

Michelle A. O'Malley

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PRINCIPLE RESEARCH INTERESTS:

My research develops new technologies to genetically engineer non-model microbes and anaerobic consortia for sustainable chemical production, remediation, and natural product discovery. Our approach combines classical microbiology with cutting-edge tools (genome sequencing, RNA-Seq) to engineer the processes that underlie protein and enzyme production. Current efforts include discovery of novel enzymes from anaerobic gut fungi, metabolic engineering for enhanced anaerobic cooperation, engineering of synthetic enzyme complexes for consolidated bioprocessing, and deciphering the structure-function relationship of membrane proteins.

EDUCATION AND TRAINING

2009-2012 USDA-NIFA Postdoctoral Fellowship, MIT (Dept. of Biology)/Broad Institute

Advisor: Chris A. Kaiser

2009 Ph.D. Chemical Engineering University of Delaware

Advisor: Anne Skaja Robinson

Thesis Project: *Expression, Purification, and Biophysical Characterization of G-Protein Coupled Receptors Expressed from Saccharomyces cerevisiae*

2004 B.S. Chemical Engineering Carnegie Mellon University

B.S. Biomedical Engineering

University Honors, College of Engineering Research Honors

PROFESSIONAL EXPERIENCE

2023 – Present Cliff R. Scholle Chair, UC-Santa Barbara, Dept. of Chemical Engineering
2024 – Present Professor, UC-Santa Barbara, Dept. of Bioengineering
2021 – 2024 Vice Chair, UC-Santa Barbara, Dept. of Bioengineering
2020 – Present Professor, UC-Santa Barbara, Dept. of Chemical Engineering
2018 – 2020 Associate Professor, UC-Santa Barbara, Dept. of Chemical Engineering
2017 – Present Academic Council Member, Engineering Biology Research Consortium (EBRC)
2016 – Present Visiting Professor, Harper Adams University (UK)
2015 – Present Faculty Affiliate, Interdepartmental Graduate Program in Marine Sciences (IGPMS), University of California, Santa Barbara
2014 – Present Faculty Affiliate, California NanoSystems Institute (CNSI)
2014 – 2021 Faculty Affiliate, Center for Bioengineering, University of California, Santa Barbara
2012 – 2018 Assistant Professor, UC-Santa Barbara, Dept. of Chemical Engineering
2009 – 2012 USDA-NIFA Postdoctoral Fellow, MIT Dept. of Biology/Broad Institute
2004 – 2009 Graduate Research Fellow, University of Delaware Dept. of Chemical Engineering
2002 – 2004 Undergraduate Researcher, Carnegie Mellon, Dept. of Chemical Engineering
2003 REU Fellow, Case Western Reserve, Dept. of Macro. Science and Engineering
2001 – 2002 LERCIP Intern, NASA Glenn Research Center Polymers Division

SELECTED HONORS AND AWARDS

2024 – 2026 Appointed to U.S. Defense Science Study Group (DSSG)
2024 AIChE Division 15c Plenary Award
2023 Biotechnology Progress Award for Excellence in Biological Engineering Publication
2023 Cliff R. Scholle Chairship, UC-Santa Barbara
2023 "Tartans on the Rise" Carnegie Mellon University Alumni Award
2021 AIChE Allan P. Colburn Award
2020 AIChE Food, Pharmaceutical, and Bioengineering Division Early Career Award
2020 American Institute of Medical and Biological Engineering (AIMBE) Fellow
2020 American Society of Microbiology Award for Early Career Applied and Biotech Research

2020	Lars G. Ljungdahl Lectureship, University of Georgia
2019	<i>Science News</i> ' 2019 SN 10: Scientists to Watch
2019	ACS Division of Biochemical Technology (BIOT) Young Investigator Award
2018	National Academy of Engineering, US Frontiers of Engineering Symposium Invited Attendee
2018	Genewiz Award Recognizing Excellence in Genomics Research
2017	ACS Women Chemist Committee (WCC) Rising Star Award
2017	Camille Dreyfus Teacher-Scholar Award
2017	ACS Division of Polymeric Materials: Science and Engineering (PMSE) Young Investigator
2016	Visiting Professor, Harper Adams University, UK
2016	Gordon and Betty Moore Foundation Inventor Fellow (Finalist)
2016	Presidential Early Career Award for Scientists and Engineers (PECASE)
2016	Alan P. Colburn Memorial Lectureship, University of Delaware
2015	National Science Foundation (NSF) CAREER Award
2015	Cottage Health – UCSB Special Research Award
2015	MIT Technology Review Top 35 Innovators Under 35 (TR35)
2014	Hellman Faculty Fellowship
2014	TechConnect Innovation Award
2013	U.S. Department of Energy (DOE) Early Career Award
2011 – 2013	U.S. Department of Agriculture (USDA) ARS-NIFA Postdoctoral Fellowship
2011	Marion and Jasper Whiting Foundation Fellowship
2010	Company of Biologists Traveling Fellowship for International Research Training
2006 – 2009	NASA-Harriet G. Jenkins Predoctoral Fellowship (20 awarded nationally)
2009, 2007	American Institute of Chemical Engineers Women's Initiatives Committee Travel Award
2008	Biophysical Society Student Travel Grant
2007	Merck Award for Best Overall Poster, Biochemical Engineering Meeting XV
2007	American Chemical Society Leadership Development Award
2007	University of Delaware Department of Chemical Engineering Teaching Fellowship
2004 – 2006	Integrative Graduate Education Research Traineeship (IGERT) NSF Fellowship
2000 – 2004	University Athletic Association (UAA) Academic Honors
2000 – 2004	Presidential Scholarship, Carnegie Mellon University

PUBLICATIONS

1. T. S. Lankiewicz, N. Elisabeth, D. L. Valentine, **M. A. O'Malley**, "An argument for using anaerobes as microbial cell factories to advance biomanufacturing and synthetic biology," **AICHE Journal**, *Accepted with Revision*. (Invited)
2. L. V. Butkovich, P. A. Leggieri, S. P. Lillington, T. A. Navaratna, C. L. Swift, N. G. Malinov, T. R. Zalunardo, O. B. Vining, A. Lipzen, M. Wang, J. Yan, V. Ng, I. V. Grigoriev, **M. A. O'Malley**, "Separation of life stages within anaerobic fungi (Neocallimastigomycota) highlights differences in global transcription and metabolism," **Fungal Genetics and Biology**, *Accepted with Revision*.
3. V. Mubayi, C. B. Ahern, M. Calusinska, **M. A. O'Malley**, "Towards a circular bioeconomy: designing microbes and polymers for biodegradation," **ACS Synthetic Biology**, 13:1978-1993 (2024). <https://doi.org/10.1021/acssynbio.4c00077>
4. E. M. Blair, J. L. Brown, D. Li, P. A. Holden, **M. A. O'Malley**, "Metagenomics analysis yields assembled genomes from prokaryotic anaerobes with polymer-degrading potential," **Biotechnology Progress**, *In press*.
5. T. Navaratna*, N. Alansari*, A. Eisenberg*, **M. A. O'Malley**, "Anaerobic fungi contain abundant, diverse, and transcriptionally active Long Terminal Repeat retrotransposons," **Fungal Genetics & Biology**, 172, 103897 (2024). (*equal authorship)
6. H. Doré, A. R. Eisenberg, E. N. Junkins, G. E. Leventhal, O. X. Cordero, B. G. Paul, D. Valentine, **M. A. O'Malley**, E. G. Wilbanks, "Targeted hypermutation of putative antigen sensors in multicellular bacteria," **PNAS**, 121(9): e2316469121 (2024). <https://doi.org/10.1073/pnas.2316469121>
7. N. Liu, V. Kivenson, X. Peng, Z. Cui, T. S. Lankiewicz, K. M. Gosselin, **M. A. O'Malley**, D. L. Valentine, "Pontiella agarivorans sp. nov., a novel marine anaerobic bacterium capable of degrading macroalgal

polysaccharides and fixing nitrogen,” **Applied and Environmental Microbiology**, 90 (2): e00914-23 (2024). <https://doi.org/10.1128/aem.00914-23>

8. P. A. Leggieri, E. M. Blair, T. S. Lankiewicz, **M. A. O’Malley**, “Continuous culture of anaerobic fungi enables growth and metabolic flux tuning without the use of genetic tools,” **Bioresource Technology**, 391: 129854 (2024). <https://doi.org/10.1016/j.biortech.2023.129854>

9. K. A. Heom, C. Wangsanuwat, L. V. Butkovich, S. C. Tam, A. R. Rowe, **M. A. O’Malley**, S. S. Dey, “Targeted rRNA depletion enables efficient mRNA sequencing in diverse bacterial species and complex co-cultures,” **mSystems**, 8 (6), e00281-23 (2024). <https://doi.org/10.1128/msystems.00281-23>

10. S. Seppala*, T. Gierke*, E. Schauer, J. L. Brown, **M. A. O’Malley**, “Identification and expression of small multidrug resistance (SMR) transporters in early-branching anaerobic fungi,” **Protein Science**, 32(9): e4730 (2023). *equal authorship <https://doi.org/10.1002/pro.4730>

11. A. Dementiev*, S. P. Lillington*, S. Jin. Y. Kim, R. Jedrzejczak, K. Michalska, A. Joachimiak, **M. A. O’Malley**, “Structure and Enzymatic Characterization of CelD Cellulase from the Anaerobic Fungus *Piromyces finnis*”, **Applied Microbiology and Biotechnology**, 107(19): 5999-6011 (2023). *equal authorship <https://doi.org/10.1007/s00253-023-12684-0>

12. S. Lillington, M. Hamilton, J. Cheng, Y. Yoshikuni, **M. A. O’Malley**, “Expression and characterization of spore coat CotH kinases from the cellulosomes of anaerobic fungi (*Neocallimastigomyces*),” **Protein Expression & Purification**, 210: 106323 (2023). <https://doi.org/10.1016/j.pep.2023.106323>

13. J. L. Brown, T. Gierke, L. Butkovich, C. L. Swift, V. Singan, C. Dawum, K. Berry, I. V. Grigoriev, **M. A. O’Malley**, “High-quality RNA extraction and regulation of genes encoding cellulosomes is correlated with stage of growth in anaerobic fungi,” **Frontiers in Fungal Biology**, 4 (2023). <https://doi.org/10.3389/ffunb.2023.1171100>

14. T. S. Lankiewicz, H. Choudhary, Y. Gao, B. Amer, S. P. Lillington, P. A. Leggieri, J. L. Brown, C. L. Swift, A. Lipzen, H. Na, M. Amirebrahimi, M. K. Theodorou, E. E.K. Baidoo, K. Barry, I. V. Grigoriev, V. I. Tomhokin, J. Gladden, S. Singh, J. C. Mortimer, J. Ralph, B. A. Simmons, S. W. Singer, **M. A. O’Malley**, “Lignin deconstruction by anaerobic fungi,” **Nature Microbiology**, 8, 596-610 (2023). <https://doi.org/10.1038/s41564-023-01336-8>

15. C. Han, K. D. Q. Nguyen, M. W. Berkow, S. Hussain, A. Kiani, M. Kinnevrew, M. N. Idso, N. Baxter, E. Chang, E. Aye, E. Winslow, S. Seppala, **M. A. O’Malley**, B. Chmelka, B. Mertz, S. Han, “Lipid membrane mimetics and oligomerization tune functional properties of proteorhodopsin,” **Biophysical Journal**, 122 (1): 168-179 (2023). <https://doi.org/10.1016/j.bpj.2022.11.012>

16. J. L. Brown, M. A. Perisin, C. L. Swift, M. Benyamin, S. Liu, V. Singan, Y. Zhang, E. Savage, C. Pennacchio, I. V. Grigoriev, **M. A. O’Malley**, “Co-cultivation of anaerobic fungi with *Clostridium acetobutylicum* bolsters butyrate and butanol production from cellulose and lignocellulose,” **Journal of Industrial Microbiology**, 49(6) (2022). <https://doi.org/10.1093/jimb/kuac024>

17. U. Neri, Y. I. Wolf, S. Roux, A. P. Camargo, B. Lee, D. Kazlauskas, I. M. Chen, N. Ivanova, L. Z. Allen, D. Paez-Espion, D. A. Bryant, D. Bhaya, RNA Virus Discovery Consortium (including **M. A. O’Malley**), M. Krupovic, V. V. Dolja, N. C. Kyrpides, E. V. Koonin, U. Gophna, “Expansion of the global RNA virome reveals diverse clades of bacteriophages,” **Cell**, 185 (21): 4023-4037 (2022). <https://doi.org/10.1016/j.cell.2022.08.023>

18. T. S. Lankiewicz, S. P. Lillington, **M. A. O’Malley**, “Enzyme discovery in anaerobic fungi (*Neocallimastigomyces*) enables lignocellulosic biorefinery innovation,” **Microbiology and Molecular Biology Reviews**, e00041-22 (2022). (Invited) <https://doi.org/10.1128/mubr.00041-22>

19. P. A. Leggieri, M. T. Valentine, **M. A. O’Malley**, “Biofilm disruption enhances growth rate and carbohydrate active enzyme production in anaerobic fungi,” **Bioresource Technology**, 127361 (2022). <https://doi.org/10.1016/j.biortech.2022.127361>

20. M. S. Elshahed, R. A Hanafy, Y. Cheng, S. S. Dagar, J. Edwards, V. Flad, K. O. Fliegerová, G. W Griffith, S. Kittelmann, M. Lebuhn, **M. A. O’Malley**, S. Podmirseg, K. V. Solomon, J. Vinzelj, D. Young, N. Youssef, “Characterization and rank assignment criteria for the anaerobic fungi (*Neocallimastigomycota*),”

International Journal of Systematic and Evolutionary Microbiology, 72 (7), 005449 (2022). <https://doi.org/10.1099/ijsem.0.005449>

21. B. Fremin, GP-SmORF Consortium (including **M. A. O'Malley**), A. S. Bhatt, N. C. Krypides, "Thousands of small, novel genes predicted in global phage genomes," **Cell Reports**, 39, 110984 (2022). <https://doi.org/10.1016/j.celrep.2022.110984>

22. J. I. Yoo[‡], T. Navaratna[‡], P. Kolence, **M. A. O'Malley**, "GPCR-FEX: a fluoride-based selection system for rapid GPCR screening and engineering," **ACS Synthetic Biology**, 11: 39–45 (2022). [‡] equal author contributions. <https://doi.org/10.1021/acssynbio.1c00030>

23. J. L. Brown, C. L. Swift, S. Mondo, S. Seppälä, A. Salamov, V. Singan, B. Henrissat, J. K. Henske, S. Lee, K. LaButti, Guifen He, M. Yan, K. Barry, I. V. Grigoriev, **M. A. O'Malley**, "Co-cultivation of the anaerobic fungus *Caecomyces churrovis* with *Methanobacterium bryantii* enhances transcription of carbohydrate binding modules dockerins, and pyruvate formate lyases on specific substrates," **Biotechnology for Biofuels**, 14:234 (2021). <https://doi.org/10.1186/s13068-021-02083-w>

24. E. Blair, K. Dickson, **M. A. O'Malley**, "Microbial communities and their enzymes facilitate degradation of recalcitrant polymers in anaerobic digestion," **Current Opinion in Microbiology**, 64: 100-108 (2021). <https://doi.org/10.1016/j.mib.2021.09.008>

25. P. A. Leggieri, C. Kerdman-Andrade, T. S. Lankiewicz, M. T. Valentine, **M. A. O'Malley**, "Non-destructive quantification of anaerobic gut fungi and methanogens in co-culture reveals increased fungal growth rate and changes in metabolic flux relative to mono-culture," **Microbial Cell Factories**, 20: 199 (2021). <https://doi.org/10.1186/s12934-021-01684-2>

26. I. Podolsky, E. Schauer, S. Seppälä, **M. A. O'Malley**, "Identification of novel membrane proteins for improved lignocellulose conversion," **Current Opinion in Biotechnology**, 73: 198-204 (2022). <https://doi.org/10.1016/j.copbio.2021.08.010>

27. K. D. Q. Nguyen, M. Vigers, E. Sefah, S. Seppälä, J. P. Hoover, N. S. Schonenbach, B. Mertz, **M. A. O'Malley**, S. Han, "Homo-oligomerization of the human adenosine A_{2a} receptor is driven by the intrinsically disordered C-terminus," **eLife**, 10:e66662 (2021). <https://doi.org/10.7554/eLife.66662>

28. C. L. Swift, K. B. Louie, B. P. Bowen, C. A. Hooker, K. V. Solomon, V. Singan, C. Daum, C. P. Pennachhio, K. Barry, V. Shutthanandan, J. E. Evans, I. V. Grigoriev, T. R. Northen, **M. A. O'Malley**, "Co-cultivation of anaerobic fungi with rumen bacteria establishes an antagonistic relationship," **mBio**, 12: 4, e01442-21 (2021). <https://doi.org/10.1128/mBio.01442-21>

29. C. L. Swift, N. G. Malinov, S. J. Mondo, A. Salamov, I. V. Grigoriev, **M. A. O'Malley**, "A genomic catalog of stress response genes in anaerobic fungi for applications in bioproduction," **Frontiers in Fungal Biology**, Vol. 2, Article 708358 (2021). <https://doi.org/10.3389/ffunb.2021.708358>

30. S. P. Lillington, W. Chrisler, C. H. Haitjema, S. P. Gilmore, C. R. Smallwood, V. Shutthanandan, J. E. Evans, **M. A. O'Malley**, "Cellulosome localization patterns vary across life stages of anaerobic fungi," **mBio**, 12(3): e00832-21 (2021). <https://doi.org/10.1128/mBio.00832-21>

31. I. A. Podolsky, S. Seppälä, H. Xu, Y. S. Jin, **M. A. O'Malley**, "A SWEET surprise: anaerobic fungal sugar transporters and chimeras enhance sugar uptake in yeast," **Metabolic Engineering**, 66: 137-147 (2021). <https://doi.org/10.1016/j.ymben.2021.04.009>

32. C. L. Swift, K. Louie, B. Bowen, H. M. Olsen, S. O. Purvine, A. Salamov, S. J. Mondo, K. V. Solomon, A. T. Wright, T. R. Northen, I. V. Grigoriev, N. P. Keller, **M. A. O'Malley**, "Anaerobic gut fungi are an untapped reservoir of natural products," **PNAS**, 118 (18) e20198551118 (2021). <https://doi.org/10.1073/pnas.20198551118>

33. S. Roux, B. G. Paul, S. C. Bagby, S. Nayfach, M. A. Allen, G. Attwood, R. Cavicchioli, L. Chistoserdova, R. J. Gruninger, S. J. Hallam, M. E. Hernandez, M. Hess, W. Liu, T. A. McAllister, **M. A. O'Malley**, X. Peng, V. I. Rich, S. R. Saleska, E. A. Elloe-Fadrosh, "Ecology and molecular targets of hypermutation in the global microbiome," **Nature Communications**, 12: 3076 (2021). <https://doi.org/10.1038/s41467-021-23402-7>

34. L. M. G. Saye, T. A. Navaratna, J. P. J. Chong, **M. A. O'Malley**, M. K. Theodorou, M. Reilly, "The anaerobic fungi: challenges and opportunities for industrial lignocellulosic biofuel production," **Microorganisms**, 9(4): 694 (2021). <https://doi.org/10.3390/microorganisms9040694>

35. P. A. Leggieri, Y. Liu, M. Hayes, B. A. Connors, S. Seppälä, **M. A. O'Malley**, O. S. Venturelli, "Integrating systems and synthetic biology to understand and engineer microbiomes," **Annual Reviews of Biomedical Engineering**, Vol. 23 (2021). <https://doi.org/10.1146/annurev-bioeng-082120-022836>
36. S. E. Wilken, J. M. Monk, P. A. Leggieri, C. A. Lawson, T. S. Lankiewicz, S. Seppälä, C. Daum, J. Jenkins, A. Lipzen, S. J. Mondo, K. W. Berry, I. V. Grigoriev, J. K. Henske, M. K. Theodorou, B. O. Palsson, L. R. Petzold, **M. A. O'Malley**, "Experimentally validated reconstruction and analysis of a genome-scale metabolic model of an anaerobic Neocallimastigomycota fungus," **mSystems**, 6(1): e00002-21 (2021). <http://dx.doi.org/10.1128/mSystems.00002-21>
37. X. Peng, S. E. Wilken, T. S. Lankiewicz, S. P. Gilmore, J. L. Brown, J. K. Henske, C. L. Swift, A. Salamov, K. Barry, I. V. Grigoriev, M. K. Theodorou, D. L. Valentine, **M. A. O'Malley**, "Genomic and functional analyses of fungal and bacterial consortia that enable lignocellulose breakdown in goat gut microbiomes," **Nature Microbiology**: 6(4): 499–511 (2021). (*Invited submission*) <http://dx.doi.org/10.1038/s41564-020-00861-0>
38. C. Wangsanuwat[‡], K. Heom[‡], E. Liu, **M. A. O'Malley**, S. S. Dey, "Efficient and cost-effective bacterial mRNA sequencing from low input samples through ribosomal RNA depletion," **BMC Genomics**, 21: 717 (2020). [‡] equal author contributions <http://dx.doi.org/10.1186/s12864-020-07134-4>
39. J. I. Yoo, S. Seppälä, **M. A. O'Malley**, "Engineered fluoride sensitivity enables biocontainment and selection of genetically-modified yeasts," **Nature Communications**, 11: 5459 (2020). <http://dx.doi.org/10.1038/s41467-020-19271-1>
40. GEM Consortium (252 authors, including X. Peng and **M. A. O'Malley**) "A genomic catalog of Earth's microbiomes," **Nature Biotechnology**, 39, 499-509 (2021). <http://dx.doi.org/10.1038/s41587-020-0718-6>
41. L. Hagen, C. G. Brooke, C. Shaw, A. D. Norbeck, H. Piao, M. O Arntzen, H. Brewer, A. Copeland, N. Isern, A. Shukla, S. Roux, V. Lombard, B. Henrissat, **M. A. O'Malley**, I. Grigoriev, S. Tringe, R. Mackie, L. Pasa-Tolic, P. B. Pope, M. Hess, "Proteome specialization of anaerobic fungi during ruminal degradation of recalcitrant plant fiber," **ISME Journal**, 15: 421–434 (2021). <http://dx.doi.org/10.1038/s41396-020-00769-x>
42. T. A. Rush, V. Puech-Pages, A. Bascaules, P. Jargeat, F. Maillot, A. Haouy, A. QuyManh Maës, M. Keller-Pearson, J. Tannous, K. R. Cope, K. Garcia, J. Maeda, C. Johnson, B. Kleven, Q. J. Choudhury, J. Labbé, C. L. Swift, **M. A. O'Malley**, J. W. Bok, S. Cottaz, S. Fort, V. Poinsoit, M. R. Sussman, C. Lefort, J. Nett, N. P. Keller, G. Becard, J. M. Ané, "Lipo-chitooligosaccharides as regulatory signals of fungal growth and development," **Nature Communications**, 11: 3897 (2020). <http://dx.doi.org/10.1038/s41467-020-17615-5>
43. S. E. Wilken, P. A. Leggieri, C. Kerdman-Andrade, M. Reilly, M. K. Theodorou, **M. A. O'Malley**, "An Arduino based automatic pressure evaluation system (A-APES) to quantify growth of non-model anaerobes in culture," **AIChE Journal**, 66 (12): e16540 (2020). <http://dx.doi.org/10.1002/aic.16540>
44. S. P. Gilmore, S. Lillington, C. H. Haitjema, R. de Groot, **M. A. O'Malley**, "Designing chimeric enzymes for synthetic fungal cellulosomes," **Synthetic and Systems Biotechnology**, 5: 23-32 (2020). <http://dx.doi.org/doi.org/10.1016/j.synbio.2020.01.003>
45. J. I. Yoo, P. S. Daugherty, **M. A. O'Malley**, "Bridging non-overlapping reads illuminates high-order epistasis between distal protein sites in a GPCR," **Nature Communications**, 11, 690 (2020). <http://dx.doi.org/10.1038/s41467-020-14495-7>
46. S. E. Wilken, S. Seppälä, T. S. Lankiewicz, M. Saxena, J. K. Henske, A. A. Salamov, I. V. Grigoriev, **M. A. O'Malley**, "Genomic and proteomic biases inform metabolic engineering strategies for anaerobic fungi," **Metabolic Engineering Communications**, 10, e00107 (2020). (*Invited submission*) <http://dx.doi.org/10.1016/j.mec.2019.e00107>
47. S. Lillington, P. Leggieri, K. Heom, **M. A. O'Malley**, "Nature's recyclers: anaerobic microbial communities drive crude biomass deconstruction," **Current Opinion in Biotechnology**, 62: 38-47 (2020). (*Invited submission*) <http://dx.doi.org/10.1016/j.copbio.2019.08.015>
48. V. Dollhofer, D. Young, S. Seppälä, C. Hooker, N. Youssef, S. M. Podmirseg, M. Nagler, M. Reilly, Y. Li, K. Fliegerová, Y. Cheng, G. W. Griffith, M. Elshahed, K. V. Solomon, **M. A. O'Malley**, M. K. Theodorou,

"The biotechnological potential of anaerobic gut fungi," *The Mycota Vol. II: Genetics and Biotechnology*, 3rd edition, edited By J. Philipp Benz and Kerstin Schipper (2020) (book chapter) (*Invited Submission*). http://dx.doi.org/10.1007/978-3-030-49924-2_17

49. C. E. Lawson, W. R. Harcombe, R. Hatzenpichler, S. R. Lindemann, F. Löffler, **M. A. O'Malley**, H. Garcia-Martin, B. F. Pfeleger, L. Raskin, O. S. Venturelli, D. G. Weissbrodt, D. R. Noguera, K. D. McMahon, "Common principles and best practices for engineering microbiomes." **Nature Reviews Microbiology**, 17: 725–741 (2019). <http://dx.doi.org/10.1038/s41579-019-0255-9>

50. C. L. Swift, J. L. Brown, S. Seppala, **M. A. O'Malley**, "Co-cultivation of the anaerobic fungus *Anaeromyces robustus* with *Methanobacterium bryantii* enhances transcription of carbohydrate active enzymes," **Journal of Industrial Microbiology**, 46(9):1427-1433 (2019). (*Invited article*) <http://dx.doi.org/10.1007/s10295-019-02188-0>

51. S. P. Gilmore[‡], T. Lankiewicz[‡], S. E. Wilken, J. L. Brown, J. A. Sexton, J. K. Henske, M. K. Theodorou, D. L. Valentine, **M. A. O'Malley**, "Top-down enrichment guides in formation of synthetic microbial consortia for biomass degradation," **ACS Synthetic Biology**, 8: 2174-2185 (2019). [‡] equal author contributions <http://dx.doi.org/10.1021/acssynbio.9b00271>

52. S. Seppälä[‡], J. I. Yoo[‡], D. Yur, **M. A. O'Malley**, "Heterologous transporters from anaerobic fungi bolster fluoride tolerance in *Saccharomyces cerevisiae*," **Metabolic Engineering Communications**, 9, e00091 (2019). [‡] equal author contributions <http://dx.doi.org/10.1016/j.mec.2019.e00091>

53. S. E. Wilken, C. L. Swift, I. A. Podolsky, T. S. Lankiewicz, J. L. Brown, S. Seppälä, **M. A. O'Malley**, "Linking "omics" to function unlocks the biotech potential of non-model fungi," **Current Opinion in Systems Biology**, 14: 9-17 (2019). (*Invited Article*) <http://dx.doi.org/10.1016/j.coisb.2019.02.001>

54. I. A. Podolsky[‡], S. S. Seppälä[‡], T. S. Lankiewicz, J. L. Brown, C. L. Swift, **M. A. O'Malley**, "Harnessing nature's anaerobes for biotechnology and bioprocessing," **Annual Reviews of Chemical & Biomolecular Engineering**, 10:105-128 (2019). (*Invited Article*) [‡] equal author contributions <http://dx.doi.org/10.1146/annurev-chembioeng-060718-030340>

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INVITED SEMINARS

“From Trash to Treasure: Bioprospecting Nature’s Microbial Communities for Biotechnology”, Department of Environmental Health & Engineering, **Johns Hopkins University**, Baltimore, MD September 2024.

“From Trash to Treasure: Bioprospecting Nature’s Microbial Communities for Biotechnology”, Department of Biomedical Engineering, **Columbia University**, New York, NY April 2024.

“From Trash to Treasure: Bioprospecting Nature’s Microbial Communities for Biotechnology”, Department of Biomedical Engineering, **Carnegie Mellon University**, Pittsburgh, PA March 2024.

“From Trash to Treasure: Bioprospecting Nature’s Microbial Communities for Biotechnology”, Department of Biomedical Engineering, **University of Utah**, Salt Lake City, UT October 2023.

“From Trash to Treasure: Bioprospecting Nature’s Microbial Communities for Biotechnology”, **Cold Spring Harbor Laboratory Synthetic Biology Course**, Cold Spring Harbor, NY July 2023.

“Unlocking the Biotech Potential of Anaerobic Gut Fungi,” Chemical Engineering Department, **University of Washington**, Seattle, WA May 2023.

“From Trash to Treasure: Bioprospecting Nature’s Microbial Communities for Biotechnology”, Department of Chemical and Biological Engineering, **Iowa State University**, Ames, IA March 2023.

“Unlocking the Biotech Potential of Anaerobic Gut Fungi,” Chemical Engineering & Materials Science Department, **Michigan State University**, Troy, MI November 2022.

“Unlocking the Biotech Potential of Anaerobic Gut Fungi,” Chemical Engineering Department, **University of Massachusetts-Amherst**, Amherst, MA November 2022.

“Unlocking the Biotech Potential of Anaerobic Gut Fungi,” Chemical & Biomolecular Engineering Department, **University of Illinois-Urbana Champaign**, September 2022.

“Unlocking the Biotech Potential of Anaerobic Gut Fungi,” Chemical Engineering Department, **European Cooperation in Science & Technology (COS) 4th NC Yeast Series**, May 2022. (virtual)

“Unlocking the Biotech Potential of Anaerobic Gut Fungi,” Chemical Engineering Department, **University of Houston**, April 2022.

“Unlocking the Biotech Potential of Anaerobic Gut Fungi,” Chemical and Biological Engineering Department, **University of Wisconsin-Madison**, February 2022.

“Unlocking the Biotech Potential of Anaerobic Gut Fungi,” Chemical Engineering Program, **Arizona State University**, February 2022.

“Unlocking the Biotech Potential of Anaerobic Gut Fungi,” Department of Civil and Environmental Engineering, **Rice University**, October 2021.

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“Unlocking the Biotech Potential of Anaerobic Gut Fungi,” Department of Chemical and Biomolecular Engineering, **Georgia Tech**, September 2021.

“Deciphering the Structure and Function of CAZymes and Cellulosomes from Anaerobic Gut Fungi,” **UCLA-DOE Institute for Genomics and Proteomics**, August 2021.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry”, Department of Bioengineering, **EPFL**, February 2021.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry”, Department of Bioengineering, **UC-San Diego**, October 2020.

“From Trash to Treasure via Microbiome Engineering”, Department of Chemical Engineering, **UC-Santa Barbara**, August 2020.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry”, Department of Bioengineering, **UC-Riverside**, June 2020.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry”, Department of Molecular, Cell, and Developmental Biology, **UCSB**, January 2020.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry”, **Lars G. Ljungdahl Lectureship**, Department of Biochemistry, **University of Georgia**, January 2020.

“Harnessing Gut Microbes to Turn Waste into Energy,” **Santa Barbara Science and Engineering Council**, December 2019.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry”, Department of Chemical Engineering, **Worcester Polytechnic University**, November 2019.

“Harnessing Gut Microbes to Turn Waste into Energy,” Department of Medical Microbiology & Immunology, **University of Wisconsin**, September 2019.

“Harnessing Gut Microbes to Turn Waste into Energy,” **Natick Soldier Center Sigma Xi Seminar**, July 2019.

“Harnessing Gut Microbes to Turn Waste into Energy,” **Santa Barbara Natural History Museum**, June 2019.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” Department of Chemical and Biological Engineering, **Northwestern University**, April 2019.

“Synthetic Anaerobic Consortia for Bioproduction and Model Development,” Advances in Biotechnology Seminar Series, **Northwestern University**, April 2019.

“Engineering Synthetic Microbial Consortia Inspired by the Herbivore Rumen,” MIT Microbiome Club, **MIT**, Cambridge, MA, November 2018.

“Exploiting Anaerobes for Biomass Breakdown & Sustainable Chemistry,” **BASF**, San Diego, CA, October 2018.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” Department of Chemical and Biological Engineering, **University of Wisconsin-Madison**, Madison, WI, September 2018.

“Engineering Synthetic Microbial Consortia Inspired by the Rumen Microbiome,” **BASF**, Company Webinar, August 2018.

“Engineering Synthetic Microbial Consortia Inspired by the Rumen Microbiome,” **Cold Spring Harbor Laboratory Synthetic Biology Course**, Cold Spring Harbor, NY, July 2018.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” Department of Chemical and Biological Engineering, **Princeton University**, Princeton, NJ, April 2018.

“Unlocking the Potential of Early-Branching Fungi for Biomass Breakdown & Conversion” **Lawrence Berkeley National Laboratory**, Division of Life Sciences, Berkeley, CA, March 2017.

“Unlocking the Potential of Early-Branching Fungi for Biomass Breakdown & Conversion” **Carnegie Mellon University**, Department of Chemical Engineering, Pittsburgh, PA, March 2017.

“Unlocking the Potential of Early-Branching Fungi for Biomass Breakdown & Conversion” **U.S. Department of Energy**, Division of Biological and Environmental Research, Arlington, VA, February 2017.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” Department of Chemical and Biomolecular Engineering, **Cornell University**, Ithaca, NY, December 2016.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” Department of Chemical Engineering, **Stanford University**, Palo Alto, CA, October 2016.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” **SLAC National Accelerator Laboratory**, Palo Alto, CA, August 2016.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” **Argonne National Laboratory**, Chicago, IL, July 2016.

“What Gut Microbes Can Teach us about Sustainability,” **UCSB GRIT Talks**, Santa Barbara, CA, June 2016.

“Microbial Allies to Promote Coastal Health”, University of California Global Health Institute (UCGHI) Silicon Valley Venture Partners, **UC San Francisco**, CA, May 2016.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” Department of Chemical and Biomolecular Engineering **Alan P. Colburn Memorial Lecture, University of Delaware**, Newark, DE, May 2016.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” Department of Chemical Engineering, **MIT**, Cambridge, MA, April 2016.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” Department of Botany, **University of British Columbia**, Vancouver, Canada, February 2016.

“Engineering Anaerobes for Value-added Bioproduction,” **US Army Research Laboratory (ARL)**, Adelphi, MD, February 2016.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” **DuPont Experimental Station**, Wilmington, DE, February 2016.

“Engineering Membrane Proteins: The Gatekeepers of the Cell”, UCSB Department of Psychology and Brain Sciences, **UC-Santa Barbara**, CA, December 2015.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” **DuPont Industrial Biosciences Division**, Palo Alto, CA, November 2015.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” **Joint BioEnergy Institute (JBEI)**, Emeryville, CA, October 2015.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” Department of Chemical and Biomolecular Engineering, **Tulane University**, New Orleans, LA, October 2015.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” Department of Chemical and Biomolecular Engineering, **Georgia Tech**, Atlanta, GA, August 2015.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” MIT Microbial Systems Seminar, **MIT**, June 2015.

“New Enzymes from Old Microbes: Exploiting Anaerobic Gut Fungi for Biomass Breakdown,” **UC-Riverside**, Department of Chemical and Environmental Engineering, Riverside, CA, May 2015.

“New Enzymes from Old Microbes: Exploiting Anaerobic Gut Fungi for Biomass Breakdown,” **National Renewable Energy Laboratory (NREL)**, Golden, CO, March 2015.

“New Enzymes from Old Microbes: Exploiting Anaerobic Gut Fungi for Biomass Breakdown,” **U.S. Department of Energy**, Division of Biological and Environmental Research, Arlington, VA, February 2015.

“Transcriptomic and Proteomic Characterization of Anaerobic Gut Fungi,” **Environmental Molecular Sciences Laboratory (EMSL)**, PNNL, Richland, WA, September 2014.

“Fueling Sustainability: Engineering Anaerobic Gut Fungi for Biomass Breakdown,” **UC-Irvine**, Department of Chemical Engineering, Irvine, CA, May 2014.

“Fueling Sustainability: Engineering Microbial Systems for Lignocellulose Breakdown,” Department of Chemical and Biomolecular Engineering, **UCLA**, Los Angeles, CA, October 2013.

“Fueling Sustainability: Engineering Microbial Systems for Lignocellulose Breakdown,” UCSB Biomolecular Science and Engineering (BMSE) Program, **UC-Santa Barbara**, CA, November 2012.

“Transcriptomic Analysis Reveals Novel Enzymes from Anaerobic Fungi,” **U.S. Department of Agriculture** National Institute of Food and Agriculture (NIFA), Washington, DC, August 2012.

“Engineering the Yeast *Saccharomyces cerevisiae* for Drug Discovery and Bioenergy Applications”, **UC-Santa Barbara**, Dept. of Chemical Engineering, Santa Barbara, CA, April 2011.

“Engineering the Yeast *Saccharomyces cerevisiae* for Drug Discovery and Bioenergy Applications”, **Case Western Reserve University**, Department of Chemical Engineering, Cleveland, OH, March 2011.

“Engineering the Yeast *Saccharomyces cerevisiae* for Drug Discovery and Bioenergy Applications”, **University of Notre Dame**, Dept. of Chemical and Biomolecular Engineering, South Bend, IN, March 2011.

“Engineering the Yeast *Saccharomyces cerevisiae* for Drug Discovery and Bioenergy Applications”, **University of Maryland**, Fischell Department of Bioengineering, College Park, MD, March 2011.

“Engineering the Yeast *Saccharomyces cerevisiae* for Drug Discovery and Bioenergy Applications”, **UC-Riverside**, Dept. of Chemical and Environmental Engineering, Riverside, CA, March 2011.

“Engineering the Yeast *Saccharomyces cerevisiae* for Drug Discovery and Bioenergy Applications”, **University of Texas at Austin**, Department of Chemical Engineering, Austin, TX, March 2011.

“Towards Rational Drug Design: Engineering Yeast for the Over-expression and Characterization of Membrane Proteins”, **Cornell**, Dept. of Chemical and Biomolecular Engineering, Ithaca, NY, March 2010.

“Surfactant Effects on Activity and Structure of the Human Adenosine A_{2a} G-Protein Coupled Receptor”, **NIST** Center for Neutron Research, Gaithersburg, MD, June 2008.

INVITED CONFERENCE PRESENTATIONS

[BioCEV; AIChE x2; others?]

“Anaerobic fungi are an untapped reservoir of biosynthetic potential for synthetic biology”, 4th Synthetic Biology of Natural Products Conference, Cancun, Mexico May 2024.

“Anaerobic fungi are an untapped reservoir of biosynthetic potential”, 32nd Fungal Genetics Conference, Asilomar, CA May 2024.

“Novel biosynthetic potential and enzymes from anaerobic fungi,” Army Research Laboratory New Frontiers in Fungal Biology Workshop (virtual), April 2024.

“Engineering Synthetic Anaerobic Consortia Inspired by the Herbivore Rumen for Biomass Breakdown and Conversion,” 6th Annual Microbiome Meeting, Berkeley, CA December 2023.

“Deciphering the Biotech Potential of Anaerobic Fungi: from Sequence to Structure & Function,” (**Plenary Talk**) 1000 Fungal Proteins Symposium, Environmental Molecular Sciences Laboratory, PNNL, Richland, WA November 2023.

“Continuous Culture and CAZyme Production in Anaerobic Fungi,” Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC), Portland, OR May 2023.

“Metatranscriptomic and Metagenomic Changes During Microbial Colonization of Plastics,” Southern California Academy of Sciences Meeting, Santa Barbara, CA May 2023.

“From Trash to Treasure: Bioprospecting Nature’s Microbial Communities for Biotechnology,” International Conference on Biomolecular Engineering (**Keynote Presentation**), Santa Barbara, CA January 2023.

“Unlocking the Biotech Potential of Anaerobes,” National Academies Board on Life Sciences, Fall Board discussion on Building the Bioeconomy: Harnessing Diversity and Unique Functions of Microbes,” Washington DC, November 2022.

“From Trash to Treasure: Bioprospecting Nature’s Microbial Communities for Biotechnology,” Biomolecular Science & Engineering and Molecular, Cell, and Developmental Biology Annual Retreat, Santa Barbara, CA October 2022.

“From Trash to Treasure: Bioprospecting Nature’s Microbial Communities for Biotechnology,” Department of Energy Joint Genome Institute (JGI) User Meeting, Berkeley, CA August 2022.

“From Trash to Treasure: Bioprospecting Nature’s Microbial Communities for Biotechnology,” Biochemical and Molecular Engineering Meeting, Cancun, Mexico, June 2022.

“Unlocking the Biotech Potential of Anaerobic Fungi from Ruminant Herbivores,” California Animal Nutrition Conference (**Keynote Presentation**), Sacramento, CA, May 2022.

“Enrichment of Gut Microbiomes from Herbivores: Engineering Carbon Flux Through Microbial Diversity and Selection,” 2022 Congress on Gastrointestinal Function (**Keynote Presentation**), April 2022 (virtual).

“Towards a Genetic Toolbox to Reprogram Anaerobic Fungi,” DoD Tri-Service Microbiome Consortium (TSMC) Meeting, April 2022 (virtual).

“Engineering Microbial Consortia from the Herbivore Rumen for Waste Valorization,” European Microbiology Society Annual Conference, Belfast, UK, April 2022.

“Unlocking the Biotech Potential of Anaerobic Gut Fungi,” Genetics Society of America Fungal Genetics Conference (**Plenary Talk**), Asilomar, CA, March 2022.

“Tracking Lignocellulose Breakdown by Anaerobic Fungi and Fungal Cellulosomes,” Department of Energy Bioimaging Science Program Contractor Meeting, March, 2022.

“Engineering Synthetic Anaerobic Consortia Inspired by the Rumen for Biomass Breakdown and Conversion,” Department of Energy Genomic Sciences Program Contractor Meeting, March, 2022.

“Unlocking the Biotech Potential of Anaerobic Gut Fungi,” AIChE Annual Meeting (**Keynote Presentation**), Boston, MA, November 2021.

“Engineering Microbial Consortia from Herbivores for Biomass Breakdown,” 4th International Conference on Microbiome Engineering (ICME), Virtual Conference, October 2021.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” Carbohydrate Bioengineering Meeting 14 (CBM14), Virtual Conference, May 2021.

“Engineering Microbial Consortia from the Herbivore Rumen for Waste Valorization,” 43rd Symposium on Biomaterials, Fuels and Chemicals, Society for Industrial Microbiology (SIMB), Virtual Conference, April 2021.

“Anaerobic Fungi: New Platforms for Biotechnology & Synthetic Biology,” Anaerobic Fungal Network Seminar Series, Webinar, April 2021.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” National Academy of Sciences: Quantum Concepts in Enhancing Sensing and Imaging Technologies: Applications for Biology, Washington, DC, March 2021.

“Tracking Lignocellulose Breakdown by Anaerobic Fungi and Fungal Cellulosomes,” DOE Biomaging Contractor Meeting, Washington, DC, February 2021.

“Harnessing Gut Microbes to Turn Waste into Energy,” Synthetic Biology Approaches to Improve Human and Environment, New York Academy of Sciences, New York, NY, November 2020.

“Engineering Synthetic Microbial Communities Inspired by the Herbivore Rumen,” **Division 15 Early Career Award**, AIChE Annual Meeting, San Francisco, CA, November 2020.

“An Arduino based automatic pressure evaluation system (A-APES) to quantify growth of non-model anaerobes in culture,” AIChE Annual Meeting, San Francisco, CA, November 2020.

“Comparative genomics of early-branching anaerobic fungi reveals novel enzymes, transporters, and biosynthetic potential,” Biodiversity Genomics 2020, Cambridge, UK, September 2020.

“Exploiting Nature’s Anaerobes to Accelerate Biomass Breakdown and Sustainable Chemistry,” American Society of Microbiology Annual Meeting, **ASM Award for Early Career Applied and Biotechnological Research**, Chicago, IL, July 2020.

“Engineering Synthetic Microbial Communities Inspired by the Herbivore Rumen,” American Society of Microbiology Annual Meeting, Chicago, IL, July 2020.

“Exploiting Nature’s Anaerobes to Accelerate Biomass Breakdown and Sustainable Chemistry,” AIChE Annual Meeting (**Keynote Presentation**), Orlando, FL, November 2019.

“Harnessing Gut Microbes to Turn Waste into Energy,” 3rd Annual DoD Tri-Service Microbiome Consortium Meeting (TSMC), Wright Patterson Airforce Base, Dayton, OH, October 2019.

“Mining Microbiomes for Nature’s CAZymes” Gordon Conference on Carbohydrate-Active Enzymes for Glycan Conversions (**Keynote Presentation**), Andover, NH, July 2019.

“Exploiting Anaerobic Consortia as New Tools for Biomass Breakdown and Sustainable Chemistry,” Cold Spring Harbor Microbiome Meeting, Cold Spring Harbor, NY, July 2019.

“Exploiting Anaerobic Consortia as New Tools for Biomass Breakdown and Sustainable Chemistry,” Biochemical Engineering XXI Meeting, Mont Tremblant, Canada, July 2019.

“Comparative genomics of early-branching anaerobic fungi reveals novel enzymes and biosynthetic potential,” American Society for Microbiology (ASM) Microbe Annual Meeting, San Francisco, CA, June 2019.

“Designing Microbial Consortia for Conversion of Wet Waste to Commodity Chemicals,” NASA/ARO Contractor Meeting, Houston, TX, June 2019.

“Engineering Synthetic Microbial Consortia Inspired by Nature,” Oxford Global SynGen Series US: 2nd Annual Synthetic Biology USA Congress, Boston, MA, May 2019.

“Horizontal Gene Transfer in the Rumen Microbiome,” Accelerated Protein Evolution in Microbial Systems Workshop, Santa Barbara, CA, April 2019.

“Engineering Synthetic Microbial Consortia Inspired by the Herbivore Rumen,” American Chemical Society Annual Meeting, **BIOT Young Investigator Award**, Orlando, FL, April 2019.

“Exploiting Anaerobic Fungi within Microbial Consortia for Biomass Breakdown and Sustainable Chemistry,” Fungal Genetics Conference, Asilomar, CA, March 2019.

“Engineering Synthetic Microbial Consortia Inspired by the Herbivore Rumen,” International Conference on Microbiome Engineering, Boston, MA, November 2018.

“Deconstructing Microbial Consortia for Sustainable Chemistry,” Dreyfus Foundation Teacher-Scholar Symposium, New York, NY, October 2018.

“Engineering Synthetic Consortia Inspired by the Rumen Microbiome,” Engineering Biology Research Consortium (EBRC) Fall Retreat, Fort Collins, CO, September 2018.

“From “Omics” to Function: Deciphering Poorly Annotated Genomes with Structural Biology,” MX APS-U Workshop, Argonne National Laboratory, IL, August 2018.

“Engineering Synthetic Consortia Inspired by the Rumen Microbiome,” Society for Industrial Microbiology (SIMB), Chicago, IL, August 2018

“Towards a Genetic Toolbox to Reprogram Anaerobic Fungi,” Society for Industrial Microbiology (SIMB), Chicago, IL, August 2018.

“Deciphering the Behavior of Anaerobic Gut Fungi (Neocallimastigales) for Biomass Conversion,” Gordon Research Conference on Cellular & Molecular Fungal Biology, Holderness, NH, June 2018.

“Building Synthetic Consortia through Interwoven Metabolism,” Madison Microbiome Engineering Workshop, Madison, WI, April 2018.

“Engineering Synthetic Consortia Inspired by the Rumen Microbiome,” Madison Microbiome Meeting (M3), Madison, WI, April 2018.

“Engineering Synthetic Consortia Inspired by the Rumen Microbiome,” American Chemical Society Annual Meeting, New Orleans, LA, March 2018.

“Unlocking the Biotech Potential of Gut Microbes from Herbivores” **American Chemical Society Women Chemists Committee (WCC) Rising Star Symposium**, New Orleans, LA, March 2018.

“Transcriptomic Characterization of *Caecomyces churrovii*: a Non-rhizoid Forming Anaerobic Fungus,” Joint Genome Institute (JGI) User Meeting: Fungal Genomics Workshop, San Francisco, CA, March 2018.

“Can Chemistry Help Build a Sustainable Future?” Carlyle Impact Summit, Montecito, CA, September 2017.

“Deciphering the Role of Fungal Secondary Metabolites within Anaerobic Microbial Communities,” Microbial and Plant Systems Modulated by Secondary Metabolites Meeting, Walnut Creek, CA, July 2017.

“A Parts List for Fungal Cellulosomes Revealed by Comparative Genomics,” Gordon Research Conference on Cellulases, Cellulosomes, and Other Carbohydrate Modifying Enzymes (**Keynote Presentation**), Andover, NH, July 2017.

“Selective Enrichment of Syntrophic Anaerobic Communities Enables Rapid Conversion of Biomass,” Society for Industrial Microbiology (SIMB) Annual Meeting, Denver, CO, July 2017.

“Exploiting Anaerobes for Biomass Breakdown & Sustainable Chemistry,” Novo Nordisk Copenhagen Bioscience Conference: Data-driven Biotechnology – Bench, Bioreactor, & Bedside, Copenhagen, Denmark, May 2017.

“Engineering Early-Branching Anaerobic Gut Fungi for Lignocellulose Breakdown and Bioproduction,” **American Chemical Society Presidential Symposium**, San Francisco, CA, April 2017.

“Novel Carbohydrate Active Enzymes from Anaerobic Fungi and Anaerobic Communities,” **American Chemical Society PMSE Young Investigator Award**, San Francisco, CA, April 2017.

“Building Synthetic Anaerobic Consortia from the Bottom-Up,” U.S. Army Workshop on Microbial Consortia & Biofilms, Santa Barbara, CA, March 2017.

“Unlocking the Secondary Metabolites of Early-Branching Anaerobic Fungi”, Joint Genome Institute (JGI) User Meeting: Metabolomics Workshop, Walnut Creek, CA, March 2017.

“Unlocking the Potential of Neocallimastigomycota for Biomass Breakdown”, Joint Genome Institute (JGI) User Meeting: Fungal Genomics Workshop, Walnut Creek, CA, March 2017.

“Bottom-up Construction of Microbial Consortia Inspired by Nature,” International Conference on Biomolecular Engineering (ICBE), San Diego, CA, January 2017.

“Young Faculty Forum: How to Start a Research Group,” American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, November 2016.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemistry,” DOE-BER Workshop on Molecular to Mesoscale Technologies, Rockville, MD, September 2016.

“Engineering Early-Branching Anaerobic Gut Fungi for Lignocellulose Breakdown and Bioproduction,” Society for Industrial Microbiology (SIMB), New Orleans, LA, July 2016.

“Novel Carbohydrate Active Enzymes from Anaerobic Fungi and Anaerobic Communities,” FASEB Conference on Microbial Glycobiology, West Palm Beach, FL, June 2016.

“Deciphering the Biomass-degrading Abilities of Anaerobic Gut Fungi (Neocallimastigales),” 13th European Congress on Fungal Genetics, Paris, France, April 2016.

“Deciphering the Biomass-degrading Abilities of Anaerobic Gut Fungi,” Joint Genome Institute (JGI) User Meeting: Genomics of Energy & Environment, Walnut Creek, CA, March 2016.

“Exploiting Anaerobes for Biomass Breakdown and Bioproduction,” Materials Research Outreach Program (MROP), Santa Barbara, CA, February 2016.

“Understanding Microbes Can Advance Biofuels,” MIT Emerging Technology (EmTech) Conference, Cambridge, MA, November 2015.

“New Enzymes from Old Microbes: Exploiting Anaerobic Gut Fungi for Biomass Breakdown,” Gordon Research Conference on Cellulases, Cellulosomes, and Other Carbohydrate Modifying Enzymes, Andover, NH, August 2015.

“Designing Synthetic Anaerobic Communities Based on Syntrophy,” Biochemical & Molecular Engineering XIX, Puerto Vallarta, Mexico, July 2015.

“Reconstructing Anaerobic Microbiomes from the Bottom-up: New Techniques to Decipher Interwoven Metabolism,” Synthetic, Evolution, Engineering & Design (SEED) Conference, Boston, MA, June 2015.

“Engineering Synthetic Cellulose-degrading Complexes Inspired by Gut Fungi,” ICB-Army Systems & Synthetic Biology Meeting, Pasadena, CA, April 2015.

“Exploiting Anaerobes for Biomass Breakdown and Sustainable Chemical Production,” Engineering Strategies for a Sustainable Food Supply Chain AIChE Workshop, Princeton, NJ, March 2015.

“Lignocellulose Breakdown by Anaerobic Microbial Communities,” UCSB Center for Sustainable Use of Renewable Feedstocks (GenSURF), Santa Barbara, CA, August 2014.

“Identification and Regulation of Novel Cellulases within Anaerobic Gut Fungi,” American Chemical Society Fall Meeting, San Francisco, CA, August 2014.

“Fueling Sustainability: Engineering Anaerobic Microbes for Biomass Breakdown and Biofuel Production,” Chalmers-UCSB Workshop on Advanced Materials, Gothenburg, Sweden, June 2014.

“Fueling Sustainability: Turning Marine Pests into Commodity Chemicals,” University of California Systemwide Bioengineering Meeting, Irvine, CA, June 2014.

“Engineering Anaerobic Gut Fungi for Lignocellulose Breakdown,” U.S. Department of Energy, Division of Biological and Environmental Research (BER), Arlington, VA, February 2014.

“Fueling Sustainability: Engineering Anaerobic Gut Fungi for Lignocellulose Breakdown,” Southern California Systems Biology Conference, Irvine, CA, January 2014.

UNIVERSITY SERVICE

2023 – present	Member, UCSB Financial System Academic Advisory Committee
2022 – 2023	UCSB Representative, UC-Wide Coordinating Committee on Graduate Affairs (CCGA)
2022 – 2023	Member, College of Engineering Faculty Executive Council
2022 – 2023	Chair, UCSB Graduate Council
2021 – present	Vice Chair, UCSB Bioengineering
2021 – 2022	Vice Chair, UCSB Graduate Council
2021 – 2022	Member, College of Engineering DEI Committee
2021 – present	Member, UCSB CNSI Advisory Committee
2021 – present	Co-lead, BioPACIFIC MIP Bionderived Materials Thrust
2020 – 2021	Member, UCSB Graduate Council
2019 – 2022	Representative, UCSB College of Engineering Faculty Executive Committee
2019 – 2020	Mentor, UCSB College of Engineering Advancing Faculty Diversity Program
2019	Hellman Fellowship Selection Committee
2019	UCSB Tenure Workshop Participant
2018, 2019	UCSB Internal Selection Committee, Pew Scholars Program

2018	Member, College of Engineering Search Committee for Director of Communications
2016 – 2019	Member, College Lectureship Advisory Committee, College of Engineering
2015 – present	Faculty Advisor, Biological Nanostructures Laboratory (BNL), CNSI
2015 – present	Task Order Leader, Systems & Synthetic Biology, Institute for Collaborative Biotechnologies (ICB)
2014 – 2020	Chair, Undergraduate Bioengineering Committee

Establishing a New Undergraduate Bioengineering Major: Leading a team of faculty to design curricula and refine a campus proposal that will establish an undergraduate B.S. Bioengineering degree through the College of Engineering (CoE) on the UCSB campus.

Increasing Genomics & Synthetic Biology Capabilities on the UCSB Campus: As faculty advisor to the Biological Nanostructures Laboratory (BNL) at the CNSI, led successful grant writing efforts to secure Illumina NextSeq & MiSeq instruments (with supporting instrumentation) and a Sony MA-900 FACS that were installed in the BNL facility for common core use. Also led fundraising efforts with the DoD to secure a \$10 million automated biofoundry for synthetic biology on the UCSB campus.

DEPARTMENTAL SERVICE

2022 – 2023	Chair, Open-level Faculty Search Committee (Bioengineering)
2022 – 2023	Chair, Junior-level Faculty Search Committee (Bioengineering)
2023 – present	Member, Diversity Committee (Chemical Engineering)
2023 – present	Member, Graduate Affairs Committee (Chemical Engineering)
2021 – present	Chair, Graduate Affairs Committee (Bioengineering)
2021 – present	Chair, Graduate Admissions Committee (Bioengineering)
2021 – present	Chair, Targeted Open-level Search Committee (Chemical Engineering)
2021 – 2022	Member, Junior Faculty Search Committee (Chemical Engineering)
2021 – 2022	Chair, Diversity Equity and Inclusion Committee (Chemical Engineering)
2020 – 2021	Member, Graduate Admissions Committee (Chemical Engineering)
2018 – 2020	Co-chair, Open Level Faculty Search Committee ((Chemical Engineering))
2018 – 2020	Chair, Graduate Admissions Committee (Chemical Engineering)
2018 – 2019	Chair, Diversity Committee (Chemical Engineering)
2015 – 2017	Chair, Graduate Admissions Committee (Chemical Engineering)
2014 – 2021	Member, Graduate Admissions Committee (Chemical Engineering)
2014 – 2017	Member, Diversity Committee (Chemical Engineering)
2012 – 2015	Member, Graduate Affairs Committee (Chemical Engineering)
2012 – 2018	Member, Undergraduate Laboratory Committee (Chemical Engineering)
2012 – 2014	Advisor, AIChE Student Chapter (Chemical Engineering)

Curriculum Development for Undergraduate Laboratories: Designing new biological laboratory experiments, rehabilitating existing experiments, and modifying course materials and teaching/grading methodology to enhance the student experience in the 180A and 180B undergraduate Chemical Engineering laboratories.

Active Participant in K-12 and Graduate Outreach: Santa Barbara Zoo Summer Camp, ARC Summer Scholar Program, UCSB Summer Institute in Math and Science (SIMS) Program, INSET Program, Materials Research Laboratory Future Faculty Program, AIChE Women's Initiatives Committee Future Faculty Panelist, UCSB Research Experience for Teachers (RET) Program, UCSB SABRE Program, UCSB ICB-URAP Program, Invited Speaker at STEM Night (Bishop Diego Garcia High School), STEM Speaker (Magnificat High School)

Broadening Participation of Women: Founded a new Diversity Committee within the Department of Chemical Engineering at UCSB, aimed at increasing the enrollment and retention of women and minorities at the graduate and post-graduate levels. To date, Prof. O'Malley has trained 35+ undergraduate students in her laboratory, including 14 women. Served as a keynote speaker for the 2016 Society of Women Engineering (SWE) Industrial Networking Evening, and donated time to speaking at high schools to encourage participation in STEM (Bishop Diego Garcia High School, Magnificat High School).

SERVICE TO THE COMMUNITY & PROFESSIONAL MEMBERSHIPS

Editorial Positions: *Scientific Reports*, Editorial Board (2021 – present); *Applied and Environmental Microbiology*, Editorial Board (2021 – present); *Integrative Biology*, Editorial Board (2021 – present); *AIChE Journal*, Consulting Editors Board (2019-present); *Biochemical Engineering Journal*, Editorial Board (2020-present); *Frontiers in Fungal Biology – Fungal Secondary Metabolite and Mycotoxins*, Associate Editor (2020-present); *Frontiers in Fungal Biology – Fungal Biotechnology*, Associate Editor (2022-present); *Frontiers in Fungal Biology – Fungal Biotechnology*, Review Editor (2020-2022); *Fungal Genetics & Biology*, Guest Editor (2019-2021); *Current Opinion in Biotechnology* (Energy Biotechnology) Guest Editor (2022-2023)

Advisory Boards & Leadership in Professional Societies: U.S. Defense Science Study Group (DSSG) (2024 – 2026); Department of Energy Joint Genome Institute (JGI) Scientific Advisory Committee (2024 – present); ACS BIOT Division Chair-Elect (2021-2022); ACS BIOT Division Chair (2022-2023); ACS BIOT Division Past-Chair (2023-2024); Native Microbials (formerly Ascus Biosciences) Scientific Advisory Board (2019-present); Department of Energy Joint Genome Institute (JGI) User Executive Committee (2019-2022); EMSL User Community Advisory Board (Biosciences Representative), PNNL (2019-2022); DOE JGI Fungal User Committee Advisory Board (2016-present); DOE-BER Biological Systems Science Advisory Committee; JGI User Meeting External Advisory Board; Genome Canada Research Oversight Committee (ROC) (2018-2020); Society of Biological Engineering Young Professionals Advisory Group

Professional Outreach: Santa Barbara Science and Engineering Council (2020); Santa Barbara Natural History Museum Science Pub Night (2019); AIChE Future Faculty Forum (2016); CNSI Academic Advisory Panel for Students & Postdocs (2015); AIChE Women's Initiatives Committee Assistant Professor Panel (2013, 2016); AIChE Women's Initiative's Committee Communication Committee (2012-2013); AIChE Women's Initiative's Committee (WIC) K-12 Outreach (2011-2012); AIChE WIC Executive Committee (2012-2013); Santa Barbara Zoo Conservation Program and Research Discovery Activities for children and families (*Species Feces Night*, *At the Watering Hole* Lecture Series, etc.) (2013-present); SWE Industrial Networking Evening (keynote speaker) (2016); Featured STEM Speaker at High Schools (Bishop Diego Garcia High School, Magnificat High School) (2015-present)

Professional Memberships:

American Institute of Chemical Engineers (AIChE)
Society of Biological Engineering (SBE)
American Chemical Society (ACS)
International Metabolic Engineering Society (IMES)
Biophysical Society (BPS)
American Heart Association (AHA)
Society for Industrial Microbiology (SIMB)
American Association for the Advancement of Science (AAAS)
Genetics Society of America (GSM)
American Society of Microbiology (ASM)

Conference Programming:

Programming Chair, Biochemical and Molecular Engineering XXIII, 2024

Organizing Committee, 5th International Conference on Microbiome Engineering, 2024
Session Convener, *Society for Industrial Microbiology Annual Meeting*, 2023
Organizing Committee, 1st Annual International Congress on Anaerobic Fungi, 2022
Organizing Committee, 5th International Conference on Microbiome Engineering, 2022
Organizing Committee, Biochemical and Molecular Engineering XXII, 2022
Steering Committee Member, PNNL Microbial Molecular Phenotyping Capability Workshop, 2021
Organizing Committee, 4th International Conference on Microbiome Engineering, 2021
Convener, *SBFC Symposium on Biomaterials, Fuels, and Chemicals*, 2021
Advisory Board, International Mycological Congress, 2022
Discussion Leader, Gordon Conference on Carbohydrate Active Enzymes, 2021 (postponed to 2023)

Organizing Committee, International Conference on Biomolecular Eng., 2021
Organizing Committee, 3rd International Conference on Microbiome Engineering, 2020
Area Coordinator, Upstream Processes, ACS, 2020
Organizing Committee, 2nd International Conference on Microbiome Engineering, 2019
Convener, Society for Industrial Microbiology Meeting, 2019
Discussion Leader, Cold Spring Harbor Laboratory Conference on Microbiomes, 2019
Concurrent Session Chair, Systems Biology & Biotechnology, Fungal Genetics Conference, 2019
Organizing Committee & Session Chair, International Conference on Biomolecular Eng., 2019
Programming Chair, ACS-BIOT Division, ACS National Meeting, 2016-2017
Academic co-chair in charge of technical program for 3,000+ BIOT members.
Organizing Committee, International Conference on Biomolecular Engineering, 2017
Convener, Society for Industrial Microbiology Meeting, 2016
Area Coordinator, Biofuels and Biobased Chemicals, ACS, 2016
Session Chair, Gene Regulation Engineering, AIChE, 2015
Session Chair, Emerging Frontiers in Systems and Synthetic Biology, AIChE, 2015
Session Chair, Protein Engineering, Biochemical and Molecular Engineering, 2015
Session Chair, Biomass Pretreatment and Hydrolysis, ACS-BIOT, 2015
Session Chair, Metabolic Engineering of Photosynthetic and Non-model Organisms, AIChE, 2014
Session Chair, Protein Expression and Post-translational Modification, AIChE, 2014
Area Coordinator, Upstream Processes, ACS-BIOT Division, 2013-2014
Session Chair, Protein Structure, Function, and Stability, AIChE, 2013
Session Chair, Bionanotechnology, ACS-Biotechnology Division, ACS, 2013
Session Chair, Protein Structure, Function, and Stability, AIChE, 2012
Session Chair, Protein Expression and Post-translational Modification, AIChE, 2012

FUNDING AND SUPPORT (\$53+ million in active & completed support at UCSB)

Active Support

- 2024 – 2027** Department of Energy, “New Bioimaging Tools to Characterize Lignin Breakdown in Anaerobic Environments,” M. A. O’Malley (PI), J. Evans (coPI) (\$1,500,000 total, \$900,000 to UCSB)
- 2024 – 2030** National Science Foundation, “NSF BioFoundry for Extreme & Exceptional Fungi, Archaea, and Bacteria (ExFAB),” M.A. O’Malley (PI) (\$22,000,000)
- 2024 – 2028** U.S. Army, Institute for Collaborative Biotechnologies, “Engineering Self-Remodeling Protein Complexes for Synthetic Biology” M. A. O’Malley (PI), M. S. Shell (coPI) (\$988,000)
- 2023 – 2025** U.S. Army, “Engineering Diatoms with Novel Inorganic Material Compositions and Properties,” M. Brzezinski (PI), B. Chmelka & M.A. O’Malley (coPIs) (\$600,000)
- 2023 – 2025** U.S. Army, “Engineering Bio-based Monomers for Materials from Unusual Microbes,” M.A. O’Malley (PI) (\$450,000)
- 2023 – 2025** U.S. Army, “Acquisition of Synthetic Biology Robotics to Advance Army-supported Research and Education,” M. A. O’Malley (PI) (\$9,850,000)
- 2022 – 2025** BASF, “Biodegradable Polyacrylates Based on Radical Copolymerization,” C. Bates (PI), J. Read de Alaniz, M. A. O’Malley, and P. Holden (coPIs) (\$750,000)
- 2022 – 2027** Department of Energy, Bioenergy Research Centers, “Joint BioEnergy Institute (JBEI),” J. Keasling (PI), ~40+ coPIs including M. A. O’Malley (O’Malley portion \$1,450,000)
- 2022 – 2024** FICUS (JGI/EMSL) User Program, “Deploying Advanced Molecular & Cell Free Expression Tools to Accelerate Characterization of Fungal Cellulosomes” M. A. O’Malley (PI); allocation of sequencing, spectroscopy, & proteomics resources (\$80,000 in-kind support)
- 2021 – 2024** National Science Foundation, “Collaborative Research: EDGE FGT: Establishing Functional Genomics in Anaerobic Fungi for Applications in Agriculture, Sustainability, and Carbon Cycling,” M. A. O’Malley (PI), K. V. Solomon (coPI) (\$1,000,000 total, \$480,000 to UCSB)
- 2021 – 2024** Department of Energy, “Engineering Synthetic Anaerobic Consortia Inspired by the Rumen for Biomass Breakdown and Conversion,” M. A. O’Malley (PI), C. Lawson and S. Baker (coPIs) (\$1,500,000 total, \$600,015 to UCSB)

Completed Support

- 2019 – 2024** Department of Energy, “Tracking Lignocellulosic Breakdown by Anaerobic Fungi and Fungal Cellulosomes” M. A. O’Malley (PI), J. Evans and S. Baker (coPIs) (\$2,250,000 total, \$1,509,000 to UCSB)
- 2017 – 2024** Camille & Henry Dreyfus Foundation, “Deconstructing Microbial Consortia for Sustainable Chemistry,” M.A. O’Malley (PI), (\$75,000)
- 2020 – 2023** University of California Faculty Research Grant, “Identifying and Culturing Anaerobic Fungi from the Primate Microbiome” M. A. O’Malley (PI) (\$13,736)
- 2020 – 2023** U.S. Army, “Harnessing Rapid Evolution to Advance the Synthetic Biology Toolbox for Wild Microbes,” M. A. O’Malley (PI), D. Valentine, E. Wilbanks, H. Moeller (coPIs) (\$436,500)
- 2020 – 2023** U.S. Army, “Determining Fundamental Mechanisms of Bio-Silicification for Advanced Materials,” M. Brzezinski (PI), M. A. O’Malley and B. Chmelka (coPIs) (\$873,000)
- 2019 – 2023** U.S. Army, “Establishing and Exploiting Biosynthetic Mechanisms of Silicification” M. Brzezinski (PI), B. Chmelka & M.A. O’Malley (coPIs) (\$330,000)
- 2018 – 2023** U.S. Army, “Designing Microbial Consortia for Conversion of Wet Waste to Commodity Chemicals” M. A. O’Malley (PI), D. Valentine (coPI) (\$600,000)
- 2016 – 2022** National Science Foundation (NSF), “CAREER: Designing Synthetic Anaerobic Consortia for Bioproduction” M. A. O’Malley (PI) (\$853,101)
- 2021 – 2022** U.S. Army, DURIP program, “Acquisition of Advanced Cytometry Tools for DoD Supported Research at UC-Santa Barbara,” M. A. O’Malley (PI), A. Mukherjee and E. Yeung (coPIs) (\$260,000)
- 2018 – 2022** Department of Energy, Bioenergy Research Centers, “Joint BioEnergy Institute (JBEI)”, J. Keasling (PI), ~40+ coPIs including M. A. O’Malley (O’Malley portion \$1,400,000)
- 2020 – 2022** U.S. Army, Institute for Collaborative Biotechnologies, “Engineering Sense-and-Respond Enzyme Complexes for Bioproduction” M. A. O’Malley (PI), M. S. Shell (coPI) (\$350,750)
- 2020 – 2022** EMSL Community Science User Program, “Connecting Structure and Function in Anaerobic Fungal Cellulosomes,” M. A. O’Malley (PI); allocation of spectroscopy and microscopy resources (\$76,120 in-kind support)
- 2019 – 2022** National Institutes of Health and National Science Foundation (Joint Program) “From specialist to generalist: a multidisciplinary approach to broadening our understanding of biotic and abiotic reservoirs of emerging fungal pathogens,” C. Briggs (PI), M. A. O’Malley, G. DiRenzo, P. Johnson, T. McMahon (coPIs) (\$1,502,376)
- 2020 – 2021** Mitsubishi, “Characterizing Microbial Bioremediation of Environmental Plastics,” M. A. O’Malley and P. Holden (coPIs) (\$200,000)
- 2021** National Science Foundation, 4th International Conference on Microbiome Engineering (ICME) Conference Grant, M. A. O’Malley (PI), Izabela Balicka (coPI) (\$12,525 to AIChE)
- 2019 – 2021** National Institutes of Health (SBIR) “SHG based screening assay for detecting effectors of brain localized GPCRs that can be used to probe mental illness related phenotypes,” M. A. O’Malley (PI), S. Han (coPI), Biodesy (coPI) (\$387,541)
- 2019 – 2021** California Nanosystems Institute, “Deciphering the Material Design Rules of Biofilms,” M. A. O’Malley (PI), M. Valentine (coPI) (\$50,000)
- 2018 – 2021** FICUS (JGI/EMSL) User Program, “Deciphering the Structure & Function of Secondary Metabolites from Anaerobic Fungi” M. A. O’Malley (PI); allocation of sequencing, metabolomics, spectroscopy, NMR, & proteomics resources (\$85,364 in-kind support)
- 2015 – 2019** EMSL Community Science User Program, “Characterizing the Cellular Envelope and Secreted Compounds of Anaerobic Gut Fungi” M. A. O’Malley (PI); allocation of spectroscopy and microscopy resources (\$108,221 in-kind support)
- 2019 – 2020** Mitsubishi, “Characterizing Microbial Bioremediation of Environmental Plastics,” M. A. O’Malley and P. Holden (coPIs) (\$150,000)
- 2018 – 2020** U.S. Army, Institute for Collaborative Biotechnologies, “Programming and Tracking Microbial Consortia” M. A. O’Malley (PI), Kris L.J. Prather (coPI) (\$500,000)
- 2018 – 2020** National Science Foundation (NSF), “EAGER: Does host specificity drive species diversification of fungal endophytes?” R. Oono (PI), K. Seltmann & M. A. O’Malley (coPIs) (\$199,779)

2017 – 2019 California Nanosystems Institute, “Bio-Building Blocks for Advanced Materials” R. Segalman (PI), M. Doherty (coPI), G. Fredrickson (coPI), C. Hawker (coPI), M.A. O’Malley (coPI) (\$150,000)

2018 – 2020 U.S. Army, Institute for Collaborative Biotechnologies, “Engineering Sense-and-Respond Enzyme Complexes for Bioproduction” M. A. O’Malley (PI), M. S. Shell (coPI) (\$340,000)

2018 – 2019 University of California Faculty Research Grant, “Assessing the Potential for Anaerobic Microbial Communities in Wastewater Treatment to Biodegrade Synthetic Textile Microfibers” P. A. Holden (PI); M. A. O’Malley (coPI) (\$12,548)

2017 – 2019 EMSL Community Science User Program, “Comprehensive Characterization of the Cellulosomes from Anaerobic Gut Fungi” M. A. O’Malley (PI); allocation of spectroscopy, NMR, & microscopy resources (estimated \$138,100 in-kind support)

2017 – 2018 U.S. Army, Institute for Collaborative Biotechnologies (ICB) “Engineering Synthetic Cellulose-degrading Complexes from Gut Fungi in *S. cerevisiae*” M. A. O’Malley (PI) (\$161,800)

2017 – 2018 California Nanosystems Institute, “Identifying & Characterizing Novel Uncultivable Microbial Species Using Single Cell Genomics” S. Dey (PI), M.A. O’Malley (coPI) (\$50,000)

2015 – 2018 National Institutes of Health (R01), “Role of Lipid Membrane and Hydration on the Oligomerization and Function of Proteorhodopsin and AzaR” S. Han (PI), M. A. O’Malley (coPI), M. Sherwin (coPI) (\$1,333,472)

2015 – 2018 U.S. Army, Institute for Collaborative Biotechnologies, “Engineering Stable Anaerobic Consortia for Bioproduction” M. A. O’Malley (PI), Kris L.J. Prather (coPI) (\$675,000)

2013 – 2018 Department of Energy (DOE) Early Career Program “Engineering Anaerobic Gut Fungi for Lignocellulose Breakdown” M. A. O’Malley (PI) (\$750,000)

2012 – 2017 U.S. Army, Institute for Collaborative Biotechnologies (ICB) “Engineering Synthetic Cellulose-degrading Complexes from Gut Fungi in *S. cerevisiae*” M. A. O’Malley (PI) (\$848,007)

2017 U.S. Army, Instrumentation Grant (Illumina MiSeq & Biomek 4000 Liquid Handling Robot) M.A. O’Malley (PI), I. Chen (coPI), G. Bazan (coPI) (\$228,000)

2017 US Army, “Microbial Consortia & Biofilm Workshop” M.A. O’Malley (PI) (\$30,000)

2016 Gordon and Betty Moore Foundation, “Better Together: Revolutionizing Biomanufacturing with Microbial Consortia” M.A. O’Malley (PI) (\$25,000)

2015 – 2016 Cottage Hospital, “Identification of Novel Bioactive Compounds from Anaerobic Gut Fungi” M. A. O’Malley (PI) (\$25,000)

2014 – 2016 University of California Faculty Research Grant, “Isolating Biomass-degrading Fungi from Wild Herbivores” M. A. O’Malley (PI) (\$10,000)

2014 – 2016 California Nanosystems Institute, “Engineering Anaerobic Consortia for Sustainable Chemical Production” M. A. O’Malley (PI), T. M. Squires (co-PI), D. Valentine (co-PI), M. K. Theodorou (co-PI) (\$150,000)

2014 – 2016 University of California Cancer Research Coordinating Committee (CRCC), “A Novel Microbial System to Screen GPCR Crosstalk During Cancer Proliferation” M. A. O’Malley (PI) (\$50,000)

2014 – 2015 Hellman Faculty Fellowship, “A Yeast Microbial Sensor to Detect Aerosolized Bioweapons” M. A. O’Malley (PI) (\$44,100)

2012 – 2015 Mitsubishi-Rayon, “Bio-based Production of Methacrylic Acid (MAA) and Methyl Methacrylate (MMA)” M. A. O’Malley (PI) (\$270,000)

2013 – 2015 American Heart Association, “Mechanistic Insight into the Oligomerization of Human Adenosine Receptors” M. A. O’Malley (PI) (\$140,000)

2013 – 2014 DOE-JGI/EMSL Community Science User Program, “Identification and Regulation of Novel Cellulases within Anaerobic Gut Fungi” M. A. O’Malley (PI); allocation for novel gut fungal genomes/transcriptomes/secretomes (\$180,000 in-kind support)

2014 Amgen Sponsored Undergraduate Fellowship for Dept. Chemical Engineering (\$4,250)

2013 Amgen Sponsored Undergraduate Fellowship for Dept. Chemical Engineering (\$4,000)

2011 – 2013 U. S. Department of Agriculture (USDA) ARS-NIFA, “Genetic Identification and Characterization of Cellulases and Cellulolytic Complexes from Fungi” M. A. O’Malley (PI) (\$120,000)

2011	Marion and Jasper Whiting Foundation Fellowship, "Towards Sustainable Energy: Developing Biofuels from Plants" M. A. O'Malley (PI) (<u>\$6,000</u>)
2010	Company of Biologists-JCS Fellowship for International Study, "Isolation and Culture of Anaerobic Gut Fungi" M. A. O'Malley (PI), written with M. K. Theodorou (<u>\$2,500</u>)
2009 – 2011	MIT Energy Initiative Seed Grant Program, "Genetic Identification and Expression of Efficient Cellulose Degrading Complexes from Fungi" C. A. Kaiser (PI), (<u>\$150,000</u>)
2006 – 2009	NASA-Harriet G. Jenkins Predoctoral Fellowship, "Expression, Purification, and Characterization of Human GPCRs in Yeast" for M. A. O'Malley (<u>\$93,000</u>)

TEACHING

Winter 2023	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 107 – Intro to Bioprocessing (Undergraduate)
Spring 2022	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 180A – Junior Undergraduate Chemical Engineering Laboratory <i>Co-Instructor: Joe Chada</i>
Winter 2022	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 107 – Intro to Bioprocessing (Undergraduate)
Fall 2021	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 272 – Omics-enabled Biotechnology (Graduate)
Spring 2021	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 173 – Omics-enabled Biotechnology (Undergraduate)
Winter 2020	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 107 – Intro to Bioprocessing (Undergraduate)
Spring 2019	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 173/273 – Omics-enabled Biotechnology (Undergraduate/Graduate)
Winter 2019	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 107 – Intro to Bioprocessing (Undergraduate)
Fall 2018	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 170 – Molecular and Cellular Biology for Engineers (Undergraduate)
Winter 2017	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 107 – Intro to Bioprocessing (Undergraduate)
Spring 2017	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 173/273 – Omics-enabled Biotechnology (Undergraduate/Graduate)
Winter 2017	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 120B – Heat Transfer (Undergraduate)
Fall 2016	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 170 - Molecular and Cellular Biology for Engineers (Undergraduate)
Spring 2016	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 171 – Biochemical Engineering
Winter 2016	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 180B – Senior Undergraduate Chemical Engineering Laboratory <i>Co-Instructor: Mike Gordon</i>
Fall 2015	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 170 - Molecular and Cellular Biology for Engineers (Undergraduate)
Spring 2015	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 272 – 'Omics'-Enabled Biotechnology (Graduate)
Winter 2015	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 180B – Senior Undergraduate Chemical Engineering Laboratory <i>Co-Instructor: Songji Han</i>
Fall 2014	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 170 - Molecular and Cellular Biology for Engineers (Undergraduate)
Spring 2014	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 180A – Junior Undergraduate Chemical Engineering Laboratory <i>Co-Instructors: Mike Gordon and Matt Helgeson</i>
Winter 2014	Instructor, UCSB, Dept. of Chemical Engineering

	<u>Course:</u> ChE 180B – Senior Undergraduate Chemical Engineering Laboratory <i>Co-Instructor: Songi Han</i>
Fall 2013	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 170 - Molecular and Cellular Biology for Engineers (Undergraduate)
Spring 2013	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 171 - Biochemical Engineering (Undergraduate)
Fall 2012	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 170 - Molecular and Cellular Biology for Engineers (Undergraduate)
Spring 2012	Instructor, UCSB, Dept. of Chemical Engineering <u>Course:</u> ChE 180A - Junior Undergraduate Chemical Engineering Laboratory <i>Co-Instructors: Samir Mitragotri and Jacob Israelachvili</i>
Spring 2011	Instructor, Massachusetts Institute of Technology, Dept. of Biology <u>Course:</u> Fueling Sustainability: Engineering Microbial Systems for Biofuel Production <i>Published and Available on MIT's Open Course Ware (http://ocw.mit.edu/index.htm)</i>
Spring 2007	Teaching Fellow and Co-Instructor, University of Delaware, Dept. of Chemical Engineering <u>Course:</u> Fundamentals of Mass and Heat Transfer (Undergraduate) <i>Co-Instructors: T. W. Fraser Russell and Chris Roberts</i>
Fall 2006	Teaching Assistant, University of Delaware, Dept. of Chemical Engineering <u>Course:</u> Biochemical Engineering (Undergraduate/Graduate) <i>Instructors: Anne Robinson and Millicent Sullivan</i>
Spring 2004	Supplemental Instructor, Carnegie Mellon University, Dept. of Biology <u>Course:</u> Biochemistry (Undergraduate)
Fall 2003	Supplemental Instructor, Carnegie Mellon University, Dept. of Chemistry <u>Course:</u> Modern Chemistry I (Undergraduate)
2001 – 2004	Peer Tutor, Carnegie Mellon University, Academic Development Office

STUDENTS AND MENTORSHIP (UCSB)

Postdoctoral Scholars (past)

- Kevin V. Solomon, 2012-2015; currently Associate Professor, University of Delaware
- Jessica Sexton, 2014-2015; currently Microbiology Scientist, Apeel Sciences
- Charles Haitjema, 2012-2016; currently Research Area Manager, Bio-technie
- Monica Rieth, 2014-2016; currently Assistant Professor, Southern Illinois University (Edwardsville)
- Doriv Knop (Ellings Fellow), 2016-2018
- Xuefeng “Nick” Peng (Simons Foundation Fellow), currently Assistant Professor, University of South Carolina, 2015-2020
- Chris Lawson, 2019-2021; currently Assistant Professor, University of Toronto
- Susanna Seppälä (VILLUM Fellow), 2014-2022; currently UCSB
- Amy Rose Eisenburg, 2020-2023; currently Alga Biosciences
- Tejas Navaratna, 2020-2023; currently postdoctoral fellow University of Michigan

Graduate Students (past)

- Jennifer L. Guerrero (NSF Graduate Research Fellow), 2010-2016 (w/ Patrick Daugherty), Amgen
- Nicole S. Schonenbach (NSF Graduate Research Fellow), 2011-2017 (w/ Songi Han), Pfizer
- John K. Henske (Mellichamp Sustainability Fellow), 2012-2017, Inscripta
- Sean Gilmore (NSF Graduate Research Fellow), 2013-2018, Native Biosciences
- Justin Yoo (NSF Graduate Research Fellow, Philip and Aida Siff Educational Foundation Fellow, Dissertation Fellow), 2014-2019, Notch Therapeutics
- St. Elmo Wilken (Dow Discovery Fellow), 2015-2020 (w/ Linda Petzold), Currently Postdoctoral Fellow, Heinrich-Heine University, Germany (Ebenhöh lab)
- Candice Swift (NSF Graduate Research Fellow, Connie Frank Fellow, Graduate Dissertation Fellow), 2015-2020, Currently U.S. Patent and Trademark Office
- Emily Sun, 2019 –2021 (w/ Arnab Mukherjee)
- Khan (Kendrick) Nguyen, 2016-2021 (w/ Songi Han), Currently Scientist, Quantum-Si

- Elizabeth Schauer (Graduate Division Fellow), 2020– 2022, Currently PhD Student Dey Lab
- Michael Vigers, 2016-2022 (w/ Songi Han)
- Jennifer Brown (Graduate Opportunity Fellow), 2016 – 2022, Currently Research Scientist, Dept. of Energy Joint Genome Institute (JGI)
- Tom Lankiewicz, 2018-2022, Currently Scientist, Allonia
- Patrick Leggieri (Graduate Research Mentorship Program Fellow), 2018 – 2023, Currently Scientist, Allonia
- Stephen Lillington, 2018 – 2023 (w/ Scott Shell), Currently Scientist, Genentech
- Katharine Dickson, 2019 – 2023 (w/ David Low), Currently Postdoctoral Fellow, UC-Davis (Hess Lab)
- Kellie Heom, 2019 – 2024 (w/ Sid Dey)

Postdoctoral Scholars & Specialists (current)

- Hugh Purdy, 2021-present
- Bo Zhang, 2022-present

Graduate students (current)

- Lazarina Butkovich, 2019 – present
- Elaina Blair, 2019 – present
- Colleen Ahern, 2020 – present
- Ramya Rangunathan, 2021 – present (w/ Brad Chmelka and Mark Brzezinski)
- Shirley Jin, 2021 – present
- Sarah Seagrave, 2022 – present
- Vikram Mubayi, 2022 – present
- Janelle Arnold, 2023 – present (w/ Carolyn Mills)
- Vikram Shanbhag, 2023 – present (w/ Scott Shell)
- Artury Ramirez, 2024 – present

Undergraduate and high school students (current)

- Jessy Gonzales, EUREKA Scholar, 2020 - present
- Chandraki Chatterjee, 2023 – present
- Hector Hernandez Cardenas, EUREKA Scholar, 2023 – present
- John Sepe, 2024 – present
- Keith Chui, 2024 – present
- Wenni Zhang, 2024 – present
- Isabella Ferrand, 2024 – present

Undergraduate students and external visitors (past)

- Noa Margolith, 2023 – 2024 (high school student)
- Taylor Gierke, EUREKA Scholar, MARC Scholar, 2020 – 2023, Currently PhD student, Yale
- Thea Zalunardo, 2021 – 2023
- Nabil Alansari, 2022 – 2023
- Johanna Blackmore, 2022 – 2023
- Natasha Aji, 2022 – 2023
- Miguel Castenada-Renteria, EUREKA Scholar, 2020 - 2021
- Kerrie Luttrell, NSF postbach fellow, 2021 – 2022, Currently PhD student, U. Hawaii
- Scott Tam, Edison Fellow, 2021 – 2022
- Michael Dong Dong, 2021 – 2022
- Corey Kerdman-Andrade, Gorman Scholar, 2019 – 2021, currently Consultant Engineer, FM Global
- Nikola Malinov, Gorman Scholar, SABRE Scholar, 2018-2021, currently PhD Student, Chemical & Biomolecular Engineering, University of Delaware
- Derek Tang, 2019 – 2020, Currently Sana Biotechnology
- Freda Lababidi, Edison Scholar, 2019 – 2020, currently Quality Assurance Engineering, Ridgeline
- Mason Gatz, SABRE Scholar, 2019
- Jenna Hoover, 2018 – 2019, currently Amgen
- Alex Smith, 2018 – 2019
- Mohan Saxena, 2017-2019
- Patrick Kolence, 2017-2019
- Teagan Pado, 2018-2019
- Julia Bryne, 2016-2018
- Samantha Lee, 2015-2018

- Zach Cogan, 2015-2017, currently lab technician, Jonathan Weissman Lab, UCSF
- Winston Hsu, 2016-2017, currently OSIsoft
- Jessica Hauk, 2015-2017, currently Chemistry
- Randall DeGroot, 2015-2017, currently Zymergen
- Francis Cunningham, RISE fellow, 2016-2017, currently PhD Student Chemical & Biomolecular Engineering, UC-Berkeley
- Charlotte Abrahamson, Amgen Fellow, 2014-2016, currently PhD Student, Chemical and Biomolecular Engineering, Northwestern University
- Herman Ching, 2015-2016, currently PhD Student, Chemical Engineering, UC-Irvine
- Ricardo Andres Parra, ICB SABRE, 2014-2016, currently PhD Student, Bioengineering, Stanford University
- Daniel Yur, ICB URAP, 2014-2016; currently PhD Student, Chemical and Biomolecular Engineering, University of Delaware
- Sarah Maxel, 2013-2015, currently PhD Student, Chemical Engineering, UC-Irvine
- Natalie Banakis, 2012-2015, currently Patagonia
- Wen-Kang Chou, ICB URAP, 2014-2015, currently PhD Student, Chemical and Biological Engineering Princeton University
- Erich Brodbeck, Amgen Fellow, ICB URAP, 2013-2014, currently Amryis
- Chris Euchus (UC-Irvine), INSET Fellow, summer 2014
- Marla Nyamdorj, 2013-2014
- David Chau, 2013-2014, currently Eurofins Advantar Labs
- Josie Tressel, 2012-2013, currently Boehringer Ingelheim
- Brian Owens, 2012-2013, currently Energy Transfer
- Brianne Kiliman, McNair Scholar, 2012-2013, currently Intel
- Elisa Ovadia, 2012-2013, currently PhD Student Chemical & Biomolecular Engineering University of Delaware
- Meredith Green, 2012-2013, currently Merck
- Jessica O'Day, 2012-2013, currently Kite Pharma
- Kane Nania (UCLA), summer 2013, currently PhD Student Chemical Engineering UCLA
- Jiehao (CJ) Chen (UC-Berkeley), INSET Fellow, summer 2013, Currently Genentech
- Megan Cottage (middle school faculty), summer 2013, currently La Colina Jr. High

Thesis Committees (completed)

- Sunyia Hussain (Han), currently Research Scientist, TetraGenetics
- Peter St. John (Doyle), currently Researcher, NREL
- Kelsey Dean (Doyle), currently Scientist, Integral Health
- John Abel (Doyle/Petzold), currently Postdoc, MGH
- Zachary Oberholzer, currently Regeneron Pharmaceuticals
- Alex Thomas (Bazan), currently Senior Product Engineer, Apeel Sciences
- Kathryn Camacho (Mitragotri), currently Kite Pharma
- Michael Zakrewsky (Mitragotri), currently Scientist, Gilead Sciences
- Joon Bok Lee (Doyle), currently Analytics Algorithms Engineer, Insulet Corporation
- Lauren Huyett (Doyle), currently Clinical Affairs Specialist, Agilent Technologies
- Max Nowak (Helgeson/Mitragotri), currently PhD Student Systems Biology, Harvard Medical School
- Joel Bozekowski (Daugherty), currently Serimmune
- Michael Paul (Daugherty)
- Anusha Pusuluri (Mitragotri/Soh), currently Kala Pharmaceuticals
- Abe Pressman (Chen), currently NRC Postdoctoral Fellow, NIST
- Veronika Kivenson (Valentine), currently Postdoctoral Fellow, Oregon State University
- Jonathan Tarn (Valentine)
- Chung-Ta Han (Han), currently R&D Principle Process Engineer, Taiwan
- Kang-Ching Fan (Mukherjee), currently Mycenax Biotech Inc.
- Chad Wangsanuwat (Dey), currently Moderna
- Alex Chialastri (Dey), currently Century Therapeutics
- Alec Vallota-Eastman (D. Valentine)
- David Podorefsky (Dey)

- Nolan Anderson (Mukherjee)
- Sevan Esaian (Wilbanks)

Thesis Committees (current)

- Ashish Ninan Chacko (Mukherjee)
- Logan Baldini (Mukherjee)
- Chieh Wang (Dey/Wilson)
- Yimeng Huang (Mukherjee)
- Austin Miller (Mukherjee)
- Taruna Schuelke (Wilbanks)
- Yuki Floyd (Keller)
- Zainab Batool (Hai)