AINDRILA MUKHOPADHYAY

Lawrence Berkeley National Laboratory (LBNL)
1 Cyclotron road, MS 978, Berkeley CA 94720
Phone (510) 495-2628, Fax (510)-495-4252; email: amukhopadhyay@lbl.gov; m-group.lbl.gov

Education

2003 Post doctoral research, Microbiology/ Systems Biology, UC Berkeley and LBNL
2002 *Ph.D.*, Organic Chemistry, University of Chicago, Chicago, IL
1997 *M.S.*, Organic Chemistry, University of Chicago, Chicago, IL
1996 *M.Sc.*, Chemistry, Indian Institute of Technology, Mumbai, India

Research Leadership

2017+ Vice President, Biofuels and Bioproducts Division, Joint BioEnergy Institute (JBEI), Emeryville, CA
2024+ Project co-PI for the DARPA CERES project, Plant-Enhanced Degradation Of Munitions by Engineered TERrestrial microbes (PEDOMETER), LBNL
2021+ Project co-PI in the DOE SFA, Microbial Community Analysis & Functional Evaluation in Soils (m-CAFEs), LBNL
2009+ Project co-PI in the DOE Scientific Focus Area: Ecosystems and genomes integrated with genes and molecular assemblies (ENIGMA)
2020+ Project co-PI in the DOE Scientific Focus Area: m-CAFEs, LBNL
2019-2021 Co-PI, Roots 2.0 Laboratory Directed Reaserach and Development (LDRD) project, LBNL
2017-2019 Co-PI, Advanced Bioinspired Chemicals and Materials Intiative LDRD project, LBNL
2016-2018 Science Strategy Mentor for Energy and Biomanufacturing for the LBNL BioSciences Area 10-year strategic plan.
2016-2018 Co-PI, Ecotoxicity for biomufacturing process, LDRD project, LBNL
2015-2017 Vice President, Fuels Synthesis Division, JBEI, Emeryville, CA
2015-2017 Deputy Vice President, Fuels Synthesis Division, JBEI, Emeryville, CA
2015-2016 PI, NASA STTR Phase II project: Automated strain engineering in cyanobacteria
2012+ Director, Host Engineering, Joint BioEnergy Institute, Emeryville, CA
2014-2015 PI, Study of novel *Acinetobacter venetianus* genes for alkane degradation, LBNL
2013-2014 Co-PI, microCLeAN DARPA seedling G-agent Bioremediation project, LBNL
2011-2014 Co-PI, Cyanobacterial Biological Soil Crusts, strategic LDRD project, LBNL
2007-2012 Director, Fuels Transport & toxicity, JBEI, Emeryville, CA
2007-2012 Director, Omics Technologies, Joint BioEnergy Institute (JBEI), Emeryville, CA
2007-2009 Project co-PI in the DOE Project: Environmental stress pathway project, LBNL
2004-2007 Technical lead for Proteomics studies for the DOE project: Virtual Institute of Microbial Stress and Survival, LBNL

Professional positions

2021+	Science Deputy, Biological Systems and Engineering Division, Biosciences Area, Lawrennce Berkeley National Laboratory (LBNL), Berkeley, CA
2024+	Board of Directors (Elected 2024), Society for Industrial Microbiology and Biotechnology (SIMB)
2022+	Co-Chair, Laboratory Staff Committee, LBNL
2016+	Senior Scientist, Biological Systems and Engineering, Biosciences Area, LBNL, Berkeley, CA
2018+	Adjunct Professor, Comparative Biochemistry Program, University of California, Berkeley, CA
2016-17	Visiting Professor, Department of Chemical Engineering, Indian Institute of Technology, Mumbai, India.
2015-2016	Interim Division Director, Biological Systems and Engineering, Biosciences Area, LBNL
2015	Biosciences Area Divisional Reorganizational Lead, Biological Engineering Division, BioSciencies Area, LBNL
2014+	Adjunct Professor, School of Life Sciences of the College of Liberal Arts and Sciences, Arizona State University, Tempe, AZ
2007-2016	Staff Scientist, LBNL, Berkeley, CA
2004-2007	Career Scientist, LBNL, Berkeley, CA
2000-2002	GSRA, Dept of Chemistry, Emory University, Atlanta, GA
1996-2000	GSRA, Dept of Chemistry, University of Chicago, Chicago, IL

General Background and Research Interests

My work is focused on understanding host response, membrane transport, signaling, stress and tolerance phenotypes in microbial systems. I study engineered and environmental microbes. I use microbiological, biochemical and systems biology tools to examine environmentally important organisms such as sulfate and metal reducing bacteria, cyanobacteria. I have specific interest in signaling mechanisms in organisms like *Rhodanococcus*, *Pseudomonas stutzeri*, *Desulfovibrio vulgaris* and *Microcoleus vaginatus, Agrobacterium tumefaciens* and for which I have conducted detailed studies. I develop tools, and use host genome and protein engineering strategies, to improve bioproduction and bioremediation applications, using bacterial and fungal systems such as *Escherichia coli, Pseudomonas putida, Corynebacterium glutamicum*, *Nosctoc punctiforme, Pantoea MT58, Saccharomyces cerevisiae* and *Rhodosporidium toruloides*.

Publications (n = 149; google citations >10k; google h-index = 57)

Peer Reviewed

1. Banerjee, D., Menasalvas, J., Chen, Y. Gin JW, Baidoo, EEK, Petzold CJ, Eng, T, **Mukhopadhyay A***. Addressing genome scale design tradeoffs in *Pseudomonas putida* for bioconversion of an aromatic carbon source. *npj Syst Biol Appl* **11**, 8, **2025** doi.org/10.1038/s41540-024-00480-z
2. Priya S, Rossbach S, Eng T, Lin H, Andeer PF, Mortimer JC, Northen TR, **Mukhopadhyay A*** Assessing horizontal gene transfer in the rhizosphere of Brachypodium distachyon using fabricated ecosystems (EcoFABs). *Appl Environ Microbiol* **2024** 90:e01505-24.

3. Kakouridis A, Diamond, S., Eng T, Mills HJ, Gamez Holzhaus, O, Summers ML, Garcia-Pichel F, **Mukhopadhyay A*** Desiccated cyanobacteria serve as efficient plasmid DNA carriers in space flight *ACS Synthetic Biology*, **2024** doi.org/10.1021/acssynbio.3c00672
4. Srinivasan A, Chen-Xiao K, Banerjee D, Oka, Asun; Pidatala V R, Eudes A, Simmons BA, Eng T, **Mukhopadhyay A*** Sustainable production of 2, 3, 5, 6-Tetramethylpyrazine at high titer in engineered *Corynebacterium glutamicum Journal of Industrial Microbiology and Biotechnology*, **2024** doi.org/10.1093/jimb/kuae026
5. Baral N, Banerjee D, **Mukhopadhyay A,** Simmons BA, Singer SW, Scown CD, Integration of Genome-Scale Metabolic Model with Biorefinery Process Model Reveals Market-Competitive Carbon-Negative Sustainable Aviation Fuel Utilizing Microbial Cell Mass Lipids and Biogenic CO_2 *BioResources*, **2024** doi: 10.15376/biores.19.3.4056-4086
6. Shrestha S, Goswami, S, Banerjee, D, Garcia, V, Zhou, E, Olmsted, Charles N; Majumder, E L-W, Kumar, D, Awasthi, D, **Mukhopadhyay, A**, Singer SW, Gladden JM, Simmons BA, Choudhary H, Perspective on Lignin Conversion Strategies That Enable Next Generation Biorefineries, *ChemSusChem* **2024** doi.org/10.1002/cssc.202301460
7. Yunus, IS, Hudson GA, Chen Y, Gin JW, Kim J, Baidoo, EEK, Petzold CJ, Adams PD, Simmons BA, **Mukhopadhyay A**, Keasling JD, Lee TS Systematic engineering for production of anti-aging sunscreen compound in *Pseudomonas putida*, *Metabolic Engineering*, **2024** doi.org/10.1016/j.ymben.2024.06.001
8. Banerjee D, Yunus IS, Wang X, Kim J, Srinivasan A, Menchavez R, Chen Y, Gin JW, Petzold CJ, Garcia Martin H, Magnuson JK, Adams PD, Simmons BA, **Mukhopadhyay A**, Kim JH, Lee TS*, Genome-scale and pathway engineering for the sustainable aviation fuel precursor isoprenol production in Pseudomonas putida, *Metabolic Engineering,* **2024**, doi.org/10.1016/j.ymben.2024.02.004.
9. Baral NR, Banerjee D, **Mukhopadhyay A**, Simmons BA, Singer SW, Scown CD * Economic and Environmental Trade-Offs of Simultaneous Sugar and Lignin Utilization for Biobased Fuels and Chemicals, *ACS Sustainable Chem. Eng***. 2024** doi: 10.1021/acssuschemeng.3c05541
10. Garber ME, Frank V, Kazakov AE, Incha MR, Nava AA, Zhang H, Valencia LE, Keasling JD, Rajeev L, Mukhopadhyay A. 2023. REC protein family expansion by the emergence of a new signaling pathway. **2023** *mBio* doi.org/10.1128/mbio.02622-23
11. Kulakowski, S, Banerjee, D, Scown, CD, **Mukhopadhyay, A*** Improving microbial bioproduction under low-oxygen conditions *COBIOT* **2023** doi.org/10.1016/j.copbio.2023.103016
12. Camargo AP*, Call L, Roux S, Nayfach S, Huntemann M, Palaniappan K, Ratner A, Chu K, Mukherjee S, Reddy T B K, Chen I-M A, Ivanova NN, Eloe-Fadrosh EA, Woyke T, Baltrus, Castañeda-Barba DAS, de la Cruz F, Funnell BE, Hall JPJ, **Mukhopadhyay A**, Rocha EPC, Stalder T, Top E, Kyrpides NC, IMG/PR: a database of plasmids from genomes and metagenomes with rich annotations and metadata, *Nucleic Acids Research*, **2024**, doi.org/10.1093/nar/gkad964
13. Eng T, Banerjee D, Menasalvas J, Chen Y, Gin J, Choudhary H, Baidoo E, Chen J-H, Ekman A, Kakumanu R, Liu Diercks Y, Codik A, Larabell C, Gladden J, Simmons BA, Keasling JD, Petzold CJ, **Mukhopadhyay A***, Maximizing microbial bioproduction from sustainable carbon sources using iterative systems engineering, *Cell Reports,* **2023**, doi.org/10.1016/j.celrep.2023.113087.
14. Garcia VE, Pidatala V, Barcelos CA, Liu D, Otoupal P, Wendt, O, Choudhary H, Sun N, Eudes A, Sundstrom ER, Scheller HV, Putnam DH, **Mukhopadhyay A**, Gladden JM, Simmons BA, Rodriguez A* Enhanced microbial production of protocatechuate from engineered sorghum

using an integrated feedstock-to-product conversion technology *Green Chemistry* **2023** doi 10.1039/D3GC01481A

15. Huang J, Quest A, Cruz-Morales P, Deng K, Pereira JH, Van Cura D, Kakumanu R, Baidoo EEK, Dan Q, Chen Y, Petzold CJ, Northen TR, Adams PD, Clark DS*, Balskus EP, Hartwig JF*, **Mukhopadhyay A***, Keasling JD* Complete integration of carbene-transfer chemistry into biosynthesis *Nature* **2023** doi.org/10.1038/s41586-023-06027-2
16. Gauttam R, Eng T, Zhao Z, Rana Q, Simmons BA, Yoshikuni Y, **Mukhopadhyay A**, Singer SW Development of genetic tools for heterologous protein expression in a pentose-utilizing environmental isolate of *Pseudomonas putida Microbial Biotechnology* **2023** doi.org/10.1111/1751-7915.14205
17. Zha J*, Zhao Z, Xiao Z, Eng T, **Mukhopadhyay A,** Koffas MAG*, Tang Y* Biosystems Design of *Corynebacterium glutamicum* for Bio-Production, *COBIOT* **2023**
18. Banerjee D, **Mukhopadhyay A*** Perspectives in Growth Production Trade-off in Microbial Bioproduction *RSC Sustainability*, **2023**
19. Zhao R, Sengupta A, Tan AX, Whelan R, Pinkerton T, Menasalvas J, Eng T, **Mukhopadhyay A**, Jun Y-S, Pakrasi HB, Tang Y Photobiological production of high-value pigments via compartmentalized co-cultures using Ca-alginate hydrogels npg *Sci Rep* **2022**
20. Wang X, Baidoo EEK, Kakumanu R, Xie S, **Mukhopadhyay A**, Lee TS* Engineering isoprenoids production in metabolically versatile microbial host *Pseudomonas putida*, *Biotechnology for Biofuels and Bioproducts* **2022**
21. Park M-R, Gauttam R, Fong B, Chen Y, Lim H-Y, Feist, A, **Mukhopadhyay A**, Petzold CJ, Simmons BD, Singer SW Revealing Oxidative Pentose Metabolism in New *Pseudomonas putida* Isolates *Environmental Microbiology* **2022**
22. Otoupal PB, Geiselman GM, Oka A, Barcelos CA, Choudhary H, Dinh D, Zhong W, Hwang H, Keasling JD, **Mukhopadhyay A**, Sundstrom E, Haushalter RW, Sun N, Simmons BA Gladden* Advanced one-pot deconstruction and valorization of lignocellulosic biomass into triacetic acid lactone using *Rhodosporidium toruloides Microbial Cell Factories* **2022**
23. Lin H-H, Mendez-Perez D, Park J, Wang X, Cheng Y, Huo J, **Mukhopadhyay A**, Lee TS, Shanks BH* Precursor Prioritization for p-Cymene Production through Synergistic Integration of Biology and Chemistry, *Biotechnology for Biofuels and Bioproducts* **2022**
24. Czajka JJ, Banerjee D, Eng TT, Menasalvas J, Yan C, Munoz NM, Poirier BC, Kim Y-M, Baker SE, Tang YJ, **Mukhopadhyay A*** Tuning a high performing multiplexed-CRISPRi *Pseudomonas putida* strain to further enhance indigoidine production *MEC* **2022**
25. Schmidt M, Pearson AN, Incha MR, Thompson MG, Baidoo EEK, Kakumanu R, **Mukhopadhyay A**, Shih PM, Deutschbauer AM, Blank LM, Keasling JD Nitrogen metabolism in *Pseudomonas putida*: functional analysis using random barcode transposon sequencing *Applied and Environmental Microbiology* **2022**
26. Garber ME, Fregoso R, Lake J, Kakouridis A, **Mukhopadhyay A*** Pseudomonas response regulators produced in an E. coli heterologous expression host exhibit host-derived post-translational phosphorylation *Scientific reports* **2022**
27. Iwai K*, Wehrs M, Garber ME, Sustarich J, Washburn L, Costello Z, Kim PW, Ando D, Gaillard WR, Hillson NJ, Adams PD, **Mukhopadhyay A**, Garcia Martin H, Singh AK* Scalable and automated CRISPR-based strain engineering using droplet microfluidics. *Microsyst Nanoeng* **2022**
28. Liu Z, Huang J, Gu Y, Clark DS, **Mukhopadhyay A**, Keasling JD, Hartwig JF* Assembly and Evolution of Artificial Metalloenzymes within *E. coli* Nissle 1917 for Enantioselective and Site-Selective Functionalization of C─H and C═C Bonds *JACS* **2022**

29. Huang, J, Liu, Z, Bloomer B, Clark*, DS, **Mukhopadhyay, A***, Keasling*, JD, Hartwig*, JF. Unnatural Biosynthesis by an Engineered Microorganism with Heterologously Expressed Natural Enzymes and an Artificial Metalloenzyme *Nature Chemistry* **2021**
30. Keasling JD*[§], Martin HG[§], Lee TS[§], **Mukhopadhyay A**[§], Singer SW[§], Sundstrom E[§] Microbial production of advanced biofuels *Nature Microbiology Reviews* **2021**
31. Banerjee D, Eng T, Sasaki Y, Srinivasan A, Oka A, Herbert RA, Trinh J, Singan VR, Sun N, Putnam D, Scown CD, Simmons B, **Mukhopadhyay, A***. Genomics Characterization of an Engineered *Corynebacterium glutamicum* in Bioreactor Cultivation Under Ionic Liquid Stress. *Frontiers in bioengineering and biotechnology* **2021**
32. Kothari A, Roux S, Zhang H, Prieto A, Soneja D, Chandonia J-M, Spencer S, Wu X, Sara Altenburg, Fields MW, Deutschbauer AM, Arkin AP, Alm EJ, Chakraborty R, **Mukhopadhyay A*** Ecogenomics of groundwater phages suggests niche differentiation linked to specific environmental tolerance *mSystems* **2021**
33. Eng T[§], Banerjee D[§], Lau AK, Herbert RA, Prahl JP, Deutschbauer AM, Tanjore D, and **Mukhopadhyay A***. Determinants of Bioreactor Fitness in *Pseudomonas putida* KT2440 Via Fitness Profiling Enables Optimized Indigoidine Production from Lignin-Derived Monomers. *Metabolic Engineering*, **2021**
34. Lim HY, Eng T, Banerjee D, Alarcon G, Lau AK, Park MR, Simmons BA, Palsson BO, Singer SW, **Mukhopadhyay A**, and Feist AM*. Generation of *Pseudomonas putida* KT2440 Strains with Efficient Utilization of Xylose and Galactose via Adaptive Laboratory Evolution. *ACS Sus Chemistry & Engineering* **2021**
35. Baral NR, Yang M, Harvey BG, Simmons BA, **Mukhopadhyay A**, Lee TS, Scown CD* Production Cost and Carbon Footprint of Biomass-Derived Dimethylcyclooctane as a High-Performance Jet Fuel Blendstock *ACS Sus Chemistry & Engineering* **2021**
36. Gauttam R, **Mukhopadhyay A**, Simmons BA, Singer SW* Development of dual-inducible duet-expression vectors for tunable gene expression control and CRISPR interference-based gene repression in *Pseudomonas putida* KT2440 *Microbial Biotechnology* **2021**
37. Wang X, Pereira, JH, Tsutakawa S, Fang X, Adams, PD. **Mukhopadhyay, A**. Lee, T S Efficient production of oxidized terpenoids via engineering fusion proteins of terpene synthase and cytochrome P450 *Metabolic Engineering* **2021**
38. Kim J, Baidoo EEK, Amer B, **Mukhopadhyay A**, Adams PD, Simmons BA, Lee TS Engineering *Saccharomyces cerevisiae* for isoprenol production, *Metabolic Engineering*, **2021**
39. Geiselman GM and Kirby J Landera A, Otoupal P, Papa G, Barcelos C, Sundstrom ER, Das L, Magurudeniya HD, Wehrs M, **Mukhopadhyay A**, Blake Simmons, Gladden JD, Conversion of poplar biomass into high-energy density tricyclic sesquiterpene jet fuel blendstocks *Microbial cell factories* **2020**
40. Banerjee, D[§]Eng, T[§], Lau, A.K., Sasaki, Y., Wang, B., Chen, Y., Prahl, J-P., Singan, VR., Herbert, RA., Liu, Y., Tanjore, D., Petzold, CJ., Keasling, JD., **Mukhopadhyay, A*** Genome-scale metabolic rewiring improves titers rates and yields of the non-native product indigoidine at scale. *Nat. Commun*. **2020**
41. Wehrs, M[§], Thompson, MG[§], Banerjee, D[§], Prahl, J-P., Morella, NM., Barcelos, CA., Moon, J., Costello, Z., Keasling, JD., Shih, PM., Tanjore D*, **Mukhopadhyay A*** Investigation of Bar-seq as a method to study population dynamics of *Saccharomyces cerevisiae* deletion library during bioreactor cultivation *Microbial cell factories* **2020**
42. Thompson, MG., Incha, MR., Pearson, AN., Schmidt, M., Sharpless, WA., Eiben, C.B., Cruz-Morales, P., Blake-Hedges, JM., Liu, Y., Adams, CA., Haushalter, RW., Krishna, RN,, Lichtner, P., Blank, LM., **Mukhopadhyay, A.,** Deutschbauer, AM., Shih, PM., Keasling JD*

Functional analysis of the fatty acid and alcohol metabolism of *Pseudomonas putida* using RB-TnSeq *AEM* **2020**

43. Lim, HG., Fong, B., Alarcon, G., Magurudeniya, HD., Eng, T., Szubin, R., Olson, CA., Palsson, BO., Gladden, JM., Simmons, BA., **Mukhopadhyay, A**., Singer, SW., Feist AM., Generation of ionic liquid tolerant *Pseudomonas putida* KT2440 strains via adaptive laboratory evolution *Green Chemistry* **2020**
44. Mohamed, ET., Werner, Allison Z; Salvachúa, D., Singer, C., Szostkiewicz, K., Jiménez-Díaz, M., Eng, T., Radi, MS., Simmons, BA., **Mukhopadhyay, A**., Herrgård, MJ., Singer, SW., Beckham, GT., Feist AM., Adaptive laboratory evolution of *Pseudomonas putida* KT2440 improves p-coumaric and ferulic acid catabolism and tolerance, *Metabolic Engineering Communications* **2020**
45. Eng T, Herbert RA, Martinez U, Wang B, Chen J, Brown JB, Deutschbauer A, Bissell MJ, Mortimer JC* **Mukhopadhyay A*** Iron Supplementation Eliminates Antagonistic Interactions Between Root Associated Bacteria *Frontiers Microbiology*, **2020**
46. Rajeev, L., Garber, ME. and **Mukhopadhyay, A***. Tools to map target genes of bacterial two-component system response regulators. *Environmental Microbiology Reports*. **2020**
47. Gauttam R, **Mukhopadhyay A**, Singer SW* Construction of a novel dual-inducible duet-expression system for gene (over) expression in *Pseudomonas putida Plasmid*, 2020
48. Chiniquy, J., Garber, M.E., **Mukhopadhyay, A**. Hillson N*. Fluorescent amplification for next generation sequencing (FA-NGS) library preparation. *BMC Genomics* **2020**
49. Chen Y, Banerjee D, **Mukhopadhyay A**, Petzold CJ* Systems and synthetic biology tools for advanced bioproduction hosts, *Current Opinion in Biotechnology*, **2020**
50. Eng T, Sasaki Y, Herbert RA, Lau A, Trinh J, Chen Y, Mirsiaghi M, Petzold CJ, **Mukhopadhyay A*** Production of tetra-methylpyrazine using engineered *Corynebacterium glutamicum, Met Eng Comm,* **2020**
51. Thompson MG, Pearson AM, Barajas JF, Cruz-Morales P, Sedaghatian N, Costello Z, Garber ME, Incha MR, Valencia LE, Baidoo EEK, Garcia-Martin H, Mukhopadhyay, A, Keasling JD* Identification, Characterization, and Application of a Highly Sensitive Lactam Biosensor from *Pseudomonas putida* ACS Synthetic Biology **2020**
52. Kothari A, Soneja D, Tang A, Carlson H, Deutschbauer AM, **Mukhopadhyay A*** Native plasmid-encoded mercury resistance genes are functional and demonstrate natural transformation in environmental bacterial isolates *mSphere* **2019**
53. Rigual V, Papa G, Rodriguez A, Wehrs M, Kim K, Oliet M, Alonso M, Gladden J, Mukhopadhyay A, Simmons B, Singh S* Evaluating protic ionic liquid for woody biomass one-pot pretreatment + saccharification, followed by Rhodosporidium toruloides cultivation ACS Sus Chem & Eng 2019
54. Rodrigues AV, Tantillo DJ, **Mukhopadhyay A**, Keasling JD, Beller HR* Insights into the Mechanism of Phenylacetate Decarboxylase (PhdB), a Toluene-Producing Glycyl Radical Enzyme. Chembiochem **2019**
55. Kang A, Mendez-Perez D, Goh E-B, Baidoo EEK. Benites VT, Beller HR, Keasling JD, Adams PD, **Mukhopadhyay A**, Lee TS* Optimization of the IPP-bypass mevalonate pathway and fed-batch fermentation for the production of isoprenol in *Escherichia coli Metabolic Engineering* **2019**
56. Langley S, Eng T, Wan K, Herbert RA, Klein A, Yoshikuni Y, Tringe S, Brown JB, Celniker S, Mortimer JC*, and **Mukhopadhyay A*** Complete Genome Sequence of *Agrobacterium sp.* 33MFTa1.1 isolated from the roots of *Thlaspi arvense*. Microbiology Resource Announcements **2019**

57. Baral NR, Kavvada, O, Mendez-Perez D, **Mukhopadhyay A**, Lee TS, Simmons BA Scown CD* Greenhouse Gas Footprint, Water-Intensity, and, Production Cost of Bio-Based Isopentenol as a Renewable Transportation Fuel *ACS Sus. Chem & Eng*. **2019**
58. Czamanski Nora L, Wehrs M, Kim J-H, Cheng J-F, Tarver A, Simmons BA, Magnuson J, Harmon-Smith M, Silva-Rocha R, Gladden JM, **Mukhopadhyay A**, Skerker JM*, Kirby J* A toolset of promoters for metabolic engineering of *Rhodosporidium toruloide*s Microbial Cell Factories **2019**
59. Wehrs, M., Gladden JM, Liu Y, Platz L, Prahl J-P, Moon J, Papa G, Sundstrom E, Geiselman GM, Tanjore D, Keasling JD, Pray TR, Simmons BA **Mukhopadhyay A*** Sustainable bioproduction of the blue pigment indigoidine: Expanding the range of heterologous products in *R. toruloides* to include non-ribosomal peptides *Green Chemistry* **2019**
60. Herbert RA, Eng T, Martinez U, Wang B, Langley S, Wan K, Pidatala V, Hoffman E, Chen JC, Bissell MJ, Brown JB, **Mukhopadhyay A*** Mortimer JC* Rhizobacteria mediate the phytotoxicity of a range of biorefinery-relevant compounds *Environmental Toxicology and Chemistry* **2019**
61. Dong J, Chen Y, Benites VT, Baidoo EE, Petzold CJ, Beller HR, Eudes A, **Mukhopadhyay A**, Singer SW* Methyl ketone production by *Pseudomonas putida* is enhanced by plant-derived amino acids, *Biotech and Bioeng* **2019**
62. Barajas JF, Wehrs M, To M, Cruickshanks L, Urban R, McKee A, Gladden J, Goh E-B, Brown ME, Pierotti D, Carothers JM, **Mukhopadhyay A**, Keasling JD, Fortman JL, Singer SW*, Bailey CB* Isolation and Characterization of Bacterial Cellulase Producers for Biomass Deconstruction: A Microbiology Laboratory Course" *Journal of Microbiology and Biology Education* **2019**
63. Baral, NR, Sundstrom E, Das L, Gladden J, Eudes, A, Mortimer JC, Singer SW, **Mukhopadhyay A,** Scown CS* Approaches for More Efficient Biological Conversion of Lignocellulosic Feedstocks to Biofuels and Bioproducts *ACS Sus. Chem. & Eng.* **2019**
64. Rajeev L, Luning EG, Zane GM, Juba TR, Kazakov AE, Novichkoc P, Wall J, **Mukhopadhyay A*** LurR is a regulator of the central lactate oxidation pathway in sulfate-reducing Desulfovibrio species. *PLOS ONE* **2019**.
65. Sasaki Y, Eng T, Herbert RA, Trinh J, Chen Y, Rodriguez, A, Gladden, JM, Simmons BA, Petzold CJ, **Mukhopadhyay, A*** Engineering *Corynebacterium glutamicum* to produce the biogasoline isopentenol from plant biomass hydrolysates. *Biotechnology for Biofuels*. **2019**
66. Kothari A, Wu Y-W, Chandonia J-M, Charrier M, Rajeev L, Rocha AM, Joyner DC, Hazen TC, Singer SW, **Mukhopadhyay A*** Large circular plasmids from groundwater plasmidomes span multiple incompatibility groups and are enriched in multimetal resistance genes. *mBio* **2019**
67. Wehrs M, Tanjore D, Eng T, Lievense J, Pray TR, **Mukhopadhyay A*** Engineering robust production microbes for large scale cultivation *Trends in Microbiology* **2019**
68. Baral, N. R., Kavvada, O., Mendez-Perez, D., **Mukhopadhyay, A.**, Lee, T. S., Simmons, B. A., Scown, C. D., Techno-economic analysis and life-cycle greenhouse gas mitigation cost of five routes to bio-jet fuel blendstocks. *Energy & Environmental Science* **2019**
69. Wang, S, Cheng G, Dong J, Tian T, Lee TS, **Mukhopadhyay A**, Simmons BA, Yuan Q, Singer SW* NaCl enhances Escherichia coli growth and isoprenol production in the presence of imidazolium-based ionic liquids, *Bioresource Technology Reports*, **2019**
70. Wehrs M, Prahl JP, Moon J, Li Y, Tanjore D, Keasling JD, Pray T, **Mukhopadhyay A*** Production efficiency of the bacterial non- ribosomal peptide indigoidine relies on the respiratory metabolic state in *S. cerevisiae Microbial Cell Factories* **2018**

71. Rajeev L, Garber M, Zane G, Wall JD, Dubchak I, Novichkov P, **Mukhopadhyay A**, Kazakov A* A new family of transcriptional regulators of tungstoenzymes and molybdate/tungstate transport *Environmental Microbiology*, **2018**
72. Wang S, Cheng G, Dong J, Tian T, Lee TS, **Mukhopadhyay A**, Simmons BA, Yuan Q, Singer S Tolerance characterization and isoprenol production of adapted *Escherichia coli* in the presence of ionic liquids *ACS Sustainable Chem*. Eng, **2018**
73. Eng T, Demling P, Herbert RA, Chen Y, Benites V, Martin J, Lipzen A, Baidoo EEK, Blank LM, Petzold CJ, **Mukhopadhyay A*** Restoration of Biofuel Production Levels and Increased Tolerance Under Ionic Liquid Stress is Enabled by a Mutation in the Essential *Escherichia coli gene cydC. Microbial Cell Factories* **2018**
74. Xu F, Sun J, Wehrs M, Kim KHo, Rau SS, Chan AM, Simmons BA, **Mukhopadhyay A**, Singh S* Biocompatible choline-based deep eutectic solvents enable one-pot production of cellulosic ethanol. *ACS Sustainable Chem*. Eng, **2018**
75. Garber ME, Rajeev L, Kazakov AE, Trinh J, Masuno D, Thompson MG, Kaplan, N, Luk, J, Novichkov PS and **Mukhopadhyay A*** Multiple signaling systems target a core set of transition metal homeostasis genes using similar binding motifs. *Mol Microbiol* **2018**
76. Thompson MG, Sedaghatian N, Barajas JF, Wehrs M, Bailey CB, Kaplan N, Hillson NJ, **Mukhopadhyay A**, Keasling JD* Isolation and characterization of novel mutations in the pSC101 origin that increase copy number. *npj Scientific Reports* **2018**
77. Jensen, H. M., Eng, T., Chubukov, V., Herbert, R. A. & **Mukhopadhyay, A*** Improving membrane protein expression and function using genomic edits. *npj Sci. Reports* **2017**
78. Dossani ZY, Reider Apel A, Szmidt-Middleton H, Hillson NJ, Deutsch S, Keasling JD, **Mukhopadhyay A*** A combinatorial approach to synthetic transcription factor-promoter combinations for yeast strain engineering. *Yeast* **2017**
79. Morrell, WC., Birkel, GW., Forrer, M, Lopez, T, Backman, TWH., Dussault, M, Petzold, CJ., Baidoo, EEK., Costello, Z, Ando, D, Alonso-Gutierrez, J, George, KW., **Mukhopadhyay, A**, Vaino, I, Keasling, JD., Adams, PD., Hillson, NJ. and Garcia Martin, H* The Experiment Data Depot: A Web-Based Software Tool for Biological Experimental Data Storage, Sharing, and Visualization. *ACS Synthetic Biology* **2017**.
80. d'Espaux L, Ghosh A, Runguphan W, Wehrs M, Xu F, Konzock O, Dev I, Nhan M, Gin J, Reider Apel A, Petzold CJ, Singh S, Simmons BA, **Mukhopadhyay A**, Martín HG, Keasling JD* Engineering high-level production of fatty alcohols by *Saccharomyces cerevisiae* from lignocellulosic feedstocks *Metabolic Engineering* **2017**
81. Parisutham V, Sathesh-Prabu C, **Mukhopadhyay A**, Lee SK*, Keasling JD Intracellular cellobiose metabolism and its applications in lignocellulose-based biorefineries *Bioresource Technology* **2017**
82. Liang Y, Richardson S, Yan J, Benites VT, Cheng-Yue C, Tran T, Mortimer J, **Mukhopadhyay A**, Keasling JD, Scheller HV, Loqué D* Endoribonuclease-Based Two-Component Repressor Systems for Tight Gene Expression Control in Plants *ACS Syn Bio* **2017**
83. Chubukov V, Desmarais JJ, Wang G, Chan LJG, Baidoo EEK, Petzold CJ, Keasling JD, **Mukhopadhyay A*** Engineering glucose metabolism of *Escherichia coli* under nitrogen starvation. *npj Systems Biology and Applications* **2017**
84. Reider Apel A, d'Espaux L, Wehrs M, Sachs D, Li R, Tong G, Garber M, Nnadi O, Zhuang W, Hillson N, Keasling JD, **Mukhopadhyay, A*** A Cas9-based toolkit to program gene expression in *Saccharomyces cerevisiae NAR* **2016**
85. Thorgersen MP, Lancaster WA, Rajeev L, Ge X, Vaccaro BJ, Poole FL, Arkin AP, **Mukhopadhyay A**, Adams MWW* A Highly Expressed High Molecular Weight S-Layer Complex of Pelosinus Strain UFO1 Binds Uranium *AEM.* **2016**

86. Hollinshead WD, Rodriguez S, Martin HG, Wang G, Baidoo EEK, Keasling JD, **Mukhopadhyay A***, Tang YJ* *Escherichia coli* glycolytic strategies, catabolite repression, and metabolite channeling *Biotechnology for biofuels* **2016**
87. Kothari A, Charrier M, Wu Y-W, Malfatti S, Zhou CE, Singer SW, Dugan L, **Mukhopadhyay A***. Transcriptomic analysis of the highly efficient oil-degrading bacterium *Acinetobacter venetianus* RAG-1 reveals genes important in dodecane uptake and utilization. *FEMS Microbiology Letters* **2016**
88. Brown ME, **Mukhopadhyay A**, Keasling JD*. Engineering bacteria to catabolize the carbonaceous component of sarin: teaching *E. coli* to eat isopropanol. *ACS Synthetic Biology* **2016**
89. Frederix M, Mingardon F, Sun N, Pray T, Singh S, Simmons BA, Keasling JD, **Mukhopadhyay A*** Development of an *E. coli* strain for one-pot biofuel production from ionic liquid pretreated cellulose and switchgrass. *Green Chemistry* **2016**
90. Fortman JL and **Mukhopadhyay A***, Future of Antibiotics: Emerging technologies, in Science & Society, *Trends in Microbiology* **2016**
91. Chubukov V, **Mukhopadhyay A**, Petzold CJ, Keasling JD, Garcia-Martín HG* Synthetic and systems biology for microbial production of commodity chemicals, *npj Systems Biology and Applications* **2016**
92. Reider-Apel A, Ouellet M, Szmidt-Middleton H, Keasling JD, **Mukhopadhyay A***, Evolved hexose transporter enhances xylose uptake and glucose/xylose co-utilization in *Saccharomyces cerevisiae, npj Sci Rep* **2016**
93. Kazakov A, Rajeev L, Chenn A, Luning EJ, Dubchak I, **Mukhopadhyay A**, Novichkov P*, σ54-dependent Regulome in *Desulfovibrio vulgaris* Hildenborough *BMC Genomics* **2015**
94. Rajeev L, Chen A, Kazakov AE, Luning EG, Zane GM, Novichkov PS, Wall JD, **Mukhopadhyay A*** Regulation of nitrite stress response in *Desulfovibrio vulgaris* Hildenborough, a model sulfate-reducing bacterium *J. Bact*. **2015**
95. **Mukhopadhyay A*** Tolerance engineering in bacteria for the production of advanced biofuels and chemicals *Trends in Microbiology* **2015**
96. Garcıa-Martin H*, Kumar VS, Weaver D, Ghosh A, Chubukov V, **Mukhopadhyay A**, Arkin AP, Keasling JD. A method to constrain genome-scale models with ^{13}C labeling data. *PLoS Comput Biol* **2015**
97. Chubukov V, Mingardon F, Schackwitz W, Baidoo EEK, Alonso-Gutierrez J, Hu Q, Lee TS, Keasling JD, **MukhopadhyayA*** Acute limonene toxicity in *Escherichia coli* is caused by limonene-hydroperoxide and alleviated by a point mutation in alkyl hydroperoxidase (AhpC) *Appl Environ Microbiol*. **2015**
98. Mingardon F, Clement C, Hirano K, Nhan M, Luning EG, Chanal A, **Mukhopadhyay A*** Improving olefin tolerance and production in *E. coli* using native and evolved AcrB. *Biotechnology and Bioengineering*. **2015**
99. Rocha UN*, Cadillo-Quiroz H, Karaoz U, Rajeev L, Klitgord N, Dunn S, Truong V, Buenrostro M, Bowen BP, Garcia-Pichel F, **Mukhopadhyay A,** Northen TR and Brodie EL, Isolation of a significant fraction of non-phototroph diversity from a desert Biological Soil Crust *Front. Microbiol* **2015**
100. Jensen HM[#], Foo JL[#], Dahl RH, George K, Keasling JD, Lee TS, Leong SSJ, **Mukhopadhyay A***. Improving microbial bio-gasoline production in *Escherichia coli* using tolerance engineering. *mBio* **2014**
101. Ghosh A, Nilmeier J, Weaver D, Adams PD, Keasling JD, **Mukhopadhyay A,** Petzold CJ, García-Martín H*. A Peptide-Based Method for 13C Metabolic Flux Analysis in Microbial Communities. *PLoS Comput Biol* **2014**

102. Rajeev L, Luning, EG, Altenburg S, Zane GM, Baidoo EE, Catena M, Keasling JD, Wall JD, Fields MW, **Mukhopadhyay A***. Identification of a cyclic-di-GMP-modulating response regulator that impacts biofilm formation in a model sulfate reducing bacterium. *Frontiers in Microbiology 5.* **2014**
103. Frederix M, Hutter K, Leu J, Batth TS, Turner WJ, Rüegg TL, Blanch H, Simmons BA, Adams PD, Keasling JD, Thelen MP, Dunlop MJ, Petzold CJ, **Mukhopadhyay A*** Development of a native *Escherichia coli* induction system for ionic liquid tolerance *Plos One* **2014**
104. Rajeev, L.*, Luning, E. G., **Mukhopadhyay, A.** DNA-affinity-purified Chip (DAP-chip) Method to Determine Gene Targets for Bacterial Two component Regulatory Systems. *J. Vis. Exp.* **2014**
105. Ray J, Keller KL, Catena M, Juba TR, Zemla M, Rajeev L, Knierim B, Zane GM, Robertson J, Auer M, Wall JD, **Mukhopadhyay A*** Exploring the role of CheA3 in *Desulfovibrio vulgaris* Hildenborough motility *Frontiers in Microbiology* **2014**
106. Dahl RH, Zhang F, Alonso-Gutierrez J, Baidoo E, Batth TS, Redding-Johanson AM, Petzold CJ, **Mukhopadhyay A**, Lee TS, Adams PD, Keasling JD* Engineering dynamic pathway regulation using stress-response promoters. *Nat Biotechnol* **2013**.
107. Kazakov A, Rajeev L, Luning EG, Zane G, Siddartha K, Rodionov D, Dubchak I, Arkin A, Wall J, Mukhopadhyay A, Novichkov P. A new family of tungstate-responsive transcriptional regulators in sulfate-reducing bacteria" *J Bact* **2013**
108. Zhou A, Baidoo E E, He Z, Mukhopadhyay A, Baumohl J, Benke P I, Joachimiak M, Xie M, Song R, Arkin A, Hazen T, Keasling J, Wall J, Stahl D, Zhou J Characterization of NaCl-tolerance in *Desulfovibrio vulagris* Hildenborough through experimental evolution *ISME J* **2013**
109. Szmidt-Middleton HL, Ouellet M, Adams PD, Keasling JD, **Mukhopadhyay A*.** Utilizing a highly responsive gene, *yhjX*, in *E. coli* based production of 1,4-Butanediol *CES* **2013**
110. Rajeev L, da Rocha U, Klitgord N, Luning E, Fortney J, Axen S, Shih P, Bouskill N, Bowen B, Kerfeld C, Garcia-Pichel F, Brodie E, Northen T*, **Mukhopadhyay A*.** Dynamic cyanobacterial response to hydration and dehydration in a desert biological soil crust. *ISME J* **2013**
111. Zhang F, Ouellet M, Batth TS, Adams PD, Petzold CJ, **Mukhopadhyay A**, Keasling J Enhancing fatty acid production by the expression of the regulatory transcription factor FadR. *Metab Eng* **2012**
112. Park JI, Steen EJ, Burd H, Evans SS, Redding-Johnson AM, Batth T, Benke PI, D'haeseleer P, Sun N, Sale KL, Keasling JD, Lee TS, Petzold CJ, **Mukhopadhyay A**, Singer SW, Simmons BA, Gladden JM*. A Thermophilic Ionic Liquid-Tolerant Cellulase Cocktail for the Production of Cellulosic Biofuels. *PLoS ONE* **2012**
113. Clark ME, He Z, Redding AM, Joachimiak MP, Keasling JD, Zhou J, Arkin AP, **Mukhopadhyay A**, Fields MW*. Transcriptomic and Proteomic Analyses of *Desulfovibrio vulgaris* Biofilms: Carbon and Energy Flow Contribute to the Distinct Biofilm Growth State. *BMC Genomics*. **2012**
114. Eudes A, George A, Mukerjee P, Kim JS, Pollet B, Benke PI, Yang F, Mitra P, Sun L, Cetinkol OP, Chabout S, Mouille G, Soubigou-Taconnat L, Balzergue S, Singh S, Holmes BM, **Mukhopadhyay A**, Keasling JD, Simmons BA, Lapierre C, Ralph J, Loqué D* Biosynthesis and incorporation of side-chain-truncated lignin monomers to reduce lignin polymerization and enhance saccharification *Plant Biotechnol J.* **2012**

115. Parsons HT, Christiansen K, Knierim B, Carroll A, Ito J, Batth TS, **Mukhopadhyay A**, Petzold CJ, Scheller HV, Loque D, Heazlewood JL*. Isolation and Proteomic Characterization of the Arabidopsis Golgi Defines Functional and Novel Components Involved in Plant Cell Wall Biosynthesis. *Plant Physiol*. **2012**
116. Rautengarten C, Ebert B, Ouellet M, Nafisi M, Baidoo EE, Benke P, Stranne M, **Mukhopadhyay A**, Keasling JD, Sakuragi Y, Scheller HV* Arabidopsis Deficient in Cutin Ferulate Encodes a Transferase Required for Feruloylation of ω-Hydroxy Fatty Acids in Cutin Polyester. *Plant Physiol.* **2012**
117. **Mukhopadhyay A** Microbial host engineering: beyond the metabolic pathway **2012** Special Issue: New Science of Synthetic and Systems Biology, Science And Culture Journal, Indian Science News Association, ed. R. Bhadra.
118. Rutherford, B.J and **Mukhopadhyay, A***. **2012** Engineering Stress Tolerance in Microbial Systems for Bioproduction of Fuels, In: Microbial Biotechnology: Energy and Environment. CABI, Wallingford, UK. ed. Arora, R.
119. Juminaga D, Baidoo EEK, Redding-Johanson AM, Batth TS, Burd H, **Mukhopadhyay A**, Petzold CJ, Keasling JD* Modular Engineering of L-Tyrosine Production in *Escherichia coli*. *Appl Environ Microbiol* **2012**
120. Rajeev L, Luning EG, Dehal PS, Price MN, Arkin AP, **Mukhopadhyay A***. Systematic mapping of two component response regulators to gene targets in a model sulfate reducing bacterium. *Genome Biology* **2011**
121. Dunlop MJ, Dossani ZY, Szmidt HL, Chu HC, Lee TS, Keasling JD, Hadi MZ, **Mukhopadhyay A***. Engineering microbial biofuel tolerance and export using efflux pumps. *Mol Syst Biol*. **2011**
122. Peralta-Yahya P, Ouellet M, Chan R, **Mukhopadhyay A**, Keasling J, Lee TS*. Identification and microbial production of a terpene-based advanced biofuel. *Nature Communications* **2011**
123. **Mukhopadhyay A**, Hillson NJ, Keasling JD* Control of Stress tolerance in bacterial host organisms for bioproduction of fuels **2011** Microbial Stress Tolerance: From Genomics to Biofuels, Microbiology Monographs (Springer series) ed. Z. Lewis Liu
124. Zhou J*, He Q, Hemme CL, **Mukhopadhyay A**, Hillesland K, Zhou A, He Z, Van Nostrand JD, Hazen TC, Stahl DA, Wall JD, Arkin AP. How sulphate-reducing microorganisms cope with stress: lessons from systems biology. *Nat Rev Microbiol.* **2011**
125. Rautengarten C, Ebert B, Herter T, Petzold CJ, Ishii T, **Mukhopadhyay A**, Usadel B, Scheller HV*. The Interconversion of UDP-Arabinopyranose and UDP-Arabinofuranose is Indispensable for Plant Development in Arabidopsis. *Plant Cell.* **2011**
126. Ouellet M, Datta S, Dibble DC, Tamrakar PR, Benke PI, Li CL, Singh S, Sale KL, Adams PD, Keasling JD, Simmons BD, Holmes BM*, **Mukhopadhyay A.** Impact of ionic liquid pretreated plant biomass on *Saccharomyces cerevisiae* growth and biofuel production. *Green Chemistry* **2011**
127. Redding-Johanson AM, Batth TS, Chan R, Krupa R, Szmidt HL, Adams PD, Keasling JD, Lee TS, **Mukhopadhyay A**, Petzold CJ*. Targeted proteomics for metabolic pathway optimization: application to terpene production. *Metab Eng.* **2011**
128. Rutherford BJ, Dahl R, Price R, Szmidt HL, Benke PI, **Mukhopadhyay A***, and Keasling JD. Functional Genomic Study of Exogenous n-Butanol Stress in *Escherichia coli*. *Appl Environ Microbiol*. **2010**.
129. Ito J, Batth TS, Petzold CJ, Redding-Johanson AM, **Mukhopadhyay A**, Verboom R, Meyer EH, Millar AH, Heazlewood JL*. Analysis of the Arabidopsis Cytosolic Proteome Highlights Subcellular Partitioning of Central Plant Metabolism. *J Proteome Res.* **2010**

130. Ito J, Petzold CJ, **Mukhopadhyay A**, Heazlewood J*. The role of proteomics in the development of cellulosic biofuels. *Current Proteomics*. **2010**
131. Cong Y, Baker ML, Jakana J, Woolford D, Miller EJ, Reissmann S, Kumar RN, Redding-Johanson AM, Batth TS, **Mukhopadhyay A**, Ludtke SJ, Frydman J, Chiu W*. 4.0-A resolution cryo-EM structure of the mammalian chaperonin TRiC/CCT reveals its unique subunit arrangement. *Proc Natl Acad Sci* U S A. **2010**
132. Zhou A, He Z, Redding-Johanson AM, **Mukhopadhyay A**, Hemme CL, Joachimiak MP, Luo F, Deng Y, Bender KS, He Q, Keasling JD, Stahl DA, Fields MW, Hazen TC, ArkinAP, Wall JD, Zhou J*. Hydrogen peroxide-induced oxidative stress responses in *Desulfovibrio vulgaris* Hildenborough. *Environ Microbiol.* **2010**
133. He Z, Zhou A, Baidoo E, He Q, Joachimiak MP, Benke P, Phan R, **Mukhopadhyay A**, Hemme CL, Huang K, Alm EJ, Fields MW, Wall J, Stahl D, Hazen TC, Keasling JD, Arkin AP, Zhou J*. Global transcriptional, physiological, and metabolite analyses of the responses of *Desulfovibrio vulgaris* Hildenborough to salt adaptation. *Appl Environ Microbiol*. **2010**
134. Dunlop MJ, Keasling JD, **Mukhopadhyay A***. A Model for Improving Microbial Biofuel Production using a Synthetic Feedback Loop. *Systems and Synthetic Biology* **2010**.
135. Ouellet M, Adams PD, Keasling JD and **Mukhopadhyay A***. A Rapid and Inexpensive Labeling Method for Microarray Gene Expression Analysis. *BMC Biotechnology* **2009**
136. Shaikh AS[#], Tang YJ[#], **Mukhopadhyay A**[#], García Martín H, Gin J, Benke PI, Keasling JD* Study of stationary phase metabolism via isotopomer analysis of amino acids from an isolated protein. *Biotechnology Progress* **2009**
137. Elias DE*, **Mukhopadhyay A**[#], Joachimiak MP[#], Redding AM, Yen H-CB, Fields MW, Hazen TC, Arkin AP, Keasling JD, Wall JD. Expression profiling of hypothetical genes in *Desulfovibrio vulgaris* leads to improved functional annotation. *Nucleic Acids Research* **2009**
138. Borglin S, Joyner DC, Jacobsen JS, **Mukhopadhyay A,** Hazen TC*. Overcoming the anaerobic hurdle in phenotypic microarrays: Generation and visualization of growth curve data for *Desulfovibrio vulgaris* Hildenborough. *J Microbiol Methods*. **2009**
139. Gaucher S[#], Redding AM[#], **Mukhopadhyay A**, Keasling JD, Singh AK*. Post-translational Modifications of *Desulfovibrio vulgaris* Hildenborough Sulfate Reduction Pathway Proteins. *Journal of Proteomic Research* **2008**
140. **Mukhopadhyay A**, Redding AM, Rutherford BJ, Keasling JD*. Importance of systems biology in engineering microbes for biofuel production. *Curr Opin Biotechnol*. **2008**
141. Fortman JL[#], Chhabra S[#], **Mukhopadhyay A**[#], Chou H, Lee TS, Steen E, Keasling JD*. Biofuel alternatives to ethanol: pumping the microbial well. *Trends Biotechnol*. **2008**
142. Shaikh AS[#], Tang YJ[#], **Mukhopadhyay A**, Keasling JD*. Isotopomer Distributions in Amino Acids from a Highly Expressed Protein as a Proxy for Those from Total Protein. *Analytical Chem* **2008**
143. **Mukhopadhyay A**, Redding AM, Joachimiak MP, Arkin AP, Borglin SE, Dehal PS, Chakraborty R, Geller JT, Hazen TC, He Q, Joyner DC, Martin VJ, Wall JD, Yang ZK, Zhou J, Keasling JD*. Cell-wide responses to low-oxygen exposure in *Desulfovibrio vulgaris* Hildenborough. *J Bacteriol*. **2007**
144. Tang YJ[#], Pingitore F[#], **Mukhopadhyay A**[#], Phan R, Hazen TC, Keasling JD*. Pathway confirmation and flux analysis of central metabolic pathways in *Desulfovibrio vulgaris Hildenborough* using GC-MS and FT-ICR mass spectrometry. *J. Bacteriol*. **2007**
145. Redding A-M, **Mukhopadhyay A**, Joyner DC, Hazen TC, Keasling JD* Study of nitrate stress in *Desulfovibrio vulgaris* Hildenborough using iTRAQ proteomics. *Brief Funct Genomic Proteomic* **2006**

146. **Mukhopadhyay A**, He Z, Alm EJ, Arkin AP, Baidoo EE, Borglin SC, Chen W, Hazen TC, He Q, Holman H-Y, Huang K, Huang R, Joyner DC, Katz N, Keller M, Oeller P, Redding AM, Sun J, Wall J, Wei J, Yang J, Yen H-C, Zhou J, Keasling JD*. Salt Stress in *Desulfovibrio vulgaris* Hildenborough: an Integrated Genomics Approach *J. Bacteriol*. **2006**
147. Gao R, **Mukhopadhyay A**, Fang F, Lynn DG* Constitutive Activation of Two-Component Response Regulators: Characterization of VirG Activation in *Agrobacterium tumefaciens*. *J Bacteriol* **2006**,
148. **Mukhopadhyay A**, Gao R, Lynn DG*. Integrating Input from Multiple Signals: The VirA/VirG Two-Component System of *Agrobacterium tumefaciens*. *ChemBioChem* **2004**
149. Wang Y, **Mukhopadhyay A**, Howitz VR, Binns AN, Lynn DG*. Construction of an efficient expression system for *Agrobacterium tumefaciens* based on the coliphage T5 promoter. *Gene* **2000**

Reports/commentaries/ Strategic Plans

1. Mukhopadhyay A, Hauser Loren Workflow 4: Signaling, in the DOE Systems Biology Knowledgebase Implementation Plan. U.S. Department of Energy Office of Science. DOE Genomic Science Microbial Systems Biology Knowledgebase Workshop, Feb. 9–10, **2010**
2. Lee TS, Keasling JD, Beller HR, Mukhopadhyay A. New methods to modify or control regulation of engineered pathways for biofuel production www.jbei.org/wp-content/uploads/2016/03/Q2-Report_full_v4.pdf. **2016**
3. Mukhopadhyay A, Perspective on the future of biofuels using microbial platforms, Biofuels International, V 11(1) Jan **2017** https://escholarship.org/uc/item/0pp0r138)
4. Designing for Deep Decarbonization: Accelerating the US Bioeconomy Workshop Report. (https://biosciences.lbl.gov/wp-content/uploads/2021/12/21-BAO-3054-Designing-the-Bioeconomy-for-Deep-Decarbonization-Report_v5.pdf)
5. Biological Science and Engineering Strategic Plan 2022-2027

Theses

- **Mukhopadhyay A,** Initiating lateral gene transfer: analysis of the VirA/VirG two component system *in vivo*. (Ph. D.) Department of Chemistry, University of Chicago, Chicago, IL, USA **2002.** *Adv.* David G. Lynn
- **Mukhopadhyay A,** Synthesis of chiral bioactive molecules using enzymes and microorganisms. (M. Sc) Department of Chemistry Indian Institute of Technology, Powai, Mumbai, Maharashtra, India, **1996**. *Adv.* S. V. Bhatt

Patents (applications and granted)

1. Eng, TT, Banerjee, D, **Mukhopadhyay, A** GENETICALLY MODIFIED BACTERIAL CELLS AND METHODS USEFUL FOR PRODUCING INDIGOIDINE *U.S. Patent 11,767,521* (2023/09/23)
2. Huang, J, Liu, Z, Clark, DS, Keasling, JD, **Mukhopadhyay, A**, Hartwig, JF. Novel Artificial Metalloenzyme chemistry in biological systems *U.S. Patent Application Ser. No*: 62/989,568 (2020/03/13)
3. Eng T, **Mukhopadhyay A**, "Production of Tetramethyl Pyrazine in the Industrial Host *Corynebacterium glutamicum U.S. Patent Application Ser. No*: 62/982,001 (2020/02/26)

4. Budin, I, Reider A, Hummel NFC **Mukhopadhyay, A,** Keasling, JD Methods for mitochondria and organelle genome editing *U.S. Patent Application Ser. No:* 62/673,597 (2020/1/16)
5. Mortimer, JC, Herbert, RA, **Mukhopadhyay, A**, Eng, TT, Use of Cholinium Lysinate as a Broad-Spectrum Herbicide. *US, Patent Application Ser. No*. 62/842,737 (2019/05/03)
6. Wehrs, M, Gladden, J, **Mukhopadhyay, A** Host yeast cells and methods useful for producing indigoidine *U.S. Patent Application Ser. No* 16/417,499 (2019/04/20)
7. **Mukhopadhyay A**, Mingardon F, Chanal A. Modified Host Cells Having tolerance to α-Olefins. *US Patent 20,170,051,317,* (2017/02/23)
8. **Mukhopadhyay A,** Reider-Apel A, Ouellet M, Keasling JD, Synthetic Polypeptide Having A Xylose Import Activity *US Patent 20170015714 A1* (2017/01/19)
9. Dunlop, MJ. Keasling, JD. **Mukhopadhyay, A.** Modified Host Cells with Efflux Pumps. *U.S. Patent No. 9428726* (2016/8/30)

Professional community service (external)

Scientific Society and peer activities

- Board of Directors (elected 2024), Society for Industrial Microbiology and Biotechnology (SIMB).
- ASM Scientific Advisory Group, Role of microbes in mitigating Climate Change, 2024-25
- ASM Expert Panel for Biomanufacturing, August 2023
- Program Chair, Society for Industrial Microbiology and Biotechnology (SIMB) Annual Meeting 2023
- Session Convener, Automated and Computational Approaches to Metabolic Engineering SIMB Annual Meeting 2022
- Session Chair for 44th SBFC 2022
- Session Co-Chair, Metabolic Engineering 14, Jul 2021
- Session Chair for 43rd SBFC 2021
- Co-Chair, Session Chair for ACS BIOT 2020
- Scientific Advisory Committee, Center for Advanced Bioenergy and Bioproducts Innovation (CABBI) 2019+
- Chair, Division O of the American Society of Microbiology (2015/16)
- Co-chair Organizing committee for the Indo-US Science and Technology Forum workshop on Cell Factories (IIT Mumbai India, March 2016).
- Editorial positions
    - Frontiers in Microbiology Journal, 2011+
    - *npj* Scientific Reports, 2017+
    - Metabolic Engineering Communications
    - JIMB Special Issue 2024
- Reviewer for peer-reviewed articles (Nature Biotech, Nature Microbiol., Mol Sys Biol, PNAS, AEM, Mol Microb, mBio, J Bact, JMB, Scientific Reports, Biotechnology for Biofuels, Metabolic Engineering, Metabolic Engineering Communications, Applied Microbiology and Biotechnology, Microbial Cell Factories, etc).
- Reviewer for funding agencies (DOE BER, DOD IARPA).
- Reviewer for the JGI SynBio Internal Review Process 2014+
- Co-chair conference symposia session (ASM general conference 2010).

Mentorship

Mentor for graduate students, exchange students/ postdocs from
- SULI/ BLUR programs 2015+
- Fullbright Scholar 2024
- FASEB Brazil 2023-24
- Visiting Faculty Program 2022
- DOE SCGSR exchange student program: 2016, 2021, 2022
- B-ACER Fellowship, India 2020
- CAPES Brazil 2019
- FAPESP BEPE Research Project, Brazil 2018
- Heidelberg University Biochemistry Centre, Germany, 2018
- IIT Mumbai India 2018
- Kyoto University 2017-18
- University of California, Berkeley 2016-
- Technical University of Braunschweig 2016-2020
- RWTH Aachen University 2015-16
- Khorana Program 2014+
- EPFL Switzerland 2012-16
- ETH Zurich, 2016
- Mines Paristech France 2012-13,
- NTU Singapore 2012,
- Mannheim University, Genrmany 2012, 2011
- IIT Kharagpur India 2009
- University of Chicago Externship program (2012)
- Biotech Partners program (2009)

- Thesis Advisory Committees
  - Arizona State University, Tempe, AZ, USA
  - Indian Institute of Technology, Mumbai, India
  - Leiden University, The Netherlands
  - DU Sustain, Denmark

Professional community service (internal)

- Development of the BSE Strategic Plan, 2022-2027
- Committee for selection of the LBNL BSA ALD 2022
- Proposal preperation, presentation and defense team; BER SFA m-CAFEs 2022 review
- Proposal preperation, presentation and defense team; BER BRC JBEI 2022 review
- Proposal preperation, presentation and defense team; BER SFA ENIGMA 2017 review
- Proposal preperation, presentation and defense team for competitive BRC FOA 30M/ year proposal 2016-2017
- Chair, Divisional Staff Committee, Biological Systems and Engineering, LBNL, Berkeley, CA, 2017+
- Scientific Focus group for selection of the LBNL Lab Director 2015
- Committee for Biosciences Mentoring Program 2014-15
- Mentor for the Biosciences Mentoring Program 2015+

- Committee for suitable serach for the JBEI COO and JBEI CSTO
- Committee for suitable search for the JBEI Director for Plant wall biosynthesis
- JBEI Volunteer, Berleley Lab Open house 2011
- Committee for LBNL Directors Award 2011
- Committee for selection of the LBNL Lab Director 2007

Invited talks/ Panels/ podcasts (n> 80, Since 2007)

1. Keynote speaker, Oklahoma State University Sustainable Energy and Biobased Product Symposium, Stillwater, OK, Feb 20th 2025
2. Keynote speaker, *Pseudomonas* Conference, Copenhagen, Denmark, Sept 1-5th 2024
3. Invited speaker, Biochemical and Molecular Engineering XXIII Conference, Dublin Ireland, July 21-25th 2024
4. Invited speaker for mini-conference at ASM Microbe: Microbial Solutions for Climate Change – Science & Policies Required to Support a Sustainable Economy for the Future, Atlanta GA, June 13th 2024
5. Plenary Talk, GSP PI meeting session on Bioenergy Research Centers, Washington DC, April 2024
6. Plenary Talk, Gas Fermentation Conference, Heron Island. Australia, Feb 21-25 2024
7. Invited speaker, DARPA DUF Workshop, Boston, MA, Dec 12, 2023
8. Invited Lecture, Comparative Biochemistry Seminar, Virtual, UC Berkeley, Oct 17th 2023
9. SynBYSS Seminar Series, Virtual, Sept 7th 2023
10. CAFFI seminar on BRC overview, Virtual, Aug 15th 2023
11. JBIMS (Joint Berkeley Initiative for Microbiome Sciences) Synthetic Communities Workshop, UC Berkeley Campus, Nov 10th, 2022
12. Women in Biotechnology Panel: BioEngineering - Engineering solutions forging new paths in multi-industry innovations, Newark, CA, Oct 12th, 2022
13. Career Exploration Seminar Series in the Institute of Molecular Biology (IMB), University of Oregon on Oct 11th, 2022
14. Review with the NATO Parliamentary Assembly Joint Committee, LBNL visit, September 20, 2022
15. Invited speaker, Lake Arrowhead Microbial Genomics Sept 2022
16. Presentation to DOE Sec. of Energy Granhom and SEAB April 19th 2022
17. 44th SBFC, Virtual 2021
18. Invited speaker, Seminar Series, Edinborough June 2021
19. Invited speaker, ASM Microbe Meeting June 2021
20. Invited speaker, EBRC Seminar Series, May 13th 2021
21. Invited speaker, Lignin Conversion, 43rd SBFC, April 26-28, 2021
22. Invited speaker, Bio-Manufacturing Solutions workshop, BU-ISE and ITIF Boston, Feb 10th 2021
23. Radio talkshow with Julie Motz, Hot Tech – Cool Science, KWMR FM Feb 9th 2021
24. Virtual Sci Foo Camp, Oct 23-25, 2020
25. Invited speaker, Indo-US workshop on Recent Developments in Bioenergy Research, Oct 19th 2020
26. Amazing Microbes, Finding Genius Podcast with Richard Jacobs, Jul 20th 2020
27. Gordon Research Seminar Mentorship Panel, Ventura Beach, CA, Jan 11th 2020
28. National Lab Day, Toledo, OH, Oct 11-12th 2019
29. CCST Biomass Expert Briefing, Sacramento, Sept 19th 2019

30. Pseudomonas 2019, Kuala Lumpur, Malaysia, July 22nd 2019
31. GapSummit, Boston, MA, June 18th, 2019
32. DOE JGI User meeting, San Francisco, CA, April 5th 2019
33. Tech Mini Colloquia JGI User meeting, San Francisco, CA, April 2th 2019
34. IGI Seminar, Berkeley, CA, March 12th 2019
35. Google team Offsite Keynote, San Francisco, CA, Jan 10th 2019
36. ABLC, San Francisco, CA, Nov 8th 2018
37. Synthetic Biology for Defense, Arlington, VA, Sept 25-27th 2018
38. Lignin Gordon Research Conference, Easton, MA, Aug 5th 2018
39. DTRA CB Tech Watch Seminar, Ft. Belvoir, VA, April 11th 2018
40. Departmental Seminar, Iowa State University, Ames, IA, Oct 12th 2017
41. SFSU Department of Chemistry Colloquium, San Francisco, CA, Sept 22nd 2017
42. BESC retreat, Plenary speaker for JBEI, Chattanooga, TN, July 11-13th 2017
43. Biology colloquium, Sonoma State University, Sonoma, CA, April 18th 2017
44. Comparative Biochemistry Seminar course, UC Berkeley, Berkeley, CA, Oct 27th 2016
45. Gordon Conference Green chemistry, Stowe, VT, July 31-Aug-5, 2016.
46. Beyond Academia, UC Berkeley, Berkeley CA, April 27th 2016
47. SFSU Department of Biology Colloquium in Microbiology and Cell & Molecular Biology, San Francisco, CA, Apr 7th 2016
48. Indo-US Bilateral Conference in Cell Factories, Mumbai, India, March 18-20th 2016
49. John Lawrence Seminar Series, LBNL, Berkeley, CA Oct 6th 2015
50. Gordon research Conference, Lucca, Italy April 24-May 1 2015
51. JGI, User meeting Walnut Creek, CA, March 25 2015
52. Genomic Science Contractors-Grantees Meeting XIII, Washington DC, Feb 22-25 2015
53. Departmental Seminar, Chemical Engineering, IIT, Mumbai, India, Feb 10th 2015
54. Indo-US Conference in Systems and Synthetic Biology, New Delhi, India, Nov 9th 2014
55. Society for Industrial Microbiology Annual Meeting, St Louise MO, Jul 24th 2014
56. Bioenergy and Photosynthesis Seminar, ASU, Tempe, AZ Feb 20th 2014
57. 12th Biennial Conference of Science and Management on the Colorado Plateau Northern Arizona University, Flagstaff, Sept 18th 2013
58. EBI Seminar series, UC Berkeley, Berkeley, Sept 3rd 2013
59. Eight Big Ideas, Berkeley Repertory Theater, Berkeley CA, May 13th 2013
60. ChemE class, University of Washington Seattle, Feb 8th 2013
61. Bioenergy and Biotechnology Team, Reliance India Limited, Mumbai, India Jan 3rd 2013
62. DBT-ICT Center for Energy Biosciences, Mumbai, India, Dec 31st 2012
63. Departmental Seminar, Washington University at St Louis, Missouri, Sept 21, 2012
64. Society for General Microbiology, Fall Conference, Warwick, UK, Sept 3-5 2012
65. Biobased Materials and Chemical, ITRI Forum 2012, Milpitas, CA, June 27th 2012
66. ASM Conference for Undergraduate Educators, San Mateo, CA June 14-17, 2012
67. Departmental Seminar, NCBS, Bangalore, India, April 10th 2012.
68. Departmental Seminar, MBU, IISc, Bangalore, India, April 9th 2012.
69. Departmental Seminar, CESE, IIT Powai, Mumbai, India, March 28th 2012.
70. Plenary session speaker, Genomic Science Meeting X, Bethesda, MD, Feb 26-29, 2012
71. Sci-Ops Talk, Physical Biosciences Division, LBNL, Berkeley, Jan 12th 2012
72. Society for Industrial Microbiology Annual Meeting, New Orleans, MI, July 27th 2011
73. Yeast Synthetic biology Workshop, San Francisco, CA, Oct 16th 2010.
74. Society for Industrial Microbiology Annual Meeting, San Francisco, CA, Aug 5th 2010
75. Indo-American Frontiers of Engineering Symposium, Agra, India, March 10-13th 2010

76. Departmental Seminar, Department of Chemistry, IIT Powai, India, March 8th 2010
77. Knowledge Economy Institute (KE2) Summit, Emeryville, CA Jan 27-28th 2010
78. American Geophysical Union (AGU) conference, San Francisco, CA, Dec 15-19 2008
79. Society for Industrial Microbiology Annual Meeting, San Diego, CA, August 10-14 2008
80. NAE workshop, Wisconsin, Madison, March 14th 2008
81. World Congress on Industrial Biotechnology and Bioprocessing, Orlando, Fl, March 21-24, 2007
82. Human Genome Conference, Zeta NEF Foundation, Los Angeles CA, October 26th 2007

Awards and Honors

- Service Award SIMB 2023
- AAAS Fellow class of 2022
- LBNL Spot award: Developing the BSE 7-year Strategic Plan (2022)
- Finalist C3E Awards: Mid-career women in clean energy (2019)
- LBNL Spot award: Contribution to the successful completion of the JBEI proposal (2017)
- LBNL Spot award: Exceptional leadership, service and support of the Biosciences reorganization enterprise (2016)
- LBNL Spot Award: Committee for Biosciences Mentoring Program (2015)
- UC Berkeley and Berkeley Lab Leadership Development Program, UC Berkeley, Center for Executive Education (2010)
- Recognized among Women @ The Lab 2013 event at Berkeley Lab (LBNL)
- Recognized among Women in Energy 2013 by the US Department of Energy
- Quayle Award for excellence in Research (Emory University) for the Academic year 2001-2002

Memberships

American Society for Microbiology (ASM), American Chemical Society (ACS), American Association for the Advancement of Science (AAAS), Society for Industrial Microbiology and Biotechnology (SIMB), American Institute of Chemical Engineers (AICHE), Women in Biotech (WIB)

Funding (since 2007)

United States Department of Energy via JBEI, ENIGMA, ENIGMA discovery, m-CAFEs, and LBNL LDRD funds (DE-AC02-05CH11231). SPO (LLNL, Exxon Mobile, Rhodium), MIPR (China Lake, Navy labs), SBIR (DOE), DARPA seedling grants, CERES program (DARPA), STTR Phase II (NASA), CRADA (Total New Energies), Conference funds (IUSSTF, NSF), and UC Berkeley QB3.