

VITA

Micah Dembo

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Education:

- *Bachelor of Science*, (Mathematics), Allegheny College, Meadville, PA.; 1972.
- *Doctor of Philosophy*, (Biomathematics), Cornell University Medical College New York NY; 1977, Thesis advisor; S.I. Rubinow.

Employment:

- Professor, Department of Biomedical Engineering, Boston University., 01-96 to present.
- Director, Whitaker Center of Comp. Biology, B. U. Dep. of Biomed. Eng., 01-02 to 10-04
- Visiting Scholar, Inst. for Mechanics and Materials, U. of California San Diego, '93-94.
- Scientific Staff Member, Theoretical Division, Los Alamos Nat. Lab., 11-78 to 12-95.
- Postdoctoral Fellow, Theoretical Biology and Biophys., Los Alamos Nat. Lab., 10-76 to 11-78.
- Predoctoral Research Fellow, Memorial Sloan Kettering Cancer Center, 09-72 to 09-76.

Personal Data:

- Birth Date: 10/16/49,
- Birthplace: Pretoria, Union of South Africa,
- Citizenship: United States of America,

Some Recent Pro Bono Activities:

- Editorial Board: Biophysical Journal (1999-2005).
- Panel Member, NIGMS study section for Complex Systems Centers of Excellence, March 2003
- Panel Member, NIGMS study section for Complex Systems Centers of Excellence, March 2002
- Track Chair: Computational Biology and Bioinformatics, Annual Meeting of the Society of Biomedical Engineering, Raleigh Durham NC. (2001).

- Chair: Symposium on the Cytoskeleton and Motility, International Congress of Biorheology, (1999)
- Associate Editor: Comments on Theoretical Biology, (1992-1998).
- Chair: Promotion and Tenure Review Board, College of Engineering, Boston University, (1999).
- Member: Promotion and Tenure Review Board, College of Engineering, Boston University, (1997, 1998).
- Chairman: Faculty Search Committees, Department of Biomedical Engineering of Boston University, (1996, 1997 and 1999).

Teaching:

- Introductory Fluid Mechanics for Biomedical Engineers, open to 3rd and 4th year undergraduates.
- Biomedical Fluids and Transport, open to graduate students
- Cytomechanics, open to graduate students and senior level undergraduates.
- Numerical Methods and Modeling in Biomedical Engineering. open to Graduate students.

Awards/Honors:

- *Alden Scholar*, Allegheny College, 1971.
- *Frank Lappin Horsfall Prize*, Memorial Sloan Kettering Institute, 1976.
- *Directors Postdoctoral Fellowship*, Los Alamos National Laboratory 1976-78.
- *Postdoctoral Publication Prize*, Los Alamos National Laboratory 1978.
- *Elected to membership*, American Institute for Medical and Biological Engineering 2004

Competitive Grants:

- *Career Development Award*, National Institute for Allergy and Infectious Disease, K04 AI00566, the Biophysics of Cell Motion. 09-83 to 08-88. Direct Budget: \$245K.
- *Principal Investigator*, National Institute for Allergy and Infectious Disease, R01 AI21002, Biophysical Models of Cell Motility. 09-84 to 08-89. Direct Budget: \$259K.
- *Principal Investigator*, National Institute for Allergy and Infectious Disease, R01 AI21002, Biophysical Models of Cell Motility. 09-90 to 08-95. Direct Budget: \$900K.
- *Principal Investigator*, Whitaker Foundation, Special Opportunity Award in Cellular Mechanics. 12-96 to 11-00. Direct Budget: \$980K.
- *Principal Investigator*, National Institute of General Medical Sciences, R01 GM61806. The Biophysics of Cell-Substratum Traction Stress. 09-00 to 08-04. Direct Budget \$625K

- *Principal Investigator*, National Institute of General Medical Sciences, R01 GM 72002. Quantitative Models of Cell Shape and Motion. 06-04 to 05-08. Direct Budget \$659K
- *Principal Investigator of Subaward*. National Institute of Heart Lung and Blood, R01 HL085303. Force Microscopy of Endothelial Cells on Novel Peptide Materials. 04-07 to 03-12. Direct Budget \$360K
- *Principal Investigator of Subaward*, National Institute of General Medical Sciences, R01 GM35325-14A2, Membrane and Cytoskeletal Dynamics during Cell Movement. 07-00 to 06-04, Direct Budget \$77K.
- *Co-Investigator of Subaward*. National Institute of Allergy and Infectious Disease, R01 AI072391. Integrative Experimental and Theoretical Studies of the Mechanics of Phagocytosis. 04-07 to 03-11. Direct Budget \$276K
- *Co-Investigator*, National Institute for Allergy and Infectious Disease, R01 AI16464. Antigen Activation and Desensitization of Basophils. 09-80 to 08-83. Direct Budget: 50% of \$580K.
- *Co-Investigator*, U.S. Army Medical Research and Development Command (90MM0545), Quantifying the Kinetic Processes Associated with HIV Infection of Target Cells. 01-90 to 12-91. Direct Budget: 25% of \$460K.

Invited Presentations (from 1988):

1. Colloquium, Dept. of Applied Mechanics & Eng. Sci.. Univ. of Cal., San Diego CA, Feb. 1988.
2. Kolloquium des Institute fur Angewandte Mathematik, Univ. Bonn, Bonn Germany, Nov. 1988.
3. Kolloquium des Abt. Theoretische Biologie. Univ. Bonn, Bonn Germany, Nov. 1988.
4. 16th Katzir-Katchalsky Conference: Solvay Inst., Brussels Belgium, Nov. 1988.
5. Colloquium, Dept. of Biomathematics. Mount Sinai Medical Center, New York NY, Dec. 1988.
6. Colloquium, Center for Fluorescence Res.. Carnegie Mellon Univ., Pittsburgh PA, Feb. 1989.
7. Colloquium, Dept. of Mathematics. Univ. of New Mexico, Albuquerque NM, April 1989.
8. Colloquium, Life Sciences Div.. Los Alamos Natl. Lab., Los Alamos NM, March 1989
9. World Congress of Biomechanics. Univ. of California - San Diego, La Jolla CA, Sept 1990.
10. Colloq. of the Dept. of Biomedical Engineering. Catholic Univ., Washington DC, Sept 1990.
11. Colloquium of the College of Engineering, Boston University, Boston MA, Sept 1990.
12. Colloquium of the Dept. of Biochemistry, Univ. of New Mexico, Albuquerque NM, Oct 1990.
13. CIAR Workshop on Complex Membranes and Adhesion in Biology, Nanaimo BC, April 1991.
14. AMS-SIAM-SMB Symp. on Some Mathematical Questions in Biology: Denver CO, Nov 1992.
15. Colloquium, College of Engineering. Boston University, Boston MA, Dec 1993.
16. Colloquium, Dept. of Aerospace and Mechanical Eng., Boston Univ., Boston MA, Dec 1993.
17. Colloquium, Dept. of Mech. Eng. and Materials Science. Duke Univ., Durham NC, April 1993.
18. GRC on Biorheology and Cell Adhesion. New England College, Hennicker NH, June 1993.

19. NATO Conference, Active Motion and Deformation of Cells, Istanbul Turkey, Sept 1993.
20. Symposium, Inst. for Biomedical Engineering, Univ. of Cal. San Diego, La Jolla CA, Oct 1993.
21. Colloquium, Dept. of Mechanical Eng., Georgia Institute of Technology, Atlanta GA, Jan 1994.
22. Workshop, Centre De Physique Des Houches, Les Houches France, Feb 1994.
23. Kolloq., Institut fur Angewandte Mathematik der Univ. Bonn, Bonn Germany, March 1994.
24. Kolloq., Abt. Theoretische Biologie der Universitat Bonn, Bonn Germany, March 1994.
25. Symp., Idaho Natl. Eng. Lab., Idaho Falls ID, Oct 1994.
26. Symp., College of Medicine, University of North Carolina, Chappel Hill NC, Nov 1994.
27. Workshop on Cell and Tissue motion. Universitat Bonn, Bonn Germany, March 1995.
28. Colloquium, Dept. of Biomedical Eng., Pennsylvania State Univ., State College PA Nov 1995.
29. GRC on Theoretical Biology and Biomathematics, Tilton Academy, Tilton NH, June 1996.
30. Colloid and Surface Science Symposium, Clarkson University, Potsdam NY, June 1996.
31. Conference, European Society of Biomechanics, Leuven Belgium, Aug 1996.
32. Workshop, Inst. for Bioeng. and Biosci., Georgia Inst. of Tech., Atlanta GA, Nov 1996.
33. Seminar, Dept. of Materials Science, Mass. Inst. of Tech., Cambridge MA, March 1997.
34. Seminar, Chem. Eng. Dept., University of Colorado, Boulder CO, Oct 1997.
35. IMA Workshop, Univ. of Minnesota. Minneapolis MN, Sept. 1998.
36. IMA Workshop, Univ. of Minnesota. Minneapolis MN, Jan. 1999.
37. Colloq., Center for Biomed. Imaging, U. of Conn. Health Center, Farmington, CN, May 99.
38. Colloq., Dept. of Mechanical Engineering, Boston U., Boston MA, May 1999.
39. Kolloquium des Institut fur Angewandte Mathematik der U. Bonn, Bonn Germany, July 1999.
40. Workshop, Pacific Institute of Univ. of British Columbia, Vancouver BC. Aug. 1999.
41. Seminar, Biochem. & Mol. Biophys. Dept., Washington Univ., St. Louis MO. Nov. 1999.
42. Rutgers Statistical Mechanics Conference, Rutgers University. Piscataway NJ. Dec. 1999.
43. Workshop, Modeling of Biological Systems. Hilton Head SC. Feb. 2000.
44. Workshop, Simulations of Polymer and Cell Dynamics. Bad Honnef Germany, June. 2000.
45. Hascoe Lecture, University of Connecticut, Storrs CN. Oct 2000.
46. Physiology and Biophysics Seminar. State University of New York, Buffalo NY. Nov 2000.
47. Bioengineering IGERT Seminar, University of Texas, Austin TX, Feb 2001.
48. Physics and Biology Seminar, Rockefeller Univ., New York, NY, Feb 2001.
49. Bioengineering Seminar, University of Massachusetts, Worcester MA, March 2001.
50. SIAM Dynamical Systems Conference, Snowbird UT, May 2001
51. Biocomplexity Workshop, Notre Dame IN, Nov. 2001.
52. Internet Conference on Computational Bioscience, Boston University, Boston MA, Nov 2001

53. Nonlinear Studies Seminar, Los Alamos National Lab, Nov 2002
54. Keystone Symposium on Cell Migration and Invasion, Breckenridge CO, Jan. 2003
55. GRC on Motile & Contractile Systems, Colby-Sawyer Col. New London NH, June 2003
56. Chem. & Biomol. Eng, Departmental Seminar, Johns Hopkins Univ. Baltimore MD, Oct. 2003
57. Mathematics Departmental Seminar, Worcester Polytechnic Inst., Worcester MA, Dec. 2003
58. Workshop on Space and Time in Cells, University of Warwick, Coventry UK, May 2004
59. Workshop on Mathematical Cell Biology, University of Heidelberg, Germany, July 2004.
60. Anatomy and Cell Biology Seminar, Tufts Univ. School of Med, Boston MA, May 2006
61. Computational Biology Seminar, Univ. of Pittsburg Med. Sch., Pittsburg PA, Oct 2006
62. National Cancer Inst Workshop: Integrating and Leveraging the Physical Sciences to Open a New Frontier in Oncology.” Arlington Va., Feb.2008

Books Edited:

1. Perelson, A.S., B. Goldstein, M. Dembo, and J. A. Jacquez, eds. (1988). Nonlinearity in biology and medicine. Elsevier Scientific, New York, 535 pp.

Peer reviewed Journal Articles and Book Chapters:

1. Dembo, M. and F. M. Sirotnak (1976). Antifolate Transport in L1210 Leukemia Cells. Kinetic Evidence for the Non-Identity of Carriers for Influx and Efflux. *Biochemica et Biophysica Acta*, 445: 505-516.
2. Rubinow, S.I. and M. Dembo (1977). The Facilitated Diffusion of Oxygen by Hemoglobin and Myoglobin. *Biophysical Journal*, 18: 29-41
3. Dembo, M. and S.I. Rubinow (1977). A Kinetic Model of Cooperativity in Aspartate Transcarbamylase. *Biophysical Journal*, 18: 245-267.
4. Dembo, M. and B. Goldstein (1978). A Thermodynamic Model of Binding of Flexible Bivalent Haptens to Cell Surface Antibody. *Immunochemistry*, 15: 307-313.
5. Dembo, M. and B. Goldstein (1978). A Theory of Equilibrium Binding of Symmetric Bivalent Haptens to Cell Surface Antibody: Application to Histamine Release Due from Basophils. *Journal of Immunology*, 121: 345-353.
6. Dembo, M., B. Goldstein, A. K. Sobotka, and L. M. Lichtenstein (1978). Histamine Release Due to Bivalent Penicilloyl Haptens: Control by the Number of Cross-linked IgE Antibodies on the Basophil Plasma Membrane. *Journal of Immunology*, 121: 354-358.
7. Wofsy, C., B. Goldstein, and M. Dembo (1978). Theory of Equilibrium Binding to Asymmetric Bivalent Haptens to Cell Surface Antibody: Application to Histamine Release from Basophils. *Journal of Immunology*, 121: 593-601.

8. Dembo, M., A. K. Sobotka, B. Goldstein, and L.M. Lichtenstein (1979). Histamine Release Due to Bivalent Penicilloyl Haptens: The Relation of Activation and Desensitization of Basophils to Dynamic Aspects of Ligand Binding to Cell Surface Antibody. *Journal of Immunology*, 122: 518-528
9. Dembo, M., V. Glushko, M. E. Aberlin, and M. Sonenberg (1979). A Method for Measuring Membrane Microviscosity Using Pyrene Excimer Formation: Application to Human Erythrocyte Ghosts. *Biochemica et Biophysica Acta*, 522: 201-211.
10. Sobotka, A. K., M. Dembo, B. Goldstein, and L.M. Lichtenstein (1979). Antigen-Specific Desensitization of Human Basophils. *Journal of Immunology*, 122: 511-517.
11. Goldstein, B., M. Dembo, and F.J. Malveaux (1979). Some Quantitative Aspects of Passive Sensitization of Human Basophils. *Journal of Immunology*, 122: 830-833.
12. Dembo, M, B. Goldstein, A. K. Sobotka, and L.M. Lichtenstein (1979). Degranulation of Human Basophils: Quantitative Analysis of Histamine Release and Desensitization, Due to a Bivalent Penicilloyl Hapten. *Journal of Immunology*, 123: 1864-1892.
13. Goldstein, B., M. Dembo, A.K. Sobotka, and L.M. Lichtenstein (1979). Some Invariant Properties of IgE-Mediated Basophil Activation and Desensitization. *Journal of Immunology*, 123: 1873-1882.
14. Dembo, M. and B. Goldstein (1979). The Mechanism of Histamine Release from Human Basophils. In: *Physical Chemical Aspects of Cell Surface Events in Cellular Recognition*, (C. DeLisi and M. Blumenthal, eds.) Elsevier—North Holland, Amsterdam, pp. 243-260.
15. Dembo, M. and B. Goldstein (1980). A Model of Cell Activation and Desensitization by Surface Immunoglobulin: The Case of Histamine Release from Human Basophils. *Cell*, 22: 59-67.
16. Dembo, M., L. Tuckerman and W. Goad (1981). Motion of Polymorphonuclear Leukocytes: Theory of Receptor Redistribution and the Frictional Force on a Moving Cell. *Cell Motility*, 1: 205-235.
17. Dembo, M. and A.K Harris (1981). Motion of Particles Adhering to the Leading Lamella of Crawling Cells. *J. Cell Biol.*, 91: 528-536.
18. Sobotka, A. K., M. Dembo, B. Goldstein, H. Metzger, and L.M. Lichtenstein (1981). Qualitative Characteristics of Histamine Release from Human Basophils by Covalently Cross-linked IgE. *Journal of Immunology*, 127: 2285-2291.
19. Dembo, M., A. K. Sobotka, L.M. Lichtenstein, and B. Goldstein (1982). Kinetic Analysis of Histamine Release Due to Covalently Linked IgE Dimers. *Molecular Immunology*, 19: 421-434.
20. Yang, C.-H., M. Dembo, and F. M. Sirotnak (1982). Two Compartment Behavior During Transport of Folate Compounds in L1210 Cell Plasma Membrane Vesicles. *Journal of Membrane Biol.*, 68: 19-28.
21. Goldstein, B., and M. Dembo (1982). *The On and Off of Human Allergies*. Los Alamos Science, 3: 20-41.
22. Yang, C.-H., M. Dembo, and F. M. Sirotnak (1983). Relationships between Carrier-Mediated Transport of Folate Compounds by L1210 Cells: Evidence for Multiplicity of Entry Routes with Different Kinetic Properties Expressed in Plasma Membrane Vesicles. *Journal of Membrane Biology*, 75: 11-20.

23. Alt W. and M. Dembo (1983). A Contraction-Disassembly Model For Intracellular Actin gels Lecture Notes in Mathematics, 1017: 1-9
24. Dembo, M., F.M. Sirotnak, and D. M. Moccio (1984). The Effects of Metabolic Deprivation on Methotrexate Transport in L1210 Leukemia Cells: Further Evidence for Separate Influx and Efflux Systems with Different Energetic Requirements. *Journal of Membrane Biology*, 78: 9-19.
25. Bell, G. I., M. Dembo, and P. Bongrand (1984). Cell Adhesion: Competition between Nonspecific Repulsion and Specific Bonding. *Biophysical Journal*, 45: 1051-1064.
26. Yang, C.-H., F. M. Sirotnak, and M. Dembo (1984). Interaction Between Anions and the Reduced Folate/Methotrexate Transport System in L1210 Cell Plasma Membrane Vesicles: Directional Symmetry and Anion Specificity for Differential Mobility of Loaded and Unloaded Carrier. *Journal of Membrane Biology*, 79: 285-292.
27. Dembo, M., F. Harlow, and W. Alt (1984). The Biophysics of Cell Surface Motility. In: *Cell Surface Dynamics: Concepts and Models*, (C. De Lisi, A. Perelson, and F. Wiegel, eds.) Marcel Dekker, New York, pp. 495-542.
28. Goldstein, B. and M. Dembo (1984). The Mechanism of Histamine Release from Human Basophils. In: *Cell Surface Dynamics: Concepts and Models*, (C. DeLisi, A. Perelson, and F. Wiegel, eds.) Marcel Dekker, New York, pp. 331-382.
29. Dembo, M. and F. M. Sirotnak (1984). Membrane Transport of Folate Compounds in Mammalian Cells. In: *Folate Antagonists as Therapeutic Agents*.(F. M. Sirotnak, J. H. Buchall, W. I. Ensminger, and J. A. Montgomery, eds.) Academic Press, New York, pp. 173-218.
30. Goldstein, B., D.W. MacGlashan, and M. Dembo (1985). Test of a Theory Relating to the Cross-Linking of IgE Antibody on the Surface of Human Basophils. *Journal of Immunology*, 135: 1429-1434.
31. Torney, D. C., M. Dembo, and G. I. Bell (1986). Thermodynamics of cell adhesion, II. Freely mobile repellers. *Biophysical Journal*, 49: 501-507.
32. Dembo, M. and F. Harlow (1986). Cell motion, contractile networks, and the physics of interpenetrating reactive flow. *Biophysical Journal*, 50: 109-122.
33. Dembo, M., M. Maltrud, and F. Harlow (1986). Numerical studies of unreactive contractile networks. *Biophysical Journal*, 50: 123-138.
34. Dembo, M. (1986). Mechanics of motility in dissociated cytoplasm. *Biophysical Journal*, 50: 1165-1183.
35. Dembo, M. and G. I. Bell (1987). The thermodynamics of cell adhesion. *Current Topics in Membranes and Transport*, 29: 71-89.
36. Torney, D. C., T. Warnock, M. A. McClosky, M. Dembo, and M.-M. Poo (1987). Rates of chemical reactions taking place in two dimensions. *Comments Mol. Cell Biophysics*, 4: 281-303.
37. Dembo, M. (1987). Mechanics of Amoeboid Motion. *Proceedings of the 10th U.S. Natl. Congress of Applied Mechanics*, (J. P. Lamb, ed.) New York: American Society of Mechanical Engineers, pp. 63-68.

38. Dembo, M., D. C. Torney, K. Saxman, and D. Hammer (1988). The reaction limited kinetics of membrane to surface adhesion and detachment. *Proceedings of the Royal Society of London*, 234: 55-83.
39. Kowluru, R., M.W. Bitensky, A. Kowluru, M. Dembo, P. Keaton, and T. Buican (1989). Reversible sodium pump defect in the diabetic red cell: Effects on filterability and implications for microangiopathy. *Proceedings of the National Academy Science USA*, 86: 3327-3331.
40. Dembo, M. (1989). Mechanics and control of the cytoskeleton in *Amoeba proteus*. *Biophysical Journal*, 55: 1053-1080.
41. Layne, S. P., J.L. Spouge, and M. Dembo (1989). The kinetics of HIV infectivity. *Los Alamos Science*, 18: 90-109.
42. Layne, S. P., J.L. Spouge, and M. Dembo (1989). Quantifying the infectivity of human immunodeficiency virus. *Proceedings of the National Academy Science USA*, 86 :4644-4648.
43. Spouge, J.L., S. P. Layne, and M. Dembo (1989). Analytic results for quantifying HIV infectivity. *Bulletin of Mathematical Biology*, 51: 715-730.
44. Dembo, M., (1989). Field theories of the cytoplasm. *Comments on Theoretical Biology*, 1: 159-178.
45. Yoshida, T., and M. Dembo (1989). Toward a comprehensive biochemical model of the human erythrocyte: relationship between metabolic and osmotic state of the cell and the state of hemoglobin. In: *The Red Cell: Seventh Ann Arbor Conference*, (G. J. Brewer, ed.) Alan Liss, Inc., New York, pp. 179-196.
46. Layne, S. P., J.L. Spouge, and M. Dembo (1989). Measuring HIV infectivity. In: *Mathematical and Statistical Approaches to AIDS Epidemiology and Dynamics*, (C. Castillo-Chavez, ed.), *Lecture Notes in Biomathematics 83*, Springer-Verlag, New York, pp. 80-110.
47. Yoshida, T., and M. Dembo (1990). A thermodynamic model of hemoglobin suitable for physiological applications. *American Journal of Physiology (Cell Physiol. 27)* 258: C563-C577.
48. Layne, S. P., M.J. Merges, M. Dembo, J.L. Spouge, and P. L. Nara (1990). HIV requires multiple gp120 molecules for CD4-Mediated infection. *Nature*, 346: 277-279.
49. Evans, E., and M. Dembo (1990). Physical model for phagocyte motility: Local growth of a contractile network from a passive body. In: *Biomechanics of Active Movement and Deformation of Cells* (N. Akkas, ed.), *NATO ASI Series, Vol. H42*. Springer-Verlag, Berlin, pp. 185-214.
50. Layne, S. P., M.J. Merges, J.L. Spouge, M. Dembo, and P. L. Nara (1991). Blocking of HIV infection depends on target cell density and viral stock age. *Journal of Virology*, 65: 3293-3300.
51. Layne, S. P., and M. Dembo (1991). The auto-regulation model: A unified concept of how HIV regulates its infectivity, pathogenesis, and persistence. *International Reviews of Immunology*, 8: 1-32.
52. Layne, S. P., M.J. Merges, M. Dembo, J.L. Spouge, S.R. Conley, J.P. Moore, J.L. Raina, H. Renz, H.R. Gelderblom, and P. L. Nara (1992). Factors underlying spontaneous inactivation and susceptibility to neutralization of human immunodeficiency virus. *Virology*, 189:695-714.

53. Ward, M. D., M. Dembo, and D. A. Hammer (1994). Kinetics of cell detachment: peeling of discrete receptor clusters. *Biophysical Journal*, 67: 2522-2534.
54. Dembo, M. (1994). On peeling an adherent cell from a surface. In Vol. 24 of series: Lectures on Mathematics in the Life Sciences, Some Mathematical Problems in Biology. American Mathematical Society, Providence, pp. 51-77.
55. Dembo, M. (1994). On free boundary problems and amoeboid motion. In; *Biomechanics of Active Movement and Division of Cells*. (N. Akkas, ed., NATO Advanced Study Institute Series;) Springer-Verlag, Berlin. pp. 231-283.
56. Oliver, T., A. Ishihara, K. Jacobson and M. Dembo (1994). Computing cell tractions from particle displacements on silicon rubber substrata. In: *Proc. 52nd Annual Meeting of the Microscopy Society of America*. (G.W. Bailey and A.J. Garrant-Reed, eds.) San Francisco Press, San Francisco, pp. 162-163.
57. Dembo, M. (1994). Solution of a continuum representation of the cytoplasmic mechanics by a finite element method. Los Alamos Unclassified Report No. 94-3454
58. Posner, R.G., and M. Dembo (1995). Binding of bivalent ligand to cell surface IgE: Can one detect ring formation? *Molecular Immunology*, 31: 737-751.
59. Goldstein, B., and M. Dembo (1995). Approximating the effects of diffusion on reversible reactions at the cell surface: ligand-receptor Kinetics. *Biophysical Journal*, 68: 1222-1230.
60. Ward, M. D., M. Dembo and D. A. Hammer (1995). Kinetics of cell detachment: effect of ligand density. *Annals of Biomedical Engineering*, 23: 322-331.
61. Oliver, T., M. Dembo and K. Jacobson (1995). Traction forces in locomoting cells. *Cell Motility and the Cytoskeleton*, 31: 225-240.
62. He, X., and M. Dembo (1996). Numerical simulation of oil-droplet cleavage by surfactant, *Journal Biomechanical Engineering*, 118: 201-209.
63. He, X., and M. Dembo (1996). Modeling chemo attractant-elicited relocalization of myosin filaments in *Dictyostelium*. *Journal of Biochemistry and Cell Biology*, 73: 421-429.
64. Dembo, M., T. Oliver, A. Ishihara, and K. Jacobson (1996). Imaging the traction stresses exerted by locomoting cells with the elastic substratum method. *Biophysical Journal*, 70: 2008-2022.
65. He, X., L-S. Luo and M. Dembo (1996). Some progress in the lattice Boltzmann method: nonuniform mesh grids. *Journal of Computational Physics*, 129: 357-363.
66. Neelamegham, S., A.W. Taylor, J. D. Hellums, M. Dembo, C.W. Smith and S.I. Simon (1997). Modeling the reversible kinetics of Neutrophil adhesion under hydrodynamic shear. *Biophysical Journal*, 72: 1527-1540.
67. He, X., and M. Dembo (1997). On the mechanics of the first cleavage division of the sea urchin egg. *Experimental Cell Research*, 233: 252-273.
68. Yang, F., X. He, M. Dembo and J.C.M. Li (1997). Impression creep of a viscous fluid. *Journal of Applied Physics*, 81: 7751-7756.
69. He, X., L-S. Luo and M. Dembo (1997). Some progress in the lattice Boltzmann method: part II, Reynolds number enhancement in simulations. *Physica A*, 239: 276-285.

70. He, X., Q. Zou, L-S. Luo and M. Dembo (1997). Analytic solutions of simple flows and analysis of nonslip boundary conditions for the Lattice Boltzmann BGK model. *Journal of Statistical Physics*, 87: 115-136.
71. Oliver, T., A. Ishihara, J. Lee, M. Dembo and K. Jacobson (1997). How keratocytes locomote along planar substrata. In: *Proceedings of the Second Hamamatsu International Symposium on Biomolecular Mechanisms and Photonics: Cell-Cell Communication*, (Akihiro Kusumi, ed), Hamamatsu Publications, Hamamatsu Japan, pp 28-33.
72. He, X., and M. Dembo (1997). A dynamical model of cell division. In: *Dynamics of Cell and Tissue Motion*, (W. Alt, A. Deutsch and G. Dunn, eds.), Birkhauser Verlag, Basel, pp 55-66.
73. Dembo, M., T. Oliver, A. Ishihara, and K. Jacobson (1997). Imaging traction stresses. In: *Dynamics of Cell and Tissue Motion*, (W. Alt, A. Deutsch and G. Dunn, eds.), Birkhauser Verlag, Basel, pp 123-132.
74. Oliver, T., K. Jacobson and M. Dembo (1998). Design and use of substrata to measure forces exerted by cultured cells. *Methods in Enzymology*, 298: 497-512.
75. Myszka, D.G., X. He and M. Dembo, T. A. Morton and B. Goldstein (1998). Extending the range of rate constants available from BIACORE: Interpreting mass transport-influenced binding. *Biophysical Journal*, 75: 583-594.
76. Oliver, T., M. Dembo and K. Jacobson (1998). Measurement of traction forces in cells locomoting along a substratum. *Cell Motility and the Cytoskeleton*, Video Supplement 5: Start Time 25:49, End time 35:36. (The complete text of the narrative of this video production also appears on pgs 342-344 of volume 39 of the printed version of this journal).
77. Oliver, T., M. Dembo, and K. Jacobson (1998). Using flexible silicone rubber to investigate cell generated traction forces. In: *Biological Mechanisms of Tooth Eruption, Resorption and Replacement by Implants*. (Z. Davidovitch and J. Mah, eds), Harvard Society for the Advancement of Orthodontics, Boston, pp 89-93.
78. Drury, J.L. and M. Dembo (1999). Hydrodynamics of micropipet aspiration. *Biophysical Journal*, 76: 110-128.
79. Alt, W. and M. Dembo (1999). Cytoplasm dynamics and cell motion: Two-phase flow models. *Mathematical Biosciences* 156: 207-228.
80. Dembo, M. and Y-L. Wang (1999). Stresses at the cell-to-substrate interface during locomotion of fibroblasts. *Biophysical Journal*, 76: 2307-2316.
81. Oliver, T., M. Dembo and K. Jacobson (1999). Separation of propulsive and adhesive traction stresses in locomoting keratocytes. *Journal of Cell Biology*, 145: 589-604.
82. Lo, C.-M., H.-B. Wang, M. Dembo, and Y-L. Wang (2000). Cell movement is guided by the rigidity of the substrate. *Biophysical Journal*, 79: 144-152.
83. Wang, H-B., M. Dembo, and Y-L. Wang (2000). Substrate flexibility regulates growth and apoptosis of normal but not transformed cells. *American Journal of Physiology*, 279: C1345-C1350.
84. Munevar, S., Y-L. Wang and M. Dembo (2001). Traction force microscopy of migrating normal and H-ras transformed 3T3 fibroblasts. *Biophysical Journal*, 80: 1744-1757.
85. Beningo, K.A., M. Dembo, I. Kaverina, J.V. Small, and Y-L. Wang (2001). Nascent focal adhesions are responsible for the generation of strong propulsive forces in migrating fibroblasts. *Journal of Cell Biology*, 153: 881-887.

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