

Sarah L. Keller, Ph.D.
Duane and Barbara LaViolette Endowed Professor of Chemistry

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Seattle, WA 98195-1700
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EMPLOYMENT

University of Washington

Professor of Chemistry
Adjunct Professor of Physics
Associate Dean of Research Activities, College of Arts and Sciences
Associate Professor of Chemistry
Assistant Professor of Chemistry

Seattle, WA

Sept 2009-present
Dec 2009-present
Aug 2010-July 2014
Sept 2005-Sept 2009
Mar 2000-Sept 2005

Stanford University

Post-doctoral researcher in lipid phase behavior
Mentor: Professor Harden M. McConnell

Stanford, CA

Aug 1997-Mar 2000

University of California

Post-doctoral researcher in electron-microscopy of surfactants
Mentor: Professor Joseph A. Zasadzinski

Santa Barbara, CA

1995-Aug 1997

Fermilab National Accelerator Lab/ Rice University

Research Assistant in particle drift chamber construction

Batavia, IL

Jun 87-Aug 87

EDUCATION

Princeton University

Ph.D. in Physics, May 30 1995. Mentor: Professor Sol M. Gruner
Thesis Topic: Interaction between Ion-channels and Lipid Membranes

Princeton, NJ

Rice University

B.A. in Physics, May 1989; Thesis advisor: Professor Randy G. Hulet

Houston, TX

HONORS / AWARDS (FACULTY)

Cottrell STAR Award – Research Corporation	2019
Avanti Award - Biophysical Society	2017
Sommorjai Miller Visiting Professor (UC Berkeley)	2015-2016
Thomas E. Thompson Award, Biophysical Society	2014
Closs Lecture Award, University of Chicago	2013
Fellow of the AAAS (American Assoc. for the Advancement of Science)	2013
UW Postdoctoral Association Mentor Award	2012
Phi Beta Kappa Visiting Scholar	2012-2013
Fellow of the American Physical Society	2011
Elected to Washington State Academy of Sciences	2011
Avanti Young Investigator in Lipid Research - ASBMB	2010
Haines Annual Lecture in Biochemistry - Wabash College	2008
Distinguished Teaching Award - University of Washington	2006
Margaret Oakley Dayhoff Research Award - Biophysical Society	2005
Annual Five Colleges Lecturer "What's New in Physics" - Smith College	2005
Outstanding Teaching Award - UW Department of Chemistry	2004
Cottrell Scholar Award	2003
NSF CAREER Award	2002
Research Innovation Award (Research Corporation)	2001

HONORS / AWARDS (TRAINEE)

National Institutes of Health Postdoctoral Fellowship (NRSA)	1998-2000
University of California President's Postdoctoral Fellowship	1995-1997
National Institutes of Health Graduate Training Grant	1993-1995
Liposome Company Fellowship	1992-1993
President's Scholarship, Princeton University	1989-1991
Board of Governors Scholarship, Rice University	1985

PUBLISHED ARTICLES IN PEER-REVIEWED JOURNALS

WoS Citations

52. C.E. Cornell, A. Mileant, N. Thakkar, K.K. Lee, S.L. Keller, Direct Imaging of Liquid Domains in Membranes by Cryo Electron Tomography, *Proc. Nat. Acad. Sci.*, in review, 2020.
51. M. Xue, R.A. Black, C.E. Cornell, G.P. Drobny, S.L. Keller, A Step toward Molecular Evolution of RNA: Sugar-modified Nucleobases Bind to Prebiotic Fatty Acid Membranes Better than Individual Bases Do, *Angew. Chemie*, in review, 2020.
50. L.-P. Bergeron-Sandoval, H.K. Heris, C. Chang, C.E. Cornell, S.L. Keller, A.G. Hendricks A.J. Ehrlicher, P. François, R.V. Pappu & S.W. Michnick, A Protein Condensate Drives Actin-Independent Endocytosis, *Science*, in review, 2019.
49. C.E. Cornell, R.A. Black, M. Xue, H.E. Litz, A. Ramsay, M. Gordon, A. Mileant, Z.R. Cohen, J.A. Williams, K.K. Lee, G.P. Drobny & S.L. Keller, Prebiotic Amino Acids Bind to and Stabilize Prebiotic Fatty Acid Membranes, *Proc. Nat. Acad. Sci. USA*, 116, 17239-17244, 2019. PMID: PMC6717294
48. C.E. Cornell, A.D. Skinkle, S. He, I. Levental, K.R. Levental & S.L. Keller, Tuning Length-Scales of Small Domains in Cell-Derived Membranes and Synthetic Model Membranes, *Biophys. J.*, 115, 690-701, 2018. PMID: PMC6103737
47. S.P. Rayermann, G.E. Rayermann, C.E. Cornell, A.J. Merz & S.L. Keller, Hallmarks of reversible separation of living, unperturbed cell membranes into two liquid phases, *Biophys. J.*, 113, 2425-2432, 2017. PMID: PMC5768487
46. C.E. Cornell, N.L.C. McCarthy, K.R. Levental, I. Levental, N.J. Brooks & S.L. Keller, *n*-Alcohol Length Governs Shift in Lo-Ld Mixing Temperatures in Synthetic and Cell-Derived Membranes, *Biophys. J.*, 113, 1200-1211, 2017. PMID: PMC5607138
45. M.C. Blosser, B.G. Horst & S.L. Keller, cDICE Method Produces Giant Lipid Vesicles under Physiological Conditions of Charged Lipid and Ionic Solutions, *Soft Matter*, 12, 7364-7371, 2016. PMID: PMC5008994
44. J.V. Bleecker, P.A. Cox & S.L. Keller, Mixing Temperatures of Bilayers Not Simply Related to Thickness Differences between Lo and Ld Phases, *Biophys. J.*, 110, 2305-2308, 2016. PMID: PMC4906269
43. J.V. Bleecker, P.A. Cox, R.N. Foster, J.P. Litz, M.C. Blosser, D.G. Castner & S.L. Keller, Thickness Mismatch of Coexisting Liquid Phases in Non-Canonical Lipid Bilayers, *J. Phys. Chem. B*, 120, 2761-2770, 2016. PMID: PMC4795991
42. J.P. Litz, N. Thakkar, T. Portet & S.L. Keller, Depletion with Cyclodextrin Reveals Two Populations of Cholesterol in Model Membranes, *Biophys. J.*, 110, 635-645, 2016. PMID: PMC4744159
41. M.C. Blosser, A.R. Honerkamp-Smith, T. Han, M. Haataja & S.L. Keller, Transbilayer Colocalization of Lipid Domains Explained via Measurement of Strong Coupling Parameters, *Biophys. J.*, 109, 2317-2327, 2015. PMID: PMC4675890 (**Cover article**)
40. R.A. Black, D.W. Deamer, M.C. Blosser, B.L. Stottrup, R. Tavakley, & S.L. Keller, Nucleobases Bind to and Stabilize Aggregates of a Prebiotic Amphiphile, Providing a Viable Mechanism for the Emergence of Protocells, *Proc. Natl. Acad. Sci. USA*, 110, 13272-13276, 2013. PMID: PMC3746888 (**F1000Prime Recommended Article**)
39. C.A. Stanich, A.R. Honerkamp-Smith, G.G. Putzel, C.A. Warth, A.K. Lamprecht, P. Mandal E. Mann, T.D. Hua & S.L. Keller, Coarsening Dynamics of Domains in Lipid Membranes, *Biophys. J.*, 105, 444-454, 2013. PMID: PMC3714885 (**Cover article & feature**)
38. M.C. Blosser, J.B. Starr, C.W. Turtle, J. Ashcraft & S.L. Keller, Minimal Effect of

- Lipid Charge on Membrane Miscibility Phase Behavior in Three Ternary Systems, *Biophys. J.*, 104, 2629-2638, 2013. PMID: PMC3686330
37. T. Portet, S.E. Gordon & S.L. Keller, Increasing Membrane Tension Decreases Miscibility Temperatures, an Experimental Demonstration via Micropipette Aspiration, *Biophys. J.*, 103, L35-37, 2012. PMID: PMC3475388 **(Featured article)**
 36. A.R. Honerkamp-Smith, B.B. Machta & S.L. Keller, Experimental Observations of Dynamic Critical Phenomena in a Lipid Membrane, *Phys. Rev. Lett.*, 108, 165702, 2012. PMID: PMC3722069
 35. M.M. Stevens, A.R. Honerkamp-Smith & S.L. Keller, Solubility Limits of Cholesterol, Lanosterol, Ergosterol, Stigmasterol and β -Sitosterol in Electroformed Lipid Vesicles *Soft Matter*, 6, 5882-5890, 2010. **(Cover article)** PMID: PMC3156111
 34. A.R. Honerkamp-Smith, S.L. Veatch & S.L. Keller, An Introduction to Critical Points for Biophysicists: Observations of Compositional Heterogeneity in Lipid Membranes, *Biochim. Biophys. Acta.*, 1788, 53-63, 2009. **(Invited, Cover article)** PMID: PMC2426649. **>100 citations**
 33. A.R. Honerkamp-Smith, P. Cicuta, M.D. Collins, S.L. Veatch, M. den Nijs, M. Schick & S.L. Keller, Line Tensions, Correlation Lengths, and Critical Exponents in Lipid Membranes near Critical Points, *Biophys. J.*, 95, 236-246, 2008. PMID: PMC2426649 **>200 citations**
 32. M.D. Collins & S.L. Keller, Tuning Lipid Mixtures to Induce Domains across Leaflets of Unsupported Asymmetric Bilayers, *Proc. Natl. Acad. Sci. USA*, 105, 124-128, 2008. PMID: PMC2224171. **>100 citations**
 31. M. Halter, Y. Liao, R.M. Plocinik, D.C. Coffey, S. Bhattacharjee, U. Mazur, G.J. Simpson, B.H. Robinson & S.L. Keller, Molecular Self-Assembly of Mixed High-beta Zwitterionic and Neutral Ground State NLO Chromophores, *Chem. Mater.*, 20, 1778-1787, 2008.
 30. S.L. Veatch, O. Soubias, S.L. Keller & K. Gawrisch, Critical Fluctuations in Domain-Forming Lipid Mixtures, *Proc. Natl. Acad. Sci. USA*, 104, 17650-17655, 2007. PMID: PMC20077022 **>200 citations**
 29. P. Cicuta, S.L. Keller & S.L. Veatch, Diffusion of Liquid Domains in Lipid Bilayer Membranes, *J. Phys. Chem. B*, 111, 3328-3331, 2007. **>100 citations**
 28. S.L. Veatch, K. Gawrisch & S.L. Keller, Closed-loop Miscibility Gap and Quantitative Tie-Lines in Ternary Membranes Containing Diphytanoyl PC, *Biophys. J.*, 90, 4428-4436, 2006. PMID: PMC1471848 **>100 citations**
 27. B.L. Stottrup and S.L. Keller, Phase Behavior of Lipid Monolayers Containing DPPC and Cholesterol Analogs, *Biophys. J.*, 90, 3176-3183, 2006. PMID: PMC1432104
 26. S.L. Keller & A.L. Smith, Advice for New Faculty Teaching Undergraduate Science, *J. Chem. Educ.*, 83, 401-406, 2006.
 25. S.L. Veatch & S.L. Keller, Seeing Spots: Complex Phase Behavior in Simple Membranes, *Biochim. Biophys. Acta (Invited)*, 1746, 172-185, 2005. (Cover article) **>500 citations**
 24. M.E. Beattie, S.L. Veatch, B.L. Stottrup & S.L. Keller, Sterol Structure Determines Miscibility vs. Melting Transitions in Lipid Vesicles, *Biophys. J.*, 89, 1760-1768, 2005. PMID: PMC1366679 **>100 citations**
 23. S.L. Veatch & S.L. Keller, Miscibility Phase Diagrams of Giant Vesicles Containing Sphingomyelin, *Phys. Rev. Lett.*, 94, 148101, 2005. **>300 citations**
 22. B.L. Stottrup, D.S. Stevens & S.L. Keller, Miscibility of Ternary Mixtures of Phospholipids and Cholesterol in Monolayers, and Application to Bilayer Systems, *Biophys. J.*, 88, 269-276, 2005. PMID: PMC1305005
 21. S.L. Veatch, I.V. Polozov, K. Gawrisch & S.L. Keller, Liquid Domains in Vesicles Investigated by NMR and Fluorescence Microscopy, *Biophys. J.*, 86, 2910-2922, 2004. PMID: PMC1304159. **>300 citations**
 20. B.L. Stottrup, S.L. Veatch & S.L. Keller, Nonequilibrium Behavior in Supported Lipid Membranes Containing Cholesterol, *Biophys. J.* 86, 2942-2950, 2004. PMID: PMC1304162 **>100 citations**
 19. S.L. Keller, Sequential Folding of a Rigid Wire into Three-Dimensional Structures, *Am. J. Phys.*, 72, 599-604, 2004.

18. S.L. Veatch & S.L. Keller, Separation of Liquid Phases in Giant Vesicles of Ternary Mixtures of Phospholipids and Cholesterol, *Biophys. J.* 85, 3074-3083, 2003. PMCID: PMC1303584. >900 citations
17. S.L. Veatch & S.L. Keller, A Closer Look at the Canonical Raft Mixture in Model Membrane Studies, *Biophys. J.* 84, 725-726, 2003. PMCID: PMC1302652
16. S.L. Keller, Miscibility Transitions and Lateral Compressibility in Liquid Phases of Lipid Monolayers, *Langmuir*, (**Invited**) 19, 1451-1456, 2003.
15. S.L. Veatch & S.L. Keller, Organization in Lipid Membranes Containing Cholesterol, *Phys. Rev. Lett.* 89, 268101, 2002. >400 citations
14. S. Bezzine, J.G. Bollinger, S.L. Veatch, S.L. Keller & M.H. Gelb, On the Binding Preference of Secreted Phospholipases A2 for Membranes with Anionic Phospholipids, *J. Biol. Chem.* 277, 48523-48534, 2002.
13. S.L. Keller, Coexisting Liquid Phases in Lipid Monolayers and Bilayers, *J. Phys.: Condensed Matter (Special Issue Article - Invited)* 14, 4763-4766, 2002.
12. W.H. Pitcher III, S.L. Keller & W.H. Huestis, Interaction of Nominally Soluble Proteins with Phospholipid Monolayers at the Air-Water Interface. *Biochim. Biophys. Acta (Biomembranes)* 1564, 107-113, 2002.
11. S.L. Keller, T.G. Anderson & H.M. McConnell, Miscibility Critical Pressures in Monolayers of Ternary Lipid Mixtures, *Biophys. J.* 79, 2033-2042, 2000. PMCID: PMC1301093
10. S.L. Keller, A. Radhakrishnan & H.M. McConnell, Saturated Phospholipids with High Melting Temperature Form Complexes with Cholesterol in Monolayers *J. Phys. Chem. B.* 104, 7522-27, 2000.
9. S.L. Keller & H.M. McConnell, Stripe Phases in Lipid Monolayers near a Miscibility Critical Point, *Phys. Rev. Lett.* 82, 1602-1605, 1999.
8. S.L. Keller, W.H. Pitcher III, W.H. Huestis & H.M. McConnell, Red Blood Cell Lipids Form Immiscible Liquids, *Phys. Rev. Lett.* 81, 5019-5022, 1998. >100 citations
7. S.L. Keller, P. Boltenhagen, D. Pine & J.A. Zasadzinski, Direct Observation of Shear-Induced Structures in Worm-Like Micellar Solutions by Freeze-Fracture Electron Microscopy, *Phys. Rev. Lett.*, 80, 2725-2728, 1998.
6. H.E. Warriner, S.L. Keller, S.H.J. Idziak, N.L. Slack, P. Davidson, J.A. Zasadzinski & C.R. Safinya, The Influence of Polymer Molecular Weight in Lamellar Gels Based on PEG-Lipids, *Biophys. J.*, 75, 272-293, 1998. PMCID: PMC1299699
5. M. Adams, Z. Dogic, S.L. Keller & S. Fraden, Entropically Driven Microphase Transitions in Mixtures of Colloidal Rods and Spheres, *Nature*, 393, 349-352, 1998. >300 citations
4. S.L. Keller, H.E. Warriner, C.R. Safinya & J.A. Zasadzinski, Direct Observation of a Defect-Mediated Viscoelastic Transition in a Hydrogel of Lipid Membranes and Polymer-Lipids, *Phys. Rev. Lett.*, 78, 4781-4784, 1997.
3. S.L. Keller, S.M. Gruner & K. Gawrisch, Small Concentrations of Alamethicin Induce a Cubic Phase in Bulk Phosphatidylethanolamine Mixtures, *Biochim. Biophys. Acta*, 1278, 241-246, 1996.
2. Y-S. Lee, J-Z. Yang, T.M. Sisson, D.A. Frankel, J.T. Gleeson, E. Aksay, S.L. Keller, S.M. Gruner & D.F. O'Brien, Polymerization of Nonlamellar Lipid Assemblies, *J. Am. Chem. Soc.* 117, 5573-5578, 1995.
1. S.L. Keller, S.M. Bezrukov, S.M. Gruner, M.W. Tate, I. Vodyanoy & V.A. Parsegian, Probability of Alamethicin Conductance States Varies with Nonlamellar Tendency of Bilayer Phospholipids, *Biophys. J.*, 65, 23-27, 1993. PMCID: PMC1225696. >200 citations

BOOK CHAPTERS / OBITUARIES

2. M.C. Blosser, C.E. Cornell, S.P. Rayermann & S.L. Keller, Phase Diagrams and Tie Lines in GUVs, Ch. 18, *The Giant Vesicle Book*, ed. R. Dimova & C. Marques, Taylor & Francis 2018
1. S.L. Keller & A.L. Kwiram, Harden Marsden McConnell (obit.), *Physics Today*, 68, 64, 2015.

PRESS (Past decade only, reverse chronological)

8. The Atlantic, "A new clue to how life originated", Aug 2019
<https://www.theatlantic.com/science/archive/2019/08/interlocking-puzzle-allowed-life-emerge/595945/>.
7. SciShow News, "How cells got their membranes (maybe)", Aug 2019
<https://www.youtube.com/watch?v=MDTk73FJ5hw&t=7s>.
6. Discover Magazine, "How cell membranes may have kicked off the origin of life" Aug 2019
<https://www.discovermagazine.com/environment/how-cell-membranes-may-have-kicked-off-the-origin-of-life>
5. Inside Science, "The origin of life may not be as coincidental as scientists once thought", Aug 2019
<https://www.insidescience.org/news/origin-life-may-not-be-coincidental-scientists-once-thought>.
4. Physics Today, "Membrane phase demixing seen in living cells", 71, 21-23, Feb 2018,
<https://physicstoday.scitation.org/doi/10.1063/PT.3.3838>.
3. Biophysical Society Spotlight, "Two Phases on Two Faces", Dec 2015,
<https://biophysicalsociety.wordpress.com/2015/12/01/two-phases-on-two-faces/>.
2. The Economist: Babbage Science and Technology Blog, "Primal Attractions", Aug 2013,
www.economist.com/blogs/babbage/2013/08/origin-life.
1. Biophysical Society Spotlight, "Giant Unilamellar Vesicle Dominates BJ Cover", July 2013,
biophysicalsociety.wordpress.com/2013/07/25/giant-unilamellar-vesicle-dominates-bj-cover/.

INVITED CONFERENCE PRESENTATIONS (Past decade only, reverse chronological)

33. Kavli Institute for Theoretical Physics, Physics of Elastic Films Conference, July 5-9, 2021. (Scheduled)
32. SFB 803 Symposium (Kloster Irsee, Germany), Aug 31 - Sept. 3, 2020. (Scheduled)
31. EMBO Physics and Chemistry of Endocytosis at Multiple Scales (Ischia, Italy), Sept. 3, 2019.
- 29 - 30. MBL Physiology, Physical Biology of the Cell, Woods Hole, July 18, 2019 & Aug. 7, 2019.
28. Cottrell Scholars Conference, July 11, 2019.
27. Evolution of Complex Life Conference, Georgia Tech, May 16, 2019.
26. Protein-Membrane Symposium, University of Copenhagen, Nov. 27, 2018.
25. FASEB Molecular Biophysics of Membranes Conference, June 17-22, 2018.
24. Biophysical Society of Canada, May 25, 2017. (Keynote speaker)
23. Biophysical Society Meeting, Awards Symposium, Feb 14, 2017.
22. Biophysical Society Meeting, BIV Subgroup Symposium, Feb 11, 2017. (Keynote speaker)
21. BPS Liposomes, Exosomes and Virosomes, Ascona, Switzerland, Sept 16-19, 2016.
20. Biomembrane Days, Berlin, Sept. 5-7, 2016.
19. CECAM International Workshop on Biomembranes, Helsinki, Aug. 16-19, 2016. (Declined)
18. Princeton University, Intracellular Phase Transitions Conference, Keynote Lecture, April 20, 2015.
17. Workshop on Biomembranes Research, Oak Ridge National Lab, July 8-9, 2014.
16. Biophysical Society Meeting, San Francisco, Feb. 15, 2014.
15. Institute for Complex Adaptive Matter Conference, UC Davis, May 19-20, 2014.
14. Evolution of Colloidal Matter Conference, NYU, June 27-29, 2013.
13. Regulation & Dynamics of Biological Membranes, (Porquerolles, France), May 27-30, 2013.
12. Kavli Institute for Theoretical Physics, Soft Matter Workshop, June 4-6, 2012.
11. COBRE Delaware Membrane Protein Symposium, May 14, 2012. (Keynote speaker)
10. Berkeley Mini-Statistical Mechanics Meeting, Jan. 14-15, 2012.
9. ERATO Symposium on Lipid Structures around Proteins (Osaka, Japan), Nov. 11-14, 2011.
8. Gordon Conference on Chemistry and Physics of Lipids, July 22-29, 2011.
7. Gordon Conference on Molecular Cell Biology of Lipids, July 17-22, 2011.
6. Undergraduate Women in Physics Conference, Portland OR, Apr. 16-17, 2011.
5. Biophysics of Membrane Transformations (Bad Honnef, Germany), Oct. 26-30, 2010.
4. Physical Chemistry of Biointerfaces (San Sebastian, Spain), July 19-24, 2010.
3. Experimental Biology 2010, ASBMB Avanti Award Symposium, Apr. 24-28, 2010.

2. ISWOLD Workshop on Lipid Domains (Rehovot, Israel), accepted for Mar. 8-12, 2010.
1. Biophysical Society Meeting, Membrane Zoology Workshop, Feb. 20-24, 2010.

INVITED UNIVERSITY / INSTITUTE PRESENTATIONS (Past decade, reverse chronological)

55. Physiology Course Speaker, Woods Hole Marine Biological Laboratory, June 30, 2020. (Scheduled)
54. Condensed Matter and Biophysics Seminar, Los Alamos Natl Lab, Mar. 2, 2020.
53. Condensed Matter Seminar, LSU Baton Rouge, Feb. 14, 2020.
52. Chemistry Seminar, Auburn University, Feb. 13, 2020.
51. Microbiology Seminar, UMass – Amherst, Jan. 21, 2020.
50. Molecular Biology Retreat, University of Colorado, Oct. 25, 2019. (Keynote speaker)
49. Stony Brook University, Biochemistry and Cell Biology Seminar, Mar. 28, 2019.
48. Soft Matter Seminar, Georgia Tech, Mar. 26, 2019. (Annual "Distinguished Lecture")
47. Physics Colloquium, Georgia Tech, Mar. 25, 2019.
46. Physics Colloquium, McGill University (Canada), Mar. 22, 2019.
45. University of Virginia, Molec. Physiology & Biological Physics, Feb. 28, 2019.
44. UT Southwestern, Molecular Biophysics Seminar, Oct. 4, 2018.
43. Washington State University, Physics Colloquium, Sept. 20, 2018.
42. Physics Colloquium, University of British Columbia, Sept. 13, 2018.
41. Chemistry Seminar, UC Irvine, Sept. 12, 2018.
40. Five-College Colloquium, Claremont Colleges, Sept. 11, 2018.
39. Physiology Course Speaker, Woods Hole Marine Biological Laboratory, June 25, 2018.
38. University of South Florida, Physics Colloquium, Oct. 13 2017.
37. Fermilab, Colloquium, Mar. 22 2017.
36. Weill Cornell Medicine, Physiology, Biophysics and Systems Bio Seminar, Mar. 8 2017.
35. UC Berkeley, Physics/MCB Colloquium, Sept. 26 2016.
34. UCLA California Nanosystems Institute Seminar, Mar. 3 2016.
33. UC Berkeley, Physical Chemistry Seminar, Feb. 16 2016.
32. San Francisco State University, Chemistry Seminar, Feb. 12 2016.
31. UC Davis, Biophysics Seminar, Feb. 5 2016.
30. UCSF, BBC Special Seminar, Jan. 25 2016.
29. Stanford University, Physical Chemistry Seminar, Jan. 12 2016.
28. University of British Columbia, Condensed Matter Seminar, Nov. 26 2015.
27. Simon Fraser University, Biophysics Seminar, Nov. 25 2015.
26. UC San Diego, Physics Colloquium, Nov. 12 2015.
25. UC Boulder, Physical Chemistry / Chemical Physics Colloquium, Oct. 23 2015.
24. Pacific Lutheran University, Chemistry Seminar, Oct. 12 2015.
23. University of Illinois at Urbana-Champaign, Physical Chemistry Seminar, Sept. 17 2015.
22. Stanford University, McConnell Symposium, April 18 2015.
21. Center for Theoretical Biological Physics, Rice University, March 17 2015.
20. Harvard University, Origins of Life Initiative, March 11 2015.
19. Georgetown University, Physics Colloquium, Sept. 9 2014.
18. Phi Beta Kappa Commencement Lecture, University of Washington, June 11 2014.
17. University of Chicago, Closs Award Lecture, May 13 2013.
16. UC Davis, Physical Chemistry Seminar, Apr. 9 2013.
15. University of New Mexico, Phi Beta Kappa Lectures, Feb. 28 – Mar. 1 2013.
14. UC San Diego, Physical Chemistry Seminar, Feb. 2013.
13. University of the Pacific, Phi Beta Kappa Lectures (two), Nov. 29-30 2012.
12. West Virginia University, Phi Beta Kappa Lectures (two), Nov. 8-9 2012.

11. Carleton College, Phi Beta Kappa Lectures (two), Oct. 25-26 2012.
10. Luther College, Phi Beta Kappa Lectures (two), Oct. 22-23 2012.
9. Elmira College, Phi Beta Kappa Lectures (two), Oct. 4-5 2012.
8. St. Michael's College, Phi Beta Kappa Lectures (two), Oct. 1-2 2012.
7. University of Pennsylvania, Physical Chemistry Seminar, Apr. 5 2012.
6. UT Austin, Physics Colloquium, Jan. 25 2012.
5. Harvard University, Widely Applied Math Seminar, Oct. 4 2011.
4. UC Berkeley, Physical Chemistry Seminar, Mar. 15 2011.
3. Indiana University at Bloomington, Biocomplexity Seminar, Sept. 28 2010.
2. University of Washington, Biochemistry Seminar, Apr. 29 2010.
1. Princeton University, Princeton Inst. for Science and Technology of Materials, Apr. 21 2010.

HIGHLIGHTS OF GROUP PRESENTATIONS AT CONFERENCES (Past decade; non-invited)

17. Biophysical Society Meeting, Feb. 2020: (Cornell, Mileant, Thakkar, Lee & Keller) / (Leveille, Cornell, Merz & Keller) / (Spears & Keller) / (Cohen, Hazra, Nguyen, Kessenich, Xue, Johnson, Drobny, Black & Keller)
16. AbSciCon, June 2019: (Black, Cornell, Xue, Litz, Ramsay, Gordon, Mileant, Cohen, Williams, Lee, Drobny & Keller) / (Cohen, Nguyen, Lalic, Black & Keller)
15. Biophysical Society Meeting, Feb. 2019: (Cornell, Skinkle, He, Levental, Levental & Keller) / (Cohen, Ramsay, Cornell, Black & Keller) / (Cornell, Mileant, Lee & Keller)
14. Biophysical Society of Canada, May 2018:
(Cornell, Skinkle, He, Levental, Levental & Keller) / (Rayermann, Rayermann, Cornell, Merz & Keller)
(Chang, Cornell & Keller) / (Leveille, Cornell, Merz & Keller)
13. Biophysical Society Meeting, Feb. 2018: (Cornell, Skinkle, He, Levental, Levental & Keller)
(Chang, Cornell & Keller) / (Rayermann, Rayermann, Cornell, Merz & Keller)
12. Gordon Conference on the Origins of Life, Jan. 2018: (Cohen, Ramsay, Cornell, Keller & Black)
11. Biophysical Society Conference, Feb. 2017:
(Cornell, McCarthy, Levental, Levental, Brooks & Keller) / (Rayermann, Rayermann, Cornell, Merz & Keller)
10. AbSciCon Conference, 2017: (Black, Gordon, Cornell & Keller)
9. Biophysical Society Conference, Feb. 2016:
(Cornell & Keller) / (Rayermann & Keller) / (Gordon, Black, Cornell, Williams, Lee & Keller)
8. Berkeley Mini Stat Mech Conference, Jan. 2016: (Cornell & Keller)
7. Biophysical Society, Feb. 2015: (James, Litz & Keller) / (Gordon, Black, Blosser & Keller)
(Blosser, Honerkamp-Smith, Han, Haataja & Keller) / (Bleecker, Cox & Keller) / (Litz, Portet & Keller)
6. Biophysical Society, Feb. 2014:
(Blosser, Honerkamp-Smith & Keller) / (Bleecker, Cox, Foster, Castner & Keller),
(Litz, Portet & Keller) / (James, Litz & Keller)
5. Biophysical Society, Feb. 2013: (Black, Deamer, Blosser, Stottrup, Tavakley & Keller)
(Bleecker, Foster & Keller) / (Portet, Holmes, Bowden, Stephens, Varga & Keller)
4. Faraday Discussion 161: Lipids and Membrane Biophysics, London, UK, Sept. 2012:
(Portet and Keller) / (Bleecker and Keller)
3. Biophysical Society, Feb. 2012:
(Stanich, Honerkamp-Smith, Putzel, Warth, Lamprecht, Mandal, Mann, Hua & Keller)
(Stanich, Craig & Keller) / (Blosser, Horst, Abkarian, Massiera & Keller) / (Portet, Gordon & Keller)
2. Biophysical Society, Mar. 2011: (Honerkamp-Smith, Machta & Keller)
(Stanich, Honerkamp-Smith, Putzel, Hua, Lamprecht, Warth, & Keller) / (Blosser, Turtle, Starr & Keller)
1. Biophysical Society, Feb. 2010:
(Honerkamp-Smith & Keller) / (Blosser, Ashcraft & Keller) / (Stanich, Honerkamp-Smith & Keller)

TEACHING

A. AWARDS

University of Washington Department of Chemistry Outstanding Teaching Award in 2005
University of Washington Distinguished Teaching Award in 2006
UW Postdoctoral Association Mentor Award in 2012
Nominee for UW Marsha Landolt Distinguished Graduate Mentor Award in 2014

B. LECTURE COURSES TAUGHT (2 per year)

Chem 155	(Honors Freshman Chemistry)	30 lectures, 10 weeks, 80 students
Chem 144, 152, 162	(Freshman Chemistry)	30 lectures, 10 weeks, 240-330 students
Chem 452	(Physical Chemistry for Biochem Majors)	30 lectures, 10 weeks, 80-150 students

NATIONAL / INTERNATIONAL SERVICE ACTIVITIES (Subset from past decade)

A. JOURNAL REVIEWS

Proc. Natl. Acad. Sci. / Phys. Rev. Lett. / Phys. Rev. E / Biophys. J. / Nature
J. Phys. Chem. / J. Memb. Biol. / Biochim. Biophys. Acta / Langmuir / Soft Matter

B. PROPOSAL REVIEW PANELS

BIO Directorate and CHEM Directorate Panels: 2009, 2014, 2016, 2017

C. AD HOC PROPOSAL REVIEWS

National Science Foundation / Research Corporation / Isaac Newton Trust (UK)
American Chemical Society - Petroleum Research Foundation

D. EXTERNAL ADVISORY BOARDS

ESPRC (UK Research Council) on Sculpting Dynamic Amphiphilic Structures 2012 – 2017

E. PROFESSIONAL SOCIETIES

American Physical Society, Fellow and Lifetime Member
Biophysical Society, Member
Washington State Academy of Science, Fellow and Member

F. MENTORING / OUTREACH

Founding member of the Membrane Chix, a networking and mentoring group

SERVICE ACTIVITIES WITHIN UW (Subset from past decade)

A. DEPARTMENTAL COMMITTEES

Physical Chemistry Second-Year Graduate Exam Committee, 2003, 2007, 2010 (Chair in 2010)
Physical Chemistry Faculty Search Committee, 2010 – 2011

Chemistry Dept. Awards Committee, 2018 – present (Chair)
Chemistry Dept. Personnel Committee, 2016 – 2018
Chemistry Dept. Development Committee, 2009 – 2015
Chemistry Dept. Ad-Hoc IB (International Baccalaureate) Committee, Fall 2011

B. UNIVERSITY-WIDE AND COMMUNITY SERVICE

UW Freshman Convocation Faculty Speaker, 2017
UW College of Arts and Sciences C21 Faculty Advisor Board, 2016 – 2017
UW Sackler Fellow Selection Committee, 2010 – present
UW Proposal Review for Royalty Research Fund, 2004 – present
UW Provost Assessment of Student Learning Task Force, 2014 – 2015
UW Mary Gates Undergraduate Research Fellowship Selection Committee, 2013
UW Biological Futures Advisory Board, 2011 – 2014
UW Advanced Materials for Energy Institute, Advisory Board, 2011 – 2014
UW Associate Dean for Research Activities for the College of Arts and Sciences, 2010 – 2014
UW Office of Research Limited Submissions Proposal Review Committee, 2010 – 2014
UW Mathematics Review Panel, 2011
UW Panels and Presentations to Advise Faculty:
– ADVANCE Workshops 2008, 2011, 2012

– UW Faculty Fellows Program 2012, 2017
 UW Panels and Presentations to Mentor Undergraduates, Graduate Students & Postdocs:
 – First Year Programs 2010, 2011, 2012, 2014, 2015, 2016, 2017, 2018, 2019
 – Women in Chemical Sciences, 2013
 UW Molecular Biophysics NIH Training Grant Selection Committee, 2008, 2010, 2012
 UW Educational Outreach, Waseda University (Japan) Faculty Development Program, Feb. 2010
 UW College of Arts and Sciences Curriculum Committee, 2009 – 2010
 Local High School and Middle School Tours of UW Laboratories: 2012, 2013, 2017

UNDERGRADUATE, GRADUATE, AND POSTDOCTORAL ADVISING

A. POSTDOCTORAL FELLOWS

Thomas R. Portet	2011 - 2013	(Current Software Engineer, Microsoft - Data Science Group)
Marcus D. Collins	2006 - 2008	(Current Scientist/Senior Fellow at Placed, Inc.)
Michael Halter	2004 - 2005	(Current NIST Research Scientist)

Awards to Postdoctoral Fellows while in the Keller Lab / UW:

T.R. Portet: *UW Sackler Fellow, Fondation Bettencourt Schueller Prix pour les Jeunes Chercheurs, Prix de l'Académie des Sciences de Toulouse, Prix Novela - City of Toulouse, 2011 Travel Award Soft Condensed Matter Gordon Conference, Skinner Prize: Best Poster Faraday Discussion 161*

M.D. Collins: *NIH Kirschstein Postdoctoral Fellowship*

M. Halter: *UW-MDITR STC Postdoctoral Travel Grant (to MH)*

B. Ph.D. STUDENTS

Heidi Spears	2018 - present	
Zack R. Cohen	2017 - present	
Chantelle L. Leveille	2016 - present	
Caitlin E. Cornell	2014 - present	
Glennis E. Rayermann	2015 - 2019	
Scott P. Rayermann	2013 - 2017	(Current Chemistry Lecturer, Univ. of Washington, Tacoma)
Jonathan P. Litz	2013 - 2015	(Current Software Engineer, Microsoft - Data Science Group)
Joan V. Bleecker	2010 - 2015	(Current Chemistry Lecturer, Univ. of Washington, Tacoma)
Matthew C. Blosser	2009 - 2014	(Current Postdoctoral Fellow, USC)
Cynthia A. Stanich	2008 - 2012	(Current Chemical Education Postdoctoral Fellow, UW)
Aurelia R. Honerkamp-Smith	2005 - 2010	(Current Asst. Prof. of Physics, Lehigh University)
Adrienne R. Battle	2004 - 2007	(Current Assoc. Prof. of Physics, Green River Comm. College)
Ben L. Stottrup	2002 - 2005	(Current Assoc. Prof. of Physics, Augsburg College)
Sarah L. Veatch	2000 - 2004	(Current Assoc. Prof. of Biophysics, Univ. of Michigan)

Awards to Ph.D Students while in the Keller Lab / UW:

Z.R. Cohen: *2017 UW Astrobio Scholar, 2018 Pacific Science Ctr - Science Communication Fellowship, 2018 NSF GRFP Fellow, 2019 Finalist for BPS Student Research Achievement Award*

C.L. Leveille: *2016 UW Excellence in Chemistry Graduate Fellowship, 2018 Biophysical Society of Canada Poster Award, 2019 BPS Student Research Achievement Award, 2019 BPS Travel Award, 2020 Travel Grant from The Company of Biologists*

G.E. Rayermann: *2018 Biophysical Society Travel Award, 2018 UW Graduate & Professional Student Senate Travel Award, 2018 UW Graduate School Travel Award, 2018 Doerner Institut Conference on Tempera Painting 1800-1950 (Munich) Travel Award, 2017 Fdn. of the Amer. Inst. for Conservation of Historic and Artistic Works Travel Award, NSF GRFP Fellow, NDSEG Fellow, ARCS Fellow*

C.E. Cornell: *2018 NC State Building Future Faculty Fellow, 2017 MBL Physiology Post-Course Research Fellow, 2017 MBL Physiology Summer Course Fellowship, 2017 BPS Travel Award, 2016 BPS Student Research Achievement Award, 2015-2017 Molecular Biophysics NIH Traineeship, 2015 NSF GRFP Honorable Mention, 2015 S.P. Pavlou and D.E. Strayer Dept. of Chemistry Fellowship, 2018 Biophysical Society of Canada Travel Award and Poster Award, 2019-2020 UW Alma Mater Travel Award, 2020 JSMF Postdoctoral Fellowship, 2020 iBiology Finalist*

S.P. Rayermann: *2016 Biophysical Society Travel Award, 2013-14 Alpha Epsilon Delta Teaching*

Excellence Award, 2013 George and Agnes Irene Cady Dept. of Chemistry Endowed Fellowship, 2013 Lloyd and Florence West Dept. of Chemistry Endowed Fellowship

J.P. Litz: *2013 BPS Travel Award, 2012 Lindau Fellow to the Lindau Meeting of Nobel Laureates, NSF Graduate Fellow, 2010 Leon J. Slutsky & Brian R. Reid Dept. of Chemistry Endowed Fellowships*

J.V. Bleecker: *2015 Ford Fellowship Honorable Mention, 2013 Biophysical Society Travel Award, 2013 Lindau Fellow - Lindau Meeting of Nobel Laureates, 2011-2013 Molecular Biophysics NIH Traineeship*

M.C. Blosser: *2014 Dept. of Physics Dehmelt Prize in Experimental Physics, 2014 UW NASA Space Grant Consortium Fellowship, 2014 University of Washington Lindau Fellow Nominee, 2012 Biophysical Society Travel Award (to MCB), Molecular Biophysics NIH Traineeship, 2010 Biophysical Society Student Research Achievement Award Finalist, 2009 UW Graduate School Top Scholar Award*

C.A. Stanich: *2012 Travel Award to TRUSE - Transforming Research in Undergraduate STEM Education, 2012 Biophysical Society Student Research Achievement Award, 2010-2011 Dept. of Chemistry Outstanding Teaching Award, 2011 Biophysical Society Student Research Achievement Award – 2nd Place, 2010 Biophysical Society Travel Award, 2008 Honen Dept. of Chemistry Endowed Fellowship*

A.R. Honerkamp-Smith: *2011 Hoffman Award for Outstanding Graduate Research in Chemistry, 2011 UW Distinguished Dissertation Award, 2011 UW College of Arts & Sciences Dean's Medal for Outstanding Graduate Student in Natural Sciences, 2010 National IGERT Poster Award, Rowland, Rabinovitch and Lingafelter Dept. of Chemistry Endowed Fellowships, 2009 UW CNT Best Presentation Award & Travel Award, 2009 Soft Condensed Matter Gordon Conference Travel Award, Best Poster Award at Advanced Study Institute's Winter School on Order, Robustness & Instabilities in Complex Systems (Norway), Fellowship to Boulder Summer School for Complex Fluids & Biological Materials, 2007 Mechanisms of Cell Signaling Gordon Conference Travel Award, 2007 Biophysical Society Travel Award, UW Molecular Biophysics NIH Traineeship, UW Nanotechnology Fellowship*

A.R. Battle: *UW Nanotechnology Fellowship, ARCS Fellowship*

B.L. Stottrup: *UW Nanotechnology Fellowship, ASCB Travel Award*

S.L. Veatch: *2003 Biophysical Society Student Research Achievement Award, Biophysical Society Travel Award, ASCB Travel Award, Poster Competition and Travel Award at NATO Biophysics Summer School, Molecular Biophysics NIH Traineeship, Nanotechnology Fellowship, Dept. of Physics Karrer Prize, Dept. of Physics Henderson Prize for Best Physics Dissertation*

C. MASTERS STUDENTS

Kim Giebenhain	2020 -	
Christina (Faller) Guvench	2015	(Current technical marketing manager at SilcsBio)
Jake R. Ashcraft	2008 - 2009	(Current Assoc. Dean and Prof. at South Seattle College)
Heena Lakhani	2004 - 2007	(Current research assistant at UW)
Ryan Rule	2004 - 2005	(Current engineer at Boeing)
Mebbie Beattie	2003 - 2005	(Current chemistry teacher)
Marci DeLeon	2001 - 2002	(Current USDA analytical chemist)

Awards to Masters Students while in Keller Lab / UW:

K. Giebenhain: *DAAD (Deutscher Akademischer Austauschdienst) German Academic Exchange*

J.R. Ashcraft: *Puget Sound Society for Technical Communication Scholarship, UW Natt-Lingafelter Award*

H. Lakhani: *UW GK-12 Fellowship*

M.E. Beattie: *UW GK-12 Fellowship*

D. UNDERGRADUATE RESEARCHERS

Peter Duff	2019 -	
Bob Weng	2019 -	
Sean Dickson	2018 - 2019	
Ana Duarte	2018 - 2019	(Became graduate student in physics at CalTech)
Andrew Ramsay	2017 - 2018	(Became employee at Adaptive Biotechnologies)
Catherine Chang	2016 - 2018	(Became post-baccalaureate researcher at the NIH)
Ranee C. James	2013 - 2016	(Currently on leave from UW)
Moshe T. Gordon	2014 - 2016	(Became chemistry graduate student at UC Boulder)
Peter N. Holmes	2012 - 2013	(Became dentistry student at UW School of Dentistry)
Marie Higinbotham	2012	(Became employee at M3 Biotechnology)
Pokuan (Paul) Ho	2012	(Became instructor in Taiwanese Military Service)

Ben G. Horst	2010 - 2011	(Became chemistry graduate student at UC Berkeley)
Andrea K. Lamprecht	2010	(Became medical student at Univ. of Queensland)
Thien-An D. Hua	2009 - 2010	(Became IT infrastructure manager at SightLife)
Cameron W. Turtle	2009	(Became Rhodes Scholar, Oxford)
Jordan B. Starr	2009	(Became medical student at Univ. of Michigan)
Marissa Hackett	2008 - 2009	(Became staff scientist at Applied Precision)
Jialing Li	2005	(Became physics graduate student at MIT)
Mark M. Stevens	2004 - 2009	(Became biology graduate student at MIT)
Daniel S. Stevens	2003 - 2004	(Became staff scientist at PATH)
Matthew Loo	2003 - 2004	(Became construction engineer)
Rayna Matsuno	2001 - 2002	(Became PhD in cancer epidemiology at Johns Hopkins)
Nathan Pennock	2001 - 2002	(Became immunology graduate student at U. Colo, Denver)
Kathy Toreson	2001	(Became neuroscience graduate student at Albany)
LaNiesha Cobb	2001	(Became managing director at Teach for America)
Kim Klonoff	2000	

Awards to Undergraduate Researchers at UW:

- A. Duarte: 2017-18 UW Mary Gates Scholar (declined)
C. Chang: 2017 UW Dept. of Chemistry Donald Hanahan Scholarship, 2018 UW URP Travel Award, Terry Scurry Scholarship, University Scholarship-Seattle
M.T. Gordon: 2016 Dept. of Chemistry Undergraduate Research Award, UW Dept. of Chemistry 2015 Benson Scholarship and 2016 Robinson Scholarship, 2015-16 UW Mary Gates Research Scholar
R.C. James: 2014 Dept. of Chemistry Boeing Scholarship, 2014 APS Minority Scholarship, 2014 UW Mary Gates Research Scholar
B.G. Horst: UW Mary Gates Scholar, UW Washington Research Foundation Fellow
J. Li: NSF REU Undergraduate Researcher
C.W. Turtle: 2009-10 UW Mary Gates Scholar, 2011 Goldwater Scholar, 2012 Rhodes Scholar
M.M. Stevens: 2007-2008 UW Mary Gates Scholar, UW Arts & Science Research Award, Dept. of Chemistry Merck Index Award
N. Pennock: UW Mary Gates Scholar
K. Klonoff, UW Chemical Sciences Research Fellow

GRANT ACTIVITY (PAST 5 YEARS, US DOLLARS)

A. CURRENT

National Science Foundation MCB (PI: Keller)	2019 – 2022	\$900,000
LEA Lipidomics Excellence Award (PI: Keller)	2019 – 2021	€1,500
National Science Foundation MCB (PI: Keller)	2014 – 2019	\$1,262,023
NASA (PI: Keller, Co-PI Lalic and Drobny)	2017 – 2020	\$548,909
UW Royalty Research Fund (PI: Keller, Co-PI Kelly Lee)	2017 – 2018	\$32,684

B. SUBMITTED AND DECLINED

Simons Foundation (PI: Keller)	2014 – 2019	\$1,180,886
Templeton Foundation (PI: Keller)	2014 – 2016	\$325,240
NASA (PI: Keller)	2016 – 2019	\$598,980
UW Royalty Research Fund (PI: Keller)	2017 – 2018	\$39,864

C. FUNDED AND COMPLETED

National Science Foundation (NSF) MCB-0744852 (PI: Keller)	2008 – 2015	\$820,000
UW MoES Faculty Partnership Grant (PI: Keller)	2014 – 2015	\$50,000
UW RRF (PI: Qiuming Yu)	2015	\$6,000

D. FELLOWSHIPS TO POSTDOCS AND GRAD STUDENTS

NIH Molecular Biophysics Fellowship (to Caitlin Cornell)	2015 – 2017	\$73,400
NSF Graduate Fellowship (to Glennis Rayermann)	2015 – 2017	\$66,000
NSF Graduate Fellowship (to Zack Cohen)	2018 – 2021	\$138,000
NIH Molecular Biophysics Fellowship (to Heidi Spears)	2019 – 2021	\$79,874