

FACULTY VITA

Date: August 30, 2021

Name: Laura R. Jarboe

Department: Chemical and Biological Engineering

Current Rank: Professor

I. BACKGROUND, PROFESSIONAL EXPERIENCE AND RECOGNITIONS

A. Education

University of Florida	Microbiology and Cell Science	Postdoc, 2006-2008
University of California, Los Angeles	Chemical and Biomolecular Engineering	Ph.D. 2006
University of Kentucky	Chemical Engineering	B.S. 2000

B. Academic Appointments

2020 - present, Cargill Professor of Chemical Engineering, ISU
2020 - present, Professor, Chemical and Biological Engineering, ISU
2016 - 2018, Chair, Interdepartmental Microbiology Program, Iowa State University
2014 - 2016, Associate Chair, Interdepartmental Microbiology Program, ISU
2014 - 2020, Associate Professor, Chemical and Biological Engineering, ISU
2013 - 2016, Karen and Denny Vaughn Faculty Fellow, ISU
2012 - present, member of Toxicology Interdepartmental Program, ISU
2010 - present, member of Bioinformatics & Computational Biology Program, ISU
2008 - present, member of Interdepartmental Microbiology Program, ISU
2008 - 2014, Assistant Professor, Chemical and Biological Engineering, ISU

C. Honors and Awards

- ISU Award for Mid-Career Achievement in Research, 2021
- Outstanding Achievement in Teaching, ISU College of Engineering, 2020
- Poster Award, ISU Faculty Research Day, 2017
- Iowa NSF EPSCoR Leadership in Outreach & Mentoring Award, 2015
- Iowa Energy Center Impact Award, 2015
- ISU CBE student AIChE chapter "You Make This Class Bearable", 2012, 2013, 2014
- University of California, Los Angeles Dissertation Year Fellowship, 2005
- University of Kentucky Commonwealth Scholarship, 1995 - 2000

II. SCHOLARSHIP AND RESEARCH/CREATIVE ACTIVITIES

A. Scholarship

Denotes any publication derived from the candidate's thesis/dissertation.

+ Denotes student co-author.

* Denotes corresponding author.

Articles in Peer-Reviewed Journals - In Print or Accepted

62. M.C. Santoscoy, **L. Jarboe***, "A systematic framework for using membrane metrics for strain engineering", *Metabolic Engineering*, 66:98-113 (2021)

61. Y. Chen⁺, E. Boggess⁺, E. Rodriguez Oscasio⁺, A. Warner⁺, L. Kerns⁺, V. Drapal⁺, C. Gossling⁺, W. Ross, R.L. Gourse, Z. Shao, J. Dickerson, T. Mansell*, **L. Jarboe***, "Reverse engineering of fatty acid-tolerant *Escherichia coli* identifies design strategies for robust microbial cell factories" *Metabolic Engineering*, 61:120-130 (2020)
60. T. Jin⁺, M. Källdström, A. Benavides⁺, M.D. Kaufman Rechulski, **L. Jarboe***, "Utilization of Mechanocatalytic Oligosaccharides by Ethanogenic *Escherichia coli* as a Model Microbial Cell Factory", *AMB Express*, 10:28, 6 pg (2020)
59. **L. Jarboe***, "Regional, institutional, and departmental factors associated with gender diversity among Chemical and Electrical Engineering graduates", *PLoS ONE*, 14(10) e0223568, 14pg (2019)
58. K. Davis, M. Rover, D. Salvachua, G. Beckham, Z. Wen, R. Brown, **L. Jarboe***, "Promoting microbial utilization of phenolic substrates from bio-oil", *Journal of Industrial Microbiology and Biotechnology*, 46:1531-1545 (2019)
57. **L. Jarboe***, "Flow chemistry case study for material and energy balance course", *Chemical Engineering Education*, 53(4):207-212 (2019)
56. M. Santoscoy⁺, **L. Jarboe***, "Streamlined assessment of membrane permeability and its application to membrane engineering of *Escherichia coli* for octanoic acid tolerance", *Journal of Industrial Microbiology and Biotechnology*, 46:843-853 (2019)
55. Z. Chi, X. Zhao⁺, T. Daugaard⁺, D. Dalluge⁺, M. Rover, P. Johnston, A. Salazar⁺, M. Santoscoy⁺, R. Smith, R. Brown, Z. Wen, O. Zabolina, **L. Jarboe***, "Comparison of Product Distribution, Content and Fermentability of Biomass in a Hybrid Thermochemical/Biological Processing Platform", *Biomass and Bioenergy*, 120:107-116 (2019)
54. Y. Chen⁺, M. Reinhardt⁺, N. Neris⁺, L. Kerns⁺, T. Mansell, **L. Jarboe***, "Lessons in Membrane Engineering for Octanoic Acid Production from Environmental *Escherichia coli* Isolates", *Applied and Environmental Microbiology*, 84(19):e01285-18, 14 pg, (2018)
53. Z. Tan, J.M. Yoon, A. Chowdhury⁺, K. Burdick⁺, **L. Jarboe**, C.D. Maranas, J.V. Shanks* "Engineering of *E. coli* inherent fatty acid biosynthesis capacity to increase octanoic acid production", *Biotechnology for Biofuels*, 11:87, 15 pg, (2018)
52. **L. Jarboe***, "Improving the success and impact of the metabolic engineering design, build, test, learn cycle by addressing proteins of unknown function", *Current Opinion in Biotechnology* (invited), 53:93-98 (2018)
51. X. Liang⁺, C. Liao⁺, M.L. Soupir*, **L. Jarboe**, M.L. Thompson, P.M. Dixon, "Escherichia coli attachment to model particulates: The effects of bacterial cell characteristics and particulate properties", *PLoS ONE* 12(9), e0184664 (2017)
50. Z. Tan, P. Khakbaz, Y. Chen⁺, J. Lombardo⁺, J.M. Yoon, J.V. Shanks, J.B. Klauda, **L. Jarboe***, "Engineering *Escherichia coli* Membrane Phospholipid Head Distribution Improves Tolerance and Production of Biorenewables", *Metabolic Engineering* 44:1-12 (2017)
49. T. Jin⁺, M.R. Rover, E.M. Petersen⁺, Z. Chi, R.G. Smith, R.C. Brown, Z. Wen, **L. Jarboe***, "Damage to the Microbial Cell Membrane during Pyrolytic Sugar Utilization and Strategies for Increasing Resistance", *Journal of Industrial Microbiology and Biotechnology*, 44(9):1279-1292 (2017)
48. C. Liao⁺, X. Liang⁺, F. Yang⁺, M. Soupir, A. Howe, M. Thompson, **L. Jarboe***, "Allelic variation in Outer Membrane Protein A Impacts Attachment of *Escherichia coli* to Environmental Particles", *Frontiers in Microbiology*, 8:Article 708, 15 pg (2017)

47. Z. Tan, W. Black⁺, J. Yoon, J. Shanks, **L. Jarboe***, "Improving *Escherichia coli* membrane integrity and fatty acid production by expression tuning of FadL and OmpF", *Microbial Cell Factories* 16:38, 15 pg (2017)
46. X. Liang⁺, C. Liao⁺, M.L. Thompson, M.L. Soupir*, **L. Jarboe**, P.M. Dixon, "Diversity in Surface Properties of *E. coli* Derived from Stream Water and Sediment", *Frontiers in Microbiology*, 7:Article 1732, 10 pg (2016)
45. K.M. Davis⁺, M. Rover, R.C. Brown, X. Bai, Z. Wen, **L. Jarboe***, "Recovery and utilization of lignin monomers as part of the biorefinery approach" *Energies* (invited), vol 9, article 808, 28 pg (2016)
44. J.P. Bacik*, **L. Jarboe**, "Bioconversion of Anhydrosugars: Emerging Concepts and Strategies" *IUBMB Life* 68(9):700-708 (2016)
43. X. Zhao⁺, **L. Jarboe**, Z. Wen*, "Utilization of pyrolytic substrate by microalgae *Chlamydomonas reinhardtii*: cell membrane property change as a response of the substrate toxicity", *Applied Microbiology and Biotechnology* 100:4241-4251 (2016)
42. M.R. Zwonitzer*,⁺ M.L. Soupir, **L.R. Jarboe**, D.R. Smith, "Quantifying Attachment and Antibiotic Resistance of *Escherichia coli* from Conventional and Organic Swine Manure", *Journal of Environmental Quality* 45(2):609-617 (2016)
41. Z. Tan, J.M. Yoon, D.R. Nielsen, J.V. Shanks, **L.R. Jarboe***, "Membrane Engineering via Trans Unsaturated Fatty Acids Production Improves *Escherichia coli* Robustness and Production of Biorenewables", *Metabolic Engineering* 35:105-113 (2016)
40. J. Lian, J. Choi⁺, Y.S. Tan⁺, A. Howe, Z. Wen, **L.R. Jarboe***, "Identification of Soil Microbes Capable of Utilizing Cellobiosan", *PLOS ONE* 11(2):e0149336 (2016)
39. J. Lian, R. McKenna⁺, M.R. Rover, D.R. Nielsen, Z. Wen, **L.R. Jarboe*** "Production of Biorenewable Styrene: Utilization of Biomass-Derived Sugars and Insights into Toxicity", *Journal of Industrial Microbiology and Biotechnology* 43(5):595-604 (2016)
38. Y. Shen⁺, **L. Jarboe**, R.C. Brown, Z. Wen* "A thermochemical-biological hybrid processing of lignocellulosic biomass for producing fuels and chemicals" *Biotechnology Advances* (invited) 33(8):1799-1813 (2015)
37. J.P. Bacik*, J.R. Klesmith, T.A. Whitehead, **L.R. Jarboe**, C.J. Unkefer, B.L. Mark, R. Michalczyk "Producing glucose-6-phosphate from cellulosic biomass: structural insights into levoglucosan bioconversion" *Journal of Biological Chemistry* 290:26638-26648 (2015)
36. X. Zhao⁺, K. Davis⁺, R. Brown, **L. Jarboe**, Z. Wen*, "Alkaline treatment for detoxification of acetic acid-rich pyrolytic bio-oil for microalgae fermentation: effects of alkaline species and the detoxification mechanisms" *Biomass and Bioenergy* 80:203-212 (2015)
35. C. Liao⁺, X. Liang⁺, M. Soupir*, **L. Jarboe** "Cellular, particle and environmental parameters influencing attachment in surface waters: a review" *Journal of Applied Microbiology* 119(2):315-330 (2015)
34. J. Trcek*, N.P. Mira, **L. Jarboe*** "Adaptation and tolerance of Bacteria against Acetic Acid" *Applied Microbiology and Biotechnology* 99(15):6215-6229 (2015)
33. L.A. Royce⁺, J.M. Yoon, Y. Chen⁺, E. Rickenbach⁺, J.V. Shanks, **L. Jarboe***, "Evolution for exogenous octanoic acid tolerance improves carboxylic acid production and membrane integrity" *Metabolic Engineering* 29:180-188 (2015)

32. Y. Fu⁺, J.M. Yoon, **L. Jarboe**, J. Shanks*, “Metabolic Flux Analysis of *Escherichia coli* MG1655 under Octanoic Acid (C8) Stress” *Applied Microbiology and Biotechnology* 99:4397-4408 (2015)
31. X. Liang⁺, M. Soupir*, S. Rigby, **L. Jarboe**, W. Zhang. “Flow cytometry is a promising and rapid method for differentiating between freely suspended *E. coli* and *E. coli* attached to clay particles” *Journal of Applied Microbiology*, 117:1730-1739 (2014)
30. T.J. Claypool⁺, D.R. Raman*, **L.R. Jarboe**, D.R Nielsen. “Technoeconomic evaluation of Bio-Based Styrene production by Engineered *Escherichia coli*” *Journal of Industrial Microbiology and Biotechnology*, 41(8):1211-1216 (2014)
29. L.A. Royce⁺, E. Boggess⁺, Y. Fu⁺, P. Liu⁺, J.V. Shanks, J. Dickerson, **L. Jarboe*** “Transcriptomic analysis of carboxylic acid challenge in *Escherichia coli*: beyond membrane damage” *PLOS ONE* 9(2):e89580 (2014)
28. M. Rover*, P. Johnston⁺, T. Jin⁺, R. Smith, R. Brown, **L. Jarboe**, “Production of clean pyrolytic sugars for fermentation” *ChemSusChem* 7:1662-1668 (2014)
27. X. Zhao⁺, Z. Chi, M. Rover, R. Brown, **L. Jarboe**, Z. Wen* “Microalgae Fermentation of Acetic Acid-Rich Pyrolytic Bio-oil: Reducing Bio-Oil Toxicity by Alkali Treatment” *Environmental Progress & Sustainable Energy* 32:955-961 (2013)
26. Z. Chi, M. Rover, E. Jun⁺, M. Deaton⁺, P. Johnston⁺, R.C. Brown, Z. Wen, **L. Jarboe***, “Overliming detoxification of pyrolytic sugar syrup for direct fermentation of levoglucosan to ethanol” *Bioresource Technology* 150:220-227 (2013)
25. L.A. Royce⁺, P. Liu⁺, M.J. Stebbins⁺, B.C. Hanson⁺, **L. Jarboe***, “The damaging effects of short-chain fatty acids on *Escherichia coli* membranes” *Applied Microbiology and Biotechnology* 97:8317-8327 (2013)
24. **L. R. Jarboe***, L.A. Royce⁺, P. Liu⁺ “Understanding biocatalyst inhibition by carboxylic acids” *Frontiers in Microbiology* vol 4, article 272, 7 pages (2013)
23. Y. Liang⁺, X. Zhao⁺, Z. Chi, M. Rover, P. Johnston⁺, R. Brown, **L. Jarboe**, Z. Wen*, “Utilization of acetic acid-rich pyrolytic bio-oil by microalga *Chlamydomonas reinhardtii*: Reducing bio-oil toxicity and enhancing algal toxicity tolerance” *Bioresource Technology*, 133:500 – 506 (2013)
22. P. Liu⁺, A. Chernyshov, T. Najdi⁺, Y. Fu⁺, J. Dickerson, S. Sandmeyer, **L. Jarboe***, “Membrane stress caused by octanoic acid in *Saccharomyces cerevisiae*” *Applied Microbiology and Biotechnology*, 97(7):3239-3251 (2013)
21. K. B. Kautharapu, J. Rathmacher, **L. Jarboe***, “Growth condition optimization for docosahexaenoic acid (DHA) production by *Moritella marina* MP-1” *Applied Microbiology and Biotechnology*, 97(7):2859-2866 (2013)
20. P. Liu⁺, **L. Jarboe*** “Metabolic Engineering of biocatalysts for carboxylic acids production” *Computational and Structural Biotechnology Journal*. 3(4) e201210011, (2012)
19. **L. Jarboe***, P. Liu⁺, K. Kautharapu, L.O. Ingram “Optimization of enzyme parameters for fermentative production of biorenewable fuels and chemicals” *Computational and Structural Biotechnology Journal*. 3(4) e201210005, (2012)
18. K.B. Kautharapu, **L. Jarboe***, “Genome sequence of psychrophilic deep sea bacterium *Moritella marina* MP-1”, *Journal of Bacteriology*, 194:6296-6297 (2012)
17. P.C. Turner, L.P. Yomano, **L.R. Jarboe**, S.W. York, C.L. Baggett⁺, B.E. Moritz⁺, E.B. Zentz, K.T. Shanmugam, L.O. Ingram*. “Optimal mapping and sequencing of the *Escherichia coli* KO11 genome reveal extensive chromosomal rearrangements and

- multiple tandem copies of the *Zymomonas mobilis pdc* and *adhB* genes" Journal of Industrial Microbiology and Biotechnology. 39(4):629-639. (2011)
16. L. R. Jarboe*, P. Liu+, L.A. Royce+, "Engineering inhibitor tolerance for the production of biorenewable fuels and chemicals", Current Opinion in Chemical Engineering (invited), 1:38-42 (2011)
15. P. Liu+, M.L. Soupir, M. Zwonitzer+, B. Huss+, L. Jarboe*, "Association of Antibiotic Resistance in Agricultural *E. coli* Isolates with Attachment to Quartz", Applied and Environmental Microbiology, 77(19):6945-6953 (2011)
14. L.R. Jarboe*, Z. Wen, D.W. Choi, R.C. Brown, "Hybrid thermochemical processing: fermentation of pyrolysis-derived bio-oil", Applied Microbiology and Biotechnology (invited), 91(6):1519-1523 (2011)
13. D. Layton+, A. Ajarapu+, D.W. Choi+, L. Jarboe*, "Engineering ethanologenic *Escherichia coli* for levoglucosan utilization", Bioresource Technology, 102:8318-8322 (2011)
12. Y. Fu+, L.R. Jarboe, J. Dickerson*. "Reconstructing genome-wide regulatory network of *E. coli* using transcriptome data and predicted transcription factor activities". BMC Bioinformatics. 12:233, 14 pgs (2011)
11. L.R. Jarboe*, "YqhD: A broad-substrate range aldehyde reductase with various applications in production of biorenewable fuels and chemicals", Applied Microbiology and Biotechnology, 89(2):249-257 (2010)
10. P.C. Turner, E.N. Miller+, L. Jarboe, C.L. Baggett+, K.T. Shanmugam, L.O. Ingram*. "YqhC regulates transcription of the adjacent *Escherichia coli* genes *yqhD* and *dkgA* that are involved in furfural tolerance", Journal of Industrial Microbiology and Biotechnology 38:431-439 (2011)
9. E.N. Miller+, P.C. Turner, L.R. Jarboe, L.O. Ingram*, "Genetic changes that increase 5-hydroxymethyl furfural resistance in ethanol-producing *Escherichia coli* LY180", Biotechnology Letters. 32(5):661-667 (2010)
8. L. R. Jarboe, X. Zhang, X. Wang, J.C. Moore+, K.T. Shanmugam, L.O. Ingram*, "Metabolic engineering for production of biorenewable fuels and chemicals: contributions of synthetic biology" (invited) Journal of Biomedicine and Biotechnology. Article ID 761042 (2010)
7. X. Zhang, K. Jantama+, J.C. Moore+, L. Jarboe, K.T. Shanmugam, L.O. Ingram*, "Metabolic Evolution of energy-conserving pathways for succinate production in *Escherichia coli*", Proceedings of the National Academy of Sciences, USA, 106(48):20180-20185 (2009)
6. E.N. Miller+, L.R. Jarboe, P.C. Turner, P. Pharkya, L.P. Yomano, S.W. York, K.T. Shanmugam, L.O. Ingram*, "Furfural Inhibits Growth by Limiting Sulfur Assimilation in Ethanologenic *Escherichia coli* strain LY180", Applied and Environmental Microbiology, 75(19):6132-6141 (2009)
5. E.N. Miller+, L.R. Jarboe, L.P. Yomano, S.W. York, K.T. Shanmugam, L.O. Ingram*, "Silencing of NADPH-dependent Oxidoreductases (*yqhD* and *dkgA*) in Furfural-Resistant Ethanologenic *Escherichia coli*", Applied and Environmental Microbiology, 75(13):4315-4323 (2009)
- #4. L.R. Jarboe+, D.R. Hyduke+, L.M. Tran+, K.J.Y Chou+, J.C. Liao*, "Determination of the *Escherichia coli* S-nitrosoglutathione response network using integrated biochemical and systems analysis", Journal of Biological Chemistry, 283(8):5148-5157 (2008)

- #3. D.R. Hyduke⁺, **L.R. Jarboe**⁺, L.M. Tran⁺, K.C. Chou⁺, J.C. Liao^{*}, “Integrated network analysis identifies nitric oxide response networks and dihydroxyacid dehydratase as a crucial target in *Escherichia coli*”, Proceedings of the National Academy of Sciences, USA, 104(20):8484-8489 (2007)
- #2. Zhou, B⁺, D. Beckwith⁺, **L.R. Jarboe**⁺, J.C. Liao^{*}, “Markov Chain Modeling of Pyelonephritis-Associated Pili Expression in Uropathogenic *Escherichia coli*”, Biophysical Journal 88(4):2541-2553 (2005)
- #1. **L.R. Jarboe**⁺, D. Beckwith⁺, J.C. Liao^{*}, “Stochastic Modeling of the Phase-Variable *pap* Operon Regulation in Uropathogenic *Escherichia coli*”, Biotechnology and Bioengineering, 88(2):189-203 (2004)

1. Books and Book Chapters

12. “Title TBD” (Springer), **L. Jarboe**, Editor. Role: Editor
Currently securing chapter authors, this book describes the development of robust biocatalysts across length scales, including enzymes, microbes, cell culture, crops, insects and livestock.
11. **L. Jarboe**^{*}, “Fermentation” in A-Z of Biorefinery. Nuttha Thongchul, Suttichai Assabumrungrat, Antonis Kokossis, co-editors. (invited, submitted)
 Role: chapter author
10. Z. Wen and L. Jarboe, “Hybrid Processing”, in Thermochemical Processing of Biomass: Conversion into Fuels, Chemicals and Power, 2nd Edition (invited). Robert C. Brown, editor. (in press)
9. L.A. Royce⁺, **L. Jarboe**^{*}, “Metabolic Engineering for Biocatalyst Robustness to Organic Inhibitors”, in Novel Bioprocessing Technology for Production of Biopharmaceuticals and Bioproducts (invited). Weichang Zhou, Claire Komives, co-editors, (2019)
 Role: chapter author
8. **L. Jarboe**^{*}, J. Klauda, Y. Chen, K. Davis, M. Santoscoy, “Engineering the Microbial Cell Membrane to Improve Bio-Production”, in Green Polymer Chemistry: New Products, Processes and Applications (invited). H.N. Cheng, Richard A. Gross, Patrick B. Smith, co-editors (2018), ISBN13: 9780841233898
 Role: chapter author
7. T. Jin⁺, J. Lian, **L. Jarboe**^{*}, “Ethanol: A Model Biorenewable Fuel”, Industrial Biotechnology: Products and Processes (invited), C. Wittmann and J.C. Liao, eds (2016), ISBN 9783527341818
 Role: chapter author
6. T. Jin⁺, Y. Chen⁺, **L. Jarboe**^{*}, “Evolutionary Methods for Improving Production of Biorenewable Fuels and Chemicals in “Biotechnologies for Biofuel Production and Optimization” (invited), C. Trinh and C. Eckert, eds. (2016), ISBN 978-0-444-63475-7
 Role: chapter author
5. **L. Jarboe**^{*}, Z. Chi “Inhibition of microbial biocatalysts by biomass-derived aldehydes and methods for engineering tolerance” pp 101-120 New Developments in Aldehydes Research (invited) (2013). ISBN #978-1-62417-090-4.
 Role: chapter author
4. L.A. Royce⁺, E. Boggess⁺, T. Jin⁺, J. Dickerson, **L. Jarboe**^{*}. “Identification of Mutations in Evolved Bacterial Genomes” *Methods in Molecular Biology* (vol 985): *Systems Metabolic Engineering: Methods and Protocols*, Hal Alper (ed). (2013)
 Role: chapter author

3. **L.R. Jarboe**, D.R. Hyduke, J.C. Liao*, "Systems Approaches to Unraveling Nitric Oxide Response Networks in Prokaryotes", Nitric Oxide (2nd Ed) Ed. L. Ignarro, Elsevier (2009) Role: chapter author
2. G.W. Luli*, **L. Jarboe**, L.O. Ingram, J.D. Wall, C.S. Harwood, A. Demain, "The development of ethanologenic bacteria for fuel ethanol production", Bioenergy, 129-137 (2008) Role: chapter author
1. **L.R. Jarboe***, T.B. Grabar, L.P. Yomano, K.T. Shanmugam L.O. Ingram, "Development of Ethanologenic Bacteria", Advances in Biochemical Engineering: Biofuels, Ed. L. Olsson, Springer (2007) Role: chapter author

2. Formally Invited Seminars and Presentations

38. (*cancelled*) in Green Polymer Chemistry Symposium, American Chemical Society Annual Meeting, Philadelphia, PA, 2020.
37. "Engineering Robust Microbial Cell Factories", in "Metabolic Engineering and Biocatalysis", American Society for Microbiology Annual Meeting, San Francisco, CA 2019
36. "Metabolic Engineering of Robust Microbial Cell Factories", Industrial Biotechnology at the Cell Membrane", CBMNet BBSRC Network in Industrial Biotechnology and Bioenergy, Sheffield, United Kingdom, 2019
35. "Metabolic Engineering of Robust Microbial Cell Factories", Advances in Metabolic Engineering, AIChE Annual Meeting, Pittsburgh, PA, 2018
34. "Engineering Inhibitor Tolerance for Robust Microbial Production of Fuels and Chemicals", Manus Bio, Cambridge, MA, 2018
33. "Metabolic Engineering of Robust Microbial Cell Factories", ACS Iowa Local Section meeting, West Branch, Iowa, 2017
32. "Metabolic Engineering of Robust Microbial Cell Factories", Cargill, Minneapolis, MN, 2017
31. "Metabolic Engineering of Robust Microbial Cell Factories", Colorado School of Mines, Department of Chemical and Biological Engineering, Golden, CO, 2017
30. "Engineering strategies for improving microbial utilization of thermally depolymerized biomass", **L.R. Jarboe***, Z. Wen, R.C. Brown, K. Davis+, T. Jin+, in "Thermal Deconstruction of Biomass: Upgrading Products of Thermal Deconstruction", AIChE annual meeting, Minneapolis, MN, 2017
29. "Engineering of Robust Microbial Cell Factories for Monomer Production", **L. Jarboe**, Green Polymer Chemistry Symposium, ACS Annual Meeting, Washington, DC 2017
28. **L. Jarboe**, Tribute Session for Lonnie O. Ingram, SIMB Annual Meeting, Denver, CO, 2017
27. **L. Jarboe**, Beijing University of Chemical Technology, 2017 Metabolic Engineering and Green Manufacturing in Microorganisms
26. "Metabolic Engineering of Robust Microbial Cell Factories", **L. Jarboe**, University of Florida, Department of Chemical Engineering, Gainesville, FL, 2017
25. "Metabolic Engineering of Robust Microbial Cell Factories", **L. Jarboe**, Rensselaer Polytechnic Institute, Howard P. Isermann Department of Chemical and Biological Engineering, Troy, NY 2017
24. "Metabolic Engineering of Robust Microbial Cell Factories, **L. Jarboe**, Iowa State University Department of Genetics, Development, and Cell Biology, 2016

23. "Metabolic Engineering of Robust Microbial Cell Factories", **L. Jarboe**, Center for Biocatalysis and Bioprocessing Microbial Factories and Biocatalytic Science, Iowa City, IA, **2016**
22. "Implicit Bias Training", S. Shields-Menard, **L. Jarboe**, SIMB Annual Meeting, New Orleans, LA, **2016**
21. "Taking inspiration from nature: design strategies for the production of biorenewable fuels and chemicals", SIMB Annual Meeting, New Orleans, LA, **2016**
20. "Hybrid Processing for Robust Production of Biorenewable Fuels and Chemicals", Iowa Energy Summit, **2015**
19. "Enabling Robust Production of Biorenewable Fuels and Chemicals from Biomass", Renewable Energy Group Life Sciences, South San Francisco, **2015**
18. "Enabling Robust Production of Biorenewable Fuels and Chemicals from Biomass" at Biotechnology for Sustainable Development, Government College, Lahore, Pakistan, **2014**
17. "Lessons from Engineering Microbial Genetic Networks" National Association of Plant Breeders workshop, Minneapolis, MN, **2014**
16. "Enabling Robust Production of Biorenewable Fuels and Chemicals from Biomass" OPX Bio, Boulder, CO, **2014**
15. "Enabling Robust Production of Biorenewable Fuels and Chemicals from Biomass" Department of Biological Systems Engineering, Virginia Tech, **2014**
14. "Identifying and Addressing Mechanisms of Biocatalyst Inhibition by Short-Chain Carboxylic Acids" Society of Industrial Microbiology and Biotechnology Annual Meeting, San Diego, CA. **2013**
13. "Enabling Robust Production of Biorenewable Fuels and Chemicals" Frontiers in Biorefining, St Simon's Island, GA. **2012**
12. "Overcoming Biocatalyst Inhibition for Robust Production of Biorenewable Fuels and Chemicals" University of Maryland, College Park. **2012**
11. "Engineering Inhibitor-Tolerant Bacterial Biocatalysts" Genomatica, **2012**
10. "Metabolic Engineering for Production of Biorenewable Fuels and Chemicals" Iowa Academy of Science Annual Meeting, **2012**
9. "Engineering Inhibitor-Tolerant Bacterial Biocatalysts" University of Iowa, Department of Chemical and Biochemical Engineering, **2011**
8. "Rational and Reverse Engineering for Biocatalyst Tolerance" Society of Industrial Microbiology Annual Meeting, New Orleans, LA, **2011**
7. "Biocatalyst Engineering for Inhibitor Tolerance" SYMBIOSIS 4.0 Biotechnology Congress, Technologico de Monterrey, Monterrey, Mexico, **2011**
6. "Strategies to Overcome Biocatalyst Inhibition" SIM Annual Meeting, San Francisco, CA, Session 15, **2010**
5. "Strategies to Overcome Biocatalyst Inhibition", Division of Chemical Engineering, Pusan National University, Republic of South Korea, **2010**
4. "Strategies to Overcome Biocatalyst Inhibition" in "Biochemistry for Engineers" course, Department of Chemical and Biological Engineering, Korea University, Republic of South Korea, **2010**
3. "Engineering Bacterial Stress Response Networks" University of Northern Illinois Department of Biological Sciences, **2009**
2. "Engineering Bacterial Stress Response Networks", University of Kentucky Department of Chemical Engineering and Materials Science, **2009**

1. "Chemical Production: Opportunities and Challenges", Iowa State University Biorenewables Intensive Program Lecture, **2009**

3. Contributed Presentations

50. "Comparison of Product Distribution, Content and Fermentability of Biomass in a Hybrid Thermochemical/Biological Processing Platform", in "Biochemical Conversion Processes in Forest/Plant Biomass Biorefineries", **L. Jarboe**, Z. Chi, X. Zhao, T.J. Dugaard, D.L. Dalluge, M.R. Rover, P.A. Johnston, A. Salazar, M. Santoscoy⁺, R.G. Smith, R.C. Brown, Z. Wen, AIChE annual meeting **2019**.

49. "Flow Chemistry Case Study for Material and Energy Balance Course", in "Free Forum on Engineering Education: First Year and Sophomore Year", **L. Jarboe**, AIChE annual meeting, **2019**.

48. "Regional, Institutional, and Departmental Factors Associated with Gender Diversity Among Chemical and Electric Engineering Graduates", in "Free Forum on Engineering Education: Junior and Senior Years II", **L. Jarboe**, AIChE annual meeting, **2019**.

47. "Strategies for Assessing and Improving Microbial Utilization of Lignin-Derived Monomers", in "Efficient Biological Processing of Lignin to Bioproducts and Biofuels", K. Davis⁺, M. Rover, D. Salvachua, G.T. Beckham, Z. Wen, R.C. Brown, **L. Jarboe**, AIChE annual meeting, **2019**.

46. "Streamlined Assessment of Membrane Permeability: A Simple and Inexpensive High-Throughput Method for Multiple Applications", in "Gene Regulation Engineering: Applications in Medicine and Biotechnology", M.C. Santoscoy⁺, **L. Jarboe**, AIChE annual meeting, **2019**.

45. "Contribution of Membrane Proteins and Composition to Microbial Robustness", E. Wettstein, M. Chavez-Santoscoy, **L. Jarboe**, in AIChE annual meeting undergraduate poster session, **2018**

44. "Reverse engineering of short-chain fatty acid tolerance and production in *E. coli*", Y. Chen⁺, E. Boggess⁺, J.V. Shanks, T. Mansell, J. Dickerson, **L.R. Jarboe***, American Chemical Society Annual Meeting, in "Synthetic Biology & Metabolic Engineering using Omics Based Approaches", **2017**, San Francisco, CA

43. "Enabling Microbial Utilization of Thermally Depolymerized Lignin Monomers" K. Davis⁺, M. Rover, D. Salvachua, G.T. Beckham, Z. Wen, R. Smith, **L. Jarboe**, R.C. Brown, AIChE Annual Meeting, in "Efficient Processing of Lignin to Bioproducts and Biofuels" San Francisco, CA, **2016**

42. "Production of biorenewable styrene: utilization of biomass-derived sugars and insights into toxicity" **L. Jarboe***, J. Lian, M. Rover, Z. Wen, B. McKenna⁺, D.R. Nielsen. SIMB Annual Meeting, New Orleans, LA, **2016**

41. "Membrane damage during production of biorenewable fuels and chemicals and compensatory membrane engineering strategies", **L. Jarboe***, Z. Tan, J. Lian, T. Jin⁺, Y. Chen⁺, J.V. Shanks, SIMB Annual Meeting, New Orleans, LA, **2016**

40. "Engineering Outer Membrane Proteins to Increase *E. coli* Membrane Integrity and Production of Fatty Acids", Z. Tan, W. Black⁺, **L. Jarboe***, Metabolic Engineering 11, Awaji, Japan, **2016**

39. "Membrane Engineering Strategies to Improve Production of Biorenewable Fuels and Chemicals", **L. Jarboe***, Z. Tan, J. Lian, T. Jin⁺, Y. Chen⁺, E. Boggess⁺, J.M. Yoon,

- J.V. Shanks, D.R. Nielsen, Z. Wen, J. Dickerson, Metabolic Engineering 11, Awaji, Japan, **2016**
- 38.** "Engineering Membrane Phospholipids Increases *E. coli* Robustness and Production of Biorenewables", Z. Tan, J.M. Yoon, Y. Chen⁺, J. Lombardo⁺, D.R. Nielsen, J.V. Shanks, **L. Jarboe**, Metabolic Engineering 11, Awaji, Japan, **2016**
- 37.** "Discovery of Design Strategies for Enabling Pyrolytic Sugar Tolerance and Utilization by *Escherichia coli*", T. Jin⁺, **L. Jarboe***. AIChE Annual Meeting, in "Biobased Fuels and Chemicals II: Enzymatic Conversion of Recalcitrant Feedstocks", Salt Lake City, UT, **2015**
- 36.** T. Jin⁺, **L. Jarboe***. "Engineering *Escherichia coli* for Ethanol Production from Pyrolytic Sugar". American Institute of Chemical Engineers annual meeting in "Biological Conversions and Processes for Renewable Feedstocks II", Atlanta, GA, **2014**
- 35.** X. Liang⁺, C. Liao⁺, M. Soupir^{*}, **L. Jarboe**, M. Thompson. "Attachment of *E. coli* Strains to Environmental Particles in Streams and Stream Sediments" Soil Science Society of America, Long Beach, CA, **2014**
- 34.** **L. Jarboe***, Z. Wen, R.C. Brown. "Hybrid Thermochemical/Biological Processing for Robust Production of Biorenewable Fuels and Chemicals". Lignin Utilization workshop, Denver CO, **2014**
- 33.** **L. Jarboe***, P. Liu⁺, L. Royce⁺. "Understanding and Mitigating Carboxylic Acid Toxicity in *E. coli* and *S. cerevisiae*". American Chemical Society annual meeting. Dallas, TX, **2014**
- 32.** Z. Chi, **L. Jarboe**, Z. Wen^{*}, R.C. Brown, M. Rover, P. Johnston⁺, "Overliming Detoxification of Pyrolytic Sugars for Direct Fermentation of Levoglucosan to Ethanol" SIMB Annual Meeting, San Francisco, CA, **2013**
- 31.** **L. Jarboe**, Z. Chi, Z. Wen, R.C. Brown "Utilization of acetic acid-rich pyrolytic bio-oil by microalgae *Chlamydomonas reinhardtii*: Reducing bio-oil toxicity and enhancing toxicity tolerance" Bioenergy IV: Innovations in Biomass Conversion for Heat, Powers, Fuels and Chemicals", Otranto, Italy, **2013**
- 30.** J. Claypool⁺, D.R. Raman^{*}, **L. Jarboe**, D. Nielsen, "The Economic Potential of Bio-Based Styrene from *Escherichia coli*" 35th Symposium on Biotechnology for Fuels and Chemicals, Portland, OR, **2013**
- 29.** L. Royce⁺, **L. Jarboe***, "The Damaging Effects of Short Chain Fatty Acids on *Escherichia coli* membranes" Omics Group Metabolomics-2013, Chicago, IL, **2013**
- 28.** L. Royce⁺, **L. Jarboe***, "Understanding Carboxylic Acid Toxicity through Omics Analysis" Omics Group Metabolomics-2013, Chicago, IL, **2013**
- 27.** M. Rover, P. Johnson⁺, **L. Jarboe**, R.C. Brown^{*}, "Clean Pyrolytic Sugars Solution" AIChE Annual Meeting, Pittsburgh, PA, **2012**
- 26.** T. Jin⁺, Y. Liang⁺, D. Layton⁺, M. Deaton⁺, Z. Chi, R.C. Brown, Z. Wen, **L. Jarboe***, "Hybrid Thermochemical Processing: Fermentation of Pyrolytic Substrates" AIChE Annual Meeting, Pittsburgh, PA, **2012**
- 25.** **L. Jarboe** "Engineering inhibitor tolerance for the production of biorenewable fuels and chemicals" Metabolic Engineering IX, Biarritz, France, **2012**
- 24.** T. Jin⁺, Y. Liang⁺, Z. Chi, D. Layton⁺, R.C. Brown, Z. Wen, **L. Jarboe*** "Enabling pyrolytic substrate utilization for the production of biorenewable fuels and chemicals" Metabolic Engineering IX, Biarritz, France, **2012**

23. M. Deaton⁺, **L. Jarboe***, “Directed Evolution of Ethanologenic *Escherichia coli* for Bio-oil Tolerance” AIChE Student Poster Session, Minneapolis, MN, **2011**
22. P. Liu⁺, **L.R. Jarboe***, “Antibiotic Resistance in Agricultural *E. coli* Isolates is Associated with Attachment to Quartz” American Society for Microbiology Regional Meeting, Des Moines, IA, **2011**
21. M. Stebbins⁺, **L.R. Jarboe***, L.A. Royce⁺, J. Au⁺, “Analysis of *E. coli* membrane composition during Octanoic Acid Inhibition” AIChE annual meeting, Salt Lake City, UT, **2010**
20. L.A. Royce⁺, M. Stebbins⁺, M. Rodriguez-Moya⁺, E. Boggess⁺, J. Dickerson, R. Gonzalez, **L. Jarboe***, “Increasing Product Tolerance through Metabolic Engineering: Short-Chain Fatty Acids” AIChE annual meeting, Salt Lake City, UT, **2010**
19. M. Zwonitzer⁺, M.L. Soupir^{*}, **L.R. Jarboe**, “Exploring the relationship between attachment and resistance of *Escherichia coli* collected from organic and commercial swine operations.” ASA-CSSA-SSSA International Annual Meeting in Long Beach, CA, **2010**
18. K.B. Kautharapu, **L.R. Jarboe***, “Metabolic engineering of *Moritella marina* MP-1 for Docosahexanoic acid Production” SIM Annual Meeting, San Francisco, CA, **2010**
17. E.N. Miller⁺, **L.R. Jarboe**, P.C. Turner, Priti Pharkya, L.P. Yomano, S.W. York, David Nunn, K.T. Shanmugam, L.O. Ingram^{*}. “Reverse engineering furfural tolerance in ethanologenic *Escherichia coli*”, Metabolic Engineering VIII, Jeju Island, Republic of South Korea, **2010**
16. D.S. Layton⁺, B. Moritz⁺, S.J. Willson, **L.R. Jarboe***, L.O. Ingram “Exploration of the Phylogenetic Relationship Between Ten *Escherichia coli* Lab Strains”, AIChE Annual Meeting, Nashville, TN, **2009**
15. J. Gillian⁺, D.S. Layton⁺, A. Teh⁺, D.K. Rollins, **L.R. Jarboe**, “The Effect of Nitric Oxide On Uncharacterized Genes in *Escherichia coli* K12”, AIChE Annual Meeting, **2009**
14. L.A. Royce⁺, **L.R. Jarboe***, “Toward A Chemical Revolution: Solving Biocatalyst Inhibition for the Production of Fatty Acids”, AIChE Annual Meeting, Nashville, TN, **2009**
13. E.N. Miller⁺, **L.R. Jarboe**, L.P. Yomano, K.T. Shanmugam, S.W. York, L.O. Ingram^{*}, “Silencing of NADPH-dependent oxidoreductases YqhD and DkgA increases furfural resistance in ethanologenic *Escherichia coli*”, AIChE Annual Meeting, Nashville, TN, **2009**
12. M. Zwonitzer⁺, M.L. Soupir^{*}, **L.R. Jarboe** “Exploring the relationship between transport, resistance, and virulence factors of *Escherichia coli* collected from swine manure”, ASA-CSSA-SSSA International Annual Meeting, Pittsburg, PA **2009**
11. **L.R. Jarboe** “NSF Engineering Research Center for Biorenewable Chemicals” SIM Annual Meeting, Toronto **2009**
10. E.N. Miller⁺, **L.R. Jarboe**, L.P. Yomano, S.W. York, K.T. Shanmugam, L.O. Ingram^{*}. “Silencing of NADPH-dependent oxidoreductases YqhD and DkgA increases furfural resistance in ethanologenic *Escherichia coli*”, SIM Annual Meeting, Toronto **2009**
9. M. Zwonitzer⁺, M.L. Soupir^{*}, **L.R. Jarboe**, “*E. coli* transport, resistance, and virulence factors from land applied swine slurry” The Dahlia Greidinger Memorial Symposium: Crop Production in the 21st Century: Global Climate Change, Environmental Risks and Water Scarcity, Technion-IIT Haifa, Israel **2009**

8. **L.R. Jarboe**, K.T. Shanmugam, L.O. Ingram*, "Advances in Engineering of Ethanologenic *Escherichia coli*", AIChE Annual Meeting, Salt Lake City, UT, **2007**
7. **L.R. Jarboe**, K.T. Shanmugam, L.O. Ingram*, "Advances in Engineering of *Escherichia coli* to Produce Ethanol and other Commodity Products", SIM Annual Meeting, Denver, CO, **2007**
- #6. **L.R. Jarboe**⁺, B. Zhou⁺, D. Beckwith⁺, J.C. Liao*, "Markov Chain Modeling of Pyelonephritis-Associated Pili Expression in Uropathogenic *Escherichia coli*" AIChE Annual Meeting, paper 383f, Cincinnati, Ohio, **2005**
- #5. **L.R. Jarboe**⁺, D. Hyduke⁺, L.M. Tran⁺, J.C. Liao*, "Identification of Reactive Nitrogen Oxide Species Response Elements in *Escherichia coli*", AIChE Annual Meeting, paper 208f, Cincinnati, Ohio, **2005**
- #4. **L.R. Jarboe**⁺, K. Kao⁺, W. Wong⁺, E. Fung⁺, Y.L. Yang, L.M. Tran⁺ and J.C. Liao*, "Identification of Transcription Factor Interaction Networks in *Escherichia coli*", AIChE Annual Meeting, Austin, Texas, **2005**
- #3. **L.R. Jarboe**⁺, K. Kao⁺, W. Wong⁺, E. Fung⁺, Y.L. Yang, L.M. Tran⁺ and J.C. Liao*, "Analysis of Transcriptional Regulatory Networks in *Escherichia coli*" Metabolic Engineering V, Lake Tahoe, Nevada, **2004**
- #2. **L.R. Jarboe**⁺, D. Beckwith⁺ and J.C. Liao*, "Stochastic Modeling of the *pap* Operon in Uropathogenic *Escherichia coli*" AIChE Annual Meeting, San Francisco, California, **2003**
- #1. **L.R. Jarboe**⁺, D. Beckwith⁺ and J.C. Liao*, "Modeling Stochastic Systems: *pap* Regulation and Expression" AIChE Annual Meeting, Indianapolis, Indiana, **2002**

B. Patents, Disclosures, and Technology Transfer

4. E.N. Miller⁺, **L.R. Jarboe**, L.O. Ingram*, "Increased Expression of Transhydrogenase Genes and Their Use in Ethanol Production" UF#-13147. Patent filed 3/15/**2010**, application published **2012**, patent application number 20120108855
3. X. Zhang, K. Jantama⁺, J. Moore⁺, **L. Jarboe**, K.T. Shanmugam, L.O. Ingram*, "Engineering the Pathway for Succinate Production" UF#-13026. Serial No. 61/166,093. WO 2010/115067 A1. Patent filed 4/2/**2010**.
2. E.N. Miller, **L.R. Jarboe**, L.P. Yomano, S.W. York, K.T. Shanmugam, L.O. Ingram, "Ethanologenic bacteria with increased resistance to furfural" UF#-13025. Patent filed 1/4/**2010**. WO2010/101665
1. E.N. Miller, **L.R. Jarboe**, L.P. Yomano, S.W. York, K.T. Shanmugam, L.O. Ingram*, "MgsA Mutant Improves Sugar Utilization" UF#-13027. **2008**

C. Funded Grants and Contracts

* indicates PI

35. **L. Jarboe**^{*}, R. Jernigan, P. St. John, "Novel Systems Approach for Rational Engineering of Robust Microbial Metabolic Pathways". \$300,000. **2021-2024**, \$100,000 to Jarboe. Leader: PI.
34. R.C. Brown^{*}, F. Farzad, **L. Jarboe**, M. Blenner, Z. Wen, P. Bryan, A. George, "Production of Macronutrients from Thermally Oxo-Degraded Wastes", abstract to DARPA ReSource. Draft budget has ~\$1,500,000 to LJ, total amount \$7,590,000. **2020 - 2024**. Role: Leader of TA2.

33. M. Lamm*, **L. Jarboe**, “Open Handbook for Chemical Engineering Separations”, ISU Miller Open Education Mini-Grant”, **2019**, \$4,963, \$1,059 to LJ. Role: co-PI.
32. **L. Jarboe***, “Addressing the biological knowledge gap”, ISU COE Exploratory Research Projects, **2019**, \$12,000, all to LJ. Role: PI.
31. **L. Jarboe***, “Engineering of *Escherichia coli* membrane lipids, head groups, proteins and sugars to improve microbial production of bio-based products” USDA NIFA **2016 – 2021**, \$500,000, all to LJ. Role: PI.
30. J. Klauda* (University of Maryland, College Park), **L. Jarboe***, Z. Shao, “Collaborative Research: Mechanisms for Cell Membrane Damage during Production of Biorenewable Fuels” NSF Energy for Sustainability, **2016 – 2019**. \$400,000 total, \$200,000 to LJ. CBET-1604576, Role: co-PI.
29. Z. Wen*, X. Bai, **L. Jarboe**, M. Rover, “Hybrid Chemical and Biological Valorization of Residual Biorefinery Lignin” NSF Energy for Sustainability, **2016 – 2019**. \$299,549, \$100,000 to LJ. CBET-1605034, Role: co-PI
28. **L. Jarboe***, DOE Early Career Development Travel award, Society of Industrial Microbiology and Biotechnology Annual Meeting, New Orleans, \$873, **2016**
27. A. Howe*, H.K. Allen, N. Ricker, **L. Jarboe**, C.M. Logue, “Using MORE to get the most: Tracking the threat of mobile antimicrobial resistance in agroecosystems”, ISU Antimicrobial Resistance seed program, **2016 – 2019**, \$146,276, \$0 to LJ. Role: co-PI.
26. **L. Jarboe***, Foreign Travel Grant, ISU Faculty Senate, \$1,419, **2016**
25. **L. Jarboe***, Z. Shao “Enabling Two- and Three- Component Bacterial Consortia” NSF BBE **2015 –2018**. \$300,000, \$150,000 to LJ. CBET-1511646. Role: PI
24. N. Mira* (Tecnico Lisboa), **L. Jarboe**, FLAD/NSF, **2014-2015** 15,000 euros. Role: Co-PI
23. N.P. Mira*, S. Vinga, M. Sauer, P. Punt, **L. Jarboe**, Z. Shao, J.V. Shanks “Towards Sustainable Microbial Production of Levulinic and Itaconic Acids” European Research Area Network in Synthetic Biology, National Science Foundation. 4,500 euro+\$5,000. Role: co-PI. **2014**
22. J. Rathmacher* (MTI, Inc), **L. Jarboe**. “SBIR Phase I: Metabolic Engineering of *Moritella marina* MP-1 for DHA production” NSF. **2013**. \$150,000, \$50,000 to LJ, IIP-1248803. Role: Co-PI.
21. R. Brown*, R. Smith, Z. Wen, **L. Jarboe**. “Leading the Bioeconomy”, ISU Presidential Initiative. **2013 –2015**. \$200,000, \$100,000 to LJ. Role: co-PI.
20. L. Dong*, Z. Wen, **L. Jarboe** “An Automated Lab-Chip Instrumentation for Rapid Metabolic Evolution and Selection of Microorganisms” ISU IPRT **2013 –2014**. \$20,000, \$0 to LJ. Role: Co-PI.
19. A. Liu, T. Jin, K. Weis, J.P. Tessonier*, **L. Jarboe**. “Rapid, High Throughput Identification and Quantification of Carbohydrates and Their Derivatives using UPLC-PDA-ELDS” CBiRC Student-Led Research Grant. **2013**. \$6,000, \$500 to LJ. Role: Co-PI.
18. **L. Jarboe***, I. Schneider*, “Diversity Speakers for Chemical and Biological Engineering Seminar Series” ISU Women’s and Diversity Grant Program Application. **2013 –2014**. \$1,500.
17. **L. Jarboe***, Z. Wen*, “Hybrid Processing for Biorenewable Fuels and Chemicals Production” workshop support **2013**. ISU Office of Biotechnology, \$3,000; ISU Plant Sciences Institute, \$5,000; Iowa Energy Center, \$4,500. Role: PI.

16. **L. Jarboe***, Z. Wen, R. Brown “Biological Utilization of Thermolytic Substrates by Bacteria and Microalgae: Addressing Toxicity of Substrate Contaminants” NSF Energy for Sustainability. **2012 –2015**. \$300,000+ \$10,000 RET supplement for **2012**, \$160,000 to LJ, CBET-1133319. Role: PI.
15. M. Soupir*, **L. Jarboe**, M. Thompson. “Genetic and environmental factors driving *E. coli* attachment to particles in streams”. NSF Environmental Engineering. **2012 – 2015**. \$304,553, \$100,000 to LJ, CBET-1236510. Role: Co-PI.
14. **L. Jarboe***, M. Soupir, C. Logue, L. Nolan “Sequence analysis of transferable genes encoding bacterial attachment and multi-drug resistance” Center for Health Effects of Environmental Contamination (CHEEC). **2012 –2013**. \$30,000, \$10,000 to LJ. Role: PI.
13. **L. Jarboe***, Z. Wen, R. Brown. “Hybrid Processing for Robust Production of Biorenewable Fuels and Chemicals”. Iowa Energy Center. **2012 – 2015**. \$315,020, \$110,000 to LJ. Role: PI.
12. R. Brown*, D. Laird, B. del Campo, **L. Jarboe**. “Production of Activated Carbon from Fast Pyrolysis Char” Iowa Energy Center. **2012 –2014**. \$201,552, \$10,000 to LJ. Role: Co-PI.
11. More than 20 faculty, “IOWA NSF EPSCOR” **2012 – 2017**. \$20,000,000, \$0 to LJ. Role: Plank member.
10. M. Soupir*, M. Helmers, M. Thompson, **L. Jarboe**, A. Mallarino, R. Kanwar. “Investigation of bacteria transport and resistance mechanisms and implications for water quality from confinement swine and beef grazing production systems in Iowa” Leopold Center Cross-Cutting Initiatives. **2012 – 2015**. \$162,100, \$0 to LJ. Role: Participant.
9. **L. Jarboe***, Z. Wen, R. Brown, O. Zobotina, M. Spalding. “Hybrid Processing for Sustainable Production of Biorenewable Fuels and Chemicals from Biomass” ISU Plant Sciences Institute Team Enabling. **2012 –2013**. \$50,000, \$25,000 to LJ. Role: PI.
8. Z. Wen*, **L. Jarboe**, R. Brown. “Fermentability of different plant species in a hybrid processing platform”. ISU Plant Sciences Institute Innovative Research. **2012 –2013**. \$59,999, \$10,000 to LJ.
7. **L. Jarboe***, Z. Wen*, “Hybrid Processing for Biorenewable Fuels and Chemicals Production” workshop support, **2012**. ISU Office of Biotechnology, \$7,800; ISU Plant Sciences Institute, \$2,500. Role: PI.
6. **L. Jarboe***, Support to attend Metabolic Engineering Conference IX, June **2012**, Biarritz, France. Engineering Conferences International. \$1,000; Iowa State University. \$1,061.
5. Z. Wen*, **L. Jarboe***, “Building a research program for converting lignocellulosic biomass into bioenergy through a hybrid process” ISU Bioeconomy Institute Signature Programs. **2011 –2013**. \$20,000, \$10,000 to LJ. Role: Co-PI.
4. Z. Wen*, **L. Jarboe**, R. Brown. “Developing a hybrid conversion process for producing bioenergy from lignocellulosic biomass” ISU Bailey Research Career Development Award. **2011 –2014**. \$150,000, \$15,000 to LJ. Role: Participant.
3. **L. Jarboe***, Support to attend Metabolic Engineering Conference VIII, June **2010**, Jeju, South Korea. Engineering Conferences International/NSF. \$800; Iowa State University. \$2,158.

2. L. Jarboe*, “Metabolic Engineering of *Moritella marinus* to produce DHA: Transcriptome Sequencing” Metabolic Technologies, Inc /IPRT. **2009 - 2011**. \$43,888, all to LJ. Role: PI.

1. Brent Shanks*, Director. Basil Nikolau, Deputy Director. T. Bobik, J. Noel, E. Pichersky, D. Oliver, P. Reilly, K.Y. San, N. DaSilva, J. Dickerson, R. Gonzalez, J. Shanks, E. Wurtele, **L. Jarboe**, A. Datye, J. Dumesic, K. Woo, M. Neurock, G. Kraus, R. Davis, R. Larock. “Engineering Research Center for Biorenewable Chemicals (CBiRC)”. NSF. **2008 - 2018**. Total amount \$30,000,000; \$1,523,024 to LJ. Role: project leader, co-leader of Metabolic Engineering Thrust **2014 - 2018**

III. TEACHING AND STUDENT MENTORING

A. Instruction for ISU

Term	Course number	Course Title	Credits	Lab	Number of students	TA/ graders
Fall 2021	ChE 210	Material and Energy Balances	3	No	100	2/1
Fall 2020	ChE 381	Chemical Engineering Thermodynamics	3	No	98	1/2
Spring 2020	ChE 625	Metabolic Engineering	3	No	4	0/0
Fall 2019	ChE 381	Chemical Engineering Thermodynamics	3	No	47	1/2, shared with other section
	BBMB 303X	General Biochemistry - 1 week case study	3	No	74	1/0
Spring 2019	ChE 358	Separations	3	No	47	1/2, shared with other section
Fall 2018	ChE 381	Chemical Engineering Thermodynamics	3	No	57	1/0, shared with other section
	BBMB 303X	General Biochemistry - 1 week case study	3	No	79	1/0
Spring 2018	ChE 210	Material and Energy Balances	3	No	30	0/1
Fall 2017	ChE 358	Separations	3	No	25	1/0
	BBMB 303X	General Biochemistry - 1 week case study	3	No	71	1/0
	Micro 604	Interdepartmental Microbiology Graduate Program Seminar	1	No	18	0/0
Spring	ChE 625	Metabolic Engineering	3	No	8	0/0

2017						
Fall 2016	ChE 381	Chemical Engineering Thermodynamics	3	No	106	1/2
	ChE 698	Chemical Engineering Teaching Practicum, co-taught with 1 other faculty	1	No	13	0/0
	BBMB 301	General Biochemistry - 1 week case study	3	No	130	1/0
	ChE 695L	Advanced Topics: Catalysis, Reaction Engineering, and Renewable Energy, co-taught with 7 other faculty	3	No	7	0/0
Spring 2016	ChE 358	Separations	3	No	95	1/3
Fall 2015	ChE 210	Material and Energy Balances	3	No	63	1/2
	Micro 604	Interdepartmental Microbiology Graduate Program Seminar	1	No	15	0/0
Spring 2015	ChE 625	Metabolic Engineering	3	No	5	0/0
Fall 2014	ChE 358	Separations	3	No	73	0/2
Spring 2014					75	1/1
Fall 2013	ChE 381	Chemical Engineering Thermodynamics	3	No	86	1/1
Spring 2013	ChE 381	Chemical Engineering Thermodynamics	3	No	58	1/2
	BCB 570	Bioinformatics IV: Computational Functional Genomics and Systems Biology - 2 guest lectures				
Fall 2012	ChE 381	Chemical Engineering Thermodynamics	3	No	79	0/2
Spring 2012	ChE 625	Metabolic Engineering	3	No	6	0/0
Fall 2011	ChE 381	Chemical Engineering Thermodynamics	3	No	64	0/2
Spring 2011					45	0/1
Fall 2010	ChE 210	Material and Energy Balances	3	No	46	0/1

Spring 2010	Micro 604	Interdepartmental Microbiology Graduate Program Seminar	1	No	15	0/0
Fall 2009	ChE 210	Material and Energy Balances	3	No	43	0/1
Spring 2009	ChE 625	Metabolic Engineering	3	No	6	0/0
Fall 2008	ChE 210	Material and Energy Balances	3	No	45	0/1

B. Curricular Development Activity for ISU

3. Contributed to the development, assessment and revision of the ChE 205 Assessment course (2016 - 2019).
2. Led by I. Schneider and in collaboration with Z. Shao, T. Mansell and R. Peters (BBMB), contributed to the development and assessment of BBMB 303X (2016 - 2019).
1. Performed analysis of historical student performance data in 2014 to establish the indicators of student success in ChE curriculum.

C. Supervision of Students as Major Professor

11. Kimia Noroozi, PhD Chemical and Biological Engineering, Fall 2020 - present
10. Efrain Rodriguez-Ocasio, PhD Chemical and Biological Engineering, Fall 2019 - present
9. Miguel Chavez-Santoscoy, PhD Chemical and Biological Engineering, Fall 2016 - present
8. Aric Warner (co-advised with Z. Shao), PhD, Microbiology, Fall 2015 - Su 2021
7. Kirsten Davis, PhD, Chemical and Biological Engineering, Fall 2014 - Su 2019. Currently working at Valent Biosciences.
6. Yingxi Chen (co-advised with T. Mansell), PhD, Chemical and Biological Engineering, 2018, "Reverse engineering of short-chain fatty acids tolerance and production in *Escherichia coli*", currently postdoctoral researcher Center for Synthetic Genomics, Shenzhen Institute of Advanced Technology
5. Tao Jin, PhD, Chemical and Biological Engineering, 2016, "Discovery of design strategies for enabling pyrolytic sugars tolerance and utilization by *Escherichia coli*", research associate at Louisiana State University
4. Chunyu Liao (co-advised with M. Soupir), PhD, Microbiology, 2015, "Genetic Factors Driving Attachment of *Escherichia coli* to Stream Particles", currently postdoctoral researcher at Helmholtz Centre for Infection Research
3. Martha Zwonitzer (co-advised with M. Soupir), MS, Environmental Science, 2015. "Exploring the relationship between attachment and antibiotic resistance of *Escherichia coli* from swine manure", employed with Bayer Crop Science
2. Ping Liu, PhD, Microbiology, 2013, "Addressing Fatty Acids Toxicity and Production in Biocatalysts", employed with Shell
1. Liam Royce, PhD, Chemical and Biological Engineering, 2013, "Elucidating mechanisms of toxicity and engineering *Escherichia coli* for tolerance of short chain fatty acids", working at United States Patent Office

D. Service on Graduate Student Committees

36. Wan Sun, PhD, Microbiology. Committee member.

35. Fatima Enam, PhD, CBE. Committee member.
34. Phil Colgan, PhD, ABE. Committee member.
33. Meirong Gao, PhD, CBE. Committee member.
32. Travis Hattery, PhD, MCDB. Committee member.
31. Carmen Lopez-Garcia, PhD, Microbiology. Committee member.
30. Cuong Van Huynh, PhD, ME. Committee member.
29. Erin Boggess, PhD, BCB. Committee member. Graduated 2018.
28. Arpa Ghosh, PhD, ME. Committee member. Graduated 2018.
27. Sambit Mishra, PhD, BBMB. Committee member. Graduated 2018.
26. Ashik Sathish, PhD, ABE. Committee member. Graduated 2018.
25. Le Zhao, PhD, CBE. Committee member. Graduated 2017.
24. Rachael Erb, PhD, EEOB. Committee member. Graduated 2017.
23. Bhagyashree S. Birla, PhD, BCB. Committee member. Graduated 2017.
22. Miguel Suastegui, PhD, CBE. Committee member. Graduated 2017.
21. Miguel Chavez-Santoscoy, MS, CBE. Committee member. Graduated 2016.
20. Jesse Walsh, PhD, BCB. Committee member. Graduated 2016.
19. Navjot Singh, PhD, BBMB. Committee member. Graduated 2016.
18. Xuefei Zhao, PhD, FSHN. Committee member. Graduated 2015.
17. Lili Zheng, MS, CBE. Committee member. Graduated 2015.
16. Rebekah McKenna, PhD, Chemical Engineering (Arizona State University). Committee member. Graduated 2014.
15. Yanan Zhang, PhD, ME. Committee member. Graduated 2014.
14. Seth Wenner, PhD, Microbiology. Committee member. Graduated 2014.
13. Dustin Dalluge, PhD, ME. Committee member. Graduated 2013.
12. Ting Wei Tee, PhD, CBE. Committee member. Graduated 2013.
11. Quyen Truong, PhD, CBE. Committee member. Graduated 2013.
10. Ryan Swanson, PhD, CBE. Committee member. Graduated 2013.
9. Ryan Sturms, PhD, BBMB. Committee member. Graduated 2013.
8. David Cantu, PhD, CBE. Committee member. Graduated 2013.
7. Amy Cervantes, MS, CCEE. Committee member. Graduated 2012.
6. Xiao Liang, MS, ABE. Committee member. Graduated 2012.
5. Huilin Zhu, PhD, BBMB. Committee member. Graduated 2011.
4. Yanfen Fu, MS, CBE. Committee member. Graduated 2011.
3. Chris Setina, MS, CBE. Committee member. Graduated 2010.
2. Ai-Ling Teh, MS, Statistics. Committee member. Graduated 2010.
1. Emmanuel Criner, MS, Statistics. Committee member. Graduated 2009.

E. Supervision of Post-Doctoral Students and Professional Staff

Postdoctoral Researchers:

5. Ammara Khalid, **2021** - present
4. Zaigao Tan (co-advised with J. Shanks) **2014 – 2016**, Assistant Professor, Shanghai Jiao Tong University
3. Jieni Lian (co-advised with Z. Wen), **2013 – 2015**, Director, Beijing Qlife Biopharmaceutical Co, Ltd
2. Zhanyou Chi (co-advised with Z. Wen), **2011 – 2014**, Professor, Dalian University of Technology
1. Kumar Kautharapu, **2010 - 2013**

Professional Staff:

2. Show-Ling Lee, 2017 - 2018

1. Andriy Chernyshov, 2009

Visiting Scientists

1. Honglei Wang, 2017 – 2018, Changchun University of Technology

F. Supervision of Independent Study and Undergraduate Research

74. Charles Truka (CBE, Griswold Intern), F18, S19, F19. Membrane engineering.
73. Denver Landers (CBE), Su19. Membrane engineering.
72. Eleanor Wettstein (BioMAP REU), Su18. Membrane engineering.
71. Efrain Rodriguez Ocasio (CBiRC REU), Su18. CBiRC. Joined ISU CBE PhD program F19. Co-author on Chen et al, published..
70. Danielle Thompson (Honors Project, ChE 210), S18, S21 – winner of COE Honors Poster Symposium Award
69. Julia Craft (BioMAP REU), Su2017. Membrane engineering.
68. Victoria Bart (CBiRC REU), Su2017. CBiRC.
67. Patrick Hertzfel (CBE) S17. Membrane engineering.
66. Jonathon Neessen (Biophysics) S17. Membrane engineering.
65. Matthew Schutte (CBE) S17. Isogenic consortia.
64. Jianing Wu (CBE), S16, S17. CBiRC.
63. Joseph Schiller (Honors Project, ChE 381), Fall 2016
62. Natalia Neris (CBiRC REU), Su16. CBiRC. Co-author on Chen et al AEM 2017.
61. Chiron Anderson (BioMAP REU) Su16. OmpA. Started ISU PhD program in Microbiology Fall 2018.
60. Jonathan English (CBE) S16. Isogenic consortia project.
59. Elspeth Petersen (CBE) S15, F15, hybrid processing. Co-author on Jin et al JIMB 2017, currently MS student in ISU CBE department.
58. Jeremy Lombardo (CBiRC REU), Su15. Co-author on Tan et al Met Eng 2017. Currently PhD student at UC Irvine.
57. William Black (CBE) F14, S15. CBiRC. Co-author on Tan et al, Microbial Cell Factories, 2017. Currently PhD student at University of California, Irvine.
56. Lucas Kerns (CBE) Su12, F12, S13, Su13, F13, F14. CBiRC. Co-author on Chen et al AEM 2017.
55. Yee Shian Tan (CBE) Su14, F14. Hybrid processing. Co-author on Lian et al PLOS ONE 2016.
54. Amar Srivastava (CBE) Su14. Hybrid processing.
53. Michael Reinhardt (SUNY Buffalo, CBiRC REU) Su14. Co-author on Chen et al AEM 2018.
52. Adriana Benavides (Monterrey Tech, BioMAP REU), Su14. Co-author on Jin et al, 2019.
51. Steven Miller (CBE) F13, S14. Hybrid processing.
50. Joseph Malicki (CBE) S14. Hybrid processing.
49. Neysha Lopez (University of Puerto Rico, BioMap REU), Su13. Hybrid processing.
48. Jessica Kuyper (CBE) Su12, S13. Hybrid processing.
47. Tiffany Lam (CBE) S13. DHA project. Freshman Honors Research Program.
46. Emily Rickenbach (CBE) S11, S13 CBiRC. Co-author on Royce et al Met Eng 2015.
45. Arieff Aizuddin Yusoff (CBE). S13. DHA project.
44. Hao Wei (CBE) F12, S13. Hybrid processing.

43. Xiaoran Shang (Biology) F12, S13. Soil attachment.
42. Farah Afiqah Mohd Faiz (CBE) S13. CBiRC.
41. Nur Naim Mohammed Salleh (CBE) F12, S13. Hybrid processing.
40. Aleah Hinsch (CBE) S13. DHA project.
39. Bing Ding (CBE) F12, S13. Hybrid processing. Accepted to Cornell PhD program Fall 2013.
38. Jasina Abdul Hakkeen (CBE) S13. Hybrid processing.
37. Phillip Johnson (CBE) F12. CBiRC.
36. Patrick Cahalan (CBE) Su12, F12. DHA project.
35. Winston (Alex) Rosinger (ISU CBE, BioMap REU) Su12. Hybrid processing.
34. Benjamin Hanson (Skidmore College, CBiRC REU) Su12. CBiRC. Co-author on Royce et al AMAB 2013.
33. Elyssa Fein (New Mexico Institute of Mining and Technology, CBiRC REU) Su12. CBiRC.
32. Mark Deaton (CBE) F10, Su11, F11, S12. CBiRC, hybrid processing.
31. Jessica Bangen (CBE) S12. DHA. Freshman Honors Research Program.
30. Miguel Suastegui (Monterrey Tech, BioMAP REU) Su11. Hybrid processing. Earned PhD in ISU CBE with Zengyi Shao, currently postdoc position at Harvard with George Church.
29. Blake Sorensen (CBE) Su11. Hybrid processing.
28. Charles Henkel (Louisiana State University, CBiRC REU) Su11. CBiRC.
27. Kimberly Booe (CBE) S11. CBiRC.
26. Donovan Layton (CBE) F08, S09, Su09, F09, S10, Su10, F10, S11. RNOS, sequence analysis, CBiRC and hybrid processing. 1st author on Layton et al 2011. Completed PhD at University of Tennessee, Spring 2017.
25. Brittany Rover (CBE) S09, F09, Su10, S11. Soil attachment, CBiRC. Completed PhD at the University of Kansas, with Cory Berkland, started a postdoc position at MIT in 2017.
24. Matt Stebbins (CBE) S09, F09, S10, F10, S11. CBiRC. AIChE poster 2010. Co-author on Royce et al AMAB 2013. Completed PhD at the University of Wisconsin-Madison.
23. Sarah Steffen (CBE) S11. Hybrid processing.
22. Halimatun Zainuddin (CBE) S11. CBiRC. Enrolled in ISU CBE PhD program in Fall 2016.
21. Lee Yeo (CBE) S11. DHA project.
20. Yiqi Sun (CBE) S11. DHA project.
19. Ebenezer Chelliah (CBE) S10, S11. CBiRC.
18. Sara Schaubroeck (CBE) F09, F10. CBiRC.
17. Maria Wahl (CBE) Su10. DHA project.
16. Rodrigo Vasquez (Monterrey Tec, BioMAP REU) Su10, RNOS project.
15. Annie Kock (University of Iowa, CBiRC REU) Su10, CBiRC.
14. Clara Andrew-Wani (University of Michigan, CBiRC REU), Su10, CBiRC. Enrolled in the Masters of Business and Science in Biotechnology program at Rutgers University.
13. Abby Jensen (CBE) S10. Soil attachment project.
12. Melanie Degrange (CBE) S10. RNOS project.
11. Austin Cocciolone (CBE) S10. DHA project.
10. Kara Mueller (Microbiology) S09, Su09, F09. RNOS, HIFU, CBiRC projects.
9. Tyler Maiers (Aero) S09, Su09, F09, Freshman Honors Mentor Program. Soil attachment project. Enrolled in medical school.
8. Kianna Elani (CBE) F09. Soil attachment project. Completed PhD at University of Minnesota, F18.
7. Meredith Breton (CBE) F08, S09, F09. Soil attachment, hybrid processing.

6. Chris Pederson (CBE) S09, Su09. HIFU project. Proceeded to medical school.
5. Ethan McGuire (ISU CBE, BioMaP REU) Su09. E. coli sequence analysis project.
4. Jennifer Au (University of Maryland) CBiRC REU, Su09. CBiRC. Completed PhD at the University of Delaware.
3. Katie Hausman (CBE) S09. RNOS project.
2. Jake Gillian (CBE) F08, S09. RNOS project. AIChE 2009 (poster).
1. Ann Baumhoer (CBE) F08. CBiRC.

G. Non-ISU Instruction (e.g. Short Courses, Workshops, Training)

Presentation at ISU "College for Seniors", **2016**

Presentation on "Metabolic Engineering of Microbes for the Production of Biorenewable Fuels and Chemicals" for community college biology teachers at Iowa Association of Community College Biology Teachers, **2013**

Presented webinar "Metabolic Engineering of Microbes for the Production of Biorenewable Fuels and Chemicals" for community college and K12 teachers through the AgEnergy program, **2013**

Contributed to development of biotechnology lab experiments for Iowa Central Community College with Biotechnology Coordinator Bryson Bergerud Spring **2013**, Fall **2012**

Biorenewables Intensive Program Lecture, "Chemical Production: Opportunities and Challenges" **2009**

Guest lecture for University of Kentucky undergraduate AIChE chapter, **2009**

Research Experience for Teachers (RET):

Summer **2014**: Hosted teacher Kent Muyskens through CBiRC RET

Summer **2013**: Hosted teacher Jeff Fox through CBiRC RET

Summer **2012**: Hosted teacher Melinda Hamann through NSF Energy for Sustainability grant

Summer **2010**: Hosted teacher Larry Price through CBiRC RET

Development of fermentation lab module, implemented **2009**

CBiRC Young Engineers Program

Victoria Kyveryga, Summer **2018**

Claire Brown, Summer **2017**

Benjamin Clark, Summer **2015**

Alexis Townsley, Summer **2010**

Avanthi Ajarapu, Fall **2009**, Spring **2010**, Fall **2010**, Spring **2011**

IV. INSTITUTIONAL SERVICE

A. University-Level Service

11. Member of UI-ISU Partnership Seed Grant Program review committee, **2019**

10. Member of Biotechnology Council, **2018** - present

9. Member of "Actions to improve the climate for women in STEM" panel (Biol/Women Studies 307), **2017, 2018, 2019**

8. Member of Cost-Sharing for Research Instrumentation Funding Review Committee, **2017** - present

7. Chair of Interdepartmental Microbiology graduate program, **2016** - **2018**

6. Judge for Micro 310L poster session, **2017**

5. Judge for GMAP research symposium, **2017**

4. Reviewer for Brandt Fellowship Program, **2016, 2017**
3. Advisory committee member for ISU's Bioeconomy Institute (**2010 - 2012**), Plant Sciences Institute (**2011 - 2013**), DNA facility (**2013 - present**), Protein facility (**2013 - present**), Metabolomics facility (**2013 - present**)
2. Interdepartmental Bioinformatics and Computational Biology program – admissions committee member, **2014 - 2016**
1. Member of search committee for director of Plant Sciences Institute, **2013**

B. College-Level Service

3. Organized and administered Academic Program for Excellence for Engineers (APEX-E) activity, **2018, 2019, 2021**
2. Member of “Key Performance Indicator” committee, **2012**
1. Advisor for Engineers without Borders Belize program, supervised trips in **2010 (2), 2012**

C. Department-Level Service

11. Chair, Recruitment and Retention committee, **2019 - 2021**
10. Member, Honors and Awards committee, **2018 - present**
9. Faculty representative on Scholars Day and Senior Visitation Day, **2015, 2017, 2019, 2020**
8. Mentoring of junior faculty Tom Mansell, **2015 – present**
7. Member of Assessment, Recruiting and Retention committee, **2014 - 2019**
6. Chaired lecturer search committee (successfully), **2014**; member of lecturer search committee, **2017 - 2018**
5. Member of faculty search committee **2009, 2010, 2011, 2015**
4. Member and co-chair of safety committee, **2012 - 2014**
3. Member of curriculum committee, **2009 - 2012, 2013 - 2014**
2. Member of ADVANCE transparency committee, **2011**
1. Faculty advisor for Omega Chi Epsilon chapter, **2008 - 2011**

V. PROFESSIONAL SERVICE

A. Editorial and Review Service for Manuscripts

Editorial

3. Founding Associate Editor, Biotechnology Notes, **2018 – present**
2. Editorial Board, Metabolic Engineering Communications, **2018 - present**
1. Associate Editor, Applied Microbiology and Biotechnology, **2017 - 2022**

Journal Article Review (*alphabetical order*)

ACS Chemical Biology	ACS Chemical Reviews
ACS Sustainable Chemistry & Engineering	ACS Synthetic Biology
Advances in Biochemical Engineering/Biotechnology	
African Journal of Biotechnology	AIChE Journal
AIMS Bioengineering	Applied and Environmental Microbiology
Applied Microbiology and Biotechnology	Biochemical Engineering Journal
Bioenergy Research	Biomass and Bioenergy
Bioprocess and Bioengineering	Bioresource Technology

Biotechnology Advances	Biotechnology and Bioengineering
Biotechnology and Bioprocess Engineering	Biotechnology for Biofuels
Biotechnology Journal	Biotechnology Progress
BMC Biotechnology	BMC Microbiology
BMC Systems Biology	Chemical Engineering Science
Computational and Structural Biotechnology Journal	
Computational Biology and Chemistry	
Current Opinion in Biotechnology	Current Opinion in Chemical Engineering
Current Opinion in Microbiology	DNA and Cell Biology
Energy & Fuels	Engineering in Life Sciences
Enzyme and Microbial Technology	FEMS Microbiology Letters
Frontiers in Microbiology	
Frontiers in Microbial Physiology and Metabolism	
Industrial & Engineering Chemistry Research	
International Journal of Biological Sciences	Gene
Journal of Biological Engineering	Journal of Biomedicine and Biotechnology
Journal of Bioscience and Bioengineering	Journal of Biotechnology
Journal of Chemical Technology & Biotechnology	
Journal of Environmental Chemical Engineering	
Journal of Industrial Microbiology and Biotechnology	
Journal of Hazardous Materials	Journal of Theoretical Biology
Marine Drugs	mBio
Metabolic Engineering	Metabolic Engineering Communications
Microbial Biotechnology	Microbial Cell Factories
Nature Catalysis	Nature Chemical Biology
PLoS ONE	PNAS
Process Biochemistry	Proteome Science
Reviews in Chemical Engineering	Scientific Reports
Trends in Biotechnology	

B. Service to Professional Societies

1. Society for Industrial Microbiology and Biotechnology (SIMB)

- Treasurer and Chair of Finance Committee, **2017 - 2023**
- Founding member of Diversity Committee, **2014 - present**
- Member of Education and Outreach Committee, **2016 - 2017**
- Member of Membership Committee, **2016 - 2018**
- Co-chaired Diversity Session, SIMB Annual Meeting, **2017, 2018, 2019**
- Co-chaired Tribute Session for Lonnie O. Ingram, SIMB Annual Meeting, Denver, CO, August **2017**
- Co-chair, "Student Contributed Oral Session", SIMB Annual Meeting, New Orleans, LA, **2016**
- Student oral session judge, SIMB Annual Meeting, **2010, 2011, 2012, 2013**
- Co-chair, "Student Contributed Oral Session", SIMB Annual Meeting, Philadelphia, PA, **2015**
- Chair of "Student Contributed Oral Session", SIMB Annual Meeting, St Louis, MO, **2014**
- Chair of Poster Session, SIMB Annual Meeting, St Louis, MO, **2014**

- Co-chair for poster session and student oral session, SIMB Annual Meeting, **2013**
- Co-chair for poster session and student oral session, SIMB Annual Meeting, **2012**
- “Metabolic Engineering” poster session judge, SIMB Annual Meeting, **2011, 2012**
- “Strategies for Mitigating Biocatalyst Inhibition” SIMB Session Chair, **2011**
- Poster session co-chair, convener for student oral session. SIM Annual Meeting, **2010**
- “Metabolic Engineering Strategies for Strain Improvement” SIM Session Co-Chair, **2009**

2. American Institute of Chemical Engineers (AIChE)

- Session Co-Chair, AIChE Annual Meeting, **2019**
“15C09 Systems and Quantitative Biology: Signaling Pathways, Response Networks and Growth”;
- “15C22 Systems and Quantitative Biology: Modeling Biological Processes”
- “15C13 Systems and Quantitative Biology: From Communities to Single Cells”
- “15C16 Systems and Quantitative Biology: Drugs and Small Molecules”
- Young Professionals Committee, **2016 - 2019**
- Co-chair, “Metabolic Engineering: Methods and Applications C”, Metabolic Engineering 11, Asawaji, Japan **2016**
- Co-Chair, “Biobased Fuels and Chemicals”, AIChE Annual Meeting, **2012**
- Co-Chair, “15c24: Biobased fuels and chemicals I”, AIChE Annual Meeting, **2011**
- Co-Chair, “15001: Biotech Industry”, AIChE Annual Meeting, **2011**
- Chair, Bioengineering Poster Session, AIChE Annual Meeting, **2010**
- Judge, Division 15 poster session, AIChE Annual Meeting, **2010**
- Judge, Poster session, Metabolic Engineering VIII meeting, **2010**
- Judge, Area 15c poster session, AIChE Annual Meeting, **2009**
- Chair, Bioengineering Poster Session, AIChE annual meeting, **2009**
- Co-chair, “Biobased Fuels and Chemicals III”, AIChE annual meeting, **2009**

C. Grant Review Activities

- DOE ARPA-E (panel member): **2013**
- DOE EPSCOR (*ad hoc*), **2011**
- NIH SBIR/STTR (panel member): **2011, 2012, 2013, 2014**
- NSF BIO/MCB (panel member): **2012, 2013, 2021**
- NSF CBET (panel member): **2012, 2013, 2015, 2017, 2018, 2020**
- NSF PIRE (*ad hoc*), **2012**
- NSF SBIR (panel member): **2013, 2014, 2015, 2016, 2018**
- USDA NIFA (panel member): **2020**
- USDA SBIR (panel member): **2021**
- North Carolina Biotech (*ad hoc*), **2012, 2013**
- Swedish Research Council (*ad hoc*): **2019**
- National Fund for Scientific and Technological Development (Chile) (*ad hoc*), **2018**
- BBSRC (*ad hoc*): **2018**

Netherlands Organization for Scientific Research (*ad hoc*), **2012, 2017**
Women in Engineering ProActive Network Change Leader Forum (*ad hoc*), **2016**
US Army Corps of Engineers Research and Development Center (*ad hoc*), **2015**
Bonneville Power Administration (*ad hoc*), **2015**
Cariparo Foundation (*ad hoc*), **2015**

D. Government, Educational, or Corporate Advisory Committees

E. Other Professional Service

1. Co-chair, "Biotechnology for Sustainable Development", Lahore, Pakistan, **2014**
2. Organized and chaired "Lignin Utilization Workshop", Denver, CO, **2014**
3. "Chemical Catalysis" session chair, Frontiers in Biorefining: Chemicals and Products from Renewable Carbon. St Simon's Island, GA. **2012**

VI. OUTREACH, COMMUNITY ENGAGEMENT AND OTHER ACTIVITIES

A. Outreach Activities

8. Shadowed by high school student from Des Moines Public Schools Central Campus, **2019**
7. "Skype a Scientist" with Nextide Academy, Purcellville, Virginia, **2019**. Pending interactions for **2019-20** academic year.
6. Hands-on activity for STEM Fair, Nevada High School, **2018, 2019**
5. Hands-on activity for ISU Science Bound program, **2018**
4. Program for Women in Science and Engineering (PWSE) "Road Less Traveled". Hosted lab tour and hands-on research activities for middle school and high school girls: **2010, 2012, 2013, 2017**
3. Participant in University of Maryland College Park "Interview a Chemical Engineer" program, **2010, 2014, 2015, 2017**
2. Office of Precollegiate Programs for Talented and Gifted (OPPTAG). **2012, 2013, 2014, 2017**
1. Judge for Des Moines Public School Science Fair, **2016**

B. Community Engagement Activities

2. Presentation at Iowa Academy of Sciences Saylorville Lake Speaker Series with Zengyi Shao and Tom Mansell, **2017**
1. Hands-on activity and presentation at Iowa Girls in Science Day, Iowa Science Center, **2018**