CURRICULUM VITAE

NAME

Dimitrije Stamenovic

DATE OF BIRTH

December 8, 1952

PRESENT RANK

Associate Professor

EDUCATION

University	Degree	Year	Field of study
University of Belgrade, Yugoslavia	Dipl. Ing.	1977	Aero/Mechanical
University of Minnesota	M.S.	1980	Mechanics
University of Minnesota	Ph.D.	1983	Mechanics

Dissertation title:

The Constitutive equation of Lung parenchyma based on Microstructural Model

EMPLOYMENT

2002 Visiting Professor in the Faculty of Mathematics, University of Belgrade, Yugoslavia

2000 – present Visiting Scientist, Department of Environmental Health, Harvard School of Public Health, Boston, Massachusetts

1993 – present Associate Professor, Department of Biomedical Engineering, Boston University, Boston, Massachusetts

1987 – 1993 Assistant Professor, Department of Biomedical Engineering, Boston University, Boston, Massachusetts

1986 – 2000 Research Associate, Department of Environmental Science and Physiology, Harvard School of Public Health, Boston, Massachusetts

1983 – 1986 Research Fellow, Department of Environmental Science and Physiology, Harvard School of Public Health, Boston, Massachusetts

1980 – 1983 Research Assistant, Department of Aerospace Engineering and Mechanics, University of Minnesota, Minneapolis, Minnesota

1980 Research Fellow, Division of Thoracic Diseases and Internal Medicine, Mayo Clinic/Foundation, Rochester, Minnesota

1978 – 1980 Teaching Associate, Department of Aerospace Engineering and Mechanics, University of Minnesota, Minneapolis, Minnesota

SOCIETY MEMBERSHIPS

1984 – present Member of The Yugoslav Society of Mechanics

1990 – present Member of The American Physiological Society

1991 – present Member of the Biomedical Engineering Society

2000 – present Member of the American Society of Mechanical Engineers

2002 – present Member of the Serbian Society of Applied and Industrial Mathematics

HONORS AND AWARDS

1976 High GPA Award from the Faculty of Mechanical Engineering, University of Belgrade

1983 – 1986 National Research Service Award (National Institutes of Health - NIH)

2004 The Biomedical Engineering Department Teacher of the Year Award
2004 – 2006 Recipient of the World University Service grant-award for the "Brain Gain Program", WUS Austria

PROFESSIONALLY-RELATED SERVICE

Grant Reviews

1999 – 2002 Member of the Cell and Molecular Biology NASA Peer Review Panel.
2000, 2003 Ad hoc member of the Bone Biology NASA Peer Review Panel.
2004 Ad hoc member of the Cell and Molecular Biology NASA Peer Review Panel.
2005 Ad hoc member of the National Hearth Lung and Blood Institute Peer Review panel.
2005 Ad hoc member of the Biomedical Research Council Peer Review Panel, Singapore.
2007 Ad hoc member of the Netherlands Organization for Scientific Research Peer Review Panel.

Scientific/Educational Meetings

2005 Chair of the Program Committee of the Summer School for Biomedical Engineering, Faculty of Mechanical Engineering, University of Belgrade, Belgrade, Serbia, June 21-25, 2005.
2006 Member of the Scientific Committee, First South-East European Conference on Computational Mechanics, Kragujevac, Serbia, June 28-30, 2006.
2006 Co-chair of the Program Committee of Workshop and Summer School in Cell and Tissue Engineering, Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia, July 1-8, 2006.
2006 Organizing the session "Computational Modeling and Mechanobiology of Cells" in the Thread "Computational Methods in Biomechanics and Mechanobiology" and Member of the International Scientific Committee of the 5th World Congress of Biomechanics, Munich, Germany, July 29-Aug. 4, 2006.

Editorial Duties

2004 – 2005 member of the Editorial Board of *Journal of the Mechanical Behavior of Materials*
2007 – present Member of the Editorial Board of *The Open Applied Physics Journal*.
2007 – present Associate Editor of the *ASME Journal of Biomechanical Engineering*

PUBLICATIONS

Book Chapters

1. **Stamenovic, D.** The mixture of phases and elastic stability of lungs with constant surface forces. In: *Mathematical Models in Medicine: Diseases and Epidemics*, Vol. 1, ed. M. Witten, Pergamon Press, New York, 1987, pp. 1071-1082. (Reprinted from *Math. Modelling*, 7: 1071-1082, 1986.)
2. Fredberg, J. J., N. Wang, **D. Stamenovic**, and D. E. Ingber. Micromechanics of the lung: from the parenchyma to the cytoskeleton. In: *Complexity in Structure and Function of the Lung*, eds. M. P. Hlastala, and H. T. Robertson, Dekker, New York, 1998, pp. 99-122 (Lung Biol. Health Dis. Ser.)
3. Patterson, C. E., and **D. Stamenovic**. Molecular architecture of endothelium. In: *Perspectives on Lung Endothelial Barrier Function*, Chapt. 2, ed. C. E. Patterson, Elsevier, Amsterdam, 2004, pp. 25-64. (Advances in Molecular Cell Biol. Ser., Vol. 35).
4. **Stamenovic, D.** Models of cytoskeletal mechanics based on tensegrity. In: *Cytoskeletal Mechanics* eds. M. R. Kazempur-Mofrad and R. D. Kamm. Cambridge University Press, New York, 2006, pp. 103-128.

5. **Stamenovic, D.**, N. Wang, and D. E. Ingber. Cellular tensegrity models of cell-substrate interactions. In: *Principles of Cellular Engineering: Understanding the Biomolecular Interface* ed. M. R. King, Academic Press, Amsterdam, 2006, pp. 81-101.
6. **Stamenovic, D.**, N. Wang, and D. E. Ingber. Tensegrity architecture and the mammalian cell cytoskeleton. In: *Multiscaling in Molecular and Continuum Mechanics: Integration of Time and Size from Macro to Nano*, ed. G. C. Sih, Springer, 2006.
7. **Stamenovic, D.** Cytoskeletal prestress as a determinant of deformability and rheology of adherent cells. In: *Cell and Tissue Engineering*, ed. B. Obradovic, Akademska Misao, Belgrade, Serbia, 2008.

Journal Articles

1. **Stamenovic, D.**, and T. A. Wilson. The shear modulus of liquid foams. *ASME J. Appl. Mech.* 51: 229-231, 1984.
2. **Stamenovic, D.** Mechanical properties of pleural membrane. *J. Appl. Physiol.* 57: 1189-1194, 1984.
3. **Stamenovic, D.**, and T. A. Wilson. A strain energy function of lung parenchyma. *ASME J. Biomech. Eng.* 107: 81-86, 1985.
4. Rodarte, J. R., R. D. Hubmayr, **D. Stamenovic**, and B. J. Walters. Regional lung strain in dogs during deflation from total lung capacity. *J. Appl. Physiol.* 58: 164-172, 1985.
5. **Stamenovic, D.** The mixture of phases and elastic stability of lungs with constant surface forces. *Math. Modelling*, 7: 1071-1082, 1986.
6. Smith, J. C., and **D. Stamenovic**. Surface forces in lungs. I. Alveolar surface tension-lung volume relationships. *J. Appl. Physiol.* 60: 1341-1350, 1986.
7. **Stamenovic, D.**, and J. C. Smith. Surface forces in lungs. II. Microstructural mechanics and lung stability. *J. Appl. Physiol.* 60: 1351-1357, 1986.
8. **Stamenovic, D.**, and J. C. Smith. Surface forces in lungs. III. Alveolar surface tension and elastic properties of lung parenchyma. *J. Appl. Physiol.* 60: 1358-1362, 1986.
9. **Stamenovic, D.** Equilibrium of pressurized cylindrical membrane with a non-monotonic pressure-volume characteristic. *Q. J. Mech. Appl. Math.* 41; 71-81, 1988.
10. **Stamenovic, D.**, and D. Yager. Elastic properties of air- and liquid-filled lung parenchyma. *J. Appl. Physiol.* 65: 2565-2570, 1988.
11. Barnas, G. M., K. Yoshino, **D. Stamenovic**, Y. Kikuchi, S. H. Loring, and J. Mead. Chest wall impedance partitioned into rib cage and diaphragm-abdominal pathways. *J. Appl. Physiol.* 66: 350-359, 1989.
12. Fredberg, J. J., and **D. Stamenovic**. On the imperfect elasticity of lung tissue. *J. Appl. Physiol.* 67: 2408-2419, 1989.
13. **Stamenovic, D.**, G. M. Glass, G. M. Barnas, and J. J. Fredberg. Viscoplasticity of respiratory tissues. *J. Appl. Physiol.* 69: 973-988, 1990.
14. **Stamenovic, D.** Micromechanical foundations of pulmonary elasticity. *Physiol. Rev.* 70: 1117-1134, 1990.
15. Barnas, G. M., **D. Stamenovic**, and J. J. Fredberg. Proportionality between chest wall resistance and elastance. *J. Appl. Physiol.* 70: 511-515, 1991.
16. Kikuchi, Y., **D. Stamenovic**, and S. H. Loring. Dynamic behavior of excised dog rib cage: dependence on muscle. *J. Appl. Physiol.* 70: 1059-1067, 1991.
17. **Stamenovic, D.** The shear modulus of foamlike structures. *ASME J. Appl. Mech.* 58: 288-289, 1991.

18. Fredberg, J. J., G. M. Barnas, and **D. Stamenovic**. Effect of amplitude during sinusoidal forcing: nonlinearity of respiratory tissue compartments. *Eur. Respir. Rev.* 1: 188-190, 1991.
19. **Stamenovic, D.** A model of foam elasticity based upon the laws of Plateau. *J. Colloid Interface Sci.* 145: 255-259, 1991.
20. Barnas, G. M., **D. Stamenovic**, K. R. Lutchen, and C. F. Mackenzie. Lung and chest wall impedances in the dog: effects of frequency and tidal volume. *J. Appl. Physiol.* 72: 87-93. 1992.
21. Ludwig, M. S., F. M. Robatto, S. Simard, **D. Stamenovic**, and J. J. Fredberg. Lung tissue resistance during contractile stimulation: structural damping decomposition. *J. Appl. Physiol.* 72: 1332-1337, 1992.
22. **Stamenovic, D.**, and T. A. Wilson. Parenchymal stability. *J. Appl. Physiol.* 73: 596-602, 1992.
23. Barnas, G. M., **D. Stamenovic**, and K. R. Lutchen. Lung and chest wall impedances in dog in normal range of breathing: effects of pulmonary edema. *J. Appl. Physiol.* 73: 1040-1046, 1992.
24. Navajas, D., S. M. Mijailovich, G. M. Glass, **D. Stamenovic**, and J. J. Fredberg. Dynamic response of the isolated relaxed diaphragm strip. *J. Appl. Physiol.* 73: 2681-2692, 1992.
25. Mijailovich, S. M., **D. Stamenovic**, and J. J. Fredberg. Toward a kinetic theory of connective tissue micro-mechanics. *J. Appl. Physiol.* 74: 665-681, 1993.
26. **Stamenovic, D.**, K. R. Lutchen, and G. M. Barnas. Alternative model of respiratory tissue viscoplasticity. *J. Appl. Physiol.* 75: 1062-1069, 1993.
27. Mijailovich, S. M., **D. Stamenovic**, R. Brown, D. Leith, and J. J. Fredberg. Dynamic moduli of rabbit lung tissue and pigeon ligamentum propatagiale undergoing uniaxial loading. *J. Appl. Physiol.* 76: 773-782, 1994.
28. Sun, Q., J. P. Butler, B. Suki, and **D. Stamenovic**. Measurements of shear wave propagation speed in gas-liquid foam. *J. Colloid Interface Sci.* 163; 269-276, 1994.
29. **Stamenovic, D.**, and G. M. Barnas. Effect of surface forces on oscillatory behavior of lungs. *J. Appl. Physiol.* 79: 1578-1585, 1995.
30. Coughlin, M. F., B. Suki, and **D. Stamenovic**. Dynamic behavior of lung parenchyma in shear. *J. Appl. Physiol.* 80: 1880-1890, 1996.
31. **Stamenovic, D.**, J. J. Fredberg, N. Wang, J. P. Butler, and D. E. Ingber. A microstructural approach to cytoskeletal mechanics based on tensegrity. *J. Theor. Biol.* 181; 125-136, 1996.
32. Coughlin, M. F., E. P. Ingenito, and **D. Stamenovic**. Static shear modulus of gas-liquid foam determined by the punch indentation test. *J. Colloid Interface Sci.* 181: 661-666, 1996.
33. Coughlin, M. F., and **D. Stamenovic**. A tensegrity structure with buckling compression elements: application to cell mechanics. *ASME J. Appl. Mech.* 64; 480-486, 1997.
34. Coughlin, M. F., **D. Stamenovic**, and J. G. Smits. Determination of spring stiffness by the resonance frequency of cantilevered piezoelectric bimorphs. *IEEE Trans. Ultrasonics, Ferroelectrics, Freq. Control.* 44: 730-732, 1997.
35. Pourati, J., A. Maniotis, D. Spiegel, J. L. Schaffer, J. P. Butler, J. J. Fredberg, D. E. Ingber, **D. Stamenovic**, and N. Wang. Is cytoskeletal tension a major determinant of cell deformability? *Am. J. Physiol. Cell Physiol.* 274: C1283-C1289, 1998.
36. Suki, B., J. S. Andrade, Jr., M. F. Coughlin, **D. Stamenovic**, H. E. Stanley, M. Sujeer, and S. Zapperi. Mathematical modeling of the first inflation of degassed lungs. *Ann. Biomed. Eng.* 26: 608-617, 1998.
37. Coughlin, M. F., and **D. Stamenovic**. A tensegrity model of the cytoskeleton in spread and

round cells. *ASME J. Biomech. Eng.* 120: 770-777, 1998.
38. Bursac, P. M., T. W. Obitz, S. R. Eisenberg, and **D. Stamenovic**. Confined and unconfined stress relaxation of cartilage: appropriateness of transversely isotropic analysis. *J. Biomech.* 32: 1125-1130, 1999.
39. **Stamenovic, D.** and M. F. Coughlin. The role of prestress and architecture of the cytoskeleton and deformability of cytoskeletal filaments in mechanics of adherent cells. *J. Theor. Biol.* 201: 63-74, 1999.
40. **Stamenovic, D.**, and M. F. Coughlin. A quantitative model of cellular elasticity based on tensegrity. *ASME J. Biomech. Eng.* 122: 39-43, 2000.
41. Bursac, P., C. V. McGrath, S. R. Eisenberg, and **D. Stamenovic**. A microstructural model of elastic properties of articular cartilage in confined compression. *ASME J. Biomech. Eng.* 122: 347-353, 2000.
42. Wang, N., and **D. Stamenovic**. Contribution of intermediate filaments to cell stiffness, stiffening and growth. *Am. J. Physiol. Cell Physiol.* 279: C188-C194, 2000.
43. **Stamenovic, D.**, and N. Wang. Invited Review: Engineering approaches to cytoskeletal mechanics. *J. Appl. Physiol.* 89: 2085-2090, 2000.
44. Wang, N., K. Naruse, **D. Stamenovic**, J. J. Fredberg, S. M. Mijailovich, I. M. Tolic-Nørrelykke, T. Polte, R. Mannix, and D. E. Ingber. Mechanical behavior in living cells consistent with the tensegrity model. *Proc. Natl. Acad. Sci. USA*, 98: 7765-7770, 2001.
45. Wang, N., I. M. Tolic-Nørrelykke, J. Chen, S. M. Mijailovich, J. P. Butler, J. J. Fredberg, and **D. Stamenovic**. Cell prestress. I. Stiffness and prestress are closely associated in adherent contractile cells. *Am. J. Physiol. Cell Physiol.* 282: C606-C616, 2002
46. **Stamenovic, D.**, S. M. Mijailovich, I. M. Tolic-Nørrelykke, J. Chen, and N. Wang. Cell prestress. II. Contribution of microtubules. *Am. J. Physiol. Cell Physiol.* 282: C617-C624, 2002.
47. **Stamenovic, D.**, Z. Liang, J. Chen, and N. Wang. Effect of the cytoskeletal prestress on the mechanical impedance of cultured airway smooth muscle cells. *J. Appl. Physiol.* 92: 1443-1450, 2002.
48. **Stamenovic, D.**, and D. E. Ingber. Models of cytoskeletal mechanics of adherent cells. *Biomech. Model. Mechanobiol.* 1: 95-108, 2002.
49. Alencar, A. M., S. P. Arold, S. V., Buldyrev, A. Majumdar, **D. Stamenovic**, H. E. Stanley, and B. Suki. Dynamic instabilities in inflating lung. *Nature* 417; 809-810, 2002.
50. Butler, J. P., R. E. Brown, **D. Stamenovic**, J. P. Morris, and G. P. Topulos. Effect of surface tension on alveolar surface area. *J. Appl. Physiol.* 93: 1015-1022, 2002.
51. Wang, N., and **D. Stamenovic**. Mechanics of vimentin intermediate filaments. *J. Muscle Res. Cell Mot.* 23: 533-538, 2002.
52. **Stamenovic, D.**, S. M. Mijailovich, I. M. Tolic-Nørrelykke, and N. Wang. Experimental tests of the cellular tensegrity hypothesis. *Biorheol.* 40: 221-225, 2002.
53. Coughlin, M. F., and **D. Stamenovic**. A Prestressed Cable Network Model of the Adherent Cell Cytoskeleton *Biophys. J.* 84: 1328-1336, 2003.
54. Djordjevic, V. D., J. Jaric, B. Fabry, J. J. Fredberg, and **D. Stamenovic**. Fractional derivatives embody essential features of cell rheological behavior. *Ann. Biomed. Eng.* 31: 692-699, 2003.
55. Sultan, C., **D. Stamenovic**, and D. E. Ingber. A tensegrity model of dynamic rheological behavior in living cells. *Ann. Biomed. Eng.* 32: 520-530, 2004.
56. **Stamenovic, D.**, B. Suki, B. Fabry, N. Wang, and J. J. Fredberg. Rheology of Airway

Smooth Muscle Cells is associated with cytoskeletal contractile stress. *J. Appl. Physiol.* 96: 1600-1605, 2004.

57. Rosenblatt, N., S. Hu, J. Chen, N. Wang, and **D. Stamenovic**. Distending stress of the cytoskeleton is a key determinant of cell rheological behavior. *Biochem. Biophys. Res. Commun.* 321; 617-622, 2004.
58. **Stamenovic, D.** Microtubules may harden or soften cells, depending on the extent of cell distension. *J. Biomech*. 38: 1728-1732, 2005.
59. Suki, B., S. Ito, **D. Stamenovic**, K. R. Lutchen, and E. P. Ingenito. Invited Review: Biomechanics of the lung parenchyma: critical roles of collagen and mechanical forces. *J. Appl. Physiol.* 98: 1892-1899, 2005.
60. **Stamenovic, D.** Effects of cytoskeletal prestress on cell rheological behavior. *Acta Biomaterialia*, 1: 255-262, 2005.
61. Jaric, J., and **D. Stamenovic**. On unsheared tetrads. *J. Elast*. 81: 153-157, 2005.
62. **Stamenovic, D.** Contractile torque as a steering mechanism for orientation of adherent cells. *Mech. Chem*. *Biosyst*. 2: 69-76, 2005.
63. Jaric, J., and **D. Stamenovic**, V. D. Djordjevic. On projection operator in finite shear. *J. Elast.* 83: 277-289, 2006.
64. Lazopoulos, K. A., and **D. Stamenovic**. A mathematical model of cell reorientation in response to substrate stretching. *Mol. Cell. Biomech.* 3: 43-48, 2006.
65. Satoru, I., A. Majumdar, H. Kume, K. Shimokata, K. Naruse, K. R. Lutchen, **D. Stamenovic**, and B. Suki. Viscoelastic and dynamic nonlinear properties of airway smooth muscle tissue: roles of mechanical force and the cytoskeleton. *Am. J. Physiol. Lung Cell Mol. Physiol.* 290: L1227-L1237, 2006.
66. **Stamenovic, D.** Cell mechanics - Two regimes, maybe three? *Nature Mater*. 5: 597-598, 2006.
67. Rosenblatt, N., A. M. Alencar, A. Majumdar, B. Suki, and **D. Stamenovic**. Dynamics of prestressed semiflexible polymer chains as a model of cell rheology. *Phys. Rev. Lett.* 97: 168101, 2006.
68. **Stamenovic, D.** Cells as tensegrity structures: architectural basis of the cytoskeleton. *FME Trans.* 34: 57-64, 2006.
69. Rosenblatt, N., S. Hu, B. Suki, N. Wang, and **D. Stamenovic**. Contributions of the active and passive components of the cytoskeletal prestress to stiffening of airway smooth muscle cells. *Ann. Biomed. Eng.*, 35: 224-234, 2007.
70. **Stamenovic, D.**, N. Rosenblatt, M. Montoya-Zavala, B. D. Matthews, S. Hu, B. Suki, N. Wang, and D. E. Ingber. Rheological behavior of adherent cells is timescale-dependent. *Biophys. J.* 93: L39-L41 2007.
71. Lazopoulos, K. A., and **Stamenovic, D.** Durotaxis as an elastic stability phenomenon. *J. Biomech.* doi:10.1016/j.jbiomech.2008.01.008
72. **Stamenovic, D.** Cytoskeletal mechanics in airway smooth muscle cells. *Respir. Physiol. Neurobiol.* doi:10.1016/j.resp.2008.02.009.

Conference Proceedings

1. **Stamenovic, D.** Strain energy functions obtained from microstructural models. *Proc. Yug. Soc. Mech.* 16th Congress of Theoretical and Applied Mechanics, Becici, Yugoslavia, May 28-June 1, 1984Vol. C1-11, pp. 79-86.
2. **Stamenovic, D.** Analysis of lung stability with respect to large disturbances. *1985 Advances*

in Bioengineering, ed. N. Langrana, ASME Annual Meeting, Miami Beach, FL, November 17-22, 1985, pp. 158-159.

3. **Stamenovic, D.** equilibrium and mixture of phases in cylindrical membranes loaded by internal pressure. *Proc. Yug. Soc. Mech.* 17th Congress of Theoretical and Applied Mechanics, Zadar, Yugoslavia, June 2-6, 1986, Vol. C1-13, pp. 75-80.
4. Mijailovich, S. M., **D. Stamenovic**, and J. J. Fredberg. A model of connective tissue micromechanics. *IEEE Proc.* 17th Annual Northeast Bioengineering Conference, Hartford, CT, April 4-5, 1991, pp. 20-21.
5. Coughlin, M. F., **D. Stamenovic**, and J. G. Smits. Determining material stiffness using piezoelectric bimorphs. *1996 IEEE Ultrasonics Symposium & Short Courses Proceedings*, eds. M. Levy, S C. Schneider, and McAvoy, UFFC Soc. San Antonio, TX, Nov. 3-6, 1996, pp. 1607-1610.
6. Bursac, P. M., T. W. Obitz, S. R. Eisenberg, and **D. Stamenovic**. Confined and unconfined stress relaxation of cartilage: a transversely isotropic analysis. *1997 Advances in Bioengineering*, ed. B. Simon, BED-Vol. 36, New York: ASME, 1997, pp. 157-158.
7. **Stamenovic, D.**, S. M. Mijailovich, I. M. Tolic-Nørrelykke, and N. Wang. Micromechanics of the cytoskeleton: experimental tests of the cellular tensegrity hypothesis. *Proc. 2001 Bioengineering Conference*, eds. R. D. Kamm, G. W. Schmid-Schönbein, G. A. Athesian, and M. S. Hefzy, BED-Vol. 50, New York: ASME, 2001, pp. 809-810.
8. Rosenblatt, N., A. M. Alencar, A. Majumdar, B. Suki, and **D. Stamenovic**. A model of rheological behaviors of living cells based on the molecular dynamics of a tensed cytoskeletal polymer chain. *Proc. SEECCM 06, First South-East European Conference on Computational Mechanics*, eds. M Kojic, and M. Papadrakakis, Kragujevac: Milenijum, 2006, pp. 441-445.

Abstracts

1. Wilson, T. A., and **D. Stamenovic**. A strain energy function of lung parenchyma. *Fed. Proc.* 42: 762, 1983.
2. Olson, L. E., T. A Wilson, **D. Stamenovic**, and J. R. Rodarte. Regional volumes (Vr) in excised right caudal dog lobes: airfilled-saline submerged. *Physiologist* 26: A22, 1983.
3. **Stamenovic, D.** A constitutive equation of pleural membrane. *Fed. Proc.* 43; 328, 1984.
4. Smith, J. C., and **D. Stamenovic**. Surface tension-volume behavior of lungs. *Physiologist* 27; A213, 1984.
5. **Stamenovic, D.**, and J. C. Smith. Stability of lungs with constant alveolar surface tension. *Fed. Proc.* 44: 450, 1985.
6. Smith, J. C., and **D. Stamenovic**. Evidence for a model of alveolar surface film behavior from recent alveolar surface tension-volume data. *Fed. Proc.* 44: 1025, 1985.
7. **Stamenovic, D.**, and J. C. Smith. Alveolar surface tension and elastic properties of the lung. *Fed. Proc.* 45: 877, 1986.
8. **Stamenovic, D.**, Y. Kikuchi, A. E. Greene, and S. H. Loring. Mechanical properties of excised dog rib cage. *Fed. Proc.* 46: 818, 1987.
9. Olson, L. E., and **D. Stamenovic**. Effect of cooling on the mechanical properties of excised dog lung lobes. *Fed. Proc.* 46: 1106, 1987.
10. **Stamenovic, D.**, and D. Yager. Elastic coefficients of air- and saline-filled rabbit lungs. *FASEB J.* 2; A1268, 1988.
11. **Stamenovic, D.**, G. M. Glass, G. M. Barnas, and J. J. Fredberg. A model of imperfect elasticity of the human chest wall. *Physiologist* 31, A220, 1988.

12. Barnas, G. M., **D. Stamenovic**, S. H. Loring, and J. J. Fredberg. Imperfect elasticity of respiratory tissues. *Physiologist* 31, A221, 1988.
13. Fredberg, J. J., and **D. Stamenovic**. On the imperfect elasticity of lung tissue. *Physiologist* 31, A221, 1988.
14. **Stamenovic, D.**, G. M. Glass, G. M. Barnas, and J. J. Fredberg. A viscoplastic model of impedance and stress relaxation of cat lung. *FASEB J.* 3; A980, 1989.
15. **Stamenovic, D.** Micromechanics and lung stability. *FASEB J.* 4: A293, 1990.
16. Barnas, G., **D. Stamenovic**, J. Fredberg, G. Ho, R. Moorman, and C. Mackenzie. Respiratory system mechanical behavior during sinusoidal and step volume forcing. *FASEB J.* 4: A864, 1990.
17. Mijailovich, S, **D. Stamenovic**, and J. J. Fredberg. Analysis of fiber-fiber kinetics in the connective tissue matrix. *FASEB J.* 4: A1068, 1990.
18. Barnas, G. M., **D. Stamenovic**, and J. J. Fredberg. Proportionality between chest wall resistance and elastance. *Physiologist* 33: A82, 1990.
19. **Stamenovic, D.**, K. R. Lutchen, C. F. Mackenzie, and G. M. Barnas. Lung, chest wall and total respiratory impedances in dog at normal breathing range of frequencies and tidal volumes. *FASEB J.* 5: A1136, 1991.
20. **Stamenovic, D.** Micromechanical aspects of lung stability. *Ann. Biomed. Eng.* 19: 577-578, 1991.
21. Fredberg, J. J., S. M. Mijailovich, and **D. Stamenovic**. Toward a kinetic theory of connective tissue mechanics. *Ann. Biomed. Eng.* 19: 577, 1991.
22. Squarcia, S. R., H. Miki, **D. Stamenovic**, and J. P. Butler. Light scattering measurements of the effect of macroscopic deformation on lung microstructure. *FASEB J.* 6: A1272, 1992.
23. Barnas, G. M., **D. Stamenovic**, and K. R. Lutchen. Lung and chest wall impedances in dog in normal range of breathing: effect of pulmonary edema. *FASEB J.* 6: A1481, 1992.
24. **Stamenovic, D.**, D. Obradovic, and G. M. Barnas. An alternative model of respiratory tissue viscopalsticity. *FASEB J.* 6: A1806, 1992.
25. **Stamenovic, D.**, and G. M. Barnas. The effect of surface forces on oscillatory behavior of lung tissue. *FASEB J.* 7: A674, 1993.
26. **Stamenovic, D.**, and G. M. Barnas. Surface tension and lung resistance. *Resp. Crit. Care Med.* 149: A816, 1994.
27. Mijailovich, S. M., **D. Stamenovic**, R. Brown, and J. J. Fredberg. Dynamic moduli of lung tissue and ligamentum propatagiale. *Resp. Crit. Care Med.* 149: A539, 1994.
28. Coughlin, M. F., and **D. Stamenovic**. Dynamic shear behavior of rabbit lungs. *FASEB J.* 9: A150, 1995.
29. **Stamenovic, D.**, J. J. Fredberg, N. Wang, and D. E. Ingber. Resistance of cells to shape distortion: a micromechanical approach. *Ann. Biomed. Eng.* 23: S-10, 1995.
30. Coughlin, M. F., and **D. Stamenovic**. A model of cell mechanics with buckling microtubules. *Ann. Biomed. Eng.* 24: S-12, 1996.
31. Suki, B., J. S. Andrade, M. Coughlin, **D. Stamenovic**, H. E. Stanley, M. Sujeer, and S. Zapperi. The first inflation of degassed lung: a statistical mechanical approach. *Ann. Biomed. Eng.* 24: S-13, 1996.
32. Obitz, T. W., S. R. Eisenberg, and **D. Stamenovic**. Creep behavior of calf articular cartilage: a transversely isotropic biphasic analysis. *Ann. Biomed. Eng.* 24: S-77, 1996.
33. Coughlin, M. F., **D. Stamenovic**, and J. G. Smits. Determining material stiffness using piezoelectric bimorphs. *1996 IEEE International Ultrasonic Symposium & Short Courses*, p.

70, 1996.

34. **Stamenovic, D.**, N. Wang, D. E. Ingber, and J. J. Fredberg. Micromechanics of the lung: from the parenchyma to the cytoskeleton. *Med. Biol. Eng. Computing: World Congress on Medical Physics and Biomedical Engineering*, Nice, France, 35: 267, 1997.
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single chain polymer via reptation: effects of distending stress. *Proc. 2003 BMES Annual Fall Meeting*, Nashville, TN, 2003, CD.

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59. Rosenblatt, N., S. Hu, N. Wang, and **D. Stamenovic**. High levels of cellular distension inhibit cellular contractility. *Proceedings of 2005 BMES Annual Fall Meeting*, Baltimore, MD, September 28-October 1, 2005, CD.
60. Rosenblatt, N., A. M. Alencar, A. Majumdar, B. Suki, and **D. Stamenovic**. Effects of stretching and mechanical interactions on the dynamics of a single polymer chain. *Proceedings of 2005 BMES Annual Fall Meeting*, Baltimore, MD, September 28-October 1, 2005, CD.
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65. Rosenblatt, N., A. Alencar, A. Majumdar, B. Suki, and **D. Stamenovic**. Dynamics of prestressed semiflexible polymer chains: application to cell rheology. *Proceedings of 2006 BMES Annual Fall Meeting*, Chicago, IL, October 11-14, 2006, CD.
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67. Rosenblatt, N., A. M. Alencar, A. Majumdar, B. Suki, and **D. Stamenovic**. A molecular model or rheological behavior of living cells. *Regional Biophysical Conference*, Balatonfüred, Hungary, August 21-25, 2007, p. 55.
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69. Rosenblatt, N., A. Majumdar, A. M. Alencar, B. Suki and **D. Stamenovic**. Dynamics of two- and three-dimensional semi-flexible polymer chains under tension: application to cytoskeletal rheology. *Proceedings of 2007 BMES Annual Fall Meeting*, Los Angeles, CA, September 26-29, 2007, CD.
70. Rosenblatt, N., A. Alencar, A. Majumdar, B. Suki, and **D. Stamenovic**. Prestressed semi-flexible polymer chains as a model cell rheology. Symposium on "Biomechanics of Cells and Molecules", *44th Annual Technical Meeting, Society of Engineering Science (SES)*, Texas A&M University, College Station, TX, October 21-24, 2007.

PATENTS

1. U.S. Patent Application No. 60/950,713 for "Knee Brace with Expandable Members and Method of Using the Same"; filed July 19, 2007.

FUNDING

Funded Proposals

1. NIH PO1 "Non-uniform ventilatory mechanics" (PI Jeffrey Drazen)
   Duration: 12/1/84-11/30/89
   Project 6: Mechanics of respiratory muscle
   Role: Participating investigator (25%)
2. NIH Young Investigator Award "Mechanical properties of lung parenchymal tissue"
   Duration: 9/1/86-8/31/89
   Role: **Principal investigator** (75%)
3. The Whitaker Foundation "Stability of airspaces in the lung"
   Duration: 9/11/89-8/31/92
   Role: **Principal investigator** (47%)
4. NIH PO1 "Physical determinants of lung function and dysfunction" (PI Jeffrey J. Fredberg)
   Duration: 7/1/90-6/30/95
   Project 1: Parenchymal mechanics
   Role: Participating investigator (10%)
   Project 4: Oscillatory mechanics
   Role: Participating investigator (13%)
   Project 6: Chest wall mechanics
   Role: Participating investigator (6%)
5. NIH RO1 "Airway and tissue mechanics at breathing frequencies" (PI Kenneth R. Lutchen)
   Duration: 12/1/94-11/30/97
   Role: Participating investigator (7.5%)
6. NASA "Microgravity tissue engineering" (PI Lisa E Freed)
   Duration: 9/1/95-8/31/99
   Role: Participating investigator (16%)
7. NIH PO1 "Physical determinants of lung function and dysfunction" (PI Jeffrey J. Fredberg)

Duration: 7/1/95-/6/30/00
Project 5: Resistance of the cell to shape distortion
Role: **Project leader** (30%)

8. NIH RO1 "Mechanics of airway smooth muscle cell" (PI Ning Wang)
   Duration: 7/1/00-6/30/01
   Role: Participating investigator (30%)
9. NIH PO1 "Physical determinants of lung function" (PI Jeffrey J. Fredberg)
   Duration: 4/1/01-3/31/06
   Project 5: Statics, dynamics and unifying role of the prestress
   Role: **Project leader** (30%)
10. Coulter Translational Partners Grant Program "Knee osteoarthritis brace"
    Duration: 4/1/07-3/31/08
    Role: **Co-Principal Investigator** (20%)
11. Coulter Translational Partners Grant Program "Knee osteoarthritis brace"
    Duration: 4/1/08-3/31/09
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GRADUATE ADVISING

Primary Doctoral Students

1. Mark F. Coughlin, thesis title: "The Microstructural Basis of Cellular Deformability", Boston University, 2000.
2. Predrag Bursac, thesis title: "Collagen Network Contributions to Structure-Function Relationships in Cartiligenous Tissues in Compression", Boston University, 2002.
3. Noah Rosenblatt, thesis title: "The Effect of Mechanical Distending Stress on the Rheology of Adherent Cells", Boston University, 2007.

Primary Master Students

1. Qian Sun, Thesis Title: "The Shear Modulus of Liquid Foam obtained from Measurements of Stress Wave Propagation", Boston University, 1992.
2. Stephanie R. Squarcia: "Light Scattering Measurements of the Effect of Macroscopic Deformation on Lung Microstructure", Boston University, 1992.
3. Mark F. Coughlin, thesis title: "Application of Punch Indentation Test in Studies of Lung Dynamic Behavior", Boston University, 1995.
4. Toby W. Obitz, thesis title: "Mechanical Properties of Articular Cartilage and Tissue Engineered Constructs: A Transversely Isotropic Biphasic Analysis", Boston University, 1996.
5. Claire Victoria McGrath, thesis title: "A Microstructural Model of Cartilage Elasticity", Boston University, 1997.
6. Zhuangli Liang, thesis title: "Microstructural Approach to Cell Dynamic Behavior", Boston University, 2003.
7. Edmond Abou Nader, thesis title: "A Microstructural Model of the Contractile Cytoskeleton", 2007.

COLLABORATORS DURING PAST 5 YEARS

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