

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

Affiliations at Northwestern:

Associate Chair, Chemical and Biological Engineering, 2019-Present

Member and Preceptor, Chemistry of Life Processes Institute, 2016-Present

Member, Center for Synthetic Biology, 2016-Present

Member, Center for Water Research, 2018-Present

Member, Center for Engineering, Sustainability and Resilience, 2019-Present

Member, Center for Air and Water, International Institute of Nanotechnology, 2020-Present

Preceptor, Interdisciplinary Biological Sciences Graduate Program, 2016-Present

Preceptor, Steering Committee, Molecular Biophysics Training Program, 2017-Present

Preceptor, Biotechnology Training Program, 2017-Present

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

Co-founder, Stemloop Inc., 2019-Present

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

James C. and Rebecca Q. Morgan Sesquicentennial Faculty Fellow, Cornell University, 2012-2016

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

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

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

HONORS AND AWARDS

2020 Blavatnik National Awards for Young Scientists, Finalist Life Sciences

2017 Camille Dreyfus Teacher-Scholar Award

2016 ACS Synthetic Biology Young Investigator Award

2016 Northwestern 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 BOARDS

Editorial Board, Nucleic Acids Research, 2015-Present
Editorial Board, ACS Synthetic Biology, 2011-Present
Editorial Affiliate, bioRxiv, 2014-Present

PUBLICATIONS (As of 8/31/20, Google Scholar H-index: 31; Total Citations: 3150)

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

1. A. Yu#, P. M. Gasper, L. Cheng, L. B. Lai, S. Kaur, V. Gopalan, A. A. Chen*, **J. B. Lucks*** (2021). "Computationally reconstructing RNA cotranscriptional folding pathways from experimental data reveals rearrangement of non-native folding intermediates". *Molecular Cell*. Doi:10.1016/j.molcel.2020.12.017 .
2. K. J. Jung#, K. K. Alam#, M. Verosloff#, D. A. Capdevila, M. Desmau, P. R. Clauer#, J. W. Lee, P. Q. Nguyen, P. A. Pasten, S. Matiasek, J.-F. Gaillard, D. P. Giedroc, J. J. Collins, **J. B. Lucks*** (2020). "Cell-free biosensors for rapid detection of water contaminants." *Nature Biotechnology*. doi: 10.1038/s41587-020-0571-7.
3. E. J. Strobel##, J. T. Lis, **J. B. Lucks** (2019). "Chemical transcription roadblocking for nascent RNA display." *Journal of Molecular Biology*, 295, 6401-6412, doi: 10.1074/jbc.RA120.012641. **Selected for special issue on methods.**
4. W. Thavarajah#, M. Verosloff#, K. J. Jung#, K. K. Alam#, J. Miller, M. C. Jewett, S. L. Young*, **J. B. Lucks*** (2020). "A primer on emerging field-deployable tools for democratizing global water quality monitoring." *npj Clean Water*, 3, 18, doi: 10.1038/s41545-020-0064-8.
5. A. D. Silverman#, U. Akova#, K. K. Alam#, M. C. Jewett*, **J. B. Lucks*** (2020). "Design and optimization of a cell-free atrazine biosensor." *ACS Synthetic Biology*, 9, 671, doi: 10.1021/acssynbio.9b00388.
6. W. Thavarajah#, A. D. Silverman#, M. Verosloff#, N. Kelley-Loughnane, M. C. Jewett, **J. B. Lucks*** (2020). "Point-of-use detection of environmental fluoride via a cell-free riboswitch-based biosensor." *ACS Synthetic Biology*, 9, 10-18, doi: 10.1021/acssynbio.9b00347.
7. X. Liu, A. D. Silverman#, K. K. Alam#, E. Iverson, **J. B. Lucks***, M. C. Jewett*, S. Raman* (2019). "Design of a transcriptional biosensor for the portable, on-demand detection of cyanuric acid." *ACS Synthetic Biology*, 9, 84-94, doi: 10.1021/acssynbio.9b00348.
8. A. J. Meyer, I. Saaem, A. D. Silverman#, V. Varaljay, R. Mickol, S. M. Blum, A. V. Tobias, N. D. Schwalm, W. Mojadedi, E. Onderko, C. Bristol, S. Liu, A. Casini, R. Eluere, F. Moser, C. Drake, M. Gupta, N. Kelley-Loughnane, **J. B. Lucks**, K. L. Akingbade, M. W. Lux, S. M. Glaven, W. J. Crookes-Goodson, M. C. Jewett, B. Gordon, C. A. Voigt (2019). "Organism engineering for the bioproduction of the

- triaminotrinitrobenzene (TATB) precursor phloroglucinol (PG).” *ACS Synthetic Biology*, 8, 2746-2755, doi:10.1021/acssynbio.9b00393.
9. E. J. Strobel[#], L. Chang[#], K. Berman[#], P. D. Carlson[#], **J. B. Lucks*** (2019). “A ligand-gated strand displacement mechanism for ZTP riboswitch transcription control.” *Nature Chemical Biology*, 15, 1067-1076, doi:10.1038/s41589-019-0382-7. [News and Views: “A newborn RNA switches its fate.”](#) M. L. Rogers, Y. Has and S. A. Woodson, *Nature Chemical Biology*, doi:10.1038/s41589-019-0391-6.
 10. J. Kim, Y. Zhou, P. D. Carlson[#], M. Teichmann, F. C. Simmel, P. A. Silver, J. J. Collins, **J. B. Lucks**, P. Yin, A. A. Green (2019). “De-novo designed translation-repressing riboregulators for multi-input cellular logic.” *Nature Chemical Biology*, 15, 1173-1182, doi: 10.1038/s41589-019-0388-1.
 11. J. D. Yesselman, D. Eiler, E. D. Carlson, M. R. Gotrik, A. E. d’Aquino, A. N. Ooms, W. Kladawang, P. D. Carlson[#], X. Shi, D. A. Constantino, D. Herschlag, **J. B. Lucks**, M. C. Jewett, J. S. Kieft, R. Das* (2019). “Computational design of three-dimensional RNA structure and function.” *Nature Nanotechnology*, 14, 866-873, doi:10.1038/s41565-019-0517-8.
 12. A. Y Xue, A. M Yu[#], **J. B. Lucks***, N. Bagheri*, (2019). “DUETT quantitatively identifies novel events in nascent RNA structural dynamics from chemical probing data.” *Bioinformatics*, 35, 5103-5112, doi:10.1093/bioinformatics/btz449. (* = co-corresponding)
 13. A. Yu[#], **J. B. Lucks*** (2019). “Tracking RNA structures as RNAs transit through the cell.” *Nature Structural and Molecular Biology*, 26, 256-257. doi:10.1038/s41594-019-0213-2.
 14. M. Verosloff[#], J. Chappell[#], K. L. Perry, J. R. Thompson, **J. B. Lucks*** (2019). “PLANT-Dx: A molecular diagnostic for point of use detection of plant pathogens.” *ACS Synthetic Biology*, 8, 902-905. doi: 10.1021/acssynbio.8b00526.
 15. P. D. Carlson[#], **J. B. Lucks*** (2019). “Elements of RNA Design.” *Biochemistry*, 58, 1457-1459. doi: 10.1021/acs.biochem.8b01129.
 16. A. D. Silverman[#], N. Kelley-Loughnane, **J. B. Lucks**, M. Jewett* (2019). “Deconstructing cell-free extract preparation for in vitro application of transcriptional genetic circuitry.” *ACS Synthetic Biology*, 8, 403-414. doi: 10.1021/acssynbio.8b00430.
 17. A. M. Westbrook[#], X. Tang, R. Marshall, C. S. Maxwell, J. Chappell[#], D. K. Agrawal, M. J. Dunlop, V. Noireaux, C. L. Beisel, **J. B. Lucks***, E. Franco* (2019). “Distinct timescales of RNA regulators enable the construction of a genetic pulse generator.” *Biotechnology and Bioengineering*, 116, 1139-1151. doi: 10.1002/bit.26918.
 18. P. D. Carlson[#], M. E. Evans[#], A. M Yu[#], E. J. Strobel[#], **J. B. Lucks*** (2018). “SnapShot: RNA Structure Probing Technologies.” *Cell*, 175, P600. doi: 10.1016/j.cell.2018.09.024.
 19. E. J. Strobel[#], A. Yu[#], **J. B. Lucks*** (2018). “High-throughput determination of RNA structures.” *Nature Reviews Genetics*, 19, 615-634. doi: 10.1038/s41576-018-0034-x. [Cover article](#).
 20. 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 *Eschericia coli* for improved eukaryotic glycosylation.” *Metabolic Engineering*, 47, 488-495, doi: 10.1016/j.ymben.2018.04.014.
 21. 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*, 7, 1507-1518, doi: 10.1021/acssynbio.7b00440.
 22. 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, doi:10.1021/acssynbio.8b00040.
 23. 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, doi: 10.1093/nar/gkx1273.

24. S. Meyer[#], P. D. Carlson[#], **J. B. Lucks*** (2017). "Characterizing the structure-function relationship of a naturally-occurring RNA thermometer." *Biochemistry*, 56, 6629-6638, doi: 10.1021/acs.biochem.7b01170.
25. 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, doi:10.1038/s41467-017-01082-6.
26. E. J. Strobel[#], K. E. Watters[#], Y. Nedralakov, I. Artismovitch, **J. B. Lucks*** (2017). "Distributed biotin-streptavidin transcription roadblocks for mapping cotranscriptional RNA folding." *Nucleic Acids Research*, 45, e109, doi: 10.1093/nar/gkx233.
27. A. Westbrook[#], **J. B. Lucks*** (2017). "Achieving large dynamic range control of gene expression with a compact RNA transcription-translation regulator." *Nucleic Acids Research*, 45, 5614-5624, doi: 10.1093/nar/gkx215.
28. J. Chappell[#], **J. B. Lucks*** (2016). "Turning it up to 11: Modular proteins amplify RNA sensors for sophisticated circuitry", *Cell Systems*, 3, 509-511, doi:10.1016/j.cels.2016.12.004.
29. 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, doi:10.1038/nsmb.3316.
30. 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, doi:10.1007/978-1-4939-6433-8_9.
31. 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, doi:10.1016/j.ymeth.2016.04.002.
32. 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, doi:10.1261/rna.054916.115.
33. 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, doi:10.1016/j.copbio.2016.03.019.
34. C. J. Glasscock[#], **J. B. Lucks**, M. P. DeLisa^{*} (2016). "Engineered Protein Machines: Emergent Tools for Synthetic Biology," *Cell Chemical Biology*, 23, 45-56, doi:10.1016/j.chembiol.2015.12.004 .
35. 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, doi:10.1093/nar/gkv879.
36. 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, doi:doi:10.1002/bit.25693. [Featured in Biotechnology and Bioengineering Spotlight Summary.](#)
37. 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, doi:10.1021/acssynbio.5b00077.
38. 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, doi:10.1016/j.ymeth.2015.05.020.
39. 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, doi:10.1016/j.cbpa.2015.05.018.
40. J. Chappell[#], M. K. Takahashi[#], **J. B. Lucks*** (2015). "Creating small transcription activating RNAs." *Nature Chemical Biology*, 11, 214-220, doi:10.1038/nchembio.1737. [Research Highlight in Nature Methods](#) "RNA that activates transcription" by N. Rusk (2015), 12, 290.

41. 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, doi:10.1021/sb400206c. [Cover article](#).
42. 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, doi:10.1093/nar/gku909.
43. 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, doi:10.1002/biot.201300018.
44. M. K. Takahashi[#], **J. B. Lucks*** (2013). "A modular strategy for engineering orthogonal chimeric RNA transcription regulators." *Nucleic Acids Research*, 41, 7577-7588, doi:10.1093/nar/gkt452.
45. 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, doi:10.1002/9780470559277.ch120019.
46. 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, doi:10.1038/nmeth.2184. [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.](#)
47. P. Cordero, **J. B. Lucks**, R. Das* (2012). "An RNA mapping database for curating RNA structure mapping experiments." *Bioinformatics*, 28, 3006-3008, doi:10.1093/bioinformatics/bts554.
48. 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, doi:10.1038/nchembio.919. [Highlighted in commentary "Automated Design of RNA Devices" by Farren Isaacs in Nature Chemical Biology.](#)
49. 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, doi:10.1093/nar/gks168.
50. 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.
51. **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, doi:10.1073/pnas.1106501108. [Highlighted in commentary "RNA structure probing dash seq" by Kevin Weeks in PNAS, and "A SHAPE in the Crowd" by M. Eisenstein in Biopolymers.](#)
52. 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, doi:10.1073/pnas.1106541108. [Featured on the cover.](#)
53. 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, doi:10.1086/659884. [Highlighted in commentary on Science Daily website.](#)
54. **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, doi:10.1073/pnas.1015741108. [Highlighted in commentary on Medical News Today website.](#)

55. J. M. Skerker, **J. B. Lucks**, A. P. Arkin* (2009). "Evolution, ecology and the engineered organism: lessons for synthetic biology." *Genome Biology*, 10, 114, doi:10.1186/gb-2009-10-11-114.
56. **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, doi:10.1016/j.mib.2008.10.002.
57. **J. B. Lucks**, D. R. Nelson, G. R. Kudla, J. B. Plotkin* (2008). "Genome landscapes and bacteriophage codon usage." *PLoS Computational Biology*, 4, e1000001, doi:10.1371/journal.pcbi.1000001.
[Highlighted in commentary on Science Daily website.](#)
58. V. Vitelli, **J. B. Lucks**, D. R. Nelson* (2006). "Crystallography on curved surfaces." *Proceedings of the National Academy of Sciences*, 103, 12323-12328, doi:10.1073/pnas.0602755103. [Featured on the cover.](#)
59. 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, doi:10.1529/biophysj.104.047340.
60. **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, doi:10.1039/B205854E.
61. 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.

NON-PEER REVIEWED PUBLICATIONS

62. D. S. Clark, C. Fischbach-Teschl, D. A. Hammer, K. H. Lee, **J. B. Lucks**, C. Reinhart-King, M. Saltzman, A. Stroock, M. C. H. van der Muelen, J. D. Varner. (2018) "Michael L. Shuler Tribute." *Biotechnology and Bioengineering*, 115, 1642-1645, doi:10.1002/bit.26716.
63. **J. B. Lucks**, A. P. Arkin (2011). "The hunt for the biological transistor." *IEEE Spectrum*, 48, 38-43, doi:10.1109/MSPEC.2011.5719724. [Cover story.](#)

MANUSCRIPTS UNDER REVIEW OR REVISION

64. C. J. Glasscock#, J. T. Lazar, B. W. Biggs, J. H. Arnold%, M. K. Kang, D. Tullman-Ercek, K. Tyo, **J. B. Lucks*** (2019). Dynamic control of pathway expression with riboregulated switchable feedback promoters. BioRxiv: 10.1101/529180 (*Submitted Science Advances*).
65. P. D. Carlson#, C. J. Glasscock#, **J. B. Lucks*** (2019). Toe-hold RNA repressors. BioRxiv: 10.1101/501767. (*In Revision Nature Communications*).
66. M. Verosloff#, W. Corcoran, T. Dolberg, J. Leonard*, **J. B. Lucks*** (2020). "RNA sequence and structural determinants of Pol III transcriptional termination in human cells".

MANUSCRIPTS IN PREPARATION

67. A. M. Westbrook#, X. Tang, D. K. Agrawal, R. Marshall, C. S. Maxwell, V. Noireaux, C. L. Beisel, M. J. Dunlop, E. Franco, J. Chappell, **J. B. Lucks*** (2018). "Tuning the transfer function of an RNA regulator with sequestration." (*In Preparation*)
68. C. Hu, **J. B. Lucks*** (2018). "Tuning the transfer functions of transcription factors." (*In Preparation*)
69. A. Yu#, M. E. Evans #, **J. B. Lucks*** (2018). "Estimating RNA structure chemical probing reactivities from reverse transcriptase stops and mutations". BioRxiv: 10.1101/292532.

PATENT APPLICATIONS

1. "Ultrasensitive and multiplexed cell-free biosensors using cascaded amplification and positive feedback." A. D. Silverman, M. C. Jewett, J. B. Lucks (2019). United States Patent Application 62/943,094.
2. "Stabilization and preservation of in vitro transcription reactions through lyophilization." J. B. Lucks, K. K. Alam, M. S. Verosloff, J. K. Jung, P. R. Clauer, J. W. Lee, J. J. Collins (2019). United States Patent Application 62/838,852.
3. "Riboswitch-based fluoride sensing in cell-free extract." J. B. Lucks, M. C. Jewett, A. D. Silverman, W. M. Thavarajah (2019). United States Patent Application 62/813,368.
4. "Detection of analytes and target molecules using regulated in vitro transcription." J. K. Jung, K. K. Alam, J. B. Lucks (2018). United States Patent Application 62/758,242.
5. "Inducible feedback promoter systems and uses thereof." K. E. Tyo, B. Biggs, D. Tullman-Ercek, J. Lucks, C. Glasscock (2018). United States Patent Application 62/730,720.
6. "On demand, portable, cell-free molecular sensing platform." M. Jewett, J. B. Lucks, A. D. Silverman, K. K. Alam (2018). United States Patent Application 62/714,427.
7. "Small RNAs (sRNAs) that activate transcription." J. B. Lucks, J. Chappell, M. K. Takahashi (2014). United States Patent Application 61/981,241.
8. "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.

INVITED PRESENTATIONS by JBL (60)

Universities/Institutes:

Department of Chemistry, Rutgers University, April 2021

National Science Foundation Biotechnology/Bioeconomy Distinguished Lecture Series, March 2021

Department Seminar, Biological Sciences Division, Department of Chemistry, UNC Chapel Hill, November 2020

Distinguished Alumni Talk, Junior/Senior Banquet, UNC Chapel Hill, November 2020

Engineering Biology Research Consortium Virtual Seminar Series, August 2020

Center for Synthetic Biology, Warwick University, UK, March 2020 (Postponed)

RNA Synthetic Biology Symposium, Imperial College, UK, March 2020 (Postponed)

Exploring Ethics: Across Art, Humanities and Science, Block Museum, Northwestern University, May 2019

Department Seminar, Biochemistry Biophysics and Mol. Bio., Iowa State, February 2019

Department Seminar, University at Washington St. Louis Medical School, February 2019

Department Seminar, Chemistry, Arizona State University, Tempe, AZ, September 2018

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

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:

Workshop on Nucleic Acids, Synthetic Biology and Artificial Life, Imperial College, UK, March 2021
Gordon Research Conference on Nucleic Acid Nanotechnology, Venturi Beach, CA, Jan 2021 (Postponed)
Seventh International Mammalian Synthetic Biology Workshop, Virtual, December 2020
Plenary Lecture, New York Academy of Sciences, "New Horizons in Synthetic Biology", NYC November 2020
Cell Free Synthetic Biology Conference, Cambridge, MA, December 2019
Sixth International Mammalian Synthetic Biology Workshop, Northwestern University, May 2019
FASEB Meeting, San Diego, CA, April 2018
Innovation Session, Gates Foundation Grand Challenges Annual Meeting, Berlin, October 2018
American Institute of Chemical Engineers, Minneapolis, MN, October 2017
Compugen Symposium, TU Darmstadt, Darmstadt, Germany, June 2017
Gordon Research Conference on Nucleic Acid Nanotechnology, Venturi Beach, CA, Jan 2017
Award Lecture, ACS Synthetic Biology Young Investigator Award, Synthetic Biology Engineering Evolution and Design (SEED) Meeting, Chicago, IL, June 2016
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, MO, 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:

Speaker, 2nd RNA-Targeted Drug Discovery Summit, Cambridge, MA, December 2019
Seminar, Synthetic Biology: A New Biotechnology Revolution, Kellogg Executive Education, Sept. 2019
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 (94)

2014, 2015, 2016, 2017, 2019 Synthetic Biology Evolution, Engineering and Design (SEED)

Presentations: ADS, KKA

Posters: KJJ, MKT, CYH (2), PDC (2) CJG (3), EJS, JEC, AMY, DAL, JEW, SIM, AMW, MV

2019 Cell Free Synthetic Biology Meeting
Posters: MV, ADS, KJJ

2019 UNC Water Meeting
Posters: JBL

2019 Colorado WASH Symposium
Posters: MV, WT

2018 Computational Approaches to RNA Structure and Function
Presentations: JBL, AMY

2017 FASEB Machines on Genes Meeting
Presentations: EJS

2017 FASEB Transcription Meeting
Presentations: EJS

2017, 2019 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, 2019 Chicago RNA Club
Presentations: EJS, MEE, AMY

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 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, 2018 Benasque RNA Bioinformatics Meeting, Benasque, Spain
Presentation: JBL (2), AMY

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

SUPERVISION OF POST-DOCTORAL SCHOLARS - Former: 4, Current: 1 (in parenthesis: present position)

1. **Yueting Zhuang**, 2012-2013 (Associate Director, Project Management, Bristol Myers Squibb)
2. **James Chappell**, 2013-2017 (Assistant Professor, Rice University Department of Biosciences)
3. **Khalid Alam**, 2016-2019 (Co-Founder and CEO, Stemloop, Inc.)
4. **Eric Strobel**, 2015-2020 (Assistant Professor, University at Buffalo Department of Biosciences)
5. **Molly Evans**, 2017-Present

SUPERVISION OF PHD STUDENTS - Former: 9, Current: 10 (in parenthesis: present position)

1. **Melissa K. Takahashi**, Ph.D. Chemical Engineering, Cornell University, 8/15/2010-6/15/2015 (Assistant Professor Cal State Northridge), Thesis title: "Developing design principles for engineering RNA transcription regulators and RNA synthetic networks."
2. **David A. Loughrey**, Ph.D. Chemical Engineering, Cornell University, 8/15/2010-12/15/2016 (Postdoc Dahlman Lab, Emory University), Thesis title: "Using SHAPE-Seq as a tool to understand RNA structure/function relationships."
3. **Kyle E. Watters**, Ph.D. Chemical Engineering, Cornell University, 8/15/2011-6/15/2016 (Senior Scientist, Arbor Biosciences), Thesis title: "SHAPE-Seq technologies for analyzing, understanding, and designing RNA structures and functions."
4. **Sarai I. Meyer**, Ph.D. Chemical Engineering, Cornell University, 8/15/2011-6/15/2016 (Senior Scientist, Quantum-Si), Thesis Title: "Engineering and characterizing RNA genetic regulators."
5. **Alexandra Westbrook**, Ph.D. Chemical Engineering, Cornell University, 8/15/2013-6/15/2018 (Postdoc, El Samad Lab, UCSF), Thesis title: "Characterization of RNA genetic regulators and synthetic networks."
6. **Paul Carlson**, Ph.D. Chemical Engineering, Cornell University, 8/15/2013-6/15/2018 (Scientist, Sherlock Biosciences), Thesis title: "Uncovering the elements of RNA design."
7. **Cameron Glasscock**, Ph.D. Chemical Engineering, Cornell University, 8/15/2013-6/15/2019, Co-Advised with Prof. Matt DeLisa (Washington Research Fellow, Baker Lab, University of Washington), Thesis title: "Genetic tools and approaches for engineering metabolism and metabolic pathways."
8. **Chelsea Hu**, Ph.D. Chemical Engineering, Cornell University, 8/15/2013-6/15/2018, Co-Advised with Prof. Jeff Varner (Postdoc, Murray Lab, Caltech), Thesis title: "Advancing RNA circuitry engineering with guidance of mathematical and computational models."
9. **Angela Yu**, Ph.D. Computational Biology and Medicine, Tri-Institutes Training Program, Cornell University, 8/15/2014-6/15/2020, Co-Advised with Christina Leslie, Memorial Sloan Kettering (Postdoc, Seelig Lab, University of Washington), Thesis title: "Computationally reconstructing RNA folding pathways from experimental data."
10. **Mathew Verosloff**, Ph. D. Interdisciplinary Biological Sciences, Northwestern University, 7/1/2016-12/15/2020 (Scientist, Mammoth Biosciences), Thesis title: "Uncovering the Mechanism of Intrinsic Transcription Termination in Order to Develop Point-of-Care Diagnostics."
11. **Katherine Berman**, Ph. D. Interdisciplinary Biological Sciences, Northwestern University, 7/1/2016-Present

12. **Adam Silverman**, Ph. D. Chemical Engineering, Northwestern University, 9/15/2016-Present, Co-Advised with Prof. Mike Jewett
13. **Luyi Cheng**, Ph. D. Interdisciplinary Biological Sciences, Northwestern University, 9/15/2016-Present
14. **Kirsten Jung**, Ph. D. Chemical Engineering, Northwestern University, 9/15/2017-Present
15. **Walter Thavarajah**, Ph. D. Chemical Engineering, Northwestern University, 9/15/2017-Present
16. **Rebecca Rassmussen**, Ph. D. Interdisciplinary Biological Sciences, Northwestern University, 9/15/2018-Present, Co-Advised with Prof. Tom O'Halloran
17. **Chloe Archuleta**, Ph. D. Chemical Engineering, Northwestern University, 9/15/2019-Present
18. **David Bushouse**, Ph. D. Interdisciplinary Biological Sciences, Northwestern University, 9/15/2020-Present
19. **Laura Hertz**, Ph. D. Interdisciplinary Biological Sciences, Northwestern University, 9/15/2020-Present
20. **Jenni Li**, Ph. D. Chemical Engineering, Northwestern University, 9/15/2020-Present
21. **Dylan Brown**, Ph. D. Chemical Engineering, Northwestern University, 9/15/2020-Present

SUPERVISION OF MASTERS STUDENTS

1. **Karl Brennan**, M.S. Chemical Engineering, Cornell University, 8/15/2014-6/15/2015 (Process Engineer, MSD Biotech).

SUPERVISION OF UNDERGRADUATE STUDENTS - Former: 22, Current: 2 %indicates published (in parenthesis: present position)

1. Jay Park, 2011-2013 (Medical School)
2. Helen Tan, 2011-2013 (Process Engineer, Mondavi Wineries)
3. Matt Carter, 2011-2014 (Scientist, Caribou Biosciences; Stanford BioE Grad School)
4. Misha Baheti, 2011-2013 (Consultant)
5. Ruize Zhuang, 2012-2015 (Stanford PhD)
6. Sitara Sankar%, 2012-2015 (GA Tech PhD)
7. Tim Abbott%, 2012-2015 (NSF Graduate Fellow, Stanford PhD)
8. Rebecca Chew%, 2012-2015 (UC Berkeley Masters)
9. Alex Settle%, 2013-2016 (Scientist, Caribou Biosciences; Memorial Sloan Kettering Graduate School)
10. Yan Zhang%, 2015-2016 (GA Tech Graduate School)
11. Elizabeth Weiss, 2015-2016 (Northwestern Medical Scientist Training Program)
12. Aron Coraor, 2015-2016 (NSF Graduate Fellow, Institute for Molecular Engineering University of Chicago Graduate School)
13. Jane Liao, 2015-2016 (Associate Scientist, GSK)
14. Raashed Raziuddin, 2015-2016 (Fermentation Process Development, Evelo Biosciences)
15. Phillip Clauer%, (Summer 2017, 2018, MIT Bioengineering Graduate School)
16. Kristen Shytel, 2017-2019 (Sherlock Biosciences)
17. Lulu Sun, 2017-2018 (Researcher, Seattle Children's Hospital)
18. Jack Arnold%, 2017-2019 (University of Chicago PhD)
19. Katarina Cheronis, 2017-2018 (Research Specialist, University of Chicago)
20. Umut Akova%, 2018-2020 (Northwestern Masters Student)
21. Kevin Fitzgerald, (Summer 2019, NSF Graduate Fellow Northwestern University).
22. Paulina Tarsul, 2019 (Northwestern Undergraduate Student)
23. Russell Stearns, 2019-Present
24. Kelly Gebman, 2019-Present

ACHIEVEMENTS BY GROUP MEMBERS

Best E-Poster, Biochemistry and Molecular Biology, AAAS National Meeting, Seattle WA, 2020 (Cheng)

Poster Awards, Cell Free Synthetic Biology Conference, Boston MA, 2019 (Jung, Silverman)
 Washington Research Foundation Postdoctoral Fellowship 2019 (Glasscock), 2020 (Yu)
 Short Talk Award, FASEB Machines on Genes Conference 2018 (Strobel)
 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), 2019 (Rasmussen), 2020 (Archuleta)
 NDSEG Graduate Fellowships: 2020 (Archuleta)
 Austin Hooy Graduate Award (2015 Takahashi, 2016 Watters, 2019 Carlson)
 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 - Former: 8, Current: 15

1. **Michael-Paul Robinson**, Ph. D. Chemical and Biomolecular Engineering, Cornell University, 2010-2017
2. **Bill Bedell**, Ph. D. Chemical and Biomolecular Engineering, Cornell University, 2012-2016
3. **Erin Stephens**, Ph.D. Biochemistry, Molecular and Cellular Biology, Cornell University, 2013-2018
4. **May Taw**, Ph. D. Microbiology, Cornell University, 2013-2019
5. **Tara Srinivasan**, Ph. D. Biomedical Engineering, Cornell University, 2012-2016
6. **Daniel Tapias-Rojas**, Ph. D. Microbiology, Cornell University, 2013-2018
7. **Thapakorn Jareontomeechai**, Ph. D. Chemical and Biomolecular Engineering, Cornell University, 2014-2016
8. **Christine Rose Laramy**, Ph. D. Interdisciplinary Biological Sciences, Northwestern University, 2015-2018
9. **Do Soon Kim**, Ph. D. Chemical and Biological Engineering, Northwestern University, 2016-Present
10. **Alexis Amaris Reyes**, Ph. D. Interdisciplinary Biological Sciences, Northwestern University, 2016-Present
11. **Nolan Kennedy**, Ph. D. Interdisciplinary Biological Sciences, Northwestern University, 2016-Present
12. **Margarethe Boyd**, Ph. D. Interdisciplinary Biological Sciences, Northwestern University, 2018-Present
13. **Andrew Hunt**, Ph. D. Chemical and Biological Engineering, Northwestern University, 2016-Present
14. **Alex Prybutok**, Ph. D. Chemical and Biological Engineering, Northwestern University, 2016-Present
15. **Blaise Kimmel**, Ph. D. Chemical and Biological Engineering, Northwestern University, 2017-Present
16. **Katie Warfel**, Ph. D. Chemical and Biological Engineering, Northwestern University, 2018-Present
17. **Jack McGee**, Ph. D. Chemical and Biological Engineering, Northwestern University, 2017-Present
18. **Kate Dray**, Ph. D. Chemical and Biological Engineering, Northwestern University, 2017-Present
19. **Peter Tran**, Ph. D. Chemical and Biological Engineering, Northwestern University, 2017-Present
20. **Hailey Edelstein**, Ph. D. Chemical and Biological Engineering, Northwestern University, 2019-Present
21. **Will Corcoran**, Ph. D. Interdisciplinary Biological Sciences, Northwestern University, 2019-Present
22. **Sam Gowland**, Ph. D. Chemical and Biological Engineering, Northwestern University, 2019-Present
23. **Camilla Koffman**, Ph. D. Chemical and Biological Engineering, Northwestern University, 2019-Present
24. **Reese Richardson**, Ph. D. Interdisciplinary Biological Sciences, Northwestern University, 2019-Present

25. **Healthier Calcaterra**, Ph. D. Chemical and Biological Engineering, Northwestern University, 2019-Present

MS COMMITTEES - past and current

1. **Daniel Tien**, M.S. Chemical and Biomolecular Engineering, Cornell University, 2015-2016

EDUCATION EXPERIENCE and RECOGNITION

Mentor, Searle Center for Advanced Learning Teaching Certificate, Tae-Eun Kim, 2020-2021

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, W18, W19, W20

Advanced Principles of Biomolecular Engineering (graduate), S18, S19, S20

Graduate Student Professional Development Course (co-instructor), F16, F17, F18, F19, F20

Responsible Conduct of Research (co-instructor), F18, F19

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

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
 - Organizing Committee, July 2020, San Francisco
9. Computational Approaches to RNA Structure and Function, Benasque, Spain
 - 2018: Session Chair - Experimental Approaches
 10. Cell Free Synthetic Biology Conference
 - Co-Chair, 2021

SERVICE - PROFESSIONAL

1. **Synthetic Biology Engineering Research Center (SynBERC)**, Parts Thrust Co-Leader, 2010-2011
2. **Synthetic Biology Engineering Research Center (SynBERC)**, Affiliate Investigator, 2010-2016
3. **Synthetic Biology Engineering Research Center (SynBERC)**, Leadership Task Force, 2014-2016
4. **US Chair, EU/US Biotechnology Task Force Synthetic Biology Working Group**, 2014-2016
5. **Board of Directors, Engineering Biology Research Consortium**, 2015-2017
6. **Founding Council Member, Engineering Biology Research Consortium**, 2017-2020
7. **Founding Chair, Individual Membership Committee, Engineering Biology Research Consortium**, 2017-2019
8. **Member, Education Working Group, Engineering Biology Research Consortium**, 2019-Present

SERVICE - PROPOSAL AND MANUSCRIPT REVIEW

1. **National Science Foundation**
 - CBET *ad hoc* reviewer, 2011, 2015, 2018
 - MCB *ad hoc* reviewer, 2014, 2018, 2019
 - SBIR *ad hoc* reviewer, 2020
2. **National Institutes of Health**
 - MSFB *ad hoc* reviewer, 2018
3. **Journal Advisory and Editorial Boards**
 - Nucleic Acids Research, 2015-Present
 - ACS Synthetic Biology, 2011-Present
 - bioRxiv, 2014-Present
4. **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 Communications, Nature Methods, Nature Protocols, Nature Reviews Microbiology, Nature Structural and Molecular Biology, 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
 - Host-Laboratory, Expanding Your Horizons Synthetic Biology Demonstration, Evanston, IL 2019

SERVICE - UNIVERSITY

1. Northwestern University, Interdisciplinary Biological Sciences (IBiS) Advisory Committee, 2021-Present
2. Northwestern University, Limited Submission Committee (LSC) Reviewer, 2021
3. Northwestern University, Chair ChBE Anti-racism, Diversity, Equity and Inclusion Committee, 2020-Present
4. Northwestern University, International Institute for Nanotechnology, Faculty Search Committee, 2020
5. Northwestern University, Interdisciplinary Biological Sciences (IBiS) Curriculum Committee, 2019-2020
6. Northwestern University, Exploring Ethics: Across Art, Humanities, and Science - May 8 2019
7. Northwestern University, Internal Program Review - Materials Science and Engineering, 2019
8. Northwestern University, Associate Chair of Chemical and Biological Engineering, 2019-Present
9. Northwestern University, Co-Chair, Graduate Student Experience Committee, 2019-Present
10. Northwestern University, Member, Alumni Relations Committee, 2019-2020
11. Northwestern University, Member, Biophysics Training Grant Steering Committee, 2018-Present
12. Northwestern ChBE Awards Committee, 2016-Present (Chair, 2017-Present)
13. Northwestern ChBE Faculty Search Committee, 2016, 2020
14. Cornell CBE Graduate Field Committee, 2011-2014, 2016
15. Cornell CBE Faculty Search Committee, 2012
16. Cornell CBE Awards Committee, 2012, 2013, 2014, 2015, 2016
17. Cornell CBE Policy Committee, 2012-2013
18. Cornell CBE Seminar Series Coordinator, 2014, 2015
19. Cornell CBE Director's Search Committee 2016
20. Cornell MBG Faculty Search Committee, 2013-2014
21. Cornell CBE Undergraduate Academic Advisor, 2012-2016
22. Cornell Churchill Scholarship Internal Selection Committee, 2013-2016

MEDIA COVERAGE AND RESEARCH HIGHLIGHTS

Media Coverage

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

26. NIH NIGMS Biomedical Beat Blog. Interview with a Scientist: Julius Lucks, Shape Seeker, July 18, 2018. <https://biobeat.nigms.nih.gov/2018/07/interview-with-a-scientist-julius-lucks-shape-seeker/> , <https://www.youtube.com/watch?v=QLiCQ5KrigA&feature=youtu.be>
27. Planet Forward. Researchers bring biotech to farmers worldwide with Plant-Dx, February 8, 2019, <https://www.planetforward.org/idea/researchers-bring-biotech-to-farmers-worldwide-with-plant-dx>
28. Northwestern University Scientists Sprint to Develop New Kind of Rapid Coronavirus Test (2020). Chicago Tribune. <https://www.chicagotribune.com/coronavirus/ct-coronavirus-northwestern-university-coronavirus-test-research-20200421-wzqacvbbh5fezll6lm67bk2zta-story.html>
29. Northwestern Engineering synthetic biologists aim to create one-step diagnostic test for COVID-19 (2020). The Daily Northwestern. <https://dailynorthwestern.com/2020/05/18/campus/northwestern-engineering-synthetic-biologists-aim-to-create-one-step-diagnostic-test-for-covid-19/#photo>
30. Sewage may help predict future virus outbreaks. Chicago researchers aim to test hundreds or thousands of manholes at a time (2020). Chicago Tribune. <https://www.chicagotribune.com/news/environment/ct-coronavirus-tracking-sewage-20200530-4zpb3hn2prb5vj4ksz7i67bnha-story.html>
31. Using sewage to track COVID-19 (2020). The 21st show. <https://will.illinois.edu/21stshow/story/using-sewage-to-track-covid-19>
32. A one-drop test for water contamination (2020). Axios Future. <https://www.axios.com/newsletters/axios-future>
33. Local researchers developing at-home kit for faster water contamination testing (2020). WGN. <https://wgntv.com/news/medical-watch/local-researchers-developing-at-home-kit-for-faster-water-contamination-testing/>
34. Toxin Tester (2020). National Science Foundation Discovery Files. https://www.nsf.gov/news/mmg/mmg_disp.jsp?med_id=186632&from=
35. Northwestern researchers hope to democratize drinking water tests through ROSALIND (2020). The Daily Northwestern. <https://dailynorthwestern.com/2020/07/12/campus/northwestern-researchers-hope-to-democratize-drinking-water-tests-through-rosalind/>
36. Every toilet flush reveals a clue in fight to stop COVID-19 (2020). Chicago Tribune. <https://www.chicagotribune.com/news/environment/ct-covid-sewage-monitoring-20201117-rgi5wgme75h5lb2qxdi6nr6lq-story.html>
37. DNA finds pollutants in green-glowing water test (2020). Scientific American. <https://www.scientificamerican.com/article/dna-finds-pollutants-in-green-glowing-water-test/>
38. RNA ties itself into knots, then unties itself in mesmerizing video (2021). Live Science. <https://www.livescience.com/new-high-resolution-rna-videos.html> . Picked up by MSN (<https://www.msn.com/en-au/news/techandscience/rna-ties-itself-in-knots-then-unties-itself-in-mesmerizing-video/ar-BB1cRdZh>) and Yahoo (<https://uk.news.yahoo.com/rna-ties-itself-knots-then-120050426.html>)
39. Ground-breaking films show RNA's complex curves take shape (2021). Nature. <https://www.nature.com/articles/d41586-021-00126-8>
40. Using R2D2 to understand RNA folding (2021). NIH Director's Blog. <https://directorsblog.nih.gov/2021/02/25/using-r2d2-to-understand-rna-folding/>

Research Highlights

41. K. M. Weeks (2011). RNA structure probing dash seq. Proceedings of the National Academy of Sciences, 108, 10933-10934.
42. M. Eisenstein (2011). A SHAPE in the Crowd. Biopolymers, 95, iii-iv.
43. J. J. Tabor (2012). Modular gene-circuit design takes two steps forward. Nature Methods, 9, 1061-1063.
44. Cornell Engineering 'Breaking the Rules' web and video stories (2014). <http://www.engineering.cornell.edu/brand/independent/>

45. L. Cahoon (2014). Code Breaker: Julius Lucks Unlocks the Secrets of RNA to Advance Human Health. Cornell Engineering Magazine, Summer, 2014.
46. 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/> .
47. N. Rusk (2015). RNA that activates transcription. Nature Methods, 12, 290.
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