

3/1/08

**ELAINE L. BEARER, MD PHD**  
**PROFESSOR OF MEDICAL SCIENCES**  
**PROFESSOR OF ENGINEERING**

Laboratories of Molecular Medicine  
Brown School of Medicine  
70 Ship St. E527  
Brown University,  
Providence, R.I. 02912

401 - 863 - 3478 Office  
401 - 863 - 2913 Dept. Assistant  
401 - 863 - 9008 Fax  
email: [Elaine\\_Bearer@Brown.edu](mailto:Elaine_Bearer@Brown.edu)  
[http://research.brown.edu/myresearch/Elaine\\_Bearer](http://research.brown.edu/myresearch/Elaine_Bearer)

**Home address:**

9 Diman Place  
Providence, RI 02906

**Education:**

MD-PhD 1983 University of California, San Francisco, Medical Scientist Training Program  
Ph.D. in Experimental Pathology with Daniel S. Friend, MD; Chair Thesis Committee: Ed Smuckler, MD  
Thesis: *Anionic Lipid Distribution in Membranes*

Post-Baccalaureate Pre-Med 1975-1977 Stanford University, Program in Human Biology,  
Teaching Assistant in Human Biology with Don Kennedy, PhD  
Student Research Assistant in Neuroscience with John G. Nicholls, MD, FRS

**Postgraduate training:**

Post-doctoral fellowships, concurrent 1986-89

University of California, San Francisco

Biochemistry and Biophysics with Bruce M. Alberts, Ph.D.,

Pathology Fellowship (clinical subspecialty diagnostics in surgical pathology)

Resident, Anatomic Pathology,

Department of Pathology, University of California, San Francisco, 1984-86

Post-doctoral Fellow with Lelio Orci, M.D., Department of Morphologie and Embryologie,  
Centre Medical Universitaire, University of Geneva, Switzerland, 1983-84

**Academic Appointments**

**Brown University**

1991-present

Department of Pathology and Laboratory Medicine

Professor of Medical Science with tenure (2004- present)

Associate Professor (with tenure) (1997-2003)

Assistant Professor (tenure-track) (1991-1997)

Division of Engineering

Professor of Engineering with tenure (2006-present)

Director, Phenotyping Core for The New Stem Cell Biology, Center of Biological Research Excellence, Roger Williams Medical Center and Brown University (2003-present)

Director, Molecular Pathology Imaging Core (1998-present)

**Marine Biology Laboratory**, Woods Hole MA 1993-present  
Summer Investigator (1993-present)

**International Brain Mapping and Intraoperative Surgical Planning Foundation**  
Los Angeles, CA 2004-present  
Chair of the Board (2006-present)  
President and co-founder (2004-2006)

**Institute of Electrical and Electronics Engineers, Inc.**  
Engineering in Medicine and Biology Society (EMBS)  
Treasurer and Founding Officer, Providence Chapter 2006-present

**San Lucas Health Project, San Lucas Toliman, Guatemala** 1993-present  
Director of Guatemala Elective Clinical Clerkship for Medical Students 1993-present  
Co-Director and co-founder 2004-present

**University of California, San Francisco** 1990-1991  
Assistant Research Biochemist (a junior faculty appointment), Department of Biochemistry and Biophysics  
Adjunct Clinical Instructor, Department of Pathology

### **Professional Certification:**

Medical License, State of California 1985-present  
Board Certified, American Board of Anatomic Pathologists 11/1986

### **Academic Honors, Awards and Honorary Degrees (selected):**

Top Pathologists for 2007, Consumer's Research Council of America , 2007  
American Chemical Society Symposium: Chemist-Composers "Music and Mind" 2006  
Dart Scholar of Learning and Memory, Marine Biological Laboratory, 2005  
Moore Distinguished Scholar, Caltech Brain Imaging Center, Caltech, 2004-2005  
Distinguished Neuroscience Lectureship Award, Rosenstiel BioMedical Center, Department of Neuroscience, and the NIEHS Marine Biology Center, University of Miami Medical School, 2003  
Honor Wall of the American Indian, Smithsonian Museum of the American Indian, 2003  
Dean's Award for Excellence in Medical School Teaching, Brown Medical School, 2003  
Dean's Award for Excellence in Medical Student Teaching, Brown Medical School, 2002  
Public Service Award, Foundation for Children and the Aged, 2002  
Honorary Diploma, Oglala Sioux Indian College, 2002  
Dean's Award for Excellence in Medical Student Teaching, Brown Medical School, 2001  
Award for Humanism in the Practice of Medicine, Jaffe Foundation, 1999

Frederik Bang Summer Research Fellowship, Marine Biological Laboratory, Woods Hole.  
1999  
Brown University, Master of Arts Degree Euendum, 1997

### **Postdoctoral and graduate student awards:**

American Cancer Society, Senior Post-doctoral Fellowship, 1989-91  
Frederik Bang Summer Research Fellowship, Marine Biological Laboratory, Woods Hole.,  
1989  
Giannini-Bank of America Fellowship, 1987-88  
Swiss National Science Foundation Fellowship, University of Geneva, Switzerland, 1983-84  
Dean's Prize for Medical Student Research, University of California, San Francisco, 1983  
First Place, Graduate Student Research Award, University of California, San Francisco, 1982  
Chancellor's Award for Research, University of California, San Francisco, 1981

### **Additional honors (selected):**

Featured in SACNAS News, spring 2006  
Features in NIH-NIGMS *The Cell* Nov. 2006  
Featured in *The Scientist*, June 15, 2002  
Featured in *Lancet*, June 23, 2002  
National Institutes of Health, NIGMS, *Findings* , September, 2002 (NIH publication for  
Congress and public outreach)  
Featured in *Nature*, May 6, 2000

## **Research and Scholarship**

### **Scientific Publications, peer reviewed journal articles**

*Four projects, each organized chronologically*

#### **Project 1: Cell Biology and Neuroscience**

Cui B, Wu C, Chen L, Ramirez A, Bearer EL, Li WP, Mobley WC, Chu S.  
One at a time, live tracking of NGF axonal transport using quantum dots.  
Proc Natl Acad Sci U S A. 2007 Aug 14; [Epub ahead of print]

Bearer, E.L., Zhang, XW, Jacobs, RE.

Alterations in Axonal Transport in a Mouse Model of Down Syndrome by In Vivo Magnetic Resonance  
Imaging  
Neuroimage. 2007, 37(1):230-42.

Bearer EL, Falzone, TL, Zhang, XW, Biris O, Rasin A, Jacobs RE.

Role of Neuronal Activity and Kinesin on Tract Tracing by Manganese-Enhanced MRI (MEMRI)  
Neuroimage. 2007;37 Suppl 1:S37-46. Epub 2007 May 13.

Frieboes, JB, Lowengrub, JS. Wise, S, Zheng X, Machlin P Bearer EL Cristini V,  
Computer Simulation of Glioma Growth.

Neuroimage. 2007;37 Suppl 1:S59-70. Epub 2007 Mar 23.

Satpute-Krishnan, P, Conley, MI., DeGiorgis, JA, Jang, M, Bearer, EL  
A peptide zipcode sufficient for anterograde transport within amyloid precursor protein.  
Proc Natl Acad Sci U S A. 2006 Oct 31;103(44):16532-7. Epub 2006 Oct 24.

Bearer, EL. Marine Invertebrate Models of Learning and Memory: Dart Symposium on Learning and Memory.  
Biol Bull 2006 210: 334.

Tyszka JM, Readhead C, Bearer EL, Pautler RG, Jacobs RE. Statistical diffusion tensor histology reveals regional dysmyelination effects in the shiverer mouse mutant.  
Neuroimage. 2006 Feb 15;29(4):1058-65. Epub 2005 Oct 5.

Bearer EL. Perspectives on herpes-APP interactions.  
Aging Cell. 2004 Apr;3(2):81-4.

Satpute-Krishnan P, DeGiorgis JA, Bearer EL. Fast anterograde transport of herpes simplex virus: role for the amyloid precursor protein of Alzheimer's disease.  
Aging Cell. 2003 Dec;2(6):305-18.

Bearer EL, Satpute-Krishnan P. The role of the cytoskeleton in the life cycle of viruses and intracellular bacteria: tracks, motors, and polymerization machines.  
Curr Drug Targets Infect Disord. 2002 Sep;2(3):247-64.

DeGiorgis JA, Reese TS, Bearer EL. Association of a nonmuscle myosin II with axoplasmic organelles.  
Mol Biol Cell. 2002 Mar;13(3):1046-57.

Bearer EL, Breakefield XO, Schuback D, Reese TS, LaVail JH. Retrograde axonal transport of herpes simplex virus: evidence for a single mechanism and a role for tegument.  
Proc Natl Acad Sci U S A. 2000 Jul 5;97(14):8146-50.

Bearer EL, Reese TS. Association of actin filaments with axonal microtubule tracts.  
J Neurocytol. 1999 Feb;28(2):85-98.

Bearer EL, Schlieff ML, Breakefield XO, Schuback DE, Reese TS, LaVail JH.  
Squid axoplasm supports the retrograde axonal transport of herpes simplex virus.  
Biol Bull. 1999 Oct;197(2):257-8.

Medeiros NA, Reese TS, Jaffe H, Degiorgis JA, Bearer EL. Primary peptide sequences from squid muscle and optic lobe myosin IIs: a strategy to identify an organelle myosin.  
Cell Biol Int. 1998;22(2):161-73.

Bearer EL, DeGiorgis JA, Jaffe H, Medeiros NA, Reese TS.  
An axoplasmic myosin with a calmodulin-like light chain.  
Proc Natl Acad Sci U S A. 1996 Jun 11;93(12):6064-8.

Bearer EL, DeGiorgis JA, Medeiros NA, Reese TS. Actin -based motility of isolated axoplasmic organelles.  
Cell Motil Cytoskeleton. 1996;33(2):106-14.

Bearer EL, DeGiorgis JA, Bodner RA, Kao AW, Reese TS. Evidence for myosin motors on organelles in squid axoplasm.  
Proc Natl Acad Sci U S A. 1993 Dec 1;90(23):11252-6.

## **Project 2: Hematology and Actin dynamics:**

Aliotta JM, Sanchez-Guijo FM, Dooner GJ, Johnson KW, Dooner MS, Greer KA, Greer D, Pimentel J, Kolankiewicz LM, Puente N, Faradyan S, Ferland P, Bearer EL, Passero MA, Abedi M, Colvin GA, Quesenberry PJ.  
Alteration of Marrow Cell Gene Expression, Protein Production and Engraftment into Lung by Lung-derived Microvesicles: A Novel Mechanism for Phenotype Modulation.  
**Stem Cells**. 2007 Jul 2; [Epub ahead of print]

Sanga S, Frieboes H, Zheng XM, Gatenby R, Bearer EL, Cristini V.  
Predictive oncology: multi-scale, multidisciplinary modeling linking phenotype, morphology and growth.  
Neuroimage. 2007;37 Suppl 1:S120-34. Epub 2007 Jun 7.

Bearer, EL. Intracellular pathogens and the actin cytoskeleton.  
(in press, *Actin, Actin-Binding Proteins and Disease*, edited by C G dos Remedios and D. Chhabra, Springer, New York, 2007)

Li Z, Kim ES, Bearer EL. Arp2/3 complex is required for actin polymerization during platelet shape change.  
Blood. 2002 Jun 15;99(12):4466-74.

Bearer EL, Prakash JM, Li Z. Actin dynamics in platelets.  
Int Rev Cytol. 2002;217:137-82

Islas-Flores I, Corrales-Villamar S, Bearer E, Raya JC, Villanueva MA Isolation of lipoxygenase isoforms from Glycine max embryo axes based on apparent cross-reactivity with anti-myosin antibodies.  
Biochim Biophys Acta. 2002 May 10;1571(1):64-70.

Abraham MT, Kuriakose MA, Sacks PG, Yee H, Chiriboga L, Bearer EL, Delacure MD. Motility-related proteins as markers for head and neck squamous cell cancer.  
Laryngoscope. 2001 Jul;111(7):1285-9.

Bearer EL, Chen AF, Chen AH, Li Z, Mark HF, Smith RJ, Jackson CL. 2E4/Kaptin (KPTN)--a candidate gene for the hearing loss locus, DFNA4.  
Ann Hum Genet. 2000 May;64(Pt 3):189-96.

Bearer EL, Prakash JM, Manchester RD, Allen PG. VASP protects actin filaments from gelsolin: an in vitro study with implications for platelet actin reorganizations. *Cell Motil Cytoskeleton*. 2000 Dec;47(4):351-64.

Bearer EL, Abraham MT. 2E4 (kaptin): a novel actin-associated protein from human blood platelets found in lamellipodia and the tips of the stereocilia of the inner ear. *Eur J Cell Biol*. 1999 Feb;78(2):117-26.

Cheng JC, Frackelton AR Jr, Bearer EL, Kumar PS, Kannan B, Santos-Moore A, Rifai A, Settleman J, Clark JW. Changes in tyrosine-phosphorylated p190 and its association with p120 type I and p100 type II rasGAPs during myelomonocytic differentiation of human leukemic cells. *Cell Growth Differ*. 1995 Feb;6(2):139-48.

Bearer EL. Cytoskeletal domains in the activated platelet. *Cell Motil Cytoskeleton*. 1995;30(1):50-66.

Bearer EL. Distribution of Xrel in the early *Xenopus* embryo: a cytoplasmic and nuclear gradient. *Eur J Cell Biol*. 1994 Apr;63(2):255-68.

Bearer EL. Role of actin polymerization in cell locomotion: molecules and models. *Am J Respir Cell Mol Biol*. 1993 Jun;8(6):582-91. Review.

Bearer, E.L. Actin and actin-associated proteins in *Xenopus* eggs and early embryos: contribution to cytoarchitecture and gastrulation. *Curr Top Dev Biol*. 1992; 26:35-52.

Bearer, E.L. (1992) Cytoskeleton in development: An introduction. *Curr Top Dev Biol*. 26:1-7.

Bearer EL. An actin-associated protein present in the microtubule organizing center and the growth cones of PC-12 cells. *J Neurosci*. 1992 Mar;12(3):750-61.

Bearer EL. Actin and actin-associated proteins in *Xenopus* eggs and early embryos: contribution to cytoarchitecture and gastrulation. *Curr Top Dev Biol*. 1992;26:35-52.

Bearer EL. Direct observation of actin filament severing by gelsolin and binding by gCap39 and CapZ. *J Cell Biol*. 1991 Dec;115(6):1629-38.

Bearer EL. Actin in the *Drosophila* embryo: is there a relationship to developmental cue localization? *BioEssays*. 1991 Apr;13(4):199-204. Critical Review.

### **Project 3: Membrane topography and lipid microdomains**

Bearer EL, Friend DS. Morphology of mammalian sperm membranes during differentiation, maturation, and capacitation.  
J Electron Microsc Tech. 1990 Dec;16(4):281-97. Review.

Bearer EL. Platelet membrane skeleton revealed by quick-freeze deep-etch.  
Anat Rec. 1990 May;227(1):1-11.

Bearer EL, Friend DS. Lipids of the platelet membrane.  
Lab Invest. 1986 Feb;54(2):119-21.

Orci L. and Bearer, EL Rose windows in blood capillaries.  
Diabetes Forecast (February) pp31-33.

Bearer EL, Orci L. Endothelial fenestral diaphragms: a quick-freeze, deep-etch study.  
J Cell Biol. 1985 Feb;100(2):418-28.

Bearer EL, Duzgunes N, Friend DS, Papahadjopoulos D. Fusion of phospholipid vesicles arrested by quick-freezing. The question of lipidic particles as intermediates in membrane fusion.  
Biochim Biophys Acta. 1982 Dec 8;693(1):93-8.

Bearer EL, Friend DS. Modifications of anionic-lipid domains preceding membrane fusion in guinea pig sperm.  
J Cell Biol. 1982 Mar;92(3):604-15.

Friend DS, Bearer EL. Beta-Hydroxysterol distribution as determined by freeze-fracture cytochemistry.  
Histochem J. 1981 Jul;13(4):535-46.

Bearer EL, Friend DS. Anionic lipid domains: correlation with functional topography in a mammalian cell membrane.  
Proc Natl Acad Sci U S A. 1980 Nov;77(11):6601-5.

### **Project 4: Technical and methods papers**

Bearer, E.L. (2003). Overview of Image Analysis, Image Importing, and Image Processing Using Freeware.  
Current Protocols in Molecular Biology 2003; Unit 14.15

Bearer, E. L. (2000). Obtaining peptide sequences of myosins for PCR primer design.  
Methods in Molecular Biology: Cytoskeleton, Methods and Protocols, ed: R. Gavin, Humana Press, Totowa, N.J. Vol 16: pp 9-15 (2000).

**Bearer**, E.L., Liu, J., Hsu, A. and Reese, T.S. (1996). A method to visualize axoplasmic filaments by electron microscopy.  
Biol. Bull. 1996; 191:272-273.

Bearer EL Orci L. (1986). A simple method for quick freezing.  
J. Electron Microsc. Tech. 1986 3:119-121.

Bearer, E.L. (1992) Fluorescence microscopy of single actin filaments labeled by conjugation to rhodamine.  
Biol. Bull. 1992; 183: 361 - 362

### **Submitted Manuscripts**

**Bearer, EL**, and Cristini VC.

Computational Modeling Identifies Morphologic Predictors of Tumor Invasion (submitted to Science)

Sud, S., Starbuck, K, Dalal, M., Page, T., Jacinto, E., Tun, R., McCloy, S.G., and Bearer, E.L.  
HIV Risk Among the Guatemalan Maya: Studies from a Small Market Town in the Western Highlands (submitted to NEJM)

### **Books:**

Garcia-Coll, C., Bearer, E.L. and Lerner, R.

*Nature and Nurture: The complex interplay of genetic and environmental influences on human behavior and development*: Totowa, NJ: Erlbaum Publishing Co. ,2004

Bearer, E.L.

*Cytoskeleton in Development*. San Diego, CA: Academic Press, 1992.

### **Chapters in books:**

Bearer, E.L. 2007

Intracellular Pathogens and the actin cytoskeleton. In: *Actin, Actin-Binding Proteins and Disease*, eds by C G dos Remedios and D. Chhabra, Springer New York

Bearer, E. L.

Music of the Spheres. In: *Parallels in Creativity*, ed. by Charles Whitney and Dimitar Sokolov. (submitted to the editor, Harvard University Press).

Bearer, E. L. 2005.

Structure-Function of the Platelet Cytoskeleton. In: *Platelet Function: Assessment, Diagnosis, and Treatment*, eds. Martin Quinn and Desmond Fitzgerald, Humana Press, London.

Bearer, E. L. 2004.

Behavior as influence and result of the genetic program: Non-kin rejection, ethnic conflict and issues in global health care. In: *Nature and Nurture*: eds. R. Lerner, C. Garcia-Coll, and E.L. Bearer, Erlbaum publishers, pp171-199.

Bearer, E. L. 2003.

Health Needs of the Third World: Perspectives from a Maya village in Guatemala. In: *Field Guide to Appropriate Technology*, eds. Barrett Hazeltine and Christopher Bull, Academic Press, San Diego, CA, pp 535-544.

Bearer, E. L. 1999.

Courage under siege. In: *Doctor's Afraid*. ed. Mary Curnen, Howard Spiro, and Deborah St. James, Yale University Press, New Haven, CT.

*Reviewed in JAMA*, June 21, 2000;283:3129; *British Medical Journal*, 2000; 321:121.

### **Patents/ licenses and inventions:**

- Patent 43781-0001 October 2007: Amyloid precursor protein peptides and their uses
- Hybridoma producing 2E4 monoclonal antibody, licensed to Babco/Covance 6/98
- provisional patent submitted: In vitro differentiation of megakaryocytes and platelet formation from bone marrow stem cells.

### **Essays:**

Bearer, E.L. (2000) New Roads Bring AIDS to the Maya. Op. Ed. Providence Journal. Dec 10, 2000.

Bearer, E.L. (1999) Altruism, Evolution, and Ethnic Cleansing. Op. Ed. Providence Journal.

Bearer, E.L. and McCloy, S.G. (1996) Give Peace a chance: Guatemalan Peace Accords. Op Ed, Providence Journal

Bearer, E.L. and McCloy, S.G. (1995) Don't criminalize Kavorkian. Op. Ed, Providence Journal

### **Funding History**

Bearer lab is currently funded by three grants from NIH. Previous support includes awards from NSF and five from private foundations. Five new NIH grant proposals have been submitted and are in process of review. In March 2008, NCRN notified Bearer that he Shared Instrumentation proposal for the purchase of a joint-use Zeiss laser scanning confocal microscope to benefit all the scientists in the new Laboratories of Molecular Medicine will be funded later this spring.

### **Session Chair at Meetings of National and International Scientific Societies (since 2002):**

Chair, Panel : "Using Transport to map the brain: Live imaging of neuronal connections by MRI" Winter Conference on Brain Research, Snowbird, Utah, Jan 28, 2008.

Chair, Symposium "Emerging concepts on viral effects on the nervous system" International Society for Neurovirology, annual meeting, San Diego, CA Oct 29-Nov. 2, 2007

Chair, Symposium " *Animal Modeling and In vivo experimentation in Image Guided Therapy*", International Brain Mapping and Intraoperative Surgical Planning Society, annual world meeting, Washington DC Sept 6-7, 2007

Chair, Symposium "Molecular Imaging", International Brain Mapping and Intraoperative Surgical Planning Society, Nov. 19, 2005.

Chair, Graduate Student Platform Session, American Society of Investigative Pathology, annual meeting, Washington, D.C., April 17-21, 2004.

Chair, "Inflammation and Infectious Disease" Minisymposium, American Society for Investigative Pathology, Meeting held in conjunction with Experimental Biology (FASEB) 2003

Chair, "Pathology for Basic Scientists" Opening Session for American Society for Investigative Pathology, Meeting held in conjunction with Experimental Biology (FASEB) 2003

Chair, "Pathology for Basic Scientists" Opening Session for American Society for Investigative Pathology, Meeting held in conjunction with Experimental Biology (FASEB) 2003

Chair, Special Interest Subgroup Session, "Systems Biology of the Cell: Are there simple rules?" annual meeting of American Society for Cell Biology, 2002

Chair, "Intellectual Property and Conflict of Interest" Panel Discussion to be held at American Society for Investigative Pathology, held in conjunction with Experimental Biology (FASEB), 2002

Chair, Trends in Pathology, "Microbial Pathogenesis" Major Symposium of American Society for Investigative Pathology, in conjunction with Experimental Biology (FASEB) 2002

Chair, "Workshop: Advances in Laser-capture, Genomics, and Proteomics" Symposium at American Society for Investigative Pathology annual meeting, in conjunction with Experimental Biology (FASEB), 2001

**Invited Talks at Meetings and Workshops (since 2002):**

"Using Transport to Map the Brain" Winter Conference on Brain Research, Snowbird, Utah, Jan 28, 2008.

"A Novel Role for APP in HSV1 Trafficking: A Time-Lapse Live Imaging Study" International Society for Neurovirology, Symposium talk, San Diego, CA, Oct. 31, 2007

"Cargo-Motor receptors revisited: Amyloid precursor protein and JIP1a are independently sufficient to mediate anterograde transport of nanobeads in axons" Society for Neuroscience, San Diego, CA, Nov, 5, 2007

"Emerging Concepts in Neuroimaging: Animal models for Circuitry" International Brain Mapping and Intra-operative Surgical Planning Society, Washington DC, Sept 7, 2007

"Hitchhiking in the axon: Herpesvirus and peptide-nanobeads identify APP and JIP1/2 as cargo receptors for transport" Symposium at International Brain Research Organization, 2007 World Congress, Melbourne Australia, July 16, 2007.

"Live Imaging of Association between HSV and APP" International Herpesvirus Workshop annual meeting, North Carolina, July 11, 2007

"Music and mind", Symposium: Chemist Composers, American Chemical Society Annual Meeting, Atlanta, GA, March 28, 2006.

"Using Transport to Map the Brain" International Brain Mapping Symposium, Keck School of Medicine, University of Southern California, Los Angeles, CA, Nov. 15, 2004

"HSV and APP: Implications for viral effects on dementia" 29<sup>th</sup> Annual International Herpesvirus Workshop, Reno NV 7/25/04

- "Context and Genetic Expression" Third Biannual Meeting, Society for the Study of Human Development, Harvard University, Nov. 1-2, 2003
- "Challenges to Conceptualizing Biological Systems: Wobble, redundancy and the unpredictable" First annual national meeting of "New Kind of Science", Newton, Mass, 6/27/03.
- "Axoplasmic transport: Evidence for actin-based transport and new insights from Herpesvirus" Distinguished Marine Neuroscience Lectureship, Rosenstiel BioMedical Center, University of Miami Medical School and NIEHS Marine Center, March 18, 2003
- "Herpes pathogenesis: Mechanisms of intracellular transport" The Science Talk for the Board of Trustees of the Marine Biology Laboratory, Yale University Club, NYC, Feb 1, 2003
- "Arp2 is required for platelet shape change" Gordon conference on Thrombosis and Hemostasis, July 12, 2002, Colby College, ME.

**Invited Lectures at Other Institutions (selected, since 2000):**

- "A Hitchhiker's Guide to the Cell: Intracellular transport, Herpes virus and neurodegeneration" Dept of Pathology, University Of California Los Angeles, June 12, 2007
- "A Hitchhiker's Guide to the Brain: Using transport to map circuitry" Laboratory of NeuroImaging, University of California, Los Angeles, May 16, 2007
- "A Hitchhiker's Guide to the Cell: Transport, Herpesvirus and a Pathologic Basis of Degeneration", University of California, San Diego, CA Jan 24, 2007
- "A Hitchhiker's Guide to the Cell: Transport, Herpesvirus and a Pathologic Basis of Degeneration", University of Southern California, Los Angeles Dec 21, 2006
- " Making and Breaking Brains: Imaging Thinking in Action." Boston BioMedical Research Institute, Sept 6. 2006
- "Nanobeads as probes for intracellular motility and other tales of technology development to image function" Instituto de Biotechnology, Universidad Autonomia de Mexico, Cuernavaca Mexico, June 5, 2006.
- "Imaging Molecular Mechanisms of Cellular Dynamics: Tools and Translations". Center for Molecular and Functional Imaging, University of California. San Francisco. CA April 3, 2006
- "Hijacking the transport machinery" Jan 18, 2006 **Keynote lecture, Caltech BioEngineering and Computational Neuroscience Retreat,**
- "Hijacking the transport machinery" Pathology Department seminar, Genentech, Dec.18, 2005
- "Hithchhiker to the brain: Herpes virus, vesicular transport and circuits" -Star Institutes, Singapore, Sept 2, 2005
- "A Hitchhiker's guide to the brain: Herpes virus, transport and amyloid precursor protein" Max-Planck Institute, Unit for Structural Molecular Biology Hamburg, Germany, July 28, 2005
- "Herpes virus and the biophysics of intracellular transport" UCLA-Caltech Virus Workgroup, May 31, 2005
- "Wanted: Dead and alive: using transport to map the brain" Caltech Brain Imaging Center Retreat ; Focus on MRI, April 24, 2005
- "Transport imaged by  $\mu$ MRI in living brain" Stanford University, Neurosciences Institute, March 5-6, 2005.

- “Hijacker to the synapse: What herpes virus tells us about axonal transport: Department of Microbiology, Columbia University Medical School, 2/2/05
- “Cytoskeletal dynamics: Mechanical biomolecules provide clues for engineering?” BioEngineering Seminar, California Institute of Technology, 11/18/04
- “Zipcode for the synapse: Herpesvirus, Alzheimer’s disease, and the molecular mechanisms of transport” Biology Seminar, California Institute of Technology, 11/1/04
- "Music and Mind" Munro Memorial Lecture, Division of Humanities, California Institute of Technology, Pasadena, CA, 5/12/04
- "Actin dynamics: role in thrombosis and microbial pathogenesis" COBRE seminar series, Roger Williams Medical Center, Providence, RI 1/28/04.
- "Cytoskeletal dynamics: Thrombosis, axoplasmic transport, and the intracellular life of microbial pathogens" NIH-NHLB, Bethesda, MD, hosted by Ed Korn, former Institute Director, 2/4/04.
- "Coagulation and infection: insights gained from a cytoskeletal perspective" Moorehouse University, Department of Biology, Nov. 18, 2003.
- "Coagulation and Infection: Insights gained from a cytoskeletal perspective." San Francisco General Hospital, an affiliate of UCSF, Department of Surgery, Research Rounds, Aug. 19, 2003.
- "Social Issues in Reproductive Health among the Maya of Guatemala" Keio University, Department of Anthropology, Tokyo, Japan, June 23, 2003.
- "Cytoskeletal dynamics: Role in neurological disease and blood coagulation" Department of Pathology, University of Hokkaido, Medical School, Sapporo, Japan, June 18, 2003.
- "Cytoskeletal dynamics in human disease" University of Tokyo, Medical School, Tokyo, Japan, June 15, 2003 (invited by the Dean of Medicine, Nobutaka Hirokawa).
- "Actin polymerization depends on Arp2 and is required for blood coagulation" University of Miami Medical School, Department of Cell Biology, Seminar Series, March 19, 2003.
- "Herpes transport" Department of Neurology, Stanford University Medical School, Nov. 15, 2002.
- "Proteomics of cell shape: Applications to cancer genomics" Comprehensive Cancer Center, University of California, San Francisco, Breast Oncology seminar series, June 12, 2002
- "Towards a “general system” understanding of cell shape change: Human platelets as substrates for combinatorial analysis." The Molecular Sciences Institute, Berkeley, California, April 16, 2002.
- "Cytoskeletal dynamics: Roles in Herpes virus pathogenesis & cardiovascular disease" Genentech, South San Francisco, Pathology group, Discovery Research Seminar Series, April 18, 2002.
- "Proteomics, Genomics and Cell Structure: Insights in the pathogenesis of metastasis, thrombosis, and the life cycle of intracellular microbes." University of California, San Francisco, Department of Pathology, "Grand Rounds" April 16, 2002

"Cytoskeletal dynamics: Roles in herpespathogenesis and cardiovascular disease." University of Vermont Medical School, Department of Biochemistry, Faculty Seminar Series. April 7, 2002.

"Molecular mechanisms of platelet activation and its role in aging" Buck Institute for Aging, Novato, CA, Seminar, Feb 1, 2002.

"Actin-based axoplasmic Transport" Harvard Medical School, Department of Neuroscience, April 6, 2000.

"Actin dynamics and the pathogenic mechanism of intracellular infection" Albert Einstein Medical College, Department of Pathology (1/6/01).

"Platelet activation and shape change: Proteomics of the actin cytoskeleton." Cor Therapeutics (now Millenium), Friday morning seminar series, Oct. 5, 2001.

"Actin dynamics and pathologic processes: Tails of Listeria and Herpes virus". Yale University Medical School, Department of Molecular Medicine, Div. of Microbila Pathogenesis, Feb 8, 2001.

"Actin dynamics and pathologic processes: Tails of Listeria and Herpes virus", Harvard Medical , Brigham and Women's Hospital, Vascular Biology Research Seminar 1/24/01

"Role of actin in the inner ear: Identification of deafness loci as actin-regulatory proteins". National Institutes of Health, National Institute of Deafness and Communicable Diseases, Institute seminar speaker, Sept. 7, 2000

## **Teaching**

The teaching load at Brown is 1.5 courses per year; each course lasts 15 weeks. My department has been shorthanded and thus my average teaching load has been higher than this (2.2 course per year, or 30+ weeks per year in the classroom). As medical faculty, I have been responsible for 1-2 large medical school courses per year, with 80 enrolled students and no teaching assistants. As Course Director for Bio 279 and 280, **I organize the integration of course content between three major medical school courses: Physiology, Pharmacology and Pathology.** Some of my teaching awards are listed in the Honors section of this CV. Service on Curriculum committees is listed under service in this CV.

### **Course director for Systemic Pathology, 2nd year medical school:**

Brown's new medical curriculum: Course Director for Systemic Pathology (Organ systems) for the new medical curriculum being implemented at Brown for the class of 2009. Requires complete revision of existing courses, including General Pathology, and ten Organ Systems: Cardiovascular, Pulmonary, Hematology, Renal, GI, Endocrine, Growth Reproduction and Development, and Supporting Structures (skin, muscle, connective tissue and bone). Involves 18 faculty in 5 hospitals and on campus.

### **Medical school Course Director:**

Systemic Pathology, Bio 279: Cardiovascular, Pulmonary, Renal, and Hematopoietic

Systemic Pathology, Bio 280: GI tract, Endocrine system, Human growth, reproduction and development, Aging and Supporting structures (skin, muscle and bone).

Medical Student Elective Clerkship in Guatemala (3<sup>rd</sup> and 4<sup>th</sup> year)

Course Director for Upper Division/Graduate School courses:

Pathologic Mechanisms of Disease Bio 285 (3 hr/wk lecture/discussion),  
Open to BioEngineering, Epidemiology and Pathobiology graduate students

Cancer Biology, Bio 129 (3 hr/wk Lecture/discussion)  
Open to upper division undergraduates and graduate students in BioEngineering,  
Pathobiology and Molecular and Cellular Biology and Biochemistry

Techniques in Microscopy Bio 215: Confocal, video and electron microscopic theory,  
technology and application

**Medical School Curriculum Committee member**

Responsible for approval of all clinical clerkships, organization of the curriculum

**BioEngineering undergraduate and graduate program curriculum committee member**

**Pathology Residency Program Steering Committee**

Steering Committee member, responsible for integration of the 5 residency programs, recruiting residents, overseeing curriculum, assessing faculty and resident performance, three rounds of LCGME accreditation reviews.

**Lecturer** (undergraduate, graduate and medical school courses)

General Pathology, Bio286

Environmental injury, cell injury, inflammation, autoimmunity, coagulation, neoplasia

Cell Biology Bio 105 (Cytoskeleton, kinetics, assays, methodology and concepts)

Virology 136 (herpes viruses, the biology and use of virus as biotechnology tools)

Developmental Biology, Bio 136

Music and Mind, Psy135

Bio Instructor for ***Bootcamp***, a high-impact one week imaging/biology workshop for entering graduate students in engineering, applied physics and mathematics. BioEngineering graduates students (Organized directed by Rob Phillips (NIH Director's Pioneer Award, 2005) to be held alternating years Caltech and Brown.

**Undergraduate and graduate student research training**

Trainer in 5 graduate programs (4 externally funded)

Pathobiology

Molecular, Cellular Biology and Biochemistry

Brain Sciences Program

Brown-MBL joint graduate program.

Biomedical Engineering

Trainer in the MD-PhD program

Undergraduate Independent Study and Honors projects (47 students since 1992)

Also sponsor undergraduate summer projects and graduate student thesis and rotations (~3 students/yr) and serve as undergraduate biology concentration advisor (6 students/yr), total of more than 60 students from my lab.

## **Service:**

### **Service on Grant Review Boards, Panels and Study Sections:**

National Institutes of Health

Member, Review Group for Program Project Grants, NIHLB, Jan 12, 2006

Member (invited to be regular member) Study Section (Cell Development and Function 4), 2005-2008.

Member, (ad hoc) Study Section ("Hemostasis and Thrombosis"), 2004

Member, (ad hoc) Study Section (Cell Development and Function 4), 2004

Member, Review Group for Program Project Grants, NIHLB, 2004-2005

Alzheimer's Association, Grant Review participant, 2004-present

American Heart Association, Northeast Regional

Advisor and panelist (regular member on study section reviewing research grants), 2002-present

National Science Foundation, Program in Cell Biology

Reviewer, Cellular Organization Panel, April 27, 2005

Advisor and panelist, (regular member on panel reviewing research grants)

"Cellular Organization Panel", 1999- 2003

POWR Program, 1997-1998

Panelist (regular member of panel reviewing research grants and advising on funding programs to increase women in science)

NASA

Member (regular) Study Section "Cellular & Molecular Biology Panel" to review research grants, 2003-present.

National Council for Research Resources,

Member (ad hoc), Study Section "Molecular Medicine", 1999

### **National Research Council, National Institutes of Health**

Participant, Graduate Program Assessment

Responsibility: Assessment of Graduate Programs in Immunology and Infectious Disease

### **Marine Biological Laboratory, Woods Hole, MA**

Member, Search Committee for Editor of Biological Bulletin 2004

Chair, Search Committee for Embryology Course Director 1996

Chair, Microbial Diversity Course review committee 2002

Chair, Microscopy Course review committee 1997

Member, Steering Committee, Brown-MBL Joint Graduate Program, 2002-present

Member, Education Committee, 1994-1999

Member of the Corporation, Marine Biological Laboratory Corporation (1991-present)

Member, Housing Committee, 1989-1994

Instructor, Neurobiology summer course, 1992-1997.

**Fellowship selection committees:**

Rhodes Fellowship Selection Committee (Rhode Island), 1995-1998  
Howard Foundation, Fellowship Selection Committee, 1995

**Editorial Boards:**

Cell Motility and the Cytoskeleton (2004-2009)  
Research in Human Development (2003-present)  
(Invited to serve as editor for Supplementary volume on Coordinate activity of Genes and Environment on Mind-Brain Continuum)

**Membership in Scientific Academies**

California Academy of the Sciences (1987-present)  
New York Academy of Sciences (1999-present)  
US-Canadian Academy of Pathology (2006-present)

**Membership on Committees for National Professional Societies**

Member, Program Planning Committee, American Society for Investigative Pathology, 2000-2002  
Member, Committee for Career Development, Women and Minorities, American Society for Investigative Pathology, 1999- 2003  
Judge, Panel of judges, Minority Affairs Symposium, Graduate Student Poster Session, American Society for Cell Biology annual meeting, San Francisco, CA, .Dec. 13-18, 2003.

**Membership in Professional Societies:**

American Society of Investigative Pathologist, American Society for Cell Biology, American Association for the Advancement of Science, Society for Neuroscience, Society for Developmental Biology (1991-2001), Rhode Island Society of Pathologists, Society for the Advancement of Chicanos and Native Americans in Science (SACNAS), Institute for Electrical and Electronics Engineers-Engineering in Biological and Medical Sciences (EMBS), Women in Engineering.

**Consulting**

Sangamo BioSciences, Inc.  
Point Richmond Tech Center, 501 Canal Blvd., Suite A100, Richmond, CA 98404  
XDx, Inc.  
750 Gateway Blvd., Suite H., South San Francisco, CA 94080  
Intralytix, Inc.  
The Warehouse at Camden Yards, 323 W. Camden Street, Suite 675, Baltimore, MD 21201  
Reify Corporation  
101 Main Street, Eighteenth Floor, Cambridge, MA 02142  
Wolfram Research  
Corporate Headquarters, Wolfram Research, 100 Trade Center Drive, Champaign, IL 61820  
Morehouse University, Atlanta, Georgia

For the Dean, JK Haynes, Dean of Science and Mathematics  
Genentech, South San Francisco, invited for Visiting Scientist position in Pathology group.

**Service to the University:**

**Brown Medical School, University, Graduate Programs and Hospital Service:**

Departmental Committees: (Department of Pathology and Laboratory Medicine)

Member, Search Committees:

- for Ph.D. Assistant Professor in Department of Pathology , 1997-1998
- for MD-PhD Assistant Professor in Department of Pathology, 1997-1998
- for MD-PhD Assistant/Associate Professor, Department of Pathology, 2002-2003
- for MD-PhD and PhD tenured faculty, Department of Pathology and Lab Medicine, 2003-2004

Member, Steering Committee, Pathology Residency Training Program, 1992- 2000

- Participated in reorganization the unification of five residency training programs
- Prepared and implemented ACGME review and re-certification
- Design and implement Strategic Plan for the Residency Program at Brown
- This committee selects and hires residents, designs curriculum, assesses performance of both faculty and residents (yearly tasks)

Director and Originator, Pathology Research and Teaching Rounds, 1995-2000

Director, Joint Use Microscope Facilities, 1993-2003

Digital microscope imaging facility, Molecular Pathology Research Lab, 1999- present

Member, Graduate Admissions Committee, Pathobiology Graduate Program

Divisional Committees: (Division of Biology and Medicine)

- Chair, Confocal Microscopy committee (1994-2003)
- Member, Executive committee, LeDuc BioImaging Facility (2003-present)
- Member, Edd's Lectureship Committee, 1993- present
- Member, Search Committee
  - for tenure-track, neuroscientist, campus-based, Dept of Neuroscience, 1994-1995
  - for clinical Neuropathologist, Rhode Island Hospital/Lifespan, 1999-2000
  - for Neurosurgeon, Rhode Island Hospital/Lifespan, 1998-1999
- Member, Admissions Committee,
  - Molecular, Cell and Biochemistry Graduate Program, 1996-2000
  - M.D.-Ph.D. Program, 2000-2003

Educational and Curricular Committees:

- Member, Community Health Assessment Committee, MD 2000, 1997- 2000
- Member, Second Year Medical School Problem-Based Learning, 1991 – 1998
- Member, Medical School Curriculum Committee, 2002- 2006
- Member, BioEngineering Curriculum committee, 2007-present

University-wide Committees

**Member, Provost's Working Group of Global Health Care, 2006-07**

**Chair, Committee on the Status of Women at Brown University (CSW), 2001-2004**

This is a standing committee of the University and the chair is elected by an all-University vote. The task of the committee is to advise the administration and other governing bodies on emerging issues that disproportionately affect women faculty.

Accomplishments of the committee during my chairmanship include:

(1) Establishment of a policy for Family Leave and stop-the-clock for tenure for childbirth: During my tenure as chair, I led the Committee in the design and implementation of the first family leave policy for faculty at Brown, and the first stop-the-clock for tenure policy. These policies were approved by the University Faculty, the Faculty Executive Committee, the President and Corporation, 2003.

(2) Equity analysis of faculty promotion, assignments, benefits. This revealed that promotion from Associate to Full Professor at Brown are significantly delayed for women, with an average of 15 years for women as compared to 7-8 years for men. A task force was assigned to investigate the reasons of this disparity.

(3) Review of the CSW Charter: I chaired the committee to reviewed the charter and redesigned the committee in collaboration with the Task Force on Faculty Governance and the changes in Faculty Rules and regulations during 2003-2004. This new Charter was approved by the University Faculty in spring 2004.

(4) Childcare access and availability: The committee solicited an outside consultant to review childcare options for Brown students, faculty and staff. The report was made to the President and awaits action.

(5) Establishment of "All Women Faculty" meetings: Originated and chaired the first all-women faculty meetings in 2002.

Upon my sabbatical leave (spring 2004), a new Associate Provost position was created to support the committee in the continuation of these activities.

Member, (ad hoc) Committee for Materials Sciences, BioEngineering and Biophysics, 1995 - 2004

Member, Steering Committee for Brown-MBL joint graduate program, 2002-present

Member, Women in Science and Engineering Committee (WISE), 1994- present

Member, Curriculum committee, Biomedical Engineering, 2007-present

### **Service to the Community (selected):**

#### **San Lucas Health Project, Guatemala (1993-present)**

Founding member of this health project that provides primary care health services to San Lucas Toliman and surrounding small communities on Lake Atitlan in the Western Highlands of Guatemala of ~40,000 people. Founded during the civil war by three physicians, myself, Steve McCloy and Mike Brabeck, the project now extends to include over 53 physicians from the USA who volunteer their time to serve 60+ communities. We have identified and trained 17 local Mayan health promoters, and assisted the community in the construction and staffing of an urgent care hospital. I initiated an elective clerkship for medical students with 3-6 students enrolled per year from around the world, including University of Oxford and Barcelona as well as Brown, Yale, U. Penn and Stanford. These students perform needs assessments on topics such as water usage and quality, pesticide exposure, asthma incidence, diarrheal diseases and women's reproductive health. They interview and examine patients and participate in treatment decisions based on environmental and social constraints of people living in Third World poverty. As a pathologist and licensed general practitioner, I have

initiated and contribute to participate to build a diagnostic laboratory using technologies suitable for the Third World. We incorporated this project with US non-profit status in 2005.

Charter member, National Museum of the American Indian, Smithsonian Institution

Scholarship fund reviewer, American Indian Education Association

Note Bene: A copy of Bearer's Music CV can be obtained upon request.