

Joshua K. Michener

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Education:

California Institute of Technology	Bioengineering	PhD	2012
Massachusetts Institute of Technology	Chemical Engineering	S.B.	2006
Massachusetts Institute of Technology	Biology	S.B.	2006

Research Experience:

2026-Present	Group Leader, Biological Systems Design, Biosciences Division, Oak Ridge National Laboratory
2024-Present	Senior Staff Scientist, Biosciences Division, Oak Ridge National Laboratory
2020-2024	Staff Scientist, Biosciences Division, Oak Ridge National Laboratory
2018-2019	Associate Staff Scientist, Biosciences Division, Oak Ridge National Laboratory
2015-2018	Wigner Staff Fellow, Biosciences Division, Oak Ridge National Laboratory
2014-2015	NRSA Fellow, Biological Engineering, MIT
2012-2014	NRSA Fellow, Organismal and Evolutionary Biology, Harvard University

Publications: (*: Corresponding author)

1. Allemann MN‡, Hochanadel LH‡, Vasileva DP, and **Michener JM***. Horizontal transfer of chromosomal DNA mediated by an integrative and conjugative element generates frequent localized recombination in *Novosphingobium aromaticivorans*. *In revision*. [Preprint](#).
2. Gee EB, Kuster RD, Klingeman DM, and **Michener JK***. Parallel tracking by sequencing reveals the impact of restriction modification systems on transfer of an integrative and conjugative element. *In revision*. [Preprint](#).
3. Qian L, Dishner IT, Capra N, Carper DL, Ogbonna N, Kertesz V, Cahill JF, Foster JC*, and **Michener JK***. Regioselective biosynthesis of oligoamides as precursors for sequence-controlled co-polyamides. *In revision*. [Preprint](#).
4. Vasileva DP, Chhetri HB, Hochanadel LH, Streich JC, Lagergren JH, Lane MJ, Oksuz E, Carper DL, Rubino B, Chitwood S, Schmitz ZD, Klingeman DM, Abraham PE, Giannone RJ, Jacobson DA*, and **Michener JK***. Genome shuffling enables quantitative trait locus mapping in *Bacillus subtilis*. *Accepted, Nat Comms*. [Preprint](#).
5. Qian L‡, Dishner IT‡, Carper DL, Parks JM, Kertesz V, Zolnierczuk NT, Ogbonna ND, Thiele NA, Cahill JF, Foster JC*, and **Michener JK***. Improved nylon polymerization using amide diads. *Green Chem.*, 2026, **28**, 11375–11386. [Link](#).
6. Bourgery C, Kato D, Capra N, Korey M, Qian L, Negoro S*, **Michener JK***. Enzymatic Nylon degradation: enzyme discovery, engineering, and opportunities. *ACS Materials Lett.* 2026, **8**, 1626–1643. [Link](#).
7. Bourgery C, Zhang LX, Carper DL, Zhou M, Sacci RL, Korey M, Wang L, Hemond JHB, Cahill JF, Bocharova V, and **Michener JK***. Reaction optimization for enzymatic deconstruction of industrially-relevant Nylon composites. *ChemBioChem*, 2026; **27**:e202600011. [Link](#).
8. Dishner IT‡, Bourgery C‡, Carper DL, Cooper CJ, Cahill JF, Mehta JM, Yakubov S, Zhang HH, Ogbonna ND, Damron JT, Sacci RL, Bocharova V, Parks JM, **Michener JK***, and Foster JC*. Circularity in sequence-controlled copolyamides enabled by regioselective enzymatic hydrolysis. *J. Am. Chem. Soc.* 2026, **148**, 17, 18285–18295. [Link](#).

9. **Michener JK***, Biochemical parallels between catabolic pathways for lignin-associated aromatic dimers. *Appl Environ Microbiol* 2026 Mar 18;92(3):e0027625. [Link](#).
10. Smith CA, Bedgar DL, Costa MA, Moinuddin SGA, Allemann MN, **Michener JK**, Davin LB, Lewis NG*. Molecular basis and biological relevance of bacterial and plant pinoresinol/lariciresinol reductase specificities. *Protein Sci* 2026 Feb; 35(2):e70436. [Link](#).
11. Allemann MN, Fachuang Lu F, Presley GN, Valentino HR, Bedgar DL, Costa MA, Moinuddin SGA, Azubuike CC, Vasileva DP, Klingeman DM, Hochanadel LH, Fisch AR, Sanders BC, Eltis LD, Giannone RJ, Davin LB, Lewis NG, Ralph J, Elkins JG, and **Michener JK***. Elucidation of a bacterial pathway for catabolism of the β - β -linked dilignol pinoresinol. *mBio* 2025, 0:e02010-25. [Link](#).
12. Druvva EE, Cahill JF, Saint-Vincent PMB, Williams AN, Bocharova V, Capra N, Meilleur F, Carper DL, Bourgerie C, Miyazaki K, Yonemura M, Shiraishi Y, Parks JM, Zhou M, Dishner IT, Foster JC, Koehler SJ, Valentino HR, Sedova A, Kertesz V, Vasileva DP, Hochanadel LH, Figg CA, Negoro S, Kato D, Chen SH*, and **Michener JK***. Identification and characterization of substrate- and product-selective nylon hydrolases. *Chem Catalysis* 2025, 5 (8) 101418. [Link](#).
13. Valentino HR, Qian L, Parks JM, Druvva EE, Sedova A, Mehta PS, Watson MP, Giannone RJ, Galanie SS, and **Michener JK***. Engineered enzymatic cascade converts diols to amino alcohols. *Green Chem*, 2025, 27, 6283-6292. [Link](#).
14. Bocharova V*, Druvva EE, Cahill JF, Popov I, Dishner IT, Zhou M, Jung GS, Ullman AM, Carper DL, Damron JT, Keum JK, Gainaru C, Chen SH, Foster JC*, and **Michener JK***. Factors modulating the hydrolysis of Nylon-6,6 by a nylon hydrolase enzyme. *Polym Chem* 2025; 16 (16): 1858–1868. [Link](#).
15. Allemann MN, Kato R, Carper DL, Hochanadel LH, Alexander WG, Giannone RJ, Kamimura N, Masai E, and **Michener JK***. Laboratory evolution in *Novosphingobium aromaticivorans* enables rapid catabolism of a model lignin-derived aromatic dimer. *Appl Environ Microbiol* 2025, 91:e02081-24. [Link](#).
16. Christel S, Carrell AA, Hochanadel LH, Villalobos Solis MI, Abraham PE, Jawdy SS, Chaves JE, Engle NL, Berhane T, Yao T, Chen J, Muchero W, Tschaplinski TJ, Cregger MA, and **Michener JK***. Catabolic pathway acquisition by rhizosphere bacteria readily enables growth with a root exudate component but does not affect root colonization. *mBio* 2025 16:e03016-24. [Link](#).
17. Metz F, Olsen AM, Lu F, Myers KS, Allemann MN, **Michener JK**, Noguera DR, and Donohue TJ*. Catabolism of β -5 linked aromatics by *Novosphingobium aromaticivorans*. *mBio* 2024 15:e01718-24. [Link](#).
18. Wilkes RA, Borchert AJ, Garcia VE, Geiselman GM, Sarah Liu S, Guss AM, **Michener JK**, Noguera DR, Masai E, Gladden JM, Ralph J, and Beckham GT*. Comparison of microbial strains as candidate hosts and genetic reservoirs for the valorization of lignin streams. *Green Chem.*, 2024, 26, 12053-12069. [Link](#).
19. Cahill JF*, Kertesz V, Saint-Vincent P, Valentino H, Druvva E, Thiele N, and **Michener JK**. High-Throughput Characterization and Optimization of Polyamide Hydrolase Activity Using Open Port Sampling Interface Mass Spectrometry. *J. Am. Soc. Mass Spectrom.* 2023 June, 34, 7, 1383–1391. [Link](#).
20. Bilbao A, Munoz N, Kim J, Orton DJ, Gao Y, Poorey K, Pomraning KR, Weitz K, Burnet M, Nicora CD, Wilton R, Deng S, Dai Z, Oksen E, Gee A, Fasani RA, Tsalenko A, Tanjore D, Gardner J, Smith RD, **Michener JK**, Gladden JM, Baker ES, Petzold CJ, Kim Y-M, Apffel A, Magnuson JK, and Burnum-Johnson KE*. PeakDecoder enables machine learning-based metabolite annotation and accurate profiling in multidimensional mass spectrometry measurements. *Nat Comms* 2023 April 28; 14: 2461. [Link](#).

21. Allemann MN, Presley GN, Elkins JG, and **Michener JK***. *Sphingobium lignivorans* sp. nov., isolated from river sediment downstream of a paper mill. *Int J Syst Evol Microbiol* 2023 Feb. [Link](#).
22. Kuatsjah E, Zahn M, Chen X, Kato R, Hinchén DJ, Konev MO, Katahira R, Orr C, Wagner A, Zou Y, Haugen SJ, Ramirez KJ, **Michener JK**, Pickford AR, Kamimura N, Masai E*, Houk KN*, McGeehan JE*, and Beckham GT*. Biochemical and structural characterization of a sphingomonad diarylpropane lyase for cofactorless deformylation. *Proc Natl Acad Sci USA* 2023 Jan; 120 (4) e2212246120. [Link](#).
23. Varner PM, Allemann MN, **Michener JK**, and Gunsch CK*. The effect of bacterial growth strategies on plasmid transfer and naphthalene degradation for bioremediation. *Environ. Technol. Innov.* 2022 November; 28: 102910. [Link](#).
24. Vasileva DP[†], Streich JC[†], Burdick LH[†], Klingeman DM, Chhetri HB, Brelsford CM, Ellis JC, Close DM, Jacobson DA*, and **Michener JK***. Protoplast fusion in *Bacillus* species produces frequent, unbiased, genome-wide homologous recombination. *Nucleic Acids Research* 2022 June; 50(11): 6211-6223. [Link](#).
25. Bleem A[†], Kuatsjah E[†], Presley GN[†], Hinchén DJ, Zahn M, Garcia DC, Michener WE, König G, Tornesakis K, Allemann MN, Giannone RJ, McGeehan JE*, Beckham GT*, and **Michener JK***, Discovery, characterization, and metabolic engineering of Rieske non-heme iron monooxygenases for guaiacol O-demethylation. *Chem Catalysis* 2022 May. [Link](#).
26. Moore JAM, Abraham PE, Michener JK, Muchero W, and Cregger MA*. Ecosystem consequences of introducing plant growth promoting rhizobacteria to managed systems and potential legacy effects. *New Phytologist* 2022 Jan; 234:1914–1918. [Link](#).
27. Azubuike CC, Allemann MN, and **Michener JK***. Microbial assimilation of lignin-derived aromatic compounds and conversion to value-added products. *Curr Opin Microbiol* 2021 Nov 11;65:64-72. [Link](#)
28. Presley GN[†], Werner AZ[†], Katahira R, Garcia DC, Haugen SJ, Ramirez KJ, Giannone RJ, Beckham GT*, **Michener JK***. Pathway discovery and engineering for cleavage of a β -1 lignin-derived biaryl compound. *Metab Eng* 2021 May; 65: 1-10. [Link](#).
29. Cregger MA, Carper DL, Christel S, Doktycz MJ, Labbé J, **Michener JK**, Dove NC, Johnston ER, Moore JAM, Vélez JM, Morrell-Falvey J, Muchero W, Pelletier DA, Retterer S, Tschaplinski TJ, Tuskan GA, Weston DJ, and Schadt CW*. Plant–Microbe Interactions: From Genes to Ecosystems Using *Populus* as a Model System. *Phytobiomes J* 2021 Mar; 5 : 29-38. [Link](#).
30. Hatmaker E, Presley G, Cannon O, **Michener JK**, Guss A, and Elkins J*. Complete genome sequences of four natural *Pseudomonas* isolates that catabolize a wide range of aromatic compounds relevant to lignin valorization. *Microbiol Resour Announc* 2020 Dec 3;9(49):e00975-20. [Link](#).
31. Elmore JR, Dexter GN, Salvachúa D, O'Brien M, Klingeman DM, Gorday K, **Michener JK**, Peterson DJ, Beckham GT, and Guss AM*. Engineered *Pseudomonas putida* simultaneously catabolizes five major components of corn stover lignocellulose: Glucose, xylose, arabinose, p-coumaric acid, and acetic acid. *Metab Eng* 2020 Nov; 62 : 62-71. [Link](#).
32. Chaves JE, Wilton R, Gao Y, Munoz Munoz N, Burnet MC, Schmitz Z, Rowan J, Burdick LH, Elmore J, Guss A, Close D, Magnuson JK, Burnum-Johnson KE, and **Michener JK***, Evaluation of chromosomal insertion loci in the *Pseudomonas putida* KT2440 genome for predictable biosystems design. *Met Eng Comm* 2020 Jul 19;11:e00139. [Link](#).
33. Gilmour CG*, Bullock Soren A, Gionfriddo CM, Podar M, Wall JD, Brown SD, Michener JK, Soledad Goñi Urriza M, Elias DA. *Pseudodesulfobivibrio mercurii* sp. nov., a mercury-methylating bacterium isolated from sediment. *Int J Syst Evol Microbiol* 2019 Jun;71(3). [Link](#).
34. Close D, Cooper CJ, Wang X, Chirania P, Gupta M, Ossyra JR, Giannone RJ, Engle NL, Tschaplinski TJ, Smith JC, Hedstrom L, Parks JM, and **Michener JK***, Horizontal transfer of a

- pathway for coumarate catabolism unexpectedly inhibits purine nucleotide biosynthesis. *Mol Microbiol* 2019; 112 (6) 1784-1797. [Link](#).
35. Millet L, Velez J, and **Michener JK***, Genetic selection for small molecule production in competitive microfluidic droplets. *ACS Synth Biol* 2019. 8, 8, 1737-1743. [Link](#).
 36. Trofimov AA, Pawlicki AA, Borodinov N, Mandal S, Mathews TJ, Hildebrand M, Ziatdinov MA, Hausladen KA, Urbanowicz PK, Steed CA, Ievlev AV, Belianinov A, **Michener JK**, Vasudevan R, and Ovchinnikova OS*. Deep data analytics for genetic engineering of diatoms linking genotype to phenotype via machine learning. *npj Comput Mater* 2019 5:67. [Link](#).
 37. Chaves JE, Presley GN, and **Michener JK***, Modular engineering of biomass degradation pathways. *Processes* 2019, 7(4), 230. [Link](#).
 38. Tuskan GA*, Groover AT, Schmutz J, DeFazio SP, Myburg A, Grattapaglia D, Smart LB, Yin T, Aury J-M, Kremer A, Leroy T, Le Provost G, Plomion C, Carlson JE, Randall J, Westbrook J, Grimwood J, Muchero W, Jacobson D, **Michener JK**. Hardwood tree genomics: unlocking woody plant biology. *Front Plant Sci* 2018; 9: 1799. [Link](#).
 39. Cecil JH, Garcia DC, Giannone RJ, **Michener JK***. Rapid, parallel identification of catabolism pathways of lignin-derived aromatic compounds in *Novosphingobium aromaticivorans*. *Appl Environ Microbiol* 2018 84:e01185-18. [Link](#).
 40. Standaert RF, Giannone RJ, and Michener JK*. Identification of parallel and divergent optimization solutions for homologous metabolic enzymes. *Metab Eng Comm* 2018. 6:56-62. [Link](#).
 41. Clarkson SM, Giannone RJ, Kridelbaugh DM, Elkins JG, Guss AM*, and **Michener JK***, Construction and optimization of a heterologous pathway for protocatechuate catabolism in *Escherichia coli* enables bioconversion of model aromatic compounds. *Appl Env Microbiol* 2017 Aug 31;83(18). [Link](#).
 42. **Michener JK***, Vuilleumier S, Bringel F, and Marx CJ. Transfer of a catabolic pathway for chloromethane in *Methylobacterium* strains highlights different limitations for growth with chloromethane or with dichloromethane. *Front Microbiol* 2016. [Link](#)
 43. Houser JR, Barnhart C, Boutz DR, Carroll SM, Dasgupta A, **Michener JK**, et al. Controlled measurement and comparative analysis of cellular components in *E. coli* reveals broad regulatory changes in response to glucose starvation. *PLoS Comput Biol* 2015; 11(8): e1004400. [Link](#)
 44. **Michener JK**, Camargo Neves AAC, Vuilleumier S, Bringel F, and Marx CJ. Effective use of a horizontally-transferred pathway for dichloromethane catabolism requires post-transfer refinement. *eLife* 2014;10.7554/eLife.04279 [Link](#).
 45. **Michener JK**, Vuilleumier S, Bringel F, and Marx CJ. Phylogeny poorly predicts the utility of a challenging horizontally-transferred gene in *Methylobacterium* strains. *J Bacteriol.*, June 2014 196:2101-2107 [Link](#).
 46. **Michener JK** and Smolke CD. Synthetic RNA switches for yeast metabolic engineering. *Methods in Molecular Biology, Yeast Metabolic Engineering*. 2012; 1152:125-36 [Link](#).
 47. **Michener JK**, Nielsen J, and Smolke CD. Identification and treatment of heme depletion due to over-expression of a lineage of evolved P450 monooxygenases. *Proc Natl Acad Sci U S A*. 2012 Nov 20;109(47):19504-9. [Link](#).
 48. **Michener JK** and Smolke CD. High-throughput enzyme evolution in *Saccharomyces cerevisiae* using a synthetic RNA switch. *Metab Eng*. 2012 Jul; 14(4):306-16. [Link](#)
 49. **Michener JK**, Thodey K, Liang JC, and Smolke CD. (2011) Applications of genetically-encoded biosensors for the construction and control of biosynthetic pathways. *Metab Eng*. 2012 May; 14(3):212-22. [Link](#)

Patents:

Bacterial quantitative trait-locus mapping, patent US-12362039-B2. **Joshua K. Michener**, Daniel Jacobson, Delyana Vasileva, Jared Streich
Enzymatic synthesis of amide oligomers, non-provisional application 63/677,609 filed 7/30/2025.
Joshua K. Michener, Jeffrey C. Foster, Liangyu Qian, Isaiah Dishner
Novel enzymes for hydrolytic nylon depolymerization, non-provisional application 63/704,159 filed 10/6/2025. **Joshua K. Michener**, Serena Chen, John Cahill, Erin Drufva, Patricia Saint-Vincent, Vera Bocharova, Célestin Bourgerie, Vilmos Kertesz, Jeffrey Foster

Teaching:

Fall 2022: LFSC 520 - Genome Science and Technology I (University of Tennessee, Knoxville)

Funding and Project Leadership:

IDeA: Intelligent Design Assistant for Enzyme Discovery and Biosynthetic Pathway Optimization (DOE BER): ORNL PI, 2025-2027
Engineering Genetically Programmable Spore Platforms for REE Recovery (DOE BER): Scientific Co-Manager, 2025-2026
Secure Ecosystem Engineering and Design Science Focus Area (DOE BER): Scientific Co-Manager, 2021-2026
Center for Plastics Innovation Energy Frontiers Research Center (DOE BES): Thrust Lead, 2021-2028
Enzyme Engineering Initiative (ORNL LDRD): Initiative Lead and PI, 2022-2026
Early Career Award, Systems metabolic engineering of *Novosphingobium aromaticivorans* for lignin valorization (DOE BER): PI, 2019-2024
Center for Bioenergy Innovation (DOE BER): Co-I, 2018-2027
Plant Microbe Interfaces Science Focus Area (DOE BER): Co-I, 2019-2023
Microbial Quantitative Trait Locus Mapping (ORNL LDRD): PI, 2018-2020
Wigner Fellowship (ORNL LDRD): PI, 2015-2017

Invited and contributed oral presentations:

Michener JK. Microbial conversion of lignin-derived aromatic dimers to performance-advantaged polymers. 2026. Lignin GRC, Florence, Italy. Invited.
Michener JK. Assimilation of lignin-derived aromatic dimers in *Novosphingobium* spp. 2025. Pacificchem, Honolulu, HI. Contributed.
Michener JK. Enzyme engineering for synthesis and recycling of sequenced copolyamides. 2025. Pacificchem, Honolulu, HI. Contributed.
Bourgerie C, ... and **Michener JK.** Discovery, characterization and engineering of nylon hydrolase for nylon recycling. 2025. SIMB Annual Meeting, San Francisco, CA. Invited.
Gee E, ... and **Michener JK.** 2025. High-throughput tracking of an integrative and conjugative element in complex microbial communities. SIMB Annual Meeting, San Francisco, CA. Invited.
Michener JK. Lignin valorization to bio-advantaged, circular-by-design, sequenced copolyamides. 2025. Inter-BRC Lignin Workshop, Madison, WI. Invited.
Michener JK. Engineering *Bacillus* species for improved microbiome engineering. 2025. 5th Mid-Atlantic Synthetic Biology Network, Newark, DE. Invited.
Michener JK. Enzymatic production of nylon oligomers. 2024. AIChE Annual Meeting, San Diego, CA. Invited.
Michener JK. Enzymatic nylon synthesis and hydrolysis. 2024. 2nd Carbios International Conference, Toulouse, France. Invited.

Michener JK. Enzymatic nylon synthesis and hydrolysis. 2024. SIMB Annual Meeting, Boston, MA. Invited.

Vasileva D, ... and **Michener JK.** Bacterial Quantitative Trait-Locus (QTL) Mapping. 2024. 22nd International Conference on Bacilli & Gram-Positive Bacteria, Bloomington, IN. Contributed.

Michener JK. Engineering *Bacillus velezensis* for improved microbiome engineering. 2024. 22nd International Conference on Bacilli & Gram-Positive Bacteria, Bloomington, IN. Contributed.

Michener JK. Systems metabolic engineering of *Novosphingobium aromaticivorans* for lignin valorization. 2024. DOE Genomic Sciences PI Meeting, Bethesda, MD. Invited.

Michener JK. Biocatalyst discovery for sustainable chemical production and recycling. 2024. Biochemistry Department, Virginia Tech, Blacksburg, VA. Invited.

Michener JK. Discovery and engineering of nylon hydrolases for PA66 recycling. 2023. Enzyme Engineering XXVII, Singapore. Contributed.

Michener JK. Biocatalyst discovery for sustainable chemical production and recycling. 2023. Society for Biocatalysis Japan Annual Meeting, Kagoshima, Japan. Invited.

Michener JK. Biocatalyst discovery for sustainable chemical production and recycling. 2023. Toyota RIKEN Symposium on Cutting Edge Research on the Use of Biocatalysts for SDGs, Nagoya, Japan. Invited.

Michener JK. New pathways for microbial assimilation of lignin-derived aromatic dimers. 2023. Nagaoka University of Technology, Nagaoka, Japan. Invited.

Druvva E, ... and **Michener JK.** 2023. Discovery and engineering of novel nylon hydrolases. Protein Engineering Gordon Research Conference, Smithfield, RI. Contributed.

Vasileva DP, ... and **Michener JK.** Quantitative Trait-Locus Mapping: A novel method for linking phenotypes to genotypes in bacteria. 2023. ASM Microbe, Houston, TX. Contributed.

Saint-Vincent P, ... and **Michener JK.** Engineering and characterizing enzymes for nylon degradation and upcycling. 2023. SIMB SBFC, Seattle, WA. Invited.

Michener JK. Enzyme discovery and engineering for valorization of natural and artificial waste polymers. American Society of Biochemistry and Molecular Biology. 2023. Seattle, WA. Invited.

Michener JK. Mapping bacterial phenotype to genotype for pathway discovery. 2023. University of Idaho, Moscow, ID. Invited.

Vasileva DP, ... and **Michener JK.** 2022. Bacterial genome shuffling creates unique recombination patterns throughout the chromosome. Subtillery. Contributed.

Allemann MN, ... and **Michener JK.** 2022. Pathway discovery, optimization and engineering in *Novosphingobium* for lignin valorization. Lignin Gordon Research Conference, Easton, MA. Contributed.

Valentino HR, ... and **Michener JK.** 2022. Engineering of a Redox Neutral Enzyme Cascade for Production of Aliphatic Diamines. Enzyme Engineering XXVI, Dallas, TX. Contributed.

Vasileva DP, ... and **Michener JK.** 2022. Quantitative trait loci (QTL) mapping: a novel method for gene discovery in bacteria. 3rd Annual Griffith's Legacy. Invited.

Michener JK. 2021. Discovery and engineering of novel aromatic catabolic enzymes from non-model bacteria. Great Lakes Bioenergy Research Center, Madison, WI. Invited.

Michener JK. 2021. Metabolic Engineering of Non-Model Bacteria for Valorization of Hemicellulose and Lignin. Molecular Plant Sciences, Michigan State University, East Lansing, MI. Invited.

Michener JK. 2020. Systems Metabolic Engineering of *Novosphingobium aromaticivorans* for Lignin Valorization. Genomic Sciences Program Annual PI Meeting, Washington, DC. Invited.

Michener JK. 2019. High-throughput screens and selections for enzyme function in non-model bacteria. American Institute of Chemical Engineering Annual Meeting, Orlando, FL. Invited.

Presley GN, ... and **Michener JK**. Expanding the molecular toolkit for lignin valorization by rapid pathway identification and new microbe isolation. 2019. SIMB Annual Meeting, Washington, DC. Invited.

Burdick LH, ... and **Michener JK**. 2019. Measuring Homologous Recombination Rates During Protoplast Fusion. ASM Microbe, San Francisco, CA. Contributed.

Michener JK. 2019. Optimizing Microbial Pathways for Lignin Valorization. SIMB Symposium on Biotechnology for Fuels and Chemicals, Seattle, WA. Invited.

Michener JK. 2019. Optimizing Microbial Pathways for Lignin Valorization. Department of Chemical Engineering, University of Tennessee, Knoxville, TN. Invited.

Michener JK. 2018. Enzymatic Conversion of Lignin-derived Aromatic Compounds. Frontiers in Biorefining, St. Simons Island, GA. Invited.

Cecil JH and **Michener JK**. 2017. Identification and Reconstruction of Pathways for Catabolism of Lignin-Derived Aromatic Compounds. American Institute of Chemical Engineers Annual Meeting, Minneapolis, MN. Contributed.

Velez J and **Michener JK**. 2017. Selecting for Small Molecule Production in Competitive Microfluidic Droplets. American Institute of Chemical Engineers Annual Meeting, Minneapolis, MN. Contributed.

Advisees:

Graduate Students:

Emily Gee (2021-2026) – PhD, Genome Science and Technology, University of Tennessee

Postdoctoral Research Associates:

Célestin Bourgerie (2024-2026); PhD AgroParisTech, France; Currently at UT-ORII

Liangyu Qian (2023-2026); PhD, Texas A&M University

Apurv Mhatre (2023-2026); PhD, Arizona State University

Hannah Valentino (2021-2023); PhD, Virginia Tech; Currently at Birch Biosciences

Oumar Sacko (2021-2022); PhD, Old Dominion University; Currently at Ginkgo Biosciences

Christopher Azubuike (2021-2023); PhD, Newcastle University, United Kingdom; Currently at Lesaffre

Marco Allemann (2020-2022); PhD, University of California, San Diego; Currently at Algenesis

Delyana Vasileva (2019-2022); PhD, University of Tokyo, Japan; Currently at ORNL

Stephan Christel (2019-2022); PhD, Linnaeus University, Sweden; Currently at Endolith

Julie Chaves (2018-2021); PhD, University of California, Berkeley. Currently at Inscripta.

Gerald Presley (2018-2019); PhD, University of Minnesota. Currently Associated Professor, Oregon State University.

Other:

Jeremy Tang (2025-2026) –Post-bachelors research associate, University of California, Berkeley

Lance Zhang (2024-2025) – SULI Undergraduate intern, Georgetown University

Nicholas Zolnierczuk (2024) – SULI Undergraduate intern, Purdue University

Sadie Chitwood (2024) – SULI Undergraduate intern, University of North Texas

Joanna Chang (2022) – SULI Undergraduate intern, University of Texas, Austin

Brandy Barber (2019-2020) – Post-bachelors research associate, University of Tennessee

Timkhite-Kulu Berhane (2019-2020) – Post-masters research associate, University of Tennessee

Zach Schmitz (2018) – SULI Undergraduate intern, MIT

Jacob Cecil (2017) – SULI Undergraduate, University of Tennessee

Jessica Velez (2017) – GEM PhD student, University of Tennessee
Danika Nimlos (2016) – SULI Undergraduate intern, University of California, Berkeley
Aline Carmago-Neves (2014) – PhD student, University of São Paulo

Professional Affiliations:

American Society for Microbiology (ASM)
American Chemical Society (ACS)
Society for Industrial Microbiology and Biotechnology (SIMB)

Honors and Awards:

DOE Early Career Award (2019-2024)
Oak Ridge Postdoctoral Association Mentor of the Year (2019)
DOE Distinguished Staff Fellowship (2015-2018)
NIH NRSA Postdoctoral Fellowship (2012-2015)
Nordic Research Fellowship (2011)
NSF Graduate Research Fellowship (2018-2011)
MIT Chemical Engineering Roger de Friez Hunneman Prize (2006)
Phi Beta Kappa (2006)

Professional Service:

Expert advisor, General Accountability Office Technology Assessment, “*Biotechnology: Applications, Challenges, and Policy Options for Engineered Microbes for Waste Cleanup*” (2026)
Editor, *Applied and Environmental Microbiology* (2026-Present)
Faculty Search Committee Chair, University of Tennessee/Oak Ridge Innovation Institute (2025)
Distinguished Staff Fellowship Selection Committee, ORNL (2024-Present)
Reviewer, DOE BER NMDC Review (2025)
Reviewer, DOE Genomic Sciences Early Career Award (2025)
Invited participant, DOE BER Microbiome Engineering Strategic Planning Workshop (2025)
Reviewer, ACS PRF (2024)
Reviewer, JGI Functional Genomics User Proposals (2019, 2020, 2024)
Reviewer, USDA NIFA SBIR/STTR Grants (2023)
Curriculum Committee, Genome Science and Technology, University of Tennessee-Knoxville (2022-2024)
Steering Committee, Genome Science and Technology, University of Tennessee-Knoxville (2022-Present)
Editorial Board, *Applied and Environmental Microbiology* (2020-2026)
Session chair, ASBMB Annual Meeting (2023)
Session chair, ASM Annual Meeting (2021)
Session chair, AIChE Annual Meeting (2015, 2018-2022)
Session chair, SIMB Annual Meeting (2019, 2022, 2025)
Topic chair, Biocatalysis, SIMB Annual Meeting (2025-2027)
iGEM Championship Judge (2012-2014, 2018)
Invited panelist, NSF workshop on “Creating a Research Agenda for the Ecological Implications of Synthetic Biology” (2014)
Invited panelist, Sloan Foundation workshop on “Governance Approaches for Synthetic Biology” (2014)