University of California, San Francisco

Curriculum Vitae

SHUVO ROY, PHD

Associate Professor
Bioengineering & Therapeutic Sciences
School of Pharmacy

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EDUCATION

1988 - 1992	Mount Union College, Alliance, OH	B.S.	Magna Cum Laude, Physics, Mathematics, and Computer Science
1992 - 1995	Case Western Reserve University	M.S.	Electrical Engineering and Applied Physics
1995 - 2001	Case Western Reserve University(Mehran Mehregany)	Ph.D.	Electrical Engineering and Computer Science

PRINCIPAL POSITIONS HELD

1998 - 2002	Cleveland Clinic	Project Staff	Department of Biomedical Engineering
2002 - 2008	Cleveland Clinic	Assistant Staff	Department of Biomedical Engineering
2008 - present	University of California, San Francisco	Associate Professor	Department of Bioengineering and Therapeutic Sciences

OTHER POSITIONS HELD CONCURRENTLY

1998 - 2008	Cleveland Clinic	Co-Director	BioMEMS Laboratory
2000 - 2008	Cleveland Clinic	Faculty	Spine Research Laboratory
2001 - 2008	Cleveland State University	Assistant Professor	Applied Biomedical Engineering Program
2001 - 2008	Case Western Reserve University	Clinical Assistant Professor	Department of Electrical Engineering and Computer Science
2006 - 2008	Case Western Reserve University	Assistant Professor	Department of Molecular Medicine

2009 - present	Cleveland Clinic	Adjunct Associate Staff	Departments of Nephrology and Biomedical Engineering

HONORS AND AWARDS

1989	William and Burdella Carl Mathematics Award, Mount Union College
1992	Senior Physics Prize, Mount Union College
1998	Ruth Barber Moon Graduate Student Award, Case Western Reserve University
1999	Top 40 under 40, Crain's Cleveland Business
2001	Clinical Translation Award, BioMEMS and Biomedical Nanotechnology World Meeting
2003	MIT TR100 Award, Top 100 Young Innovators, Technology Review Magazine
2004	NASA Group Achievement Award, Harsh Environment MEMS
2004	Ribbon Award, Outstanding Symposium Paper, MRS Fall Meeting
2005	Who's Who in Biotechnology, Crain's Cleveland Business
2005	Cleveland Clinic Innovator Award
2006	Mentor Recognition Award, Cleveland Clinic Science Internship Program
2007	Cleveland Clinic Innovator Award
2008	Thomas G. Orr Memorial Lectureship, Southwestern Surgical Congress
2009	Biotech Humanitarian Award Finalist, Biotechnology Industry Organization
2009	2009 Images of the Year Selection, Biomaterials Journal
2011	mHealth Alliance Award, Vodafone Americas Foundation & mHealth Alliance

KEYWORDS/AREAS OF INTEREST

Medical Applications of MEMS and Nanotechnology: Minimally Invasive Surgical Tools; Wireless Physiological Monitors; Portable Diagnostics; Tissue Engineering Substrates; Artificial Organs; Controlled Drug Delivery; High Resolution Ultrasonic Imaging

PROFESSIONAL ORGANIZATIONS

Memberships

1996 - present	IEEE (Institute of Electrical and Electronics Engineers)
2004 - present	ASM International

Service to Professional Organizations

2003 - 2003	Glennan Microsystems Initiative	Steering Committee
2003 - present	Nano-Network	Founder, Advisory Board
2000 - 2000	Coventor Workshop on Design Modeling of BioMEMS	Organizer and Host

2002 - 2004	4th& 6th Annual International Symposium on BioMEMS	Conference Chairperson
2003 - 2003	4th Annual BioMEMS and Nanotech World Meeting	Scientific Advisory Board & Session Chair - Clinical Applications, Applying MEMS to Medicine
2004 - 2004	5th Annual BioMEMS and Nanotech World Meeting	Scientific Advisory Board & Session Chair - Minimally Invasive Medical Technology
2004 - 2004	2004 BMES Annual Fall Meeting	Session Chair - From the Nano- to the Micro- Scale in BME
2004 - 2004	The Cleveland Clinic NanoMedicine Summit	Director & Principal Organizer
2004 - 2004	NCI Cancer Nanotechnology Symposium	Chairperson of Steering Committee
2005 - 2005	Ohio Nanotechnology Summit	Chairperson (Biomedicine) & Conference Steering Committee
2006 - 2006	Ohio Nanotechnology Summit	Conference Steering Committee
2006 - 2006	ASME 2006 Summer Bioengineering Conference	Session Chairperson - MEMS
2006 - 2006	CIMTEC 2006, 4th Forum on New Materials	International Advisory Board - Biomedical Applications of Nano Technologies Symposium
2006 - 2006	Materials, Medicine, and Nanotechnology Summit	Co-Director & Principal Organizer
2008 - 2008	Materials and Processes for Medical Devices	Co-Chairperson of Organizing Committee
2008 - 2008	Cleveland NanoMedicine Summit: Nanoparticles for Diagnostics and Therapeutics	Conference Organizing Committee
2009 - present	UCSF Department of Bioengineering and Therapeutic Sciences, Faculty Search Committee	Member
2009 - present	ASM Medical Materials & Strategic Advisory Committee	Member
2011 - present	UCSF Academic Senate, Committee on Faculty Welfare	Member

SERVICE TO PROFESSIONAL PUBLICATIONS

2001 - 2001	Guest Editor, Biomedical Microdevices
2002 - present	Thematic Section Editor, Biomedical Microdevices
2003 - present	Editorial Board, Sensors and Materials
2005 - present	Associate Editor, Editorial Board, Biomedical Microdevices
1999 - present	referee for Applied Physics Letters (6 papers in past 5 years), Biomedical Microdevices (20 papers in the past 5 year), Tissue Engineering (5 papers in past 4 years), Sensors and Materials (4 papers in past 4 years), Langmuir (3 papers in past 3 years), Nano Letters (2 papers in past 3 years), Macromolecular Bioscience (2 papers in past 5 years), Journal of Microelectromechanical Systems (1 paper in past 1 year), Journal of Membrane Science (2 paper in past 2 year), Journal of Neuroscience Methods (1 paper in past 5 years), Biotechnology and Bioengineering (1 paper in past 5 years), Journal of Biomaterials Science: Polymer Edition (1 paper in past 3 years), IEEE Spectrum (1 paper in past 5 years), Acta Biomaterialia (1 paper in the past 1 year), Journal of Medical Devices (2 papers in the past 1 year), Sensors and Actuators, (1 paper in the past 1 year)

INVITED PRESENTATIONS

INTERNATIONAL

2000 BioMEMS and Biomedical Nanotechnology WORLD; Columbus, OH, 2000 (invited talk); Columbus, OH, 2001 (invited talk)

2006 ASME 2006 Summer Bioengineering Conference; Amelia Island, FL, 2006 (plenary talk)

2006 Gordon Research Conference; New London, CT, 2006 (platform)

2007 Inauguration of Joint Biomedical Engineering Program between Ghent University and Free University of Brussels, Ghent, BELGIUM, 2007 (keynote)

2007 Politzer Society Meeting, Cleveland, OH, 2007 (keynote)

2008 ASAIO Annual Conference, Washington, D.C. (plenary talk)

2008 Southwest Surgical Congress Meeting, Acapulco, MEXICO 2008 (keynote)

2008 AVS International Symposium, Boston, MA, 2008 (invited talk)

2009 Endovascular Surgery - Bringing Basic Science to Clinical Practice, Stockholm, Sweden, 2009 (invited talk)

2009 Transducers 2009, Denver, CO 2009 (invited talk)

2010 World Molecular Engineering Network Twentieth Annual Meeting on Structural Biology, Cabo San Lucas, Mexico 2010 (invited talk)

NATIONAL

2001 BioMEMS; Sunnyvale, CA, 2001 (invited talk); Boston, 2002 (invited talk); Boston, 2004 (invited talk)

2004 NASS Spring Meeting; Boca Raton, FL, 2004 (invited talk)

2004 Conference-Workshop on Strategic Research to Enable NASA's Exploration Missions; Cleveland, OH, 2004 (invited talk)

2004 NNI Grand Challenge Workshop; Palo Alto, CA, 2004 (invited talk)

2005 ASAIO Annual Conference, Washington, DC, 2005 (invited talk); San Francisco, CA 2008 (plenary talk)

2005 ASEIO Annual Convention, Cleveland, OH, 2005 (invited talk)

2006 Society of Neurological Surgeons, Durham, NC, 2006 (invited talk)

2006 NSF Workshop on Wearable and Implanted Systems for Health Monitoring and Diagnostics, Arlington, VA, 2006 (invited talk)

2007 OMTEC 2007, Chicago, 2007 (invited talk)

2009 Glaucoma Summit, San Francisco, 2009 (invited talk)

2009 Joint Graduate Program in Bioengineering, Annual Conference (invited talk)

2010 Bioengineering and Therapeutic Sciences Symposium, San Francisco, 2010 (invited talk)

2010 University of California, Berkeley, Department of Bioengineering Seminar, 2010 (invited talk)

2010

University of California, Berkeley, Nanoengineering Conference (invited speaker)

2010 MedTech Frontiers seminar at Triple Ring (invited presentation)

2011 University of California, Berkeley and San Francisco, Department of Bioengineering Seminar, 2011 (invited talk)

2011 American Society for Artificial Internal Organs Annual Conference, Washington, DC, 2011, (invited talk)

2011 French American Biotechnology Symposium Annual Meeting, San Francisco, 2011, (invited talk)

2011 National Kidney Foundation, Spring Clinical Meeting Symposium (invited talk)

2011 National Nanotechnology Infrastructure Network Symposium (invited talk)

2011 Accelerating Predictive Drug Development Through Quantitative Pharmacology Conference, San Francisco, 2011 (invited panel discussion)

2011 Berkeley Sensor and Actuator Center, Seminar Series, 2011 (invited talk)

PROFESSIONAL MEDIA FEATURES

1999 Crain's Cleveland Business, "The Goal - Inside Out Surgery: Clinic Researchers Work on Smart Catheter Parts"

DesignFax, "MEMS and Micromachining in the New Millennium: Biomedical Applications Aid Surgery, Diagnosis, Drug Delivery, and More"

2001 Small Times, "Doctors Find Faster Way to Stimulate Bone Growth"

Small Times, "Buckeye State is Going Biotech to Create New Base"

Small Times, "Smarter Tools Will Help Neurosurgeons Work More Accurately, Researchers Say"

2002 Northern Ohio Live, "Getting Small"

Crain's Cleveland Business, "Local Research May Be the Next Line of Defense"

Science, "Can Sensors Make a Home in the Body"

2003 Preclinica, "BioMEMS Comes to Life"

2003 NBC Wall Street Journal Report, "2003 Top Innovators"

Nanobiotech News, "BioMEMS Applications Move from Concept to Reality"

Technology Review, "Biotech + Medicine: The Convergence of Biology with Computing and Nanotechnology is Yielding Safer and More Effective Medicines"

2004 R&D Magazine, "Medical Applications Adopt MEMS Technology"

MD News, "Nanomedicine at The Cleveland Clinic: Exploring the Big Potential of Tiny Technology"

WDOK FM 104.1, "Nanotechnology"

The Plain Dealer, "Tiny Science Expects to Reap Big Advances: Putting Heads Together on a Molecular Level"

WCPN FM 90.3 (NPR), "Small Technology with a Big Impact"

2005 PBS Newshour with Jim Lehrer, "Women in Science"

Crain's Cleveland Business, "Startup Senses a Need for Orthopedic Detection Device"

Orthopedics This Week, "OrthoMEMS-NASA and Cleveland Clinic

	Team Up for Space Age Orthopedic Implants"
2006	Crain's Cleveland Business, "Summit to Bring Together Physicians, Engineers"
	Technology Review (online), "Dialysis Unplugged: Will nano-engineered implants set kidney patients free?"
	WCPN FM 90.3 (NPR), "Nanotechnology Brings Big Change"
	MPMD: Materials and Processes for Medical Devices, "Biomedical Microdevices at the Cleveland Clinic"
2007	Los Angeles Times, "The Next Generation of Artificial Kidneys"
2010	PBS Newshour, "For Scientists, Collaborative Efforts Could Speed Medical Advances"
	Discover Magazine, "Researchers Plan to Build the World's First Implantable, Mechanical Kidney"
	ABC 7 News, "Artificial kidneys may replace dialysis treatments"
	KTVU TV Channel 2 News, "Scientists Unveil Revolutionary Artificial Kidney"
	Yahoo! News, "UCSF Unveils Model for Implantable Artificial Kidney to Replace Dialysis"
	CNET.com, "Are the days of kidney dialysis numbered?"
	Popular Science - Online, "Researchers Announce First Implantable Artificial Kidney Prototype"

GOVERNMENT AND OTHER PROFESSIONAL SERVICE

2001 - 2001	US Civilian Research and Development Fund	Grant Reviews
2001 - 2004	NIH/NCRR	Study Section
2002 - present	Glennan Microsystems, Inc.	Board Member
2003 - present	NIH/NIBIB	Study Section
2003 - present	National Science Foundation	Grant Reviews
2004 - 2004	Siemens Westinghouse Competition	National Finals Judge
2010 - 2010	Nanoscale Science and Engineering Center	External Scientific Advisory Board

UNIVERSITY AND PUBLIC SERVICE

UCSF SYSTEM-WIDE

2003 - 2008	CLEVELAND CLINIC, LERNER RESEARCH INSTITUTE	2003-2008 Communications Committee: Member (2003-2005) Chairperson (2005-now)
2006 - present	OHIO STATE UNIVERSITY, NSF CENTER FOR AFFORDABLE NANOENGINEERING OF POLYMERIC BIOMEDICAL DEVICES	Scientific Evaluation Board: Member
2008 - 2008	CLEVELAND CLINIC, CLEVELAND CLINIC MAGAZINE	Advisory Board: Member
2008 - present	CLEVELAND STATE UNIVERSITY, DEPARTMENT OF CIVIL ENGINEERING	Visiting Committee: Member

UCSF CAMPUS-WIDE

2008 - present	JOINT GRADUATE GROUP IN BIOENGINEERING	Executive Committee: Member
2009 - present	GRADUATE PROGRAM IN PHARMACEUTICAL SCIENCES AND PHARMACOGENOMICS	Member
2008 - present	School of Pharmacy	Faculty Council: Member
2010 - present	Masters in Translational Medicine Program	Executive Committee: Member
2011 - present	Academic Senate Committee on Faculty Welfare	Member
2012 - present	Medical Scientist Training Program (MSTP) Council	Member

SCHOOL OF PHARMACY

2008 - present	SCHOOL OF PHARMACY	Faculty Council: Member

DEPARTMENTAL SERVICE

2009 - present	DEPARTMENT OF BIOENGINEERING AND THERAPEUTIC SCIENCES	Faculty Search Committee: Member

TEACHING AND MENTORING

TEACHING

FORMAL SCHEDULED CLASSES FOR UCSF STUDENTS

Qtr	Academic Yr	Course Number and Title	Teaching Contribution	Units	Class Size
Fall	2001 - 2002	Biomedical Microdevices	instructor	3	10
Spr.	2003 - 2004	BioMEMS	instructor	3	13
Spr.	2009 - 2010	SOM Introduction to Human Biology and Medicine	guest lecturer	3	
Sum	2010 - 2010	Nephrology Mini Course	instructor		
Spr	2010 - 2012	Drug Delivery Systems	instructor	2	40
Win	2011 - 2012	Principles of Medical Device Innovation	Course director and instructor	2	20

TEACHING NARRATIVE

I have participated in the redesign and teaching of BPS 113, which commenced with first year UCSF clinical pharmacy students in Spring 2010. In addition, I have designed and taught a new 2-unit course in Winter 2010, BioE 297 Principles of Medical Device Innovation, which introduced key concepts of the medical devices product development process.

I have designed and taught a semester-long course on biomedical applications of MEMS for advanced undergraduate and graduate students at Case Western Reserve University and Cleveland State University, both of which are located near the Cleveland Clinic. Typically, 10-15 students enrolled from various engineering departments, and with varying levels of background knowledge of MEMS. Therefore, I sectioned the course into three components - review of fundamental technologies, analysis of prototype bioMEMS devices, and a term paper project. I used a mixed model of problem based learning (PBL) and traditional instruction to achieve a balance between transmission of formal knowledge and development of core skills such as inquiry, problem solving, and collaboration.

I have also designed and taught short courses ranging from half-day to 4 days in conjunction with professional societies and corporate continuing education offices. These courses are customized to the audience backgrounds and needs. Typically, the courses have been targeted to either practicing engineers interested in learning about challenges that must be overcome for successful medical device development, or clinicians interested in developing MEMS solutions to existing medical problems. For both groups, I offered an overview of state-of-the-art in MEMS technology,

and then engaged the attendees through interactive discussions on specific problems that overlap with their interests and background.

MENTORING

PREDOCTORAL STUDENTS SUPERVISED OR MENTORED

Dates	Name	Program or School	Role	Current Position
2003 - 2003	Paul Bixenstine	Shaker Heights High School, high school student	Co-supervised laboratory work on ultrasound transducer	BA, Magna Cum Laude, Brown University, 2008
2002 - 2005	Charlie Blaha	Dennison University, University of Toledo, undergraduate student	Supervised undergraduate research projects on spine biomechanics and tissue engineering scaffolds	Research and Development Engineer - Cantimer, Inc.
2006 - 2006	Grant Cathcart	Shaker Heights High School, high school student	Co-supervised summer work on ultrasound transducers	Undergraduate Student - Rice University
2003 - present	Chaitanya Chandrana	Cleveland State University, graduate student	Doctoral advisor on ultrasound transducers	Los Alamos National Lab, New Mexico
1999 - 1999	Christine Chevalier	University of Dayton, undergraduate student	Supervised undergraduate research project on blood coagulation sensor	Engineer - Analex Corporation
2003 - 2006	Maddy Coquillette	Hathaway Brown School, high school student	Supervised research project on spine biomechanics	Medical Student - Harvard Medical School
2006 - 2007	Abby Eldridge	Rensselaer Polytechnic Institute, undergraduate student	Supervised undergraduate research project on surface modification	Graduate Student - Rensselaer Polytechnic Institute
2001 - 2008	Lisa Ferrara	Cleveland State University, graduate student	Doctoral advisor on spine biomechanics	Founder and CEO - OrthoKinetic Technologies, LLC
2005 - 2005	Levi Frolich	Fuchs Mizrachi School, high school student	Co-supervised summer work on ultrasound transducers	Student - Technion International School of Engineering
2004 - 2004	Aseem Garg	St. Edward High School, high school student	Supervised summer work on bioMEMS	Undergraduate Student - Washington University in St. Louis
2004 - 2005	Morgan Grossman-Mckee	Shaker Heights High School, hight school student	Supervised research project on cell growth kinetics	Undergraduate Student - Washington University in St. Louis
2002 - 2002	Matthew Immerman	Shaker Heights High School, high school student	Co-supervised summer work on bioMEMS	Communication Analyst, San Francisco
2004 - present	Eun Jung Kim	Cleveland State University, graduate student	Doctoral advisor on tissue engineering scaffolds	Postdoctoral Fellow - University of California, San Francisco
2007 - 2007	Laney Kuenzel	Hathaway Brown School, high school student	Supervised research project on drug delivery	Undergraduate Student - Stanford University

Dates	Name	Program or School	Role	Current Position
			microneedles	
2002 - 2003	Jeff Magistrelli	Case Western Reserve University, graduate student	Master's thesis advisor on membrane transport characterization	Engineer - Firestone Polymers
2001 - 2001	Emily Marcinkevicius	Hathaway Brown School, high school student	Supervised research project on bioMEMS	Graduate Student - Memorial Sloan-Kettering Cancer Center
2001 - 2005	Alvaro Mata	Cleveland State University, graduate student	Doctoral advisor on tissue engineering scaffolds	Director, Nanotechnology Platform at Parc Cientific, Barcelona
2001 - 2002	Rushabh Modi	Case Western Reserve University, graduate student	Master's thesis advisor on ultrasound transducers	Staff Scientist/Engineer - Siemens Medical
2002 - 2008	Pulak Nath	Cleveland State University, graduate student	Doctoral advisor on microfluidic biochip system	Postdoctoral Fellow - Los Alamos National Laboratory
2006 - 2006	Steve Pennybaker	Newbury High School, high school student	Supervised summer work on drug delivery microneedles	Undergraduate Student - Massachusetts Institute of Technology
2002 - 2004	Rachel Rosenblum	Case Western Reserve University, graduate student	Master's project advisor on membrane fabrication process	Beacon Partners
1999 - 2000	Christina Saikus	Hathaway Brown School, high school student	Co-supervised laboratory work on bioMEMS	Medical/Doctoral Student - Emory University/Georgia Institute of Technology
2005 - 2005	Dusty Schroeder	Bucknell University, undergraduate student	Supervised undergraduate research project on cell growth kinetics	Graduate Student - University of Texas at Austin
2004 - 2007	Ross Smith	Case Western Reserve University, graduate student	Master's thesis advisor on membrane transport characterization	Scientist - High Performance Technologies, Inc
2001 - 2003	Elena Udovina	Hathaway Brown University, high school student	Supervised research project on membrane characterization	Graduate Student- University of Cambridge
2003 - 2003	Mike Vanderboom		Supervised summer work on bioMEMS	unknown
2002 - 2002	Emiko Vaughn	Beaumont School, high school student	Supervised research project on surface modification	Accountant - OsAir/Great Plains Exploration, LLC
2005 - 2005	Teal Wurm	University of Cincinnati, undergraduate student	Co-supervised undergraduate research project on ultrasound transducers	Graduate Student - University of Minnesota
2009 - 2009	Lalitha Muthusubramaniam	University of California, San Francisco, graduate student	Supervised summer rotation project	Graduate Student - University of California, San Francisco
2009 - 2009	Rohit Nalamasu	University of California, San Diego, undergraduate student	Supervised summer internship	Undergraduate Student - University of California , San Diego
2009 - present	Mozziyar Etemadi	University of California, San Francisco, MD/PhD Student	Supervised summer rotation project	Medical Student - University of California, San Francisco

Dates	Name	Program or School	Role	Current Position
2009 - 2009	Jonathan Sockolosky	University of California, San Francisco, graduate student	Supervised research rotation	Graduate Student - University of California, San Francisco
2009 - present	Augusto Tentori	University of California, San Francisco, graduate student	Graduate Student Advisor	Graduate Student - University of California, San Francisco
2009 - present	Erh-Chia Yeh	University of California, San Francisco, graduate student	Graduate Student Advisor	Graduate Student - University of California, San Francisco
2010 - present	Neel Shah	University of California, Berkeley, graduate student	Supervised graduate research	Graduate Student - University of California, Berkeley
2010 - present	Torin Yeager	University of California, San Francisco, graduate student	Supervised research rotation	Graduate Student - University of California, San Francisco

POSTDOCTORAL FELLOWS AND RESIDENTS DIRECTLY SUPERVISED OR MENTORED

Dates	Name	Fellow	Faculty Role	Current Position
1998 - 2002	William Fissell, MD	Resident - University Hospitals of ClevelandNephrology Fellow - University of Michigan	Research Supervision, Career Guidance	Staff Physician, Cleveland Clinic
2005 - 2006	Matt Johnston, PhD	Postdoctoral Fellow - Cleveland Clinic	Research Supervision	Scientist - Gebauer Company
2004 - 2008	Tao Pan, PhD	Research Engineer - Cleveland Clinic	Research Supervision	Staff Research Engineer - Case Western Reserve University
2001 - 2005	Jim Talman, PhD	Research Engineer - Cleveland Clinic	Research Supervision	Patent Examiner - US Patent and Trademark Office
2009 - present	Rachel Lowe, PhD	Postdoctoral Fellow	Research Supervision	Max Planck for Biophysical Chemistry
2009 - present	Rishi Kant, PhD	Postdoctoral Fellow	Research Supervision	McKinsey and Company
2010 - present	Eun Jung Kim, PhD	Postdoctoral Fellow	Research Supervision	Postdoctoral Researcher

FACULTY MENTORING

Dates	Name	Position While Mentored	Mentoring Role	Current Position
2003 - present	William Fissell, MD	Lecturer (Medicine), Assistant Professor (Medicine) - University of Michigan	Grant Reviews, Research Collaborator	Associate Staff (Nephrology), Director of Renal Nanotechnology Laboratory (Biomedical Engineering) - Cleveland Clinic
2009 - present	Hao Jiang, PhD	Assistant Professor - San Francisco State University	Grant Reviews, Publications, Research Collaborator	Assistant Professor - San Francisco State University
1998 - present	Aaron Fleischman, PhD	Project Staff, Assistant Staff - Cleveland Clinic	Grant Reviews, Research Collaborator	Assistant Staff, Co-Director of BioMEMS Laboratory (Biomedical Engineering) -

Dates	Name	Position While Mentored	Mentoring Role	Current Position
				Cleveland Clinic
2001 - 2004	Raj Shekhar, PhD	Project Staff - Cleveland Clinic	Grant Reviews	Assistant Professor (Diagnostic Radiology) - University of Maryland in Baltimore
2002 - 2005	Geoffrey Vince, PhD	Assistant Staff - Cleveland Clinic	Grant Reviews, Research Collaborator	Chair, Biomedical Cleveland Clinic
2004 - 2007	Steve William, PhD	Project Staff - Cleveland Clinic	Grant Reviews	Project Staff (Biomedical Engineering) - Cleveland Clinic

OTHER VISITING FACULTY SUPERVISED

1999 - 1999 Gerry Neudeck, PhD Purdue University

TEACHING AND MENTORING AIDS

Developed syllabus, lectures, hand-outs, and group website for a semester-long course on biomedical applications of MEMS technology; class was offered twice for advanced undergraduate and graduate students at Case Western Reserve University and Cleveland State University.

Developed syllabus, lecture materials, and hand-outs for class on minimally invasive biomedical MEMS technology, which was part of an annual short course on BioMEMS sponsored by ASME (American Society of Mechanical Engineers); class was adopted for 3 years.

Developed brand new graduate level course on principles of medical device innovation at UCSF. The course is designed to introdcue key concepts of product development including concept generation, prototyping approaches to demonstrate feasibility, and translation pathways. The class has been offered twice, and the course was adopted as requirement for the UCSF-UCB Masters in Translational Medicine Program.

OTHER

Instructor for Corning Future Opportunities Innovation Workshop, which explored potential market introduction and growth opportunities for Corning, Inc.

Instructor for CMP-MIC short course on microfabrication of medical devices, which was attended by semiconductor fabrication engineers with specialization in chemical-mechanical polishing.

SUMMARY OF TEACHING AND MENTORING HOURS

2007 - 2008

165 total hours of teaching (including preparation)

Formal class or course teaching hours: 15 hours

Informal class or course teaching hours: 150 hours

Mentoring hours: 20 hours

Other Hours:

2008 - 2009

150 total hours of teaching (including preparation)

Formal class or course teaching hours: 10 hours

Informal class or course teaching hours: 140 hours

Mentoring hours: 25 hours

Other Hours:

2009 - 2010	160 total hours of teaching (including preparation) Formal class or course teaching hours: 10 hours Informal class or course teaching hours: 150 hours Mentoring hours: 30 hours Other Hours:
2010 - 2011	174 total hours of teaching (including preparation) Formal class or course teaching hours: 24 hours Informal class or course teaching hours: 150 hours Mentoring hours: 30 hours Other hours:
2011 - 2012	320 total hours of teaching (including preparation) Formal class or course teaching hours: 40 hours Informal class or course teaching hours: 120 hours Mentoring hours: 80 hours
2012 - 2013	320 total hours of teaching (including preparation) Formal class or course teaching hours: 40 hours Informal class or course teaching hours: 160 hours Mentoring hours: 80 hours

RESEARCH AWARDS

CURRENT

1R01EB014315 (PI)	04/01/2012 - 03/31/2016
NIH	$406,109 direct/yr1
Biocompatibility of Implantable Renal Replacement Devices	

P50AR0060752 (Co-PI)	04/01/2012 - 03/31/2016
NIH/NIAMS	$999,598 direct/yr1
Translation of Quantitative Imaging in Osteoarthritis	

Bridging the Gap Award (J&J) (PI)	04/01/2012 - 03/13/2013
California Institute for Quantitative Biosciences	$100,000 direct/yr1
Intravascular Capsule for Treatment of Type I Diabetes	$100,000 total

Translational Technology Development Award (PI)	02/01/2011 - 06/30/2012
UCSF Clinical and Translational Science Institute	$12,360 direct/yr1

Reconstruct of vertebral endplate using biomedical microelectromechanical systems (bioMEMS) and microfabrication related technologies MEMS and nanotechnology	$30,000 total

Bridging the Gap Award (Rogers) (PI)	01/01/2011 - present
California Institute of Quantitative Biosciences	$220,000 direct/yr1
Development of a wearable, hemofiltration device for renal replacement	

1 R01 EB012031-01A1 (Co-I)	07/01/2011 - 06/30/2016
NIH/NIBIB	$496,982 direct/yr1
Endovascular Magnetic Catheter for Interventional MRI	$2,996,325 total

1 P50 FD003793-02 (Co-I)	09/01/2011 - 08/31/2013
Food & Drug Administration Pediatric Device Consortia Grant Program	$323,625 direct/yr1
UCSF Pediatric Device Consortium	$1,000,000 total

W81XWH-05-2-0010 (Co-I)	09/01/2008 - 08/31/2012
Innovative Biotherapies [Subcontract]	$9,709 direct/yr1
Nanofabricated Bioartificial Kidney	$77,702 total

PAST

Cleveland Advanced Manufacturing Program, ()	01/01/1999 - 06/20/1999
Microfabricated Filters and Cutting Tools	$17,000 direct/yr1
	$17,000 total

R43 HL062733 (Co-I)	05/15/1999 - 11/30/2000
NIH/SBIR-Phase I	$22,150 direct/yr1
Miniature, Implantable Fiber-Optic Pressure Sensor	$22,150 total

(Co-PI)	07/01/1999 - 06/30/2003
NASA	$98,490 direct/yr1
Micromachined Ultrasonic Transducers For Minimally Invasive Imaging	$393,960 total

(Co-PI)	07/01/1999 - 06/30/2003
NASA	$96,141 direct/yr1
Miniature Drug Delivery Systems for Minimally Invasive Therapy	$384,564 total

(Co-PI)	08/15/1999 - 06/30/2000
Ohio Board of Regents	$243,000 direct/yr1
Ohio MicroMD: The Ohio BioMEMS Consortium on Medical Therapeutic Devices	$243,000 total

(PI)	07/01/2000 - 12/31/2000

iMEDD, Inc.	$10,340 direct/yr1
Fabrication of Nanomembranes	$10,340 total
(Consultant Co-PI)	07/15/2000 - 12/31/2000
Whitaker Foundation	$15,833 direct/yr1
Micromachined Biocapsule Membranes	$15,833 total
BAA 00-011 SymBioSys (Co-PI)	09/01/2000 - 06/30/2002
DARPA	$186,002 direct/yr1
Experimental and Theoretical Development of Bio-Fluid Transport Models through Nano- and Micro-fluidic Components	$325,503 total
(Co-PI)	10/01/2000 - 09/30/2002
NASA	$33,507 direct/yr1
Evaluation of MEMS Materials of Construction for Implantable Medical Applications	$67,114 total
01-060 (PI)	07/01/2001 - 06/30/2004
Ohio Third Frontier Action Fund	$369,930 direct/yr1
MEMS Technology Platform for Implantable Medical Applications	$739,860 total
R01 HL 069094 (Co-I)	01/01/2002 - 12/31/2007
NIH/NHLBI	$499,000 direct/yr1
High Frequency Nonlinear Acoustic Intravascular Imaging	$2,494583 total
(PI)	05/01/2002 - 04/30/2005
NASA	$168,313 direct/yr1
Controlled-Release Microsystems for Pharmacological Agent Delivery	$477,689 total
(PI)	01/01/2003 - 09/30/2003
Rockefeller Brothers Fund	$23,150 direct/yr1
Growth of Connective Tissue Progenitor Cells on Micro-Textured Surfaces for Enhanced Bone Tissue Engineering	$23,150 total
R43 HL 074652 (Co-I)	09/01/2003 - 08/31/2004
NIH/SBIR-Phase I	$21,568 direct/yr1
Ultrasonic Microtransducer for Intravascular Imaging	$21,568 total
R21 EB 003272 (PI)	09/12/2003 - 08/31/2006
NIH/NIBIB	$150,000 direct/yr1
Microneedle Array for Catheter Drug Delivery	$275,000 total
R21 EB 002285 (Co-I)	09/30/2003 - 05/31/2006
NIH/NIBIB	$50,000 direct/yr1

BioMEMS Materials for Renal Tissue Engineering	$100,000 total

W81XWH-04-1-0520 (Co-PI)	05/18/2004 - 06/30/2008
DoD/USAMRMC	$378,830 direct/yr1
Portable Biochip for Rapid Detection of Biowarfare Agents	$1,086,835 total

(PI)	05/01/2005 - 12/31/2007
OrthoMEMS, LLC	$13,000 direct/yr1
Wireless Pressure Sensor Demonstration	$43,846 total

(Co-I)	07/01/2005 - 06/30/2008
Ohio BRTT Partnership	$1,212,121 direct/yr1
Clinical Tissue Engineering Center (CTEC)	$3,636,364 total

(PI)	08/01/2005 - 06/30/2007
NASA	$62,405 direct/yr1
High Resolution Portable Ultrasonic Imaging System	$124,810 total

R43 NS 052939 (Co-I)	09/15/2005 - 06/30/2008
NIH/NINDS	$25,000 direct/yr1
Ambulatory System for Hydrocephalus Shunt Monitoring	$49,460 total

W81XWH-05-2-0010 (Co-PI)	06/01/2006 - 08/31/2010
DoD/USAMRMC	$50,000 direct/yr1
Nanofabricated Bioartificial Kidney	$250,000 total

R43 HL084775 (Co-I)	09/30/2006 - 03/31/2008
NIH/SBIR-Phase I	$14,154 direct/yr1
Micromachined Intravascular Ultrasound Transducer	$14,154 total

0750159 (Co-I)	01/01/2007 - 06/30/2007
NSF/SBIR-Phase I	$21,227 direct/yr1
Intravascular Drug Delivery using Microneedle Arrays	$21,227 total

0750218 (Co-I)	01/01/2007 - 06/30/2007
NSF/SBIR-Phase I	$19,785 direct/yr1
Wireless Sensor for In Vivo Wireless Pressure Measurement	$19,785 total

NNC07QA84A84P-1A (PI)	01/01/2007 - 12/31/2007
NASA/STTR-Phase I	$24,501 direct/yr1
Nanoporous Membrane for Medical Grade Water Generation	$24,501 total

R01 EB008049 (PI)	09/30/2007 - 08/31/2011
NIH/NIBIB	$871,806 direct/yr1
	$2,599,296 total

1 P50 FD003793-01 ((Co-I))	09/25/2009 - 01/31/2012
Food & Drug Administration Pediatric Device Consortia Grant Program	$346,550 direct/yr1
UCSF Pediatric Device Consortium	$1,000,000 total

P50AR060752 (Co-I)	04/01/2011 - 03/31/2016
NIH/NIAMS	$999,598 direct/yr1
Translation of Quantitative Imaging in Osteoarthritis	$5,433,042 total

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PATENTS ISSUED OR PENDING (ALLOWED)

1. System for Measuring Intraocular Pressure of an Eye and a MEM Sensor for Use Therewith, A.J. Fleischman, S. Roy, and H. Lewis, US Patent 6,447,449

2. MEMS-based Integrated Magnetic Particle Identification System, A.J. Fleischman, S. Roy, M. Zborowski, and J. Chalmers, US Patent 6,623,984

3. Miniature Ultrasound Transducer, A.J. Fleischman, S. Roy, and G. Lockwood, US Patent 6,641,540

4. Apparatus and Method for Monitoring a Condition inside a Body Cavity, S. Roy, K. Ouriel, and A.J. Fleischman, US Patent 6,682,490

5. Apparatus and Method for Assessing Loads on Adjacent Bones, S. Roy, L.A. Ferrara, A.J. Fleischman, and E.C. Benzel, US Patent 6,706,005

6. Intraocular Pressure Measurement System including Sensor Mounted in a Contact Lens, A.J. Fleischman, S. Roy, and H. Lewis, US Patent 6,749,568

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9. Ultrafiltration Membrane, Device, Bioartificial Organ, and Methods, W.H. Fissell, H.D. Humes, S. Roy, and A.J. Fleischman, US Patent 7,048,856

10. Intraocular Pressure Measurement System including a Sensor Mounted in a Contact Lens, A.J. Fleischman, S. Roy, and H. Lewis, US Patent 7,169,106

11. Apparatus and Method for Assessing Loads on Adjacent Bones, S. Roy, L.A. Ferrara, A.J. Fleischman, and E.C. Benzel, US Patent 7,182,736

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14. Apparatus and method for assessing loads on adjacent bones, S. Roy, A.J. Fleischman, E.C. Benzel, and L.A. Ferrara, US Patent 7,491,179

15. Ultrafiltration Membrane, Device, Bioartificial Organ, and Methods, W.H. Fissell, H.D. Humes, S. Roy, and A.J. Fleischman, US Patent 7,540,963

16. Method and apparatus for eddy current compensation in a radio frequency probe, J.R. Talman, A.J. Fleischman, B.L. Sauer, S. Roy, US Patent 7,771,351

17. Method and apparatus for determining a characteristic of an in vivo sensor. Talman; James R., Roy; Shuvo, Sauer; Brian L., Fleischman; Aaron J. US Patent 7,878,208

ABSTRACTS

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