

## Matthew R. Glucksberg, PhD

- Current Position** Professor  
Biomedical Engineering Department  
Northwestern University  
Evanston, IL 60208-3107  
Phone: 847-491-7121 Fax: 847-491-4928  
m-glucksberg@northwestern.edu www.bme.northwestern.edu
- Education** Columbia University, School of Engineering and Applied Science,  
Department of Civil Engineering and Engineering Mechanics  
PhD: Engineering Mechanics, May 1987.  
MS: Engineering Mechanics, January 1984.  
BS: Engineering Mechanics, May 1981.
- Professional Experience**
- 1978-1981 **Programmer**  
Planetary Science Group, Institute for Space Studies, Goddard  
Space Flight Center, NASA, 2880 Broadway New York, NY.
- 1981-1982 **Project Engineer**  
Tubeco Incorporated, 451 Varick Street, Brooklyn, NY.
- 1982-1986 **Research Assistant**  
Department of Civil Engineering and Engineering Mechanics  
Columbia University, New York, NY.
- 1986-1988 **Research Associate**  
Departments of Medicine and Physiology, College of Physicians  
and Surgeons, Columbia University, New York, NY.
- 1988-1994 **Assistant Professor**  
1994-2000 **Associate Professor**  
2002-2010 **Chair, BME Department**  
2000-Present **Professor**  
Biomedical Engineering Department,  
McCormick School of Engineering and Applied Science.  
Northwestern University, Evanston, IL
- 2013-Present **Director**, Center for Innovation in Global Health Technologies  
2015- Present **Honorary Professor**, University of Cape Town, Cape Town, South Africa
- Memberships** Biomedical Engineering Society  
American Institute of Medical and Biological Engineering  
American Society of Engineering Education
- Honors** Elected Fellow, Biomedical Engineering Society, 2010  
Elected to College of Fellows, AIMBE, 2000.  
Microcirculatory Society Instrumentation Award (with PS Jensen) 1997  
ARVO-NEI Travel Award, 1992  
Ralph M. Parsons Outstanding Young Research Professor, 1989-1992

## Publications in Refereed Journals

MR Glucksberg and J Bhattacharya. Effect of dehydration on interstitial pressures in the isolated dog lung. *J. Appl. Physiol.* 67(2):839-845, 1989.

S Bhattacharya, MR Glucksberg and J Bhattacharya. Measurement of lung microvascular pressure in the intact anesthetized rabbit by the micropuncture technique. *Circulation Res.* 64:167-172, 1989.

MR Glucksberg. Mechanics of the perialveolar interstitium of the lung. *Applied Cardiovascular Pathophysiology* 3:247-251, 1990.

MR Glucksberg and J Bhattacharya. Effect of alveolar and pleural pressures on interstitial pressures in the isolated dog lung. *J. Appl. Physiol.* 70:2 914-918, 1991.

TR Ford, JR Sachs, JB Grotberg and MR Glucksberg. Perialveolar interstitial resistance in the isolated rat lung. *J. Appl. Physiol.* 70(6):2750-2756, 1991.

MR Glucksberg and R Dunn. Direct measurement of retinal microvascular pressures in the live, anesthetized cat. *Microvas. Res.* 45:158-165, 1993.

KW Grace, JE Colgate, MR Glucksberg and JH Chun. A six degree of freedom micromanipulator for ophthalmic surgery. *IEEE Proceedings* 630-635, 1993.

MR Glucksberg, R Dunn and C. Giebs. In-vivo micropuncture of retinal vessels. *Graefe's Arch. Ophthalmol.* 231:405-407, 1993.

MR Glucksberg and J Bhattacharya. Effect of vascular pressure on interstitial pressures in the isolated dog lung. *J. Appl. Physiol.* 75:268-272, 1993.

MR Glucksberg and J Bhattacharya. Effect of alveolar and pleural pressures on interstitial pressures in the isolated dog lung. *J. Appl. Physiol.* 70:2 914-918, 1991.

TR Ford, JR Sachs, JB Grotberg and MR Glucksberg. Perialveolar interstitial resistance in the isolated rat lung. *J. Appl. Physiol.* 70(6):2750-2756, 1991.

MR Glucksberg and R Dunn. Direct measurement of retinal microvascular pressures in the live, anesthetized cat. *Microvas. Res.* 45:158-165, 1993.

R Attariwala, CP Giebs and MR Glucksberg. The influence of elevated intraocular pressure on vascular pressures in the cat retina. *Investigative Ophthalmol. Vis. Sci.* 35:1019-1025, 1994.

JR Sachs, OE Jensen, MR Glucksberg and JB Grotberg. Linear flow and deformation in a poroelastic disk with a free surface. *J. Appl. Mech.* 61:729-731, 1994.

OE Jensen, JR Sachs, MR Glucksberg and JB Grotberg. Weakly nonlinear deformation of a thin poroelastic layer with a free surface. *J. Appl. Mech.* 61:726-728, 1994.

JB Grotberg and MR Glucksberg. A buoyancy-driven squeeze-film model of pleural fluid dynamics: basic concepts. *J. Appl. Physiol.* 77(3):1555-1561, 1994.

PS Jensen, MR Glucksberg, JE Colgate, KW Grace, R. Attariwala. Robotic micromanipulator for robotic surgery. *IEEE Proceedings, MRCAS*, 204-210, 1994

CM Waters, MR Glucksberg, N DePaola, J Chang and JB Grotberg. Shear stress alters pleural mesothelial cell permeability in culture. *J. Appl. Physiol.*, 81(1): 448-458, 1996.

R Attariwala and MR Glucksberg. Control mechanisms of retinal vein pressure in the cat: Evaluation using an in situ infusion micropipette. *Microcirc.* 3(3):263-270, 1996.

CM Waters, J Chang, N DePaola, MR Glucksberg, and JB Grotberg. The effects of physical forces on growth factor production and growth stimulation by pleural mesothelial cells, *Am. J. Physiol. (Lung, Cell Mol. Physiol.)*, 16: L552-L557, 1997.

KW Grace, PS Jensen, JE Colgate and MR Glucksberg. Teleoperation for ophthalmic surgery: from the eye robot to feature extracting force feedback. *Automedica* (10):235-242, 1997).

PS Jensen, MR Glucksberg, JE Colgate, KW Grace, R. Attariwala. Toward robot assisted vascular microsurgery in the retina. *Graefes Arch. Ophthalmol.* 235:696-701, 1997.

R Attariwala, PS Jensen and MR Glucksberg. Retinal vein pressures following experimental retinal vein occlusion. *Invest. Ophthalmol. Vis. Sci.* 38(13):2742-2749, 1997.

PS Jensen, R Attariwala and MR Glucksberg. Regional variation in capillary hemodynamics in the cat retina. *Invest. Ophthalmol. Vis. Sci.* . 39(2):407-415, 1998.

- DM Eckmann, M Swartz, MR Glucksberg, N Gavriely and JB Grotberg. Perfluorocarbon induced alterations in pulmonary mechanics. *Artif. Cell, Blood Sub.* 26, 359-366, 1998.
- DM Eckmann, M Swartz, MR Glucksberg, N Gavriely and JB Grotberg. Influence of intravenous perfluorocarbon administration on the dynamic behavior of lung surfactant. *Artif. Cell, Blood Sub.* 26, 259-271, 1998.
- JL Bull, LK Nelson, JT Walsh, Jr., MR Glucksberg, S Schurch, and JB Grotberg Surfactant-spreading and surface-compression disturbance on a thin viscous film. *J. Biomech. Eng.* 121(1):89-98, 1999.
- SQ Liu, MR Glucksberg, LF Mockros, JB Grotberg and AP Mok. Partial prevention of monocyte and granulocyte activation in rat vein grafts by eliminating eddy blood flow and reducing tensile stress. *J. Biomech.* 32:1165-1175, 1999.
- KJ Cassidy, JL Bull, MR Glucksberg, CA Dawson, ST Haworth, R Hirschl and JB Grotberg. A rat lung model of instilled liquid transport in the pulmonary airways. *J. Appl. Physiol.* 90, 1955-1967, 2001.
- CM Waters, MR Glucksberg, C Lee, R Van Mater, and R Warp, E Lautenschlager, K Healy, B Moran, U Savla, J Bearinger. A system to impose prescribed homogenous strains on cultured cells. *J Appl Physiol.* 91(4):1600-10, 2001.
- R Haber, J.B. Grotberg, MR Glucksberg, G Miserocchi, D Venturoli, M Del Fabbro and CM Waters. Steady-state pleural fluid flow and pressure and the effects of lung buoyancy. *J. Biomech. Eng.* 123:485-492, 2001.
- Sen N, Glucksberg MR, Bhattacharya S. 5-Hydroxytryptamine-induced microvascular pressure transients in lungs of anaesthetized rabbits. *Acta Physiol Scand.* 172(2):81-7, 2001.
- KE Shafer-Peltier, C Hayes, MR Glucksberg, and RP. Van Duyne. Toward a glucose biosensor based on surface enhanced Raman scattering. *J. Am. Chem. Soc.* 125(2):588-93, 2003
- WK Taylor, KE Gokay, C Capccio, E Davis, M Glucksberg, and DA Dean. The effects of cyclic stretch on gene transfer in alveolar epithelial cells. *Mol. Therapy* (4):542-9., 2003.
- YL Kim, JT Walsh, and MR Glucksberg. OCT determination of dispersion in the bovine retina. *Applied Optics* 42(34): 6959-6966, 2003.
- YL Kim, JT Walsh, TK Goldstick, and MR Glucksberg. Variation of corneal refractive index with hydration. *Phys. Med. Biol.* 49:859-868 2004.
- Wu FI, JT Walsh, MR Glucksberg. Measurements of choroidal blood by optical coherence tomography. *Appl. Optics* 44(8):1426-33, 2005.
- Seuryneck SL, NJ Brown, CW Wu, KW Germino, EK Kohlmeir, EP Ingenito, MR Glucksberg, AE Barron, and M Johnson. Optical monitoring of bubble size in a pulsating bubble surfactometer for characterization of exogenous lung surfactant replacements. *J. Appl. Physiol.* 99:624-33, 2005.
- Geiger, RC, CM Waters, DW Kamp, and MR Glucksberg. KGF prevents oxygen-mediated damage in ARPE-19 cells. *Invest. Ophthalmol, Vis.. Sci.* 46:3435-42, 2005.
- DA Stuart, C Ranjit Yonzon, X Zhang, O Lyandres, NC Shah, MR Glucksberg, JT Walsh, and RP Van Duyne. Glucose Sensing Using Near-Infrared Surface-Enhanced Raman Spectroscopy: Gold Surfaces, 10-Day Stability, and Improved Accuracy. *Anal. Chem.*, 77, 4013-19, 2005.
- Stuart DA, Yonzon CR, Zhang X, Lyandres O, Shah NC, Glucksberg MR, Walsh JT, Van Duyne RP. Glucose sensing using near-infrared surface-enhanced Raman spectroscopy: gold surfaces, 10-day stability, and improved accuracy. *Anal Chem*, 77(13):4013-9, 2005.
- Lyandres O, Shah NC, Yonzon CR, Walsh JT Jr, Glucksberg MR, Van Duyne RP. Real-time glucose sensing by surface-enhanced Raman spectroscopy in bovine plasma facilitated by a mixed decanethiol/mercaptohexanol partition layer. *Anal Chem.*, 77(19):6134-9 2005.
- Geiger, RC, Taylor W, Glucksberg M.R. and Dean DA Cyclic stretch-induced reorganization of the cytoskeleton and its role in enhanced gene transfer. *Gene Ther.* 13(8):725-31,2006.
- Stuart, DA, JM Yuen, NC Shah, O Lyandres, CR Yonzon, MR Glucksberg, JT Walsh, RP Van Duyne In Vivo Glucose Measurement by Surface-Enhanced Raman Spectroscopy. *Anal. Chem.* 78(20):7211-5 2006.
- Thangawng AL, MA Swartz, MR Glucksberg, and RA Ruoff. Bond-Detach Lithography: A Method for Micro Nanolithography by Precision PDMS Patterning, *Small*, 3(1):132-138, 2007.

Thangawng AL, RS Ruoff, MA Swartz, MR Glucksberg. An ultra-thin PDMS membrane as a bio/micro-nano interface: fabrication and characterization. *Biomed Microdevices*. 9(4):587-95, 2007.

Webb AR, BD Macrie, AS Ray, JE Russo, AM Siegel, MR Glucksberg, GA Ameer. In vitro characterization of a compliant biodegradable scaffold with a novel bioreactor system. *Ann. Biomed. Eng.* 35(8):1357-67, 2007

O Lyandres, NC Shah, C Ranjit-Yonzon, JT Walsh Jr., MR Glucksberg, and RP VanDuyne. Lactate and Sequential Lactate-Glucose Sensing Using Surface-Enhanced Raman Spectroscopy. *Anal. Chem. Anal. Chem.*, 79(18), 6927-6932, 2007.

O Lyandres, JM Yuen, NC Shah, RP. VanDuyne, JT Walsh Jr., MR Glucksberg. Progress Toward an In Vivo Surface-Enhanced Raman Spectroscopy Glucose Sensor. *Diabetes Tech. & Ther.* 10(4): 257-265, 2008.

O Lyandres, O, Glucksberg MR, Walsh JT, Shah N C., Yonzon CR, Zhang X, and Duyne RP. Surface-Enhanced Raman Sensors for Metabolic Analytes. In *Modern Concepts of Biomedical Vibrational Spectroscopy*, Kneipp, J., Lasch, P., Eds., John Wiley & Sons, Inc.; pp.221-241, 2009

NC Shah, Yuen JM, Glucksberg R, Walsh JT and Van Duyne RP. Surface-Enhanced Raman Spectroscopy for Glucose Analysis. In *In Vivo Analytical Chemistry of Glucose*, Stenken, J., Cunningham, D., Eds., John Wiley & Sons, Inc.; pp. 421-443, 2010.

D Zeng, Juzkiw T, Thomas TR, Darren W, Chan H, Glucksberg MR, Ethier CR and Johnson M. Young's modulus of elasticity of Schlemm's canal endothelial cells. *Biomechanics and Modeling in Mechanobiology*. 9(1), 1617-7959, 2010.

Yuen JM, Shah NC, Walsh JT, Glucksberg MR, Van Duyne RP. Transcutaneous Glucose Sensing by Surface-Enhanced Spatially Offset Raman Spectroscopy in a Rat Model. *Anal Chem.* 2010 Sep [Epub ahead of print] PMID: 20845919

Prediction range estimation from noisy Raman spectra with robust optimization. Lyandres O, Van Duyne RP, Walsh JT, Glucksberg MR, Mehrotra S. *Analyst*. 2010 Aug;135(8):2111-8. Epub 2010 Jun 9. PMID: 20532412

Transcutaneous Glucose Sensing by Surface-Enhanced Spatially Offset Raman Spectroscopy in a Rat Model. *Anal. Chem.*, 2010, 82 (20), pp 8382–8385, 2010

Zeng D, Juzkiw T, Read AT, Chan DWH, Glucksberg MR, Ethier CR, and Johnson M Young's modulus of elasticity of Schlemm's canal endothelial cells. *Biomech. & Mod. in Mechanobiology*. 9(1)19-33, 2010.

Cole, J., Linsenmeier, R., McKenna, A., & Glucksberg, M. (2010). Investigating engineering students' mathematical modeling abilities in capstone design. Paper presented at the American Society for Engineering Education Annual Conference & Exposition, Louisville, KY.

Cole, J., Linsenmeier, R., Molina, E., Glucksberg, M., & McKenna, A. (2011). Assessing engineering students' mathematical modeling abilities in capstone design. Paper presented at the American Society for Engineering Education Annual Conference & Exposition, Vancouver, B.C., Canada

Ma K, Jonathan MY, Shah NC, Walsh, JT, Glucksberg MR, and Van Duyne RP In Vivo, Transcutaneous Glucose Sensing Using Surface-Enhanced Spatially Offset Raman Spectroscopy: Multiple Rats, Improved Hypoglycemic Accuracy, Low Incident Power, and Continuous Monitoring for Greater than 17 Days, *Anal. Chem.*, 83, 9146-9152, 2011.

Sharma, K. Ma, M. R. Glucksberg, and R. P. Van Duyne, "Seeing through bone with surface-enhanced spatially-offset Raman spectroscopy", *J. Am. Chem. Soc.*, 135, 17290–17293 (2013)

Lamano JB, Bushnell GG, Chen H, Badrinathan A, El Tecle NE, Bendok BR, Glucksberg MR. Force characterization of intracranial endovascular embolization: Coil type, microcatheter placement, and insertion rate *Neurosurgery*. 2014

Go K, Kim Y, Lee AH, Staricha K, Messersmith PB, Glucksberg MR. Design of Novel Mixer and Applicator for Two-Component Surgical Adhesives, *J. Med. Dev., Transactions of the ASME*. 2015;9(4).

Ploss B, Douglas TS, Glucksberg M, Kaufmann EE, Malkin RA, McGrath J, Mkandawire T, Oden M, Osuntoki A, Rollins A. Part II: U.S.-Sub-Saharan Africa Educational Partnerships for Medical Device Design.. *Annals of Biomedical Engineering*. 45(11):2489-2493, 2017.

## Patents

Colgate, Glucksberg, and Grace. System for positioning a medical instrument within a biotic structure using a micromanipulator. April 25, 1995. Patent number 5,410,638.

Glucksberg, Walsh, Shafer-Peltier, Hayes, and Richard P. Van Duyne. Surface enhanced Raman nanobiosensor. Van Duyne, Glucksberg, Walsh Jr., Ranjit-Yonzon, Shah, Lyandres. New partition layer for surface enhanced Raman nanobiosensor. Pending.

## Teaching

- Global Health Technology Program, Cape Town, South Africa, Spring Quarter, 2006-2011.  
Winter 2012-18. Co-director/co-instructor with David Kelso. 10 students/year. Four Courses co-Taught with Prof. Kelso and South African Faculty: BME314-SA, BME388-SA, BME389-SA, BME391-SA
- 395 Medical Devices, Disease and Global Health  
Spring Quarter 2012-2018, 20-30 Students per year
- 302 Systems Physiology: Cardiovascular and Respiratory Physiology  
Fall Quarter 1989-2003, 70-90 students/year.
- 402 Advanced Systems Physiology: Cardiovascular and Respiratory Physiology, 1991-1995, Fall Quarter, 10-20 Students/year
- 402 Advanced Systems Physiology (with SQ Liu) 1998-2002  
Fall Quarter, 10-20 Students/year
- 371 Mechanics of Biological Tissue, 1989-1998, 2000, 2004-2005  
Fall Quarter, 15-35 Students
- 271 Introduction to Biomechanics, 2000-2002, 2004  
10-25 Students
- 512 Graduate Seminar in Biomedical Engineering, 1990-1999, 2001-2002, 2008  
Fall, Winter and Spring Quarters, 15-25 Students
- 390 Biomedical Engineering Design (with D Kelso), 1999-2002, (with D Kelso and G Ameer) 2005-Present  
Winter Quarter, 58-85 Students
- 390-1, 390-2 Biomedical Engineering Design (with D Kelso) Fall 2009,10,12, Winter 2010- Present  
Disease, medical devices and global health, Spring 2012
- EDC Engineering Design and Communication, 1 qtr/year 2006-2010

## *Graduate Student Supervision*

Rajpaul Attariwala

MS 1993. Thesis title: "The influence of elevated intraocular pressure on retinal vascular pressures"

PhD 1996. Thesis title: "The mechanics of the cat retinal circulation during acute experimental retinal vein occlusion"

Claudine Giebs

MS (ME) 1994. Thesis title: "The effect of oxygen breathing on retinal vascular pressures"

MS (BME) 1995. Thesis title: "Blood gases and the control of retinal vascular pressure"

Patrick Jensen

MS, 1994. Thesis title: "A six degree of freedom micromanipulator for ophthalmic surgery"

PhD, December, 1996 Thesis title: "Capillary hemodynamics in the cat retina"

Stanley Szeto

MS 1996. Thesis Title: "Radial segregation of perfluorocarbon droplets in ghost cell suspensions flowing through a capillary tube"

Michael Lin

MS June, 1996 Project Title: "Fabrication of a stretchable silicon substrate for cell culture"

Karen Cassidy (Co-advised with JB Grotberg)

PhD (ME), Dec 1999.

Chris Geiger

MS 1999, Thesis Title “A network model of retinal blood flow” 1999

PhD 2003 “KGF prevents oxygen-mediated damage In ARPE-19 Cells”

Frank Wu

PhD 2004, Thesis Title: “Choroidal perfusion measurements using optical coherence tomography”

Younglae Kim

MS 2002

Sivaraj Sivaramakrishnan, PhD 2007, “Effects of shear stress on epithelial cell cytoskeletal morphology and function” (co-advised with Karen Ridge)

Abel L. Thangawng, PhD 2007 “Effects of substrate stiffness on cell motility and matrix synthesis” (co-advised with Rod Ruoff)

Jonathan Yuen

MS 2004, Thesis title: “Flow phantoms for OCT measurement of choroidal blood flow”

PhD 2010,

Olga Lyandres

MS 2004 Raman-Based Glucose Sensors

PhD 2009

Micah Rogel

MS 2009

PhD 2013

Ke Ma

MS 2010

PhD 2013

#### *Post Doctoral Supervision*

Jonathan Yuen, PhD, June 2009-2012

Theodore Ford, MD, July 1989-August 1990.

Robert Dunn, MD (co-supervised/supported with RA Linsenmeier), September 1991-July 1993.

Jeffery Sachs, PhD (co-supervised/supported with JB Grotberg), September 1989-July 1990.

Karen Shafer, PhD, August 2001-2003

#### **Service**

##### *National*

Finance Committee, Biomedical Engineering Society, 1994-1995

Lions Eye Research Grants special reviewer 1994-1996

USIA Foreign Research Grants special reviewer, 1997

NIH-NEI Visual Sciences C Study Section Ad-Hoc Member, 1997-2001

NIH-NEI Visual Sciences A Study Section Reviewer, 2001-2004

NIH-NIDDK DK99-013 Special Study Section Reviewer, 1999-2005

NIH-NIDDK Diabetes Centers of Excellence Special Reviewer, 1999-2004

AIBS Technologies for Metabolic Monitoring Reviewer 2003

Secretary, Council of Chairs, 2003-2004

Chair-elect, Council of Chairs 2004-2005, Chair 2005-2006, Past Chair 2006-2007

Chicago Universities Bioengineering Industry Consortium Executive Committee 2002-Present

Biomedical Engineering Society 2006 Annual Meeting Planning Committee (NU Host)

AIMBE Academic Council, Member, 2002-Present/Fellow selection committee 2007

External Advisory Board, Columbia University Biomedical Engineering Dept., 2005-2008

Biomedical Engineering Society, Member, Board of Directors, 2005-2010  
World Health Imaging Alliance, Board Member, 2007-Present (Chair 2007-2009)  
Northwestern Foundation for Global Health, Board Member, 2010-Present  
Education Track co-Chair, BMES Annual Meeting 2015

#### *University*

Animal Care and Use Committee, 1993-1998  
Chair, Animal Care and Use Committee, 1995-1998  
Committee on Animal Resources, 1995-1998  
Faculty Associate, Lingren Residential College, 1996-Present  
Program Review Committee, Communication Disorders, 1999  
Life Sciences Minority Committee, 1999-Present  
SRQP Preceptor, 1995, 1997, 1999  
Graduate Program Review Committee, 2001-2002  
*No longer keep track of these committees...*

#### *McCormick School*

Graduate Research Committee, 1990-1996  
Graduate Research and Scholarship Committee 1999-Present  
Customer Satisfaction Committee, 1992-1994  
HPME Admissions Committee, 1990-Present  
Participant, NHSI (Cherub) Program 1993-1998  
Faculty Liaison, Baxter FIRST Competition, 1996-1997  
Participant, Diversity Retreat, 1997  
McCormick Awards Committee, 1997  
Committee on the Future, 1997-1999  
Member, Assistant Professor Search Committee, ME Department 1998  
Bioengineering Planning Committee, 2000-2004  
McCormick Minorities in Engineering Committee, 2002-present  
Promotion and Tenure Committee (at-large member), 2001-2002  
Space Committee, 2002-present  
Chair, Department Chairs Subcommittee on SDA Policy, 2003  
*No longer keep track of these committees...*

#### *Feinberg School of Medicine*

Member, Medical Biomechanics Program, 1991-1999  
Anesthesia Faculty Search Committee, 1991 (CM Waters)  
Member, Feinberg Cardiovascular Institute, 1995-Present  
Member, Division Chief Search Committee, Pulmonary Division (JI Sznajder), 1997-1998  
Medical Biomechanics Program Steering Committee, 1997-1999  
Subcommittee on Bioengineering, 2004  
Northwestern Center for Surgical Education (N-CASE) Advisory Board, 2004-Present  
CTSA Planning Committee 2006

#### *BME Department*

Seminar Coordinator, 1989-1999  
BMES Student Chapter Faculty Advisor, 1989-1992  
BME Faculty Search Committee, 1991 (DePaola)  
Chair, Financial Aid Committee, 1990-2001  
Graduate Admissions Officer, 1990-2001  
Graduate Admissions Committee, 1989-2002  
Graduate Program Committee, 1992-1997  
BME Web Page Oversight, 1996-2004  
Chair, Space Committee, 1997-1998  
Long Range Planning Committee, 1995-1996  
Undergraduate Program Committee, 1989-1994

BME Faculty Search Committee 1994 (Liu)  
BME Reconstruction Committee 1993-1995  
BME Senior Faculty Search Committee, 1998-1999 (Johnson)  
Chair BME Faculty Search Committee, 1999 (Ameer)  
BME/RIC Faculty Search Committee 2000 (Perreault)  
Third Cycle Program Review Committee Chair 2001-2002  
Director, BME-ME-RIC Neural Engineering Graduate Program 2003-2006  
Chair, Engineering Life Sciences Building Committee, 2008-2011  
Co-Chair, "One Northwestern" Graduate Life and Research Committee, 2008-  
Engineering Life Sciences Building Planning Committee, 2009-Present  
*No longer keep track of most of these committees...*

### **Invited Talks and Symposia**

Pulmonary Division, University of Chicago, January 1990  
Blood Substitutes Program, Baxter International, Round Lake IL, January 1991  
Scheie Eye Institute, University of Pennsylvania, Philadelphia, PA, April 1992  
Istituto di Fisiologia Umana I, Università di Milano, Milan, Italy, July 1993  
Pulmonary Circulation Symp., Biomedical Engr. Soc. Fall Meeting, Memphis TN, October 1993  
Department of Pharmacology, Rush College of Medicine, Chicago, IL, October 1993  
Rush College of Medicine, Department of Pharmacology, Chicago, November 1994  
Pleural Mechanics Symposium, Biomedical Engr. Soc. Fall Meeting, Tempe AZ, October 1994  
Biomedical Engineering Department, Penn State University, September 1995  
Department of Mechanical Engineering, Swiss Federal Technical Institute, October 1995  
Department of Ophthalmology, Massachusetts General Hospital, Boston, MA, December 1995  
Tsukuba Technical University, Dept. Pulmonary Surgery, Tsukuba, Japan, October 1996  
International Society for Eye Research Meeting, Yokohama, Japan, October 1996  
Biomedical Engineering Department, Marquette University, Milwaukee, WI, September 1997  
International Society for Eye Research Meeting, Paris, France, July 1998  
Coherence Domain Imaging Symposium, Cleveland, OH, October 1998  
Ocular Blood Flow Symposium ARVO, Ft. Lauderdale, FL, April 1999  
Ocular Biomechanics Symposium, Biomedical Engr. Soc. Fall Meeting, Atlanta, GA, October 1999  
Department of Physiology, University of Louisville, November 1999  
The 11th International Conference on Mechanics in Medicine and Biology, Maui, HI, April 2000  
Biomedical Engineering Department, Vanderbilt University, Nashville, TN, April 2000  
Physiology Department, University of Varese, Varese, Italy, December 2001  
Ocular Biomechanics Symposium, ASME Meeting, Snowbird Utah, 2002  
Physiology Department, University of Tennessee, Memphis, April 2004  
BME Department, Illinois Institute of Technology, October 2004  
Plenary Speaker, Whitaker Biomedical Engineering Education Summit, March 2005  
BME Department, University of Minnesota, September 2005  
BME Department, Boston University, September 2006  
Association of Clinical Engineers of South Africa, Cape Town, S. Africa, May 2007  
Plenary Speaker, Diabetes Technology Symposium, October 2007  
BME Department, UC Irvine, November 2007  
BME Department, University of Pittsburgh, November, 2008  
University of Cape Town, Dept. of Human Biology, May 2009  
BME Department, NJIT, November 2009  
NCIIA Neonatal Technologies Conference (organizer at NU) August 2011  
BME Department, University of Utah, November 2012  
University of Ibadan, Nigeria 2012  
University of Lagos, Nigeria 2013  
University of Arkansas, 2015  
University of Lagos, 2017

### **Peer Review**



American Journal of Physiology  
Annals of Biomedical Engineering  
Archives of Ophthalmology  
Current Eye Research  
Experimental Eye Research  
Investigative Ophthalmology and Visual Science  
Journal of Applied Physiology  
Journal of Biomechanical Engineering  
Lung  
Microcirculation  
Microvascular Research  
Pulmonary and Critical Care Medicine  
Circulation

**Research Support** (does not include grants and contracts I administer as director of CIGHT)

Micropuncture measurements of lung interstitial properties, PI, 7/1/89-12/31/91.

American Lung Association

Interstitial pressure and lung liquid transport. PI, 4/1/89-3/31/92

Whitaker Foundation

Micropuncture measurement of the retinal microvascular pressure profile. PI, 1/1/92-12/31/92.

Ralph M. Parsons Foundation

Effect of intraocular pressure on retinal vascular pressures Fight For Sight, 6/1/92-8/31/92

Research to Prevent Blindness, Fellowship for R Attariwala,.

Investigation of pulmonary mechanics after iv PFOB in rabbits. D. Eckmann, PI, 5/10/91-12/31/92. Alliance Pharmaceutical Corp

Retinal tissue PO<sub>2</sub> enhancement. Alliance Pharmaceutical Corp, Co-investigator (TK Goldstick, PI), 1/1/93-12/31/94.

A microinjection system for the treatment of retinal vascular occlusion. The Margaret W. and Herbert Hoover Jr. Foundation, PI, 1/1/91-6/30/96.

Regional effects of intraocular pressure on capillary hemodynamics. Fellowship for PS Jensen 6/1/96-8/31/96. Fight For Sight, Research to Prevent Blindness.

Pressure and flow in the retinal microcirculation. PI, 4/1/93-3/31/00

NIH/NEI

Pulmonary mass and heat transport. JB Grotberg, PI, 7/1/92-6/30/97

NIH/NIHLB

Pulmonary mechanics and transport: an integrated cellular and organ level approach. Co-PI, 1/1/94-8/31/97

Whitaker Foundation Special Opportunity Award

Vascular cell death and proliferation: role of mechanical stretch. Co-Investigator, SQ Liu, PI, 1/1/00-12/31/02  
NSF

Bioengineering partnership for optical coherence tomography, PI (Subcontract from Case Western Reserve University, Bioengineering Partnership Award, JA Izatt, PI). 1/1/00-12/31/05

NIH/NEI

Color Doppler OCT imaging of the retina and choroid. NIH (NEI) 4/1/00-3/31/04, PI

Supporting student and teacher inquiry in bioscience. 9/29/00-9/28/03, (Brian Reiser, PI)

NIH Science Education Partnership Award

Development of a Tissue Mechanics Teaching Laboratory, PI, 11/1/00-10/31/00

Murphy Society

Mechanisms of Gene Delivery Under Conditions of Mechanical Stretch. DA Dean, PI, 4/1/01-3/31/03, IBNAM

Photonics imaging working group. Director, 9/1/00-8/31/03  
Cross-Schools Initiative

Bioengineering partnership for optical coherence tomography, 1/1/00-12/31/05, PI.  
NIH/NEI (Subcontract from Case Western Reserve University, BRP Award, JA Izatt, PI)

Surface enhanced Raman spectroscopy for monitoring lactate and glucose, 7/1/04-6/30/06, PI  
USAMRMC (Army)

Gene transfer to the alveolar epithelium: effects of stretch, 1/1/02-12/31/05, DA Dean, PI.  
NIH R01

Multianalyte detection using SERS-based sensors 4/1/01-9/30/03, PI.  
IBNAM

Neural engineering for the restoration of human function. Special Opportunity Award, 6/1/03-5/31/06, PI.  
Whitaker Foundation

Surface enhanced Raman spectroscopy for monitoring lactate and glucose, 6/1/04-3/31/06, PI  
USAMRMC (Army)

Mechanical forces in a model of epithelial wound healing, 4/1/03-9/30/04, PI  
BAXTER/IBNAM

BME Design for resource poor environments, 9/1/05-8/31-08, PI  
Murphy Society, Northwestern University

Surface enhanced Raman nanobiosensor, 1/1/03-12/31/09, JT Walsh, PI  
NIH R21-R33

BME design for global health  
NCIIA Sustainable Vision Award 5/1/2007-12/31/2008

BME global healthcare technology program  
NCIIA Curriculum Development Award 10/1/08-9/31-10

Integrating social science and BME global healthcare design  
NU Alumnae Associate Award, 9/1/08-8/31/09

A SERS-based approach to glucose sensing  
NIH NIDDK R56, RP Van Duyne, PI 9/1/09-8/31/10

Raman-based nanosensors  
NU Baxter Alliance 6/1/10-5/31/11

Human Powered Nebulizer, Cape Town South Africa  
NU Alumnae Associate Award, 9/1/09-8/31/10

KMC Care in Cape Town, South Africa  
NU Alumnae Associate Award, 9/1/09-8/31/10

SMP Program in Global Health Technologies, 9/1/10-8/31/12  
NSF

NU-Baxter Alliance: Raman Spectroscopy-Based Platform Technologies for Monitoring Drug  
Infusion. Baxter Healthcare. 6/1/10-9/30/13.

Support for MS SMP students, Cape Town South Africa  
NU Alumnae Associate Award, 9/1/11-8/31/13

Project Support for BME390. NASA, 10/1/12-8/31/14

Canada Grand Challenges, TB Diagnostic, Subcontract from UCT 3/1/11-2/28/15

NIH, Enhancing BME Senior Capstone Design at Northwestern University, 6/1/11-5/31/16.

1D43TW009374, NIH/FIC. Co-I (Murphy PI), Developing Innovative Interdisciplinary  
Biomedical Engineering Programs in Africa, 09/25/13-08/31/18

D43TW010134, NIH/FIC. Co-I (Ogunsola PI), Building research and innovation in Nigeria's  
science (BRAINS) 08/28/15-07/31/20