

CURRICULUM VITAE

Julius B. Lucks

Associate Professor of Chemical and Biological Engineering
Northwestern University, 2145 Sheridan Rd. Evanston, IL 60208
web: luckslab.org

EDUCATION

B.S., Chemistry (Highest Honors) (2001) University of North Carolina, Chapel Hill, NC

M.Phil., Chemistry (2002) University of Cambridge, Cambridge, UK

M.S., Chemical Physics (2004) Harvard University, Cambridge, MA

Ph.D., Chemical Physics (2007) Harvard University, Cambridge, MA

Miller Fellow Postdoctoral Associate (2011) University of California, Berkeley, CA

PROFESSIONAL EXPERIENCE

Associate Professor, Chemical and Biological Engineering, Northwestern University (2016-)

Affiliations at Northwestern:

Member and Preceptor, Chemistry of Life Processes Institute (2016-)

Member, Center for Synthetic Biology (2016-)

Member, Center for Water Research (2018-)

Preceptor, Interdisciplinary Biological Sciences Graduate Program (2016-)

Preceptor, Molecular Biophysics Training Program (2017-)

Preceptor, Biotechnology Training Program (2017-)

Assistant Professor, Chemical and Biomolecular Engineering, Cornell University (2011-2016)

Affiliations at Cornell:

Graduate Field Member, Biochemistry, Molecular and Cell Biology (2013-2016)

Graduate Field Member, Biomedical Engineering (2014-2016)

Graduate Field Member, Computational Biology (2014-2016)

Graduate Field Member, Microbiology (2014-2016)

Founding Council Member, Engineering Biology Research Consortium (2017-)

Founding Board of Directors Member, Engineering Biology Research Consortium (2015-2017)

US Chair, EU/US Biotechnology Task Force Synthetic Biology Working Group (2014-2016)

Instructor and Co-Creator, Cold Spring Harbor Course on Synthetic Biology (2013-2015)

James C. and Rebecca Q. Morgan Sesquicentennial Faculty Fellow, Cornell University (2012-Present)

Affiliated Investigator, NSF Synthetic Biology Engineering Research Center, (2011-Present)

Miller Fellow Postdoctoral Associate, Bioengineering, Univ. of California, Berkeley, CA (2008-2011)

Postdoctoral Associate, Information Science, Cornell University, Ithaca, NY (2007)

Visiting Scholar, Theoretical Physics, Institute Marie Curie, Paris, Fr (2005)

HONORS AND AWARDS

2017 Camille Dreyfus Teacher-Scholar Award

2016 ACS Synthetic Biology Young Investigator Award

2016 Searle Leadership Award

2015 NSF CAREER Award

2015 Cornell College of Engineering Mr. and Mrs. Richard F. Tucker `50 Teaching Award

2013 NIH Director's New Innovator Award

2013 Office of Naval Research (ONR) Young Investigator

2013 Alfred P. Sloan Research Fellowship

2012 Defense Advanced Research Projects Agency (DARPA) Young Faculty Award

2012 James C. and Rebecca Q. Morgan Sesquicentennial Faculty Fellow

2008-2011 Miller Research Fellow, University of California, Berkeley

2002-2007 John and Fannie Hertz Foundation Graduate Fellow
2002 Robert Karplus Prize Fellowship in Chemical Physics, Harvard University
2001 Winston Churchill Scholarship, Churchill College, Cambridge University
2001 National Science Foundation Graduate Fellowship (Declined, Duplicate Funding)
2001 Department of Defense Graduate Fellowship (Declined, Duplicate Funding)
2000-2001 Barry M. Goldwater Scholarship, Univ. North Carolina, Chapel Hill
2001 Francis P. Venable Medal, Univ. North Carolina, Chapel Hill
2001 Academic Excellence in Physical Chemistry, Univ. North Carolina, Chapel Hill
2000 Phi Beta Kappa, Univ. North Carolina, Chapel Hill
2000 NSF REU Fellowship, Univ. Colorado, Boulder
1999 American Chemical Society Undergraduate Research Award
Editorial Board, *Nucleic Acids Research* (2015-Present)
Editorial Board, *ACS Synthetic Biology* (2011-Present)
Affiliate, bioRxiv (2014-Present)

PUBLICATIONS

* = corresponding author; # = student from Lucks group; % = undergraduate student; = highlight

1. E. J. Strobel #, A. Yu #, J. B. Lucks* (2018). "High-throughput determination of RNA structures." *Nature Reviews Genetic (In Press)*.
2. C. J. Glasscock #, L. E. Yates, T. Jaroentomeechai, J. D. Wilson, J. H. Merritt, J. B. Lucks, M. P. DeLisa*, (2018). "A flow cytometric approach to engineering *Escherichia coli* for improved eukaryotic glycosylation." *Metabolic Engineering*, 47, 488-495.
3. C. Hu #, M. K. Takahashi #, Y. Zhang #%, J. B. Lucks* (2018). "Engineering a functional small RNA negative auto regulation network with model-guided design." *ACS Synthetic Biology* doi: 10.1021/acssynbio.7b00440.
4. D. K. Agrawal, X. Tang, A. M. Westbrook #, R. Marshall, C. S. Maxwell, J. B. Lucks, V. Noireaux, C. L. Beisel, M. J. Dunlop, E. Franco (2018). Mathematical modeling of RNA-based architectures for closed loop control of gene expression. *ACS Synthetic Biology*, 7, 1219-1228.
5. K. E. Watters #, K. Choudhary, S. Aviran, J. B. Lucks, K. L. Perry, J. L. Thompson (2017). "Probing of RNA structures in a positive sense RNA virus reveals selection pressures for structural elements." *Nucleic Acids Research*, 46, 2573-2584.
6. S. Meyer #, P. D. Carlson #, J. B. Lucks* (2017). "Characterizing the structure-function relationship of a naturally-occurring RNA thermometer." *Biochemistry*, 56, 6629-6638.
7. J. Chappell #, A. Westbrook #, M. Verosloff #, J. B. Lucks* (2017). "Computational design of STARS for versatile and dynamic gene regulation." *Nature Communications*, 8:1051, 1-12.
8. E. J. Strobel #, K. E. Watters #, Y. Nedialakov, I. Artismovitch, J. B. Lucks* (2017). "Distributed biotin-streptavidin transcription roadblocks for mapping cotranscriptional RNA folding." *Nucleic Acids Research*, doi: 10.1093/nar/gkx233.
9. A. Westbrook #, J. B. Lucks* (2017). "Achieving large dynamic range control of gene expression with a compact RNA transcription-translation regulator." *Nucleic Acids Research*, doi: 10.1093/nar/gkx215
10. J. Chappell #, J. B. Lucks* (2016). "Turning it up to 11: Modular proteins amplify RNA sensors for sophisticated circuitry", *Cell Systems*, 3, 509-511.
11. K. E. Watters #, E. J. Strobel #, A. Yu #, J. B. Lucks* (2016). "Cotranscriptional Folding of a Riboswitch at Nucleotide Resolution", *Nature Structural and Molecular Biology*, 23, 1124-1131. [Recommended by Faculty of 1000 Prime](#).
12. K. E. Watters #, J. B. Lucks* (2016). "Mapping RNA structure in vitro with SHAPE chemistry and next generation sequencing (SHAPE-Seq)," in "RNA Structure Determination," D. Turner and D. Mathews (eds.) *Methods in Molecular Biology*, 1490, 135-162.

13. K. E. Watters #, A. Yu#, E. J. Strobel#, A. H. Settle#%, J. B. Lucks* (2016). Characterizing RNA structures in vitro and in vivo with selective 2'-hydroxyl acylation analyzed by primer extension sequencing (SHAPE-Seq), *Methods*, 103, 34-48.
14. M. K. Takahashi #, K. E. Watters #, P. M. Gaspar, T. R. Abbott #%, P. D. Carlson #, A. A. Chen, J. B. Lucks* (2016). "Using in-cell SHAPE-Seq and simulations to probe structure-function design principles of RNA transcriptional regulators," *RNA*, 22, 920-933.
15. E. J. Strobel #, K. E. Watters #, D. Loughrey, J. B. Lucks* (2016). "RNA systems biology: Uniting functional discoveries and structural tools to understand the global roles of RNAs," *Current Opinion in Biotechnology*, 39, 182-191.
16. C. J. Glasscock#, J. B. Lucks, M. P. DeLisa (2016). "Engineered Protein Machines: Emergent Tools for Synthetic Biology," *Cell Chemical Biology*, doi: 10.1016/j.chembiol.2015.12.004 .
17. K. E. Watters #, T. R. Abbott #%, J. B. Lucks* (2015). "Simultaneous characterization of cellular RNA structure and function with in-cell SHAPE-Seq," *Nucleic Acids Research*, 44, e12 .
18. S. Meyer #, J. Chappell #, S. Sankar #%, R. Chew #%, J. B. Lucks* (2015). "Improving fold activation of small transcription activating RNAs (STARs) with rational RNA engineering strategies," *Biotechnology and Bioengineering*, 113, 216-225 . [Featured in Biotechnology and Bioengineering Spotlight Summary.](#)
19. C. Y. Hu #, J. D. Varner, J. B. Lucks* (2015). "Generating effective models and parameters for RNA genetic circuits," *ACS Synthetic Biology*, 4, 914-926.
20. M. K. Takahashi #, C. A. Hayes, J. Chappell #, Z. Z. Sun, R. M. Murray, V. Noireaux*, J. B. Lucks* (2015). "Characterizing and prototyping genetic networks with cell-free transcription-translation reactions," *Methods*, 86, 60-72.
21. J. Chappell #, K. E. Watters #, M. K. Takahashi #, J. B. Lucks* (2015). "A renaissance in RNA synthetic biology: new mechanisms, applications and tools for the future," *Current Opinion in Chemical Biology*, 28, 47-56.
22. J. Chappell #, M. K. Takahashi #, J. B. Lucks* (2015). "Creating small transcription activating RNAs," *Nature Chemical Biology*, 11, 214-220. [Research Highlight in Nature Methods "RNA that activates transcription" by N. Rusk i\(2015\), 12, 290.](#)
23. M. K. Takahashi #, J. Chappell #, C. A. Hayes, Z. Z. Sun, J. Kim, V. Singhal, K. J. Spring, S. Al-Khabouri, C. P. Fall, V. Noireaux, R. M. Murray, J. B. Lucks* (2015). "Rapidly characterizing the fast dynamics of RNA genetic circuitry with cell-free transcription-translation (TX-TL) systems," *ACS Synthetic Biology*, 4, 503-515. (published online March, 2014).
24. D. Loughrey #, K. E. Watters #, A. H. Settle #%, J. B. Lucks* (2014). "SHAPE-Seq 2.0: Systematic optimization and extension of high-throughput chemical probing of RNA secondary structure with next-generation sequencing," *Nucleic Acids Research*, 42, e165.
25. J. Chappell #, M. K. Takahashi #, S. Meyer #, D. Loughrey #, K. E. Watters #, J. B. Lucks* (2013). "The centrality of RNA for engineering gene expression," *Biotechnology Journal*, 8, 1379-1395.
26. M. K. Takahashi#, J. B. Lucks* (2013). "A modular strategy for engineering orthogonal chimeric RNA transcription regulators," *Nucleic Acids Research*, 41, 7577-7588.
27. S. A. Mortimer, C. Trapnell, S. Aviran, L. Pachter, J. B. Lucks* (2012). "SHAPE-Seq: High-throughput RNA structure analysis," *Current Protocols in Chemical Biology*, 4, 275-297.
28. C. C. Liu, L. Qi, J. B. Lucks, T. H. Segall-Shapiro, D. Wang, V. K. Mutalik, A. P. Arkin* (2012). "An adapter from translational to transcriptional control enables predictable assembly of complex regulation," *Nature Methods*, 9, 1088-1094. [Highlighted in commentary "Modular gene-circuit design takes two steps forward" by J. J. Tabor in Nature Methods News and Views \(2012\), 9, 1061-1063.](#)
29. P. Cordero, J. B. Lucks, R. Das* (2012). "An RNA mapping database for curating RNA structure mapping experiments," *Bioinformatics*, 28, 3006-3008.
30. V. K. Mutalik, L. Qi, J. C. Guimaraes, J. B. Lucks, A. P. Arkin* (2012). "Rationally designed families of orthogonal RNA regulators of translation," *Nature Chemical Biology*, 8, 447-454. [Highlighted in commentary "Automated Design of RNA Devices" by Farren Isaacs in Nature Chemical Biology.](#)

31. L. Qi, J. B. Lucks, C. C. Liu, V. K. Mutalik, A. P. Arkin* (2012). "Engineering naturally occurring trans-acting non-coding RNAs to sense molecular signals," *Nucleic Acids Research*, 40, 5775-5786.
32. S. Aviran, J. B. Lucks, L. Pachter* (2011). "RNA structure characterization from chemical mapping experiments," *In: Proceedings of the Forty-Ninth Allerton Conference on Communication, Control and Computing*. Monticello, IL, 1743-1750 doi:10.1109/Allerton.2011.6120379.
33. J. B. Lucks*, S. A. Mortimer, C. Trapnell, S. Luo, S. Aviran, G. P. Schroth, L. Pachter, J. A. Doudna, A. P. Arkin* (2011). "Multiplexed RNA structure characterization with selective 2'-hydroxyl acylation analyzed by primer extension sequencing (SHAPE-Seq)," *Proceedings of the National Academy of Sciences*, 108, 11063-11068. [Highlighted in commentary "RNA structure probing dash seq" by Kevin Weeks in PNAS](#), and ["A SHAPE in the Crowd" by M. Eisenstein in Biopolymers](#).
34. S. Aviran, C. Trapnell, J. B. Lucks, S. A. Mortimer, S. Luo, G. P. Schroth, J. A. Doudna, A. P. Arkin, L. Pachter* (2011). "Modeling and automation of sequencing-based characterization of RNA structure," *Proceedings of the National Academy of Sciences*, 108, 11069-11074. [Featured on the cover](#).
35. S. L. Young, P. W. Sherman, J. B. Lucks, G. H. Pelto* (2011). "Why on Earth?: Evaluating hypotheses about the physiological functions of human geophagy," *Quarterly Review of Biology*, 86, 97-120. [Highlighted in commentary on Science Daily website](#).
36. J. B. Lucks, L. Qi, V. K. Mutalik, D. Wang, A. P. Arkin* (2011). "Versatile RNA-sensing transcriptional regulators for engineering genetic networks," *Proceedings of the National Academy of Sciences*, 108, 8617-8622. [Highlighted in commentary on Medical News Today website](#).
37. J. B. Lucks, A. P. Arkin (2011). "The hunt for the biological transistor," *IEEE Spectrum*, 48, 38-43. [Cover story](#).
38. J. M. Skerker, J. B. Lucks, A. P. Arkin* (2009). "Evolution, ecology and the engineered organism: lessons for synthetic biology," *Genome Biology*, 10, 114.
39. J. B. Lucks, L. Qi, W. R. Whitaker, A. P. Arkin* (2008). "Toward scalable parts families for predictable design of biological circuits," *Current Opinion Microbiology*, 11, 567-573.
40. J. B. Lucks, D. R. Nelson, G. R. Kudla, J. B. Plotkin* (2008). "Genome landscapes and bacteriophage codon usage," *PLoS Computational Biology*, 4, e1000001. [Highlighted in commentary on Science Daily website](#).
41. V. Vitelli, J. B. Lucks, D. R. Nelson* (2006). "Crystallography on curved surfaces," *Proceedings of the National Academy of Sciences*, 103, 12323-12328. [Featured on the cover](#).
42. J. D. Weeks, J. B. Lucks, Y. Kafri, C. Danilowicz, D. R. Nelson, and M. Prentiss* (2005). "Pause point spectra in DNA constant-force unzipping," *Biophysical Journal*, 88, 2752-2765.
43. J. B. Lucks, A. J. Cohen, N. C. Handy* (2002). "Constructing a map from the electron density to the exchange-correlation potential," *Physical Chemistry Chemical Physics*, 4, 4612-4618.
44. P. W. Ayers, J. B. Lucks, R. G. Parr* (2002). "Constructing exact density functionals from the moments of the electron density," *Acta Univ. Debreceniensis Series Physica et Chimica*, XXXIV-XXXV, 223.

PATENT APPLICATIONS

45. "Small RNAs (sRNAs) that activate transcription." J. B. Lucks, J. Chappell, M. K. Takahashi (2014). United States Patent Application 61/981,241. (PCT application subsequently filed April 2015).
46. "Transcription Elongation Control Elements and Methods of Use Thereof." A. P. Arkin, J. B. Lucks, L. Qi, W. P. Whitaker (2010). United States Patent Application 61/250,342.

NON-PEER REVIEWED PUBLICATIONS

1. J. B. Lucks, Y. Kafri* (2007). Dynamics of RNA Translocation through a Nanopore. <http://arxiv.org/abs/q-bio/0703028>.
2. J. B. Lucks* (2008). Python - All a Scientist Needs. <http://arxiv.org/abs/0803.1838>.

INVITED PRESENTATIONS by JBL (42)

Universities/Institutes:

Center for Cancer Research RNA Initiative Seminar Series, National Cancer Institute, Bethesda MD, March 2018

Department Seminar, Chemistry, Marquette University, Marquette, WI, December 2017

Department Seminar, Biology, University of Colorado, Boulder, CO, November 2017

Department Seminar, Physics, University of Minnesota, Minneapolis, MN, April 2017

Department Seminar, Biology, University of Illinois at Chicago, Chicago, IL, April 2017

Department Seminar, Biophysics, Rockefeller University, New York, NY, March 2017

Award Lecture, ACS Synthetic Biology Young Investigator Award, Synthetic Biology Engineering Evolution and Design (SEED) Meeting, Chicago, IL, June 2016

Department Seminar, Molecular and Cell Biology, University of California Berkeley, April 2016

Center Seminar, The Center for RNA Biology, Ohio State University, March 2016

Department Seminar, Chemical and Biomolecular Engineering, University of Illinois Urbana-Champaign, December 2015

Department Seminar, Chemical and Biological Engineering, Princeton University, November 2015

Department Seminar, Biomedical Engineering, Boston University, October 2015

Department Seminar, Bioengineering, Caltech, April 2015

Department Seminar, Chemical and Biological Engineering, Northwestern University, March 2015

Department Seminar, Bioengineering, Rice University, February 2015

Department Seminar, Chemical and Biological Engineering, Rensselaer Polytechnic Institute, Feb. 2015

Department Seminar, Biology, Middlebury College, October 2014

Field Seminar, Microbiology, Cornell University, October 2014

Department Seminar, RNA Institute and Department of Chemistry, The University at Albany, October 2014

Field Seminar, Biomedical Engineering, Cornell University, May 2014

Department Seminar, Applied Mathematics, Harvard University, April 2014

Department Seminar, Biology, Ithaca College, March 2014

Department Seminar, Laboratory for Atomic and Solid State Physics, Cornell University, March 2014

Keynote Lecture, CBE 4th Annual Graduate Research Symposium, Cornell University, October 2013

Field Seminar, Biochemistry, Molecular and Cell Biology, Cornell University, May 2013

Department Seminar, Biochemistry and Biophysics, University of Rochester Medical Center, May 2013

Department Seminar, Computational Biology, MIT, April 2013

Center Seminar, Center for Computational Molecular Biology, Brown University, March 2013

Department Seminar, Molecular Medicine, Cornell University, March 2012

Conferences:

FASEB Meeting, San Diego, CA, April 2018

American Institutes of Chemical Engineering, Minneapolis, MN, October 2017

Compugen Symposium, TU Darmstadt, Darmstadt, Germany, June 2017

Gordon Research Conference on Nucleic Acid Nanotechnology, Venturi Beach, CA, Jan 2017

Inaugural Annual Retreat, Engineering Biology Research Consortium, Pasadena, CA, November 2016

Workshop, EU/US Biological Systems Standardization Workshop, Valencia, Spain, March 2015

Inaugural Meeting, Synthetic Biology: Engineering, Evolution and Design, Los Angeles, CA, July 2014

Symposium Presentation, Donald Danforth Plant Science Center, St Louis, MS, September 2012

Invited Lecture, Upstate New York Illumina Users Group Meeting, Ithaca NY, May 2012

Annual Retreat, Synthetic Biology Engineering Research Center Retreat, UC Berkeley, CA, March 2012

Inaugural Meeting, Cold Spring Harbor Asia Conference on the Design and Synthesis of Biological Systems, Suzhou, China, October 2011

Industry:

Seminar, Arrakis TX, Cambridge, MA, May 2018

Seminar, Manus Biosynthesis, Cambridge, MA, October 2015

Seminar, DSM, Cambridge, MA, October 2016

CONTRIBUTED PRESENTATIONS and POSTERS by JBL or LUCKS GROUP MEMBERS (78)

2017 FASEB Transcription Meeting

Presentations: EJS

2017 Gordon Research Conference Nucleic Acids

Presentations: EJS

Posters: EJS, AMY

2016, 2017 Engineering Biology Research Consortium Retreats

Presentations: PDC

Posters: KA (2), AMW, CH, CJG, AMY, KEB, MV, ADS

2016 Chicago RNA Club

Presentation: EJS

2016 Mountain Lake Transcription Meeting

Presentations: EJS

2016 Rustbelt RNA

Presentations: EJS

2011, 2013, 2015 International Conference on Biomolecular Engineering

Presentations: JBL (2); Posters: JBL

2012, 2014, 2015 AIChE National Meetings

Presentations: SIM (2), MKT (2), KEW (2);

Posters: TRA (undergraduate)

2011, 2012, 2013, 2014, 2015, 2016 Synthetic Biology Engineering Research Center Retreats

Presentations: MKT (2), KEW, JEC, AMW;

Posters: DAL (4), MKT (1), SIM (2), KEW (1), PDC (1), CJG (1), CYH (1), AW (2), AY (1)

2015 Cold Spring Harbor Genome Engineering Meeting (Poster: KEW)

2014, 2015, 2016, 2017 Synthetic Biology: Engineering, Evolution and Design Meeting (Posters: MKT, CYH (2), PDC (2), GJG (3), EJS, JEC, AY, DAL, KEW, SIM, AMW, MV)

2014, 2015, 2016 Annual RNA Science Symposium, Albany NY

Presentations: KEW;

Posters: KEW (2), EJS (1)

2014 RNA Society Meeting, Quebec, Canada (Poster: KEW)

2013 Gordon Conference on Synthetic Biology, Mount Snow, VT (Posters: DAL, SIM, MKT)

2013 Mammalian Synthetic Biology Conference, MIT, MA (Poster: KEW)

2013 Hudson RNA Club Meeting (Poster: KEW)

2012 Benasque RNA Bioinformatics Meeting, Benasque, Spain (Presentation: JBL)

2011 Synthetic Biology 5.0, Stanford University, Palo Alto CA (Poster: DAL)

2008 Synthetic Biology 4.0, Hong Kong, China (Presentation: JBL)

2008 Pycon, Chicago, IL (Presentation: JBL)

2007 Microsoft Research eScience Workshop, Chapel Hill, NC (Presentation: JBL)

POST-DOCTORAL SCHOLARS SUPERVISED - past and current

1. **Yueting Zhuang**, Ph.D. Cornell University (2012-2013). Current: Bristol Myers Squibb
2. **James Chappell**, Ph.D. Imperial College London (2013-2017). Current: Assistant Professor, Rice University

3. **Eric Strobel**, Ph.D. Cornell University (2015-Present)
4. **Khalid Alam**, Ph. D. University of Missouri (2016-Present)
5. **Molly Evans**, Ph. D. University of Chicago (2017-Present)

PHD DISSERTATIONS DIRECTED - past and current

1. **Melissa K. Takahashi**, Ph.D. Chemical Engineering (2010-2015)
2. **David A. Loughrey**, Ph.D. Chemical Engineering (2010-2016)
3. **Kyle E. Watters**, Ph.D. Chemical Engineering (2011-2016)
4. **Sarai I. Meyer**, Ph.D. Chemical Engineering (2011-2016)
5. **Alexandra Westbrook**, Ph.D. Chemical Engineering (2013-Present)
6. **Paul Carlson**, Ph.D. Chemical Engineering (2013-Present)
7. **Cameron Glasscock**, Ph.D. Chemical Engineering (2013-Present) (Co-Advised with Prof. Matt DeLisa)
8. **Chelsea Hu**, Ph.D. Chemical Engineering (2013-Present) (Co-Advised with Prof. Jeff Varner)
9. **Karl Brennan**, M.S. Chemical Engineering (2014-2015)
10. **Angela Yu**, Ph.D. Computational Biology and Medicine (2014-Present) (Co-Advised with Christina Leslie, Memorial Sloan Kettering)
11. **Mathew Verosloff**, Ph. D. Interdisciplinary Biological Sciences (2016-Present)
12. **Katherine Berman**, Ph. D. Interdisciplinary Biological Sciences (2016-Present)
13. **Adam Silverman**, Ph. D. Chemical Engineering (2016-Present) (Co-Advised with Prof. Mike Jewett)
14. **Luyi Cheng**, Ph. D. Interdisciplinary Biological Sciences (2016-Present)
15. **Kirsten Jeung**, Ph. D. Chemical Engineering (2017-Present)
16. **Walter Thavarajah**, Ph. D. Chemical Engineering (2017-Present)

UNDERGRADUATE RESEARCH MENTORING %indicates published

Mr. Jay Park, 2011-2013 (Medical School); Ms. Helen Tan, 2011-2013 (Process Engineer, Mondavi Wineries); Mr. Matt Carter, 2011-2014 (Scientist, Caribou Biosciences); Ms. Misha Baheti, 2011-2013 (Consultant); Mr. Ruize Zhuang, 2012-2015 (Stanford PhD); Ms. Sitara Sankar%, 2012-2015 (GA Tech PhD); Mr. Tim Abbott%, 2012-2015 (NSF Graduate Fellow, Stanford PhD); Ms. Rebecca Chew%, 2012-2015 (UC Berkeley Masters); Mr. Alex Settle%, 2013-2016; Ms. Yan Zhang, 2015-2016; Ms. Elizabeth Weiss, 2015-2016; Mr. Aron Coraor, 2015-2016; Ms. Jane Liao, 2015-2016; Mr. Raashed Raziuddin, 2015-2016; Mr. Phillip Clauer, (Summer 2017); Ms. Kristen Shytel, 2017-Present; Ms. Lulu Sun, 2017-Present; Mr. Jack Arnold, 2017-Present; Ms. Katarina Cheronis, 2017-Present.

ACHIEVEMENTS BY GROUP MEMBERS

Beckman Postdoctoral Fellowship 2017 (Strobel)
 Best Talk, Rustbelt RNA Conference 2016 (Strobel), 2017 (Yu)
 Inaugural Cornell CBE Fleming Graduate Scholar 2015 (Watters)
 NSF Graduate Fellowships: 2011 (Takahashi), 2012 (Watters, Meyer), 2013 (Carlson) 2015 (Glasscock, Abbott), 2016 (Zhuang)
 Austin Hoey Graduate Award (2015 Takahashi, 2016 Watters)
 AIChE Women's Initiative Committee Travel Award 2014 (Meyer, Takahashi)
 Engineering Learning Initiatives Research Awards: 2012 (Tan), 2013 (Sankar, Abbott), 2014 (Chew, Abbott), 2015 (Chew)
 Cornell Undergraduate Research Board Best Poster 2014 (Sankar)
 Cornell Engineering Alumni Association Undergraduate Research Award 2014 (Abbott)
 Genentech Scheele Outstanding Junior Awards: 2011 (Park), 2013 (Zhuang)
 Amgen Research Scholarship 2013 (Zhuang)

Great Lakes National Scholarship 2012 (Watters)

PHD COMMITTEES - past and current

1. **Michael-Paul Robinson**, Ph. D. Chemical and Biomolecular Engineering (2010-Present)
2. **Bill Bedell**, Ph. D. Chemical and Biomolecular Engineering (2012-Present)
3. **Erin Stephens**, Ph.D. Biochemistry, Molecular and Cellular Biology (2013-Present)
4. **May Taw**, Ph. D. Microbiology (2013-Present)
5. **Tara Srinivasan**, Ph. D. Biomedical Engineering (2012-2016)
6. **Daniel Tapias-Rojas**, Ph. D. Microbiology (2013-Present)
7. **Thapakorn Jareontomechai**, Ph. D. Chemical and Biomolecular Engineering (2014-Present)
8. **Do Soon Kim**, Ph. D. Chemical and Biological Engineering (2016-Present)
9. **Christine Rose Laramy**, Ph. D. Interdisciplinary Biological Sciences (2015-Present)
10. **Alexis Amaris Reyes**, Ph. D. Interdisciplinary Biological Sciences (2016-Present)
11. **Nolan Kennedy**, Ph. D. Interdisciplinary Biological Sciences (2016-Present)

MS COMMITTEES - past and current

1. **Daniel Tien**, M.S. Chemical and Biomolecular Engineering (2015-2016)

EDUCATION EXPERIENCE and RECOGNITION

Camille Dreyfus Teacher-Scholar Award, Camille and Henry Dreyfus Foundation, 2017
Cornell College of Engineering Mr. and Mrs. Richard F. Tucker `50 Teaching Award, 2015

Associate Professor, *Northwestern University*
Advanced Thermodynamics (graduate), W17

Assistant Professor, *Cornell University*

Heat and Mass Transfer (undergraduate), F11, F12, F14, F15

Advanced Principles of Biomolecular Engineering (graduate), S13, S14, S15

Principles and Practices of Graduate Research (graduate), F11, F12, F14

Chemical and Biomolecular Engineering Seminar Coordinator (graduate), S14, F14, S15, F15

Co-Creator and Instructor, Cold Spring Harbor Summer Course on Synthetic Biology, Su13, Su14, Su15.

The CSHL synthetic biology course is an international, intensive laboratory course consisting of real research projects in synthetic biology combined with talks and interactions with world class researchers. The course is emerging as a focal point for setting the research and teaching agenda for biomolecular engineering and synthetic biology.

Panel Participant, "Mastering Your Future - Learning to Read (Scientific Papers)." Cornell College of Engineering. February 2013

"How to write a grant proposal." w/ Paulette Clancy. Cornell Chemical and Biomolecular Engineering Graduate Students. S15, F15

SERVICE - CONFERENCE / SYMPOSIUM / COLLOQUIUM ORGANIZATION

1. Synthetic Biology 5.0: The Fifth International Meeting on Synthetic Biology
 - Co-organizer, June 15-17 2011, Stanford, Palo Alto, CA
2. 4th International Conference on Biomolecular Engineering
 - Poster session co-chair, January 13-16 2013, Fort Lauderdale, FL
3. American Institute for Chemical Engineering (AIChE) National Meeting
 - Co-chair, "Gene Regulation Engineering" & "Paradigms in Systems and Synthetic Biology", Section 15c, October 2013, San Francisco, CA
 - Co-chair, Topical A "Paradigms in Systems and Synthetic Biology", October 2014, Atlanta, GA
 - Chair, Topical A "Emerging Frontiers in Systems and Synthetic Biology", 2015, Salt Lake City, Utah

4. Metabolic Engineering X Meeting
 - Poster session co-chair, June 2014, Vancouver BC
5. 5th International Conference on Biomolecular Engineering
 - Co-chair “High-Throughput Biological Design”, January 13-16 2014, Austin, TX
6. The Nuts and Bolts of Bioengineered Systems: A Workshop on Standards in Synthetic Biology
 - Meeting Co-organizer, March 8-12, 2015, Valencia Spain
7. 6th International Conference on Biomolecular Engineering
 - Organizing Committee, January 13-16 2016, Singapore
8. Synthetic Biology: Engineering, Evolution and Design (SEED) Conference
 - Organizing Committee, July 2016, Chicago
 - Organizing Committee, July 2017, Vancouver
 - Organizing Committee, July 2018, Arizona
 - Co-organizer, July 2019, New York

SERVICE - PROFESSIONAL

1. **Synthetic Biology Engineering Research Center (SynBERC)**, Parts Thrust Co-Leader, 2010-2011
2. **Synthetic Biology Engineering Research Center (SynBERC)**, Leadership Task Force 2014-Present
3. **US Chair, EU/US Biotechnology Task Force Synthetic Biology Working Group** (2014-Present)
4. **Board of Directors, Engineering Biology Research Consortium (2015-2017)**
5. **Founding Council Member, Engineering Biology Research Consortium (2017-)**
6. **Founding Chair, Individual Membership Committee, Engineering Biology Research Consortium (2017-)**.

SERVICE - PROPOSAL AND MANUSCRIPT REVIEW

1. **National Science Foundation**
 - CBET *ad hoc* reviewer, 2011 and 2015
 - MCB *ad hoc* reviewer, 2014 and 2018
2. **Journal Advisory and Editorial Boards**
 - Nucleic Acids Research, 2015-Present
 - ACS Synthetic Biology, 2011-Present
 - bioRxiv, 2014-Present
3. **Journal Reviews**
 ACS Chemical Biology, ACS Synthetic Biology, Biophysical Journal, Biotechnology and Bioengineering, Cell, Journal of Biological Engineering, Molecular Cell, Molecular Systems Biology, Nature Biotechnology, Nature Chemical Biology, Nature Methods, Nature Protocols, Nature Reviews Microbiology, Nucleic Acids Research, PLoS ONE, PLoS Pathogens, Proceedings of the National Academy of Sciences USA, Science, WIREs RNA

SERVICE - OUTREACH

1. **J. B. Lucks***, M. K. Takahashi[#], J. Saathoff. “An Introduction to Chemical and Biomolecular Engineering”. CATALYST Academy for Under Represented Minorities, Cornell University, Ithaca NY (June 2011).
2. **J. B. Lucks***, S. I. Meyer[#], K. E. Watters[#]. “An Introduction to Chemical and Biomolecular Engineering”. CATALYST Academy for Under Represented Minorities, Cornell University, Ithaca NY (June 2012).
3. **J. B. Lucks***. “Optimization of Biosynthetic Pathways”. NSF GK-12 Grass Roots: Advancing Education in Renewable Energy and Cleaner Fuels through Collaborative Graduate Fellow/Teacher/Grade-School Student Interactions, Cornell University, Ithaca NY (July 2012).

4. **J. B. Lucks.** "Mastering Your Future - Learning to Read (Scientific Papers)." Cornell College of Engineering. Panelist. (February 2013).
5. **Cold Spring Harbor Course on Synthetic Biology**
 - Co-organizer, July-August 2013, 2014, 2015.
6. **NSF Building with Biology Project Developer/Participant**
 - Developed 'Microbe Match' card game with the Sciencenter, Ithaca NY, 2015.
 - 'Showtime!' on Synthetic Biology, Sciencenter, Ithaca NY, 2015.
 - Participated in 'SynBio Day' at the Sciencenter, Ithaca NY, September 2015.
 - Community forum on 'Building with Biology', Ithaca Generator, Ithaca NY, September 2015.
7. **Northwestern Center for Synthetic Biology**
 - Western Springs Elementary School synthetic biology demonstration, Evanston, IL 2018.

SERVICE - UNIVERSITY

1. Northwestern ChBE Awards Committee, 2016
2. Northwestern ChBE Faculty Search Committee, 2016
3. Cornell CBE Graduate Field Committee, 2011-2014, 2016
4. Cornell CBE Faculty Search Committee, 2012
5. Cornell CBE Awards Committee, 2012, 2013, 2014, 2015, 2016
6. Cornell CBE Policy Committee, 2012-2013
7. Cornell CBE Seminar Series Coordinator, 2014, 2015
8. Cornell CBE Director's Search Committee 2016
9. Cornell MBG Faculty Search Committee, 2013-2014
10. Cornell CBE Undergraduate Academic Advisor, 2012-Present
11. Cornell Churchill Scholarship Internal Selection Committee, 2013-Present

MEDIA COVERAGE AND RESEARCH HIGHLIGHTS

Media Coverage

1. E. Check Hayden (2011). Life hackers seek new tools, Nature 474, 261.
2. S. Cohen (2012). The ScieCahoonntist: Prof. Lucks Researches RNA to Build Biological Circuitry. Cornell Daily Sun, September 12 2012.
3. A. Dy (2016). SEED 2016: Welcome to Chicago! PLoS Blogs, July 29, 2016.

Research Highlights

1. K. M. Weeks (2011). RNA structure probing dash seq. Proceedings of the National Academy of Sciences, 108, 10933-10934.
2. M. Eisenstein (2011). A SHAPE in the Crowd. Biopolymers, 95, iii-iv.
3. J. J. Tabor (2012). Modular gene-circuit design takes two steps forward. Nature Methods, 9, 1061-1063.
4. Cornell Engineering 'Breaking the Rules' web and video stories (2014). <http://www.engineering.cornell.edu/brand/independent/>
5. L. Cahoon (2014). Code Breaker: Julius Lucks Unlocks the Secrets of RNA to Advance Human Health. Cornell Engineering Magazine, Summer, 2014.
6. S. Adams (2015). Cornell's new genetic "switch" could detect deadly diseases. IthacaWeek, <http://www.ithacaweek-ic.com/cornell-researchers-engineer-on-switch-for-genes/> .
7. N. Rusk (2015). RNA that activates transcription. Nature Methods, 12, 290.

8. Sharing Science: Watching the STARS (Small Transcription Activating RNAs). NSF MCB Blog, April 10, 2015. <https://nsfmcb.wordpress.com/2015/04/01/sharing-science-watching-the-stars-small-transcription-activating-rnas/>

Quoted In

1. DARPA to Offer \$30 Million to Jump-Start Cellular Factories, Science Insider (2011), June 29.
2. Tailor-Made Genome, The Scientist (2011), July 14.
3. Defense Research Agency Hunts for Biotech Innovators, The Chronicle of Higher Education (2013), October 7.
4. What Are Genetically Recoded Organisms?, Popular Science (2013), October 17.
5. Synthetic Biologists Create Paper-Based Diagnostic for Ebola, MIT Technology Review (2014), October 24.
6. Bringing Synthetic Biology to (Freeze-Dried) Paper, Biotechniques (2014), December 3.
7. A new paper-based test for the Zika virus, MIT News (2016), May 6.
8. Group seeks to overturn patent ruling on breakthrough gene technology, The Wall St. Journal (2017), April 14.
9. Bacterial photography goes technicolor, The Scientist (2017), May 22.
10. Complex Biological Computer Commands Living Cells, IEEE Spectrum (2017), July 26.