

## **MARGARET LISE GARDEL**

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### **CURRENT POSITIONS:**

- 2021-present Director, James Franck Institute, Chicago, IL  
2019-present Horace B. Horton Professor, Department of Physics, Pritzker School of Molecular Engineering, James Franck Institute & Institute for Biophysical Dynamics, University of Chicago  
2016-2019 Professor, Department of Physics, James Franck Institute & Institute for Biophysical Dynamics, University of Chicago  
2015-present Director, Chicago Materials Research Center, University of Chicago  
2013-2016 Associate Professor, Department of Physics, James Franck Institute & Institute for Biophysical Dynamics, University of Chicago  
2013-2019 Fellow, Institute for Molecular Engineering  
2008-present Committee on Molecular Medicine, University of Chicago  
2007-2013 Assistant Professor, Department of Physics, James Franck Institute & Institute for Biophysical Dynamics, University of Chicago

### *GRADUATE TRAINING PROGRAMS*

- 2016-present Oversight Committee, Graduate Program in Biophysics  
2009-2015 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:**

- 2020** Sackler Award for Biophysics  
**2014** Fellow, American Physical Society  
**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  
**2004** Pappalardo Postdoctoral Fellowship, M.I.T.

1997 Barry M. Goldwater Scholarship

**PROFESSIONAL SOCIETIES:**

American Society of Cell Biology

Biophysical Society

American Physical Society

**PUBLICATIONS**

1. Vandenbosch R, Henry BP, Cooper C, **Gardel ML**. “Fragmentation partners from collisional dissociation of C60”, *Physical Reviews Letter*. 1998; 81:1821-1824.
2. Rhyne JJ, Kaiser H, Luo H, Xioao G, **Gardel ML**. “Long Wavelength Spin Dynamics in La<sub>0.53</sub>Ca<sub>0.47</sub>MnO<sub>3</sub>”, *Journal of applied physics*. 1998; 83:7339-7341.
3. **Gardel ML**, Vandenbosch R, Henry BP, Cooper C, Will DI. “Electron Detachment and Fragmentation in Collisions Between 1.25 keV/carbon C8 and C60 clusters and H<sub>2</sub>”, *European Physical Journal D*. 1999; 7:79-81.
4. Ramirez AP, Subramanian MA, **Gardel ML**, Blumberg G, Li D, et al. “Giant Dielectric Constant Response in a Copper-titanate”, *Solid state communications*. 2000; 115:217-220.
5. Gordon VD, Valentine MT, **Gardel ML**, Andor-Ardó D, Dennison S, Bogdanov AA, Weitz DA, Deisboeck TS. “Measuring the mechanical stress induced by an expanding multicellular tumor system: a case study”, *Exp Cell Res*. 2003; 289(1):58-66. ([pdf](#))
6. **Gardel ML**, Valentine MT, Crocker JC, Bausch AR, Weitz DA. “Microrheology of entangled F-actin solutions”, *Phys Rev Lett*. 2003; 91(15):158302. ([pdf](#))
7. Wong IY, **Gardel ML**, Reichman DR, Weeks ER, Valentine MT, Bausch AR, Weitz DA. “Anomalous diffusion probes microstructure dynamics of entangled F-actin networks”, *Phys Rev Lett*. 2004; 92(17):178101. ([pdf](#))
8. **Gardel ML**, Shin JH, MacKintosh FC, Mahadevan L, Matsudaira P, Weitz DA. “Elastic behavior of cross-linked and bundled actin networks”, *Science*. 2004; 304(5675):1301-5. ([pdf](#))
9. Valentine MT, Perlman ZE, **Gardel ML**, Shin JH, Matsudaira P, Mitchison TJ, Weitz DA. “Colloid surface chemistry critically affects multiple particle tracking measurements of biomaterials”, *Biophys J*. 2004; 86(6):4004-14. [PMC1304301](#).
10. Shin JH, **Gardel ML**, Mahadevan L, Matsudaira P, Weitz DA. “Relating microstructure to rheology of a bundled and cross-linked F-actin network in vitro”, *Proc Natl Acad Sci U S A*. 2004; 101(26):9636-41. [PMC470727](#).
11. **Gardel ML**, Shin JH, MacKintosh FC, Mahadevan L, Matsudaira P, Weitz DA. “Scaling of F-actin network rheology to probe single filament elasticity and dynamics”, *Phys Rev Lett*. 2004; 93(18):188102. ([pdf](#))
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### **INVITED REVIEWS & BOOK CHAPTERS**

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8. **Gardel ML**. “Living matter--nexus of physics and biology in the 21st century”, *Mol Biol Cell*. 2012; 23(21):4165-6. [PMC3484094](#).
9. **Gardel ML**. “Materials science: Synthetic polymers with biological rigidity”, *Nature*. 2013; 493(7434):618-9. ([pdf](#)) [doi:10.1038/nature11855](https://doi.org/10.1038/nature11855).
10. Stam S, **Gardel ML**. “Cutting through the noise: the mechanics of intracellular transport”, *Dev Cell*. 2014; 30(4):365-6. ([pdf](#)) [doi:10.1016/j.devcel.2014.08.013](https://doi.org/10.1016/j.devcel.2014.08.013), PubMed [PMID: 25158851](#).

11. Oakes PW, **Gardel ML**. “Stressing the limits of focal adhesion mechanosensitivity”, *Curr Opin Cell Biol.* 2014; 30:68-73. [PMC4459577](#).
12. **Gardel ML**. “Moving beyond molecular mechanisms”, *J Cell Biol.* 2015; 208(2):143-5. [PMC4298694](#).
13. De La Cruz EM, **Gardel ML**. “Actin mechanics and fragmentation”, *J Biol Chem.* 2015; 290(28):17137-44. (pdf) [PMC4498053](#).
14. Murrell MP, Oakes PW, Lenz M, **Gardel ML**. “Forcing cells into shape: the mechanics of actomyosin contractility”, *Nature Reviews. Molecular Cell Biology.* 2015; 16(8):486-98. [PMC7443980](#).
15. **Gardel ML**, Oakes PW. “Measuring Cell Mechanics. *Colloquium Series on Quantitative Cell*”, *Biology: Vol. 3* ed. Marshall WF. *Morgan & Claypool Life Sciences Publishers.* 2015. [doi:10.4199/C00137ED1V01Y201508QCB003](#).
16. Suarez C, McCall PM, **Gardel ML**; Kovar DR. “When Is “Enough” Enough?”, *Cell Systems.* 2017; 4(5):480-482. [doi:10.1016/j.cels.2017.05.007](#).
17. Banerjee S, **Gardel ML**, Schwarz US. “The Actin Cytoskeleton as an Active Adaptive Material”, *Annu Rev Condense Matter Phys.* 2019; 11:421-439. [doi: https://doi.org/10.1146/annurev-conmatphys-031218-013231](#). [PMC7748259](#).
18. Cavanaugh KE, Staddon MF, Banerjee S, **Gardel ML**. “Adaptive viscoelasticity of epithelial cell junctions: from models to methods”, *Curr Opin Genet Dev.* 2020; 63:86–94. [doi: https://doi.org/10.1016/j.gde.2020.05.018](#). [PMC7483996](#).
19. Cavanaugh KE, Chmiel TA, **Gardel ML**. “Caveolae Spelunking: Exploring a New Modality in Tensional Homeostasis”, *Developmental Cell.* 2020; 54(1):3-5. [doi: https://doi.org/10.1016/j.devcel.2020.06.016](#).

## **DISSEMINATION OF TECHNIQUES**

1. Aratyn-Schaus Y, Oakes PW, Stricker J, Winter SP, **Gardel ML**. “Preparation of complaint matrices for quantifying cellular contraction”, *J Vis Exp.* 2010; (46). pii: 2173. [PMC3159639](#).
2. Fischer RS, Myers KA, **Gardel ML**, Waterman CM. “Stiffness-controlled three-dimensional extracellular matrices for high-resolution imaging of cell behavior”, *Nat Protoc.* 2012; 7(11):2056-66. [PMC3845971](#).
3. Murrell MP, Thoresen T, **Gardel ML**. “Reconstitution of contractile actomyosin arrays”, *Methods Enzymol.* 2014; 540:265-82. [PMC4459579](#).
4. Cavanaugh KE, Oakes PW, **Gardel ML**. “Optogenetic Control of RhoA to Probe Subcellular Mechanochemical Circuitry.” *Curr Prot Cell Biol.* 2020; 86(1): e102. [PMC7008778](#).

## **SELECTED PRESS COVERAGE:**

1. Pok S, Jacot JG. “Work and Tension: New Evidence that Adherent Cells of Same Area Do the Same Work Independent of Stiffness and Focal Adhesions”, *Biophysical Journal.* 2014; 107(4):798. [PMC4142246](#).
2. Short B. “Stress fibers guide focal adhesions to maturity”, *J Cell Bio.* 2012; 196(3):301. [PMC3275377](#).
3. Verkhovsky AB. “Cell-matrix adhesion: slip and immobilization under force”, *Current Biology.* 2010; 20(16):R669-71. [PMID:20728050](#).



4. Williams R. “The actin flow paradox”, *Journal of Cell Biology*. 2008; 183:965.  
[doi: 10.1083/jcb.1836iti4](https://doi.org/10.1083/jcb.1836iti4).
5. McGrath J. “Cell Mechanics: Filamin A Leads the Way”, *Current Biology*. 2006; 16(9):R326-7.  
[doi:10.1016/j.cub.2006.03.075](https://doi.org/10.1016/j.cub.2006.03.075).

### **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 Cells: 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 (8/2013)
22. Company of Biologists, “Navigating the Cell: How Motors Function *in vivo*” Workshop, West Sussex, England (3/23/2014)
23. Physical and Biological Systems, Gif, France (6/28/2014)
24. World Congress of Biomechanics, “Cytoskeleton-Membrane Interactions” Symposium, Boston, MA (7/8/2014)
25. World Congress of Biomechanics, Keynote Speaker in “Cell-Substrate Interactions” Symposium, Boston, MA (7/10/2014)
26. IEEE Engineering in Medicine and Biology, “Onco-Mechanics: The Forces of Cancer”, Chicago, IL (8/2014)
27. Plenary Speaker, Summer Biomechanics, Bioengineering & Biotransport Conference, Snowbird, Utah (6/2015)
28. Gordon Conference, “Cell Contact & Adhesion” Andover, NH (6/2014)

29. Gordon Conference, “Motile & Contractile Systems” Colby-Sawyer, ME (8/2014)
30. EMBO Conference, “Physics of Cells: From Molecules to Systems (PhysCell 2015)” (9/2015)
31. “Cell-Matrices Mechanobiology Workshop, UIUC, Urbana, IL (10/2015)
32. International Meeting of the German Society for Cell Biology 2016, Martinfried, Germany (3/2016)
33. “Engineering Approaches to Biomolecular Motors: From in vitro to in vivo”, BPS Thematic Meeting, Vancouver, Canada (6/17/2016)
34. Gordon Research Conference, “Signaling from Adhesion Receptors”, Colby Sawyer College, Maine (6/22/2016)
35. qBio 10 – Quantitative and Systems Biology Conference, Nashville, TN (7/28/2016)
36. Gordon Conference, “Directed Cell Migration” Galveston, TX (1/26/2017)
37. American Physical Society, Invited Session on Cytoskeletal Mechanics, New Orleans, LA (3/14/2017)
38. ASBMB Annual Meeting, “Dynamics of Cytoskeletal Assemblies” Symposium, Chicago, IL (4/23/2017)
39. Company of Biologists Meeting, “Cellular Dynamics: Membrane-Cytoskeleton Interface”, Southbridge, MA (5/21/2017)
40. European Cytoskeletal Forum, “Mechanical Coupling in Cells”, Helsinki, Finland (6/4/2017)
41. EMBO/EMBL Symposium, “Mechanical Forces in Biology”, Heidelberg, Germany (7/14/2017)
42. Gordon Conference, “Signaling by Adhesion Receptors”, Biddeford, ME (6/25/2018)
43. World Congress on Biomechanics, Dublin, Ireland (7/9/2018)

*Invited Lectures at National Conferences, Topical Courses and Symposia:*

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)
12. Stanford University, Mechanobiology Symposium, Stanford, CA (11/5/2014)
13. Houghton Conference on Active Matter, Brown University, Providence, RI (5/10/17)
14. University of Pennsylvania, CEMB Symposium, Philadelphia, PA (9/13/2018)
15. Northwestern University, Midwest Q-Bio Conference, Evanston, IL (11/17/2018)

*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)
34. U.C. San Diego, Bioengineering Department Seminar, San Diego, CA (1/31/2014)
35. U. of Illinois at Chicago, Anatomy and Cell Biology Dept. Seminar, Chicago, IL (2/13/2014)
36. U. of Chicago, Institute for Molecular Engineering Seminar, Chicago, IL (3/15/2014)
37. U. Illinois at Chicago, Physiology Department Seminar, Chicago, IL (1/15/2016)
38. U. Chicago, Physics Department Colloquium, Chicago, IL (1/30/2016)
39. Harvard University, Systems Biology Dept. Theory Lunch, Boston, MA (4/15/2016)
40. University of North Carolina, Dept. of Cell Biology Seminar, Chapel Hill, NC (5/2/2016)
41. UT Southwestern, Biophysics Dept. Seminar, Dallas, TX (5/12/2106)
42. CU Boulder, Biophysics Training Grant Seminar, Boulder, CO (3/22/2017)
43. U. Illinois Urbana-Champaign, Materials Science Department Colloquium, Urbana, IL (8/27/2018)

### **PROFESSIONAL ACTIVITIES:**

- |           |   |
|-----------|---|
| 2020-     | Advisory Committee, qBio/NSF Simons Center (Harvard University)       |
| 2019-2021 | Chair Line, Division of Biological Physics, American Physical Society |
| 2018      | Guest Editor, Proceedings of the National Academy USA                 |

- 2017-2018 Selection Committee, Max Delbruck Prize in Biological Physics from American Physical Society (Chair, 2018)
- 2015 Co-editor, Current Opinion in Cell Biology, “Cell Architecture”, Vol 38
- 2015-2021 Member, Intercellular Interactions Study Section, National Institutes of Health
- 2015- Advisory Board, Journal of Cell Science
- 2014- Editorial Board, Molecular Biology of the Cell
- 2013-2015 Elected to College Council and Committee of the College Council, U. Chicago
- 2013-2019 Editorial Board, Biophysical Journal
- 2013-2016 Editorial Board, Journal of Cell Biology
- 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

**Manuscript Referee:** Nature, Science, Cell, 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, Nature Materials, 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, Macromolecular Interactions – special emphasis panel (2013), Physical Sciences Oncology Center (Fall 2014), Member of Intercellular Interactions Study Section (2015-2021)), National Science Foundation (MRSEC site review, CAREER award), Keck Foundation, Radcliffe Institute for Advanced Study, Human Frontiers Foundation, Howard Hughes Medical Institute

***Conference Organization:***

- 2017** Co-organizer, “Cellular Dynamics: Membrane-Cytoskeleton Interface”, Company of Biologists (Southbridge, MA)
- 2017** Co-organizer, EMBO/EMBL Symposium 2017: Mechanical Forces in Biology (Heidelberg, Germany)
- 2015** Organizer, NSF Workshop of Cell Mechanics (Chicago, IL)
- 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:***

- Ayanna Matthews (2021-pres)
- Theresa Chmiel (2018-pres)
- Margo MacDonald (2019-pres)
- Tracy Chmiel, Physics (2018-pres)

Wen-hung Chou, Biophysics (2018-pres)  
 Steven Redford, Biophysics (2018-pres)  
 John Devany, Physics (2018-pres)  
 Danielle Scheff, Physics (2016-2021)  
 Kate Cavanaugh, Developmental Biology (2016-2020)  
 Erik Schaumann, Chemistry (2015-2020)  
 Guillermina Ramirez, Biophysics (2012-2017, PhD, postdoc with Manu Prakash & Wallace Marshall)  
 Tim Fessenden, Cancer Biology Graduate Program (2011-2017, postdoc with Stephanie Spranger)  
 Patrick McCall, Physics (2011-2017, PhD expected, postdoc with Tony Hyman)  
 Samantha Stam, Biophysics Graduate Program (2011-2017, postdoc with Jody Nunnari)  
 Steve Winter, Medical Science Training Program (2009-2013, practicing MD)  
 Thomas Caswell, Physics (2008-present) (co-advisor: Sid Nagel, postdoc at Brookhaven National Lab)  
 Jonathan Stricker, Physics (2008-2012, Ph.D., Research Associate, Sg2)  
 Tobias Falzone, Biophysics (2008-2012, Ph.D., postdoc Rae Anderson at U. San Diego)  
 Lawrence Uricchio, Biophysics (2008-2009, M.S.)

***Postdoctoral Fellows Supervised:***

Shailaja Seetharaman (2021-pres)  
 Soumya Mukherjee (-pres)  
 Mehdi Molaei (2016-pres)  
 Jon Winkelman, Ph.D. Cell & Molecular Biology (2016-pres)  
 Bob Harmon, Ph.D. Biological Sciences (2013-pres)  
 Nitin Kumar, Ph.D. Physics (2015-2019) Assistant Professor Physics, IIT Bombay  
 Barbara Hissa, Ph.D. Cell Biology (2013-2018) Deputy Head, Schlöch Lab, Universitätsmedizin  
 Mannheim  
 Kim Weirich, Ph.D. Biomolecular Science & Engineering (2013-2018) Starting Faculty at Clemson  
 University in Fall  
 Sayantan Majumdar, Ph.D. Physics (2013-2017, Associate Professor in Physics, Raman Research  
 Institute)  
 Patrick Oakes, Ph.D. Physics (2009-2016, Assistant Prof. of Physics, Loyola University)  
 Shiladitya Banerjee, Ph.D. Physics (2013-2016, Department of Physics Carnegie Mellon University)  
 Tae Yoon Kim, Ph.D., Mechanical Engineering (2011-2013, Assistant Prof. in Biomedical Engineering,  
 at Purdue University)  
 Martin Lenz, Ph.D. Physics (2009-2012, CNRS Researcher, LPTMS, CNRS & U. Paris-Sud, France)  
 Michael Murrell, Ph.D. Biological Engineering, ICAM Fellowship (2009-2013, Asst. Prof in  
 Bioengineering, Yale University)  
 Venkat Maruthamuthu, Ph.D. Chemical Eng., (2009-2014, Asst. Prof of Mechanical & Aerospace  
 Engineering, Old Dominion University)  
 Todd Thoresen, Ph.D. Biochemistry (2008-2013)  
 Chris Harland, Ph.D. Physics, Grainger Postdoctoral Fellow, (2010-2012, Senior Data Scientist  
 Microsoft)  
 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, Product Development Scientist, Hepregen)

***Undergraduate Students Supervised:***

Kevin Bernat, Physics (2015-2016)  
Maria Benitez-Jones (summer 2014, MRSEC REU)  
Alexander David (summer 2014, MRSEC REU)  
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)

RESEARCH FUNDINGACTIVE

**RO1 GM104032-01A1, NIH/NIGMS (PI: Gardel)** 09/21/15- 08/20/20

National Institutes of Health

*Mechanical Regulation of Cell Adhesion by Dynamic Cytoskeletal Assemblies*

To identify mechanisms regulating force transmission at cell-ECM and cell-cell adhesions.

**DMR-1420709 (PI: Gardel)** 11/01/14- 10/31/20

National Science Foundation

*Materials Research Science & Engineering Center (MRSEC)*

This Center grant pursues fundamental studies of materials

**Army Research Office MURI W911NF-14-1-0403 (PI: Gardel)** 08/01/14- 07/31/19

Department of Defense

*Mechanisms of Force Sensing in Adherent Cells as Inspiration for New Materials*

Co-PI: Greg Voth (U.Chicago), David Kovar (U. Chicago),

Enrique De La Cruz (Yale), Martin Schwartz (Yale), Eric Dufresne (Yale)

To develop synthetic materials that utilize mechanical cues to stimulate chemical reactivity.

**Packard Fellowship for Science and Engineering (PI: Gardel)** 09/25/08-10/15/19

David and Lucile Packard Foundation

*Mechanical Response of Dynamic Assemblies of Cellular Proteins*

The study of non-equilibrium phenomenon in biological matter in reconstituted cytoskeletal network from purified proteins.

COMPLETED

**INSPIRE Track 1 (Co-PI: Gardel & Jennifer Ross, UMass)** 10/01/13- 9/30/17

National Science Foundation MCB-1344203

*Condensed Phases & Transitions of Cellular Patterns*

To discover the universal physical laws governing the organization of proteins and organelles inside of cells.

**Gordon and Betty Moore Foundation 4308.05** 07/01/15- 07/31/17

(PIs: Gardel, Justin Kinney (Cold Spring Harbor), Lisa Manning (Syracuse)

*Immersive DNA Force Sensors and Predictive Mechanical Modeling for Tissue Morphogenesis*

To construct novel force sensors and use these to test mechanical models of 3D tissue.

**DMR-0820054 (PI: Gardel)** 9/1/08-7/31/15

National Science Foundation

*Materials Research Science & Engineering Center (MRSEC)*

This Center grant pursues fundamental studies of materials.

**Career Award at the Scientific Interface (PI: Gardel)** 7/1/07-6/30/16

Burroughs Wellcome Fund

(In no cost extension until 9/31/16)

*Mechanical Feedback in Cell Migration*

Novel biophysical approaches to study the physical behavior of cytoskeletal assemblies involved in cell migration including the development of traction force substrates compatible with high resolution imaging.

**Early Excellence Award (PI: Gardel)** 7/1/12-6/30/16

American Asthma Foundation

*Cytoskeletal Dynamics underlying Airway Hyperresponsiveness*

To identify mechanisms by which dynamic cytoskeleton regulates contractility of airway smooth muscle cells.

**NIH Director's Pioneer Award Program (PI: Gardel)**

PHSN/NIGMS DP1 OD003354

7/1/07-7/31/14

This project was to establish novel experimental tools and frameworks that can be used to dissect how the physical behaviors of multi-protein complexes emerge from the properties of individual proteins by integrating experimental approaches from the field of condensed matter physics with molecular cell biology and biochemistry.

**1P50HL107171-01 (PI: Solway)**

05/01/11-04/30/14

National Institutes of Health

*Therapeutic Potentiation of Bronchial Dilatation*

Identification in novel asthma therapies.