

## **MARGARET LISE GARDEL**

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### **CURRENT POSITIONS:**

2008-present Committee on Molecular Medicine, University of Chicago  
2007-present Assistant Professor, Department of Physics, University of Chicago  
2007-present Assistant Professor, James Franck Institute, University of Chicago  
2007-present Assistant Professor, Institute for Biophysical Dynamics, University of Chicago

### ***GRADUATE TRAINING PROGRAMS***

2009-present Co-Director, Graduate Program in Biophysics, University of Chicago  
2010-present Trainer, Graduate Program Cell and Molecular Biology  
2007-present Trainer, Graduate Program in Biophysics  
2007-present Trainer, Molecular Cell Biology Training Grant

### **EDUCATION:**

**Sc.B.**, Magna cum laude, Physics (with Honors) and Mathematics, Brown University, 1998  
**Ph.D.**, Physics, Harvard University, 2004. (Advisor: David A. Weitz)

### **RESEARCH EXPERIENCE:**

2005-2007 Postdoctoral Fellow, Cell Biology, Scripps Research Inst. (Advisor: Clare Waterman)  
2004- 2005 Pappalardo Postdoctoral Fellow, Physics, M.I.T., Cambridge, MA  
2000- 2004 Graduate Student, Physics Department, Harvard University, Cambridge, MA

### **AWARDS:**

**2012** American Asthma Foundation Early Excellence Award  
**2008** Lucille Packard Fellowship  
**2008** Alfred P. Sloan Fellowship  
**2007** NIH Director's Pioneer Award  
**2005** Burroughs Wellcome Fund Career Award at the Scientific Interface  
**2005** Jane Coffin Childs Memorial Fellowship  
**2005** Damon Runyan Postdoctoral Fellowship (declined)  
**2004** Pappalardo Postdoctoral Fellowship, M.I.T.  
**2003** Excellence in the Teaching of Physics, Harvard Physics Department  
**2003** Certificate of Distinction in Teaching, Harvard College  
**1999-2004** Graduate Fellowship, Lucent Technologies  
**1998** Phi Beta Kappa  
**1998** Sigma Xi  
**1997** Barry M. Goldwater Scholarship

### **PROFESSIONAL SOCIETIES:**

American Society of Cell Biology

Biophysical Society

American Physical Society

## **PUBLICATIONS**

1. R. Vandenbosch, B.P. Henry, C. Cooper, **M.L. Gardel**, F. Liang and D.I. Will, “Fragmentation partners from collisional dissociation of  $C_{60}$ ”, *Physical Review Letters*, 81:1821-1824 (1998)
2. J.J. Rhyne, H. Kaiser, H. Luo, Gang Xiao and **M.L. Gardel**, “Long Wavelength Spin Dynamics in  $La_{0.53}Ca_{0.47}MnO_3$ ”, *J. Applied Physics*, 83: 7339-7341 (1998)
3. **M.L. Gardel**, R. Vandenbosch, B.P. Henry, C. Cooper and D.I. Will, “Electron detachment and fragmentation in collisions between 1.25 keV/carbon  $C_8^-$  and  $C_{60}^-$  clusters and  $H_2$ ”, *European Physical Journal D*, 7: 79-81 (1999)
4. A.P. Ramirez, M.A. Subramanian, **M. Gardel**, G. Blumberg, D. Li, T. Vogt, S.M. Shapiro, “Giant dielectric constant response in a copper-titanate” *Solid State Communications*, 115: 217-220 (2000)
5. V.D. Gordon, M.T. Valentine, **M.L. Gardel**, D. Andor-Ardo, S. Dennison, A.A. Bogdanov, D.A. Weitz and T.S. Deisbock, “Measuring the mechanical stress induced by an expanding multicellular tumor system: a case study”, *Experimental Cell Research* 289: 58-66 (2003) ([pdf](#))
6. **M.L. Gardel**, M.T. Valentine, J.C. Crocker, A.R. Bausch, and D.A. Weitz, “Microrheology of Entangled F-actin Solutions”, *Physical Review Letters* **91** 158302 (2003) ([pdf](#))
7. I.Y. Wong, **M.L. Gardel**, D.R. Reichman, Eric Weeks, M.T. Valentine, A.R. Bausch, D.A. Weitz, “Anomalous diffusion probes microstructure dynamics of entangled F-actin networks”, *Physical Review Letters*, **92** 178101 (2004) ([pdf](#))
8. M.T. Valentine, Z.E. Perlman, **M.L. Gardel**, J.H. Shin, P.T. Matsudaira, T.J. Mitchison and D.A. Weitz, “Investigating the effects of colloidal surface chemistry on multiple particle tracking measurements of biomaterials”, *Biophysical Journal*, **86** 4004-4014 (2004) ([pdf](#))
9. J.H. Shin, **M.L. Gardel**, F.C. MacKintosh, L. Mahadevan, P.A. Matsudaira and D.A. Weitz “Relating Microstructure to Elasticity of Crosslinked and Bundled Actin Networks”, *Proc. Nat'l Acad. Sci.* **101** 9637-9641 (2004) ([pdf](#))
10. **M.L. Gardel**, J.H. Shin, F.C. MacKintosh, L. Mahadevan, P.A. Matsudaira and D.A. Weitz, “Elastic Behaviors of F-actin Networks”, *Science*, **304** 1301-1305 (2004) ([pdf](#))
11. **M.L. Gardel**, J.H. Shin, F.C. MacKintosh, L. Mahadevan, P.A. Matsudaira and D.A. Weitz, “Scaling of the Rheology of Prestressed Networks as a Probe of Single Filament Elasticity”, *Physical Review Letters*, **93** 188102 (2004) ([pdf](#))
12. Liu, J., **M.L. Gardel**, E. Frey, K. Kroy and D.A. Weitz, “Microrheology Probes Length Scale Dependent Rheology”, *Physical Review Letters*, **96** 118104 (2006). ([pdf](#))
13. **M.L. Gardel**, F. Nakamura, J. Hartwig, J.C. Crocker, T.P. Stossel and D.A. Weitz, “Stress-Dependent Elasticity of Composite Actin Networks as a Model for Cell Behavior”, *Physical Review Letters*, **96** 088102 (2006) ([pdf](#))
14. **M.L. Gardel**, F. Nakamura, J. Hartwig, J.C. Crocker, T.P. Stossel and D.A. Weitz, “Pre-Stressed F-actin Networks Cross-linked by Hinged Filamins Replicate Mechanical Properties of Cells”, *Proceedings of the National Academy of Sciences*, **103** 1762-1767 (2006) ([pdf](#))
15. C.C. Féral, A. Zijlstra, E. Tkachenko, G. Prager, **M.L. Gardel**, M. Slepak, and M.H. Ginsberg, “CD98hc (SLC3A2) participates in fibronectin matrix assembly by mediating integrin signaling”, *Journal of Cell Biology*, **178**: 701-711 (2007) ([pdf](#))
16. B. Sabass, **M.L. Gardel**, C.M. Waterman, U. Schwarz, “High Resolution Traction Force Microscopy Based on Experimental and Computational Advances”, *Biophysical Journal*, 94: 207-220 (2008) ([pdf](#))
17. Y. Lim, S.-T. Lim, A. Tomar, **M.L. Gardel**, J. A. Bernard-Trifilo, X.L. Chen, S.A. Uryu, R. Canete-Soler, J. Zhai, H. Lin, W.W. Schlaepfer, P. Nalbant, G. Bokoch, D. Ilic, C. Waterman-Storer, and D. D. Schlaepfer, “PyK2 and FAK connections to p190Rho guanine nucleotide exchange factor

- regulate RhoA activity, focal adhesion formation, and cell motility”, *Journal of Cell Biology*, 180: 187-203 (2008) ([pdf](#))
18. **ML Gardel**, B Sabass, L Ji , G Danuser, US Schwarz, CM Waterman, "Traction Stress in focal adhesions correlates biphasically with actin retrograde flow speed", *Journal of Cell Biology*, 183(6) 999-1005 (2008) ([PMID](#))
  19. RS Fischer, **M Gardel**, X Ma, RS Adelstein, CM Waterman, "Local Cortical tension by myosin II guides 3D endothelial cell branching", *Current Biology*, 19(3):260-5 (2009) ([PMID](#))
  20. S.A. Rizvi, E.M. Neidt, J. Cui, Z. Feiger, **M.L. Gardel**, S.A. Kozmin and D.R. Kovar, "Identification of a Small Molecule Inhibitor of Formin-Mediated Actin Assembly", *Chemistry and Biology*, 16(11):1158-68 (2009) ([PMID](#))
  21. Stricker J, B Sabass, US Schwarz, **M.L. Gardel**, "Optimization of traction force microscopy for micron-sized focal adhesions", *J. Phys: Condensed Matter* 22 (19):194104 (2010) ([pdf](#))
  22. Y. Aratyn-Schaus and **M.L. Gardel**, "Transient frictional slip between integrin and the ECM in focal adhesions under myosin-II tension", *Current Biology* 20 (13):1145-53 (2010) ([pdf](#))
  23. N. Borghi, M. Lowndes, V. Maruthamuthu, **M.L. Gardel** and J. Nelson, "Regulation of Cell Motile Behavior by Crosstalk between cadherin- and integrin-mediated adhesions", *Proc. National Acad Sciences*, 107(30):13324-9 (2010) ([PMID](#))
  24. M. Smith, E. Blankman, L. Luetjohann, **M.L. Gardel**, C.M. Waterman, M.C. Beckerle, "A Zyxin-Mediated Mechanism for Actin Stress Fiber Maintenance and Repair", *Developmental Cell*, 19(3):365-76 (2010) ([PMID](#))
  25. M. Norstrom and **M.L. Gardel**, "Shear Thickening of Actin Networks Cross-linked with Myosin IIB", *Soft Matter*, 7:3228-3233 (2011) ([pdf](#))
  26. V. Maruthamuthu, B. Sabass, U. Schwarz and **M.L. Gardel**, "Cell-ECM Traction Force Modulates Endogenous Tension at Cell-Cell Contacts", *Proc Natl Acad Sci U S A*: **12**: 4708-13 (2011) ([pdf](#))
  27. Y Aratyn-Schaus, PW Oakes, **M.L. Gardel**, "Dynamic and Structural Signatures of Lamellar Actomyosin Force Generation", *Molecular Biology of the Cell*. **22**: 1330-1339 (2011) ([pdf](#))
  28. T. Thoresen, M. Lenz and **M.L. Gardel**, "Reconstitution of Contractile Actomyosin Bundles", *Biophysical Journal*, (100)11: 2698-705 (2011) ([pdf](#))
  29. J. Stricker, Aratyn-Schaus, Y., Oakes, P. and **M.L. Gardel**, "Spatiotemporal Constraints on the Force-Dependent Growth of Focal Adhesions", *Biophysical Journal*, 100(12): 2883-93 (2011) ([pdf](#))
  30. P. Oakes, Y. Beckham, J. Stricker and **M.L. Gardel**, "Tension is required but not sufficient for focal adhesion maturation without a stress fiber template", *Journal of Cell Biology*, 196(3):363-375 (2012) ([pdf](#))
  31. M. Lenz, **M.L. Gardel** and A.R. Dinner, "Requirements for disordered actomyosin contractility", *New Journal of Physics*, 14:033037 (2012) ([pdf](#))
  32. T. Falzone, M. Lenz, D.R. Kovar and **M.L. Gardel**, "Assembly kinetics determine the architecture of  $\alpha$ -actinin crosslinked F-actin networks", *Nature Communications*, 3:861 (2012) ([pdf](#))
  33. M. Lenz, T. Thoresen, **M.L. Gardel** and A.R. Dinner, "Contractile units in disordered actomyosin bundles arise from F-actin buckling", *Physical Review Letters*, 108:238107(2012) ([pdf](#))
  34. M.R. Stachowiak, P.M. McCall, T. Thoresen, H.E. Balcioglu, L. Kasiewicz, **M.L. Gardel** and B. O'Shaughnessy, "Self-organization of Myosin II in Reconstituted Actomyosin Bundles", *Biophysical Journal*, 103:1265-1274 (2012) ([pdf](#))
  35. M. Murrell and **M.L. Gardel**, "F-actin Buckling Coordinates Contractility and Severing in a Biometric Actomyosin Cortex", *PNAS*, 2012;109(51):20820-20825 ([pdf](#))
  36. T.A. Caswell, Z. Zhang, **M.L. Gardel** and S.R. Nagel, "Observation and Characterization of the Vestige of the Jamming Transition in a Thermal 3D System", *PRE*, 2013;87(1):012303 ([pdf](#))

37. T. Thoresen, M. Lenz and **M.L. Gardel**, “Myosin II isoforms self-organize characteristic contractile units in actomyosin bundles”, accepted *Biophysical Journal* ([pdf](#))
38. I. Cokic, Y. Beckham, A.A. Birukova, **M.L. Gardel**, K.G. Birukov, “Endothelial barrier disruption and recovery is controlled by substrate stiffness”, accepted, *Microvascular Research*
39. T.T. Falzone, P. Oakes, J. Sees, D.R. Kovar\* and **M.L. Gardel\***, “Actin Assembly Factors Regulate the Gelation Kinetics and Architecture of F-actin Networks”, *Biophysical Journal* ([pdf](#))

### **INVITED REVIEWS AND BOOK CHAPTERS**

40. **M.L. Gardel**, M.T. Valentine and D.A. Weitz, “Microrheology”, *Microscale Diagnostic Techniques*, K. Breuer (ed) Springer Verlag, (2005)
41. Ji L., Loerke D., **Gardel M.**, and Danuser G. “Probing Intracellular Force Distributions by High-Resolution Live Cell Imaging and Inverse Dynamics” *Methods in Cell Biology* 83 :199-235 2007
42. **M.L. Gardel**, K. Kasza, C. Brangwynne, J. Liu and D.A. Weitz “Mechanical Response of Cytoskeletal Networks”, *Methods in Cell Biology*, Vol. 89 Chapter 18, 2008 ([pdf](#))
43. Y. Aratyn-Schaus & **M.L. Gardel**, "Clutch Dynamics", *Science*, 322: 1646-1647 (2008) ([pdf](#))
44. J.Stricker, T. Falzone, **M.L. Gardel**, “Mechanics of the F-actin Cytoskeleton”, *Journal of Biomechanics*, 43(1):9-14 (2010) ([pdf](#))
45. **M.L. Gardel**, I. Schneider, Y Aratyn-Schaus, CM Waterman, “Mechanical Integration of Actin and Adhesion Dynamics in Cell Migration”, *Ann. Rev. Cell and Developmental Biology*, 26:315-33 (2010) ([PMID](#))
46. V. Maruthamuthu, Y. Aratyn-Schaus, **M.L. Gardel**, “Conserved F-actin Dynamics and Force Transmission at Cell Adhesions”, *Current Opinion in Cell Biology*, 22(5):583-8 (2011) ([PMID](#))
47. U.S. Schwarz and **M.L. Gardel**, “United we stand- integrating the actin cytoskeleton and cell-matrix adhesions in cellular mechanotransduction”, *Journal of Cell Science*, 125:1-10 (125) (2012) ([pdf](#))
48. **M.L. Gardel**, “Living Matter – nexus of Physics and Biology in the 21<sup>st</sup> Century”, *Mol Biol Cell*, 23:4165-4166 (2012) ([pdf](#))
49. **M.L. Gardel**, “Synthetic polymers with biological rigidity”, *Nature* doi:10.1038 (2013)

### **DISSEMINATION OF TECHNIQUES**

50. Y. Aratyn-Schaus, P.W. Oakes, J. Stricker, S.P. Winter and M.L. Gardel, “Preparation of Compliant Matrices for Modulating and Quantifying Cellular Traction”, *Journal of Visualized Experiments*, doi:10.3791/2173 (2010) ([pdf](#))
51. R.S. Fischer, K.A. Myers, M.L. Gardel and C.M. Waterman “Stiffness-controlled three-dimensional extracellular matrices for high-resolution imaging of cell behavior”, *Nature Protocols*, 11:2056-66 (2012) ([pdf](#))

### **SELECTED PRESS COVERAGE:**

1. B. Short, “Stress fibers guide focal adhesions to maturity”, *J Cell Bio* 196(3):301 (2012)
2. A.B. Verkhovskiy, “Cell-matrix adhesion: slip and immobilization under force”, *Current Biology*, 20(16):R669-71 (2010)
3. R. Williams, “The actin flow paradox”, *Journal of Cell Biology* 183:965 (2008)
4. J. McGrath, “Cell Mechanics: Filamin A Leads the Way”, *Current Biology* 16(9):R326-7 (2006)

## **INVITED TALKS:**

### *Invited Lectures at International Conferences:*

1. American Physical Society, Montreal, CA (3/2004)
2. American Physical Society, Baltimore, MD (3/2006)
3. American Society for Cell Biology, Baltimore, MD (12/10/2008)
4. Active Soft Materials Conference, Syracuse, NY (5/19/2009)
5. International Symposium on Systems Biology in Cancer and Immunology, U. of Montreal (7/14/2009)
6. Biophysical Society, Futures in Biophysics Symposium, San Francisco, CA (2/23/2010)
7. International 101<sup>st</sup> Titisee Conference, Titisee, Germany (3/18/2010)
8. , 9. 10. University of Stellenbosch, Workshop on Active Matter, Stellenbosch, South Africa (11/19/2010)
11. UC Berkeley, Mini-Statistical Mechanics Meeting, Berkeley, CA (1/15/2011)
12. Banff International Research Station, Mathematical Biology of the Cell Workshop, Banff, Canada (8/4/2011)
13. EMBO Meeting, “Actin cortex mechanics and Cellular Morphogenesis” Session, Vienna, Austria (9/11/2011)
14. Biophysical Society Meeting, “Response of Single Molecules to Force” Symposium, San Diego, CA (2/27/2012)
15. March Meeting of American Physical Society, “Active Responses of Biological Materials to Mechanical Stress” Symposium, Boston, MA (3/2/2012)
16. Frontiers in Myogenesis, Society of Muscle Biology, New York, NY (6/5/2012)
17. Gordon Research Conference, Signal Transduction by Engineered Extracellular Matrices, Biddeford, ME (7/9/2012)
18. EMBO Conference, “Physics of Cell: From Soft to Living Matter”, Giens, FR (8/2 – 8/5/2012)
19. Physics of Cancer Symposium, Leipzig, GE (11/1/2012-11/3/2012)
20. American Society for Cell Biology, “Physics and Cell Biology” Symposium, San Francisco, CA (12/16/2012)
21. Gordon Research Conference, Soft Condensed Matter, August, 2013

### *Invited Lectures at National Conferences, Topical Courses and Programs:*

1. -2. U. of San Diego, Center for Theoretical Biophysics, La Jolla, CA (7/15/2007)
3. Marine Biological Lab, Cell Physiology Course Lecture, Woods Hole, MA (8/2008)
4. Kavli Institute for Theoretical Physics, Santa Barbara, CA (2/16/2010)
5. Marine Biological Lab, Cell Physiology Course Lecture, Woods Hole, MA (6/25/2010)
6. Chicago Area Cytoskeleton Meeting, Chicago, IL (3/18/2011)
7. Marine Biological Lab, Cell Physiology Course Lecture, Woods Hole, MA (7/20/2011)
8. Marine Biological Lab, Cell Physiology Course, Visiting Scholar, Woods Hole, MA (7/9-7/13/2012)
9. EMBL Heidelberg, Germany, EMBO Practical Course on “Microscopy, Modeling and Biophysical Methods”, Heidelberg, GE (8/30/2012)
10. NIH Pioneer Symposium, Bethesda, MD (9/15/2012)
11. Carolina Biophysics Symposium, Durham, NC (11/6/2012)

*Invited Departmental Seminars and Colloquia:*

1. Princeton University, Physics Department Seminar., Princeton, NJ (3/2004)
2. University of Chicago, James Franck Institute Seminar, Chicago, IL(2/6/2005)
3. Massachusetts Institute of Technology, Physics Dept Seminar, Cambridge, MA (2/17/2005),
4. Brown University, Physics Dept. Seminar, Providence, RI(5/13/2005)
5. M.I.T, Mechanical Engineering Department Seminar, Cambridge, MA(5/17/2005)
6. Harvard University, Physics Department Seminar, Cambridge, MA (5/18/2005)
7. M.I.T., Biological Engineering Department, Cambridge, MA (7/12/2005)
8. Northwestern University, Physics Colloquium, Evanston, IL (9/28/2007)
9. University of Illinois at Chicago, Physics Colloquium, Chicago, IL (4/2/2008)
10. Illinois of Institute of Technology, Seminar, Chicago, IL (8/2008)
11. U. of Illinois at Urbana-Champaign, Physics of Living Cell Seminar, Urbana, IL (10/11/2008)
12. U. of Illinois at Urbana-Champaign, Mechanical Engineering Seminar, Urbana, IL (5/4/2009)
13. U. of Michigan, Physics Department Colloquium, Ann Arbor, MI (11/4/2009)
14. U. Illinois at Chicago, Pharmacology Department, Chicago, IL (1/15/2010)
15. Scripps Florida, Cell Biology Department, Jupiter, FL (1/19/2010)
16. New York University, Physics Department Seminar, New York, NY (2/5/2010)
17. Rockefeller University, Physics Department Seminar, New York, NY (2/25/2010)
18. M.I.T., Physics Department Colloquium, Cambridge, MA (3/11/2010)
19. Heidelberg University, Center for Quantitative Biology, Heidelberg, GE (3/16/2010)
20. Indiana University, Biology Department Seminar (3/25/2010)
21. Washington University, Physics Department, St. Louis, MO (10/2010)
22. Stanford University, Biochemistry Seminar, Palo Alto, CA (1/19/2011)
23. Western Michigan University, Physics Department Colloquium (1/31/2011)
24. Columbia University, Cell Biology-Pathology Department, New York, New York (2/14/2011)
25. Argonne National Laboratory, Physics Department Colloquium, Argonne, IL (9/16/2011)
26. Lehigh University, Physics Department Colloquium, Bethlehem, PA (10/20/2011)
27. U. Pennsylvania, Pennsylvania Muscle Institute, Philadelphia, PA (11/15/2011)
28. U. of Virginia, Cell Biology Department Seminar, Charlottesville, VA (3/14/2012)
29. Georgia Tech, Physics Department Colloquium, Atlanta, GA (4/16/2012)
30. Argonne National Laboratory, Center for Nanomaterials Seminar (8/1/2012)
31. Developmental Biology Institute, Seminar, Marseilles, France (9/3/2012)
32. – 34. Syracuse University, Physics Department Colloquium & Seminar, Syracuse, NY (10/11-10/12/2012)
33. Duke University, Biology Department Seminar, Durham, NH (11/5/2012)

**PROFESSIONAL ACTIVITIES:**

2013	Nominating Committee for American Society for Cell Biology
2012-2013	Program Committee, 2013 Annual American Society for Cell Biology Meeting
2011	Committee for Postdoctoral Awardees, 2012 American Society for Cell Biology
2010	Co-editor, Special Edition of J. of Physics:Condensed Matter on “Cell-Substrate Adhesions”
2009-2012	Editorial Board, Journal of Physics: Condensed Matter
2008-pres	Editorial Board, Cell Health and Cytoskeleton

**Manuscript Referee:** Nature, Science, Journal of Cell Biology, Physical Review Letters, Nature Physics, Molecular Biology of the Cell, Biophysical Journal, Cell Motility and the Cytoskeleton, PLOS, Proceedings of the National Academy of Sciences, Nature Communications

**Grant Proposal Referee:** National Institutes of Health (NIH Innovator, *ad hoc* member of NCSD study section in Fall 2011, *ad hoc* member of Intercellular Interactions study section in Fall 2012), National Science Foundation (MRSEC site review, CAREER award), Keck Foundation, Radcliffe Institute for Advanced Study, Human Frontiers Foundation, Howard Hughes Medical Institute

***Conference Organization:***

- 2013** Co-organized two Focus Sessions at the APS March Meeting on Cell Mechanics  
**2009-2010** Co-organizer, Pre-Meeting Session at 49<sup>th</sup> American Society for Cell Biology Meeting on “Mechanical and Biochemical Feedback in Cells” in San Diego, CA  
**2007** Co-organizer, Minisymposium at 47<sup>th</sup> American Society for Cell Biology Meeting on “Mechanics of Cytoskeletal Assemblies” in Washington DC  
**2007** Co-organizer, Focus Session at American Physical Society March Meeting on ‘Cytoskeletal Dynamics in Cell Migration’ in Denver, CO

**TRAINING:**

***Graduate Students Supervised:***

Guillermina Ramirez, Biophysics Graduate Program (2012-present) (co-advisor: Sally Horne)  
 Tim Fessenden, Cancer Biology Graduate Program (2011-present)  
 Patrick McCall, Physics (2011-present)  
 Samantha Stam, Biophysics Graduate Program (2011-present) (co-advisor: Wendy Zhang)  
 Steve Winter, Medical Science Training Program (2009-present)  
 Thomas Caswell, Physics (2008-present) (co-advisor: Sid Nagel)  
 Jonathan Stricker, Physics (2008-2012, Ph.D.)  
 Tobias Falzone, Biophysics (2008-2012, Ph.D.) (co-advisor: David Kovar)  
 Lawrence Uricchio, Biophysics (2008-2009, M.S.)

***Postdoctoral Fellows Supervised:***

Tae Yoon Kim, Ph.D., Mechanical Engineering (2011-present) (co-advisor: Ed Munro)  
 Patrick Oakes, Ph.D. Physics (2009-present)  
 Michael Murrell, Ph.D. Biological Engineering, ICAM Fellowship (2009-present, Asst. Prof in Bioengineering at U. Wisconsin-Madison starting 2013)  
 Venkat Maruthamuthu, Ph.D. Chemical Eng., American Heart Association Fellow (2009-present)  
 Todd Thoresen, Ph.D. Biochemistry (2008-present)  
 Chris Harland, Ph.D. Physics, Grainger Postdoctoral Fellow, (2010-2012)  
 Moshe Naoz, Ph.D. Physics (2010-2011)  
 Melanie Close, Ph.D. Biochemistry (2009-2011, clinical trial coordinator U. Chicago hospital)  
 Yvonne Aratyn-Schaus, Ph.D. Cell Biology (2007-2010), postdoctoral fellow with Kit Parker (Harvard)

***Undergraduate Students Supervised:***

Simon Kelow, Physics (summer, 2012, MRSEC REU)  
 Adam DeJesus, Chemistry (2011- 2012), postbac with Dr. Beth McNally, U. Chicago, Medical School

Kareem Sayegh, Physics (2011-2012)

Jonathan Sellon, Chemistry (2007-2010, PC Bio Fellow), graduate student in HST program at MIT

Marion Paolini, Physics (2009-2010), graduate student at ESPI, France

Katya Koshelev, Physics (2009), graduate student at Harvard University

Eric Wong, Cornell Undergraduate (summer, 2008-2009)

Shivani Pathak (summer, 2009, MRSEC REU)

Samantha Stam (summer, 2009, MRSEC REU), graduate student Biophysics, U. Chicago

Uri Morone (summer 2009, Physics REU)

**COLLABORATORS (Since 2007):**

Mary Beckerle, Huntsman Cancer Institute

Gaudenz Danuser, Cell Biology, Harvard University Medical School

Aaron Dinner, Chemistry Department, U. of Chicago

David Kovar, Molecular Genetics and Cell Biology, U. Chicago

Alex Mogilner, Dept. of Mathematics, U. of California, Irvine

Ed Munro, Dept. of Molecular Genetics and Cell Biology, U. of Chicago

James Nelson, Dept. of Biochemistry, Stanford University

Ben O'Shaughnessy, Dept. of Chemical Engineering, Columbia University

Ulrich Schwarz, Physics Department, U. Heidelberg

Cecile Sykes, Physics, Ecole Polytechnique