Vitae of Jay X. Tang

Name, Position and Academic Department(s)

Jay X. Tang, Professor of Physics and Engineering
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Education

B. S., July, 1987, Department of Physics, Peking University, Beijing, P. R. China.
Ph.D., February 1995, Department of Physics, Brandeis University, Waltham, MA. Thesis topic: *Isotropic and cholesteric liquid crystalline phase transitions of filamentous bacteriophage fd.* Advisor: Seth Fraden.

Professional Appointments

Postdoctoral Research Fellow supported by a National Institute of Health (NIH) training grant, Harvard Medical School, July, 1994-September, 1997
Instructor of Medicine, Harvard Medical School, October, 1997-August, 1999
Assistant Professor of Physics, Indiana University, August, 1999-December, 2002
Guest Faculty at the Institute of Theoretical Physics (ITP), University of California-Santa Barbara, Program Title: Complex Fluids, Feb-March, 2002
Assistant Professor of Physics and Engineering, Brown University, July, 2002- June, 2008
Guest Professor, Institute of Physics, Chinese Academy of Sciences, Beijing, PRC, 2005-2008
Associate Professor of Physics and Engineering, Brown University, July, 2008- 2015
Professor of Physics and Engineering, Brown University, July, 2015-present
Member, Center for International Collaboration, Institute of Physics (IOP), Chinese Academy of Sciences, Beijing, PRC., 2019-present.
Faculty Trainer, Biomedical Engineering (BME) and Molecular Pharmacology and Physiology (MPP) graduate programs, 2010-present.

Publication

b. Book Chapters

1. Janmey, P. A., Shah, J. V., and Tang, J. X., Complex Network in Cell Biology. In *Dynamic networks in physics and biology*. G. Forgacs, Ed. EDP Sciences, Les Ulis, 1998.
2. Janmey, P. A., Shah, J. V., Tang, J. X., and Stossel, T. P., Actin Filament Networks, In *Actin Structure.* dos Remedios, C.G. and Thomas, D.D., Springer, Heidelberg, 1999.
3. Janmey, P. A., Tang, J. X., Schmidt, C. 1999. Actin Filaments. Biophysics textbook online (http://biosci.umn.edu/biophys/OLTB/supramol.html).
4. Li, G., and Tang, J. X., Measuring the strength of bacterial adhesion by micromanipulation, in *"Microbial Surfaces- Structure, Interactions and Reactivity"*, Camesano, T. and Mello, C., Editors, ACS Symposium Series 984, 2007.
5. Tang, J. X., Microbial Life at the Interface, in *The T.D. Lee Lecture Series,* Volume 9, 2012, Beijing, PRC.

c. Refereed Journal Articles

1. Tang, J. and Fraden, S. Magnetic field induced isotropic-nematic phase transition in a colloidal suspension. *Phys. Rev. Lett.,* 1993, 71, 3509-3512.

2. Tang, J. and Fraden, S. Isotropic-cholesteric phase equilibrium in colloidal suspensions of filamentous bacteriophage *fd. Liquid Crystals,* 1995, 19, 459-467.
3. Kas, J., Strey, H., Tang, J., Finger, D., Ezzell, R., Sackmann, E., and Janmey, P. F-actin, a model polymer for semiflexible chains in dilute, semidilute and liquid crystalline solutions. *Biophysical Journal*, 1996, 70, 609-625.
4. Tang, J., Wong, S., Tran, P, and Janmey, P., Cation induced bundle formation of rodlike polyelectrolytes, *Ber. Bunsen-Ges. Phys. Chem.,* 1996, 100, 796-806.
5. Tang, J. and Janmey, P. The polyelectrolyte nature of F-actin and the mechanism of actin bundle formation, *J. of Biol. Chem.,* 1996, 271, 8556-8563.
6. Tang, J. and Fraden, S. None-monotonic temperature dependence of the flexibility of bacteriophage *fd. Biopolymers,* 1996, 38, 13-22.
7. Tang, J. X., Szymanski, P., Janmey, P., and Tao, T. Electrostatic effects of smooth muscle calponin on actin assembly. *Euro. J. Biochem.,* 1997, 247, 432-440.
8. Tang, J. X., Ito, T., Tao, T., Traub, P., and Janmey, P. Opposite effects of electrostatics and steric exclusion on bundle formation by F-actin and other filamentous polyelectrolytes. *Biochemistry,* 1997, 36, 12600-12607.
9. Kothakota, S., Azuma, T., Reinhard, C., Klippel, A., Tang, J. X., Chu, K., McGarry, T. J., Kirschner, M. W., Koths, K., Kwiatkowski, D., J., and Williams, L. T., Caspase-3-Generated Fragment of Gelsolin: Effector of Morphological Changes in Apoptosis, *Science,* 1997, 278, 294-298.
10. Parker, C. A., Takahashi, K. , Tang, J. X.,Tao, T., and Morgan, K. G., Cytoskeletal Targeting of Calponin in Differentiated, Contractile Smooth Muscle Cells, *J. Physiology,* 1998, 508.1, 187-198.
11. Guttenberg, Z., Tang, J. X., Isenberg, G., Ezzell, R. M., and Goldmann, W. H., Analysis of the F-actin binding fragments of vinculin using stopped-flow and dynamic light scattering measurements, *Euro. J. Biochem.,* 1998, 254, 413-419.
12. Janmey, P., Kas, J., Shah, J. V., Allen, P. G., and Tang, J. X., Cytoskeletal networks and filament bundles: regulation by proteins and polycations, *Biol. Bull.,* 1998, 194, 334-336.
13. Tang, J. X. and Janmey, P., Two distinct mechanisms of actin bundles formation, *Biol. Bull.,* 1998, 194, 406-408.
14. Wriggers, W., Tang, J. X., Azuma, T., Marks, P., and Janmey, P. A., Cofilin and gelsolin segment 1: molecular dynamics simulation and biochemical analysis predict a similar actin binding mode, *J. Mol. Biol.,* 1998, 282, 921-932.
15. Geng, Y., Azuma, T., Tang, J. X., Hartwig, J., Muszynski, M., Wu, Q., Libby, P., and Kwiatkowski, D., Caspase-3-induced gelsolin fragmentation contributes to actin cytoskeletal collapse, nucleolysis, and apoptosis of vascular smooth muscle cells exposed to proinflammatory cytokines, Euro. J. Cell Biol., 1998, 77 (December issue).
16. Lyubartsev, A., Tang, J. X., Janmey, P., and Nordenskiold, L., Electrostatically induced polyelectrolyte association of rodlike virus particles, *Phys. Rev. Lett.*, 1998, 81, 5465-6468.
17. Xian, W., Tang, J. X., Janmey, P., Braunlin, W., The polyelectrolyte behavior of actin filaments: a 25Mg NMR study, *Biochemistry,* 1999, 38, 7219-7226.
18. Tang, J. X. , Janmey, P., Stossel, T., and Ito, T., Thiol oxidation of actin produces dimers that enhance the elasticity of the F-actin network, *Biophysical J., 1999,* 76, 2208-2215.
19. Leinweber, B., Tang, J. X., Stafford, W.F., and Chalovich, J. M., Calponin interaction with a-actinin-actin: Evidence for a structural role for calponin. *Biophysical J.,* 1999, 77, 3208-3217.
20. Wong, G. C.-L., Tang, J. X., Lin, A., Li, Y., Janmey, P., and Safinya, C. R., Hierarchical self-assembly of F-actin and cationic lipid complexes: Stacked three-layer membranes forming giant ribbon-like tubules, *Science,* 2000, 288, 2035-2039.
21. Frank G. Schmidt, Hinner, B., Sackmann, E., and Tang, J. X., Viscoelastic properties of semiflexible filamentous bacteriophage fd, Phys. Rev. E, 2000, 62, 5509-5517.
22. Tang, J. X., Josef A. Käs, Jagesh V. Shah, and Paul A. Janmey, Counterion-induced actin ring formation. 2001, Euro. Biophys. J. 30, 477-484.

23. Tang, J. X., Janmey, P., Lyubartsev, A., and Nordenskiold, L., Metal Ion Induced Lateral Aggregation of Filamentous Viruses fd and M13. Biophys. J. 2002, 83, 566-581.
24. Viamontes, J., and Tang, J. X., A continuous isotropic-nematic liquid crystalline transition of F-actin solutions. Phys Rev E. 2003, 67, 040701.
25. Wong, G. C.-L., Lin, A., Tang, J. X., Li, Y., Janmey, P., and Safinya, C. R., Lamellar phase of stacked two-dimensional rafts of actin filaments. Phys. Rev. Lett., 2003, 91, 018103.
26. Butler, J. C., Angelini, T., Tang, J. X., and Wong, G. C.-L., Ion multivalence and like-charged polyelectrolyte attraction. Phys. Rev. Lett., 2003, 91, 028301.
27. Hosek, M., and Tang, J. X., Polymer-Induced Bundling of F-actin and the Depletion Force. Phys. Rev. E., 2004, 69, 051907.
28. Li, G., and Tang, J. X., Diffusion of actin filaments within a thin layer between two walls. Phys. Rev. E., 2004, 69, 061921.
29. Addas, K., Schmidt, C. F., and Tang, J. X., Microrheology of solutions of semiflexible biopolymer filaments using laser tweezers interferometry. Phys. Rev. E., 2004, 70, 021503.
30. Yang, L., Liang, H., Angelini, TE., Butler, J., Coridan, R., Tang, J. X., and Wong, G. C.-L., Self-assembled virus-membrane complexes. Nature Materials, 2004, 3, 615-619.
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32. Li, G., Smith, C. S., Brun, Y. V., and Tang, J. X., Elasticity of the *Caulobacter crescentus* adhesive holdfast. J. Bacteriology, 2005, 187, 257-265.
33. Li, G., Wen, Q., and Tang, J. X., Single filament electrophoresis of F-actin and filamentous virus fd. J. Chem. Phys., 2005, 122:104708.
34. Tang, J. X., Kang, H., and Jia, J., Intriguing self-assembly of large granules of F-actin facilitated by gelsolin and alpha-actinin. Langmuir, 2005, 21, 2789-2795.
35. Balter, A., and Tang, J. X., The hydrodynamic stability of helical growth at low Reynolds number, Phys. Rev. E., 2005, 71:051912.
36. Angelini, TE., Sanders, LK., Yang, L., Liang, H., Wriggers, W., Tang, J. X., and Wong, G. C.-L., Structure and dynamics of condensed multivalent ions within polyelectrolyte bundles: a combined X-ray diffraction and solid-state NMR study, J. Phys.: condensed matter, 2005, 17, S1123-S1135.
37. Tang, J. X., Qi Wen, Bennett, A., Kim, B., Bucki, R., and Janmey, P., Anionic poly(amino acid)s dissolve actin and DNA bundles, enhance DNAse activity, and reduce the viscosity of cystic fibrosis sputum, Am. J. Physiology, 2005, 289, L599-605.
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39. Atakhorrami, M., Kwiecińska, J. I., Addas, KM, Koenderink, GH, Tang, J. X., Levine, AJ, MacKintosh, FC., and Schmidt, CF, Correlated fluctuations of microparticles in viscoelastic solutions: quantitative measurement of material properties by microrheology in the presence of optical traps. Phys Rev. E., 2006. 73, 061501.
40. Viamontes, J., Narayanan, S., Sandy, A. R., and Tang, J. X, The Orientational Order Parameter of the Nematic Liquid Crystalline Phase of F-actin. Phys Rev. E., 2006, 061901.
41. Tsang, P., Li, G., Brun, Y. V., Freund, L. B., and Tang, J. X., Adhesion of Single Bacterial Cells in the Micronewton Range. PNAS. 2006, 103, 5764-5768. ***Featured in Nature, Science News, National Public Radio, Fox News, etc.***
42. Liu, Y., Guo, Y., Valles, J. M., and Tang, J. X., Microtubule Bundling and Nested Buckling Drive Stripe Formation in Polymerizing Tubulin Solutions. PNAS, 2006, 103, 10654-10659.
43. Li, G., and Tang, J. X., Low torque and high swimming efficiency of *Caulobacter* smarmer cells. Biophys. J., 2006, 91, 2726-2734.
44. Wen, Q., and Tang, J. X., Temperature effects on the onset of aggregation of fd virus induced by divalent counterions. Phys. Rev. Lett., 2006, 97, 048101.
45. Viamontes, J., Patrick W. Oakes, and Tang, J. X., Isotropic to nematic liquid crystalline phase transition of F-actin varies from continuous to first order. Phys. Rev. Lett., 2006, 97, 118103.

46. Wen Q., Li, G., Tang, J. X., and Huber G., Switching statistics of a flagellar motor: first-passage time and dynamic binding, J. Statistical Physics, 2007, 128, 257-267.
47. Oakes, P., W., Viamontes, J., and Tang, J. X., Growth of tactoidal droplets during the first order isotropic to nematic phase transition of F-actin, Phys Rev E., 2007, 75:061902.
48. Guo, Y., Liu, Y., Tang, J. X., and Valles, J. M., Polymerization force driven buckling of microtubule bundles determines the wavelength of patterns formed in tubulin solutions, Phys Rev Lett., 2007, 98:198103.
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51. He, J., Mak, M., Liu, Y., and Tang, J. X., Counterion Dependent Microrheological Properties of F-actin Solution across Isotropic-Nematic Phase Transition, 2008, Phys Rev E, 78:011908.
52. Guo, Y., Liu, Y., Tang, J. X., Oldenbourg, R., and Valles, J. M., Effects of osmotic force and torque on microtubule bundle and pattern formation, Phys Rev E., 2008, 78:041910.
53. Li, G., Tam, L.-K., and Tang, J. X. , Amplified effect of Brownian motion in bacterial near-surface swimming, PNAS, 2008, 105: 18355-18359.
54. Oakes, P. W., Patel, D., Morin, N. A., Zitterbart, D. P., Fabry, B., Reichner, J. S., and Tang, J. X. Neutrophil morphology and migration are affected by substrate elasticity, BLOOD, 2009, 114:1387-95.
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56. Kang, H., Carlsson, A. E., and Tang, J. X., A Kinetic overshoot in Actin network assembly induced jointly by branching and capping proteins, Phys. Rev. E, 2009, 80:041913.
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58. Kang, H., Q. Wen, P. A. Janmey, J. X. Tang, E. Conti and F. C. MacKintosh, Nonlinear Elasticity of Stiff Filament Networks: Strain Stiffening, Negative Normal Stress, and Filament Alignment in Fibrin Gels, J. Phys. Chem. B, 2009, 113, 3799–3805.
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60. Kang, H., Perlmutter, D. S., Shenoy, V. B., and J. X. Tang, A kinematic description of deterministic actin trajectories induced by spherical beads, Biophys J., 2010, 99: 2793-2802 **(Feature Article)**.
61. Ikuta, T., Thatte, H. S., Tang, J. X., Mukerji, I., Bridges, K. R., Knee, K., Wang, S. H., Montero-Huerta, P., Joshi, R. M., and Head, C. A., Nitric oxide reduces sickle hemoglobin polymerization: Potential role of nitric oxide-induced charge alteration in depolymerization, Archives of Biochemistry and Biophysics, 2011, doi:10.1016/j.abb.2011.03.013.
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64. Li, G., Bensson, J., Nisimova, L., Munger, D., Mahautmr, P., Tang, J. X., Maxey, M. R., and Brun, Y. V., Accumulation of swimming bacteria near a solid surface, Phys. Rev. E., 2011, 84, 041932.
65. Li, G., Brown, P. J., Tang, J. X., Xu, J., Quardokus, E., M., Fuqua, C., and Brun, Y. V., Surface contact stimulates the just in time deployment of bacteria adhesions, Molecular Microbiology, 2012, 83: 41-51 **(featured by a commentary article at the front of the issue)**.

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75. Loosley, AJ, O'Brien, C, Reichner, J., and Tang, J. X., Describing Directional Cell Migration with a Characteristic Directionality Time, 2015, PLoS ONE, 10(5): e0127425. doi:10.1371/journal.pone.0127425.
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77. Morse, M., Colin, R., Wilson, L., Tang, J. X., Aero-tactic behavior of *Caulobacter Crescentus* diagnosed using a 3-channel microfluidic setup. 2016, Biophys J, 110:2076.
78. Tang, J. X., Measurements of fluid viscosity using a miniature ball drop device. 2016, Rev Sci Instruments, 87:054301.
79. Si, T., Yuan, J., Wu, Y., and Tang, J. X., Physical Biology of Bacterial Motility, 2016, Acta Physica Sinica, 65:178703.
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85. J. Bell, G. Araujo, and Tang, J. X., entitled "Discovery of oscillations in rotational speed of body-tethered *C. crescent*us", Phys Rev. E., 2020, 102:062416. doi.10.1103/PhysRevE.102.062416.
86. H. Ma, J. Bell, W. Chen, S. Mani, and Tang, J. X., "An expanding bacterial colony forms a depletion zone with growing droplets", Soft Matter, 2021, 17: 2315-2326. DOI: 10.1039/D0SM01348J.

87. W. Chen, N. Mani, H. Karani, H. Li, S. Mani, and Tang, J. X., entitled "Confinement Discerns Swarmers from Planktonic Bacteria", eLife, 2021;10:e64176 DOI: 10.7554/eLife.64176
88. A. De, W. Chen, H. Li, J. R. Wright, R. Lamendella, D. J. Lukin, W. Szymczak, K. Sun, L. Kelly, S. Ghosh, D. B. Kearns, Z. He, C. Jobin, X. Luo, A. Byju, S. Chatterjee, B. S. Yeoh, M. Vijay-Kumar, Tang, J. X., S. Mani, entitled "Bacterial Swarmers enriched during intestinal stress ameliorate damage", Gastroenterology. 2021, 161:211-224, https://doi.org/10.1053/j.gastro.2021.03.017
89. G. Araujo, Z. Zheng, J. On, and Tang, J. X., entitled "Assessment of a weak mode of bacterial adhesion by applying an electric field", MDPI-Applied Microbiology. 2021, 1:255-269, DOI: https://doi.org/10.3390/applmicrobiol1020019
90. W. Chen, S. Mani, and Tang, J. X., entitled "An Inexpensive Imaging Platform to Record and Quantify Bacterial Swarming", Bio-protocol, 2021, 11:e4162, DOI: 10.21769/BioProtoc.4162.
91. Z. Zhang, H. Liu, H. Karani, J. Mallen, W. Chen, A. De, S. Mani, and Tang, J. X., entitled "Enterobacter sp. Strain SM1_HS2B Manifests Transient Elongation and Swimming Motility in Liquid Medium", Microbiology Spectrum, June 24, 2022. DOI: https://doi.org/10.1128/spectrum.02078-21.
92. Tang, J. X., Opportunities and challenges in biological soft matter research, Frontiers in Soft Matter, 2: 958524, 2022. DOI: 10.3389/frsfm.2022.958524.

d. Meeting Proceedings

1. Tang, J. X., Oldenbourg, R., Allen, P., and Janmey, P., Tactoidal granules in concentrated actin gels: a solidlike state of protein filaments, *proceedings of the material research society fall meeting, Symposium K: materials science of the cell,* 1997.
2. Nordenskiold, L., Lyubartsev, A., Tang, J. X., and Janmey, P., Electrostatically induced bundle formation of rodlike polyelectrolytes, *proceedings of the material research society fall meeting, Symposium K: materials science of the cell,* 1997.
3. Tang, J. X., The polyelectrolyte nature and large scale self-assembly of the protein filaments F-actin. *In proceedings of the 3rd joint meeting Chinese physicists worldwide*, Hong Kong, 2000.
4. Viamontes, J., and Tang, J. X., Nematic liquid crystalline formation of F-actin displays features of a continuous transition. *Proceedings of the material research society fall meeting, Sym FF/GG/HH, 2001*. Published in 2002.
5. Addas, K. M., Levine, A. J., Tang, J. X., Schmidt**.** C. F., One- and Two-Particle Microrheology in Entangled Solutions of fd Virus. *Proceedings of the material research society fall meeting, 2001. Sym FF/GG/HH, 2001.* Published in 2002.
6. C.F. Schmidt, M. Atakhorrami, K. Addas, G.H. Koenderinck, F.C. MacKintosh, J.X. Tang, MOLECULAR MECHANICS OF CYTOSKELETAL COMPONENTS, Proceedings of the XXI International Congress of Theoretical and Applied Mechanics, Warsaw, 2004, Kluwer Academic Publishers.
7. Tang, J. X., and J. He, Rheology of Actin Networks Probed by Micron-Sized Beads: Opposite Effects of Surface Adsorption and Hopping, *Proceedings of 2009 NSF CMMI Engineering Research and Innovation conference, Honolulu, Hawaii.* Published in June, 2009.
8. McMullen, A., Mihovilovic, M., Stein, D., and Tang, J. X., A Study of Protein Filaments Sliding through Solid-State Nanopores. in Nanotech 2011 vol. 3. 2011.

g. Invited Lectures and Workshop since 2003

21. Chair of APS Invited Session: Polymers in Biological Cells (DCMP/DBP), March, 2003.

22. Special seminar at the Institute Curie, Paris, May. 2003.
23. Biophysics seminar at the Vejie University, Amsterdam, June, 2003.
24. Biophysics seminar at the Institute of Physics, Chinese Academy of Science, Beijing, August, 2003.
25. Biophysics seminar at University of Science and Technology of China, Hefei, PRC, August, 2003.
26. Biophysics colloquium at Nanking University, Nanjing, PRC, August, 2003.

27. Biophysics seminar at Peking University Medical School, Beijing, August, 2003.
28. Departmental colloquium in the Chemistry Department of IUPUI, IN, Sept, 2003.
29. Special biophysics colloquium at physics department, Cornell University, Sept, 2003
30. Physics colloquium, Syracuse University, Sept, 2003.
31. Invited talk at the Society of Rheology Meeting, Pittsburg, Oct, 2003
32. Physics colloquium, Catholic University of America, Nov, 2003
33. Invited talk at the American Institute of Chemical Engineers (AICHE) annual meeting, Nov, 2003
34. Invited talk at the 17th New England Complex Fluids Workshop, Dec, 2003.
35. Biomedical Engineering Seminar, Brown University, March, 2004.
36. Seminar, jointly held by Institute of Medicine and Engineering and Materials Research Science and Engineering Center (MRSEC), University of Pennsylvania, January, 2004.
37. **Chairing a session in the Biopolyelectrolytes Workshop, Univ. of Minnesota, May, 2004**
38. Contributing talk at the 4th International Polyelectrolyte Conference, June, 2004.
39. Seminar, Department of Material Science and Engineering, UIUC, Aug, 2004.
40. Seminar, Department of Biomedical Engineering, Washington University, St Louis, Oct, 2004.
41. Colloquium, Rhode Island College, Oct, 2004.
42. Condensed matter seminar, UMass-Amherst, Dec, 2004.
43. **Chair of APS Session: Biopolymers: Molecules, Solutions and Networks (DPOLY/DBP), March, 2005.**
44. Seminar, Institute of Physics, Chinese Academy of Science, Beijing, August, 2005.
45. Seminar, Division of Physics, Peking University, Beijing, August, 2005.
46. Presentation on bacterial adhesion, Research Center of Archer-Daniel-Midland (ADM) Company, Il, Sept 26, 2005.
47. Invited talk, 4th World Congress of Cellular and Molecular Biology, Poitiers, France, Oct, 2005.
48. Physics colloquium, Brown University, Dec 12, 2005.
49. Biophysics seminar, Lehigh University, Dec 13, 2005.
50. Seminar, Courant Institute, New York University, Feb, 2006.
51. Guest Lecture, Brown Biomed, Bio 110, entitled "Biophysics of Molecular Motors", April, 2006.
52. Seminar, Brown iGEM project, on bacterial super glue, June, 2006.
53. Invited talk, Society of Engineering Science Annual Meeting, State College, PA, Aug, 2006.
54. Invited talk, ACS meetings, San Francisco, Sept 10, 2006, on "*Caulobacter* holdfast, a wet super glue".
55. Physical mathematics seminar, MIT, Sept 19, 2006, entitled "*Caulobacter crescentus* - a fast swimming, chemotactic, and super sticky bacterium".
56. Physics Colloquium, Lehigh University, Sept 28, 2006, entitled "some physics of protein assembly".
57. Condensed matter physics seminar, Yale University, Nov 9, 2006.
58. Physics seminar, Boston University, Nov 17, 2006.
59. Biophysics seminar on *C. crescentus*, Department of Biology, Tsinghua University, PRC, Dec 18, 2006.
60. Biophysics seminar on *C. crescentus*, Div of Cell Biology, USTC, PRC, Dec 25, 2006.
61. Biophysics seminar, Department of Physics, Nanjin University, PRC, Dec 26, 2006.
62. Biophysical society annual meeting platform presentation, March 04, 2007.
63. Seminar at the molecular and celluler biology department, University of Connecticut Health Center, March 22, 2007.
64. Invited talk at the Chinese Mechanics Society 50th Anniversary Conference, Beijing, Aug 20-22, 2007.
65. Biophysics Seminar at Princeton University, Oct 15th, 2007.
66. Colloquium at Univ of Connecticut, Storr, Nov. 8th, 2007.
67. Guest lecture to the synthetic biology seminar course, Brown University, Nov.26, 2007.
68. Seminar on bacterial swimming, Department of Applied Mathematics, Brown University, Feb. 4, 2008.
69. **Chair of APS Session: Cytoskeletal Dynamics (DPOLY/DBP), March, 2008.**
70. Condensed matter physics seminar at Syracuse University on actin biophysics, Oct 3, 2008.
71. Physics colloquium at University of Rhode Island on actin biophysics, Oct 17, 2008.

72. Condensed matter physics seminar at University of Massachusetts, Amherst, on actin biophysics, Nov 6, 2008.
73. Seminar at the NSF MRSEC onsite review, Division of Engineering, Brown University, entitled "Neutrophil adhesion on soft substrate and mechanical sensing, Jan 22, 2009.
74. Surgical Research Seminar at the Rhode Island Hospital, entitled "From *in vitro* actin assembly to neutrophil migration", Jan 27, 2009.
75. Seminar at the Rob Phillips group, Caltech, entitled "From *in vitro* actin assembly to neutrophil migration", Feb 24, 2009.
76. Seminar at the Mechanical and Aerospace Engineering Department, UCSD, entitled "Biophysical Studies of Bacterial Motility and Adhesion", Feb 25, 2009.
77. Colloquium in the Department of Biomedical Engineering, Carnegie Mellon University, entitled "From *in vitro* actin assembly to neutrophil migration", March 16, 2009.
78. Oral presentation at the Brown-University of Rhode Island Imaging Conference, entitled "Applications of optical and atomic force microscopy on biomaterials studies", April 8, 2009.
79. Applied Math and Biological Science summer undergraduate research series, Brown University, entitled "Biophysical Studies of Bacterial Motility and Adhesion", July 14, 2009.
80. Seminar at Aspen Center for Physics Workshop on When Bacteria Meet Physics, entitled "Bacterial Motility", Aug 31st, 2009.
81. Seminar at Aspen Center for Physics Workshop on Self-assembly, entitled "Biological Functions of Actin Are Served by Its Non-Equilibrium Assembly with Much Assistance", Aug 31st, 2009.
82. Colloquium at Tougaloo College, entitled "Physics of Cells: from bacterial swimming to neutrophil crawling", Nov. 13, 2009.
83. Platform presentation at the 54th Biophysical Society Annual Meeting in San Francisco, entitled "What we learn from actin comet tails going awry", Feb 23, 2010.
84. Invited Speaker at the American Society of Microbiology in San Diego, entitled "Caulobacter Motility at Boundaries", May 24, 2010.
85. Physics Colloquium, Beijing Normal University, entitled "Physics of Cells: from bacterial swimming to neutrophil crawling", June 22, 2010.
86. Seminar at the Institute of Genetic Engineering, Chinese Academy of Science, Beijing, entitled "Neutrophil biomechanics and mechanosensing", June 24, 2010.
87. Seminar at the University of Science and Technology of China (USTC), entitled "Physics of Cells: from bacterial swimming to neutrophil crawling", June 28, 2010.
88. Invited speaker at the Society of Engineering Science (SES) annual meeting at Aims, Iowa, entitled "Neutrophil migration on soft substrate and mechanosensing", Oct 4, 2010.
89. Colloquium at the Department of Mathematical Sciences Applied Mathematics, New Jersey Institute of Technology (NJIT), entitled "Bacterial Motility at the Boundaries", March, 2011.
90. Invited talk at the Banff Workshop on Modeling in Biological Systems, entitled "A multiple spring model for biopedally crawling cells", Aug, 2011.
91. Special seminar at the Institute of Quantitative Biology, Peking University, PRC, entitled "Physics of Bacterial Swimming at the Fluid Boundary", Nov 5, 2011.
92. Invited talk at the International Symposium on Mechanobiology, Shanghai, PRC, entitled "Probing mechano-sensing using traction microscopy-Application in neutrophil migration and transendothelial migration on soft substrate", Nov. 9, 2011.
93. **Invited Speaker and Session Chair of APS Symposium: Bacterial Motility (DBP/DFD), March, 2012.**
94. Seminar on Soft Matter Day at Shanghai Jiao Tong University, June, 2012.
95. Invited Lecture Series at the International Workshop on Many Body Coulomb Systems, entitled "Electrostatics on Biomolecular Interactions", Shanghai, June, 2012 (Four lectures).
96. Invited talk at the same workshop, entitled "Polyelectrolyte Properties of Bio-Macromolecules".
97. Seminar at the Institute of Nanoscience, Chinese Academy of Sciences, Suzhou, PRC, entitled "Polyelectrolyte Properties of filamentous proteins and viruses", June, 2012.

98. Seminar at Department of Mechanical Engineering, Peking University, Beijing, entitled "Probing neutrophil spreading and migration on soft substrate by traction microscopy", June, 2012.
99. The MRSEC seminar series, Brandeis University, entitled "Trapped at the Surface: How a flagellated bacterium probes molecular absorption at the air-liquid Interface", Oct, 2012.
100. Platform talk at the APS DFD meeting, San Diego, CA, entitled "Accumulation of Swimming Bacteria Near an Interface", Nov, 2012.
101. Seminar at Brown Chemistry, entitled "Physics and chemistry learned by experimenting with a motile and differentiating bacterium *Caulobacter crescentus*", April, 2013.
102. Physics Colloquium at Huazhong Institute of Science and Technology, Wuhan, PRC, entitled "Microbial Life at the Interface", April 21, 2013.
103. Physics Colloquium at Wuhan University, PRC, entitled "Microbial Life at the Interface", April 22, 2013.
104. Invited talk at the Aspen Center for Physics in the workshop of physics for functional biological assemblies, entitled "How flagellated bacteria deal with surfaces and viscoelastic media", June 9, 2013.
105. Talk at the Society of Engineering Science (SES) Annual Meeting, entitled "The mechanics of motion & confinement of flagellated bacteria at air-water interface", July, 2013.
106. Invited talk at the New England Complex Fluids Workshop, entitled "How does a motile bacterium cope with complex fluids and interfaces?", Sept 20, 2013.
107. Guest seminar at Berg Diagnostics, Framingham, MA, entitled "How do motile bacteria cope with complex fluids and interfaces?", Dec 3, 2013.
108. Physics Colloquium, University of Rhode Island, entitled "Motion of uni-flagellated bacteria at interfaces and in complex media", Feb 28, 2014.
109. Invited talk at the workshop for the IUPUP Congress on Biological Physics, Beijing, PRC, entitled "Motility of Uni-flagellated Bacteria in Complex Media", on June 19, 2014.
110. Invited talk, entitled "Directionality time-a characteristic parameter for analysis of directionally biased motion", at Beijing Computational Science Research Center Workshop on Statistical Physics of Active Matter, on June 24, 2014.
111. Selected talk at the New England granular materials conference, entitled "High permeability and efficient relaxation of agar gel-an ideal substrate for bacterial swarming", July, 2014.
112. Physics colloquium at Washington University, St. Louis, MO, entitled "Translocation of Filamentous Viruses through Solid-State Nanopores", Nov 13, 2014.
113. Contributing talk at the APS March Meeting, San Antonio, Texas, entitled "Motor Switching Rates in *Caulobacter Crescentus* Follow First Passage Time Distribution", March 11, 2015.
114. Physical Mathematics Seminar at MIT, entitled "Motion of uni-flagellated bacteria at interfaces and in complex media", Oct 19, 2015.
115. Presentation at the Brown-NUWC research exchange on Computational and Fluid Dynamics, entitled "Recent Advance in the Biophysical Study of Motile and Adhesive Bacteria", Oct 25, 2015.
116. Contributing talk at the APS Division of Fluid Dynamics (DFD) annual meeting in Boston, entitled "Motion of uni-flagellated bacteria in polymer solutions", Nov. 22, 2015.
117. **Session Chair and 1st speaker at the APS Division of Fluid Dynamics (DFD) annual meeting in Boston**, with a contributing talk entitled "An undergraduate lab on measuring fluid viscosity using a miniature ball drop device", Nov. 23, 2015.
118. Physics Colloquium at USTC, Hefei, PRC, entitled "Flageller Motor Switching in *Caulobacter Crescentus* Obeys First Passage Time Statistics", Jan 22, 2016.
119. **Session Chair at the 2016 APS Annual March Meeting in Baltimore**, Session E39: Cell Motility: From Single Cell to Collective Dynamics.
120. Contributing talk at the 2016 APS March Meeting in Baltimore, entitled "Directionality time-a characteristic parameter for analysis of directionally biased motion". Session E39: Cell Motility: From Single Cell to Collective Dynamics III.
121. Invited talk at KITP Workshop, Institute of Physics, Beijing, August 22, 2016, entitled "Dynamic Pattern Evolution of a Bacterial Swarm"

122. Invited Seminar at Tianjin University School of Engineering, Aug, 31, 2016, entitled "Biophysical Study on Bacterial Motility and Adhesion".
123. Invited Seminar at Institute of Microbiology, Chinese Academy of Sciences, Beijing, Sept 2, 2016, entitled "Bacterial Motility and Adhesion".
124. Invited Talk at Chinese Physical Society Annual Meeting, Beijing, Sept 3, 2016, entitled "Physical Biology of Bacterial Motility". Session K-Soft Matter.
125. **Session Chair at the 2017 APS Annual March Meeting in New Orleans**, Session H12: Swimming, Motility and Locomotion.
126. Contributing talk at the 2017 APS March Meeting in New Orleans, entitled "Dynamic pattern evolution in growing bacterial colonies", Session H12: Swimming, Motility and Locomotion.
127. Seminar at Institute of Soft Matter, Soochow University, PRC, June 30, 2017, entitled "A new experimental approach to the study of electro-kinetics".
128. Seminar at the Isaac Newton Institute of Mathematical Science, Cambridge University, UK, entitled "Pattern Evolution in Growing Bacterial Colonies", Oct, 2017.
129. Seminar at Center for Living Systems, York University, UK, entitled "Motion of uni-flagellated bacteria at interfaces and in complex media", Oct, 2017.
130. Seminar at Exeter University, Exeter, UK, entitled "Motion of uni-flagellated bacteria at interfaces and in complex media", Oct 2017.
131. Seminar at University of Bristol, Bristol, UK, entitled "Motion of uni-flagellated bacteria at interfaces and in complex media", Oct, 2017.
132. Seminar at the Cavendish Laboratory, Cambridge University, UK, entitled "Motion of uni-flagellated bacteria at interfaces and in complex media", Nov, 2017.
133. Contributing talk at the 2018 APS March Meeting in Los Angeles, entitled "Capillary flow and mechanical buckling in a growing annular bacterial colony". Session Y50: Microbiological Physics, March 9, 2018.
134. Invited talk at Jamming in Biological Systems Workshop, at the Institute of Physics, Chinese Academy of Sciences, in Beijing, on Aug 10, 2018, entitled "Pattern Evolution in Growing Bacterial Colonies".
135. Physics Colloquium at Indiana University, Bloomington, IN, entitled "Motility of uni-flagellated bacteria", Nov, 14, 2018.
136. Seminar in the Mechanical Engineering Department, Hong Kong University, entitled "Motility of uni-flagellated bacteria", Feb 27, 2019.
137. Physics colloquium at Chinese University of Hong Kong, entitled "Motility of uni-flagellated bacteria", Feb 28, 2019.
138. Contributing talk at the 2019 APS March Meeting in Boston, entitled "Depletion Zone Following the Spread of a Bacterial Colony". Session H63: Physics of Microbiomes and Microbial Communities II, March 5, 2019.
139. Contributing talk at the 2019 APS March Meeting in Boston, entitled "Density and Viscosity Measurements on the Liquid Condensates of FUS Protein Low-Complexity Domain". Session K65: Phase Separation in Biological Systems, March 6, 2019.
140. Seminar in the Mechanical Engineering Department of USTC, Hefei, PRC, entitled "Mechanical Features in an Expanded Bacterial Colony", Jan 6, 2020.
141. Seminar in the Chemical Engineering Department of Tsinghua University, Beijing, PRC, entitled "Mechanical Features in an Expanded Bacterial Colony", Jan 13, 2020.
142. Physics Colloquium at Amherst College, entitled "Bacterial Motility-From Physics To Human Health", April 6, 2022.

i. Work under Review

j. Work in Progress

1. Pollack-Milgate, S., Saitia, S., Mani, S., and Tang, J. X,, Reliable determination of bacterial growth rate in liquid medium. Manuscript in preparation.

6. Research Grants

I. Current Grants

1. National Science Foundation, Division of Material Research, Condensed Matter Physics, The role of intercellular interaction in bacterial swarming motility, $424642, 07/01/2022-06/30/2025. PI: Tang.

II. Completed Grants

1. Research Investment Fund (RIF) award from the Research and University Graduate School (RUGS), Indiana University, to purchase an atomic force microscope (AFM) for materials science and biological applications (co-PI with Dave Baxter), $150K, May, 2000.
2. Indiana 21st Century Fund, entitled "Center for Membrane Protein Biotechnology", 2002-2004, $1,320K. PI: Gil Lee, Purdue University. Tang's portion as a Co-PI is $170K in two-year total. (Fund returned for leaving the state of Indiana).
3. Graduate Assistance in Areas of National Need (GAANN), Department of Education. $630K, August 2001-August 2004. This grant funds a departmental program of which Tang serves as a co-director. The grant provides full support for 7 graduate students each year to conduct research under the theme of microscopic physics and biophysics. (Participation ended due to departure from Indiana University).
4. National Science Foundation grant, entitled "Solution Physics of F-actin and Filamentous Bacteriophages", $270K, July, 2000-June 2003.
5. National Science Foundation Major Research Instrumentation (MRI) grant, entitled " Acquisition of a Scanning Probe Microscope for Studies of Biomolecules and Nanoscale Materials and Devices ", $133K, Sept, 2003-Aug 2004. PI: Tang. Co-PIs: Ling, Powers, Valles and Xiao.
6. Salomon Award, Brown University, research project entitled "Chemotactic trajectory and hydrodynamics of *Caulobactor* crescentus swarmer cells, June, 2004-May, 2005.
7. National Institute of Health R01 grant, entitled "Dissolution of polyelectrolyte bundles in airway fluids", April, 2001-May 2006. PI: P.A. Janmey at U. Penn Medical School, with Tang as Subcontractor (Portion for Tang $350,000).
8. NASA Ground Based Biology Study, entitled "Microscopic Studies of Gravi-Sensitive Microtubule Assembly in Simulated Variable Gravity Conditions, $472K, Jan, 2004-Dec, 2006. PI: Tang, Co-I: Valles.
9. National Science Foundation Award DMR 0405156, entitled "Compensatory Roles of Electrostatics and Depletion Force on the Aggregation of Filamentous Viruses and Protein Filaments", $273K, Aug, 2004-July 2007. PI: Tang.
10. Petroleum Research Fund, American Chemical Society, entitled "Liquid crystalline formation of filamentous actin assembly", $80K, Sept, 2005-August, 2007. PI: Tang.
11. Brown Seed Fund, entitled "Integrin mediated adhesion and retraction during T cell migration", PI: Tang, with L. Ben Freund, Minsoo Kim and Jonathan Reichner, $90,000, Feb 17, 2007-Feb 16, 2008.
12. National Institute of Health R21, entitled "Neutrophil Mechano-sensing", July, 2008-June, 2010, PI: Reichner, Rhode Island Hospital, Subcontractor: Tang ($250 K).
13. National Institute of Health R01, entitled "Mechanism of Caulobacter Adhesion", ~$1.1M, March 1, 2007-Feb 28, 2011. PI: Y. Brun, Indiana University. Subcontractor: Tang (~$400 K).
14. National Science Foundation, Directorate of Engineering (CMMI), entitled "Mechanics of intracellular pathogens and biomimetic systems propelled by actin comet tails", Sept, 2008-August, 2011. PI: Vivek Shenoy, Co-PI: Tang ($350 K).

15. National Science Foundation, Directorate of Engineering (CMMI), entitled "Biomechanics of Actin Network Regulated by Physical Mechanisms", Sept, 2008-August, 2012. PI: Tang ($300 K).
16. Institute of Molecular and Nano Innovation (IMNI) Seed Award, Brown University, January 2011-June, 2012. PI: Tang, Co-PI: Stein ($40k).
17. National Science Foundation, Directorate of Physics (PHYS), entitled " Physics of Near Surface Bacterial Swimming", Sept, 2011-August, 2015. PI: Tang ($300 K).
20. Institute of Theoretical Physics, Chinese Academy of Sciences (CAS), entitled "Modeling bacterial motion in viscoelastic media", June 2014-May 2016, PI: Tang (~40K); CAS collaborator: Ouyang, Zhongcan.
21. National Science Foundation, Division of Engineering (CBET), Fluid Dynamics, Motion of Uni-flagellated Bacteria in Visco-elastic Media, $362,359, 09/01/2014-08/31/2017. PI:Tang, Co-PI: Pelcovits.
22. National Science Foundation, Division of Materials Research (DMR), Biomaterials, Electrophoresis of Filamentous Viruses through Solid State Nanopores, $330,000, 09/01/2015-08/31/2019. PI:Tang, Co-PI: Stein.
23. Brown University Seed Fund, entitled "Biocondensate, a preliminary IRG for 2019 NSF MRSEC Competition". 06/01/2018-5/31/2019. The fund total was $38.5K, primarily supported two semesters of graduate RA.

III. Pending Grants

NONE

7. Service since 2003

(i) To department and university

- Faculty searches: Condensed Matter Experiment Faculty Search Committee, 2003, leading to the hiring of Professor Vesna Mitrovic; 2006, leading to the hiring of Professor Derek Stein. CMT/Biophys search, 2008, no offer made after a thorough search.
- Physics Colloquium Committee, 2003-2008; 2012-2013. Running the Condensed Matter/Biological Seminar Series, 2012-2013.
- Assisted dept chair in revising Physics Bulletin and Physics Newsletter, 2003-2004; Updated physics research website, 2009-2010. Active participation in the departmental external review, including drafting portions of the document dealing with biological physics research (and presentation to the reviewers), physics graduate program, etc.
- Physics Department Executive Officer, July, 2009-June, 2010, assisting the chair with a variety of issues, including attending meetings as his backup with the university administrators, prospective students and their parents, current graduate students concerning research placement, etc. I have also served as liaison between the chair and various committees within the department. Other efforts included consulting graduate students on their research placement, writing two news articles to honor Prof Gerry Guralnick for his 2009 Sakurai Prize in Theoretical Physics, and joining a 3-day trip in Nov, 2009, to Jackson, MI, in order to strengthen the historic alliance between Brown University and Tougaloo College. The effort related to Brown-Tougaloo Alliances continues in 2010, involving participation in a number of events on Brown campus, and hosting Professor Santanu Banerjee in the summer of 2010. Another effort I was proud to have undertaken was to persuade the department to raise graduate summer stipend (took 3 faculty meetings).
- University Nominations Committee, 2009-2011; also served on the Awards Nomination Subcommittee.
- University Engineering and Applied Science Building Planning Committee, chaired by Clyde Bryant, 2010-2011.

- I served on the ad hoc advisory committee for Year of China activities at Brown, 2011-2012. I served on one panel discussion, joined several meetings, and participated in several other events.
- In April, 2013, I accompanied then VP of Internationalization, Prof. Matthew Gutmann, on a 10-day trip to PRC, mainly to strengthen Brown University's ties with Peking University and Nanjing University.
- In 2012-2013, I worked with Zhejiang University (ZJU), particularly through Prof. Daomu Zhao, Executive Dean of Physics, to have brought 3 selected physics undergraduate students from ZJU to study one semester at Brown with full tuition paid by ZJU.
- In 2014-2015, I served as a graduate advisor and a member of the departmental colloquium committee. I also ran the weekly condensed matter/biological physics seminar series. I typically host 4-6 speakers per year for both physics colloquia and CM/Biological Physics seminars (2015 speakers include Profs Eric Mazur, David Weitz, Jianlin Luo, and Maria Kilfoil).
- I served a 3-year term on the University Resources Committee (URC), 2014-2017, which involved 2 hours of meeting most Mondays during the fall semester.
- I started serving on the Sheridan Advisory Board, fall 2017-. This service helps myself on more reflective teaching, as well as guiding the Sheridan Center in their service to science departments.
- I joined a working group in 2016, under the HHMI program at Brown, which seeks to improve STEM teaching to life science students. I took several initiatives in order to evaluate and improve the teaching of Phys 30/40 to life science students, including a textbook change and a new course of spring semester Phys0030 starting in 2019.

Undergraduate affairs:
- Faculty Advisor for Brown freshmen, 6 for 2004-2005; 7 for 2005-2006; 6 for 2006-2007; 5 for 2007-2008; 6 for 2008-2009; 5 for 2009-2010; 6 for 2010-2011, 6 for 2011-2012, 6 for 2012-2013, 5 for 2014-2015, 6 for 2015-2016, and 6 for 2018-2019.
- Undergraduate affairs advisor, 2005-2009, dealing with course transfer credit, AP credit, course equivalences, high school seniors and their parents' visits, etc.
- Faculty panelist on the annual campus forum at the Science Center on how to apply for graduate programs (2010, 2011, 2012); faculty panelist on a similar forum at the physics department for physics concentrators (2010, 2011, 2012, 2014).
- In 2019-2020, serving as chair of the undergraduate advising committee in the physics department.

Graduate program:
- Physics Qualifying Committee, 2004; 2005;
- Physics graduate admissions committee, 2004-2012; Chair of the committee, 2009-2012. Chairing this committee means tons of work from January through April, including reading files of over 300 applicants, spending hours leading committee meetings, and handling hundreds of emails with applicants and admits, etc. Serving on this committee again 2019-present.
- Director of Physics MS program, 2012-2013. I took significant chunks of time working closely with the dept chair to set up the new MS program and gained approval by the physics faculty and the grad school. I ran the admission process during its first year with the first batch of MS students enrolling in 2013. In 2015, upon returning from my year long sabbatical leave, I was re-engaged with the MS program, and then served as the Director of Masters Program till summer of 2017.
- In 2019-2020, I served as Graduate Advisor to 6 PhD students and 8 master students.
- Thesis committee member of Kossyrev, and Ozden (2003); Lu, and Xianyu (2004); Karine Guevorkian, Sowmya, Sriskandh (Eng.) and Lei Wang (2006); Weifeng Shen and Elnaz Alipour-Assiabi (2007); Shanshan Wu, Yongxing Guo and Yifeng Liu (2008); Jun He, Patrick Oakes, Hongyuan Jiang (Mechanical Engineering), and Hyeran Kang (2009); Christian O'Brian (Pathobiology Program, PhD, 2010); Katie Heflin (Pathobiology Program, PhD, 2011); Jin Wang, Pengyu Liu, and Hao Tu (2012); JingJing Wang (2013); April He, Liu Xu and Il-young Jung (2014); Wang Miao, Ravi Singh (2015).

- Effective July 1, 2022, I was asked again and agreed to serve as Director of Physics MS program. Over the summer of 2022, I spent numerous hours meeting with the staff to make necessary updates to the program handbook and logistic to welcome and guide the largest incoming class (~50 students).

(ii) Service to the profession

- Registered reviewer for Physical Review Letters (appx. 4/year), Physical Review E. (appx. 3/year), Proceedings of National Academy of Sciences (PNAS), Nature, Science, Biophysical Journal (appox 4/year), Biochemistry, Biomacromolecules, FEBS Letts, American J. of Physiol., European Biophysics J., Physical Biology, Langmuir, etc.
- Invited reviewer for Molecular Cell Biology, by Lodish et al., Sixth Edition. 2002; Book Review for Garland Science Publishing for a proposed biophysics textbook, 2004; Book review for CRC Press for proposed 2nd edition of Introduction to Molecular Biophysics, by, Tuszynski and Kurzynski, 2005. Book reviewer of "University Physics" by Eric Mazur, Pearson/Addison-Wesley, 2007. Modern Physics for Scientists and Engineers, by John Morrison, for Taylor and Francis, 2013. Nadeau, 2014. Principles and Practice of Physics, by Eric Mazur, Pearson/Addison-Wesley, 2016.
- External referee for the soft condensed matter physics program, institute of physics, Chinese Academy of Sciences, Nov., 2001; Nov., 2007; Nov. 2010; Nov. 2016.
- Reviewed neutron scattering proposals to National Institute of Standard and Technology (NIST), summer, 2002 (9); spring, 2003 (6).
- Panelist for a National Heart, Lung and Blood Institute (NHLBI) Program Grant, 2006
- Regular reviewer for NSF individual investigator's proposals and program proposals. **In 2014**, I reviewed two NSF MRSEC center proposals.
- Served on a variety of NSF Program panels, averaging about one per year.
- Organized the 18th New England Complex Fluids Workshop, held successfully at Brown University, March, 2004. Also co-organize the 30th New England Complex Fluids Workshop at Brown again in June, 2007 (with Derek Stein), and again in March, 2020 (with Daniel Harris).
- L**ead organizer** of the 2007 Aspen Center for Physics Workshop, entitled "Cytoskeletal Assembly and Cell Motility", May 27-June 10, 2007. Co-organizer of the 2013 Aspen Center for Physics Workshop, entitled "Physics of Functional Biological Assemblies: Pushing, Pulling and Sensing", May 7-June 15, 2013.
- Organizer and/or session chair in the APS March Meetings (2003, 2005, 2008, 2012, 2016, 2017).
- Each year, I write over a dozen letters of recommendation for graduate, postdoctoral, and faculty applications, as well as assessment for various promotion and award nominations.
- Since 2019, I joined an international panel to evaluate the Hong Kong Graduate Fellowship Scheme. The mission was to assist the Hong Kong Education Council for its selection of over 100 PhD fellows over about 270 finalists annually. As an international panel member, I evaluated in 2019 about 40 finalists, providing comments and scores of them. I then spent two full days in the panel discussion of these and all other finalists so that all fellowship positions were recommended in ranked order. In 2020, the panel review was conducted remotely due to the Corvid-19 travel restriction, but the amount of efforts I expanded was about the same.

(iii) Service to the community

- Volunteer Judge for Rhode Island Science and Engineering Fair nearly each year.
- Faculty mentor for Research Experience for Teachers (RET), Brown MRSEC. Teachers advised include Mr. John Foley, summer, 2004; Mr. F. Dorsey, 2005; Ms. Maria Curtin, 2011.
- Sunday school 6th grade math teacher for Newton Chinese Language School, spring, 2004.
- Volunteer, 5th grade math fair, Heights Elementary School, Sharon, MA, June, 2004.
- Atomic Force Microscopy (AFM) lecture and demonstration for RET teachers, July, 2004, 2006.
- Volunteer tutor of 3 students from the local Classic High School in preparation of their participation in Physics Olympiad. Spring 2005.

- Freshmen advisor 2004-present; Freshmen advisor 2005-present; Mentor of Neerav Parekh, a Brown Freshman of under-represented background, under the ALANA program, 2005-2006.
- International Genetically Engineered Machines (iGEM) Ambassador to P. R. China, 2006-2007. I made iGEM related presentations at 3 universities in China in Dec, 2006. Prior to the trip, I wrote letters to Chinese Ministry of Education, Chinese Natural Science Foundation, and Chinese Academy of Sciences to promote iGEM. I also made numerous calls in China to help promote iGEM. As a result, 4 teams from Chinese universities participated in the 2007 iGEM competition held at MIT, and the Peking University Team won the grand prize in their first participation.
- In June, 2009, I gave a seminar at Sharon Middle School, telling over 40 seventh graders about the type of research I do as a biophysicist. I also consulted several high school seniors on their college application.
- I advise several high school students and their parents on college application per year. I have also advised a number of college students outside Brown for their graduate applications.
- In 2010 and 2011, I served as the faculty Mentor of Dr. Lei Zhang, Assistant Professor of Physics, Winston Salem State University (WSSU), for his preparation and application for tenure promotion. I was asked to do so by Provost Brenda Allen of WSSU, a former faculty colleague at Brown. I coached Dr. Zhang over a period of one year, with an hour-long discussion each month, followed by spending several hours to help polish every piece of his tenure dossier. My mentorship eventually helped Dr. Zhang attain his tenure.
- My laboratory provides demonstrations to local K12 students once or twice per year. This is part of our outreach effort to spark the interest of young students in science.
- Since 2012, I have been a member of Board of Trustees of Peking University Alumni Association of New England (PKUAA-NE). I volunteer a few hours per month to participate in advisory activities for the organization.
- Since 2015, I have participated in the BrownPrep program, to share my experience in science with several groups of high school students.
- On August 15, 2018, I was invited to give a public lecture, with simucast, at BONC, a publicly traded company in Beijing, PRC, entitled “A Personal Perspective on Biophysics in Connection with Science and Technology Worldwide”.
- In 2020, during the covid-19 pandemic, I offered extensive consultation to Hope Health, a nursing organization with several sites in RI and MA, to help the clinical staff education group develop and implement a practical N95 respirators reuse program by UV sterilization.

8. Academic Honors and Fellowships

- China and the U. S. Physics Examination and Application (CUSPEA), a joint program designed to select top Chinese physics students for graduate study in the US, July, 1987.
- Martin Fisher Scholar of Physics, Brandeis University, Sept., 1988 - May, 1991.
- Stephen Berko Memorial Prize for Outstanding Research, Brandeis University, May, 1994.
- Departmental Nomination for Sloan Fellowship, Sept, 2000.
- Joseph and Sophia Konopinski Award for Teaching Excellence, April, 2002, Indiana University.
- Salomon Research Award, Brown University, 2004.
- Kuanchen Wang Travel Award to visit Institute of Genetic Engineering, Beijing, China, Dec, 2006; Aug, 2011.
- Salomon Teaching Award, Brown University, 2008.
- Santander Universities Travel Award for International Collaboration, 2011.
- Elected **American Physical Society Fellow (Biological Physics)**, 2016

9. Teaching and Training Activities

- Graduate students who have obtained PhD with me as the primary thesis advisor, Karim Addas (August, 2004), Ariel Balter (April, 2005); Jorge Viamontes (Sept, 2005), Qi Wen (June, 2006),Yifeng Liu (Sept,

2008), Patrick Oakes (May, 2009), Jun He (May, 2009), Hyeran Kang (Sept, 2009), JingJing Wang, (Dec 2013, BME program, co-advised with A. Tripathi), Alexander Loosley (Sept, 2014), Angus McMullin (June, 2015, co-advised by Derek Stein), Michael Morse (Sept, 2015).

- Thesis advisor of current Ph.D. students: Jordan Bell, George Araujo, and Weijie Chen.
- Thesis advisor of physics MS students: Ms. Wenyu Zhang, Zidong Ma, Mr. Hui Ma, and Mr. Ang Li.
- Undergraduate students trained in the lab: Demetrious Harrington (2003-2006); Sareet Jacob and Mariana Mihalusova (2003-2004); Kelly Molloy and Worasom Kundhikanjana (2004-2005); Daniel Dwortis (2004-2006); Edward Baher (2005-2006); Lick-Kong Tam (2005-2007); Mike Mak and Deepa Galaiya (2006-2008); Lauren Francis, Robert Kim, and Jensen Law (2008-2009); Marie Atterbury, Tatiana Lopes, Panrapee (Jessie) Mahautmr, Daniel Munger, Katrina Wilson (2009-2010); Liana Nisimova, James Bensson (summer, 2010); Serin Seckin (2009-2011); Yosuke Kurokawa (2009-2012); Athena Huang (2011-2012), Marianna Neubauer (2010-2012), Nelson Lau & Daniel Milstein (summer, 2012), Ryan Handoko (2011-13), Yukun Gao (2011-13), Erica Kahn (2012-2013), Jeff Cummings (2012-2013), Nathan Johnson (2012-2014), Alexander Yang and Sha Sha (2013-2015), William Klimpert (2015-2017)
- Planned and obtained university approval for two new courses: PH0161, Biological Physics, offered each fall since 2004; PH0262, an advanced biophysics course since spring, 2005 (last offered in 2012).
- Initiated the weekly Biophysics Journal Club in 2004, which ran about ten years.
- Jointly developed an informal course with department chair for 1st year physics graduate students, called "Physics Communications", 2012-2013.
- Jointly developed with the department chair a new MS program in physics, and served as the director of the new MS program (DMP), 2012-2013. Resumed position as DMP, 2015-2017.
- Developed two freshman seminar courses: The first course is PH0110, Excursion to Biophysics, offered in fall, 2008; fall, 2009; and spring, 2011; The second course is PH0113, Squishy Physics, offered in spring, 2015 and 2016.
- I resumed teaching PHYS1610/2630 Biological Physics in 2018. I introduced interactive teaching to the course, and received highly positive feedback from students who took it in both semesters of 2018.
- In 2019, I initiated a new, limited enrollment, spring semester Phys0030, introductory physics primarily for life science students. This new offer allowed up to 36 students to take semester 1 of intro physics in the spring semester, and then its semester 2 sequel in the fall. The course was successfully implemented and the sequence is repeated in 2020. Effective spring, 2021, the cap has been lifted and the enrollment exceeded 100.
- In 2020-2022, while continuing to teach Phys0030 through the pandemic, I was also assigned to teach Phys0050, a calculus based introductive physics, and Phys1610/2630, Biological Physics. I was able to bring back interactive learning to classroom in the fall semester of 2022.

10. Editorial Service

- Editorial board member of MDPI-Fluid Dynamics, 2021-
- **Specialty chief editor**, Frontier in Soft Matter, 2021-