood-Brain Barrier to Study the Alzheimer's Disease, Helena Mateu, Masters Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, June 2011.

Quantifying the Nanomachinery at the Nanoparticle-Biomolecule Interface, Helena De Puig, Master's Thesis in the Mechanical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, July 2011.

Characterization of a GSK3b Heterozygote Knockout Mouse Line as Model of Partial and Selective GSK3b Inhibition in the Study of Alzheimer's Disease, Begona Canovas, Master's Thesis in the BioEngineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, September 2011.

Why Some Individuals Are Able to Tolerate Alzheimer's Pathology Without Resulting in Structural Damage or Impaired Cognition?, Leticia Fernandez, Master's Thesis in the BioEngineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain. October 2011.

Automatic Generation of a Capillary Network Structure for Obtaining a Computational Model of the Blood Brain Barrier", Fernando Garcia Polite, Masters Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, December 2012.

Mechanisms and Implications of Fracture in Cardiovascular Stents, Kay Dee Everett, Doctoral thesis in The School of Engineering and Applied Sciences, Harvard University, Cambridge, Massachusetts, 2013

A New Personalized Arterial Model to Understand Biological Response to Flow Through Computational and In Vitro Techniques, Pablo Santoma, Masters Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, May 2013.

Targeting Photodynamic Therapy to Microvascular Endothelial Cells, Elisabet Rosas, Master's Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, July 2013.

Correlation between cardiovascular disease biomarkers and biochemical and physical milieu in complex vascular environments, Jordi Martorell Lopez, Doctoral Thesis in Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain. October 2013.

Effect of Shear stress and Coculture with Astrocyte on Blood Brain Barrier Microvascular Endothelial Cells Phenotype", Sina Salehi, Sarnoff Fellow at Vanderbilt University, August 2014.

A methodology for designing a supply chain solutions program targeting healthcare providers, Suman Machinani, Masters of Business Thesis in MIT Leaders for Global Operations, Sloan School of Management and School of Engineering, 2015.

Diseño de un soporte polimérico para reemplazar tejidos vasculares, Marina Sanchez, Masters Thesis in the Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, May 2015.

Impact of Cellular Component and Their Interaction in the BBB Phenotype, Paula Del Rey Puech, Master's Thesis in the BioEngineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, July 2015.

Surface Modification of Pericardium for Enhanced Biocompatibility of Bioprosthetic Aortic Valves, Mario Lopez Maya, Master's Thesis in the BioEngineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, July 2015.

Localized and disease-specific chemotherapeutic drug delivery using adhesive hydrogels for neoadjuvant therapy of locally advanced breast cancer, Nuria Oliva Jorge, Doctoral Thesis in Medical Engineering and Medical Physics, Massachusetts Institute of Technology, Cambridge, MA June 2016.

Optimizing Registration of Complex Vascular Geometries, Mie Kunio, Doctoral Thesis in Medical Engineering and Medical Physics, Massachusetts Institute of Technology, Cambridge, MA June 2016.

Multiplexed Immunoassay for Zika, Dengue and Chikungunya using Gold Nanoparticles and Surface-Enhanced Raman Spectroscopy, Marc Carre Camps. Mater's Thesis. Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain. ,July 2016.

Hemodynamic alterations at the Blood-Brain Barrier and optimization of renal denervation treatment to prevent vascular impairment, Fernando Garcia Polite, Doctoral Thesis in Chemical Engineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain. November 2016.

The role of flow on regulating the activity of phosphorylated glycoprotein at the blood brain barrier David Gomez, Master's Thesis in the BioEngineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, July 2017.

Design of a novel bioreactor for ear cartilage tissue engineering, Ferran Lozano, Master's Thesis in the BioEngineering Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, July 2017.

Dengue diagnosis in lateral flow using camelid single-domain antibodies, Diana Fandos Lopez, Master's Thesis in the Chemistry Department, Institut Quimic de Sarria, Ramon Llull University, Barcelona, Spain, July 2017.

Development of a polymeric patch to promote migration and proliferation of vascular cells, Noemi Bala Palasi, Master's Thesis in the Chemical Engineering Department, Ramon Llull University, Barcelona, Spain September 2017.

THESIS READER

Powers, Mark, "Substratum control of hepatocyte aggregate morphology", Doctoral Thesis in the MIT Department of Chemical Engineering, Massachusetts Institute of Technology, October 1996.

Caroline Douglass O'Brien, "Continuum fluid dynamics in Endovascular Stents", Doctoral Thesis in the MIT Department of Chemical Engineering, Massachusetts Institute of Technology, 2012

Grace Teo, "Stem cell transmigration though endothelial cells", Doctoral thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, 2013

Alexandra Elisa German, "Paxillin-dependent control of tumor angiogenesis", Doctoral thesis in the Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, 2013

Alexander Bagley, Doctoral thesis in the Harvard-MIT Division of Health Sciences and Technology, "Optically Active Nanomaterials for Diagnostic and Therapeutic Applications in Ovarian Cancer"

Kevin Lin, "Nanoparticle Systems that Exploit Host Biology for Diagnosis and Treatment of Disease", Doctoral Thesis in the Department of Chemical Engineering at Massachusetts Institute of Technology, 2013

Jordi Martell, "Correlation between cardiovascular disease biomarkers and biochemical and physical milieu in complex vascular environments" Doctoral Thesis in the Department of Chemical Engineering at Institute Quemic de Saria, 2013

Jeremy Suhardi, "Antibiotic Eluting Ultra-High Molecular Weight Polyethylene (UHMWPE) as Treatment for Periprosthetic Joint Infection" candidate for PhD in Medical Engineering and Medical Physics

Antonis Sakellarios, Mathematical Modeling Of The Mechanisms Of Atherosclerotic Plaque Development , PhD Thesis In University Of Ioannina, School Of Sciences And Technologies, Department Of Materials Science And Engineering, 2016

2. Regional, National, or International Contributions

a. Invited Presentations

1987 *Polymer-based controlled delivery: Its role in angiogenic processes* Beth Israel Hospital, Boston, MA, Cardiovascular Grand Rounds, Invited Lecture.

1988 *Neovascularization of Atherosclerotic Plaque* Beth Israel Hospital, Boston, MA, Cardiovascular Grant Rounds, (April 1988), Invited Lecture.

1988 *Neovascularization of Atherosclerotic Plaque,* Brigham & Women's Hospital, Boston, MA, Cardiovascular Grand Rounds, (May 1988), Invited Lecture.

1988 *Neovascularization of the coronary arterial wall*, Brigham & Women's Hospital, Harvard Medical School, The Multidisciplinary Program in Cardiovascular Disease Vascular Medicine Series, Boston, MA, Invited Lecture.

1988 *Polymer-based controlled delivery: Its role in basic science research* Ministry of Trade and Technology, Danish Council on Technology, Copenhagen, Denmark, Invited Lecture.

1989 *Polymer-based controlled delivery: Its role in the study of growth factor biology,* Inaugural Address, Biopharmaceutics Program, 350th Anniversary of the Founding of the University of Helsinki, University of Helsinki, Helsinki , Finland, Visiting Professorship.

1991 *Local therapy of atherosclerosis*, Cardiovascular Grand Rounds, Beth Israel Hospital, Boston, MA, Invited Lecture.

1991 *Peri-adventitial control of neointimal proliferation,* Northwestern University, Department of Vascular Surgery, Evanston, Illinois, Visiting Professorship.

1991 *bFGF regulation of smooth muscle cell proliferation and angiogenesis is linked in the perivascular space of injured blood vessels*, The Blood Vessel Club, Atlanta, GA, Invited Lecture.

1991 *Molecular aspects of growth and inflammatory mechanisms in vascular cells*, FASEB, Atlanta, GA, Invited Lecture.

1992 *Restenosis: Local action of heparin and heparin binding growth factors,* Grand Rounds, University of Cincinnati, Cardiovascular Division, Cincinnati, OH, Visiting Professorship.

1993 Longwood Area Vascular Biology Series, Boston, MA, Invited Lecture.

1993 Grand Rounds, Yale University, Cardiovascular Division, New Haven, CT, Invited Lecture.

1993 Restenosis Summit, Cleveland, OH, Invited Lecture.

Endothelial control of smooth muscle cell proliferation, Northwestern University Medical School. Cardiovascular Division, Feinberg Institute, Evanston, IL, Visiting Professorship.

Prevention and treatment of restenosis: Lessons learned from endogenous forms of vascular repair, Restenosis Summit VII, Cleveland, OH, Invited Lecture.

1995 *Issues in the Responsible Conduct of Research*, Massachusetts Institute of Technology, Boston, MA, Invited Lecture.

1996 Longwood Area Vascular Biology Series, Invited Lecture.

1996 Cardiovascular Research Seminar, Boston VA Medical Center, Boston University School of Medicine, Boston, MA, Seminar.

1996 *Perivascular and Endovascular Drug Delivery Concepts and The Biology of Endovascular Implants,* Transcatheter Cardiovascular Therapeutics Symposium, 8th Annual Symposium, Cardiology Research Foundation & Washington Hospital Center, Washington, DC, February 28-March 3, Invited Lecture.

1996 *Antisense Strategies for Controlling the Vascular Response to Injury,* Research Initiatives in Vascular Disease, Bethesda, MD, Invited Lecture.

1996 *Balloons to stents: Reduction and restenosis with evolving interventional technology*, The Physician's Meeting, Chicago, IL, Invited Lecture.

1996 *Endogenous mediators of restenosis,* Columbia University, Cardiology Grand Rounds, New York, NY, Visiting Professorship.

1996 *Exploring Medical Career Options*, National Youth Leadership Forum on Medicine, Cambridge, MA, Seminar.

1996 *Balloons and stents: Local drug delivery potential,* Johnson & Johnson's Annual Symposium on Drug Delivery Technology, Chicago, IL, Invited Lecture.

1996 Physician's Meeting Seminar

Vascular Biology, Vascular Medicine and Vascular Interventions: Balloons and Stents, New Jersey Society of Interventional Cardiology, Passaic, NJ, Invited Lecture.

1997 Cardiovascular Research Seminar Series, St. Elizabeth's Medical Center, Boston, MA, Invited Lecture.

1997 *Tissue engineered vascular endothelial cell implants for the delivery of vasoactive compounds*, Eighth International Symposium on Recent Advances in Drug Delivery, Salt Lake City, Utah, Invited Lecture.

1997 *Pathology of restenosis*, Interventional Cardiology, Twelfth Annual Demonstrations Course, Snowmass, CO, Invited Lecture.

1997 Grand Rounds, The New York Hospital-Cornell Medical Center, New York, Invited Lecture.

1997 *Medical Breakthroughs from M.I.T.: Sampling Current Research*, Catherine N. Stratton Lectures on Aging Successfully, M.I.T Invited Lecture.

1997 *Restenosis and Growth Factors: Model of Paracrine Growth Control* Seminars in Vascular Biology, Harvard Medical School, Seminar.

1997 *Controlled Release of Heparin, Antisense Oligonucleotides, and Cytokines for Restenosis,* Controlled Release Society, Stockholm, Sweden, Invited Lecture.

1997 *Biology and Pathology of Endovascular Implants*, 2nd International Meeting on Interventional Cardiology, Jerusalem, Israel, Invited Lecture.

1997 *Controversies in the Biology of Restenosis,* 2nd International Meeting on Interventional Cardiology, Jerusalem, Israel, Invited Lecture.

1997 *Materials and Cells in Cardiovascular Healing*, Gordon Research Conference on Biomaterials: Biocompatibility and Tissue Engineering, Holderness, NH, Invited Lecture.

1997 *Evolution of Thought in Coronary Artery Disease,* Cadillac Trial Meeting/Guidant Corp., July 27-29, San Francisco, CA, Invited Lecture.

1997 *High Risk Coronary Angioplasty*, The Cardiovascular Nursing & Technologist Symposium, Transcatheter Cardiovascular Therapeutics IX, September 24, Washington, DC, Invited Lecture.

1997 *Tissue Engineering Concepts (cells + composite modalities) to Achieve Therapeutic Effects,* Local Cardiovascular Drug Delivery, Transcatheter Cardiovascular Therapeutics IX, September 24, Washington, DC, Invited Lecture.

1997 *Nir-ly There: Technology Assessment and New Product Review,* Nir-ly There: Evolution of an Advanced Stent Technology, Transcatheter Cardiovascular Therapeutics IX, September 24, Washington, DC, Invited Lecture.

1997 *Nir-ly There: Vessel Requirements, Product Development, Clinical Verification – The NIR Future,* Nir-ly There: Evolution of an Advanced Stent Technology, Transcatheter Cardiovascular Therapeutics IX, September 24, Washington, DC, Invited Lecture.

1997 *Future Roles and Impact of Biological Coatings in Interventional Vascular Therapy and Future Coating Technologies*, Biological Coatings for Interventional Devices: Setting A New Standard for Success, Transcatheter Cardiovascular Therapeutics IX, September 24, Washington, DC, Invited Lecture.

1997 *Developing Improved Engineering and Animal Study Guidelines for Stents in the Future and Stents and the FDA Streamlining the Pathway for Regulatory Approval of Stents in the Future*: A Fireside Chat with the FDA,

Transcatheter Cardiovascular Therapeutics IX, September 25, Washington, DC, Invited Lecture.

1997 *The Impact of Stent Design on Pathobiologic Responses and The Role of Stents and the Impact of Multilink in Coronary Intervention,* The Advanced Multilink Intracoronary Stent: Harmonizing Design and Function, Transcatheter Cardiovascular Therapeutics IX, September 25, Washington, DC, Invited Lecture.

1997 *When to Integrate Molecular Biology and Advanced Quantitative Techniques,* Advanced Workshop on Experimental Animal Models, Transcatheter Cardiovascular Therapeutics IX, September 26, Washington, DC, Invited Lecture.

1997 *Future Needs and Developments in Antisense Technology,* National Heart, Lung, and Blood Institute, National Institutes of Health, September 25-26, Bethesda, Maryland, Invited Lecture.

1997 *Stent Design – Pathobiologic Responses,* Advanced Stent Workshop: Practical Tips and Tricks (including hands-on industry presentations of the new stents), Transcatheter Cardiovascular Therapeutics IX, September 28, Washington, DC, Invited Lecture.

1997 *Barriers in Drug Delivery,* Conference on Formulations and Drug Delivery II, American Chemical Society/Controlled Release Society, Inc., October 5-8, La Jolla, California, Invited Lecture.

1997 *Polyampholytic Hydrogen Phase Transitions at High Ionic Strengths,* Materials Research Society, Invited Lecture.

1997 *Equilibrium and Non-Equilibrium Polyelectrolyte Hydrogen Phase Transitions,* Materials Research Society, Invited Lecture.

1997 *Tissue Engineering in Restenosis*, American Association of Pharmaceutical Scientists, November 4, Boston, Mass, Invited Lecture.

1997 *Stent and artery geometry determine intimal thickening independent of deep arterial injury*, 70th Scientific Sessions, American Heart Association, November 9-12, Invited Lecture.

1997 *Blockage of the Leukocyte integrin Mac-1 Reduces Experimental Restenosis*, 70th Scientific Sessions, American Heart Association, November 9-12, Invited Lecture.

1997 *Heparin-coated stents eliminate mural thrombus deposition for days without affecting restenosis*, 70th Scientific Sessions, American Heart Association, November 9-12, Invited Lecture.

1997 *Vascular endothelial growth factor effect on vascular permeability is mediated by synthesis of platelet-activating factor*, 70th Scientific Sessions, American Heart Association, November 9-12, Orlando, FL, Invited Lecture.

1997 *Effects of stent geometry, balloon compliance, and deployment pressure on balloon-artery interactions during stent placement: A finite element model*, American Heart Association 70th Scientific Sessions, November 9-12, Orlando, FL, Invited Lecture.

1997 *Controlled Drug Delivery and Vascular Disease*, The 4th US-Japan Symposium on Drug Delivery Systems, December 14-19, Kauai, HI, Invited Lecture.

1997 Research Seminar, Guidant Inc, Santa Clara, CA, Seminar.

1998 *Pathology of Local Vascular Implants*, 15th Annual International Symposium on Interventional Cardiology, January 21-25, Miami Beach, FL, Invited Lecture.

1998 *Frontier Therapy for Vascular Proliferative Diseases*, 15th Annual International Symposium on Interventional Cardiology, January 21-25, Miami Beach, FL, Invited Lecture.

1998 *Local Cardiovascular Drug Delivery*, 15th Annual International Symposium on Interventional Cardiology, January 21-25, Miami Beach, FL, Invited Lecture.

1998 *Stent-Based Drug Delivery*, 4th Local Drug Delivery Meeting and Cardiovascular Course on Radiation and Molecular Strategies, February 26-28, Hotel Noga Hilton, Geneva, Switzerland, Invited Lecture.

1998 *Expanded polytetrafluoroethylene stent graft encapsulation reduces intimal thickening regardless of stent design*, 47th Annual Scientific Session, American College of Cardiology, March 29-April 1, Atlanta, GA, Invited Lecture.

1998 *Local Perivascular Basic Fibroblast Growth Factor (bFGF) Treatment in Patients with Ischemic Heart Disease*, 47th Annual Scientific Session, American College of Cardiology, March 29-April 1, Atlanta, GA, Invited Lecture.

1998 *The Endothelium in Vascular Disease*, Cardiology & Cardio-thoracic Surgery, Third International Symposium, June 8-9, Jerusalem, Israel, Invited Lecture.

1998 *Development of Scientifically-based Cardiovascular Therapies*, Thomas Jefferson University Hospital/Cardiovascular Research Center, July 17, Philadelphia, PA, Invited Lecture.

1998 Intensive Review of Internal Medicine. Brigham & Women's Hospital and Harvard Medical School, August 9-16, Cambridge, MA, Invited Lecture.

1998 *Vascular Visions: Acute Myocardial Infarction and Cardiogenic Shock: Salvaging Myocardium, Stabilizing Rhythm, and Prolonging Life.* Cardiology Research Foundation, September 15-17, Washington, D.C, Invited Lecture.

1998 *Molecular Cardiology and Local Cardiovascular Drug Delivery I*, Washington Convention Center, October 6, Washington, D.C, Invited Lecture.

1998 *Molecular Cardiology and Local Cardiovascular Drug Delivery II*, Washington Convention Center, October 7, Washington, D.C, Invited Lecture.

1998 *Coronary Stents I: Stent Designs, Controversies in Stenting, and The NIR Stent: An Advanced Platform for the Future. Interactive FDA Working* Session, October 8, Washington Convention Center, Washington, D.C, Invited Lecture.

1998 *Understanding The Biomaterials, Biomechanics, and Pathobiologic Responses of Coronary Stents: Revising U.S. Regulatory Standards ,* Plenary Session #7 Endovascular Prosthetic Devices I. (Stents). October, 9, Washington Convention Center, Washington, D.C, Plenary Presentation.

1998 *Vascular Biology and Biomedical Engineering*, Center for Engineering in Medicine, Shriners Hospital for Children, October 21, Boston, MA, Invited Lecture.

1998 *The Vascular Biology of Interventional Cardiology over the last 400 years*, Mt. Sinai Hospital, October 21, New York, NY, Invited Lecture.

1998 *The Future of the Clinician-Scientist*, Mt. Sinai Hospital, October 21, New York, NY, Invited Lecture.

1999 *Tissue engineering and vascular disease,* Mt. Sinai School of Medicine, July 14, New York, NY, Invited Lecture.

Controlled release of growth factors: Biology, pharmacokinetics and clinical applications, Alkermes, Inc., August 3, Invited Lecture.

1999 *Drug Delivery: Innovations in Therapeutic Targeting*, Massachusetts Biotechnology Council, October 18, Invited Lecture.

1999 *Tissue Engineering and Vascular Disease*, Institute for Medicine and Engineering, University of Pennsylvania, December 7, Visiting Professorship.

1999 *Controlled release from endovascular implants*, 5th Japan Symposium on Drug Delivery Systems, December 12-17, Maui, Hawaii, Invited Lecture.

2000 *Molecular Intervention in Cardiovascular Disease and Stent-based Drug Delivery*, 12th Annual International Symposium on Endovascular Therapy, ISET 2000, January 23-27, Miami Beach, FL, Invited Lecture.

2000 *Frontiers in Cardiovascular Biology*, Harvard School of Public Health, Laboratory of Cardiovascular Biology-Center for the prevention of Cardiovascular Disease, February 11, Boston, MA, Seminar.

2000 *Vascular Tissue Engineering: Structure vs. Function, The Biology of Vascular Interventions – Minimally Invasive Approaches to Vascular Disease*, February 17-18, Bethesda, MD, Invited Lecture.

2000 *Tissue Engineering & Vascular Disease*, Cardiovascular Research Seminar 1999-2000, February 23, St. Elizabeth's Medical Center, Boston, MA, Invited Lecture.

2000 *Scaffolds for Perivascular Endothelial Cell Implantation*, Tissue Engineering, Biomemetics and Medical Implant Science: Second Annual Grantees Meeting, National Institute of Health, March 2, 2000, Bethesda, MD, Invited Lecture.

2000 *Scaffolds for perivascular endothelial cell transplantation*, VIIth Biannual Meeting of the International Society for Applied Cardiovascular Biology, March, 9-11, Tucson, AZ, Invited Lecture.

2000 4th Biannual International Symposium on Cardiology and Cardio-Thoracic Surgery, July 3-4, Jerusalem, Israel, Invited Lecture.

2000 *Local treatment and biomaterials*, XIth International Vascular Biology Meeting, September, 5-9, Geneva, Switzerland, Invited Lecture.

2000 *Debate: Gold Stents Represent a New Standard for Visibility, Performance and Clinical Outcomes*, The 12th Annual Symposium, Washington Convention Center, October 19, Washington, DC, Invited Lecture.

2000 *Coronary Stents I: Differentiating Stent Design and Performance*, Transcatheter Cardiovascular Therapeutics, The Twelfth Annual Symposium, Washington Convention Center, October 19, Washington, DC, Invited Lecture.

2000 *Implications of Stent Design: Key Findings from Multi-Link Tetre Animal Studies*, Controversies in Coronary Stenting, Transcatheter Cardiovascular Therapeutics, The Twelfth Annual Symposium, Washington Convention Center, October 19, Washington, DC, Invited Lecture.

2000 *Molecular Cardiology for the 'Clinician': Concepts, Semantics, and Clinical Applications -- Hope or Hype?*, Plenary Session #3: Atherosclerosis and Molecular Cardiology, Transcatheter Cardiovascular Therapeutics, The Twelfth Annual Symposium, Washington Convention Center, October 19, Washington, DC, Invited Lecture.

Stent Design Dictates Thrombosis and Restenosis: New Insight Into the Performance of Standard Stainless Steel Stents from Computer Modeling

2001 *Evaluating Stent Performance and Biocompatibility in Bench and Animal Models*, CIMIT Forum, Massachusetts General Hospital, January 9, Boston, MA.

2001 *BioTechnology and Entrepreneurship: Visions of the Future*, MIT-Science and Engineering Business Club, January 19, Cambridge, MA.

2001 *Does Stent Design Really Matter?*, Cardiovascular Radiation Therapy V/Restenosis Forum, February 7, Washington, DC.

2001 *Tissue Engineering: Living Stent II*, Cardiovascular Radiation Therapy V/Restenosis Forum, February 7, Washington, DC.

2001 *Stent Design and Drug Delivery*, Cardiology of Georgia, P.C., March 15, Atlanta, GA.

2001 Cardiology Grand Rounds, Columbia University, May 15, New York, NY

2001 *Vascular Biology, Vascular Medicine, and Vascular Biotechnology*, Division of Cardiology, University of Texas Medical Branch at Galveston, May 24, Galveston, TX.

2001 *Endovascular Stents: Model Systems for Vascular Biology Research*, Division of Cardiology, University of Texas Medical Branch at Galveston, May 24, Galveston, TX.

2001 *Do We Understand Restenosis? Which Pathways Should Be Interrupted?* Transcatheter Cardiovascular Therapeutics 2001, September 11, Washington, DC.

2001 *Importance of Release Kinetics and Depth of Penetration*, Transcatheter Cardiovascular Therapeutics 2001, September 11, Washington, DC.

2001 *The Burgeoning Field of Clinical Tissue Engineering: From Stem Cell Implants to Vascular and Myocardial Remodeling*, Transcatheter Cardiovascular Therapeutics 2001, September 12, Washington, DC.

2001 *Tissue Engineering - Present Status and Future Expectations*, Transcatheter Cardiovascular Therapeutics 2001, September 12, Washington, DC.

2002 *Stent Based Drug Delivery*, 14th Annual International Symposium on Endovascular Therapy, ISET 2002, January 20-24, Miami Beach, FL, Invited Lecture.

2002 *What is Tissue Engineering and How Can it be Applied?,* 14th Annual International Symposium on Endovascular Therapy, ISET 2002, January 20-24, Miami Beach, FL, Invited Lecture.

2002 *Polymers on Stents: Biocompatibility, Release Kinetics, and Depth of Penetration,* Cardiovascular Radiation Therapy VI/Restenosis Forum II, February 6-8, Washington, DC.

2002 Joint Interventional Meeting, JIM 2002, February 7-9, Rome, Italy.

2002 *Cyphers, the 'Key' Difference*, Cordis Symposium, May 22-24, 2002, France, Paris.

2002 *Vascular Biology, Tissue Engineering and Vascular Repair,* Morris Karnovsky Symposium, June 10, 2002, Cambridge, MA, Invited Lecture.

2002 *The Drug-Eluting Stent Revolution: Multi-Component Design Elements of a Breakthrough Technology*, Transcatheter Cardiovascular Therapeutics 2002, September 24, 2002, Washington, DC, Invited Lecture.

2002 Live Case Transmissions, Transcatheter Cardiovascular Therapeutics 2002, September 24, 2002, Washington, DC, Discussant.

2002 Moderated Panel and Audience Q & A: Drug-Eluting Stents, 2ranscatheter Cardiovascular Therapeutics 2002, September 25, 2002, Washington, DC, Discussant.

2002 *The Molecular Cardiology Symposium: Angiogenesis, Cell Therapy, and Local Drug Delivery*, Transcatheter Cardiovascular Therapeutics 2002, September 27, 2002, Washington, DC, Event Moderator.

2002 *The Burgeoning Field of Tissue-Engineering—From Cell Therapy approaches to Vascular and Myocardial Remodeling to Organogenesis*, Transcatheter Cardiovascular Therapeutics 2002, September 27, 2002, Washington, DC, Invited Lecture.

2002 The Drug-Eluting Stent Summit, Transcatheter Cardiovascular Therapeutics 2002, September 27, 2002, Washington, DC, Section Moderator.

2002 *The drug carrier vehicle—1) Polymer vs. Phosphorylcholine vs. Direct Adherence; 2) Impact of Bioerodability and Vascular Reactivity*, Transcatheter Cardiovascular Therapeutics 2002, September 27, 2002, Washington, DC, Invited Lecture.

2002 *Drug Release Kinetics—Factors Governing Dose and Tissue Penetration From Polymer and Non Polymer Based Systems*, Transcatheter Cardiovascular Therapeutics 2002, September 27, 2002, Washington, DC, Invited Lecture.

2002 *Basic Science and Desirable Components of a Drug Eluting Stent*, Roundtable Discussion and Audience Q & A, Transcatheter Cardiovascular Therapeutics 2002, September 27, 2002, Washington, DC, Discussant.

2003 *Understanding the Concept of Drug-Eluting Stents*, January 19, 2003, International Symposium on Endovascular Theory, Miami, FL.

Hot Topics in Interventional Cardiology, January 19, 2003, International Symposium on Endovascular Theory, Miami, FL, Panelist.

Controversies in Endovascular Medicine, January 20, 2003, International Symposium on Endovascular Theory, Miami, FL, Moderator.

What do Vascular Specialists Need to Know about Drug Eluting Stents, January 20, 2003, International Symposium on Endovascular Theory, Miami, FL.

2003 *Issues Regarding Stent Design Drug-Related System*, April 1 2003, American College of Cardiology Meeting 2003, Chicago, IL.

2003 *Inhibitor Macrophage Infusion*, May 23, 2003, EuroPCR, Paris, France

2003 *A novel systemic anti-inflammatory strategy to reduce restenosis: Liposomal bisphonates and macrophage depletion*, September 16 2003 Transcatheter Cardiovascular Therapeutics, Washington, DC.

2003 *Drug-eluting stents: A 'case study' of the first successful biotechnology platform- pitfalls, lessons and insights*, September 17 2003 Transcatheter Cardiovascular Therapeutics, Washington, DC.

2003 *A basic primer on the essentials of drug-carrier systems- polymers, PC coatings, and direct bonding methods- similarities, differences and other innovative solutions*, September 18 2003 Transcatheter Cardiovascular Therapeutics, Washington, DC.

2003 Pharmaceutical Patent Forum, SG Cowen Securities Corporation, October 7 2003, 6th Annual Pharmaceutical Therapeutic Categories Review Conference, New York, NY.

2003 *Drug-Eluting Stents: Technical Update*, December 8 2003, 5th International Meeting on Interventional Cardiology, Tel Aviv, Israel.

2004 Understanding the Concept of Drug Eluting Stents: The Impact of Stent Design, January 25 2004, International Symposium on Endovascular Theory, Miami, FL.

Crossfire: Topical debates in Endovascular Therapy, January 26 2004, International Symposium on Endovascular Theory, Miami, FL.

Live Case Demonstrations, January 26 2004, International Symposium on Endovascular Theory, Miami, FL.

Carotid Artery Therapy, January 26 2004, International Symposium on Endovascular Theory, Miami, FL.

Engineering Solutions for Restenosis, January 26 2004, International Symposium on Endovascular Theory, Miami, FL.

2004 *Mechanisms of DES Failures*, May 7, 2004, Drug Eluting Stents In-Dept Symposium, Washington, DC.

Bioabsorbable Polymers, May 7, 2004, Drug Eluting Stents In-Dept Symposium, Washington, DC.

2004 *Mechanistic insights into Sirolimus activity and distribution after stent delivery*, May 24, 2004, PCR, Paris, France. Plenary Session.

2004 *The Brave New World: Drug Eluting Stents and Other Revolutions*, August 12, 2004, Life Sciences Conference, Jerusalem, Israel.

2004 *Innovations in Experimental Medicine: Impact on Drug-Eluting Stents and Other Antirestenosis Therapies*, September 27, 2004, Transcatheter Cardiovascular Therapeutics, Washington, DC.

Understanding the Concept of Drug Eluting Stents: The Impact of Stent Design, International Symposium on Endovascular Theory, January 25 2004, Miami, FL, Invited Lecture.

Session II- Crossfire: Topical debates in Endovascular Therapy, International Symposium on Endovascular Theory, January 26 2004, Miami, FL, Moderator.

Live Case Demonstrations, International Symposium on Endovascular Theory, January 26 2004, Miami, FL, Panelist.

Topic I- Carotid Artery Therapy, International Symposium on Endovascular Theory, January 26 2004, Miami, FL, Moderator.

Engineering Solutions for Restenosis, International Symposium on Endovascular Theory, January 26 2004, Miami, FL, Invited Lecture.

Stent Design and Geometry, A.G. Edwards 3rd Annual Panel and Interactive Discussion on Emerging Medical Technology, February 24, 2004, NY, NY, Keynote Speaker.

2005 *The Basics of Restenosis and DES*, January 16 2005, International Symposium on Endovascular Theory, Miami, FL.

2005 *The Trials and Tribulations of Drug Eluting Stents*, January 16 2005, International Symposium on Endovascular Theory, Miami, FL.

2005 *Stent Based Drug Delivery: Conception, Clinical Use and Remaining Challenges*, January 27 2005, St. Elizabeth's Hospital, Tufts University.

2005 *Tissue Engineering: Examples from the Cardiovascular System*, February 7, 2005, Pathology Grand Rounds, Brigham and Women's Hospital, Boston, MA.

2005 *Drug Eluting Stents: Mechanisms and Myths*, February 21 2005, 12th International Symposium on Recent Advances in Drug Delivery Systems, Salt Lake City, UT.

2005 *Drug Eluting Stents: Conception, Implementation and Current Challenges*, April 13 2005, Minnesota's Medical Device Community Forum: Design of Medical Devices, Minneapolis, MN.

2005 *Current Trends and Lab Issues regarding Drug Eluting Stent Technology*, February 24, 2005, Morgan Stanley 8th Annual Interventional Cardiology, Conference, New York, NY.

Drug Eluting Stents: Conception, Implementation and Current Challenges, Design of Medical Devices Conference and President's Interdisciplinary Conference on Medical Devices, April 13-15, 2005, Minneapolis, MN, Invited Lecture.

Innovations in Cardiovascular Tissue Engineering, National Academy of Engineering and MIT School of Engineering Symposium on Stimulating Invention and Innovation, May 17, 2005, Cambridge, MA, Panelist.

Biomedical Applications of Expandable Microspheres, DuPont Symposium, May 19, 2005, Wilmington, DL, Panelist.

Stent-Based Drug Delivery, Controlled Release Society Annual Meeting, June 18-22, 2005, Miami, FL, Invited Lecture.

Vascular Repair, Inside and Out, Devices, Drugs and Cells, Gordon Research Conference on Biomaterials: Biocompatibility/ Tissue Engineering, July 31-August 5, 2005, Plymouth, NH, Invited Lecture.

The Evolution of Medical Sciences in Judaism, MIT Hillel Faculty Lunch Speakers Series, September 23, 2005, Invited Lecture.

Advances in Polymer and Drug Development, American Heart Association Annual Meeting, Dallas, Texas, November 14, 2005, Invited Lecture.

Cardiovascular Tissue Engineering: Lessons from Devices and Vascular Biology, Cardiovascular Grand Rounds, Dartmouth-Hitchcock Medical Center, Hanover, New Hampshire, December 2005. Invited Lecture.

2006 *Drug Eluting Stents In-Depth*, Cardiovascular Revascularization Therapies 2006 Conference, Cardiovascular Research Institute, Washington Hospital Center, Washington, DC, Moderator.

New Insights into the Biology of DES, Cardiovascular Revascularization Therapies 2006 Conference, Cardiovascular Research Institute, Washington, DC, Invited Lecture.

Tissue Regeneration and Translational Research, Massachusetts Medical Device Industry Council, Massachusetts Medical Society, Waltham, MA, May, 2006, Invited Panelist.

Tissue Engineering of Endothelial Cells and the Immune Response, World Transplant Congress, Washington, DC, Invited Lecture.

2007 *Stents, Drug Elution and Tissue Engineering: Technology in Evolution*, Cardiology Grand Rounds, Cardiovascular Research Institute, Washington Hospital Center, Washington, DC, May 1, 2007. Invited Lecture.

Animal Studies, Harvard Clinical Research Institute-Cardiomed Device Consultants Seminar: Medical Device Development Workshop: A Case Study Approach, Boston, MA, May 16, 2007. Invited Lecture.

Cardiovascular Tissue Engineering and Biotechnologies, Re-Engineering of the Cardiovascular Stem Cell Biology, Harvard Stem Cell Institute's Strategic Development in Biological Innovation, Cambridge, MA,. April 30, 2007, Invited Lecture.

The Right Approaches for Animal Models and Pre-clinical Studies to Gain the Required Data to Allow Clinical Studies, ICI 2007 – Innovations in Cardiovascular Interventions, Tel Aviv, Israel, December 4, 2007, Invited Lecture.

2008 *Drug Transport in Artery Walls*, FDA/NSF/NIH Workshop on Computer Methods in Cardiovascular Device Design & Evaluation, Bethesda, MD, March 18, 2008, Invited Lecture

Challenges of Academic-Industry Collaboration in the Modern Era, 3rd Annual Medical Device Regulatory, Reimbursement and Compliance Congress, Harvard University, Cambridge, MA, March 27, 2008, Invited Lecture.

Vascular Biology, Endovascular Stents, and Tissue Engineering: Robert Koch and The Dread Pirate Robert, 25th Reunion Symposium, Harvard Medical School, Boston MA, June 5, 2008, Invited Lecture.

Stents as a Case-Study of Experimental Interventional Medicine, Transcatheter Cardiovascular Therapeutics 20th Annual Symposium; 2008 Washington, DC, October 12-17, Plenary Lecture.

Biodegradable Polymers, Healing Drugs and Disappearing Stents: Where Is the Future? Scientific Sessions 2008, American Heart Association Annual Meeting, New Orleans, LA, November 11,Invited Lecture.

2009 *Endothelial Engineering Concept to Clinic*, Cardiovascular Grand Rounds, Massachusetts General Hospital, Boston, MA, March 4, 2009. Invited Lecture.

Keynote Speaker, 4th International Symposium on Biomechanics in Vascular Biology and Cardiovascular Disease, Rotterdam, The Netherlands, April 16-17, 2009.

Endothelial Regulation of Vascular Homeostasis: Intersection of Vascular and Immune Biology Inside and Out, Jeffrey M. Hoeg Arteriosclerosis, Thrombosis and Vascular Biology Award for Basic Science and Clinical Research Lecture. American Heart Association Arteriosclerosis, Thrombosis and Vascular Biology Annual Conference, April 29-May 1, 2009, Washington, DC.

Climate for Innovation in Massachusetts, Medical Technology Leadership Forum, May 7-8, 2009, Boston, MA, Invited Lecture.

Center for Scientific Review Special Emphasis Panel: American Recovery Reinvestment Act Grand Opportunity (GO) Grant Applications, August 6, 2009, Bethesda, MD.

Part 1: A Basic Science Tour de Force: Perivascular Tissue Engineered Allogeneic Endothelial Cells: Vascular Repair After Intervention:

Preclincial and Clinical Results, Transcatheter Cardiovascular Therapeutics 21st Annual Conference, September 21-25, 2009, San Francisco, CA, Invited Lecture.

Polymer Bioabsorption Fundamentals and Differences Among DES Systems, Transcatheter Cardiovascular Therapeutics 21st Annual Conference, September 21-25, 2009, San Francisco, CA, Invited Lecture.

Session III- Polymer-Free DES Platforms, Transcatheter Cardiovascular Therapeutics 21st Annual Conference, September 21-25, 2009, San Francisco, CA, Moderator.

2010 *Vascular Biology, Vascular Tissue Engineering and Novel Vascular Therapeutics*, Translational and Molecular Imaging Institute Seminar Series, Mount Sinai School of Medicine, May 21, 2010, New York, New York. Invited Lecture.

Tissue Engineering for the Injured Lung, Harvard Lung Conference & CIMIT:Center for Integration of Medicine & Innovative Technology, Inhalation Technology Workshop, Harvard Medical School, October 6-7, 2010, Boston MA. Invited Lecture.

Early, Innovative Resuscitation and Bleeding Control after Injury, CIMIT:Center for Integration of Medicine & Innovative Technology Forum-Trauma and Critical Care, Pre-Hospital Resuscitation Workshop, Massachusetts General Hospital, Boston, MA. Invited Lecture

The Impact of Vascular Biology & Computational Models on Device Innovation in Cardiovascular Medicine (Case Examples), Transcatheter Cardiovascular Therapeutics 22st Annual Conference, September 21-25, 2010, Washington, DC. Invited Lecture.

2011 *Tissue-Specific Adhesive Materials*, IDEASTREAM Deshpande Center Symposium 2011, April 15, 2011, Massachusetts Institute of Technology, Cambridge, MA. Invited Lecture.

Bench to Bedside: Marriage of Engineering and Biological Sciences: Forget the Future, What have we learned from the past, Dean's Distinguished Lecture, April 21, 2011, The Fu Foundation School of Engineering and Applied Science, Columbia University, New York, New York. Invited Lecture

A Report from the Edelman Lab, Harvard-MIT Biomedical Engineering Center, Massachusetts Medical Device Industry Council, 15th Annual Conference, May 3, 2011, UMass Boston Campus Center, Boston, MA. Plenary Speaker

Bioengineering, Vascular Biology and Emerging Cardiovascular Therapeutics, American Society of Mechanical Engineering (ASME) 2011 Summer Bioengineering Conference, June 23, 2011, Farmington, PA. Plenary Speaker

ISCTE-IUL / MIT-Portugal Venture Competition, September 22, 2011, Lisbon, Portugal. Keynote Speaker

Tissue Engineering: Linking Vascular & Cancer Biology, Brigham & Women's Hospital, Biomedical Research Institute Regenerative Therapeutics Research Center Inaugural Symposium, September 26, 2011.

Invited Lecture

Engineering Endothelial Cells – The Paradigmatic Paracrine Cell Regulators, Society for Laboratory Automation and Screening: Global Symposia Series – Screening Stem Cells'11, September 27, 2011, Sheraton Boston, Boston, MA. Invited Lecture.

Potential Improvements in the US Regulatory System – Hope for the Future? MD4 Utah Summit 2011, October 25, 2011

What Vascular Biology can Teach us About Cancer Biology, Columbia University, Katz Prize Lecture in Cardiovascular Research, October 27, 2011

VBT-CVM Seminar: *Endothelial Angiocrine Regulation – Convergence of Vascular & Cancer Biology*, Yale University, October 31, 2011

Cardiovascular Medicine Grand Rounds: The Polymer Coating in Stent Biology Culprit or Savior, Yale University, November 1, 2011

What's Gone RIGHT! Innovation Is Still the Cornerstone of Less Invasive Interventional Therapy, TransCatheter Therapeutic Conference, November 7, 2011 San Francisco

Durable Polymers Can Be a Positive Attribute of a Stent!, TransCatheter Therapeutic Conference, November 8, 2011 San Francisco

Lecture Title: Do Polymers on Stents Add Risk or Safety? New Experimental Insights, TransCatheter Therapeutic Conference, November 8, 2011 San Francisco

Drug Coated Balloons Validation Strategies: Bench Testing, In Vivo PK, and Beyond,TransCatheter Therapeutic Conference, November 8, 2011 San Francisco

Emerging Technologies, 14th annual MIT Venture Capital Conference, Nov 18, 2011, Boston Marriott Cambridge

2012

Tissue Engineering: Unraveling the Mysteries of Cardiovascular and Cancer Biology, Hollingsworth Lecture, University of Texas at Austin, January 26, 2012

Factors in Stent Thrombogenicity and Stent-Based Drug Deposition, Cardiovascular Grand Rounds, Beth Israel Deaconess Hospital, January 27, 2012

What Endothelial Biology and Tissue Engineering Have Taught us about Vascular and Cancer Diseases, Simposi Incor – FMUSP – Harvard de Excelencia em Pesquisa Medica May 17, 2012 Sao Paolo Brazil

NIH workshop on imaging in tissue engineering & regenerative medicine May 31, 2012, Bethesda MD

Cell Based Therapies in Vascular Access Maturation and Preservation, Fresenius Medical Directors Meeting, Las Vegas NV, June 13, 2012

2012 Smooth Muscle Conference June 24-29, 2012 Snowmass Village, CO, Chair: Cell to Cell Communication

2012 Smooth Muscle Conference June 24-29, 2012 Snowmass Village, CO, Cell-cell communication dominates in vascular repair: Coupled interactions of endothelial cells, smooth muscle cells and monocytes

Sinai Innovations, Innovation: Withering Art or Thriving Science?", November 13, 2012, Mt Sinai NY

Transcatheter Therapeutic Conference, October 22, 2012, Miami FL, Associate Director

Is Innovation In The United States On The Road To Recovery? An Interim Analysis And Critique, Transcatheter Therapeutic Conference, October 22, 2012, Miami FL

DCB - Evaluation Of Drug Transfer, Tissue Pharmacokinetics, And Vascular Effects, Transcatheter Therapeutic Conference, October 22, 2012, Miami FL

Cell-Based Therapies For Vascular Disease, Transcatheter Therapeutic Conference, October 22, 2012, Miami FL

Strut Architecture And Polymer Configuration Modulate Device Outcomes, Transcatheter Therapeutic Conference, October 22, 2012, Miami FL

2013

Cell-cell Communications Dominates in Tissue Repair: Coupled Interactions of Endothelial Cells, Smooth Muscle Cells, Monocytes and Tissue Cells – Implications for Vascular Disease and Cancer Biology, Association of University Cardiologists Meetings, January 9 -11, 2013

Materials Innovation: Driving the Revolution in Cardiovascular Interventions, Keynote Address, Society for Biomaterials 2013 Annual Meeting & Exposition, April 10 – 13, 2013, Boston, MA

Future of Innovation and Investigation in Science and Technology, Congressional Committee on Science and Technology, Congress of the United States, April 16, 2013

The Big Bang in Medicine and Engineering - will the knowledge explosion actually hurt innovation across disciplines? April 17, TEDMED 2013, Washington DC

Panel Discussion, 2nd Annual Kantoff-Sang Lecture, Regulatory Science: Perspectives, May 2, 2013, Cambridge, MA

Innovation Grand Rounds; Brigham and Women's Hospital Oct 2013: Developing Technology in the Modern Era: Industrial-Academic Collaborations in Creating Cardiovascular Innovations

Keynote Address: Interventional Innovation "Then and Now." The Evolution of Translational Science, Clinical Evidence-Based Medicine. Transcatheter Cardiovascular Therapeutics, October 28, 2013, San Francisco, CA

Structural vs. Biologic DES Failure Modes: Experimental Insights. Transcatheter Cardiovascular Therapeutics, October 28, 2013, San Francisco, CA

Electrical irrigation alters RF ablation treatment zone geometry and preserves medical and adventitial tissue while maintaining. Transcatheter Cardiovascular Therapeutics, October 28, 2013, San Francisco, CA

Computational methods to assess plaque and intravascular hemodynamics. George D. Behrakis Cardiovascular Symposium on Vascular Biology, November 14, 2013, Boston MA

Regulatory Sciences, Harvard Catalyst, The Harvard Clinical and Translational Science Center, Medical Device Development, November 14, 2013, Cambridge, MA

2014

MMA Roadshow: Managing App Development under FDA Regulation, March 20, 2014, Cambridge MA

Regulatory Sciences, Harvard Catalyst, The Harvard Clinical and Translational Science Center, Medical Device Development, April 10, 2014 Cambridge, MA

The unique anatomy of renal artery ostium may limit efficacy of endovascular radiofrequency ablation, euroPCR, May 21, 2014, Paris France

Computational methodology for understanding and predicting lesion geometry in catheter-based renal sympathetic denervation, euroPCR, May 21, 2014, Paris France

Cordis RenLane: Irrigated, helical multi-electrode, euroPCR, May 21, 2014, Paris France

Mechanisms and Myths in Endovascular Stenting, euroPCR, May 21, 2014, Paris France

Thrombosis in Endovascular Implants: Flow, surfaces and milieu – Virchow knew it first. Thrombosis Mini-Symposium, Boston University, Boston MA, May 29, 2014

DES Gap Analysis 1: Mechanistic Concepts, BioResorbable Vascular Scaffolds: Transformational Technology for PCI, Boston MA July 25, 2014

Plenary Session IX: Dynamic Dialogues I: Myths and Controversies – Drug-Eluting Stents (Metallic and Bioresorbable). Transcatheter Cardiovascular Therapeutics, September 14, 2014, Washington DC

Dynamic Dialogues II: Myths and Controversies - Adjunctive Pharmacology. Transcatheter Cardiovascular Therapeutics, September 15, 2014, Washington DC

Endothelial cell control of vascular and cancer biology. Transcatheter Cardiovascular Therapeutics, September 15, 2014, Washington DC

Dynamic Dialogues III: Myths and Controversies – Endovascular Therapies. Transcatheter Cardiovascular Therapeutics, September 16, 2014, Washington DC

Early Device Validation Strategies: Changes and Opportunities. Transcatheter Cardiovascular Therapeutics, September 16, 2014, Washington DC

Mechanisms of Renal Denervation, International Conference on Innovation, Tel Aviv, Israel, December 15, 2014

Renal Denervation: Mechanistic Drivers Explain Disparate Clinical Findings, International Conference on Innovation, Tel Aviv, Israel, December 16, 2014

How do we Bridge the Gap in Medical Innovation?, Plenary Lecture, International Conference on Innovation, Tel Aviv, Israel, December 16, 2014

2015 Endothelial control of Vascular and Cancer Biology, Dean's Distinguished Lecture, Weill-Cornell New York, February 13, 2015

Effects of Orbital Atherectomy Treatment on Drug Absorption in Calcified Peripheral Arteries, Cardiovascular Research Technologies 2015, Washington DC February 22, 2015

Antiplatelet Therapy and Stent Design: Considerations of Stent Design.\, Polymer and Drug. Platelet Colloquium, University of Lexington, KY, April 8, 2015

Endothelial Control of Vascular Disease and Cancer Biology, Department of Clinical Laboratory and Nutritional Sciences Colloquium University of Massachusetts Lowell, April 16, 2015

Regulatory Sciences, Harvard Catalyst, The Harvard Clinical and Translational Science Center, Medical Device Development, April 10, 2015 Cambridge, MA

Innovations in Bare Metal, Drug-Eluting, Self-Expanding, and Absorbable Coronary Stents, Cardiovascular Medicine: Update for the Practitioner, Boston, MA, May 7, 2015

Innovation in Medicine: We are done or are we only beginning ?, Massimo Calabresi Lecture, Medical Grand Rounds, Yale University, New Haven CT, May 14, 2015

Vascular and Cancer Biology – Where Specific Etiology clashes with Tissue Engineering, Cardiology Grand Rounds, Yale University, New Haven CT, May 15, 2015

Hot line - DES trials and registries, co-chair, Euro-PCR, Paris May 19, 2015

Primary lesion treatment with orbital atherectomy system enhances paclitaxel deposition in calcified peripheral arteries, Euro-PCR, Paris May 19, 2015

Redefining bioabsorbable DES with MiStent: drug elution beyond polymer presence- preclinical testing, Euro-PCR, Paris May 20, 2015

Hot line – Peripheral interventions, Chair, Euro-PCR, Paris May 20, 2015

Cardiovascular innovation pipeline- TAVI and peripheral interventions, co-chair, Euro-PCR, Paris May 20, 2015

Procedural parameters of successful ablation – Anything on the horizon, Euro-PCR, Paris May 21, 2015

Redefining Aortic stenosis – Use of Advanced Imaging, Hemodynamics, Computational Models, and Clinical Data to Revise Triggers Points for Treatment, Keynote Lecture. TCT-San Francisco, CA, October 11, 2015

Renal Denervation: Do New Anatomical Insights Dictate Procedural Changes? Lecture TCT-San Francisco, CA, October 11, 2015

Can Today's Metallic Stent Platforms, Delivery Systems, and Durable Polymers Be Meaningfully Improved? Yes, Made Thinner and More Flexible, With Optimally Designed Platforms and Enhanced Polymers – There is Still Room for Improvement! Lecture. TCT-San Francisco, CA, October 12, 2015

Enhanced Circumferential Ablation using a Multi-electrode Bipolar/Unipolar Over-the-Wire Renal Denervation RF Catheter System with Closed Loop Sensing Lecture. TCT-San Francisco, CA, October 13, 2015

Emerging Cardiovascular Technologies and Interventional Heart Failure, Discussant, TCT-San Francisco, CA, October 14, 2015

Bioresorbabale Vascular Scafflods, Part 1, Moderator. TCT-San Francisco, CA, October 14, 2015

Emerging Understanding of BRS Fundamentals, Lecturer, TCT-San Francisco, CA, October 14, 2015

Pushing Innovation at the Cusp of Engineering, Biology and Medicine, Flexner Discovery Lecturer, Vanderbilt University Medical School, Nashville, Tennessee, November 4, 2015

Physician-Scientist Career Talk, MSTP Physician-Scientist Speaker Series, Vanderbilt University Medical School, Nashville, Tennessee, November 4, 2015

Redefining Aortic Stenosis: Use of Advanced Imaging, Hemodynamics, Computational Models and Clinical Data to Revise Trigger Points for Treatment, International Conference on Innovation, Tel Aviv, Israel, December 14, 2015

Influence of arterial Micro-Anatomy on Response to Renal Artery Denervation, International Conference on Innovation, Tel Aviv, Israel, December 14, 2015

Keynote Lecture, How do we Bridge the Gap in Medical Innovation?, Ninth course: Health Care Technological Innovation - From Idea to Commercialization, Tel Aviv University, Tel Aviv, Israel, December 14, 2015

2016 Keynote Lecture: Computational Modeling In Device Development. Irish Royal Society of Science, Galway, Ireland, January 22, 2016

Have we reached the zenith of innovation in medicine? MIT Sloan Healthcare Executives, Cambridge, MA, April 6, 2016

Plenary Speaker, Student Research in Advancing Research Concepts to Clinic, Global Youth Summit, Brandies University, Waltham, MA, June 26, 2016

The big data problem in biotechnology development and clinical medicine, MIT's Institute for Data, Systems, and Society – Cambridge MA, September 23, 2016

Specific Etiology, Regenerative Medicine and Cardiovascular Medicine, Simon Dack M.D., Memorial Lectruer, Mount Sinai School of Medicine, New York, NY October 10, 2016

Featured Lecture: Interventional Innovation is Alive and Well – Reflections and Predictions, TCT 2016, Washington DC, October 30, 2016

Moderator, Autonomic Modulation: New Targets, New Opportunities, TCT 2016, Washington DC, October 30, 2016

Lecture, Can Improvements in Metallurgy and Stent Design Improve Early and Late Outcomes With DES? TCT 2016, Washington DC, October 30, 2016

Moderator, Bench to Bedside: The Conundrum of Pre-Clinical Testing for Transcatheter Valve Therapies – When Is My Device Ready for Human Testing?, TCT 2016, Washington DC, October 30, 2016

Featured Lecture: The Current Symptom-Based Paradigm for When to Treat Aortic Stenosis Is Flawed - A Hypothesis to Integrate Hemodynamic, Structural, and Functional Parameters, TCT 2016, Washington DC, October 30, 2016

Lecture, Implications of Bioresorbable Polymer/Metal Type, Processing, Thickness, Configuration, and Other Variables on Mechanical Properties, Vascular Compatibility, and Healing II: Biomechanical Perspectives TCT 2016, Washington DC, October 31, 2016

Moderator, Early Feasibility Studies: A Critical Appraisal, TCT 2016, Washington DC, October 31, 2016

Role of Policy in Innovation, Woodrow Wilson Innovation Mesico Summit, Bostn, MA November 18, 2016

ICI Innovation Award Competition, Chair, Tel Aviv Israel, December 5, 2016

Tutorial on Erodible Materials, Tel Aviv Israel, December 6, 2016

Functionality of multilayer flow modulator (MFM) for treating type-B aortic dissections, Tel Aviv Israel, December 6, 2016

State of Innovation, Tel Aviv Israel, December 6, 2016

INNOVATION: MIT & PORTUGAL, MassBio-Massachusetts Biotechnology Council, December 19, 2016

2017 The Role of Academic Centers in Regulatory Sciences, Annual meeting Harvard-MIT Center for Regulatory Science, American Academy of Arts and Sciences, Somerville MA March 7, 2017

Communicating our vision, Plenary presentation at the 2017 Annual Meeting of the American Institute for Medical and Biological Engineering (AIMBE).National Academy of Sciences, Washington DC March 20, 2017

Evolving BRS technology, Chairperson, euroPCR 2017, Paris, France May 16, 2017

Novel insights from renal denervation studies, Chairperson, euroPCR 2017, Paris, France May 16, 2017
Bioresorbable scaffold thrombosis: what have we learnt? Plenary panelist, euroPCR 2017, Paris, France May 16, 2017

How a unique DES platform translates into clinical differentiation with MiStent: from premise to proven effectiveness, Symposium speaker, euroPCR 2017, Paris, France May 16, 2017

Bioresorbable valve therapy: tomorrow's world, Plenary Chairperson, euroPCR 2017, Paris, France May 16, 2017

Advances in BRS: understanding interactions with vessel biology, Chairperson, euroPCR 2017, Paris, France May 17, 2017

Cardiac regenerative strategies for interventionalist: update on clinical translation and outcomes, Plenary panelist, euroPCR 2017, Paris, France, May 7, 2017

Determining patient cardiac function from integrated device parameters, Symposium speaker, 2nd Annual Acute Cardiac Unloading Recovery Meeting, Barcelona, Spain, August 25, 2017

Refining the Classic Definition of Aortic Stenosis: A Dynamic Interpretation Including the Role of Ventricular Stroke Work and Vascular Impedance, Lecturer, TCT2017, Denver, Colorado, October 30, 2017

Metallic DES: What Can We Expect From New Drugs, Polymers, and Metals? Have We Reached the Limit of Iterative Development? Lecturer, TCT2017, Denver, Colorado, October 30, 2017

Early Feasibility Studies: Milestones Achieved and Future Directions, Discussant, TCT2017, Denver, Colorado, October 30, 2017

Device-Based Hypertension Therapies Beyond Renal Denervation, Moderator, TCT2017, Denver, Colorado, October 30, 2017

Insights into Asymmetric Scaffold Bioreabsorption and Failure Mechanism, Lecturer, TCT2017, Denver, Colorado, November 1, 2017

Refining AS Nosology with Hemodynamics, International Conference on Innovation, Tel Aviv, Israel, December 4, 2017

Strain Accentuates Asymmetric Bioerosion of Vascular Scaffolds and Variable Clinical Performance, International Conference on Innovation, Tel Aviv, Israel, December 5, 2017

Science and Clinical importance of Hemodynamics and Ventricular Unloading, International Conference on Innovation, Tel Aviv, Israel, December 5, 2017

Simultaneous Tracking Drug Delivery and Receptor Interactions Distinguishes DES, International Conference on Innovation, Tel Aviv, Israel, December 5, 2017

Keynote Lecture, Medical Innovation, Eleventh course: Health Care Technological Innovation - From Idea to Commercialization, Tel Aviv University, Tel Aviv, Israel, December 5, 2017

Collaborative Innovation: Transforming or Burdening Medicine, Grand Rounds, Tufts Medical Center, December 15, 2017

2018 Featured Lecture: Redefining Aortic Stenosis – Can Quantitative Metrics Replace Symptom-Directed Intervention for Aortic Stenosis, Heart Valve Society 4th annual meeting, New York City, April 12, 2018

Moderator, Commemorative Plenary Session - Celebrating the 50th Anniversary of the Circulation Aortic Stenosis Natural History Manuscript Heart Valve Society 4th annual meeting, New York City, April 12, 2018

b. Professional and educational leadership role

3. Teaching awards received

2000 The 2000 Thomas A. McMahon Mentoring Award, Harvard University / Massachusetts Institute of Technology Division of Health Sciences and Technology

4. Major curriculum offerings/educational programs developed

1989-1992 Introductory Course for First Year Cardiology Fellows, Brigham and Women's Hospital, Boston
Organizer and Lecturer
20 cardiology fellows, and faculty members
25 hours per year

HST-150	*Pharmacology*
1989-1996	founding and core faculty member 40 Medical and Graduate students 60 hours/year
HST-240	*Physician-Scientist Preceptorship*
1989-present	founding faculty and course director 40 Medical and Graduate students required graduation 1 month elective
HST-090	*Cardiovascular Pathophysiology*
1980, 1982	tutor
1991-1998	core faculty member
1999-present	director 55 Medical and Graduate students

E. Report of Clinical Activities:

1989 Attending Physician, Levine Coronary Care Unit, Brigham and Women's Hospital, Boston

1. Core member of the Brigham and Women's Hospital coronary care unit faculty in addition to general cardiology outpatient and inpatient care.

2. Clinical activity includes directing the day-to-day care of the most acutely ill patients in our hospital with ischemic heart disease, unstable angina, myocardial infarction, respiratory distress, shock, sepsis, sudden death, congestive heart failure, dysrhythmias etc. I routinely perform diagnostic right heart catheterization, trans-thoracic echocardiograms, pluerocenteses, paracenteses, and insertion of temporary pacemakers, pulmonary artery catheters, central venous catheters, and arterial pressure monitoring catheters. On an emergent basis I perform pericardiocenteses, tracheal incubations and insert intra-aortic balloon counterpulsation pumps.

3. I also serve on a permanent rotating basis at providing formal legacy interpretations of departmental electrocardiograms

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2	Localized oligonucleotide therapy	WO9301286 (A2); WO9301286 (A3)	1/21/1993	Rosenberg Robert D, Simons Michael, Edelman Elazer, Langer Robert S, Dekeyser Jean-Luc,[Be]
3	Localized oligonucleotide therapy	WO9308845 (A1)	5/13/1993	Rosenberg Robert D, Simons Michael, Edelman Elazer, Langer Robert S, Dekeyser Jean-Luc,[Be]
4	Lokalisert oligonukleotid-terapi	NO934828 (A)	2/24/1994	Rosenberg Robert D, Simons Michael, Edelman Elazer, Langer Robert S, Dekeyser Jean-Luc,[Be]
5	Extraluminal regulation of the growth and repair of tubular structures in vivo	US5455039 (A)	10/3/1995	Edelman Elazer R, Adams David H, Karnovsky Morris J,
6	Extraluminal regulation of the growth and repair of tubular structures in vivo	US5527532 (A)	6/18/1996	Edelman Elazer R, Adams David H, Karnovsky Morris J,
7	Extraluminal regulation of the growth and repair of tubular structures in vivo	US5540928 (A)	7/30/1996	Edelman Elazer R, Adams David H, Karnovsky Morris J,

	Title	Publication number	Publication date	Inventor(s)
8	Inhibition of Vascular Occlusion Following Vascular Intervention	WO 996038188 A1	12/5/1996	Edelman Elazer, Aruna Nathan, Nugent Matthew A
9	Localized oligonucleotide therapy	US5593974 (A)	1/14/1997	Rosenberg Robert D, Simons Michael, Edelman Elazer, Langer Robert S, Dekeyser Jean-Luc,[Be]
10	Inhibition of vascular smooth muscle cell proliferation with implanted matrix containing vascular endothelial cells	US5766584 (A)	6/16/1998	Edelman Elazer R, Nathan Aruna, Nugent Matthew A,
11	Localized oligonucleotide therapy for preventing restenosis	CA2228977 (A1)	5/7/1999	Rosenberg Robert D, Simons Michael, Edelman Elazer R, Sirois Martin G,[Ca]
12	Stent slip sensing system and method	US6091980 (A)	7/18/2000	Squire James C, Rogers Campbell, Edelman Elazer R,
13	Device for stabilizing a treatment site and method of use	WO0062680 (A1)	10/26/2000	Takahashi Masao; Edelman Elazer E; Carpenter Kenneth W
14	Stent expansion and apposition sensing	US6179858 (B1)	1/30/2001	Squire James C, Rogers Campell, Edelman Elazer R,
15	Device for stabilizing a treatment site and method of use	US6231585 (B1)	5/15/2001	Takahashi Masao,[Jp]; Edelman Elazer E, Carpenter Kenneth W,
16	Low disturbance pulsatile flow system	AU4359201 (A)	9/24/2001	Edelman Elazer; Kolandaivelu Kumaran
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18	Device for stabilizing a treatment site and method of use	US6338710 (B1)	1/15/2002	Takahashi Masao,[Jp]; Edelman Elazer E, Carpenter Kenneth W,

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21	Expandable medical device with improved spatial distribution	US6764507 (B2); US2002068969 (A1)	6/6/2002	Shanley John F, Eigler Neal L, Edelman Elazer R,
22	Localized oligonucleotide therapy for preventing restenosis	US2002151513 (A1)	10/17/2002	Sirois Martin G,[Ca]; Edelman Elazer R, Rosenberg Robert D, Simons Michael,
23	Stent concept for minimization of deployment related wall shear and injury	US2003093142 (A1)	5/15/2003	Edelman Elazer, Kolandaivelu Kumaran,
24	Direct arterial infiltration for production of vascular pathology	US2003192555 (A1)	10/16/2003	Edelman Elazer, Rogers Campbell, Welt Frederick G,
25	Method and apparatus for accurate positioning of a dual balloon catheter	US7066905 (B2); US2004092870 (A1)	5/13/2004	Squire James C, Edelman Elazer R, Teirstein Paul,
26	Method of treating acute coronary syndromes	WO2005002545 (A1); WO2005002545 (A8) US2017100415(A1) US009827254 (B2)	1/13/2005	Richter Yoram, Edelman Elazer R, Golomb Gershon,; Danenberg Haim D,
27	Inhibition of occlusion of blood vessel after intervening blood vessel	JP2005254000	9/22/2005	Richter Yoram, Edelman Elazer R, Nathan Aruna, Nugent Matthew A
28	Method of treating ischemia-reperfusion injury	US2006051407 (A1)	3/9/2006	Richter Yoram, Edelman Elazer R, Golomb Gershon,; Danenberg Haim D,
29	Methods and compositions for enhancing vascular access	WO2006062909 (A3); WO2006062909 (A2)	6/15/2006	Nugent Helen Marie, Edelman Elazer, Dalal Anupam, Bollinger Steve, Epperly Scott,

	Title	Publication number	Publication date	Inventor(s)
30	Materials and methods for minimally-invasive administration of a cell-containing flowable composition	WO2006062871 (A2); WO2006062871 (A3); WO2006062871 (A9)	6/15/2006	Nugent Helen Marie, Edelman Elazer, Bollinger Steve,
31	Expandable medical device with improved spatial distribution	US2006149354 (A1); US7842083 (B2)	7/6/2006	Shanley John F, Eigler Neal L, Edelman Elazer R,
32	Localized delivery of cardiac inotropic agents	WO2006127907 (A2); WO2006127907 (A3)	11/30/2006	Edelman Elazer, Lovich Mark,
33	Process for embolization using swellable and deformable microspheres	US8062673 (B2); US2007237742 (A1)	10/11/2007	Figuly Garret D, Mahajan Surbhi, Schiffino Rinaldo S, Feldstein Michael J, Shazly Tarek M, Edelman Elazer R,
34	Medical treatment applications of swellable and deformable microspheres	US2007237741 (A1); US8252339 (B2)	10/11/2007	Figuly Garret D, Mahajan Surbhi, Schiffino Rinaldo S, Bhatia Sujata K, Edelman Elazer R, Shazly Tarek Michael, Feldstein Michael Jordan,
35	Methods and compositions for modulating tissue modeling	WO2008057590 (A2); WO2008057590 (A3)	5/15/2008	Nugent Helen Marie, Edelman Elazer R, Tjin Tham Sjin Robert M,
36	Materials and methods for treating and managing wounds and the effects of trauma	WO2009020650 (A3); WO2009020650 (A2)	2/12/2009	Nugent Helen Marie, Bollinger Stephen A, Edelman Elazer R, Schubert Shai, Ng Yin Shan, Tjin Tham Sjin Robert,
37	Devices and systems for local delivery of inotropic agents to the epicardium	US8562586 (B2); US2010057039 (A1)	3/4/2010	Lovich Mark, Edelman Elazer,

	Title	Publication number	Publication date	Inventor(s)
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39	Endovascular devices with axial perturbations	US2010114302 (A1) US2015127085 (A1)	5/6/2010	Tzafriri Abraham, Kolandaivelu Kumaran, Edelman Elazer R,
40	Methods and compositions for enhancing vascular access	US2010204783 (A1)	8/12/2010	Nugent Helen Marie, Edelman Elazer, Dalal Anupam, Bollinger Stephen August, Epperly Scott,
41	Methods and devices for treatment of lumenal systems	US2010228280 (A1)	9/9/2010	Groothuis Adam, Mcnamara Edward I, Markham Peter, Edelman Elazer R,
42	Endovascular devices/catheter platforms and methods for achieving congruency in sequentially deployed devices	US2010318173 (A1)	12/16/2010	Kolandaivelu Kumaran, Swaminathan Rajesh V, Gibson William J, Edelman Elazer R,
43	Composiciones y su uso para aumentar el acceso vascular.	ES2348961 (T3)	12/17/2010	Nugent Helen; Edelman Elazer; Epperly Scott; Bollinger Steve; Dalal Anupam
44	Expandable medical advice for delivery of beneficial agent	EP2263619 (A3); EP2263619 (A2)	12/22/2010	Park Kinam, Shanley John F, Edelman Elazer R, Eigler Neal L,
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46	Method for treating acute coronary syndrome	JP2011016838 (A)	1/27/2011	Edelman Elazer R; Golomb Gershon; Danenberg Haim D; Richter Yoram
47	Method for imaging biomaterial erosion in vivo	US2011085712 (A1)	4/14/2011	Artzi Natalie, Edelman Elazer R,

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48	Methods and compositions for enhancing vascular access	AU2011211370 (A1); AU2011211370 (B2)	9/1/2011	Marie Nugent Helen; Elazer Edelman; Anupam Dalal; Steve Bollinger; Scott Epperly
49	Endovascular platforms for uniform therapeutic delivery to local targets	US2011313508 (A1)	12/22/2011	Kolachalama Vijaya, Levine Evan, Edelman Elazer,
50	Stent type opening method and device	JP2012005867 (A); JP5198637 (B2)	1/12/2012	
51	Methods and compositions for managing cancer cell growth	US2012027858 (A1)	2/2/2012	Franses Joseph W, Edelman Elazer R, Cardoso Angelo Manuel De Almeida, Nugent Helen Marie,
52	Method of treating acute myocardial infarction	EP2266536 A3	10/17/2012	Danenberg Haim D, Golomb Gershon, Edelman, Elazer R
53	Biocompatible adhesive materials and methods	US8802072 (B2); US2012263672 (A1)	10/18/2012	Artzi Natalie, Edelman Elazer R, Jorge Nuria Oliva, Solanes Maria Carcole,
54	Methods and compositions for enhancing vascular access	AU2012238220 (A1); AU2012238220 (B2)	10/25/2012	Nugent Helen Marie; Edelman Elazer; Dalal Anupam; Bollinger Steve; Epperly Scott
55	Mechanical testing system and method	US2013042697 (A1) US9091617 (B2)	2/21/2013	Edelman Elazer R, Furman Kay Dee, Desany Gerard J,
56	Materials and methods for altering an immune response to exogenous and endogenous immunogens, including syngeneic and non-syngeneic cells, tissues or organs	US2013177600 (A1)	7/11/2013	Edelman Elazer R, Nugent Helen Marie, Methe Heiko,
57	Materials and methods for treating and managing angiogenesis-mediated diseases	CN103230414 (A)	8/7/2013	Nugent Helen Marie; Edelman Elazer R; Tjin Tham Sjin Robert M; Ng Yin Shan

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58	Localized Delivery of Cardiac Inotropic Agents	US8551961 (B2)	10/8/2013	Edelman Elazer R, Lovich Mark
59	Systems and methods for treating lumenal valves	US2013310924 (A1) US8894704 (B2)	11/21/2013	Groothuis Adam, Ebner Adrian, Markham Peter, Edelman Elazer,
60	Methods and compositions for enhancing vascular access	SG195537 (A1)	12/30/2013	Nugent Helen Marie, Edelman Elazer, Dalal Anupam, Bollinger Steve, Epperly Scott
61	Simultaneous delivery of receptors and/or co-receptors for growth factor stability and activity	US2014066374 (A1)	3/6/2014	Edelman Elazer R, Baker Aaron B,
62	Tissue-engineered endothelial and epithelial implants differentially and synergistically regulate tissue repair	US2014099289 (A1) US9011837 (B2)	4/10/2014	Edelman Elazer R, Zani Brett,
63	Multi-parameter thrombotic assay apparatus, systems, and methods	US2014236494 (A1)	8/21/2014	Kolandaivelu Kumaran, Edelman Elazer R,
64	Materials and methods for treating and managing plaque disease	ES2490610 (T3)	9/4/2014	Nugent Helen Marie; Edelman Elazer; Bollinger Steve
65	Local drug delivery devices and methods for treating cancer	US2014308336 (A1) US9301926 (B2) US2016/0175491 (A1) CA2944480 (A1)	10/16/2014	Indolfi Laura; Edelman Elazer; Langer Robert; Clark Jeffrey; Ting David; Ferrone Cristina; Ligorio Matteo
66	Material and Method for Minimally Invasive Administration of Cell-Containing Flowable Composition	JP2015042682 (A)	3/5/2015	Nugent Helen Marie; Edelman Elazer; Bollinger Steve
67	Methods, Compositions, and Devices to Induce Mobilization and Recruitment of Progenitor Cells	US2015086516 (A1)	3/26/2015	Indolfi Laura; Edelman Elazer

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68	Controllably Degradable Compositions and Methods	US2015174156 (A1) KR20160101957 (A) WO2016210112(A1)	6/25/2015	Artzi Natalie; Edelman Elazer; Kelmansky Regina; Cervantes Marc Mier
69	Compositions and Uses to Govern Cancer Cell Growth	US2015196687 (A1)	7/16/2015	Frances Joseph W; Edelman Elazer; Cardoso Angelo Manuel; Nugent Helen Marie
70	Methods and compositions for enhancing vascular access	ES2541684 (T3)	7/23/2015	Marie Nugent Helen; Elazer Edelman; Anupam Dalal; Steve Bollinger; Scott Epperly
71	Biocompatible adhesive materials and methods	ES2548406 (T3)	10/16/2015	Artzi Natalie, Edelman Elazer R, Jorge Nuria Oliva, Solanes Maria Carcole
72	Method of treating acute myocardial infarction	ES2548719 (T3)	10/20/2015	Danenberg Haim D, Golomb Gershon, Edelman Elazer R
73	Intravascular Device	US2016000590 (A1)	1/7/2016	Boyden Edward Stuart; Franzesi Giovanni Talei; Wentz Christian; Grossman Nir; Edelman Elazer R; Derdeyn Colin; Leuthardt Eric; Weitere C
74	Materials and Methods for Rescue of Ischemic Tissue and Regeneration of Tissue Integrity During Resection, Engraftment and Transplantation	US2016121023 (A1)	5/5/2016	Edelman Elazer R; Melgar Lesmes Pedro
75	An Expandable Medical Device and a Kit Comprising an Expandable Medical Device and a Delivery Balloon	HK1211828 (A1)	6/3/2016	Richter Yoram; Edelman Elazer R

	Title	Publication number	Publication date	Inventor(s)
76	Method and Apparatus for Stenting	US9492293 (B2) WO2017059220(A1) US20170277722(A1)	11/15/2016	Richter Yoram; Edelman Elazer R
77	Hydrogel Composites, Compositions, and Methods	US2017106117 (A1)	4/20/2017	Artzi Natalie, Edelman Elazer R, Unterman Shimon, Charles Lyndon, Strecker Sara

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