

KEVIN V SOLOMON, PH.D.

Associate Professor of Chemical & Biomolecular Engineering • University of Delaware
150 Academy St, CLB 211, Newark, DE 19716

☎ (302) 831-8960 • ✉ kvs@udel.edu • 🏠 <http://solomonlab.weebly.com>

RESEARCH AREAS

Biocatalysis via environmental microbes to deconstruct renewable plant biomass and plastic wastes; synthetic biology tool development to engineer microbes; plant viral-like particles for nanoparticle synthesis and vaccines

PROFESSIONAL EXPERIENCE

- 2023 –** **Associate Professor**, Chemical & Biomolecular Engineering, University of Delaware
Trainer, Chemistry-Biology Interface T32 Program (2021 –)
Trainer, Computational Biology, Bioinformatics, and Biomedical Data Science (i3-CBB) T32 Program (2022 –)
Trainer, Microbiology Graduate Program (2022 –)
Faculty Affiliate, Center for Plastics Innovation (2021 –)
Affiliated Faculty, Delaware Biotechnology Institute (2022 –)
Director, NIIMBL Workforce Development Training Center for Biopharma Manufacturing ('22 –)
- 2021 – 2023** **Assistant Professor**, Chemical & Biomolecular Engineering, University of Delaware
- 2021 –** **Adjunct Professor**, Agricultural & Biological Engineering, Purdue University
- 2019 –** **Academic Member**, Engineering Biology Research Consortium (EBRC)
Council Member, EBRC Roadmapping Taskforce & Membership Committees (2020 –)
Board of Directors/Steering Committee Member (2024 –)
- 2016 – 2020** **Assistant Professor**, Agricultural & Biological Engineering, Purdue University
Faculty Affiliate, Purdue University Interdisciplinary Life Science (PULSe) (2016 – 2020)
Faculty Affiliate, Laboratory of Renewable Resources Engineering (LORRE) (2017 – 2020)
Member, Purdue Institute of Inflammation, Immunology and Infectious Disease (2018 – 2020)
- 2012 – 2015** **Postdoctoral Scholar**, Chemical Engineering, Univ. of California, Santa Barbara (UCSB)
- 2006 – 2012** **Graduate Research Assistant**, Chemical Engineering, Massachusetts Institute of Technology
- 2003 – 2006** **NSERC Undergraduate Research Assistant**, Chemical Engineering, McMaster University

EDUCATION

- 2015** **Postdoctoral Scholar**, Chemical Engineering, University of California, Santa Barbara, CA
Systems Biology of Lignocellulolytic Non-model Anaerobic Fungi
Advisor: Michelle A. O'Malley, Ph.D.
- 2012** **Ph.D.**, Chemical Engineering, Massachusetts Institute of Technology (MIT), Cambridge, MA
Development of Glucose Valves for Metabolic Eng. Applications in «E. coli»
Advisor: Kristala L. Jones Prather, Ph.D.
- 2008** **M.S.**, Chemical Engineering Practice, Massachusetts Institute of Technology, Cambridge, MA
- 2006** **B. Eng**, Chemical Engineering & Bioengineering, McMaster University, Hamilton, ON, Canada
Honors: *Summa cum laude*
Senior thesis: *A novel immobilized enzyme reactor system utilizing the unique inverse phase transition behavior of ELP-fusion proteins*
Advisor: Carlos Filipe, Ph.D.

SUMMARY OF SCHOLARLY ACTIVITY

- H-index = 22; i10 = 29 (Google Scholar)
- 40 peer-reviewed publications, 21 as senior author
- 3 book chapters
- IP: 5 patents granted, 2 pending, 1 provisional
- 63 invited presentations and seminars
- Contributor to 3 technical roadmaps, 2 policy papers
- Congressional testimony before US Congress
- Directing 12 PhDs, 1 MS, 4 postdocs, 5 undergrads, 2 HS students
- 4 PhDs conferred; 3 MS degrees conferred
- >80 undergraduate projects advised
- >\$15.1 M raised extramurally since 2016, ~\$13 M at UD, ~\$6.5 M to research program, ~\$5.8 M current

SELECTED HONORS & AWARDS

2023	AIChE Division 15 Early Career Award
2023	<i>Biochemical Engineering Journal</i> Young Investigator Award
2023	ACS BIOT Young Investigator Award
2023	Lloyd N. Ferguson Young Scientist Award (NOBCCHE)
2022	<i>Microorganisms</i> Young Investigator Award
2022	Invited Speaker at National Academy of Engineering (NAE) 2022 US Frontiers of Engineering Symposium, Seattle, WA
2022	SIMB Early Career Award
2022	NSF Faculty Early Career Development (CAREER) Award
2021	Invited participant to NAE 2021 German – American Frontiers of Engineering Symposium, Oak Ridge, TN
2020	Named as one of the 1000 Inspiring Black Scientists in America by Cell Mentor
2019	US Department of Energy Early Career Award
2019	Congressional testimony before the 116 th US Congress
2019	Teaching for Tomorrow Fellow, Purdue University
2018	Most Outstanding Faculty, Purdue University Residences
2017	Genewiz Empower New Faculty Award
2014	Distinguished Young Scholar Seminar Series, UW-Seattle
2013	Nucleic Acids Research Travel Award – Intl. Conf. on Biomolecular Eng., Ft. Lauderdale, FL
2011	Invited Webinar, Best of BIOT, American Chemical Society
2010	Genopole Travel Grant, International Conference on Synthetic Biology, Paris, France
2010	Science Education Leadership Award, Synthetic Biology Engineering Research Center
2009 – 2011	Natural Sciences & Engineering Research Council of Canada (NSERC) PGS D Scholar
2008	NSERC PGS M Scholar
2006	NSERC Julie Payette PGS M Scholar – 1 of 24 awarded annually in Canada
2006	Lemelson Presidential Fellow, MIT
2006	Society of Chemical Industry Merit Award
2005	Kimberly-Clark Scholar
2004	NSERC Undergraduate Student Research Award
2002	Atomic Energy Canada Ltd. (AECL) Scholar
2001	Governor General's Bronze Medal
2001	Ontario Scholar

CONSULTING EXPERIENCE

2007	Pharmaceutical Development , GlaxoSmithKline, Research Triangle Park, NC
2007	Process Development , BASF, Ludwigshafen, Germany

PUBLICATIONS

(* corresponding author, ‡ equal contribution, Solomon Lab members, mentored undergrads (iGEM Team), Mentored undergrads)

Peer-Reviewed Journal Articles in reverse chronological order

Citations: January 23, 2024, *Google Scholar*, <https://scholar.google.com/citations?hl=en&user=UORk8-EAAAAJ>

■ **Work as Senior Author**

1. RR Klauer, DA Hansen‡, D Wu‡, LM Oliveira Monteiro‡, **KV Solomon***, MA Blenner*, Biological Upcycling of Plastic Waste, *Ann Rev Chem Eng*, in press (2024). doi: 10.1146/annurev-chembioeng-100522-115850
2. B Graver, N Chakravarty, **KV Solomon***, Prokaryotic argonauts for *in vivo* biotechnology and molecular diagnostics, *Trends in Biotechnology*, 42 (1): 61-73 (2024). [Citations: 2 Impact Factor: 17.3]
3. AJ Vaidya‡, M Rammohan‡, YH Lee‡, KZ Lee‡, CY Chou, Z Hartley, CA Scott, RG Susler, L Wang, LS Loesch-Fries, MT Harris, **KV Solomon***, Engineering Alkaline-Stable Barley Stripe Mosaic Virus-Like Particles for Efficient Surface Modification, *Biochemical Engineering Journal*, 199: 109062 (2023). [Citations: 0 Impact Factor: 3.9]
4. C Hooker, R Hanafy, ET Hillman, J Muñoz, **KV Solomon***, A genetic engineering toolbox for the lignocellulolytic anaerobic gut fungus *Neocallimastix frontalis*, *ACS Synthetic Biology*, 12 (4): 1034-1045 (2023). [Citations: 2 Impact Factor: 5.32]

5. ET Hillman, LE Caceres Martinez, G Kilaz, **KV Solomon***, Top-down enrichment of oil field microbiomes to limit souring and control oil composition during extraction operations. *AIChE Journal*, 68 (12): e17927 (2022). (Invited to the Futures Issue). [Citations:1 Impact Factor: 4.167]
6. AJ Vaidya, **KV Solomon***, Surface Functionalization of Rod Shaped Viral-Like Particles for Biomedical Applications, *ACS Applied Bio Materials*, 5 (5): 1980-1989 (2022). (invited to Early Career Forum) [Citations: 9 Impact Factor: 3.25]
7. KZ Lee[‡], MA Mechikoff[‡], MK Parasa, T Rankin, P Pandolfi, K Fitzgerald, E Hillman, **KV Solomon***, Repurposing the homing endonuclease I-SceI for positive selection and development of gene editing technologies, *ACS Syn Biol*, 11 (1): 53-60 (2022). [Citations: 3 Impact Factor: 5.11]
8. KZ Lee, MA Mechikoff, A Kikla, A Liu, P Pandolfi, K Fitzgerald, F Gimble, **KV Solomon***, NgAgo possesses guided DNA nicking activity, *Nucleic Acids Research*, 49 (17): 9926-9937 (2021). [Citations: 15 Impact Factor: 16.97]
9. ET Hillman, E Frazier, E Shank, A Ortiz-Velez, J Englaender, **KV Solomon***, Anaerobic fungal mevalonate pathway genomic biases lead to heterologous toxicity underpredicted by codon adaptation indices, *Microorganisms*, 9(9):1986 (2021). [Citations: 3 Impact Factor: 4.17]
10. CL Swift, KB Louie, BP. Bowen, CA Hooker, **KV Solomon**, V Singan, C Daum, CP Pennacchio, K Barry. V Shutthanandan, JE Evans, IV Grigoriev, TR Northen, MA O'Malley*, Co-cultivation of anaerobic fungi with rumen bacteria establishes an antagonistic relationship, *mBio*, 12(4):01442-21 (2021). [Citations: 10 Impact Factor: 6.78]
11. ET Hillman, M Li, CA Hooker, J Englaender, IR Wheeldon, **KV Solomon***, Hydrolysis of lignocellulose by anaerobic fungi produces free sugars and organic acids for two-stage fine chemical production with *Kluyveromyces marxianus*, *Biotechnology Progress*, 37 (5): e3172 (2021). [Citations: 10 Impact Factor: 2.68]
12. C Sweet, A Aayush, LR Readnour, **KV Solomon**, DH Thompson*, Development of a Fast Organic Extraction-Precipitation Method for Improved Purification of Elastin-like Polypeptides that is Independent of Sequence and Molecular Weight. *Biomacromolecules*, 22 (5): 1990-1998 (2021). [Citations: 10 Impact Factor: 6.99]
13. KZ Lee, V Basnayake Pussepitiya[‡], YH Lee[‡], LS Loesch-Fries, MT Harris, S Hemmati, **KV Solomon***, Engineering Tobacco Mosaic Virus and its Virus-Like-Particles for Synthesis of Biotemplated Nanomaterials. *Biotechnology Journal*, 16 (4): 200311 (2021). [Citations: 34 Impact Factor: 3.54]
14. YH Lee[‡], KZ Lee[‡], RG Susler, CA Scott, L Wang, LS Loesch-Fries, MT Harris, **KV Solomon***, Bacterial production of Barley Stripe Mosaic Virus Biotemplates for Palladium Nanoparticle Growth. *Applied Nano Materials*, 3 (12): 12080 - 12086 (2020). [Citations: 5 Impact Factor: 5.097]
15. C Hooker, KZ Lee, **KV Solomon***, Leveraging the biotechnology potential of anaerobic fungi, *Current Opinion in Biotechnology*, 59, 103-110 (2019). (invited) [Citations: 43 Impact Factor: 9.14]
16. RM RedCorn, ET Hillman, **KV Solomon**, AS Engelberth*, Xanthobacter-dominated biofilm as a novel source for high-value rhamnose, *Applied Microbiology & Biotechnology*, 103 (11): 4525-4538 (2019). [Citations: 8 Impact Factor: 3.53]
17. C Hooker, E Hillman, J Overton, A Ortiz-Velez, M Schacht, A Hunnicutt, N Mosier, **KV Solomon***, Hydrolysis of untreated lignocellulosic feedstock is independent of S-lignin composition in newly classified anaerobic fungal isolate, *Piromyces* sp. UH3-1. *Biotechnology for Biofuels*, 11:293 (2018). [Citations: 22 Impact Factor: 5.84]
18. ET Hillman, LR Readnour, **KV Solomon***, Exploiting the natural product potential of fungi with integrated -omics and synthetic biology approaches. *Current Opinion in Systems Biology*, 5: 50-56 (2017). (invited) [Citations: 30 Impact Factor: 2.90]

■ **Work as a senior author in a consortium**

19. MS Elshahed*, RA Hanafy, Y Cheng, SS Dagar, JE Edwards, V Flad, KO Fliegerová, GW Griffith, S Kittelmann, M Lebuhn, MA O'Malley, SM Podmirseg, **KV Solomon**, J Vinzelj, D Young, and NH. Youssef. Characterization and rank assignment criteria for the anaerobic fungi (Neocallimastigomycota), *International Journal of Systematic and Evolutionary Microbiology*, 72 (7): 005449 (2022) [Citations: 9 Impact Factor: 2.4]
20. Beal*, GS. Baldwin*, iGEM Interlab Study Contributors (including E Foster, J Rickus, **KV Solomon**), Comparative analysis of three studies measuring fluorescence from engineered bacterial genetic constructs, *PLoS ONE*, 16(6): e0252263 (2021). [Citations: 10 Impact Factor: 3.24]

21. J Beal*, T Haddock-Angelli*, G Baldwin*, M Gersharter, A Dwijayanti, M Storch, M Lizarazo, R Rettberg, iGEM Interlab Study Contributors (including E Foster, J Rickus, **KV Solomon**), Quantification of Bacterial Fluorescence using Independent Calibrants, *PLoS ONE*, 13(6): e0199432 (2018). [Citations: 69 Impact Factor: 3.24]
- **Supervised work**
22. CL Swift, KB Louie, BP Bowen, HM Brewer, SO Purvine, A Salamov, SJ Mondo, **KV Solomon**, AT Wright, TR Northen, IV Grigoriev, NP Keller, MA O'Malley*, Anaerobic gut fungi are an untapped reservoir of natural products, *PNAS*, 118 (18): e201985118 (2021). [Citations: 38 Impact Factor: 11.20]
23. **KV Solomon**, JK Henske, SP Gilmore, A Lipzen, IV Grigoriev, D Thompson, MA O'Malley*. Catabolic repression in early-diverging anaerobic fungi is partially mediated by natural antisense transcripts. *Fungal Genetics & Biology*, 121:1-9 (2018). [Citations: 11 Impact Factor: 3.495]
24. JK Henske, SP Gilmore, CH Haitjema, **KV Solomon***, MA O'Malley*. Biomass-degrading enzymes are catabolite-repressed in anaerobic gut fungi, *AiChE J*, 64 (12): 4263-4270 (2018). (Invited Article, Founders Issue Honoring Jay Bailey) [Citations: 35 Impact Factor:4.01]
25. JK Henske, SE Wilken, **KV Solomon**, CE Smallwood, V Shutthanandan, JE Evans, MK Theodorou, MA O'Malley, Metabolic characterization of anaerobic fungi provides a path forward for consolidated bioprocessing of crude lignocellulose, *Biotechnology & Bioengineering*, 115 (4): 874-884 (2018). [Citations: 61 Impact Factor: 4.53]
26. SP Gilmore, JK Henske, JA Sexton, **KV Solomon**, S Seppälä, JI Yoo, LM Huyett, A Pressman, JZ Cogan, V Kivenson, X Peng, YP Tan, DL Valentine, MA O'Malley*. Genomic analysis of methanogenic archaea reveals a shift towards energy conservation, *BMC Genomics*, 18: 639 (2017). [Citations: 47 Impact Factor: 3.969]
27. S Seppälä, SE Wilken, D Knop, **KV Solomon**, MA O'Malley*. The importance of sourcing enzymes from non-conventional fungi for metabolic engineering & biomass breakdown, *Metabolic Engineering*, 44: 45-59 (2017). (invited). [Citations: 58 Impact Factor: 7.808]
28. CH Haitjema, SP Gilmore, JK Henske, **KV Solomon**, R de Groot, A Kuo, S Mondo, AA Salamov, K LaButti, Z Zhao, J Chinquy, K Barry, HM Brewer, SO Purvine, AT Wright, B Boxma, T van Alen, JHP Hackstein, SE Baker, K Barry, IV Grigoriev, MA O'Malley*, A Parts List for Fungal Cellulosomes Revealed by Comparative Genomics. *Nature Microbiology*, 2:17087, (2017). [Citations: 202 Impact Factor: 17.74]
29. S Seppälä, **KV Solomon**, SP Gilmore, JK Henske, MA O'Malley*, Mapping the membrane proteome of anaerobic gut fungi identifies a wealth of carbohydrate binding proteins and transporters. *Microbial Cell Factories*, 15: 212, (2016). [Citations: 26 Impact Factor: 5.14]
30. **KV Solomon**, *E Ovadia*, F Yu, W Mizunashi, MA O'Malley*. Mitochondrial targeting increases specific activity of a heterologous valine assimilation pathway in *Saccharomyces cerevisiae*. *Metabolic Engineering Communications*, 3:68-75, (2016). – **Most downloaded in the past 90 days (4/26/16)** [Citations: 2 Impact Factor: 4.897]
31. GJ Li et. al (+140 additional authors, including **KV Solomon**, JK Henske, CH Haitjema, SP Gilmore, MK Theodorou, MA O'Malley), Fungal diversity notes 253-366: taxonomic and phylogenetic contributions to fungal taxa. *Fungal Diversity*, 78 (1): 1-237, (2016). [Citations: 685 Impact Factor: 15.39]
32. **KV Solomon**, JK Henske, MK Theodorou, MA O'Malley*. Robust and effective methodologies for cryopreservation and DNA extraction from anaerobic gut fungi. *Anaerobe*, 38: 39 – 46, (2016). – **Top 10 most downloaded in the past 90 days (2/18/16)** [Citations: 29 Impact Factor: 3.331]
33. **KV Solomon**, CH Haitjema, JK Henske, SP Gilmore, D Borges-Rivera, A Lipzen, HM Brewer, SO Purvine, AT Wright, MK Theodorou, IV Grigoriev, A Regev, DA Thompson, MA O'Malley*. Early-branching gut fungi possess a large, comprehensive array of biomass degrading enzymes. *Science*, 351 (6278): 1192 - 1195, (2016). – **featured in popular press such as BBC, CNBC, Forbes, Newsweek, Phys.org and Science 2.0, and highlighted in Trends in Biochemical Science, Nature Biotech, and Nature Reviews Microbiology** [Citations: 285 Impact Factor: 47.728]
34. **KV Solomon**, CH Haitjema, DA Thompson, MA O'Malley*. Extracting data from the muck: deriving biological insight from complex microbial communities and non-model organisms with next generation sequencing. *Current Opinion in Biotechnology*, 28:103-110, (2014). (invited) [Citations:42 Impact Factor: 9.14]
35. CH Haitjema, **KV Solomon**, JK Henske, MK Theodorou, MA O'Malley*. Anaerobic Gut Fungi: Advances in Isolation, Culture, and Cellulolytic Enzyme Discovery for Biofuel Production. *Biotechnology and Bioengineering*, 8(111): 1471-1482, (2014). (invited) [Citations: 156 Impact Factor: 4.53]

36. **KV Solomon**, TS Moon, *B Ma*, *TM Sanders*, KLJ Prather*. Tuning primary metabolism for heterologous productivity. *ACS Synthetic Biology*, 2(3):126-135, (2013). – **Top 10 most read of Q2 2013** [Citations: 34 Impact Factor: 5.32]
37. **KV Solomon**, *TM Sanders*, KLJ Prather*. A dynamic metabolite valve for the control of central carbon metabolism. *Metabolic Engineering*, 14(6): 661-671, (2012). [Citations: 122 Impact Factor: 7.808]
38. **KV Solomon** and KLJ Prather*. The zero-sum game of pathway optimization: Emerging paradigms for tuning gene expression. *Biotechnology Journal*, 6(9): 1064-1070, (2011). (invited) [Citations: 31 Impact Factor: 3.54]
39. CH Martin, DR Nielsen, **KV Solomon** & KLJ Prather*. Synthetic Metabolism: Engineering Biology at the Protein and Pathway Scales. *Chemistry & Biology*, 16: 277-286, (2009). (invited) [Citations: 103 Impact Factor: 8.116]
40. E Leonard, D Nielsen, **K Solomon**, & KJ Prather*. Engineering microbes with synthetic biology frameworks. *Trends in Biotechnology*, 26: 674-681, (2008). (invited) [Citations: 93 Impact Factor: 19.536]

Technical Conference Papers & Published Editorials

■ Work as Senior Author

- 1 TS Moon, **KV Solomon**, I Borodina, C Vickers, Impacting future generations of synthetic biologists by ensuring diversity, equity, and inclusion, *Trends in Biotechnology*, 41 (9): 1099-1105 (2023).
- 2 R Klauer, MA Blenner, **KV Solomon***, Life...Finds a Way": Sustainable Capture and Upcycling of Plastics by Microbes, *The Bridge*, 52 (4): 14-18 (2022). – **Invitation extended as one of the best talks from the 2022 US NAE Frontiers of Engineering Meeting**
- 3 K Atherton, VK Chang, K Fitzgerald, A Kikla, C Roleck*, A Santos, E Hillman, KZ Lee, S Lee, P Lengemann, J Rickus, **K Solomon**. Engineering the lung microbiome to degrade inhaled carcinogens, *PLoS iGEM Reports*, (2018). <https://bioconverse.breezio.com/article/4919611915891640257/engineering-the-human-lung-microbiome-to-degrade-inhaled-carcinogens>
- 4 S Mohan, C Roleck, P Rudin, B Clark, E Foster, A Kikla, S Magill, M Aronson, R Budde, H Kubo, A Liu, H Lysandrou, C Martin, A Petrucciani, J Welch, S Ha, J Rickus, & **K Solomon**. Engineering *E. coli* for phosphate bioremediation with genes from polyphosphate-accumulating organism *Microlunatus phosphovorius*, *PLoS iGEM Report 17-05*, (2017). <http://blogs.plos.org/collections/igem-report-17-05/>
- 5 **KV Solomon***. 4th International Conference on Biomolecular Engineering Tackles New Challenges with Synthetic Biology. *ACS Synthetic Biology*, 2(2):68-71, (2013).

Published Editorials (as a Consortium Member)

■ Work as Senior Author

- 1 ER. Aurand*, TS Moon, NR Buan, **KV Solomon**, M Köpke, EBRC Technical Roadmapping Working Group, Addressing the Climate Crisis Through Engineering Biology, *npj Climate Action*, in press (2023).
- 2 ED Lee, ER Aurand*, DC Friedman, EBRC Microbiomes Roadmapping Working Group (including E Hillman, **KV Solomon**). Engineering Microbiomes—Looking Ahead, *ACS Synthetic Biology*, 9 (12): 3181-3183, (2020).

Book Chapters

■ Work as Senior Author

1. MA Mechikoff†, KZ Lee†, **KV Solomon***. Positive Selection Screens for Programmable Endonuclease Activity using I-SceI, in: Synthetic Biology - Methods and Protocols, Second Edition (Methods in Molecular Biology series). ed by Jeffrey Braman, in press. (Springer)
2. V Dollhofer*, D Young, SM Podmirseg, M Reilly, Y Li, C Hooker, **K. Solomon**, M Elshahed, N Youssef, K Fliegerová, Y Chen, GW Griffith, MK Theodorou, M O'Malley. The biotechnological potential of anaerobic gut fungi, in: Genetics and Biotechnology. The Mycota (A Comprehensive Treatise on Fungi as Experimental Systems for Basic and Applied Research), vol 2. ed. by J. Philipp Benz and Kerstin Schipper, 2020 (Springer). [Citations: 18]
3. M Ladisch, E Ximenes, N Mosier, A Engelberth, **K Solomon**, Bioprocess Engineering, in: Industrial Microbiology, 1st ed., ed. by DB Wilson, H Sahn, KP Stahmann, M Koffas, 2019 (Wiley).

Technology Roadmaps & Policy White Papers

■ *Work as Senior Author*

1. Engineering Biology Research Consortium, EBRC Policy Papers In Response To The 2022 Bioeconomy Executive Order (2022). <https://ebrc.org/publications-2022eo-compilation/>
2. Engineering Biology Research Consortium, Translational Research For Breakthrough Technologies: Advancing Engineering Biology To Address Societal Needs At NSF (2022). <https://ebrc.org/translational-research-for-breakthrough-technologies-advancing-engineering-biology-to-address-societal-needs/>
3. Engineering Biology Research Consortium, Engineering Biology for Climate & Sustainability: A Research Roadmap for a Cleaner Future (2022). <https://roadmap.ebrc.org/engineering-biology-for-climate-sustainability>
4. Engineering Biology Research Consortium, Engineering Biology & Materials Science: A Research Roadmap for Interdisciplinary Innovation (2021). <https://roadmap.ebrc.org/2021-roadmap-materials/>
5. Engineering Biology Research Consortium, Microbiome Engineering: A Research Roadmap for the Next-Generation Bioeconomy (2020). <https://roadmap.ebrc.org/2020-roadmap-microbiomes/>

CONGRESSIONAL TESTIMONY

1. Engineering Our Way to a Sustainable Bioeconomy: Hearings before the House Science, Space, and Technology Subcommittee on Research and Technology, US House of Representatives, 116th Congress (2019) (Testimony of **Kevin Solomon**). <https://www.congress.gov/event/116th-congress/house-event/109051>

PATENTS AND TECHNOLOGY DISCLOSURES

■ *Work as Senior Author*

Patents Granted

1. **Kevin Solomon**, **Kok Zhi Lee**, Michael Harris, Yu-Hsuan Lee, Loretta Sue Loesch-Fries. Nanoparticles And Biotemplates With Tunable Length And Methods Of Manufacturing The Same, US Patent 11,820,988, issued 21 Nov 2023.
2. **Kevin Solomon**, **Kok Zhi Lee**, **Ethan Hillman**, **Yu Hong Wang**. Tunable, synthetic transcriptional regulators responsive to environmental triggers, US Patent 11,352,632, issued 7 June 2022.

Patents pending

1. **Kevin Solomon**, **Kok Zhi Lee**, **Akash Vaidya**, **Mruthula Rammohan**, *Continuation patent application to:* Nanoparticles And Biotemplates With Tunable Length And Methods Of Manufacturing The Same, US Patent Application 18/516,243, filed 21 Nov 2023.
2. Mark Blenner, **Kevin Solomon**, Lummy Monteiro, Jyoti Singh, **Ross Klauer**. Improved plastic degradation by darkling beetle larvae, microbes and enzymes, US Provisional Patent Application 63/336,657, filed April 29, 2022. Patent pending
3. **Kevin Solomon**, **Kok Zhi Lee**. NgAgo as a DNA-guided gene editing tool in prokaryotes and eukaryotes, US Provisional Patent Application 62/643,814, filed Mar 2018. Patent pending

Technology Disclosures

1. Invention Disclosure – Mark Blenner, **Kevin Solomon**, **Ross Klauer**. UD22-11: Biological and biomolecular recovery of plastic waste, filed November 7, 2022

■ *Supervised work*

Patents granted

1. Michelle A. O'Malley, **Kevin V. Solomon**, and Charles H. Haitjema. Proteins from Anaerobic Fungi and Uses Thereof, US Patent 10, 717, 768, issued 21 Jul 2020. (Licensed to CogniTek)
2. Michelle A. O'Malley, **Kevin V. Solomon**, Wataru Mizunashi, Fujio Yu. Bioproduction of Methyl Methacrylate, US Patent 10, 676, 766, issued 9 Jun 2020. (Licensed in 2018 by Mitsubishi-Rayon)
3. **Kevin Solomon**, Tae Seok Moon, Kristala L Prather. Glucose Valves and other Metabolite Valves, US Patent 8,835,138, issued 16 Sep 2014.

Technology Disclosures

1. Invention Disclosure and Provisional Patent – Michelle A. O'Malley, **Kevin V. Solomon**, and Charles H. Haitjema. Production of Biofuels from Novel Fungal Strains and Enzymes Derived Therefrom, US Provisional Patent Application 62/296,064, filed Feb 2016. → merged with US Patent 10, 717, 768

SELECTED PUBLICITY, QUOTES, AND FEATURED ARTICLES

1. Zombie Fungus from “The Last of Us” Spurs Increased Interest in Fungal Research, **EMSL News**, April 12, 2023, <https://www.emsl.pnnl.gov/news/zombie-fungus-from--the-last-of-us--spurs-increased-interest-in-fungal-research/15105>
2. Tackling Plastic Waste, **UDaily**, January 18, 2023, <https://www.udel.edu/udaily/2023/january/plastic-degrading-microbes-mealworms-mark-blenner-engineering/>
3. S3 Episode 1: Chomping Toward Better Plastic Recycling, **Genome Insider**, July 28, 2022, <https://jgi.doe.gov/genome-insider-s3-episode-1-chomping-toward-better-plastic-recycling/>
4. Mealworms: A plastic pollution solution, **You Oughta Know – WHYY TV**, April 15, 2022, <https://youtu.be/3Ulxja0JE2s>
5. What to do about trash, **Tumble Science Podcast for Kids**, April 15, 2022, <https://www.sciencepodcastforkids.com/single-post/what-to-do-about-trash>
6. Digging for cures, **UDaily**, March 31, 2022, <https://www.udel.edu/udaily/2022/march/kevin-solomon-nsf-career-award-national-science-foundation-gene-editing/>
7. Untapped Potential: New hope for biodegrading plastics may lie in worm microbiome, **UDaily**, October 29, 2021, <https://www.udel.edu/udaily/2021/october/mealworms-plastics-microbiome-kevin-solomon-mark-blenner/>
8. The unexplored power of microbes, **Forbes**, Feb 1, 2021 <https://www.forbes.com/sites/johncumbers/2021/02/01/the-unexplored-power-of-microbes/?sh=2b79761f3f38>
9. Where CRISPR Fumbles, Argonaut Can Find a Handle, **Genetic Engineering & Biotechnology News**: April 4, 2019, <https://www.genengnews.com/news/where-crispr-fumbles-argonaut-can-find-a-handle/>

INVITED SEMINARS

Scheduled

1. Chemistry & Biochemistry Departmental Seminar, University of Maryland, May 2024
2. Discovery of enzymes for plastics degradation, Pacific Northwest National Lab (PNNL), April 2024
3. Viral-like particles for nanomaterial synthesis, Chemistry & Biochemistry Departmental Seminar, George Mason University, April 2024

Completed

1. “Microbial solutions for capturing and upcycling waste carbon in recalcitrant polymers,” Winter Departmental Seminar Series, Chemical Engineering, University of Washington, January 2024.
2. “Microbial solutions for capturing and upcycling waste carbon in recalcitrant polymers,” Winter Departmental Seminar Series, Chemical Engineering, University of Florida, January 2024.
3. “Prokaryotic Argonautes: Programmable DNA Endonucleases for Biotech,” Technical Seminar Series, New England Biolabs, December 2023.
4. “Prokaryotic Argonautes as Alternatives for Gene Editing”, The Grove Virtual Seminar (hosted by Ginkgo Bioworks), May 2023 <https://www.youtube.com/watch?v=SAyHgkCPEfc>
5. “Microbial solutions for capturing and upcycling waste carbon in recalcitrant polymers,” Spring Departmental Seminar Series, Chemical & Biological Engineering, Princeton University, April 2023

6. "DEGRADATION OF NATURAL AND SYNTHETIC POLYMERS: Mining gut microbiomes for new enzymes," Codexis, Inc. Virtual Seminar Series, April 2023.
7. "LIFE ... FINDS A WAY: Degrading and upcycling recalcitrant polymers via microbial systems", Fall Departmental Seminar Series, Chemical Engineering, Michigan Technological University, October 2022
8. "LIFE FINDS FOUND A WAY: (Re)Discovering microbial solutions to emerging global challenges", Chemical & Biomolecular Engineering 4th Year Symposium, University of Delaware, Newark, DE, June 2022
9. "Domestication of environmental microbes for efficient (re)use of renewable feedstocks and consumer wastes in biomanufacturing", Spring Departmental Seminar Series, Energy, Environmental & Chemical Engineering, Washington University at St. Louis, April 2022.
10. "Domesticating anaerobic fungi for direct biomanufacturing from renewable plant biomass", Spring Departmental Seminar Series (virtual), Biological Systems Engineering, Virginia Tech, April 2022.
11. "Domesticating anaerobic fungi for direct biomanufacturing from renewable plant biomass", Spring Departmental Seminar Series (virtual), Microbiology Program, UC Riverside, January 2022.
12. "Domesticating anaerobic fungi for direct biomanufacturing from renewable plant biomass", Fall Departmental Seminar Series, Department of Chemical & Biological Engineering, Tufts University, November 2021.
13. "Domestication of anaerobic fungi for applications in sustainability, catalysis, and medicine", Fall Departmental Seminar Series, Department of Chemical Engineering, WPI, November 2021.
14. "Domestication of anaerobic fungi and other environmental microbes for applications in sustainability, catalysis, and medicine", Fall Departmental Seminar Series, Department of Biology, University of Rochester, November 2021.
15. "Engineering viral biotemplates for nanomaterial synthesis," Fall Departmental Seminar Series, Monk Family Department of Chemical Engineering & Materials Science, University of Southern California, October 2021.
16. "Domesticating anaerobic fungi for direct biomanufacturing from renewable plant biomass," Fall Departmental Seminar Series, Department of Biological and Environmental Engineering, Cornell University, September 2021.
17. Fall Departmental Seminar Series, T32 Chemistry-Biology Interface Program, University of Delaware, September 2021.
18. "Engineering viral biotemplates for nanomaterial synthesis", Spring Colloquium Series (virtual), Applied Physical Sciences, University of North Carolina -Chapel Hill, April 2021.
19. "Genomics-powered approaches to domesticate anaerobic fungi for direct biomanufacturing from renewable plant biomass", Bioinformatics Seminar (virtual), Center for Bioinformatics & Computational Biology, University of Delaware, March 2021.
20. "Domesticating anaerobic fungi for direct biomanufacturing from renewable plant biomass", Spring Seminar Series (virtual), Department of Chemical & Biological Engineering, Northwestern University, March 2021.
21. "Domesticating anaerobic fungi for direct biomanufacturing from renewable plant biomass", Fall Seminar Series (virtual), Department of Chemical & Biological Engineering, University of Colorado-Boulder, October 2020.
22. Spring Seminar Series, Department of Chemical & Biomolecular Engineering, University of Delaware, Newark, DE, Jan 2020.
23. "Engineering sustainable chemistry via systems and synthetic biology", Fall Seminar Series, Depauw University, Greencastle, IN, Sep 2019.
24. Fall Seminar Series, Biochemistry Division, Department of Chemistry, Purdue University, West Lafayette, IN, November 2016.

■ **Supervised work**

25. Winter Seminar Series, Department of Biochemistry, Purdue University, West Lafayette, IN, February 2016
26. Department of Chemical Engineering, Columbia University, New York, NY, February 2015
27. Department of Chemical & Biomolecular Engineering, NC State University, Raleigh, NC, February 2015
28. Department of Chemical & Biomolecular Engineering, Tulane University, New Orleans, LA, January, 2015
29. Wisconsin Energy Institute, University of Wisconsin, Madison, WI, January 2015

30. Department of Chemical & Biomolecular Engineering, UCLA, Los Angeles, CA, January 2015
31. Department of Agricultural & Biological Engineering, Purdue University, West Lafayette, IN, December 2014
32. Fall Seminar Series, Department of Chemical and Biological Engineering, Rensselaer Polytechnic Institute, Troy, NY, September 2014

INVITED LECTURES AND CONFERENCE PRESENTATIONS

Scheduled

1. Keynote, International Anaerobic Fungi Congress, virtual, October 2024
2. Cold Spring Harbor Synthetic Biology Summer Course, Cold Spring Harbor, NY, July 2024
3. Boston University Bioinformatics Student-Organized Symposium Keynote, Boston, MA, June 2024.
4. Biophysical Society Intrinsically Disordered Proteins (IDP) Subgroup Symposium, Philadelphia, PA, February 2024.

Completed

5. "Barley Strip Mosaic Virus-Like Particles as Biotemplates for Mineralization of Metallic Nanoparticles," 2023 NSF Nanoscale Science and Engineering Grantees Conference, Alexandria, VA, December 2023.
6. "pAgos: Novel programmable DNA endonucleases as the basis of next gen tools," MCB CAREER Awardee Conference, Alexandria, VA, November 2023.
7. "Environmental microbes for efficient (re)use of renewable feedstocks and consumer wastes in biomanufacturing," 2023 AIChE Annual Meeting, Orlando, FL, November 2023. (**Division 15 Young Investigator Award Lecture**)
8. "Discovery and characterization of LDPE degrading enzymes and microbes from the yellow mealworm", NOBCCHE Annual Meeting, New Orleans, LA, September 2023 (invited for *Lloyd N Ferguson Young Scientist Award*)
9. "Bacterial biomolecular condensates for control of protein activity," ACS Annual Fall Meeting, San Francisco, CA, August 2023. (invited for *BIOT Young Investigator Award*)
10. "Prokaryotic Argonauts and the quest for more flexible gene editing technologies," Synthetic Biology Gordon Research Conference, Sunday River, ME, July 2023.
11. "Harnessing Lignocellulolytic Anaerobic Fungi for Metabolic Engineering", Metabolic Engineering XV, Singapore, June 2023.
12. "Developing Prokaryotic Argonauts as Alternatives for Gene Editing," 2023 Synthetic Biology: Engineering, Evolution & Design (SEED), Los Angeles, CA, June 2023
13. "Discovery and characterization of LDPE degrading enzymes and microbes from the yellow mealworm," Society for Industrial Microbiology and Biotechnology (SIMB) 45th Symposium on Biomaterials, Fuels, and Chemicals, Portland, OR, May 2023.
14. "Discovery of Distributed Pathways for Plastic Conversion in the Yellow Mealworm Microbiome," Department of Energy 2023 Genomic Sciences Program (GSP) Annual Principal Investigator (PI) Meeting, Bethesda, MD, April 2023.
15. "Biodegradation Of Polyolefins via the Yellow Mealworm Gut Microbiome," Visions for Sustainable Polymers, Georgia Tech Polymer Network and the Renewable Bioproducts Institute, Atlanta, GA, April 2023.
16. "Prokaryotic Argonauts As Alternatives For Gene Editing," 12th International Conference on Biomolecular Engineering, Santa Barbara, CA, January 2023.
17. "Onboarding Environmental Microbes for Efficient (re)Use of Renewable Feedstocks and Consumer Wastes in Biomanufacturing", Synthetic biology of underutilized organisms with unique phenotypes, AIChE Annual Meeting, Phoenix, AZ, 2022.
18. "LIFE ... FINDS A WAY: Discovering and deploying microbial solutions to emerging global challenges," National Academy of Engineering's 2022 US Frontiers of Engineering Workshop, Seattle, WA, September 2022.

19. "Enhanced polyolefin and polystyrene degradation by yellow mealworm microbial consortia and isolates," Biodegradation and Bioremediation: groundwater contaminants, plastic waste, plant biomass waste, 2022 Annual Meeting of the Society of Industrial Microbiology & Biotechnology, August 2022.
20. "LIFE FINDS FOUND A WAY: Discovering unconventional microbial solutions from exotic environments", Keynote speaker, Context, Connections, and Community Symposium (C3S), Northwestern University, July 2022.
21. "Prokaryotic Argonauts and the quest for more flexible gene editing technologies", Biochemical & Molecular Engineering XXII, Cancun, Mexico, June 2022.
22. ~~"Penn State's 39th Summer Symposium, Department of Biochemistry & Molecular Biology, August 2022. Rescheduled twice before being cancelled due to COVID-19 pandemic."~~
23. "Domestication of environmental microbes for applications in sustainability, catalysis, and medicine", Synthetic Biology Young Speaker Series (SynBYSS), virtual, April 2022. <https://youtu.be/NtJNd4ciNCU>
24. "Domestication of anaerobic fungi for applications in sustainability and agriculture", 2nd Annual Mid Atlantic Synthetic Biology Symposium, MITRE Corporation, McClean, VA, November 2021
25. "Domesticating anaerobic fungi for direct biomanufacturing from renewable plant biomass", Metabolic Engineering and New Tools for Non-Model Organisms, SIMB Annual Meeting, Austin, TX, Aug 2021.
26. "Characterization and Domestication of Neocallimastigomycota for Direct Biomanufacturing from Renewable Biomass", Joint Canadian Fungal Research Network (CanFunNet) and Great Lakes Mycology Conference (virtual), May 2021.
27. "Tools to accelerate development of non-conventional microbes", Innovative Engineering of Metabolism, 2020 AIChE Annual Meeting, virtual, November 2020.
28. ~~Microbial biotechnology and engineered systems, International Symposia on Microbial Ecology 18 (ISME18), Cape Town, South Africa, Aug 2020. Cancelled due to COVID-19 pandemic.~~
29. ~~"Enabling tools for biomanufacturing in anaerobic fungi from renewable plant biomass", 42nd Symposium on Biomaterials, Fuels and Chemicals, New Orleans, LA, April 2020. Cancelled due to COVID-19 pandemic.~~
30. Department of Energy 2020 Genomic Sciences Program (GSP) Annual Principal Investigator (PI) Meeting, Washington, DC, Feb 2020.
31. "Enabling tools for metabolic engineering in anaerobic fungi", AfroBiotech, Atlanta, GA, Oct 2019.
32. "Development of genetic and epigenetic strategies to optimize biomass-degrading capabilities in anaerobic fungi", 14th Annual DOE Joint Genome Institute Genomics of Energy & Environment Meeting, San Francisco, CA, April 2019.
33. "Tool development to exploit Neocallimastigomycota for bioenergy", 30th Fungal Genetics Conference, Pacific Grove, CA, March 2019.
34. Breakout Session: "Cross-Cutting Biology –Bridging Models from Plants to Animals to Humans", CTSI Retreat, West Lafayette, IN, Jan 2019
35. "Microbial Enhanced Oil Recovery", NSF-IUCRC Planning Meeting: Center for Bioanalytical Metrology, Indianapolis, IN September 2018.
36. "Developing early-diverging anaerobic gut fungi as an emerging platform for consolidated bioprocessing", Microbial Factories, SIMB Annual Meeting, Chicago, IL, August 2018.
37. "Open Access & Open Science: Lessons Learned from Synthetic Biology", Great Lakes Science Boot Camp, West Lafayette, IN, July 2018.
38. Microbiomes and Microbial Communities for Agriculture and Bioenergy: "Unlocking the animal mycobiome for bioenergy and animal health", AIChE Annual Meeting, Minneapolis, MN, 2017.
39. "Synthetic Biology Panel: Harnessing the animal mycobiome with synthetic biology for antibiotic-free livestock." University & Industry Consortium Annual Fall Meeting, Indianapolis, IN, October 2016.

■ **Supervised work**

40. Distinguished Young Scholar Seminar Series, Department of Chemical Engineering, University of Washington, Seattle, WA, August 2014

41. Best of BIOT: Upstream Processes – Metabolic Engineering and Synthetic Biology, ACS BIOT Webinar Series, October 2011

CONTRIBUTED PRESENTATIONS (*speaker, Solomon Lab members, *Solomon Lab undergrads*)

1. L Monteiro, J Singh, R Klauer, A Hansen, S Krishnamoorthy, A Wright, M Blenner, **KV Solomon***. “Integrated omics and chemical biology approaches reveal novel polyolefin-degrading microbial communities and isolates,” AIChE Annual Meeting, Orlando, FL, November 2023.
2. L Monteiro, J Singh, R Klauer, A Hansen, S Krishnamoorthy, A Wright, M Blenner, **KV Solomon***. “Integrated omics and chemical biology approaches reveal novel polyolefin-degrading microbial communities and isolates,” ACS Annual Fall Meeting, San Francisco, CA, August 2023.
3. C Hooker, R Hanafy, E Hillman, **K Solomon***. “Domesticating anaerobic fungi for CAZyme overproduction and direct biomanufacturing from renewable plant biomass,” SIMB Annual Meeting, Minneapolis, MN, August 2023
4. R Klauer, L Monteiro, A Hansen, J Singh, **KV Solomon**, M Blenner*. Discovery of microbial communities, microbial isolates, and enzymes for biodegradation of polyolefins and polystyrene, SIMB Annual Meeting, Minneapolis, MN, Aug 2023.
5. AJ Vaidya*, M Rammohan, CH Chou, J Donlevie, J Patel, E Gillen, **KV Solomon**. Tuning the Immunogenicity of Barley Stripe Mosaic Virus-Like Particles by Surface Engineering, EBRC Annual Meeting, Evanston, IL, 2023
6. R Klauer*, L Monteiro, J Singh, M Blenner, **KV Solomon**. Discovery of polyethylene degradation processes from the digestive system of the yellow mealworm, EBRC Annual Meeting, Evanston, IL, 2023
7. R Klauer*, L Monteiro, J Singh, M Blenner, **KV Solomon**. Discovery of polyethylene degrading microbes and enzymes from the gut of the yellow mealworm, Society for Industrial Microbiology and Biotechnology (SIMB) 45th Symposium on Biomaterials, Fuels, and Chemicals, Portland, OR, May 2023.
8. C.-Y Chou*, Y.-H Lee, KZ Lee, CV Basnayake Pussepitiyalage, AK Vaidya, S Hemmati, **KV Solomon**, S Loesch-Fries, MT Harris, Surface Mineralization of Barley Stripe Mosaic Virus Biotemplates, AIChE Annual Meeting, Phoenix, AZ, 2022.
9. M Parasa*, B Rubino, B Howard, **KV Solomon**. Programmable Control of Protein Activity Via Reversible Formation of Biomolecular Condensates in Bacteria, AIChE Annual Meeting, Phoenix, AZ, 2022.
10. CV Basnayake Pussepitiyalage*, S Hemmati, AJ Vaidya, C.-Y Chou, **KV Solomon**, MT Harris and S Loesch-Fries, Kinetic and Parametric Studies of Pd Mineralization on Barley Stripe Mosaic Virus (BSMV) Virus-like-Particles (VLPs) As Biotemplates, AIChE Annual Meeting, Phoenix, AZ, 2022.
11. L Monteiro, J Singh, R Klauer, **KV Solomon**, M Blenner*, Thermoplastic Degradation By Yellow Mealworm Gut Microbial Communities and Isolates, AIChE Annual Meeting, Phoenix, AZ, 2022.
12. AJ Vaidya*, J Donlevie, O Akin-Adenekan, **KV Solomon**. Surface Functionalization of Recombinant Barley Stripe Mosaic Virus-like Particles for Biomedical Applications & Nanomaterial Synthesis, AIChE Annual Meeting, Phoenix, AZ, 2022.
13. C Hooker*, R Hanafy, E Hillman, **K Solomon**. A genetic engineering toolbox for anaerobic fungi, SIMB Annual Meeting, San Francisco, CA, 2022.
14. M Parasa*, **K Solomon**. Tunable temperature-sensitive control of protein activity *in vivo* via reversible aggregate formation, SIMB Annual Meeting, San Francisco, CA, 2022.
15. KZ Lee*, YH Lee, R Susler, C Scott, L Wang, S Loesch-Fries, M Harris, **KV Solomon**. Engineering of Barley Stripe Mosaic Virus-derived nanoparticles via bacteria for diverse applications, EBRC Annual Meeting, Berkeley, CA, 2022
16. M Blenner*, L Monteiro, J Singh, R Klauer, **KV Solomon**. Nutrient supplementation enhances yellow mealworm microbiome degradation of polyolefins., SIMB Symposium on Biomaterials, Fuels and Chemicals, New Orleans, LA, 2022
17. C Hooker*, E Hillman, R Hanafy, J Muñoz-Briones, Stephen Mondo, and **K Solomon**, Multiomics analyses elucidate lignocellulolytic regulatory strategies in anaerobic fungi, ACS Annual Spring Meeting, San Diego, CA, 2022.
18. MK Parasa, **K Solomon***, Reversible formation of biomolecular condensates in bacteria for control of protein activity, ACS Annual Spring Meeting, San Diego, CA, 2022.

19. R Hanafy^{*}, C Hooker, E Hillman, **K Solomon**, Developing genetic tools to unlock the biotechnological potential of anaerobic gut fungi, 31st Fungal Genetics Conference, Pacific Grove, CA, 2022.
20. E Hillman, M Li, C Hooker^{*}, J Englaender, I Wheeldon, **K Solomon**, Partnering anaerobic fungi and engineered *Kluyveromyces marxianus* enables direct and efficient production of fragrances and fuels from agricultural residues, AIChE Annual Meeting, Boston, MA, 2021.
21. YH Lee^{*}, KZ Lee, S Hemmati, S Loesch-Fries, **K Solomon**, MT Harris, Biotemplating of barley stripe mosaic virus virus-like particles for directed synthesis of metal nanomaterials, AIChE Annual Meeting, Boston, MA, 2021.
22. A Vaidya^{*}, KZ Lee, YH Lee, S Hemmati, S Loesch-Fries, MT. Harris, **K Solomon**, Engineering of barley stripe mosaic virus capsid protein to tune morphology and surface functionality of self-assembled viral-like particles for diverse applications, AIChE Annual Meeting (virtual), Boston, MA, 2021.
23. E Hillman, E Frazier, E Shank, A Ortiz-Velez, J Englaender, **K Solomon**^{*}. Reducing rare codon content in heterologous anaerobic fungal genes reveals efficient mevalonate pathway homologs, ACS Fall Meeting (virtual), 2021.
24. C Hooker^{*}, E Hillman, J Munoz, **K Solomon**, Building genetic engineering tools for anaerobic gut fungi, ACS Fall Meeting (virtual), 2021.
25. **KV Solomon**^{*}, Enabling Tools for Biomanufacturing in Anaerobic Fungi from Renewable Plant Biomass, AIChE Annual Meeting (virtual), 2020.
26. **KV Solomon**^{*}, Development of Modular Tunable Biosensors for Gene Regulation and Autonomous Pathway Optimization, AIChE Annual Meeting (virtual), 2020.
27. KZ Lee^{*}, MA Mechikoff, A Kikla, A Liu, P Pandolfi, K Fitzgerald, Z Hartley, T Rankin, FS Gimble, **KV Solomon**, "Characterizing the DNA-cleaving and gene-editing abilities of NgAgo and other programmable endonucleases". 259th ACS National Meeting & Exposition, Philadelphia, PA, 2020
28. KZ Lee^{*}, MA Mechikoff, A Kikla, A Liu, P Pandolfi, F Gimble, **KV Solomon**. Development of prokaryotic Argonautes as more flexible gene-editing tools in bacteria, Engineering Biology Research Consortium (EBRC) Virtual Seminar Series, 2020
29. **KV Solomon**^{*}. "Enabling tools for Synthetic Biology in Anaerobic Fungi" 2nd Central US Synthetic Biology Workshop, Madison, WI, 2019.
30. Z Hartley^{*}, KZ Lee, **KV Solomon**. "Developing a Cell-Free System for Assessing On/Off-Target Activities of Argonaute-Based Gene-Editing Tools", Purdue Undergraduate Research Conference, West Lafayette, IN, 2019. – **third place in the College of Agriculture Oral Presentation Recipients**
31. **KV Solomon**^{*}. "Tool development to manipulate early-branching anaerobic fungi as a platform for biotechnology", 257th Annual Meeting of the American Chemical Society, Orlando, FL, 2019.
32. KZ Lee^{*}, A Liu, A Kikla, F Gimble, **KV Solomon**. "Characterization of a mesophilic prokaryotic Argonaute for gene-editing", 257th Annual Meeting of the American Chemical Society, Orlando, FL, 2019. – **featured in Genetic Engineering & Biotechnology News**
33. **KV Solomon**^{*}, "Global regulation of lignocellulolytic proteins from anaerobic fungi in response to substrate lignin content and composition", 255th ACS Meeting, New Orleans, LA, 2018.
34. R Chatterjee, YH Wang, KZ Lee, E Hillman, L Readnour, **KV Solomon**^{*}. "Engineering modular tunable biosensors responsive to cellular health for gene regulation and pathway optimization", 2017 Annual SIMB Meeting, Denver, CO, 2017
35. E Hillman, C Hooker, A Ortiz-Velez, **KV Solomon**^{*}, "Anaerobic fungi robustly degrade untreated forestry products of variable lignin composition", 253rd ACS Meeting, San Francisco, CA, 2017.
36. E Hillman^{*}, A Ortiz-Velez, C Hooker, **KV Solomon**, "Optimized colony PCR rapidly profiles the extensive untapped biosynthetic potential for fuels and medicines in isolated anaerobic fungi", NOBCCHE Northeast Midwest Regional Meeting, Pittsburgh, PA, 2017.

■ **Supervised work**

37. **KV Solomon**^{*}, JK Henske, SP Gilmore, S Seppala, MD Reith, MA O'Malley, "Novel gut fungal transporters for improved fuel and energy production", 251st ACS Annual Meeting, San Diego, CA 2016
38. JK Henske^{*}, **KV Solomon**, MK Theodorou, IV Grigoriev, MA O'Malley, "Deciphering the regulation of biomass degradation by anaerobic fungi", 251st ACS Annual Meeting, San Diego, CA, 2016

39. SP Gilmore*, JA Sexton, JK Henske, **KV Solomon**, MK Theodorou, MA O'Malley, "Bottom-up construction of synthetic microbial pairs inspired by nature", 251st ACS Annual Meeting, San Diego, CA, 2016
40. **KV Solomon**, S Seppala, MA O'Malley*, "Novel Gut Fungal Sugar Transporters for Improved Bioprocess Efficiency," AIChE Annual Meeting, Salt Lake City, UT, 2015
41. CH Haitjema*, SP Gilmore, **KV Solomon**, MA O'Malley. "Engineering cellulose-degrading complexes from anaerobic gut fungi", 249th ACS Annual Meeting, Denver, CO, 2015
42. JH Henske*, **KV Solomon**, MA O'Malley. "Novel co-culture approach to compartmentalize biomass deconstruction and biofuel production", 249th ACS Annual Meeting, Denver, CO, 2015
43. J Sexton, **KV Solomon**, JK Henske, MK Theodorou, D Valentine, MA O'Malley*. "Reconstructing anaerobic microbiomes from the 'bottom-up': New techniques to decipher interwoven metabolism", 249th ACS Annual Meeting, Denver, CO, 2015
44. **KV Solomon**, JK Henske, CH Haitjema, D Borges-Rivera, DA Thompson, A Regev, MA O'Malley*, "Deciphering transcriptional regulation patterns for novel enzyme discovery," International Conference on Biological Engineering (ICBE), Austin, TX, January 2015
45. **KV Solomon***, JK Henske, CH Haitjema, D Borges-Rivera, DA Thompson, MA O'Malley. "RNAseq reveals substrate-specific lignocellulosic degradation responses in anaerobic gut fungi", AIChE Annual Meeting, Atlanta, GA, 2014
46. **KV Solomon***, JK Henske, CH Haitjema, D Borges-Rivera, DA Thompson, MA O'Malley. "Deciphering global regulatory patterns for cellulase discovery in anaerobic fungi", 1st Annual SEED Conference, Manhattan Beach, CA, 2014
47. **KV Solomon**, JK Henske, CH Haitjema, D Borges-Rivera, DA Thompson, MA O'Malley*. "Engineering Anaerobic Gut Fungi for Lignocellulose Breakdown", DOE Annual Genomic Science Contractor-Grantee Meeting XII, 2014
48. MA O'Malley*, JK Henske, **KV Solomon**, CH Haitjema. "Engineering anaerobic gut fungi for the production of fuels and bioactive compounds", 247th ACS Annual Meeting, Dallas, TX, 2014
49. **KV Solomon***, CH Haitjema, D Borges-Rivera, DA Thompson, MA O'Malley. "Discovery and Regulation of Biomass-Degrading Enzymes From Anaerobic Gut Fungi Using Next-Generation Sequencing", AIChE Annual Meeting, San Francisco, CA, 2013
50. **KV Solomon**, CH Haitjema, D Borges-Rivera, DA Thompson, A Regev, MA O'Malley* , "Transcriptomic Analysis Reveals Novel Lignocellulolytic Enzymes from Anaerobic Gut Fungi," American Chemical Society Spring Meeting, New Orleans, LA, 2013 – **highlighted by national ACS press release**
51. **KV Solomon**, CH Haitjema, D Borges-Rivera, DA Thompson, MA O'Malley*. "Engineering Anaerobic Gut Fungi for Lignocellulose Breakdown", International Conference on Biological Engineering, Fort Lauderdale, FL, January 2013
52. **KV Solomon***, KJ Prather. "Tuning of Glycolytic Flux for Heterologous Production with a 'Glucose Valve'", AIChE Annual Meeting, Minneapolis, MN, 2011
53. **KV Solomon***, TS Moon, KJ Prather . "Glucose Valves: Tuning primary metabolism for heterologous production", 241st ACS Annual Meeting, Anaheim, CA, 2011 – **selected as "Best of BIOT Division" and invited as a webinar**
54. **KV Solomon***, TS Moon, SH Yoon, KLJ Prather. "Glucose Valves: A New Device for Pathway Engineering", Intl.Conference on Synthetic Biology, Évry, France, 2010
55. **KV Solomon***, TS Moon, KJ Prather. "A Glucose Valve For Pathway Engineering", AIChE Annual Meeting, Salt Lake City, UT, 2010
56. **KV Solomon***, KJ Prather. "Glucose Valves: Tuning Primary Metabolism for Pathway Optimization", SynBERC Fall Retreat, Cambridge, MA, 2010
57. **KV Solomon***, KJ Prather. "Antisense RNA Mediated Redirection of Glycolytic Flux for Heterologous Pathway Production", NOBCCHE Annual Meeting, Atlanta, GA, 2010

POSTER PRESENTATIONS (*speaker; *mentored undergrad*; Solomon Lab member)

1. C Pirner*, D Pedada, MA Blenner, **KV Solomon**. The Feasibility of Emerging non-CRISPR Gene Editing Platforms for CHO Cell Engineering, AMBIC Winter Meeting, Clemson, SC, 2024.

2. B Graver*, D Carman, **KV Solomon**. Identifying an Optimal Mesophilic Prokaryotic Argonaute for Synthetic Biology, EBRC Annual Meeting, Evanston, IL, 2023
3. MH Yen*, **KV Solomon**. Microbial Foundry for Scalable ssDNA production, EBRC Annual Meeting, Evanston, IL, 2023.
4. R Klauer*, L Monteiro, J Singh, **KV Solomon**, M Blenner. Plastics Degradation By the Yellow Mealworm Gut Microbiota and Associated Enzyme Studies, AIChE Annual Meeting, Phoenix, AZ, 2022.
5. L Monteiro*, J Singh, R Klauer, M Blenner, **KV Solomon**. Enhanced biodegradation of polystyrene and polyethylene by mealworms larvae in an enrichment derived from co-diet supplementation, SIMB Annual Meeting, San Francisco, CA, 2022.
6. C Hooker*, R Hanafy, E Hillman, **K Solomon**. A genetic engineering toolbox for anaerobic fungi, SIMB Annual Meeting, San Francisco, CA, 2022.
7. M Parasa*, **K Solomon**. Tunable temperature-sensitive control of protein activity *in vivo* via reversible aggregate formation, SIMB Annual Meeting, San Francisco, CA, 2022.
8. R Hanafy*, C Hooker, E Hillman, **K Solomon**, Developing genetic tools to unlock the biotechnological potential of anaerobic gut fungi, American Society for Microbiology (ASM) Annual Meeting, Washington, DC, 2022.
9. M Parasa, **KV Solomon**, "Tunable temperature-sensitive control of protein activity in vivo via reversible aggregate formation", EBRC Annual Meeting, Berkeley, CA, 2022
10. AJ Vaidya, KZ Lee, J Donlevie, **KV Solomon**, "Ex Planta Production of Barley Stripe Mosaic Virus-Like Particles for Flexible Genetic and Protein Engineering", EBRC Annual Meeting, Berkeley, CA, 2022
11. C Hooker, R Hanafy, EH Hillman, **KV Solomon**, "A genetic engineering toolbox for anaerobic gut fungi", EBRC Annual Meeting, Berkeley, CA, 2022
12. R Klauer*, L Monteiro, J Singh, M Blenner, **KV Solomon**. Plastics upcycling via microbial consortium in the gut microbiome of the yellow mealworm, SIMB Symposium on Biomaterials, Fuels and Chemicals, New Orleans, LA, 2022
13. R Hanafy*, C Hooker, E Hillman, **K Solomon**, Developing genetic tools to unlock the biotechnological potential of anaerobic gut fungi, 31st Fungal Genetics Conference, Pacific Grove, CA, 2022.
14. M Parasa*, **KV Solomon**. Design of temperature-responsive controllers for regulating gene-expression, , SIMB Annual Meeting, Austin, TX, 2021.
15. C Hooker*, **KV Solomon**. Leveraging epigenetics to improve CAZyme expression in anaerobic fungi, SIMB Annual Meeting, Austin, TX, 2021.
16. KZ Lee*, YH Lee, R Susler, C Scott, L Wang, S Loesch-Fries, M Harris, and **KV Solomon**, Engineering of Barley Stripe Mosaic Virus-derived nanoparticles through E.coli for diverse applications, ICBE (virtual), 2021.
17. EH Hillman*, **KV Solomon**, Microbial Enhanced Oil Recovery via in situ activation of native microbes with tailored nutrient formulations, 3rd International Conference on Microbiome Engineering (virtual), 2020.
18. E Hillman*, C Hooker*, **KV Solomon**. "Genetic tools to optimize lignocellulose conversion in anaerobic fungi and interrogate their genomes", Department of Energy 2020 Genomic Sciences Program (GSP) Annual Principal Investigator (PI) Meeting, Washington, DC, Feb 2020.
19. KZ Lee*, M Mechikoff, A Kikla, A Liu, K Fitzgerald, Z Hartley, T Rankin, FS Gimble, **KV Solomon**, "Prokaryotic Argonautes as more flexible gene-editing tools for study and improvement of human health", NIBIB Synthetic Biology Consortium Meeting, Bethesda, MD, 2019.
20. E Hillman*, C Hooker, **KV Solomon**, "Unlocking and characterizing novel biosynthetic capabilities of anaerobic fungi for drug discovery and development," NIBIB, Synthetic Biology Consortium Meeting, Bethesda, MD, 2019.
21. E Hillman*, **KV Solomon**. "Microbial Enhanced Oil Recovery Via in Situ Activation of Native Microbes with Tailored Nutrient Formulations", 3rd International Conference on Microbiome Engineering, virtual, 2020
22. M Mechikoff*, KZ Lee, P Pandolfi, **KV Solomon**. "Positive Selection Screens for DNA Endonuclease Activity", 257th Annual Meeting of the American Chemical Society, Orlando, FL, 2019.

23. KZ Lee*, A Kikla, A Liu, **KV. Solomon**, “An uncharacterized N-terminal domain participates in DNA cleavage in prokaryotic Argonautes”, SIMB Annual Meeting, Chicago, IL, August 2018. – **best student poster award in Biocatalysis**
24. **KV Solomon**, “Early-diverging anaerobic gut fungi as an emerging platform for biomass degradation”, Metabolic Engineering 12, Munich, Germany, 2018
25. A Liu*, KZ Lee, A Kikla, A Murfee, **KV. Solomon**, “Argonaute as a programmable gene repression tool in *E. coli*”, Indiana Academy of Sciences Symposium, Indianapolis, IN 2017.
26. KZ Lee*, A Murfee, A Liu, A Kikla, **KV Solomon**. “NgAgo Inducibly Represses Gene Expression at Sites Programmed with P-ssDNA.” 4th ABE Graduate Symposium | Sigma Xi Poster Competition, West Lafayette, IN, 2017.
27. L Readnour*, E Hillman, KZ Lee, R Chatterjee, YH Wang, **KV Solomon**. “Development of Novel ELP-Based Transcriptional Regulators for Improved Biomanufacturing.” 4th ABE Graduate Symposium | Sigma Xi Poster Competition, West Lafayette, IN, 2017.
28. E Hillman*, C Hooker, A Ortiz-Velez, **KV Solomon**. “Anaerobic Fungi: Regulating microbial environments in ruminant guts without antibiotics.” 4th ABE Graduate Symposium | Sigma Xi Poster Competition, West Lafayette, IN, 2017.
29. C Hooker*, E Hillman, A Ortiz-Velez, **KV Solomon**. “Anaerobic fungal enzymes efficiently degrade diverse agricultural and food wastes for bioenergy.” 4th ABE Graduate Symposium | Sigma Xi Poster Competition, West Lafayette, IN, 2017.
30. YH Wang*, R Chatterjee, E Hillman, **KV Solomon**. “Using Elastin-Like Polypeptides for Better Retention of Biofuels”, 2016 SURF Symposium, Purdue University, West Lafayette, IN 2016.
31. R Chatterjee*, YH Wang, E Hillman, **KV Solomon**. “Improving Biofuel Production with Tunable Transcriptional Regulation via Elastin-like Polypeptides”, MASI Poster Symposium, DowAgroSciences, Indianapolis, IN 2016.
32. KZ Lee*, S Mohan, **KV Solomon**, “Reprogramming bacterial stress responses for improved biofuel and value-added chemical production”, 3rd ABE Graduate Symposium, W. Lafayette, IN, 2016
33. A Ortiz-Velez*, E Hillman, **KV Solomon**. “Identification of gut fungi and their potential as a vast source of drug candidates”, MASI Poster Symposium, DowAgroSciences, Indianapolis, IN 2016.

■ **Supervised work**

34. **KV Solomon***, SP Gilmore, JK Henske, MA O’Malley. “Antisense RNA exclusively regulate key genes in anaerobic fungi”, AIChE Annual Meeting, San Francisco, CA 2016.
35. **KV Solomon***, JH Henske, SP Gilmore, S Seppala, MA O’Malley. “Mining sugar transporters from gut fungi for improved fuel & energy production”, 3rd Annual SEED (Synthetic Biology: Engineering, Evolution, Design) Conference, Chicago, IL, 2016.
36. **KV Solomon***, JK Henske, CH Haitjema, D Borges-Rivera, DA Thompson, MA O’Malley. “Engineering Anaerobic Gut Fungi for Lignocellulose Breakdown”, Department of Energy Genomic Science Contractor-Grantee Meeting, Washington, DC, 2015
37. **KV Solomon***, E Ovadia, MA O’Malley. “Engineering the valine assimilation pathway to produce biochemicals and fuels in *S. cerevisiae*”, Metabolic Engineering X, Vancouver, BC, Canada, 2014
38. **KV Solomon***, JK Henske, CH Haitjema, D Borges-Rivera, DA Thompson, A Regev, MA O’Malley. “Identification and regulation of novel cellulases within anaerobic gut fungi”, 9th JGI User Meeting, Walnut Creek, CA, 2014
39. **KV Solomon***, JK Henske, CH Haitjema, D Borges-Rivera, DA Thompson, A Regev, MA O’Malley. “Engineering Anaerobic Gut Fungi for Lignocellulose Breakdown”, 4th Annual SoCal SysBio. Conference, Irvine, CA, 2014
40. **KV Solomon***, CH Haitjema, D Borges-Rivera, DA Thompson, A Regev, MA O’Malley “Transcriptomic analysis of an anaerobic fungus reveals novel cellulolytic genes”, 4th International Conference on Biomolecular Engineering, Ft. Lauderdale, FL, 2013
41. **KV Solomon***, KLJ Prather. “Tuning Glycolysis for Heterologous Production”, Biochemical and Molecular Eng XVII, Seattle, WA, 2011

42. **KV Solomon***, KLJ Prather. "Glucose Valves for Microbial Chemical Factories", SynBERC Site Visit, Emeryville, CA, 2011
43. **KV Solomon***, KLJ Prather. "Redirecting primary metabolism for heterologous pathway production", SynBERC Site Visit, Emeryville, CA, 2010
44. **KV Solomon***, TS Moon, SH Yoon, KLJ Prather. "Antisense mediated redirection of glycolytic flux for heterologous pathway production", SynBERC Fall Meeting, Cambridge, MA, 2009 – **won Honorable Mention in Poster competition**
45. **KV Solomon***, TS Moon, SH Yoon, D Nielsen, KLJ Prather. "Antisense mediated redirection of glycolytic flux", SynBERC Site Visit, Berkeley, CA, 2009

UNIVERSITY & DEPARTMENTAL SERVICE @ UD

- 2023 UDRF-SI Reviewer
- 2023 Launched a bootcamp for high school students in Synthetic Biology (BooST)
- 2023 Chemical & Biomolecular Engineering Faculty Search Committee
- 2022 – 2023 VP Research, Scholarship & Innovation Search Advisory Committee
- 2022 – Chemical & Biomolecular Engineering Undergraduate Curriculum Committee
- 2022 – Faculty Advisor, National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE) Student Chapter
- 2022 – NIIMBL Workforce Development Training Center Director
- 2022 – Computational Biology, Bioinformatics, and Biomedical Data Science (i3-CBB) Program Committee, CBE Representative
- 2021 – Colburn Community Committee
- 2021 – CBE Undergraduate Faculty Advisor, Class of '25
- 2021 – UD Education & Workforce Development Committee Representative, BioMADE Manufacturing Innovation Institute
- 2021 – 2022 CBE Departmental Colloquia Organizer
- 2021 Faculty Advisor, AIChE Student Chapter
- 2021 Delaware Bioscience Center for Advanced Technologies (CAT) Technical Review Committee

Active Participant in K-12 Outreach: Developed and led hands-on activities demonstrating principles of chemical separations and polymerization to predominantly African American K-3 students at St. Peters Cathedral School as part of their Summer Camp (2021). Developed and launched the first Bootcamp for Synthetic Biology Training (BooST @ UD) to provide an intensive hands-on 3-week introduction to synthetic biology methods and theory for high school students at Charter School of Wilmington. Providing authentic summer research experiences for DE high school students.

Providing educational opportunities beyond the classroom: Strong advocate for undergraduate research. Currently supervising 2 undergraduate/honors theses. Provide technical and advisory support to the student-led iGEM team, which designs biological systems that address grand challenges in medicine, manufacturing, food, and ethics with biology. (Co-advisor with Aditya Kunjapur)

UNIVERSITY & DEPARTMENTAL SERVICE @ PURDUE

- 2020 Member, ABE/EEE Faculty Search Committee
- 2019 – 2020 ABE Undergraduate Recruitment Committee
- 2019 Member, Food Science Fermentation Science Faculty Search Committee
- 2017 – 2020 Member, Diversity Action Team in Agriculture, MAR Subcommittee Co-Chair
- 2017 – 2020 ABE Undergraduate Academic Advisor for ~40 students/year
- 2017 – 2020 Advisor, SBE Student Chapter
- 2016 – 2020 Member, Department of Agricultural & Biological Engineering Graduate Committee
- 2016 – 2020 Advisor, Purdue iGEM Team
- 2016 – 2020 Director of undergraduate and high school student research projects (MASI, SURF, PASA)
- 2016 – 2017 Advisor, Soybean Product Innovation Team
- 2016 – 2018 Diversity Ambassador
- 2017 – 2018 Member, College of Agriculture Dean Search Committee
- 2017 – 2018 Member, Food Science/EEE Faculty Search Committee
- 2016 – 2017 Member, College of Agriculture Honors Committee
- 2016 Program Lead, proposed Sustainable Aviation BioEnergy Research Center (SABER)

Broadening Participation of African Americans: Founding member of Diversity Ambassadors initiative to increase the enrollment and retention of African American students. Program establishes partnerships with HBCUs

by facilitating inter-institutional exchanges. Funded by Purdue Office of the Provost's Inaugural Diversity Transformation Award (2016; \$100K/ 2 yrs.).

Active Participant in K-12 Outreach: Purdue Agribusiness Science Academy (PASA) enrichment program for middle school and high school students from urban communities in Chicagoland and Indianapolis areas; Molecular Agriculture Summer Institute (MASI) provides enrichment opportunities for high school students and summer research for undergrads.

Providing educational opportunities beyond the classroom: Provide technical and advisory support to the student-led Purdue Biomakers team that competes annually in the International Genetic Engineered Machines (iGEM) Competition. Competition attracts more than 300 student teams from across the globe to design and build innovative solutions to grand challenges in medicine, manufacturing, food, and ethics with biology. 2016-2020 team entries regularly recognized with *Bronze, Silver or Gold Medals*.

EXTERNAL SERVICE & OTHER PROFESSIONAL ACTIVITIES

Board of Directors: Engineering Biology Research Consortium (2024-2026)

Policy: Congressional Testimony: US House of Representatives (2019)

Technology Roadmaps: EBRC Microbiome Technology Roadmap (2020), EBRC Materials Technology Roadmap (2021); EBRC Mitigating Climate Change Technology Roadmap (2022)

Advisory Boards: DOE Environmental Molecular Sciences Laboratory (EMSL) User Executive Committee (2021 – 2023); DOE Pacific Northwest National Lab (PNNL) Predictive Phenomics Initiative Advisory Committee (2022 – 2024)

Editorial Boards: Editorial Board Member: *Engineering in Life Sciences* (2022 – 2024); *Experimental Biology & Medicine* – Synthetic Biology Section (2022 – 2025)

Early Career Advisory Board: *ACS Synthetic Biology* (2024-2025)

Associate Editor: *Frontiers in Fungal Biology* (Fungal Biotechnology Section) (2020 –); *Frontiers in Synthetic Biology* – Metabolic Engineering Section (2023 –)

Review Editor: *Frontiers in Bioengineering and Biotechnology* – Synthetic Biology (2019 –); *Frontiers in Chemical Engineering* – Biochemical Engineering (2021 -); *Frontiers in Microbiology* – Systems Microbiology (2022 -);

Professional Society: Programming Committee for Annual Meetings: *Symposium on Biomaterials, Fuels and Chemicals (SBFC)*, *Society for Industrial Microbiology & Biotechnology* Co-Chair (2023), Chair (2024), Past Chair (2025); *AIChE Division 15C:* Vice Chair Elect (2023), Vice Chair (2024), Chair (2025)

Society Leadership: SIMB Nomination Committee Member (2023), SIMB Planning Committee Member (2023), Webinar Planning Committee Member (2023)

Reviewer: Journals: *ACS Synthetic Biology*, *AIChE Journal*, *Applied Microbiology & Biotechnology*, *Biochemical Engineering Journal*, *Bioengineering & Translational Medicine*, *Biotechnology for Biofuels*, *Biotechnology & Bioengineering*, *Biotechnology Journal*, *ISME Journal*, *Journal of Biological Engineering*, *Materials Advances*, *Metabolic Engineering*, *Metabolic Engineering Communications*, *Molecular Biotechnology*, *Molecular Microbiology*, *Microbiology and Molecular Biology Reviews*, *Nature Chemical Biology*, *Nature Communications*, *Nucleic Acids Research*, *PLoS One*, *Synthetic Biology* (2009-present)

Panels: DOE – JGI Community Science Program (2016 – 2022), EMSL User Science Programs (2020 – 2023), NIH PCMB (2021), NSF-CBET (2016 – 2018, 2020, 2022), USDA NIFA (2019, 2022), NSF (2019, 2020), NSF-MCB (2020, 2022), NSF MFB (2022).

ad hoc Grant Review: Ontario Genomics Institute LSRP: Natural Resources and the Environment: Sector Challenges - Genomic Solutions (2015); Notre Dame Eck Institute for Global Health (2016); VENI, Technologiestichting STW (2016); Genome British Columbia – Sector Innovation Program (2017), Deutsche Forschungsgemeinschaft (2018), CIISA – Centre for Interdisciplinary Research in Animal Health, Faculty of Veterinary Medicine, University of Lisbon, Portugal (2020), NSF-CBET (2020), Schmidt Ventures (2021), The Royal Society (2023), L'Agence National de la Recherche (2023).

DEI Initiatives MIT Alumni/Graduate Student of Color Mentor (2022); Panelist for “Bioengineering and Our Community: Is Biotech for Me?” (AfroBiotech, 2020); Purdue Diversity Action Team in Agriculture, Multicultural Awareness Requirement Subcommittee Co-Chair (2017-2020); Purdue Diversity Ambassador to HBCUs (2016-2018); Panelist for under-represented minorities interested in pursuing a Ph.D. (PVAMU, 2012); MIT Summer Research Program Mentor (2008 - 2010);

Outreach: Delaware Youth Environmental Summit (YES!) Seminar Speaker (2023); K12 Engineering (2021); MASI (2016-2019); PASA Summer Institute (2016-2019); UCSB Research Experience for Teachers (RET) Program Mentor (2013); Organizer of Synthetic Biology Symposium (PVAMU, 2008)

Conference Programming

American Chemical Society – Biochemical Technology Division Annual National Meeting

Session Chair

Synthetic Biology and -OMICS Approaches to Engineer Microbial Communities, 2016
Microbial and Non-Model Hosts: Strain Engineering and Process Development, 2017
Microbial Metabolic Engineering, 2018, 2019
Systems Biology & Omics: Tools and Applications, 2021
AAV Upstream Process Development, 2023

Poster Session Area Coordinator, 2017, 2019

Upstream Area Coordinator (Symposium Organizer), 2020

Big Data Science Approaches, Knowledge Management, and Artificial Intelligence Area Coordinator (Symposium Organizer), 2022

American Institute of Chemical Engineers Annual Meeting

2025 Division 15C Program Chair

2024 Division 15C Program Vice Chair

2023 Division 15C Program Vice Chair Elect

Session Chair

Advances in Metabolic Engineering of Photosynthetic/Non-Model Organisms, 2017
Advances in Metabolic Engineering, 2018
Synthetic Biology Applications, Metabolic Engineering 2019
Metabolic Engineering Platform Development – Non-conventional Eukaryotes, 2020
Metabolic Platform Development- Non-Conventional Species and Systems, 2022

Metabolic Engineering Theme Leader, 2020, 2022

Afrobiotech Conference [Society for Biological Engineering (AIChE)]

Session Chair:

Metabolic Engineering and Synthetic Biology, 2019

Metabolic Engineering, Synthetic Biology, and Chemical Biology, 2021

Organizing Committee, 2020

Central US Synthetic Biology Conference

Organizing Committee, 2020

Biochemical Engineering

Session Chair: Machine learning-guided design and automation, 2022

Engineering Biology Research Consortium Annual Retreat

Session Chair: Addressing National and Global Needs, 2022

International Conference on Biomolecular Engineering

Session Chair: Metabolic Engineering for Fuels, Chemicals and Pharmaceuticals, 2017

International Metabolic Engineering Society

Organizing Committee: Metabolic Engineering 15, 2023

Society for Industrial Microbiology & Biotechnology Annual Meeting

Session Chair

Photosynthetic and Non-Conventional Organisms in Metabolic Engineering, 2017

Utilization of Lignin and Alternate Feedstocks, 2018

Program Committee: Environment, 2022-2024

Symposium on Biomaterials, Fuels and Chemicals (SBFC), Society for Industrial Microbiology & Biotechnology

Session Chair: Enzyme discovery and engineering for biomass deconstruction and biofuels and chemical production, 2021

*Topic Area Chair: TOPIC AREA 3- Biomass engineering and deconstruction, 2022
Meeting Planning Committee (2023 – 2025, Chair - 2024)*

Synthetic Biology: Engineering, Evolution & Design (SEED) Conference
Organizing Committee, 2022

Professional Memberships

American Chemical Society (Biotechnology Division) (ACS-BIOT)
American Institute of Chemical Engineers (AIChE) Division 15
International Metabolic Engineering Society (IMES)
National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE)
Society of Biological Engineers (SBE)
Society for Industrial Microbiology & Biotechnology (SIMB)

Treasurer, NSF-sponsored Synthetic Biology Engineering Research Center (SynBERC) Student Leadership Council (SLC) (2009 – 2011)

Managed \$20K+ budget for nationwide student-led initiatives including professional development opportunities, student inter-institute exchanges and outreach symposia at primarily minority serving institutions. Provided critical assessment of Center activities to NSF ERC leadership

Co-chair, SynBERC SLC (2009)

Developed and led nationwide student initiatives to foster interest in synthetic biology and develop center-wide collaborations. Provided critical assessment of Center activities to NSF ERC leadership

TEACHING

UD Chemical & Biomolecular Engineering

Date	Course	Title	Course Enrollment
F 2021 - 2023	CHEG332	Chemical Engineering Kinetics	~75 UG
Sp 2022 - 2023	CHEG840 ^A	Rate Processes & Dynamics for Microbial Systems	19 G/UG

^ANew course developed at the University of Delaware

Purdue Agricultural & Biological Engineering

Date	Course	Title	Course Enrollment
F 2016 - 2018	ABE591 [#]	Principles of Systems & Synthetic Biology	~15 G/UG
Sp 2017 - 2020	ABE 440	Cell & Molecular Design Principles	~30 UG
Sp 2017	AGR493I	Ag Study Abroad: Ireland Spring Break	36 UG
Su 2019		Industrial Microbial Biotechnology in Germany	
F 2019 - 2020	ABE 540	Principles of Systems & Synthetic Biology	~13 G/UG

[#]New course developed at Purdue. Transitioned to the permanent course number ABE 540

TEACHING TRAINING

2020 PREP (Professors Reviewing Excellent Practices), Purdue University, West Lafayette, IN
2018 Fellow, Teaching for Tomorrow program, Purdue University, West Lafayette, IN
2016 Attendee, *Effective Teaching Workshop* by Prof. Richard Felder & Dr. Rebecca Brent
2012 – 2015 Guest Lecturer, UCSB – invited lectures on synthetic biology, transcriptomics & chemical kinetics
2012 Trainee, Graduate Student Teaching Certificate, MIT Teaching and Learning Laboratory, Cambridge, MA
2010 Lab Instructor, MIT iGEM Team, MIT, Cambridge MA
2010 Instructor & Course Development, Molecular Biology Lab Fundamentals Bootcamp, Synthetic Biology Engineering Research Center (SynBERC), Cambridge, MA
2009 Teaching Assistant, ICE I – Continuous Process Design, MIT, Cambridge, MA
2005 Teaching Assistant, Problem Solving & Technical Comm., McMaster University, Hamilton, ON, Canada
2005 Teaching Assistant, Introduction to Professional Engineering, McMaster University, Hamilton, ON, Canada

STUDENTS AND MENTORSHIP

Advisor

- Faculty advisor to 19 students from the UD CBE Class of '25 (2021 – present)

- AIChE Student Chapter (**2021**) – faculty advisor to this student academic/professional development club affiliated with AIChE
- Faculty academic advisor (**2017 – 2020**) to ~40 students/year enrolled in Agricultural & Biological Engineering
- Purdue iGEM Team (**2016 – 2020**) – provide technical and material support to team of 7 independent undergraduate researchers developing microbial systems to address grand engineering challenges and compete in the International Genetically Engineered Machines Competition @ MIT

YEAR	PROJECT	ACHIEVEMENT
2016	Phosphorus reclamation via engineered <i>E. coli</i>	Silver Medal
2017	Benzene degradation via engineered lung microbiome treatment	Silver Medal
2018	Low cost, paper based diagnostic test for yeast infections	Bronze Medal
2019	Biological Control of Rice Blast Fungus in Crops	Bronze Medal
2020	Argonaute-based diagnostic assay for COVID-19	Gold Medal

- Soybean Product Innovation Competition (**2016 – 2017**) – provide technical and material support to team of 4 undergraduate/graduate students developing novel soy-based products (2016 – compostable toothbrushes; 2017 – biodegradable prescription bottles)
- Society of Biological Engineers (**2016 – 2020**) – faculty advisor to this student academic/professional development club affiliated with AIChE's SBE

Current Trainees

2020 – present	Akash Vaidya	CBE PhD Candidate 2022 GAANN Teaching Fellow
2021 – present	Radwa Hanafy, PhD	CBE Postdoctoral Research Associate
2021 – present	Ming Hung Yen	CBE PhD Candidate
2022 – Present	Ross Klauer	CBE/CBI PhD Student DENIN Fellow – coadvised with Mark Blenner
2022 – present	Brett Graver	BISC PhD Student
2022 – present	Namrata Chakravarty, PhD	Postdoctoral Research Associate
2022 – present	Manish Pareek, PhD	Postdoctoral Research Associate
2022 – present	Robert Barlow	CBE PhD Student
2022 – present	David (Alex) Hansen	CBE PhD Student – coadvised with Mark Blenner
2022 – present	Mruthula Rammohan	CBE PhD Student
2023 – present	Kunwoo Khim	CBE MS Student
2023 – present	Jenna Ott, PhD	Postdoctoral Research Associate
2024 – present	Ben Alexander	CBE PhD Student
2024 – present	Raine Hagerty	CBE PhD Student
2024 – present	Wren Mallikarjunan	CBE PhD Student – coadvised with Mark Blenner
2024 – present	Nathan Miller	CBE PhD Student – coadvised with Mark Blenner
2024 – present	Hayeon Park	CBE PhD Student – coadvised with Wilfred Chen
2024 – present	Samaha Zaman	CBE PhD Student

Past Trainees

2018 – 2023	Mrugesh Parasa	PhD defense: 5/23 current: University of Arizona Molecular & Cell Biology postdoc
2016 – 2022	Casey Hooker, PhD	Purdue University College of Engineering Outstanding Graduate Research Award (2022) Purdue University ABE Department Outstanding Graduate Research Award (2022) MS in Biological Engineering, 2018 NSF Graduate Research Fellow 2018-2021 PhD defense: 11/22 current: Fungal Molecular Scientist, Aqua Cultured Foods
2016 – 2021	Kok Zhi Lee, PhD	Purdue ABE Outstanding Service Award Defense Threat Reduction Agency Travel Award, Central US Synthetic Biology Workshop 2019

Carol D. Litchfield Best Student Poster Presentation Award at SIMB 2018 | **PhD defense:** 4/21 | **current:** Washington University at St. Louis Energy, Environmental & Chemical Engineering postdoc

2016 – 2021	Ethan Hillman, PhD	Purdue University College of Engineering Outstanding Graduate Research Award (2020) PULSe 5 Minute Thesis presentation competition winner (2020) NSF Graduate Research Fellowship Program (Honorable mention, 2017) PhD defense: 2/21 current: Michigan Medicine postdoc
2017 – 2019	Jake Englaender, PhD	Postdoctoral Research Associate current: Lead Microbial Fermentation Scientist, AgroSpheres
2018 - 2019	Michael Mechikoff, MS	MS defense: 12/19 current: US Air Force
2016 - 2018	Logan Readnour, MS	Andrews Fellowship MS defense: 11/18 current: Sequencing Specialist, Lanzatech
2022 – 2023	Derek Wu, MS	

Rotation Students

2023	Topher Pirner	UD CBI PhD Student (CBE)/Visiting Sabbatical
2022	Austin Desmarais	UD Microbiology PhD Student
2022	Austin Morgan	UD Microbiology PhD Student
2022	Brett Graver	UD BISC PhD Student
2022	Ross Klauer	UD CBI PhD Student (CBE)
2021	Shelby Anderson	UD CBI PhD Student (CBE)
2020 – 2021	Javier Muñoz	Purdue PULSe PhD Student
2020	Lauren Wilbanks	Purdue PULSe PhD Student
2018	Logan Kurgan	Purdue PULSe PhD Student
2017	Jonathan Overton	Purdue ABE PhD Student
2017	Conrrad Nicholls	Purdue PULSe PhD Student

Thesis Committees

Current PhD Committees @UD

Vijaydev Ganesan (CBE, Blenner)
 Madan Gopal (CBE, Chen/Kunjapur)
 David Le (CBE, Lee)
 Anthony Stohr (CBE, Chen/Blenner)
 D'Jana Wyllis (CBE, Kunjapur)
 Casey Derieux (MGP, Hanson)
 Chaoying Ding (CBE, Ierapetritou)

Aginiprakash Dhanabal, MS (ABE/Allen Garner) – 12/19
 Michelle Ingle, MS (ABE/David Umulis) – 11/19

PhD Committees Completed

Dr. Md. Shariar Karim (ABE/David Umulis) – 12/16
 Dr. Leyla Nesrin (ABE/Jenna Rickus) – 07/17
 Dr. Lee Stunkard (BCHEM/Jeremy Lohman) – 12/19
 Dr. Emma Brace (ABE/Abby Engelberth) – 7/20
 Dr. Sarah Daly (ABE/Jiqin Ni) – 7/20
 Dr. Ikenna Okekeogbu (ABE/Kari Clase) – 7/20
 Dr. Craig Sweet (CHEM/David Thompson) – 12/20
 Dr. Ruben Lopez (ENE/Tamara Moore) – 12/22

Current PhD Committees @Other Institutions

Cody Kamoku (ChE @ ASU, David Nielsen)
MS Committees Completed
 Jeremiah Vue, MS (ChE/John Morgan) – 07/17
 Paul Lengemann, MS (ABE/Meng Deng) – 07/18

Undergraduate Researchers and Visitors

Current

	Year	Undergrad	Program/ Honors/Achievements	Current Affiliation
1	2024 –	Valeria Villadiego Valencia	UDRAW	Biological Sciences '27, UD
2	2023 –	Austin Futtu	UDRAW	AMB & Biotech '27, UD

3	Fall 23	Ashwin Mhadeshwar	HS Intern	Garnet Valley High School, PA '24
4	Fall 23	Oscar Hageman	HS Intern	Cape Henlopen High School '24
5	Summer 23	Arya Gupta	HS Intern	Charter School of Wilmington '25
6	2023 –	Subiksha Srinivasan Vidya	HS Intern	Charter School of Wilmington '26
7	Summer 23	Jadira Fuentes Bautista		CBE AMB & Biotech '26, UD
8	2023 –	Ashley Kalan	INBRE Summer Scholar '23, DE-INBRE Academic Year Fellow '23-'24	CBE '25, UD
9	2022 –	Evan Gillen	INBRE Summer Scholar '23 (declined)	CBE '26, UD
10	2022 –	Jesal Patel	INBRE Summer Scholar '22, UD Summer Scholar '23	CBE '25, UD

Past

	Year	Undergrad	Program/ Honors/Achievements	Current Affiliation
11	Summer 23	Robyn Logue	INBRE Summer Scholar '23	Eng Phy '26, DSU
12	2022 – 2023	Toni Akin-Adenekan	Senior Thesis	Assoc. Scientist, AstraZeneca
13	2021 – 2023	Megane Noubissi Tabouguia	Senior Thesis	Research Assoc., IFF
14	2021 - 2023	Julia Donlevie	Honors Thesis	PhD Student, Cornell ChE
15	Summer 22	Dylan Carman	REU Fellow; NSF Graduate Research Fellow	PhD Student, JHU
16	Summer 22	Ashlesha Mohapatra	CHOG2p REU Fellow	CBE '24, UD
17	Summer 22	Alvaro Tinoco Guzman	HS Intern (K12 Engineering)	
18	Summer 22	Krish Modi	HS Intern (NSF RAHSS Fellow)	Class of '27, Penn
19	Summer 22	Aidan Kindopp	REU Fellow; Goldwater Scholar	ChE '23, Univ. Rhode Island
20	2021 - 2022	Altaf Bacchus		CBE '25, UD
21	2021	Brigid Monahan		CBE '24, UD
22	Summer 21	Zymir Robinson	CHOG2p REU Fellow	Biology '23, DSU
23	2020 – 2021	Rebecca Slaughter		Process Engineer, Catalent
24	2019 – 2021	Benjamin Rubino	Honors Thesis	Biology '22, Purdue
25	2019 – 2021	Benjamin Howard		Biological Engineering '21, Purdue
26	2019 – 2021	Elizabeth Frazier	REU Fellow; <i>Microorganisms</i> , 9:1986 (2021); NDSEG Fellow	PhD Student, Purdue
27	2019 – 2021	Tyler Rankin	<i>ACS Syn Biol</i> , 11:53-60 (2022)	PhD Student, Iowa
28	2020	Benjamin Burns		Biological Engineering '22, Purdue
29	2017 – 2020	Kevin Fitzgerald	OUR Scholar 2019; NSF Graduate Research Fellow; <i>ACS Syn Biol</i> , 11:53-60 (2022); <i>NAR</i> , 49: 9923-9937 (2021).	PhD student, Northwestern
30	2018 – 2020	Paula Pandolfi	Honors Thesis; <i>ACS Syn Biol</i> , 11:53-60 (2022); <i>NAR</i> , 49: 9923-9937 (2021).	PhD student, UCLA

31	2019 – 2020	Zach Hartley	Honors Thesis	PhD student, UCR
32	2019	Abigail Venskus	SROP Fellow/REU	Lab Tech, SUNY Upstate
33	2019	Kathryn Myers		Lab Tech, Notre Dame
34	2019	Ja'Sean Holmes	NSF REU Fellow	Cell & Mol Biol '21, Colby College
35	2018 – 2019	Rachel Susler	<i>Appl. Nano Mater</i> , 3: 12080 – 12086 (2020).	Purdue ChE '19
36	2018 – 2019	Corren Scott	<i>Appl. Nano Mater</i> , 3: 12080 – 12086 (2020)	Process Engineer, Carlisle Construction Materials
37	2018 – 2019	Trang Dieu		Repligen
38	2018	Ethan Gaskin		MS Student, CMU
39	2018	Frances Opferman		MA Student, Queens
40	2017 – 2019	Archana Kikla	Honors Thesis; <i>NAR</i> , 49: 9923-9937 (2021).	PhD Student, ASU
41	2017 – 2019	Juya Jeon	SURF Fellow	PhD Student, WUSTL
42	2017 – 2019	Makayla Schacht	<i>Biotechnol. Biofuels</i> , 11:293 (2018)	Assoc. Lab Technician, Covance
43	2017 – 2018	Abigail Hunnicutt	<i>Biotechnol. Biofuels</i> , 11:293 (2018)	Field Services Tech, SCIEX
44	2017 – 2018	Evan Shank	<i>Microorganisms</i> , 9:1986 (2021)	Business Development, NEXTFLY Web Design
45	2016 – 2019	Adrian Ortiz-Velez	MASI Fellow, <i>Biotechnol. Biofuels</i> , 11:293 (2018); <i>Microorganisms</i> , 9:1986 (2021).	PhD student, San Diego State/UC Riverside
46	2016 – 2019	Rohit Chatterjee	MASI/SURF Fellow, OUR Scholar	MD student, IU
47	2016 – 2018	Alexander Murfee		
48	2016 – 2018	Arren Liu	MASI Fellow; <i>NAR</i> , 49: 9923-9937 (2021).	PhD student, ASU
49	2016 – 2018	Suraj Mohan		MS, Research associate, Lanzatech
50	2016 – 2018	Yu Hong (James) Wang	SURF Scholar/Martin Ag Research Scholar, Coauthor on patent	PhD student, CMU
51	2017	Bowman Clark		
52	2017	Eung Baek Kim		
53	2016	Emma Foster		PhD Student, Purdue
54	2016	Sharifah Binti Syed Omar		Human Factors Engineer, Farm Design, Inc
55	2014 – 2015	Charlotte Abrahamson	Amgen Scholar	PhD
56	2013 – 2014	Erich Brodbeck	SSB URAP Fellow	Process Engineer, Amyris
57	2013	Megan Cotich	Research Experience for Teachers Fellow, integrated research in Gr. 7 Life Sciences curriculum	Life Sciences, La Colina Junior High School
58	2013	Elisa Ovadia	<i>ME Comm.</i> 3:68-75, (2016)	PhD, process engineer, Kite Pharma
59	2012 – 2013	Brian Owens		Project Manager, Kinder Morgan
60	2011	Tarielle (Sanders) Jones	Amgen Scholar; <i>ME</i> 14(6): 661-671, (2012); <i>ACS SynBio</i> , 2(3):126-135, (2013)	PhD, Senior Engineer, Raytheon

61	2011	Brian Ma	SURF Fellow, <i>ACS SynBio</i> , 2(3):126-135, (2013)	MS, software engineer, Sahara Cloude
62	2010	Zach Waxman		MD, software engineer, Tempus Labs
63	2010	U'Kevia Bell	MSRP Fellow, Biophysical Society Poster award at ABCAM 2012	Production Engineer, Dow
64	2009	Matt Luchette		MD, pediatrician
65	2008	Aziza Glass	MSRP Fellow	DVM, private veterinarian