Khalid Salaita

*Associate Professor*  Office: (404) 727-7522

*Emory University* Lab: (404) 727-9011

*Department of Chemistry* Fax: (404) 727-6586

*1515 Dickey Drive*  k.salaita@emory.edu

*Atlanta, GA, 30322* <http://chemistry.emory.edu/faculty/salaita>

**Professional Experience**

*2015-Present* Associate Professor of Chemistry, Emory University, Atlanta, GA

*2014-Present* Program Faculty, Department of Biomedical Engineering, Georgia Institute of Technology and Emory University, Atlanta, GA

*2010-Present* Program Faculty, Winship Cancer Institute, Atlanta, GA

*2009-2015* Assistant Professor of Chemistry, Emory University, Atlanta, GA

*2006-2009* Postdoctoral Fellow with Prof. Jay T. Groves, University of California, Berkeley

**Education and Training**

**Postdoctoral Fellow**,7**/**2006 – 7/2009

Department of Chemistry, University of California, Berkeley, CA

Advisor: *Professor Jay T. Groves*

* Discovered a spatio-mechanical signaling pathway for the Eph receptor tyrosine kinase
* Developed an electrostatic-based label-free approach for microarray readout

**Ph.D. Chemistry***,* 8/2001 – 6/2006

Northwestern University, Evanston, IL

Thesis: *Dip-Pen Nanolithography: From Fundamental Transport to High-Throughput Applications*

Advisor*: Professor Chad A. Mirkin*

* Developed a massively parallel two-dimensional AFM-based lithography technique
* Studied the interfacial electrochemical properties of self-assembled monolayers on metallic films

**B.S. Chemistry***,* 8/1997 – 12/2000

Old Dominion University, Norfolk, VA

Undergraduate research with Prof. Nancy Xu, Old Dominion University, VA (*1998-2000)*

* Investigated metal nanoparticle-induced fluorescence

# **Awards and Honors**

Kavli Fellow **2016**

*Selected by the advisory board of the Kavli Foundation, members of the National Academy of Sciences and organizers of the Kavli/National Academy of Sciences Frontiers in Science Symposia series*

2016 Collegiate Inventor’s Competition, third place **2016**

*National competition recognizing the most innovative discoveries from science, engineering, mathematics, and technology*

Emory University Innovation Award **2015**

*Awarded by the office of technology transfer for most innovative technology development*

2015

Camille Dreyfus Teacher-Scholar Award **2014**

*Program supports the research and teaching careers of young faculty in the chemical sciences. Criteria for selection include an independent body of scholarship attained within the first five years of their appointment as independent researchers, and a demonstrated commitment to education, signaling the promise of continuing outstanding contributions to both research and teaching.*

NSF Early CAREER Award **2014**

*The National Science Foundation's most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations.*

Alfred P. Sloan Research Fellow **2013**

*126 early-career scholars selected from eight disciplines*

Cancer Research Award, Georgia Cancer Coalition **2010**

Nanoscale Science and Engineering Outstanding Research Award, *Northwestern University* **2005**

Joseph W. Richards Fellow of the Electrochemical Society **2005**

Nanoscale Science and Engineering Center Fellow, *Northwestern University* **2004**

International Dominion Scholarship, *Old Dominion University* **1997**–**2001**

Analytical Chemistry Award, *Old Dominion University* **2000**

CRC Chemistry Award, *Old Dominion University* **1998**

**Publications**

*Articles From Work at Emory University (\*\* indicates undergraduate co-author)*

1. Glazier, R.; Salaita, K. “*Supported Lipid Bilayer Platforms to Probe Cell Mechanobiology*” Biochimica et Biophysica Acta (BBA) Biomembranes, 2017, in press. DOI:10.1016/j.bbamem.2017.05.005 PMID: 28502789
2. Konen, J.; Summerbell, E.; Dwivedi, B.; Galior, K.; Hou, Y.; Rusnak, L.; Chen, A.; Saltz, J; Zhou, W.; Boise, L.; Vertino, P.; Cooper, L.; Salaita, K.; Kowalski, J.; Marcus, A.; “*Image-guided genomics of phenotypically heterogeneous populations reveals vascular signaling during symbiotic collective cancer invasion*" Nature Communications, 2017, 8, 15078. [doi:10.1038/ncomms15078](https://www.nature.com/articles/ncomms15078) PMID: 28497793
3. Liu, Y.; Blanchfield, L.; Pui-Yan Ma, V.; Andargachew, R.; Galior, K.; Liu, Z.; Evavold, B.; Salaita, K. “*DNA-based Nanoparticle Tension Sensors Reveal that T-cell Receptors Transmit Defined pN Forces to Their Antigens for Enhanced Fidelity”*  Proceedings of the National Academy of Sciences, 2016, 113 (20) 5610-5615, [DOI:10.1073/pnas.1600163113](http://www.pnas.org/content/early/2016/04/27/1600163113)

* See Chemical & Engineering News highlight, May 16th 2016, vol. 94 (2), pg. 12, *“T cells tug on antigens”* <http://cen.acs.org/articles/94/i20/T-cells-tug-antigens.html>
* See interview explaining the work <https://www.youtube.com/watch?v=fDTcserI4rM>
* See also “*T cells use handshakes to sort friends from foes*” in [Emory University Science Commons](http://esciencecommons.blogspot.com/2016/05/t-cells-use-handshakes-to-sort-friends.html)

1. Ma, P.-Y., Victor; Liu, Yang; Yehl, Kevin; Gailor, Kornelia; Zhang, Yun; Salaita, Khalid "*The Mechanically-induced Catalytic Amplification Reaction for Readout of Receptor-Mediated Cellular Forces*", Angewandte Chemie International Edition, 2016, 55(18), 5488-5492 DOI: 10.1002/anie.201600351<http://onlinelibrary.wiley.com/doi/10.1002/anie.201600351/abstract>

* See also highlight [“PCR for cellular forces” in June 2016 issue of *Nature Methods*](http://www.nature.com/nmeth/journal/v13/n6/full/nmeth.3886.html)

1. Ma, Victor Pui-Yan; Liu, Yang; Blanchfield, Lori; Su, Hanquan; Evavold, Brian; and Salaita, Khalid, “*Ratiometric tension probes for mapping receptor forces and clustering at intermembrane junctions*” Nano Letters, 2016, 16 (7), 4552–4559 <http://pubs.acs.org/doi/abs/10.1021/acs.nanolett.6b01817> DOI: [10.1021/acs.nanolett.6b01817](http://sfxhosted.exlibrisgroup.com/emu?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&__char_set=utf8&rft_id=info:doi/10.1021/acs.nanolett.6b01817&rfr_id=info:sid/LibX&rft.genre=article)
2. Chang, Yuan; Liu, Zheng; Zhang, Yun; Galior, Kornelia; \*\*Yang, Jeffery; Salaita, Khalid; “*A General Approach for Generating Fluorescent Probes to Visualize Piconewton Forces at the Cell Surface*”, Journal of the American Chemical Society, 2016, 138 (9), 2901-2904 <http://pubs.acs.org/doi/abs/10.1021/jacs.5b11602>  DOI: [10.1021/jacs.5b11602](http://sfxhosted.exlibrisgroup.com/emu?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&__char_set=utf8&rft_id=info:doi/10.1021/jacs.5b11602&rfr_id=info:sid/LibX&rft.genre=article)
3. Somasuntharam, I.; Yehl, K.; Carroll, S.; Maxwell, J.; Martinez, M.; Pao-Lin Che; Brown, B.; Salaita K.*; Knockdown of TNF-α by DNAzyme gold nanoparticles as an anti-inflammatory therapy for myocardial infarction*, Biomaterials, 2016, 83, 12–22.

DOI: <http://dx.doi.org/10.1016/j.biomaterials.2015.12.022>

1. Liu, Z.; Liu, Y.; Galior, K.; Salaita, K.; *Nanoscale Optomechanical Actuators for Controlling Mechanotransduction in Living Cells*, Nature Methods, 2016, 13, 143–146. DOI:10.1038/nmeth.3689 <http://www.nature.com/nmeth/journal/vaop/ncurrent/full/nmeth.3689.html>
2. Kevin Yehl; Andrew Mugler; Skanda Vivek; Yang Liu; Yun Zhang; Eric R. Weeks; Salaita. K.; *High Speed DNA-based Motors Powered by RNaseH*, Nature Nanotechnology, 2016, 11, 184–190. <http://www.nature.com/nnano/journal/vaop/ncurrent/full/nnano.2015.259.html>

* See also highlight in December 9th 2015 issue of [*Chemistry World*, *Royal Society of Chemistry, “Speedy DNA nanomachines are on a roll”*](http://www.rsc.org/chemistryworld/2015/12/dna-nano-machine-motor-fast-roller)
* See also highlight in [Phys.org](http://phys.org/news/2015-12-nano-walkers-speedy-dna-based-motor.html)
* See also highlight in [NanoWerk](http://www.nanowerk.com/nanotechnology-news/newsid=42013.php)
* See also highlight in [Emory Science Commons](http://esciencecommons.blogspot.com/2015/12/nano-walkers-take-speedy-leap-forward.html)
* See also highlight of work in [Video](https://www.youtube.com/watch?v=NM784y5Twc8&feature=youtu.be) interview

1. Stabley, D.; Simon, S. M.; Mattheyses, A. M.; **Salaita, K**.; *Real-time Imaging with 20 nanometer Resolution*, Nature Communications, 6, 8307, **2015**. DOI:[10.1038/ncomms9307](http://rdcu.be/eCCi)
2. Galior, Kornelia; Liu, Yang; Yehl, Kevin; Vivek, Skanda, Salaita, K.; “*Titin-based Nanoparticle Tension Sensors Map High-Magnitude Integrin Forces within Focal Adhesions*” Nano Letters, 2015, 16 (1), 341–348. DOI: [10.1021/acs.nanolett.5b03888](http://sfxhosted.exlibrisgroup.com/emu?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&__char_set=utf8&rft_id=info:doi/10.1021/acs.nanolett.5b03888&rfr_id=info:sid/LibX&rft.genre=article)

* See also Faculty1000 recommendation

1. Jurchenko, C.; Salaita, K.; *Lighting up the Force: Investigating Mechanisms of Mechanotransduction Using Fluorescent Tension Probes*, Molecular and Cellular Biology, 35(15) 2570-2582, 2015. [DOI: 10.1128/MCB.00195-15](http://mcb.asm.org/content/early/2015/05/28/MCB.00195-15.abstract)
2. Zhang, Y.; Ge, C.; Zhu, C.; **Salaita, K.**; *DNA-based Digital Tension Probes Reveal Early Cell Adhesion Mechanics at the Single Molecule Level*, Nature Communications, 5, 5167, **2014**. [DOI:10.1038/ncomms6167](http://www.nature.com/ncomms/2014/141024/ncomms6167/full/ncomms6167.html#abstract)

* See highlight in November 3rd, **2014** issue of *C&E News,* “[Shedding Light On Cell Mechanics](http://cen.acs.org/articles/92/i44/Shedding-Light-Cell-Mechanics.html)”
* See highlight in November 5th, **2014** issue of [*Nature Reviews Molecular and Cell Biology*](http://chemistry.emory.edu/faculty/salaita/Papers_files/nature%20reviews%20highlight.pdf)
* See highlight in December, **2014** issue of [*Nature Methods*](http://www.nature.com/nmeth/journal/v11/n12/full/nmeth.3202.html)

1. Liu, Y.; Medda, R.; Liu, Z.; Galior, K.; Yehl, K.; Cavalcanti-Adam, A. E.; Spatz, J. P.; **Salaita, K.**; *Nanoparticle Tension Probes Patterned at the Nanoscale: Impact of integrin clustering on force transmission*, Nano Letters, 14(10), 5539-5546, **2014**. [DOI: 10.1021/nl501912g](http://pubs.acs.org/doi/abs/10.1021/nl501912g)
2. Jurchenko, C.; Chang, Y.; Narui, Y.; Zhang, Y.; **Salaita. K**. *Integrin Generated Forces Lead to Streptavidin-Biotin Unbinding in Cellular Adhesions*, Biophysical Journal, 106(7), 1436-1446, **2014**. <http://www.sciencedirect.com/science/article/pii/S0006349514002197>

* See highlight in April 7th, 2014 issue of C&E News: <http://cen.acs.org/articles/92/i14/Cellular-TugWar.html>

1. Jiang, T.; Xu, C.; Liu, Y.; Liu, Z.; Wall S. J.; Zuo, X.; Lian, T.; **Salaita, K.**; Ni, C.; Pochan, D.; Conticello, V., P.; *Structurally Defined Nano-scale Sheets from Self-Assembly of Collagen-Mimetic Peptides*, Journal of the American Chemical Society, 136(11), 4300-4308, **2014**. <http://pubs.acs.org/doi/abs/10.1021/ja412867z>

*Citations: 7 (Web of Science)*

1. Zheng, W.; Liu, Y.; West, A.; Schuler, E.; Yehl, K.; Dyer, R. B.; Kindt, J. T.; **Salaita, K.**; *Quantum dots encapsulated within phospholipid membranes: phase-dependent structure, photostability, and site-selective functionalization*, Journal of the American Chemical Society, 136 (5), 1992–1999, **2014**. <http://dx.doi.org/10.1021/ja411339f>

*Citations: 4 (Web of Science)*

1. Boopathy, A. V.; Che, P. L.; Somasuntharam I., Fiore V. F.; Cabigas, E. B.; Ban, K.; Brown M. E.; Narui, Y.; Barker T. H.; Yoon, Y.; **Salaita, K.**; García, A. J.; Davis, M. E.; *The modulation of cardiac progenitor cell function by hydrogel-dependent Notch1 activation,* Biomaterials, 35(28), 8103-8112, **2014** [http://www.sciencedirect.com/science/article/pii/S0142961214006395#](http://www.sciencedirect.com/science/article/pii/S0142961214006395)

*Citations: 2 (Web of Science)*

1. Narui, Y.; **Salaita, K.**; *Membrane Tethered Delta Activates Notch and Reveals a Role for Spatio-Mechanical Regulation of the Signaling Pathway*, Biophysical Journal, 105(12), 2655-2665, **2013**. <http://www.sciencedirect.com/science/article/pii/S000634951301240X>

*Citations: 3 (Web of Science)*

1. Liu, Y.; Yehl, K.; Narui, Y.; **Salaita, K.** *Tension Sensing Nanoparticles for Mechano-imaging at the Living non-Living Interface*, Journal of the American Chemical Society, *135* (14), 5320–5323, **2013**. <http://pubs.acs.org/doi/abs/10.1021/ja401494e>

*Citations: 15 (Web of Science)*

* See also highlight in September 19th, 2013 issue of *The Scientist*, Lab Tools, “[Sensing a little tension](http://www.the-scientist.com/?articles.view/articleNo/37216/title/Sensing-a-Little-Tension/)”
* Recommended by Faculty of 1000 (<http://f1000.com/prime/717989993>)

1. Stabley, D.; Retterer, S.; \*\*Marshall, S.; **Salaita, K**. *Manipulating the Lateral Diffusion of Surface-Anchored EGF Demonstrates that Receptor Clustering Modulates Phosphorylation Levels*, Integrative Biology, *5*, 659-668, **2013**.<http://pubs.rsc.org/en/content/articlepdf/2013/ib/c3ib20239a>

*Citations: 5 (Web of Science)*

* See also back cover art for the issue: <http://pubs.rsc.org/en/content/articlepdf/2013/ib/c3ib90011h>

1. Stabley, D.; Jurchenko, C.; \*\*Marshall, S.; **Salaita, K**.; *Mapping Mechanical Tension across Membrane Receptors with a Fluorescence Sensor*, Nature Methods, *9*, 64-67, **2012** <http://www.nature.com/nmeth/journal/vaop/ncurrent/full/nmeth.1747.html>

*Citations: 31 (Web of Science)*

* See also: [*Research* *Concentrates*](http://cen.acs.org/articles/89/i46/Measuring-Tension-Cell-Surface.html), Chemical & Engineering News, 89(46), p. 35, **2011**
* See also: [*Author profile*](http://www.nature.com/nmeth/journal/v9/n1/full/nmeth.1816.html), Nature Methods, DOI:10.1038/nmeth.1789, **2012**
* Seealso: “[Tiny tools to measure force](%E2%80%9CTiny%20tools%20to%20measure%20force%E2%80%9D,)”, Methods to Watch Special Feature, Nature Methods, 11, 29, **2014**
* Recommended by Faculty of 1000 (<http://f1000.com/prime/13931971>)

1. Yehl, K.; Joshi, J.; Greene, B.; Dyer, R.; Nahta, R.; **Salaita, K**.; *Catalytic Deoxyribozyme-Modified Nanoparticles for RNAi Independent Gene Regulation*, ACS Nano, *6(10)*, 9150-9157, **2012** <http://pubs.acs.org/doi/abs/10.1021/nn3034265>

*Citations: 12 (Web of Science)*

1. \*\*Chan, C.; **Salaita, K**.; *The Molecular Boat: A Hands-On Experiment to Demonstrate the Forces Applied to Self-assembled Monolayers at Interfaces*, Journal of Chemical Education, 89(12), 1547, **2012**,DOI*:* <http://dx.doi.org/10.1021/ed200832h>

*Citations: 2 (Web of Science)*

* Selected as cover art for the December 2012 issue.

1. Narui, Y.; **Salaita, K. S**. *Dip-pen Nanolithography of Optically Transparent Cationic Polymers to Manipulate Spatial Organization of Proteolipid Membranes,* Chemical Science*, 3*, 794-799, **2012** <http://pubs.rsc.org/en/Content/ArticleLanding/2012/SC/C1SC00475A>

*Citations: 14 (Web of Science)*

1. Laroui, H.; Yan,Y.; Narui, Y.; Ingersoll, S. A.; Ayyadurai, S.; Charania, M. A.; Zhou, F.; **Salaita, K.**; Sitaraman, S.V.; Merlin, D.;*Tri-DAP interacts directly with the LRR domain of NOD1 and consequently increases RICK/NOD1 interaction and RICK phosphorylation activity*, Journal of Biological Chemistry, *286*, 31003-31013, **2011**, <http://www.jbc.org/content/286/35/31003>

*Citations: 24 (Web of Science)*

1. Laroui, H.; Wilson, S.D.; Dalmasso, G.; Salaita, K.; Murthy, N.; Sitaraman, S.; Merlin D.; *Nanomedicine in GI*, American Journal of Physiology, Gastrointestinal and Liver Physiology, *300(3)*, G371-G383, 2011. <http://ajpgi.physiology.org/content/300/3/G371>

*Citations: 22 (Web of Science)*

*Publications from prior work*

1. Nair, P. N.; Salaita, K.; Petit, R. P.; Groves, J. T.; *Investigating the Role of Receptor Organization Using Geometrically Patterned Lipid Membranes*, Nature Protocols, 2011, *6*, 523-539. <http://www.nature.com/nprot/journal/v6/n4/full/nprot.2011.302.html>
2. Salaita, K.; Groves, J.T.; *Roles of the Cytoskeleton in Regulating EphA2 Signaling*, Communicative & Integrative Biology, *3(5)*, 454-457, 2010.

<http://www.landesbioscience.com/journals/cib/article/SalaitaCIB3-5.pdf>

1. Salaita, K.\*; Nair, P.\*; Petit, R.S.; Neve, R. M.; Das, D; Gray, J.W.; Groves J.T*.*; *Physical Manipulation of EphA2 Spatial Organization Alters Cellular Response to Ephrin-A1,* Science, 2010, *327(5971)*, 1380-1385.

<http://www.sciencemag.org/cgi/content/full/327/5971/1380>

See also, *Perspectives*, Science, 327(5971), 1335-1336, 2010.

See also, *Research Highlights*, Nature Materials, 9, 285, 2010.

See also, *Research Highlights*, Nature Reviews Molecular Cell Biology, 11, 311, 2010.

1. Salaita, K.; Amarnath, A.; Higgins, T. B.; Mirkin, C. A.; *The Effects of Organic Vapor on Alkanethiol Deposition Via Dip-Pen Nanolithography*. Scanning, 2010, *32 (1);* 9-14. <http://www3.interscience.wiley.com/journal/123371600/abstract>
2. Clack, N. C.\*; Salaita, K.\*; Groves, J. T.; *Electrostatic Imaging of DNA Microarrays Using Charged Particles.* Nature Biotechnology, 2008, *26(7)*; 825-830.

<http://www.nature.com/nbt/journal/v26/n7/full/nbt1416.html>

See also, *Research Highlights,* Nature Materials, 7, 608, 2008.

See also, *News of the Week,* Chemical & Engineering News, 86(27), 9, 2008.

See also, *News and Views*, Personalized Medicine, 5, 419, 2008.

See also, *Inside Bay Area*, Oakland Tribune, 2008.

1. Salaita, K.; Wang, Y.; Vega, R. A.; Mirkin, C. A.; *Applications of Dip-Pen Nanolithography*. Nature Nanotechnology, 2007, *2*; 145-155.

<http://www.nature.com/nnano/journal/v2/n3/full/nnano.2007.39.html>

1. Salaita, K.; Lee, S.-W.; Ginger, D. S; Mirkin, C. A.; *DPN-Generated Nanostructures as Positive Resists For Preparing Lithographic Masters or Hole Arrays.* Nano Lett. 2006, *(6)11*; 2493-2498. <http://pubs.acs.org/doi/pdf/10.1021/nl061719t>
2. Salaita, K.\*; Wang, Y.\*; Fragala, J.; Vega, R. A.; Liu, C.; Mirkin, C. A.; *Massively Parallel Dip-Pen Nanolithography with 55,000 Two-Dimensional Arrays*. Angew. Chem. Int. Edit., 2006, *45(43)*; 7220-7223. (Cover Article).

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See also, *Research Highlights,* Nature, 443, 484, 2006. See also, *News Focus*, Science, 314, 47, 2006.

See also, *Latest News*, Chemical & Engineering News, 84(40), 13, 2006.

See also, *Business,* Chicago Tribune, September 26, 2006.

1. Sun, P.; Zong, H.; Salaita, K.; Ketter, J. B.; Hoffman, B. M.; Mirkin, C. A.; *Probing Electrochemical Potential Versus Surface Distance by Molecular Orientation*. J. Phys. Chem. B. 2006, *110(37)*; 18151-18153. <http://pubs.acs.org/doi/pdf/10.1021/jp065089v>
2. Khoshbin, M. S.; Ovchinnikov, M. V., Salaita, K., Mirkin, C. A., Stern, C. L., Zakharov, L. N. Rheingold, A. L.; *Metallomacrocycles Incorporating Cofacially Aligned Diimide Units*. Chem. Asian J., 2006, *1(5)*; 686-692. (Cover article)

<http://www3.interscience.wiley.com/cgi-bin/fulltext/113392841/HTMLSTART>

1. Vega, R. A.; Salaita, K.; Kakkessery, J. J.; Mirkin, C. A.; *Nanopatterns of Biological Molecules. In Nanobiotechnology II: Concept, Applications and Perspectives.* Wiley-VCH, Weinheim, Germany, 2006, Chapter 13, 235-262.
2. Lee, S. W.; Oh, B. K.; Sanedrin, R. G.; Salaita, K.; Mirkin, C. A. *Oriented Protein Nanostructures Generated via Parallel Dip-Pen Nanolithography.* Advanced. Materials. 2006, *18*, 1133-1136. <http://www3.interscience.wiley.com/cgi-bin/fulltext/112569700/PDFSTART>
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4. Salaita, K.; Lee, S.-W.; Wang, X.; Huang, L.; Dellinger, T. M.; Liu, C.; Mirkin, C. A. *Sub-100nm, Centimeter-Scale, Parallel Dip-Pen Nanolithography.* Small 2005, *1(10)*; 940-945. <http://www3.interscience.wiley.com/cgi-bin/fulltext/110575796/HTMLSTART>

See also, *Research News*, Materials Today, May 9th, 2005.See also, *Highlights*,Advanced Functional Materials, 16*,* 15*,* 2006.

1. **Salaita**, **K**.; Amarnath, A.; Maspoch, D.; Higgins, T. B.; Mirkin, C. A. *Spontaneous “Phase Separation” of Patterned Binary Alkanethiol Mixtures*.J. Am. Chem. Soc*.* **2005,** *127(32)*; 11283-11287. <http://pubs.acs.org/doi/pdf/10.1021/ja042393y>

1. Vega, R. A.; Maspoch D.; **Salaita, K.;** Mirkin C. A. *Nanoarrays of Single Virus Particles*. Angew. Chem. Int. Edit. **2005**, 44(37); 6013-6015.

<http://www3.interscience.wiley.com/cgi-bin/fulltext/111081789/HTMLSTART>

1. Liu, X.; Zhang, Y.; Goswami, D. K.; Okasinski, J. S.; **Salaita, K.**;Sun, P.; Bedzyk, M. B.; Mirkin, C. A. *The Controlled Evolution of a Single Crystal.* Science **2005**, *307;* 1763-1766. <http://www.sciencemag.org/cgi/content/full/307/5716/1763>

See also, *Meeting News*, Chemical & Engineering News, 83(13), 33, **2005.**

1. Vesper, B. J.; **Salaita K.**; Zong, Z.; Mirkin, C. A.; Barrett, A. G.; Hoffman, B. M. *Surface-Bound Porphyrazines: Controlling Reduction Potentials of Self-Assembled Monolayers Through Molecular Proximity/Orientation to a Metal Surface.* J. Am. Chem. Soc. **2004**, 126*(50)*; 16653-16658*.* <http://pubs.acs.org/doi/pdf/10.1021/ja045270m>

See also, *Highlights of Recent Literature,* Science,306*,* 5704*,* **2004.**

1. Xu, X.-H. N.; Huang, S.; Brownlow, W.; **Salaita, K.**; Jeffers, R. B. *Size and Temperature Dependence of Surface Plasmon Absorption of Gold Nanoparticles Induced by Tris(2,2'-bipyridine)ruthenium(II).* J. Phys. Chem. B.**2004**, 108(40); 15543-15551.

<http://pubs.acs.org/doi/pdf/10.1021/jp048124b>

1. Zhang, Y.\*; **Salaita, K**.\*; Lim. J.-H.; Lee, K.-B.; Mirkin, C. A. *A Massively Parallel Electrochemical Approach to the Miniaturization of Organic Micro- and Nanostructures on Surfaces.* Langmuir**2004**, *20(3)*; 962-968.

<http://pubs.acs.org/doi/pdf/10.1021/la030392y>

1. Zhang, Y.; **Salaita, K.**; Lim, J.-H.; Mirkin, C. A. *Electrochemical Whittling of Organic Nanostructures.* Nano Letters **2002***, 2(12)*;1389-1392*.*

<http://pubs.acs.org/doi/full/10.1021/nl0202298>

**Patents Issued**

* “Massively Parallel Lithography with Two-Dimensional Pen Arrays”, patent number 8,220,317, **7/17/2012**, Mirkin, Chad; **Salaita, Khalid**; Yuhuang Wang; Fragala, Joseph; Shile, Raymond.
* “Etching and Hole Arrays”, patent number 8,192,795; issued **6/5/2012**, Mirkin, Chad; **Salaita; Khalid**.
* “*Phase separation in patterned structures*”, patent number 8,057,857 ; issued **11/15/2011**, Mirkin, Chad; **Salaita; Khalid**.
* “*Electrochemical miniaturization of organic micro-and nanostructures*”, patent number 7,611,619; issued **11/3/2009**, Mirkin, C.; Zhang, Y.; **Salaita, K.**
* “*Nanoarrays of single virus particles, methods and instrumentation for the fabrication and use thereof*”, patent number 7,569,340; issued **8/4/2009**, Mirkin, C.; Vega, R.; Maspoch, D.; **Salaita, K.**

# **Patents Pending** (\* = at Emory University)

* *\*Polynucleotide Based Movement, Kits and Methods Related Thereto,* **2015,** 15080PROV, **Salaita, K.**; Yehl, K.
* *\*Devices, Compositions, and Methods for Measuring Molecular Forces,* **2011**, US61/540,615, **Salaita K.;** Jurchenko, C.; Stabley, D.
* *\*Particle-Nucleic Acid Conjugates and Therapeutic Uses Related Thereto,* **2012**, WO 2014/003830, US61/663,933, **Salaita, K.**; Yehl, K.
* *A Spatial Biomarker of Disease and Detection of Spatial Organization of Cellular Receptors,* **2010,** PCT/US2010/022671, **Salaita, K.**; Nair, P. M.; Das, D.; Gray, J. W.; Groves, J. T.
* *Electrostatic Sensing of Oligonucleotides using Charged Particles,* **2008,** 2397P, Groves, J. T.; Clack, N. C.; **Salaita, K.**

# **Lectures and Presentations** (in reverse chronological order, **\***= invited, *upcoming talks italic*)

* 1. \*Keynote to the Bioengineering and Biosciences Graduate Students techniques symposium, Georgia Institute of Technology, Atlanta, GA, June 7th, **2017**
  2. \*10th Southeast Meeting on Soft Materials, Georgia Institute of Technology, Atlanta, GA, May 12th **2017**.
  3. \*Nanotechnology forum, “Nanobiomaterials in Healthcare”, Georgia Institute of Technology, Atlanta, GA, May 3rd, **2017**
  4. \* NIH T32 Tissue Engineering Training Grant Seminar, Georgia Institute of Technology, Atlanta, GA, April 18, **2017**
  5. \*Fifteenth Japanese-American Kavli Frontiers of Science symposium, Irvine, California, December 2-4, **2016.**
  6. \* U.S. National Academy of Sciences Arab Arab-American Frontiers of Science, Engineering, and Medicine symposium, Masdar Institute of Science Technology, Abu Dhabi, United Arab Emirates, November 5-8, **2016.**
  7. \* Key Note Speaker: Cell Biology of Viral Infection meeting, Schoental, Germany November 2 – 4, **2016**.
  8. Mechanical Biology of Disease, Biophysical Society Meeting, Singapore, September 27-30, **2016.**
  9. \* “Nanoparticles for Measuring/Controlling Cell Signaling” symposium, American Chemical Society National Meeting, August 21-25, **2016**
  10. **\*** “Impacts of Nanotechnology & Single Molecule Spectroscopy in Biology & Medicine” symposium, American Chemical Society National Meeting, August 21-25, **2016**
  11. **\*** “Analyzing & Controlling Cell-Material Interactions” symposium, American Chemical Society National Meeting, August 21-25, **2016**
  12. \*Materials Research Society, Bioinspired Dynamic Materials, Phoenix, Arizona, March 28-April 1, **2016**
  13. \*UNAM-Emory joint Symposium, Atlanta, GA, March 3rd, **2016**
  14. \*Columbia University, Department of Chemistry Colloquium, January 21st, **2016**
  15. \*University of Alabama, Department of Chemistry, January 28th, **2016**
  16. \*PacifiChem, Honolulu, Hawaii, December 15-19th, **2015**
  17. \*American Society for Cell Biology (ASCB) 2015, San Diego, December 12-17, **2015**
  18. \*Arab-American Frontiers of Science, Engineering, and Medicine symposium, hosted by the King Abdullah University of Science and Technology (KAUST), Saudia Arabia, December 5-7, **2015**
  19. \*TethMem Meeting 2015, Singapore, November 8-11th, **2015**
  20. \*Boston University, Department of Chemistry, October 16th, **2015**.
  21. \*University of Maryland, Department of Physics Biophysics Seminar, October 12th, **2015**
  22. \*New Biological Frontiers Illuminated by Molecular Sensors and Actuators, Taipei, Taiwan, June 28 – July 1, **2015**
  23. \*Nano Korea, World Trade Center, Seoul, July 1-3rd, **2015**
  24. \* 2015 Canadian Society of Chemistry National Meeting, Ottawa, Canada, June 11-15th, **2015**
  25. \*Boston University, Dept. of Biomedical Engineering and Dept. of Chemistry, February 18th, **2015**
  26. Biophysical Society Meeting, Baltimore, MD, February 7, **2015**
  27. \*Max Planck Institute for Intelligent Systems, Stuttgart, Germany, February, 2nd, **2015**
  28. \*Delft University of Technology, Bionanoscience Department, Netherlands, Jan. 29th, **2015**
  29. \*Pennsylvania State University, Department of Chemistry, December 11th, **2014**
  30. \*Biophysics Colloquium, Cornell University, Ithaca, NY, November 12th, **2014**
  31. \*Camille Dreyfus Symposium, New York Academy of Sciences, NY, Oct. 24th, **2014**
  32. \*University of Wisconsin-Madison, Department of Chemistry, October 2nd, **2014**
  33. \*Wyss Institute for Biologically Inspired Engineering, Harvard University, September 18th, **2014**
  34. *\**Materials Horizons Symposium, Georgia Institute of Technology, July 23rd, **2014**
  35. *\**7th World Congress of Biomechanics, Boston, MA, July 6-11, **2014**
  36. \*Indian University-Purdue University at Indianapolis, April 30th, **2014**
  37. \*Indiana University, Department of Chemistry, April 29th, **2014**
  38. \*University of Pittsburgh, Department of Chemistry, Pittsburgh, PA, April 17,**2014**
  39. \*Stanford University, Department of Chemistry, Palo Alto, CA, March 31st, **2014**
  40. \*“Biomembrane Structure, Mechanics, and Dynamics” symposium, American Chemical Society,  March 16-20th, **2014**(two invited presentations)
  41. \*University of California, Berkeley, Department of Chemistry, Structural and Quantitative Biology Seminar, March 17th, **2014**
  42. \*North Carolina State University, Department of Materials Science and Engineering, February 28th, **2014**
  43. \*University of California at San Diego, Department of Chemistry, February 24th, **2014**
  44. \*Biophysical Society Meeting, San Francisco, CA, February 15-19, **2014**
  45. \*University of California at San Francisco, Department of Biochemistry and Biophysics, CA, February 14th, **2014**
  46. \*Georgia Institute of Technology, Department of Chemistry, Atlanta, GA, February 11th, **2014**
  47. \*International Institute of Nanotechnology, Frontiers in Nanotechnology Seminar, Northwestern University, February 6th, **2014**
  48. **\***Department of Chemistry, University of Florida, February 4th, **2014**
  49. \*Center of Physics of Living Systems, University of Illinois Urbana-Champaign, January, 31st, **2014**
  50. \*Institute for Bioengineering of Catalonia (IBEC), Departmental Seminar, Barcelona, Spain, November 25th, **2013**
  51. \*Institute of Photonic Sciences, Departmental Seminar, Barcelona, Spain, November 26th, **2013**
  52. \*University of Akron, Department of Chemistry, OH, November 12th, **2013**
  53. \*“Surface Chemistry in Oncology” symposium, American Chemical Society Meeting, New Orleans, LA, April 7-11, **2013**
  54. \*“Biomembrane Structure, Mechanics, and Dynamics” symposium, American Chemical Society, New Orleans, LA, April 7-11, **2013**
  55. Biophysical Society Annual Meeting, Philadelphia, Pennsylvania, February 2-6th, **2013**
  56. \*Indo-US Science and Technology Forum AAAS Symposium on “Structure, Dynamics, and Mechanics of Biological Membranes” Bangalore, India, December 29th – 31st, **2012**
  57. **\***Loyola University, Department of Chemistry Seminar, Chicago, IL, November 8, **2012**
  58. \*Seoul National University, Department of Chemistry, Seoul, Korea, October 22, **2012**
  59. **\***Hong Kong Baptist University, Department of Chemistry, Hong Kong, October 25, **2012**
  60. \*Cardiovascular Biology Seminar, Emory University Medical School, October 3, **2012**
  61. \*Ecole polytechnique fédérale de Lausanne EPFL, Lausanne, Switzerland, September 28, **2012**
  62. **\***University of Geneva, Department of Biochemistry, Geneva, Switzerland, September 27, **2012**
  63. **\***ETH, Science City, Zurich, Switzerland, September 24, **2012**
  64. \*MipTec International Conference on Drug Discovery, Basel, Switzerland, September 24-27, **2012**
  65. \*Gordon Research Conference on Notch Signaling, Bates College, Lewiston, ME, Aug. 12-17, **2012** (invited oral presentation)
  66. Gordon Research Conference on Single Molecule Approaches to Biology, West Dover, VT, July 15-20, **2012**
  67. 7th International Symposium on Biomechanics in Vascular Biology & Cardiovascular Disease, Atlanta, GA, April 25-27, **2012**.
  68. \*“Biomembrane Structure, Mechanics, and Dynamics” symposium, American Chemical Society, San Diego, CA, Mar. 27-31, **2012**.
  69. \*Intestinal Pathobiology Symposia, Georgia State University, Atlanta, GA, March 1-2, **2012**.
  70. \*Department of Cell Biology Seminar, Emory University, Atlanta, GA, January 28th, **2012**.
  71. \*Georgia Institute of Technology, Molecular biophysics seminar, December 5, **2011**.
  72. \*Center for Nanoscale Materials & Biointegration (CNMB), University of Alabama, Birmingham, December 2, **2011**
  73. \*Mirkunite 2011, Northwestern University, Chicago, Il, Aug. 28-29, **2011**
  74. **\***Young Investigator Symposium, Dept. of Chemistry, Seoul National University, Seoul, Korea, Aug. 24, **2011**
  75. \*NanoKorea 2011, Kintex, Seoul, Korea, Aug. 24-26, **2011**
  76. \*International Conference on Materials for Advanced Technology, Suntec, Singapore, Jun.26-Jul 1, **2011** (two talks in separate sessions)
  77. International Conference on Materials for Advanced Technology, Suntec, Singapore, Jun. 26-Jul 1, **2011** (two talks in separate sessions)
  78. Gordon Research Conference on fibronectin, integrins & related molecules, Lucca, Italy, May 1-6, **2011**
  79. American Chemical Society, Anaheim, CA, Mar. 27-31, **2011** (two talks in separate sessions)
  80. American Chemical Society, Anaheim, CA, Mar. 27-31, **2011** (two talks in separate sessions)
  81. \*Integrative Nanoscience Institute (INSI) Colloquium, Florida State University, Tallahassee, FL Jan. 31, **2011**
  82. \*American Chemical Society Southwest Regional Meeting/Southeast Regional Meeting, New Orleans, LA, USA, Dec. 1-4, **2010**
  83. **\***Nanotechnology Workshop, Georgia Tech Nanotechnology Center, Atlanta, GA, Oct. 25, **2010**
  84. International Q-bio Conference on Cellular Information Processing, Santa Fe, NM, Aug. 11-14 **2010**
  85. **\***NSTI, International Conference on Nanoscience and Technology, Anaheim, CA, June 21-25 **2010**
  86. \*Winship Elkin Lecture Series, Winship Cancer Institute, Atlanta, GA, Feb. 5 **2010**
  87. \*Oak Ridge National Lab, Center for Nanophase Materials Sciences, Oak Ridge, TN, Nov. 6, **2009**
  88. \*School of Medicine, Department of Physiology, Emory University, Atlanta, GA, Oct 29 **2009**

**Group Member Presentations (underline indicates presenting student, \*= undergrad)**

1. Roxanne Glazier, *“Investigating Integrin Mechanics in Podosomes using Fluorescence Spectroscopy”*2016 Southeastern Biomaterials meeting, October 16th **2016**.
2. Jessica Petree, “Building a Nanozyme for RNA Gene Therapy” 2016 Southeastern Biomaterials meeting, October 16th **2016**.
3. Joshua Brockman, “2D Molecular Force Probes: Taking Tension in New Directions”, 9th Southeast Meeting on Soft Materials, Atlanta, GA, May 16th **2016**
4. Aaron Blanchard, “DNA Motors for Molecular Detection”, 9th Southeast Meeting on Soft Materials, Atlanta, GA, May 16th **2016**.
5. Victor Ma, “Ratiometric tension probes for mapping receptor forces and clustering at intermembrane junctions”, 9th Southeast Meeting on Soft Materials, Atlanta, GA, May 16th **2016**.
6. Zheng Liu, Khalid Salaita, “Optomechanical Actuators for Controlling Mechanotransduction in Living Cells.” Wuhan University, Wuhan, January, 6, **2016**
7. Zheng Liu, Khalid Salaita, “Optomechanical Actuators for Controlling Mechanotransduction in Living Cells.” Southeast University, Nanjing, January 3, **2016**
8. Zheng Liu, Khalid Salaita, “Optomechanical Actuators for Controlling Mechanotransduction in Living Cells.” Huazhong University of Science & Technology, Wuhan, Dec.28, **2015**
9. Kevin Yehl, Andrew Mugler, Skanda Vivek, Yang Liu, Yun Zhang, Edward Ma\*, Eric R. Weeks, Salaita. K. 2015 Gordon Research Conference on Nucleosides, Nucleotides & Oligonucleotides, Salve Regina University, Newport, RI, June 28 - July 3, **2015**.
10. Yun Zhang, Yongzhi Qiu, Wilbur Lam and Khalid Salaita, 2015 Gordon Research Conference on Fibronectin, Integrins & Related Molecules, Il Coco, Italy, May 10-15, **2015**.
11. Kevin Yehl, Andrew Mugler, Skanda Vivek, Yang Liu, Yun Zhang, Edward Ma\*, Eric R. Weeks, Salaita. K., Southeastern Regional Meeting of the American Chemical Society (SERMACS), Nashville, Tennessee, November 11, **2014**.
12. Mengzhen Fan\*, Kevin Yehl, Khalid Salaita, “Single-Nucleotide Polymorphism (SNP) Detection Using a DNA-based Machine”, Biomedical Engineering Society Annual Meeting, San Antonio, Texas, October 22-25, **2014**
13. Richard Park\*, Yang Liu, Khalid Salaita, “Optical Imaging of Biomolecular Tension with Sub-100 nm Resolution”, Biomedical Engineering Society Annual Meeting, San Antonio, Texas, October 22-25, **2014**
14. Yang Liu, Kornelia Galior, Khalid Salaita, “Nanoparticle Tension Probes Patterned at the Nanoscale: Impact of integrin clustering on force transmission*”*, Gordon Research Conference/symposium on Signaling by Adhesion Receptors: Spatial Relevance of Adhesion Signals, Bates College, Lewiston, ME, June 22nd, **2014**
15. Zheng Liu, Khalid Salaita “Optomechanical Actuators for Controlling Mechanotransduction in Living Cells.” The 8th Southeast Meeting on Soft Materials, Atlanta, GA, USA, May, 14th **2014**.
16. Weiwei Zheng, Geoffrey Strouse, Khalid Salaita “Molecular Engineering of Quantum Dots and Their Local Environments”, College of Engineering and Applied Sciences, Nanjing University, China, April 11th **2014**
17. Weiwei Zheng,Geoffrey Strouse, Khalid Salaita. *Molecular Engineering of Quantum Dots and Their Local Environments,* Invited talk in the College of Chemistry and Materials Engineering, Wenzhou University, China, April 8th **2014**
18. Yang Liu, Rebbeca Medda, Ada Cavalcanti-Adam, Khalid Salaita. 58th Annual Meeting of the Biophysical Society, “Investigating Focal Adhesion Mechanics Using Nanopatterned Molecular Tension Fluorescence Microscopy (MTFM)". Feb. **2014**, San Francisco, CA (oral presentation)
19. Yang Liu, Kevin Yehl, Yoshie Narui, Ada Cavalcanti-Adam, Khalid Salaita. Atlanta Area Molecular and Cellular Biophysics Symposium, Poster title: “Tension Sensing Nanoparticle Patterning for Imaging Receptor Mechanics on the Surface of Living Cells". Dec **2013**, Atlanta, GA (Poster)
20. Yun Zhang, Chenghao Ge, Cheng Zhu, Khalid Salaita. DNA-based “Digital” pN-range Tension Probes Reveal Early Cell Adhesion Mechanics at the Single Molecule Level, 58th Annual Meeting of the Biophysical Society, San Francisco, CA, Feb. 19th, **2014.** (Poster)
21. Weiwei Zheng,Yang Liu, Ana West, Erin E. Schuler, Kevin Yehl, R. Brian Dyer, James T. Kindt, Khalid Salaita.*Quantum Dots Encapsulated within Phospholipid Membranes: Phase-dependent Structure, Photostability, and Site-selective Functionalization*, 247th ACS National Meeting, Dallas, TX, USA. March 17th **2014**.
22. Weiwei Zheng, Geoffrey Strouse, Khalid Salaita. Semiconductor Quantum Dots (QDs): Tools for Optical Probing, Fisk University, Nashville, TN, USA. February 11th **2014**
23. Yang Liu, Kevin Yehl, Yoshie Narui, Ada Cavalcanti-Adam, Khalid Salaita. Poster title: “Tension Sensing Nanoparticle Patterning for Imaging Receptor Mechanics on the Surface of Living Cells". Gordon Research Conference and seminar: Self-Assembly & Supramolecular Chemistry, May **2013**, Switzerland.
24. Yang Liu, Khalid Salaita. Chemistry Seminar, "Mechano-imaging at the living/nonliving interface with AuNP-based molecular tension fluorescence microscopy (MTFM)". June **2013**, Hunan University, People's Republic of China.
25. Weiwei Zheng,Yang Liu, Kevin Yehl, Ana West, Erin Schuler, James Kindt, Khalid Salaita. *Quantum Dots in Lipid Vesicles.* Poster Presentation in the Atlanta Area Molecular and Cellular Biophysics Symposium, Atlanta, GA, December, 7th **2013**.
26. Yehl, K.; Zhang, Yun; Liu, Yang; Liu, Zheng; Salaita, K. "Supramolecular Particle Motors (SPMs): Autonomous motion powered by RNA hydrolysis" Poster at Atlanta Biophysics Symposium, Atlanta, GA, December, **2013.**
27. Yuan Chang, Yun Zhang, Khalid Salaita, “Visualizing Mechanical Tension in Living Cell by Molecular Tension Fluorescence Microscopy (MTFM)”, Poster Presentation in the Atlanta Area Molecular and Cellular Biophysics Symposium, Atlanta, GA, December, 7th **2013**. (poster presentation)
28. Zheng Liu, Yang Liu, Yuan Chang, Khalid Salaita, Opto-mechanical actuators to control cell adhesion, Poster Presentation in the Atlanta Area Molecular and Cellular Biophysics Symposium, Atlanta, GA, December, 7th **2013.**
29. Yehl, K.; Greene, B.; Joshi, J.; Dyer, R.; Nahta, R.; Salaita, K. “DNAzyme-Nanoparticle Conjugates: Synthesis, properties, and applications in gene regulation and self-assembled nanomotors" Poster at Self-Assembly & Supramolecular Chemistry Gordon Research Conference,Les Diablerets, Switzerland, May **2013**.
30. C. Jurchenko; D. Stabley. A Fluorescence Force Meter for Molecular Imaging of Live Cells. Collegiate Inventor's Competition, Washington, D.C. November 12, **2012.**
31. Yehl, K.; Somasuntharam, I.; Davis, M.; Salaita, K. “TNFα specific DNAzyme functionalized gold particles as anti-infammatory therapeutic for cardiac preservation following myocardial infarction” BMES conference Abstract, Presentation at BMES National Meeting, Atlanta, GA, October **2012**.
32. Yuan Chang, Yoshie Narui, Khalid Salaita, “Engineering Protein Ligands to Measure Cellular Forces”, PEM6-The Sixth International Peptide Engineering Meeting, Emory University, Oct. 2-5, **2012** (poster presentation)
33. Yehl, K.; Joshi, J.; Greene, B.; Dyer, R.; Nahta, R.; Salaita, K. “Deoxyribozyme-modified Nanoparticles for RNAi Independent Gene Regulation” Poster at Inter-PEN meeting, Boston, MA, October **2012**.
34. C. Jurchenko. Peptide Mechanophore to Investigate the Role of Force in Integrin Activation. Meeting of Atlanta Adhesion Authority. September 20, **2012**.
35. Yehl, K.; Joshi, J.; Greene, B.; Dyer, R.; Nahta, R.; Salaita, K. “Deoxyribozyme-modified Nanoparticles for RNAi Independent Gene Regulation” Poster at ACS National Meeting, Philadelphia, PA, August **2012**.
36. Yehl, K.; Salaita, Khalid “Hybridization-driven catalysts: Novel approaches in nucleic acid sensing” Presentation at SERMACS, New Orleans, LA, December **2010**.

**Teaching Experience**

# **Emory University**, Department of Chemistry, Atlanta, GA

* *CHEM 260:* Quantitative Analytical Chemistry (undergraduate course), Spring 2016
* *CHEM 301*: Biochemistry (undergraduate course), 70 students enrolled, Fall 2015
* *CHEM 260*: Quantitative Analytical Chemistry (undergraduate course), Spring 2015
* *CHEM 260*: Quantitative Analytical Chemistry (undergraduate course), Fall 2013, Overall Evaluation (47 students): **7.62** Departmental average: **7.46**
* *CHEM 360*: Principles of Instrumental Analysis (undergraduate course), Spring 2013, Overall Evaluation (4 students): **8.40** Departmental average: **7.80**
* *CHEM 571*: Introduction to Biomolecular Chemistry (graduate course), Fall 2012, (14 students)
* *CHEM 360*: Principles of Instrumental Analysis (undergraduate course), Spring 2012

Overall Evaluation (8 students): **8.46** Departmental average: **7.70**

* *CHEM 571*: Introduction to Biomolecular Chemistry (graduate course), Fall 2011

Average Grade Evaluations (16 students): **2(A+), 77 (A), 4(A-), 13(B)**

* *CHEM 360*: Principles of Instrumental Analysis (undergraduate course), Spring 2011

Overall Evaluation (24 students): **8.17** Departmental average: **7.60**

* *CHEM 723*: Bioanalytical Chemistry, (graduate course), Fall 2010

Average Grade Evaluations (9 students): **46**(**A**), **3**(**A-**), **1**(**B+**), **3**(**B**), **1**(**B-**)

* *CHEM 360*: Principles of Instrumental Analysis (undergraduate course), Spring 2010

Overall Evaluation (22 students): **6.51** Departmental average: **7.34**

# **Northwestern University**, Department of Chemistry, Evanston, IL

* General Chemistry Lab Teaching Assistant,Sept – Mar 2001
* Instrumental Analysis Lab Instructor, Sept – Dec 2002

**Old Dominion University**, Department of Chemistry, Norfolk, VA

* Physical Chemistry Lab Teaching Assistant, Fall 2000
* Grader, Analytical Chemistry, Fall 2000

**Research Funding**

**1. Active Awards**

R01-GM097399-01 5/19/2012 - 5/18/2017

NIH-NIGMS

**Title**: “Elucidating the Biophysical Mechanisms of Notch Activation”

**Goal**: The major goal of this proposal is investigate whether the Notch receptor pathway is activated through molecular mechanical forces.

**Role**: **PI**

DARPA-Biological Technologies Office 12/15/2015 - 12/14/2017

BAA-15-35

**Title**: “Programmable and Enzyme Powered Self-Assembled Artificial Muscle”

**Description:** To generate living materials that can convert chemical energy into useful mechanical work.

**Role**: **PI**

NSF-CHEM CMI (1611102) 7/2/2016 – 7/1/2019

**Title**: “High Speed DNA-based Motors for Chemical Sensing”

**Description**: Developing a new platform for chemical sensing by using far-from-equilibrium processes that are kinetically controlled

**Role:** PI

2014 Camille Dreyfus Teacher-Scholar 9/15/2014-9/14/2019

Camille Dreyfus Foundation

**Description**: Funds are awarded for a 5-year period and may be used for such purposes as equipment, Technical assistance, professional travel, trainee support, or any other activity directly related to the Fellow's research.

**Role**: **PI**

NSF Early CAREER Award (1350829) 5/19/2014 – 5/18/2019

**Title**: “CAREER: Mechanisms of Cellular Mechanotransduction”

**Description:** 5-year CAREER proposal aiming to employ newly developed optical force sensors to investigation the mechanism of focal adhesion assembly and signaling.

**Role**: **PI**

NSF-IDBR (1353939) 5/19/2014 – 5/18/2017

Instrument Development for Biological Research (IDBR)

**Title**: “IDBR: Development of a High Resolution Force Microscope”

**Description:** To develop a dedicated system to measure molecular forces with 3-orders of magnitude higher force resolution and orientational resolution than current techniques.

**Role**: **PI**

Coulter Translational Fund 1/1/2017 – 12/31/2017

Seed grant

**Title:** “Inhaled GeneRegs - A novel platform for asthma therapeutics”

**Description:** Seed grant to explore commercialization of nanozyme technology

**Role**: PI

**3. Complete**

NSF-EAGER (1362113) 4/2/2014 - 4/3/2016

**Title**: “Developing Optically Triggered Protein Actuators in Living Organisms”

**Description:** Exploratory high-risk high-reward proposal to initiate the field of mechano-optogenetics

**Role**: **PI**

Supplement to R01-GM097399-01 5/19/2015 - 5/18/2016

NIGMS

**Title**: “Fluorescence Lifetime Imaging Microscope System to Support Molecular Tension Probe Signal Analysis”

**Description**: FLIM system for imaging molecular tension probes.

**Role**: **PI**

1R01CA157754-01A1 4/30/2012 – 4/30/2017

NIH-NCI

**Title**: “Mechanisms of Herceptin Resistance”

**Goal:** The major goals of this project are to define molecular and biomolecular mechanisms of Herceptin resistance in breast cancer.

**Role**: Co-PI with Rita Nahta, Pharmacology, Emory.

2013 Alfred P. Sloan Research Fellow 9/15/2013 – 9/15/2015

Alfred P. Sloan Foundation

**Description:** Funds are awarded for a two-year periods and may be used for such purposes as equipment, Technical assistance, professional travel, trainee support, or any other activity directly related to the Fellow's research.

**Role**: **PI**

Supplement to NSF CAREER (1350829) 11/18/2014 - 1/17/2015

NSF-MCB

**Goal**: Supplement to the NSF CAREER award.

**Role**: **PI**

62570EGII (Salaita) 9/1/2012 – 5/31/2013 0.0 calendar

Army Research Office- Department of Mechanical Sciences

"Molecular Force Meter to Image Force Propagation in Cells"

Evaluate the use of fluorescence force sensor to measure blast-induced injuries in single cell models.

Georgia Program of Excellence in Nanotechnology (GPEN) 2/1/2012-1/31/2013 0.0 calendar

NIH (PI: Gang Bao)

Grant to support a new seed project in the program of excellence in nanotechnology center.

Cancer Research Award (Salaita) 05/01/2010 – 04/30/2011

Georgia Cancer Coalition

“Mechanical Mechanisms of Notch Receptor Deregulation in Breast Cancer”

This is an exploratory award for young investigators with the goal of obtaining preliminary data. The central objective of this proposal is to demonstrate that mechanical forces acting on ligand-stimulated Notch receptor can alter its biochemical activity.

CNMS2009-269 Center for Nanophase Materials Sciences 08/01/2009 – 07/30/2011

Oak Ridge National Laboratory Salaita(PI)

Study of ErbB Receptor Signaling Using Nanopatterned Supported Membranes

The goal is to generate nanofabricated substrates that will be used to interrogate the role of ErbB receptor spatio-temporal signaling

URC-00016401 (Salaita) 5/2/2011 – 5/1/2012 0.0 calendar

University Research Committee, Emory University

“Optical force mapping at the cell surface”

This award provides seed funding to synthesize and characterize fluorescence-based sensors that can be used to measure forces at the cell surface.

CNMS2013-114 (Salaita) 2/1/2013-1/31/2014 0.0 calendar

User Nanoscience Research Program at the Center for Nanophase Materials Sciences

Project Title: “Understanding the role of mechanical force in Notch receptor activation”

User proposal for fabrication of nanoscale patterns to probe mechanisms of Notch receptor activation

**Student Training**

**Current Postdoctoral Students**

1. Dr. Jing Zhao (Ph.D. NC State, 2016) 2016-present
2. Dr. Kimberly Clarke (Ph.D. Ga Tech) 2017-present

**Current Graduate Students**

1. Yuan Yang (Peking University, 2011) 2011-present
2. Kornelia Galior (Appalachian State University, 2012) 2012-present
3. Victor Ma (Hong Kong Baptist University, 2013) 2013-present
4. Jessica Petree (University of Georgia, 2012) 2013-present
5. Roxanne Glazier (University of Washington, 2014) 2014-present
6. Joshua Brockman (Ohio State University, 2014) 2014-present
7. Hanquan Su 2015-present
8. Aaron Blanchard (UT Austin, BS BME, 2015) 2015-present
9. Nusaiba Baker (Johns Hopkins, BS Biology, 2014) 2016-present
10. Anna Kellner (University of Wisconsin, BS Pharmacology, 2016) 2016-present
11. Allison Ramey (Virginia Commonwealth University, BS BME, 2016) 2016-present
12. Alisina Bazrafshan (Sharif University, BS Chemistry, 2015) 2016-present
13. Yixiao Dong (Wuhan University, BS Chemistry 2013, MS Chemistry 2016) 2016-present
14. Rong Ma (Wuhan University, BS 2012, MS University of Hong Kong 2013) 2016-present
15. Brendan Deal (Davidson College, BS Chemistry, 2016) 2016-present
16. Dale Combs (Middle Tenessee State, BS Chemistry 2009, MS Chemistry 2016) 2016-present
17. Kevin Fish (University of California, San Diego, BS Biophysics 2013) 2016-present

**Current Undergraduate Students**

1. Jacob Yi 2015-present
2. Julia Eisman 2017-present

**Former Postdoctoral Students**

1. Dr. Weiwei Zheng (2012-2015) currently an Assistant Professor of Chemistry at Syracuse University. <http://weiweizhenglab.syr.edu/>
2. Dr. Zheng Liu (Ph.D. Xiamen University, 2010; Postdoc 2013-2016) currently an Assistant Professor of Chemistry at Wuhan University.

**Former Graduate Students**

1. Yang Liu (B.S. Hunan University 2010, Ph.D. Chemistry 2016); currently a postdoctoral fellow at Johns Hopkins University with Prof. Taekjip Ha. Thesis title: “Developing Nanoparticle-based Tools to Investigate Mechanotransduction at the Living/Nonliving Interface”.
2. Yun Zhang (B.S. Chemistry Xiamen University 2011; Ph.D. Chemistry, 2016); currently directly of analytical chemistry core at Sichuan University in China. Thesis title: “Development of DNA-based Molecular Tension Probes to Investigate Integrin Mechanical Forces”
3. Kevin Yehl (Ph.D. Chemistry, October 2015); currently a postdoctoral fellow at MIT with Tim K. Liu. <https://be.mit.edu/directory/timothy-k-lu>. Thesis title: “Fundamental properties and applications of surface confined enzymes in gene regulation and molecular motors”
4. Carol Jurchenko (Ph.D. Chemistry, October 2015); currently at Kennesaw State University. Thesis title: “Development of Fluorescence-based Molecular Tension Probes to Investigate Cellular Mechanical Forces”
5. Yoshie Narui ( Ph.D. Chemistry, January 2014); currently a postdoctoral fellow at The Ohio State University, Columbus, OH (<https://research.chemistry.ohio-state.edu/sotomayor/>). Thesis Title: “Elucidating the Biophysical Mechanisms of Notch Activation”
6. Daniel Stabley (Ph.D. Chemistry, February 2014); currently a postdoctoral fellow at St. Jude Children’s hospital, Memphis, TN ([Solecki research group](http://www.stjude.org/stjude/v/index.jsp?vgnextoid=5967d160659c5110VgnVCM1000001e0215acRCRD&vgnextchannel=7cc71436e3218010VgnVCM1000000e2015acRCRD)). Thesis Title: “Nanoscale Tools to Expand the Biophysical Understanding of Epidermal Growth Factor Receptor Function”
7. Yue Ding (Ph.D. Physics, joint with Laura Finzi, May 2014); currently employed as a scientist at Twistnostics, Baltimore, MD (<http://twistnostics.com/About.html>). Thesis Title: “DNA Supercoiling as a Regulatory Signal for the Lambda Repressor and An Integrated Calibration Method for the Molecular Fluorescence Force Probes”

**Former Undergraduate Students**

1. Sam Druzak (B.S. Chemistry Emory University 2015); currently technician at Emory University Pediatrics.
2. Mengzhen (Edward) Fan (B.S. Chemistry 2015); currently PhD student at Oxford University, UK.
3. Ian Bolin (B.S. Chemistry 2014); currently at Columbia University, Dental School Program, NY
4. Arish Jamil (B.S. Chemistry 2014);
5. Rohan Prabhu (B.S. Chemistry 2014);
6. Charlene J. Chan (Honors B.S. Chemistry 2012); currently at Harvard University, Chemical Biology Ph.D. program, Boston, MA, Advisor: Vlad Denic (<http://www.deniclab.com/>)
7. Kevin Harrell (Honors B.S. Chemistry 2012); currently at Emory University School of Medicine
8. Stephen Marshall (B.S. Chemistry 2012); currently in Chemistry Ph.D. program, California Institute of Technology, Pasadena, CA, Clemons Lab (<http://clemonslab.caltech.edu/stephen-marshall.html>)
9. Deep Chandegara (B.S. Chemistry 2012); current at University of Southern California Medical School, Los Angeles, CA
10. Alexander Hong (B.S. Chemistry 2011); currently at San Francisco State University, Prehealth Program

**Summer Undergraduate Research Experience at Emory (SURE) Students**

Wenzheng Sun, Emory University 2016

Mengzhen (Edward) Fan, Emory University 2014

Kevin Gale, Clemson University 2014

Richard Park, Brown University 2014

Rohan Prabhu, Emory University 2013

Kevin Harrell, Emory University 2011

**Student Awards**

Victor Ma, Lindau Nobel Laureate Meeting Award 2017

Aaron Blanchard, Bronze Medal [Collegiate Inventors Competition](http://collegiateinventors.org/) 2016

Kevin Yehl, Bronze Medal [Collegiate Inventors Competition](http://collegiateinventors.org/) 2016

Jessica Petree, Student Research Award, 2016 Southeastern Biomaterials Meeting 2016

Kornelia Galior, Best Poster Presentation, AACC annual meeting 2016

Roxanne Glazier, NSF GRFP 2016-2019

Aaron Blanchard, NSF GRFP Honorable Mention 2016

Josh Brockman, NSF GRFP 2015-2018

Jessica Petree, ARCS Fellow 2015-2018

Jessica Petree, NSF GRFP Honorable Mention 2015

Yun Zhang, Best Poster Award, GRC/GRS Fibronectin, Integrins & Related Molecules 2015

Kevin Yehl, [ARCS Award](https://www.arcsfoundation.org/atlanta/current-scholars), ARCS Foundation 2013-2014

Yang Liu, Johnston Award, Emory University 2014

Yang Liu, GRC travel award 2014

Yue Ding, Biophysical Society National Meeting Travel Grant 2014

Yun Zhang, Quayle Award, Department of Chemistry, Emory University 2013

Yang Liu, Quayle Award, Department of Chemistry, Emory University 2013

Kevin Yehl, [NSF-EAPSI](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5284) Award 2013

Yoshie Narui, [Lindau Nobel Laureate Meeting](http://www.lindau-nobel.org/) Award 2013

Daniel Stabley and Carol Jurchenko, Finalists [Collegiate Inventors Competition](http://collegiateinventors.org/) 2012

Charlene Chan, Emory University Outstanding Senior Award 2012

Kevin Yehl, Honorable Mention NSF Graduate Research Fellowship Program 2011

Charlene Chan, Emory University William Jones Chemistry Scholarship 2011

Stephen Marshall, SIRE Independent Research Award 2011

Charlene Chan, Chemistry Department Undergraduate Poster Award 2011

Charlene Chan, Chemistry Department ACS Travel Award 2011

Deep Chandegara, Hypercube Outstanding Physical Chemistry Student 2011

Stephen Marshall, SIRE Independent Research Award 2010

Charlene Chan, SIRE Independent Research Award 2010

Kevin Yehl, GAANN Graduate Student Fellowship 2010

**Student Advising**

**Ph.D. Thesis Committees**

1. Shengyuan Wang (Emory University, Department of Chemistry) 2016- present
2. Matt Jenkins (Emory University, Department of Chemistry) 2016- present
3. Paula Tyler (Emory University, Department of Chemistry) 2016- present
4. Helen Siaw (Emory University, Department of Chemistry) 2016-present
5. Emily Bartle (Emory University, GDBBS, Cell biology) 2015-present
6. Brooke Andrews (Emory University, Department of Chemistry) 2016-present
7. Nik Muaz Nik Rushdi (Emory/Georgia Tech, Biomedical Engineering), 2016-present
8. Hanquan Su (Chemistry) 2015-present
9. Chenghao “Charles” Ge (Emory/Georgia Tech, Biomedical Engineering)
10. Anthony Robert Prosser
11. Samuel Ban-Seok Jeong
12. Chen Liang (Chemistry)
13. Rebecca Bartlett
14. Kornelia Galior
15. Samantha Iamurri
16. Noel Li
17. Charles Modlin
18. Lean Quertinmont
19. Andrei Zholud (Physics, Emory)
20. Rolando Rengifo
21. Elizabeth Magnotti (Ph.D. 2016)
22. Li Zhang (Ph.D. 2016)
23. Fish Pan (Ph.D. 2015)
24. Lan Ge (M.Sc. 2013)
25. Patrick Baldwin (Ph.D. 2014)
26. Neha Ahuja (M.Sc. 2012)
27. Omar Villanueva (Ph.D. 2015)
28. Jim Vickers (Ph.D. 2015)
29. Hongjin Lv (Ph.D. 2015)
30. Sha Li (Ph.D. 2015)
31. I-Lin Wu (Ph.D. 2013)
32. Mark Baillie (Ph.D. 2013)
33. Erin Schuler (Ph.D. 2015)
34. Archana Boopathy (BME program, Ph.D., 2014)
35. Yue Ding (Physics)
36. Jie Liu (BME program, Ph.D. 2013)
37. Inthu Somasuntharam (BME program)
38. Yan Yan (Physics PhD program).

**Honor’s Thesis Committees**:

1. Kelly Burke (B.S. 2012)
2. Kevin Harrell (B.S. 2012)
3. Charlene Chan (B.S. 2012)
4. Sung Park (physics, B.S. 2012)
5. Michael Mcclain (B.S. 2011)
6. Huyen Tran Thi (B.S. 2011)

**Undergraduate Advisees**:

1. Corbin Harris (B.S. 2014)
2. Alyssa Pollard
3. Daniel Kim
4. Seth Arman
5. Samantha Sircar (B.S. 2014)
6. Kevin Harrell (B.S. 2012)
7. Yan Li
8. Stephen Marshall (B.S. 2012)
9. Suk Whan Yoon
10. Xiaoying (Cherie) Gu (B.S. 2013)

**Professional Affiliations/Activities**

**Professional Societies**

American Chemical Society 2001-present

Biophysical Society 2012-present

**Membership and Activities**

* Program Faculty, Winship Cancer Institute, Cancer Cell Biology, 2011- present
* Executive Advisory Board, Community for Active Surfaces and Interfaces (CRASI), 2016-present
* Member, NIGMS T32 Cell and Tissue Engineering Training Program, 2015- present
* Member, Petit Institute for Bioscience and Bioengineering (IBB), 2016- present

**Educational Activities and Outreach**

* “How to succeed in graduate school”, graduate student orientation seminar, 2011 - present
* Science of pingpong event as part of the Atlanta Science Festival, March 2015.
* Organized two booths ("Nanoparticles in our everyday lives" and “Interfaces and surface chemistry: the molecular boat”) at the Atlanta Science Festival Expo ( > 10,000 attendees), March 2015.
* Nano Demonstration for Science Week at Mill Springs Academy (High school for students of special needs), Alpharetta, Spring 2014
* Departmental open house for Atlanta Science Festival, Spring 2014
* Organized two booths ("Nanoparticles in our everyday lives" and “Interfaces and surface chemistry: the molecular boat”) at the Atlanta Science Festival Expo ( > 10,000 attendees), March 2014.
* Emory Lab tour for Spelman Undergraduates (2013, 2012)
* Demonstration and class room visit at Renfroe Middle School, Decatur, GA (2013)
* Science Pen Pal with student at Renfroe Middle School, Decatur, GA (2013)
* NIH (NIGMS) mentoring workshop for new faculty in organic and biological chemistry, Dallas, TX, May 14-16, 2011
* Cancer Cell Biology Program Scientific Retreat, Emory University, Oct. 11, 2010
* Center for Faculty Development & Excellence (CDFE) sponsored workshop, Emory University:

*Teaching Portfolio Workshop: Some Best Practices and Examples*- October 7th 2010

* Mentor to HHMI-Emory high school teacher fellow (2011).
* Georgia State Science Olympiad Tournament, event supervisor, March 2011
* Host lab for Towers High School (DeKalb County) student laboratory tour, 2010 - 2011

**Departmental Service Activities**

* Chair Faculty Recruiting Committee, Department of Chemistry, 2015-present
* Member, Graduate Committee, 2016- present
* Faculty Search Committee, Department of Chemistry, 2015/2016
* Faculty Search Committee, Department of Chemistry, 2014/2015
* Faculty Search Committee, Department of Chemistry, 2013/2014
* Course Planning Committee, Department of Chemistry, 2012- present
* Faculty Search Committee (P30), Department of Chemistry, 2010
* Graduate Student and Admissions Committee, Department of Chemistry, 2009 – 2014
* Halle Institute-sponsored Departmental delegation to Seoul National University and Hong Kong Baptist University, 2012
* Postdoctoral and Graduate Student Academic Job Search Workshop, fall 2013.

**University Service Activities**

* Chair, Mathematics and Natural Sciences sub-committee of the University Research Committee (URC), 2014-present
* ARCS Foundation selection committee, 2014-present
* Member, University Research Committee (URC), Mathematics and Natural Sciences sub-committee, 2012 - 2014
* 2014 STEM Research and Career Symposium, March 26-28, Emory University
* Travel Award subcommittee for the 2014 STEM Research and Career Symposium
* Emory Graduate Diversity Fellowship (EGDF) Selection Committee, Emory University, 2010-2012
* Winship Cancer Center Retreat Theme Group Leader: “Undruggable targets: Emerging opportunities”, Decatur, GA, August 3rd 2012
* Computational and Life Science Initiative (CLS) Search Committee, Emory University, 2010
* Admissions and Scholarship Committee, Emory University, 2009 – 2013

**National Service Activities**

* Biophysical Society (BPS) International Relations Committee, 2013-2019
* Co-organizer of “Nanoparticles for Measuring/Controlling Cell Signaling” symposium for Division of Colloid and Surface Chemistry (COLL) at the Fall 2016 American Chemical Society meeting, Philadelphia, PA.
* CAREER review panel, Cellular Dynamics and Function Cluster, Division of Molecular and Cellular Biosciences, Washington DC, September 22-24, 2016
* CAREER review panel, Cellular Dynamics and Function Cluster, Division of Molecular and Cellular Biosciences, Washington DC, September 22-24, 2015
* Review panel, Instrument Development for Biological Research (IDBR), Division of Biological Infrastructure, Directorate of Biological Sciences, Washington DC, October 15-16, 2014
* CAREER review panel, Cellular Dynamics and Function Cluster, Division of Molecular and Cellular Biosciences, Washington DC, September 3-5, 2014
* Ad hoc reviewer for Chemical Measurement and Imaging Program Division of Chemistry at NSF, April, 2014
* Ad hoc reviewer for Molecular Biophysics Program in the Division of Molecular and Cellular Biosciences, NSF, 2014
* Reviewer for NIH NIDDK ZDK1 GRB-8 (M3) Special Emphasis Panel, Intestinal Stem Cells U01
* Co-chair of the “Applications of Supported Bilayers” Workshop at Biophysical Society 58th annual meeting, Feb. 15-19, 2014, San Francisco, CA
* Cytoskeleton and Cell Motility review panel of the Cellular Dynamics and Function Cluster, Division of Molecular and Cellular Biosciences at the NSF, May 1-3, 2013
* Organizer of Biophysical Society Regional Networking Meeting, “Atlanta Area Biophysics Meeting”, December 7th, 2013.
* Ad hoc reviewer for *American Association for the Advancement of Science (AAAS)*, Indo-US Science & Technology Forum (IUSSTF).
* Ad hoc reviewer for the following agencies: NSF Macromolecular, Supramolecular and Nanochemistry; Program and Agency for Science Technology and Research (A\*STAR), Singapore; AFOSR; ARO.
* Reviewer for the following journals: *JACS*, *Chemical Science,* *Biophysical Journal, Nature Methods*, *Nature Asia Materials*, *Analyst*, *PLOS*, *Langmuir, J. Mat. Chem., Journal of Physical Chemistry, Advanced Materials, Analytica Chimica Acta*, *IET Systems Biology*, *Applied Physics A,* and *Journal of Structural Biology*
* Session Chair, Functional Nanomaterials, International Conference on Materials for Advanced Technology (ICMAT), Singapore, June, 2011