Matthew J. Scarborough, P.E., Ph.D.
Associate Professor |Department of Civil and Environmental Engineering
College of Engineering and Mathematical Sciences | University of Vermont
213D Votey Hall | 33 Colchester Avenue, Burlington, VT 05405

EDUCATION

Ph.D. University of Wisconsin- Madison, 2019
Major: Civil and Environmental Engineering
Dissertation title: Production of beneficial chemicals from renewable feedstocks with anaerobic microbiomes
Advisors: Dr. Daniel Noguera and Dr. Timothy Donohue

B.S. University of Wyoming, 2008
Major: Civil Engineering (Environmental Option)

PROFESSIONAL EXPERIENCE

Gregory N. Sweeny Green and Gold Professor of Civil Engineering, Associate Professor, University of Vermont, Burlington, VT **August 2019 – Present**
A member of the Department of Civil and Environmental Engineering teaching courses across multiple academic levels, supervising a combined experimental and computational research group, and serving the department, college, university, and State of Vermont. Teaching and research are focused on the application of microbiomes to transform organic wastes into beneficial products, the use of microbiomes to protect the environment and public health, and fundamentals of microbiome assembly, function, resilience, and modeling.

Research Assistant, Great Lakes Bioenergy Research Center, Madison, WI **June 2014 – August 2019**
Operated bioreactors, performed multi-omic analyses, and mentored undergraduate and graduate students. Research focused on the conversion of residuals of lignocellulosic biorefining to medium-chain fatty acids.

Project Engineer, CH2M, Omaha, NE **June 2008 – October 2015**
Project Engineer at a global consulting firm with duties including the study, modeling, design, and construction of wastewater and water resources projects.

TEACHING EXPERIENCE

CE 151/ CEE 3510: Water and Wastewater Engineering

Topics: Water demand and supply, coagulation-flocculation, softening, sedimentation, filtration, disinfection, wastewater collection, screening and grit removal, primary clarification, activated sludge, anaerobic digestion, decentralized water and wastewater management, the engineering design process

			Mean Scores (Maximum of 5)		
Semester	No. Students	No. Evaluations	How much did you learn?	How academically and intellectually challenging?	How effective was the instructor?
Spring 2021	22	20	4.65	4.28	4.80
Spring 2022	34	30	4.68	4.17	4.88
Fall 2022	25	24	4.42	4.25	4.96

CEE 3520: Environmental Engineering Chemistry and Microbiology

Topics: Fundamentals of matter and light, water chemistry, precipitation-dissolution, acid-base chemistry, air chemistry, redox chemistry, microbiology, biochemistry

			Mean Scores (Maximum of 5)		
Semester	No. Students	No. Evaluations	How much did you learn?	How academically and intellectually challenging?	How effective was the instructor?
Fall 2024	27	22	4.18	3.45	4.77

CE 247/ CEE 4570: Sustainable Resource Recovery Design (Undergraduate and Graduate Students)

Topics: Solid waste characteristics, landfills and landfill residuals, recycling, incineration, composting, anaerobic digestion, cost estimating, and life cycle assessment.

			Mean Scores (Maximum of 5)		
Semester	No. Students	No. Evaluations	How much did you learn?	How academically and intellectually challenging?	How effective was the instructor?
Fall 2020	20	17	4.88	4.53	4.94
Spring 2023	41	38	4.63	4.05	4.89
Spring 2024	39	32	4.47	3.50	4.88
Spring 2025	42	36	4.58	3.33	4.67

CE 256/ CEE 5560: Biological Processes for Water and Wastewater Treatment (Undergraduate and Graduate Students)

Topics: Activated sludge, microbial kinetics and stoichiometry, modeling biological processes, biofilms, anaerobic bioprocessing of wastes, soil and groundwater bioremediation, emerging biological processes.

			Mean Scores (Maximum of 5)		
Semester	No. Students	No. Evaluations	How much did you learn?	How academically and intellectually challenging?	How effective was the instructor?
Spring 2020	13	11	4.73	4.64	4.91
Spring 2022	34	30	4.67	4.60	4.83

CE 395: Multi-scale Modeling of Biological Processes

Topics: Biochemistry, microbiology, kinetic and stoichiometric modeling, metabolic modeling, Python

			Mean Scores (Maximum of 5)		
Semester	No. Students	No. Evaluations	How much did you learn?	How academically and intellectually challenging?	How effective was the instructor?
Fall 2021	6	5	4.80	4.80	5.00

RESEARCH FUNDING

Proposals Submitted or In-Preparation

Funding Agency	Role	Title	Requested Amount	Status
US National Science Foundation	Co-PI (PI: Kristen Underwood)	Collaborative Research: E-RISE: Vermont PFAS Environmental Research Network	$950,000	Under Review
Renewable Natural Resources Foundation	PI	Valorization of waste fats, oils, and grease using lipolytic fungi	$188,025	Under Review
US Department of Agriculture	PI (Co-PI: Jeanne Harris)	Elucidating the Role of the Alfalfa Root Nodule Microbiome on Modulating Plant Function through High-Resolution Spatial Omics	$300,000	Under Review
US Department of Energy	Co-PI (PI: Ehsan Ghazanfari)	Investigation of hydrogen loss and structural alteration in reservoir rock caused by microbial activity during hydrogen storage in depleted hydrocarbon reservoirs	$543,323	Under Review
US National Science Foundation	PI (PI for Washington State is Kuang Zhang and for Johns Hopkins is Shilva Shresta)	Collaborative Research: Hydrogel encapsulation for controlled delivery of synthetic microbial consortia for high-yield chain elongation	$317,440	In Preparation
US Department of Defense	PI	Conversion of organic wastes to methylketones using permafrost-derived microbial communities	$1,080,000	In Preparation
US National Science Foundation	Co-PI (PI: Julia Perdrial, Co-Pl: Donna Ramirez Harrington)	NRT: Future Leaders Optimizing Water with Artificial Intelligence (FLOW-AI): Convergent Training for Fit-for-purpose water management	~$2,500,000	In Preparation

External Federal Funding as PI

Funding Agency	Role	Title	Award Amount	Years
US National Science Foundation	PI	CAREER: Expanding and controlling the product spectrum from anaerobic bioprocessing of wastes	$561,424	2022-2027
US National Science Foundation	PI (PI for ASU is Anca Delgado)	Collaborative Research: Microbial chain-elongation mediated dehalogenation and carbon transformation	$214,427	2022-2025
US Department of Agriculture	PI, (Co-PIs Raju Badireddy, Andrea Hicks - UW-Madison)	Production of propane from agricultural wastes	$299,999	2022-2025
US Environmental Protection Agency	PI, Co-PI Eric Roy	Agricultural digesters as biorefining hubs: food waste co-digestion focused on farmers	$199,997	2022-2024
		TOTAL	$1,275,847	

Other External Funding as PI

Funder	Role	Title	Award Amount	Years
Casella Waste Systems	PI	Microbiome-based Strategies to Reduce Greenhouse Gas Emissions from Landfills	$32,008	2024
Agrimark/ Cabot	PI (Co-PIs Raju Badireddy, Deb Neher, and Eric Roy)	Towards a closed-loop resource recovery facility for Cabot	$129,586	2022-2024
		TOTAL	$161,594	

Internal Funding as PI

Funding Agency	Role	Title	Award Amount	Years
Gund Institute for Environment - Catalyst Award	PI (Co-PI Heather Darby)	Understanding and addressing the impacts of flooding on greenhouse gas emissions, nutrient loss, and microbial community dynamics in agricultural soils	$49,968	2025 - 2026
University of Vermont Water Center/ USGS	PI	Assessing Mechanisms of Phosphorous Removal at a Champlain Basin Wastewater Treatment Plant	$26,000 (plus $26,000 in match)	2023-2024
Vermont NASA EPSCoR	PI	Multi-omic insights into a bioreactor microbiome producing medium-chain fatty acids	$22,464 (plus $22,464 in match)	2022-2023
Vermont NASA EPSCoR	PI	Anaerobic bioconversion of organic wastes to support long-term space missions	$24,956 (plus $25,000 in match)	2021-2022
University of Vermont Office of the Vice President for Research	PI	Establishing a PFAS Degrading Microbiome	$3,000	2019-2020
		TOTAL	$199,852	

Funding as Co-PI, Co-I, or Key Person

Funding Agency	Role	Source	Title	Award Amount	Years
National Science Foundation	Co-PI (PI- Veera Gnaneswar Gude – Purdue University Northwest; Co-PI Mohammad Marufuzzaman – Mississippi State University)	Federal	IRES: Addressing Critical Challenges of Anaerobic Digestion Biotechnology	$450,000	2025 - 2030

UVM Water Resources Institute	Key Person (PI – Julia Perdrial; Key Persons – Donna Ramirez Harrington, Ana Morales)	Internal	Request for Funds to Develpp an NSF Research Traineeship Proposal on Water Resources and Management	$67,082	2025
University of Vermont Office of the Vice President for Research	Key Person (PI – Carol Adair, Key persons: Deb Neher, Juan Alves, Heather Darby, Anthony D'Amato, Joshua Faulkner, Gillian Falford, Josef Gorres, Nicholas Gotelli, Ana Morales, Julia Perdrial, Eric Roy)	Internal	Carbon mitigation and resilience (CMaR): A facility to accelerate carbon research on climate change mitigation and resilience	$74,380	2020-2021
Transportation Infrastructure Durability Center	Co-PI (PI – Mandar Dewoolkar, Co-PIs – Gregory Rowangould, Ehsan Ghazanfari)	Regional	Evaluation of processed glass aggregate for utilization in transportation projects as a sand borrow	$256,003 (plus $216,974 in match)	2020-2023
University of Vermont College of Agriculture and Life Sciences	Co-PI (PI – Deb Neher, Co-PIs Heather Darby, Eric Von Wettberg, Raju Badireddy, Joshua Faulkner, Eric Roy, Raju Badireddy, Jeanne Harris, Joshua Farley)	Internal	Resilient soils for resilient farms: Soil health for small- and medium-sized farms	$75,000	2020
			TOTAL	$1,139,439	

MANUSCRIPTS IN PREPARATION

(Advised graduate students underlined, advised undergraduate students indicated with asterisks)*

4. Conrado, L., McCoy, J.*, Rabinovich, L.*, Stamatopoulou, P., **Scarborough, M.** 2024. Open-culture fermentation of a mixture of twenty proteinogenic amino acids when methanogenesis is inhibited. For submission to *Bioresource Technology* [IF = 11.2].

3. Conrado, L., McCoy, J.*, Rabinovich, L.*, Stamatopoulou, P., **Scarborough, M.** 2024. Metagenomic and metatranscriptomic insights into amino acid fermentation. For submission to *mSystems* [IF = 6.4].

2. Stamatopoulou, Y., **Scarborough, M.J.,** 2024. Octanoate production from food waste without an external electron donor by a microbiome enriched with glucose as sole carbon source. For submission to *Bioresource Technology* [IF = 11.2].

1. Stamatopoulou, Y., **Scarborough, M.J.** 2024. Impacts of organic loading rate on the conversion of sugars to medium-chain carboxylic acids revealed through multi-omics. *Environmental Science and Technology* [IF = 10.8]. UNDER FIRST REVISION.

PEER REVIEWED PUBLICATIONS- SUBMITTED/ UNDER REVISION

(Advised graduate students underlined, advised undergraduate students indicated with asterisks)*

2. Marien, Q., Regueira, A., Petrognani, C., **Scarborough, M.**, Ganigue R. 2025. Hydrogen supply reroutes the methylotophic Wood-Ljungdahl pathway in *Clostridium luticellari*. Bioresource Technology [IF = 9.0]. UNDER REVIEW.

1. Davoudimehr, M., Santanaen L.*, Conrado, L., **Scarborough, M.J.,** 2024. Impacts of thermal pre-treatment on butyrate production from cow manure. *Biomass and Bioenergy* [IF = 5.8]. UNDER REVIEW.

PEER REVIEWED PUBLICATIONS- PUBLISHED OR ACCEPTED

(Advised graduate students underlined, advised undergraduate students indicated with asterisks)*

30. Peipert, D., Montgomery, T.L., Toppen, L.C., Lee, M.F.J., **Scarborough, M.J.,** Krementsov, D.N. 2025. Colonization by Akkermansia muciniphila modulates central nervous system autoimmunity in an ecological context-dependent manner. *Frontiers in Immunology*. 16. https://doi.org/10.3389/fimmu.2025.1655428 [IF = 5.9].

29. Friedline, S., McDaniel, E., **Scarborough, M.,** Madill, M., Waring, K., Lin, V.S., Malmstrom, R.R., Goudeau, D., Chrisler, W., Dueholm, M.K.D., Gorham, L.J., Kombala, C.J., Griggs, L.H., Olson, H.M., Lehmann, S.B., Munoz, N., Trejo, J., Tolic, N., Pasa-Tolic, L., Williams, S., Lipton, M., Hallam, SJ., Ziels, R.M. 2025. Activity-targeted metaproteomics uncovers rare syntrophic bacteria central to anaerobic community metabolism. *Nature Microbiology*. 10, 2749-2767. https://doi.org/10.1038/s41564-025-02146-w [IF = 19.4].

28. Subedi, N., Nutbeam, F.E., Dewoolkar, M.M. **Scarborough, M.J.** 2025. Method development for assessment of deleterious materials in processed glass aggregate. *Journal of Testing and Evaluation* [IF = 1.2]. ACCEPTED.

27. Hobson, S., Porterfield, K., Neher, D., **Scarborough, M**., Roy, E. 2025. Plastic contamination of composts derived from feedstocks with and without food waste. *Frontiers in Sustainable Food Systems*. 9. https://doi.org/10.3389/fsus2025.167037 [IF = 3.1].

26. Montgomery, T., Toppen, L., Eckstrom, K., Heney, E., Kennedy, J., **Scarborough, M**., Kremenytsov, D. 2024. Lactobacillaceae differentially impact butyrate-producing gut microbiota to drive CNS autoimmunity. *Gut Microbes*. 16(1). https://doi.org/10.1080/19490976.2024.2418415 [IF = 12.2]

25. Agena, E., Gois, I., Bowers, C.M., Radhakrishnan, M., **Scarborough, M.J**., Lawson, C.E. 2024. Evaluating the feasibility of medium chain oleochemical synthesis using microbial chain elongation. *Journal of Industrial Microbiology and Biotechnology*. kuae027. https://doi.org/10.1093/jimb/kuae027 [IF = 3.4]

24. Sampara, P., Lawson, C., **Scarborough, M**., Ziels, R. 2024. Advancing environmental biotechnology with microbial community modeling rooted in functional 'omics. *Current Opinion in Biotechnology*. 88:103165. https://doi.org/10.1016/j.copbio.2024.103165 [IF = 7.7]

23. Conrado, L., McCoy, J.*, Rabinovich, L.*, Davoudimehr, M., Stamatopoulou, P., **Scarborough, M.** 2024. Anaerobic conversion of proteinogenic amino acids when methanogenesis is inhibited: Carboxylic acid production from single amino acids. *Fermentation*. 10, 237. https://doi.org/10.3390/fermentation10050237 [IF = 3.3]

22. Lienhart, P.H., Rohra, V.*, Clement, C.*, Toppen, L.C., Rizzo, D.M., **Scarborough, M.** 2024. Landfill intermediate cover soil microbiomes and their potential for mitigating greenhouse gas emissions revealed through metagenomics. *Science of the Total Environment*, 925, 171697. https://doi.org/10.1016/j.scitotenv.2024.171697 [IF = 10.7]

21. DeCola, A.C., Toppen, L.C., Brown, K.P., Dadkhah, A., Rizzo, D.M., Ziels, R.M., **Scarborough, M.** 2024. Microbiome assembly and stability during start-up of a full-scale, two-phase anaerobic digester fed cow manure and mixed organic feedstocks. *Bioresource Technology*, *394*, 130247. https://doi.org/10.1016/j.biortech.2023.130247 [IF = 11.2]

20. McDaniel, E.A., **Scarborough, M.,** Mulat, D.G., Lin, X., Sampara, P.S., Olson, H.M., Yopung, R.P., Eder, E. K., Attah, I.K., Markillie, L.M., Hoyt, D.W., Lipton, M.S., Hallam, S.J., Ziels, R.M. 2023. Diverse electron carriers drive syntrophic interactions in an enriched anaerobic acetate-oxidizing consortium. ISME Journal. **https://doi.org/10.1038/s41396-023-01542-6 [IF = 11.0].**

19. Porterfield, K., **Scarborough, M.,** Roy, E. 2023. Organics recycling tradeoffs: Biogas potential and microplastic content of mechanically depackaged food waste. ACS Sustainable Chemistry and Engineering. ttps://doi.org/10.1021/acssuschemeng.3c01710 [IF = 9.22]

18. Myers, K., Ingle, A., Walters, K., Fortney, N., **Scarborough, M.,** Donohue, T., Noguera, D. 2023. Comparison of metagenomes from fermentation of various agroindustrial residues suggests a common model of community organization. Frontiers in Bioengineering and Biotechnology. 11. https://www.frontiersin.org/articles/10.3389/fbioe.2023.1197175/full [IF = 5.66]

17. Walters, K., Myers, K., Wang, H., Fortney, N., Ingle, A., **Scarborough, M.,** Donohue, T., Noguera, D. 2022. Metagenomes and metagenome-assembled genomes from microbial communities fermenting ultra-filtered milk permeate. Microbiology Resource Announcements. 11(7): e00293 https://journals.asm.org/doi/full/10.1128/mra.00293-22 [IF = 0.88]

16. Fortney, N., Myers, K., Ingle, A., Walters, K., **Scarborough, M.,** Donohue, T., and Noguera, D. 2022. Metagenomes and metagenome-assembled genomes from microbiomes metabolizing thin stillage from an ethanol biorefinery. Microbiology Resource Announcements. 11(8): e00290. https://journals.asm.org/doi/full/10.1128/mra.00290-22 [IF = 0.88]

15. Ingle, A., Fortney, N., Myers, K., Walters, K., **Scarborough, M.,** Donohue, T., and Noguera, D. 2022. Metagenome-assembled genomes from a microbiome that metabolizes carbohydrate-rich dairy manure hydrolysate. Microbiology Resource Announcements 11(8): e00292. https://journals.asm.org/doi/full/10.1128/mra.00292-22 [IF = 0.88]

14. **Scarborough, MJ**., Myers, KS., Fortney, NW., Ingle, AT., Donohue, TJ., Noguera, DR. 2022. Metagenome-assembled genomes from a microbiome converting xylose to medium-chain carboxylic acids. Microbiology Resource Announcements 11(4): e0115121. https://journals.asm.org/doi/10.1128/mra.01151-21 [IF = 0.88]

13. Fremin, B. J., A. S. Bhatt, N. C. Kyrpides, A. Sengupta, A. Sczyrba, A. Maria da Silva, A. Buchan, A. Gaudin, A. Brune, A. M. Hirsch, A. Neumann, A. Shade, A. Visel, B. Campbell, B. Baker, B. P. Hedlund, B. C. Crump, C. Currie, C. Kelly, C. Craft, C. Hazard, C. Francis, C. W. Schadt, C. Averill, C. Mobilian, D. Buckley, D. Hunt, D. Noguera, D. Beck, D. L. Valentine, D. Walsh, D. Sumner, D. Lymperopoulou, D. Bhaya, D. A. Bryant, E. Morrison, E. Brodie, E. Young, E. Lilleskov, E. Högfors-Rönnholm, F. Chen, F. Stewart, G. W. Nicol, H. Teeling, H. R. Beller, H. Dionisi, H.-L. Liao, J. M. Beman, J. Stegen, J. Tiedje, J. Jansson, J. VanderGheynst, J. Norton, J. Dangl, J. Blanchard, J. Bowen, J. Macalady, J. Pett-Ridge, J. Rich, J. P. Payet, J. D. Gladden, J. D. Raff, J. L. Klassen, J. Tarn, J. Neufeld, K. Gravuer, K. Hofmockel, K.-H. Chen, K. Konstantinidis, K. M. DeAngelis, L. P. Partida-Martinez, L. Meredith, L. Chistoserdova, M. A. Moran, **M. Scarborough**, M. Schrenk, M. Sullivan, M. David, M. A. O'Malley, M. Medina, M. Habteselassie, N. D. Ward, N. Pietrasiak, O. U. Mason, P. O. Sorensen, P. Estrada de los Santos, P. Baldrian, R. M. McKay, R. Simister, R. Stepanauskas, R. Neumann, R. Malmstrom, R. Cavicchioli, R. Kelly, R. Hatzenpichler, R. Stocker, R. A. Cattolico, R. Ziels, R. Vilgalys, S. Blumer-Schuette, S. Crowe, S. Roux, S. Hallam, S. Lindow, S. H. Brawley, S. Tringe, T. Woyke, T. Whitman, T. Bianchi, T. Mock, T. Donohue, T. Y. James, U. C. Kalluri, U. Karaoz, V. Denef, W.-T. Liu, W. Whitman and Y. Ouyang (2022). "Thousands of small, novel genes predicted in global phage genomes." Cell Reports **39**(12): 110984. [IF = 9.42]

12. Neher, D., Harris, J., Horner, C., **Scarborough, M**. Badireddy, R., Faulkner, J., White, A., Darby, H., Farley, J., Von-Wettberg, E. 2022. Resilient Soils for Resilient Farms: An Integrative Approach to Assess, Promote and Value Soil Health for Small- and Medium-Size Farms. Phytobiomes**.** [IF = 3.24]

11. **Scarborough, MJ**., Lawson, CE., DeCola, AC., Gois, IM. 2022. Microbiomes for sustainable biomanufacturing. Current Opinion in Microbiology (65) 8. https://doi.org/10.1016/j.mib.2021.09.015 [IF = 7.93]

10. Nayfach, S., S. Roux, R. Seshadri, D. Udwary, N. Varghese, F. Schulz, D. Wu, D. Paez-Espino, I. M. Chen, M. Huntemann, K. Palaniappan, J. Ladau, S. Mukherjee, T. B. K. Reddy, T. Nielsen, E. Kirton, J. P. Faria, J. N. Edirisinghe, C. S. Henry, S. P. Jungbluth, D. Chivian, P. Dehal, E. M. Wood-Charlson, A. P. Arkin, S. G. Tringe, A. Visel, **IMG Metagenome Data Consortium**, T. Woyke, N. J. Mouncey, N. N. Ivanova, Kyrpides, N. C., Eloe-Fadrosh, A. (2020). A genomic catalog of Earth's microbiomes. Nature Biotechnology. 10.1038/s41587-020-0718-6. [IF = 54.91]

9. Stamatopoulou, P., Malkowski, J.*, Conrado, L., Brown, K.*, **Scarborough, M.** 2020. Fermentation of Organic Residues to Beneficial Chemicals: A Review of Medium-Chain Fatty Acid Production. Processes 8(12), 1571. https://doi.org/10.3390/pr8121571. [IF = 3.04]

8. **Scarborough, MJ**., Hamilton, JJ., Erb, EE., Donohue, TJ., Noguera, DR. 2020. Diagnosing and predicting mixed culture fermentations with unicellular and guild-based metabolic models. mSystems 5: e00755- 20. https://doi.org/10.1128/mSystems.00755-20. [IF = 6.63]

7. **Scarborough, MJ.,** Meyers, KM., Donohue, TJ., Noguera, DR. 2020. Multi-omic analysis of medium-chain fatty acid synthesis by Candidatus Pseudoramibacter fermentans, sp. nov., and Candidatus Weimeria bifida, gen. nov., sp. nov. Applied and Environmental Microbiology 10.1128/AEM.02242-19. https://doi.org/10.1128/AEM.02242-19 (Spotlight Selection) [IF = 4.02]

6. Seib, M., Booton, A., **Scarborough, MJ.,** Noguera, DR. 2019. Evaluation of acid phase - methane phase digestion as a means to enhance co-digestion of source separated organics and municipal sewage sludges. Water Science and Technology 80 (7), 12. [IF = 1.64]

5. **Scarborough, MJ.,** Lawson, CE., Hamilton, JJ., Donohue, TJ., Noguera, DR. 2018. Metatranscriptomic and thermodynamic insights into medium-chain fatty acid production. mSystems 3 (6) 00221-18. [***Editor's Pick***] [IF = 6.60]

4. **Scarborough, MJ.,** Lynch, G., Dickson, M., McGee, M., Donohue, T., Noguera, DR. 2018. Increasing the economic value of lignocellulosic stillage through medium-chain fatty acid production. Biotechnology for Biofuels 11 (1), 200. [IF = 5.45]

3. Hu, Y., **Scarborough, M.,** Aquirre-Villega, H., Larson, R., Noguera, D., Zavala, V. 2018. A supply chain framework for the analysis of the recovery of biogas and fatty acids from organic waste. ACS Sustainable Chemistry & Engineering 6 (5), 6211 – 6222. [IF: 6.97]

2. Burger, BT., Imam, S., **Scarborough, MJ.**, Noguera, DR., Donohue, TJ. 2017. Combining genome-scale, experimental, and computational methods to identify essential genes in *Rhodobacter sphaeroides.* mSystems 2e00015-17. [IF: 5.82]

1. Keene, N., Reusser, S., **Scarborough, M.**, Grooms, A., Seib, M., Domingo JS., Noguera, DR. 2017. Pilot plant demonstration of stable and efficient high-rate biological nutrient removal with low dissolved oxygen conditions. Water Research. 121, 72 – 85. [IF: 7.05]

INVITED CONFERENCE TALKS

4. **Scarborough, MJ**. 2025. The 3rd International Chain Elongation Conference. Seoul, South Korea. Hybrid Conference. Keynote.

3. **Scarborough, MJ**. 2024. *Microbiome-based fermentation of organic wastes*. Northern New England Microbiome Symposium. Burlington, VT.

2. **Scarborough, MJ.** 2022. *Very Big and Very Tiny Considerations for Chain Elongation***.** The 2nd International Chain Elongation Conference. Bad Boll, Germany. Hybrid conference. Keynote.

1. **Scarborough, MJ.** 2021. *Microbiome-based transformation of wastes to beneficial chemicals*. The 4th International Conference on Microbiome Engineering. Society of Biological Engineering. American Institute of Chemical Engineers (AIChE). Boston, MA. Plenary.

PEER REVIEWED CONFERENCE PROCEEDINGS

4. **Scarborough, MJ**. 2025. *Beyond OILRIG: Impact of applied redox chemistry modules on cognitive and affective outcomes in a water and wastewater engineering course.* American Society for Engineering Education Annual Conference and Exhibition. Montreal, Quebec, Canada.

3. **Scarborough, MJ**., McMahon, K. 2020. *Overcoming affective and cognitive chemistry challenges in an introductory environmental engineering course using a Flint Water Crisis case study.* American Society for Engineering Education Annual Conference and Exhibition. Virtual.

2. **Scarborough, MJ.**, Arends, M., Jeyanayagam, S., Schimmoller, L., Assouline, J. 2013. *First Flush Disinfection: Challenges of Chlorinating Wet Weather Primary Effluent to Meet a Stringent E. coli Target.* Water Environment Federation Disinfection and Public Health Conference. Indianapolis, Indiana.

1. **Scarborough, MJ.**, Arends, M., Jeyanayagam, S., Schimmoller, L. 2012. *Residual Madness: The Practical Challenges of Chlorinating Primary Clarifier Wet Weather Flows.* The 85th Annual Water Environment Federation Technical Exhibition and Conference. Chicago, Illinois.

PEER REVIEWED (ABSTRACT ONLY) CONFERENCE PRESENTATIONS AND POSTERS

15. **Scarborough, MJ.,** DeCola A.C**.** 2025. *An attempt at improving redox chemistry outcomes in a water and wastewater engineering course with minimal interventions*. University of Vermont Scholarship of Teaching and Learning Symposium. Oral Presentation.

14. **Scarborough, MJ.,** DeCola A.C**.** 2024. *Improving cognitive and affective chemistry outcomes in a water treatment engineering course*. University of Vermont Scholarship of Teaching and Learning Symposium. Oral Presentation.

13. **Scarborough, MJ.,** DeCola A.C**.** 2024. *Optimizing phosphorus removal with minimal modifications: A little data goes a long way*. The New England Water Environment Association Annual Conference. Boston, MA. Oral Presentation.

12. **Scarborough, MJ**., DeCola, A.C. 2023. *Vermont case studies analyzing impacts of septage, unutilized chemical, and RAS reaeration on phosphorus removal*. Green Mountain Water Environment Association Fall Trade Show. Oral Presentation.

11. **Scarborough, MJ**., *DeCola, A.C.* 2022*. Anaerobic digestion simulation with guild-based metabolic models*. The 17th IWA World Conference on Anaerobic Digestion. Ann Arbor, MI. Oral Presentation.

10. **Scarborough, MJ.** Donohue, TJ. Noguera, DR. 2021. *Metabolic modeling of medium-chain fatty acid production by microbial communities.* The World Microbe Forum. Virtual. Poster Presentation.

9. **Scarborough, MJ.** Donohue, TJ. Noguera, DR. 2020. *Simulating chain elongation with constraint-based metabolic modeling*. The 1st International Chain Elongation Conference. Virtual. Oral Presentation.

8. **Scarborough, MJ**. 2020. *Applying Multi-Omics Tools to Guide New Treatment Processes: Anaerobic Conversion of Industrial Wastes to Valuable Products*. The New England Water Environment Association Annual Conference. Boston, MA. Oral Presentation.

7. **Scarborough, MJ.,** Donohue, TJ. Noguera, DR. 2019. *A guild-based metabolic model improves understanding of a medium-chain fatty acids producing microbiome.* The 2nd International Conference on

Microbiome Engineering. Society of Biological Engineering. American Institute of Chemical Engineers (AIChE). Harvard Medical School, Boston MA. Oral Presentation.

6. **Scarborough, MJ.**, McMahon, K. 2019. *Improving cognitive and affective chemistry outcomes with a Flint Water Crisis case study.* Association of Environmental Engineering and Science Professors Research and Education Conference. Arizona State University, Tempe, Arizona. Poster Presentation.

5. **Scarborough, MJ.,** Noguera, DR., Donohue, TJ. 2019. *The other lignocellulosic leftover: Conversion Residue Valorization with a Microbial Community*. Department of Energy Genomic Sciences Program Principal Investigators Meeting. Tysons Corner, Virginia. Poster Presentation.

4. **Scarborough, M.**, Lawson, C., Hamilton, J., Donohue, T., Noguera, D. 2018. *Unraveling Metabolic Networks in a Microbiome Converting Lignocellulosic Residues to Medium-chain Fatty Acids*. 17th Symposium of the International Society of Microbial Ecology. Leipzig, Germany. Poster Presentation.

3. **Scarborough, M.**, Lawson, C., Hamilton, J., Donohue, T., Noguera, D. 2018. *Metatranscriptomic Analysis of a Medium-chain Fatty Acid Producing Microbiome*. American Society for Microbiology Microbe Conference. Atlanta, GA. Poster Presentation.

2. **Scarborough M.**, Celik, D., Donohue, T., Noguera, D. *Carbon and Energy Recovery from Lignocellulosic Ethanol Production Wastewater*. 2016. The 89th Annual Water Environment Federation Technical Exhibition and Conference. New Orleans, Louisiana. Oral Presentation.

1. **Scarborough, MJ.,** Arends, M. 2011. *Designing Disinfection for Wet Weather Flows at the Missouri River Wastewater Treatment Plant.* Nebraska Water Environment Association Fall Conference. Presentation.

INVITED SEMINARS, LECTURES, AND PANELS

19. **Scarborough, M.** 2025. Biorefining wastes from food systems. UVM Food Systems Research Center Food and Ideas Gathering. September 12, 2025.

18. Dewoolkar, M., **Scarborough, M.** 2025. Processed glass aggregate/ glass cullet – quantifying deleterious materials content, allowable limits, and economic analysis. Transportation Infrastructure Durability Center Webinar. April 23, 2025. Online.

17. **Scarborough M.** 2025. Microbiomes: Nature's solution to pollution and climate change. University of Vermont Lifelong Learning Institute (OLLI). February 5, 2025. Online.

16. **Scarborough, M.** 2024. *Meta'omic insights into microbiome-based fermentation of organic residues*. Seminar for the Dartmouth – University of Vermont Microbiome Retreat. Shelburne. VT. June 5, 2024.

15. **Scarborough, M.** 2024. *Microbiomes for valorizing wastes*. Guest lecture. CEE 6331: Biological Processes taught by Dr. Ameet Pinto. Georgia Tech. April 9, 2024.

14. **Scarborough, M.** 2024. *Harnessing microbiomes (and plants?) to reduce methane emissions from landfills.* Seminar. Plant and Soil Science Faculty and Graduate Students. University of Vermont. March 27, 2024.

13. **Scarborough, M.** 2023. *Anaerobic bioconversion of wastes to beneficial products.* Seminar. Environmental Engineering Faculty and Graduate Students/ Biodesign Swette Center for Environmental Biotechnology. Arizona State University. November 6, 2023.

12. **Scarborough, M.** 2023. *Anaerobic bioconversion of wastes to beneficial products.* Seminar. Water Resources and Environmental Engineering Faculty and Graduate Students. University of Massachusetts – Amherst. October 20, 2023.

11. **Scarborough, M.** 2023. *Microbiome-based strategies for organic waste management.* Seminar. Part of GundXChange seminar series hosted by the Gund Institute for Environment at the University of Vermont. March 9, 2023

10. **Scarborough, M.** 2023. *The final step or a node in the cycle?: New concerns and strategies to manage food wastes*. Seminar. Course entitled Food Systems Issues and Solutions. February 3, 2023

9. **Scarborough, M.** 2022. *Guild-based metabolic modeling of Chain Elongation*. Seminar. International Water Association webinar entitled State-of-the-art modelling on anaerobic mixed-culture fermentation. Online. March 31, 2022.

8. **Scarborough, M.** 2022. *Multi-omic and modeling insights into microbiome-based chain elongation*. Lecture. Course entitled Biology, Electrochemistry, and Technology. Princeton University. Online. February 23, 2022.

7. **Scarborough, M.** 2021**.** *Microbial communities for resource recovery from wastes: biology-driven engineering***.** Seminar. Department of Biology and Health Sciences, Edinboro University (Pennsylvania). November 22, 2021.

6. **Scarborough, M.** 2021**.** *Sustainable biomanufacturing with microbiomes***.** Seminar. Department of Microbial and Molecular Genetics, University of Vermont. October 13, 2021.

5**. Scarborough, M.** 2021**.** *Engineering (and Imagineering) Circular Bioeconomies.* Department of Mathematics Colloquium, St. Michael's College. February 5, 2021. Online.

4**. Scarborough, M.** 2021**.** *Harnessing microbes to protect the environment.* Teen Science Café Network. January 27, 2021. Online.

3. **Scarborough, M.** 2020**.** *The United Nations Sustainable Development Goals.* Panel Discussion at Champlain College. October 7, 2020. Online.

2. **Scarborough, M.** 2020**.** *Deciphering roles in an anaerobic bioreactor microbiome with multi-omics and modeling.* Seminar. Plant and Soil Science Department, University of Vermont. March 27, 2020. Online.

1. **Scarborough M.** 2019. *Harnessing microbiomes to protect the environment*. Seminar. Department of Civil and Environmental Engineering Departmental, University of Vermont. October 25, 2019.

NON PEER REVIEWED PRESENTATIONS AND POSTERS

5. **Scarborough, MJ.**, McMahon, K. 2019. *Improving cognitive and affective chemistry outcomes with a Flint Water Crisis case study.* UW-Madison Education Research Poster Fair. Madison, Wisconsin. Poster

4. **Scarborough, M.**, Lawson, C., Hamilton, J., Donohue, T., Noguera, D. 2018. *Lignocellulosic Leftovers and the Bacterial Biome that Transforms Them.* 2018. Great Lakes Bioenergy Research Center Annual Science Meeting. South Bend, Indiana. Poster.

3. **Scarborough, M.**, Celik, D., Donohue, T., Noguera, D. 2016. *Using Anaerobic Microbiomes to Valorize Lignocellulosic Stillage.* Great Lakes Bioenergy Research Center Annual Science Meeting. South Bend, Indiana. Poster.

2. **Scarborough, M.**, Celik, D., Noguera, D., Donohue, T. 2015. *Stillage Valorization.* Great Lakes Bioenergy Research Center Annual Science Meeting. South Bend, Indiana. Poster.

1. **Scarborough, MJ.,** Bagley, DM. 2007. *Molecular Hydrogen Production Using Purple Non-Sulfur Bacteria Enriched from Anaerobic Digester Sludge*. NSF/ EPSCoR Undergraduate Research Fellowship Program. Laramie, Wyoming. Presentation.

RESEARCH ADVISING AND MENTORING

Ph.D. Students (2 completed, 5 In-progress)

Name	Research Topic	Start Date	Defense Date	Graduation Date	Scholarships, Fellowships, and Awards	Position After Graduation
Silas Decker	Medium-chain fatty acid production	September 2024			GAANN Fellowship	
Robert Jones	Medium-chain fatty acid production	September 2024			Gund Barrett Fellowship	
Joy Onuh (Co-advised with Dr. Mandar Dewoolkar)	Use of recycled glass for septic mounds	September 2023			Gund Barrett Fellowship	
Mona Davoudimehr	Propane production from agricultural wastes	January 2023			UVM Food Systems Fellowship	
Lucinda Toppen (Co-advised with Dr. Donna Rizzo)	Medium-chain fatty acid production from amino acids	September 2022			GAANN Fellowship	
Leandro Conrado	Medium-chain fatty acid production from amino acids	January 2020	May 2024	August 2024		Process Engineer at Geosyntec in Denver, Colorado
Panagiota Stamatopoulou	Medium-chain fatty acid production from carbohydrates	January 2020	March 2024	May 2024	Gerondelis Foundation Scholarship, UVM Food Systems Fellowship, SWANA Steve Parker Memorial Scholarship	Postdoc at University of Tuebingen in Germany

M.S. Students – Thesis Option (6 completed, 1 In-progress)

Name	Research Topic	Start Date	Graduation Date	Scholarships, Fellowships, and Awards	Position After Graduation
Rachel Goodwin	Determining strategies to improve methane degradation in landfill cover soils	September 2025			

Name	Research Topic	Start Date	Graduation Date	Scholarships, Fellowships, and Awards	Position After Graduation
Maura Duval	Use of mushroom-based biochar for removal of heavy metals	January 2024	October 2025		
Neha Subedi (Co-advised with Dr. Mandar Dewoolkar)	Determination of deleterious material content in processed glass aggregate	September 2022	October 2024		Engineer at Civil and Environment Consultants in Nashville, TN
Kennedy Brown	Anaerobic membrane bioreactors for resource recovery from Cabot Creamery wash water	September 2022	August 2024	Barrett Fellowship	Ph.D. Student at UC Berkley
Peyton Lienhart	Greenhouse gas emission reductions by Methanotrophs in intermediate landfill cover soils	July 2022	August 2023	Vermont NASA EPSCoR Graduate Fellowship	Environmental Engineer at CDM Smith in Providence, RI
Amy DeCola	Microbial community dynamics in a full-scale agricultural digester	September 2021	May 2023	Best Graduate Poster Award at the 2022 New England Water Environment Association Annual Conference	Environmental Engineer at Hoyle Tanner and Associates in Burlington, VT
Fiona Nutbeam (Co-advised with Dr. Mandar Dewoolkar)	Determination of deleterious material content in processed glass aggregate	June 2021	October 2022		Environmental Engineer at Aqualis in Milwaukee, WI

M.S. Students – Project Option (4 completed, 1 In-progress)

Name	Research Topic	Start Date	Graduation Date	Scholarships, Fellowships, and Awards	Position After Graduation
Lauren Santanen	Separation of butyric acid from 1-decanol and trioctylamine	September 2025			
Hannah Kuleba	Reducing methane emissions from landfills	January 2024	May 2025		Environmental Engineer at Roux Associates in Somerset, NJ
Amelia McClure	Optimization of biological phosphorus removal at the Burlington Main Wastewater Treatment Facility	September 2021	December 2025		Current Operator at Burlington Main WWTP in Burlington, VT

Sarah Hobson	Microplastics in Compost	September 2021 (Became Adviser in October 2022)	May 2023		Environmental Analyst at State of Vermont Agency of Natural Resources
Ryan Weinstein	Enrichment of a PFAS degrading microbial community	September 2019	August 2020		Environmental Engineer at Woodard and Curran in Portland, ME

Undergraduate Students (34 total, 6 in-progress)

(* = continued as graduate student in my group; † = honor's program advisee)

Name	Research Topic(s)	Start Date	End Date	Notes	Position After Graduation
Blake Weingarten	Bioinformatic analysis of Nanopore reads from a year-long time series of an activated sludge process	August 2025			
Ava Chizum	Medium-chain fatty acid production from amino acids	July 2025	August 2025	HHMI STEM Scholar	
Bella Mowrer	Reducing greenhouse gas emissions from landfills	July 2025	August 2025	HHMI STEM Scholar	
Meadow Novicki	Organic waste fermentation with permafrost microbes	July 2025	August 2025	HHMI STEM Scholar	
Katie Harmon	Organic waste fermentation with permafrost microbes	July 2025		HHMI STEM Scholar	
Sylvia Panetta	Reducing greenhouse gas emissions from landfills	July 2025	August 2025	HHMI STEM Scholar	
Mia Pisani	Medium-chain fatty acid production from amino acids	July 2025	August 2025	HHMI STEM Scholar	
Matilde Campuzano	Use of crushed recycled glass to replace sand in septic mounds	July 2025	August 2025	HHMI STEM Scholar	
Naomi Shenk	Processed glass aggregate as a sand replacement	January 2025			

Name	Research Topic(s)	Start Date	End Date	Notes	Position After Graduation
Rachel Goodwin*	Landfill intermediate cover soils	January 2025	August 2025	Richard Barrett Scholar	Graduate student in my research group
Andrew Chen	Production of Propane from Cow Manure	January 2024			
Johan Shattuck†	Landfill intermediate cover soil microbiomes	September 2024		Richard Barrett Scholar	
Illana Schenk	Metabolic modeling of amino acid fermentation	June 2024			
Lauren Santanen*	Production of Propane from Cow Manure	January 2024	May 2025		Graduate Student at University of Vermont
Elliott Austin	GC-MS Analysis of short- and medium-chain fatty acids	January 2024	September 2024		Engineer at Vermont Agency of Transportation
Jacob McCoy†	Fermentation of amino acids to medium-chain fatty acids	June 2022	May 2025	NSF REU, Honor's Thesis Advisee	Environmental Engineer at Wright Pierce in Burlington, VT
Leo Rabinovich	Fermentation of amino acids to medium-chain fatty acids	September 2022	May 2024	REU	
Jenna Fracasso†	Impacts of high salt concentrations on phosphorus removal by duckweed	September 2023	May 2024	Honor's Thesis Advisee	Staff Environmental Engineer at Haley & Aldrich in Boston, MA
Hudson Smith†	Reduction of greenhouse gas emissions from manure lagoons using fungal biomass	June 2022	May 2024	Summer REU, Honor's Thesis Advisee, NEWEA Annual Conference Best Poster Award 2024	Ph.D. Student at University of Colorado-Boulder
Sarah Foy	On-farm anaerobic digesters as hubs for food waste management	June 2022	May 2024	Richard Barrett Scholar, Research for credit	Environmental Engineer at Hoyle Tanner in Burlington, VT
Perry Wilson	Nutrient removal and recover from Cabot washwater	May 2023	December 2023	Richard Barrett Scholar	M.S. Student at Oregon State University

Name	Research Topic(s)	Start Date	End Date	Notes	Position After Graduation
Marina Godley- Fisher	Anaerobic membrane bioreactors for resource recovery from Cabot Creamery wash water	September 2022	May 2023	REU	Staff Engineer at MSK Engineers in Bennington, VT
Courteney Hales†	Reduction of greenhouse gas emissions from manure lagoons using biochar	January 2022	May 2023	REU, Summer REU, Honor's Thesis Advisee	Ph.D. Student at Northeastern University
Ryan McKeown	Anaerobic membrane bioreactors for resource recovery from Cabot Creamery washwater	March 2022	May 2023	Richard Barrett Scholar	Ph.D. Student at University of Colorado-Boulder
Kennedy Brown*	Anaerobic digestion, composting	September 2019	May 2022	REU	M.S. Student at University of Vermont
Juliet Malkowski	Metabolic modeling of amino acid conversion to medium-chain fatty acids	June 2020	May 2022	REU	M.S. Student at the University of British Columbia
Catherine Brockner	Nature-based treatment processes to treat dairy wastes	September 2021	December 2021	Independent Study	Structural Engineer at Dunn Associates in Salt Lake City, UT
Venus Rohra	Greenhouse gas emission reductions by Methanotrophs in intermediate landfill cover soils	January 2020	September 2021	REU, Richard Barrett Scholar	Engineer at Green International Affiliates in Tewksbury, MA
Olivia Mead	GC-MS analysis of medium-chain fatty acids	September 2020	May 2021	REU, Independent Study	Engineer at Woodard and Curran in Portland, ME
Amy DeCola*	Microbial community dynamics in a full-scale agricultural digester	September 2020	May 2021	REU	M.S. Student at the University of Vermont
Peyton Lienhart*	Biogas biomethanation, Greenhouse gas emission reductions by Methanotrophs in intermediate landfill cover soils	September 2020	May 2021	REU	M.S. Student at the University of Vermont
Reed Winter	GC-MS analysis of medium-chain fatty acids	September 2019	May 2021	REU	Staff Engineer at Aldrich and Elliot in Burlington, VT

Name	Research Topic(s)	Start Date	End Date	Notes	Position After Graduation
Courtney Clement	Metagenomic analysis of intermediate landfill cover soils	May 2020	May 2021	REU, Independent Study	Ph.D. Student at Oregon State University
Cassidy Vaccari	Management of manure at Shelburne Farms in Vermont	January 2020	August 2020	REU, Richard Barrett Scholar	Staff Engineer at Dubois and King in Randolph, VT

Other Graduate Student Committees (7 Completed, 5 In-progress)

Name	Institution and Program	Primary Advisor	Degree	Completion Date
Yuxiang Shen	UVM - Civil and Environmental Engineering	Raju Badireddy	Ph.D.	January 2022
Logan Werner	UVM - Civil and Environmental Engineering	Raju Badireddy	M.S.	October 2023
Sakib Khan	UVM - Civil and Environmental Engineering	Raju Badireddy	Ph.D.	January 2023
Kate Porterfield	UVM - Natural Resources	Eric Roy	M.S.	May 2021
Finn Bondenson	UVM - Civil and Environmental Engineering	Eric Roy	M.S.	May 2023
Kate Porterfield	UVM - Civil and Environmental Engineering	Eric Roy	Ph.D.	July 2024
Quinten Marien	Ghent University (Belgium) - Biotechnology	Ramon Ganigue	Ph.D.	June 2024
Kelsie Herzer	Arizona State University – Civil and Environmental Engineering	Anca Delgado	Ph.D.	
Abhina Chonnambi	UVM – Civil and Environmental Engineering	Raju Badireddy	M.S.	
Eshita Jhahan	UVM – Civil and Environmental Engineering	Raju Badireddy	Ph.D.	
Jacob Lacy	UVM – Biomedical Engineering	David Bernstein	Ph.D.	
Kehinde Ojasanya	UVM – Civil and Environmental Engineering	Raju Badireddy	Ph.D.	
Caleb McLaughlin	Arizona State University – Civil and Environmental Engineering	Anca Delgado	Ph.D.	

INTELLECTUAL PROPERTY

- Donohue, TJ, **Scarborough, MJ**, and Noguera DR. 2022. *Microbiomes and methods for producing medium chain fatty acids from organic substrates.* US Patent No. 11242544

PROFESSIONAL SOCIETY AFFILIATIONS

- Engineers Without Borders 2005 – 2014, 2019 - Present
- Water Environment Federation 2008 - Present
- American Society for Microbiology 2017 - Present
- International Water Association 2018 - Present
- Association of Environmental Engineering & Science Professors 2019 - Present
- American Society for Engineering Education 2019 – Present
- American Society of Civil Engineers 2023 - Present

SELECT PROFESSIONAL SOCIETY SERVICE

- Co-Chair, Expanding the Horizons of Anaerobic Digestion Modeling Workshop at IWA AD17 2022
- IWA Anaerobic Digestion World Congress 17, Scientific Committee 2022
- International Chain Elongation Conference, Scientific Committee 2022
- AEESP Academic Job Application Reviewer 2021
- WEF Municipal Resource Recovery Design Committee, Fundamentals Outreach Chair 2015 - 2018
- Organizer, Energy Fundamentals Workshop at WEFTEC 2016

DEPARTMENTAL, COLLEGE AND UNIVERSITY SERVICE

- Search Committee, Casella Center Research Specialist 2025
- M.S. Admissions Reviewer, Food Systems 2025
- Organizing Committee, Northern New England Microbiome Symposium 2024
- Faculty Search and Hiring Committee, Assistant/ Associate Professor 2023 - 2024
- CEE Undergraduate Affairs Subcommittee 2023 - Present
- CEE Environmental Engineering Curriculum Subcommittee, Chair 2019 – 2023
- Engineers Without Borders, UVM Student Chapter, Responsible Engineer-In-Charge 2019 – Present
    - Currently I am the responsible engineer-in-charge for a project that will provide water to a primary school in Kajinge, Rwanda with approximately one mile of distribution piping from the source to the school. I mentor all students working on the project and meet regularly with the student project manager to advise on planning and design elements as well as team building and stakeholder engagement. I am responsible for reviewing all documents prior to submission to Engineers Without Borders – USA.
- Faculty Search and Hiring Committee, Full Professor and Vermont EPSCoR Director 2020 - 2021
- Faculty Search and Hiring Committee, Assistant/ Associate Professor 2021 - 2022

- Faculty Search and Hiring Committee, Assistant/ Associate Professor 2022 - 2023
- College of Engineering and Mathematical Sciences Admitted Student Visit Days Greeter 2022
- University of Vermont Open House – Academic Fair Representative and Closer Look 2023
- Invited presenter – CEMS Board of Advisors Meetings 2020, 2023
- Vermont NASA EPSCoR Student Scholarship Reviewer 2022
- UVM Summer Undergraduate Research Fellowship Reviewer 2022
- Civil and Environmental Engineering Capstone Design Mentor 2019 - Present
    - 2019 – 2020: Mentored the Burlington WWTP Chemical Reduction Team. The team won the New England Water Environment Association Student design competition (Wastewater Division) and placed second in the national Water Environment Federation Competition.
    - Fall 2021: Mentored an EPA Rainworks Project Team completing an assessment and design of stormwater infrastructure on the UVM campus.
    - Spring 2022: Mentored a team analyzing alternatives for Cabot Creamery to manage their wastewater.
    - Fall 2022: Mentored a team designing a new septic system for Sandbar State Park in Milton, VT.
    - Spring 2023: Mentored a team continuing the design of a septic system from Sandbar State Park.
    - Fall 2023: Technical consultant for team treating wastes at an apple orchard and cidery and provided lab support to multiple teams for testing wastewater quality
    - Spring 2024: Technical consultant for team designing new disinfection process for a town drinking water system

JOURNAL PEER REVIEW

I review approximately 24 papers per year. I have provided reviews for Environmental Science and Technology, Microbiome, Water Science and Technology, Applied and Environmental Microbiology, Bioresource Technology, Bioresource Technology Reports, Sustainability, Water Research, Frontiers Bioengineering, mSystems, Chemosphere, ACS Sustainable Chemistry and Engineering, Environmental Science: Water Research and Technology, Canadian Journal of Microbiology, AIChE Journal, mBio, and ACS ES&T Engineering

JOURNAL EDITING

- Editorial Board Member, Bioresource Technology 2025 - Present

PROPOSAL PEER REVIEW

- USDA, Reviewer for National Institute of Food and Agriculture 2025
- National Science Foundation, Reviewer for CBET (No. 2) 2024
- National Science Foundation, Reviewer for CBET (No. 1) 2024
- National Science Foundation, Reviewer for CBET 2023
- Department of Energy, Reviewer for Biological and Environmental Research Division 2022
- National Science Foundation, Reviewer for CBET 2022

- Department of Energy, Reviewer for Biological and Environmental Research Division 2021
- National Science Foundation, Reviewer for CBET 2021
- State of Wisconsin, Technical Advisor for Anaerobic Digestion Grant Program 2017 - 2018

SELECT PROFESSIONAL DEVELOPMENT ACTIVITIES

- American Society for Engineering Education DELTA Junior Faculty Institute 2021
- UVM Center for Teaching and Learning - Teaching Effectively Online 2020
- UW–Madison Delta Program Certificate in Research, Teaching and Learning 2019

OTHER SELECT SERVICE

- Mathcounts Coach for Mater Christi School in Burlington, Vermont 2025 - Present
- University of Wyoming Civil and Architectural Engineering Advisory Board 2009 – 2013

AWARDS AND HONORS

- American Academy of Environmental Engineers and Scientists 40 Under 40 Award 2024
- Gregory N. Sweeny Green and Gold Professor of Civil Engineering 2023 - Present
- University of Vermont Graduate Student Senate Outstanding Faculty Advisor Award 2023
- College of Engineering and Mathematical Sciences Excellence in Student Advising Award 2022
- University of Vermont Graduate Student Senate Outstanding Faculty Advisor Award 2022
- The University of Vermont Kroepsch-Maurice Excellence in Teaching Award 2021
- American Society for Engr. Education Environmental Engr. Division Early Career Award 2020
- National Science Foundation Graduate Research Fellowship 2016 - 2019
- University of Wisconsin Distinguished Graduate Fellowship 2015 - 2016
- Wyoming Engineering Society Outstanding Engineering Student 2008
- National Science Foundation/ Wyoming EPSCoR Undergraduate Research Fellowship 2007
- Norwich University Freshman Cadet ("Rook") of the Year Award 2005

LICENSURE

- Professional Civil Engineer, State of Vermont (License No. 0018.0134495) 2019 - Present
- Professional Civil Engineer, State of Nebraska (License No. E14696) 2013 – 2020

CONSULTING

- Founder and President of Scarborough Environmental Consulting, P.L.C. specializing in the study, design, and modeling of biological processes for wastewater treatment and organic waste management.
- Provided technical and mentoring support to Hoyle, Tanner & Associates as a Senior Environmental Engineer for:

- Basis of design and final design of biological process upgrades for the Town of Milford, NH Wastewater Treatment Facility.
- Vermont Agency of Natural Resources state-wide phosphorus removal optimization study with study sites including the Richmond, North Burlington, and Winooski wastewater treatment facilities.
- Twenty Year Evaluation of the Richmond, VT wastewater treatment facility, including basis of design
- Biological process upgrades and solids handling upgrades for Middlebury, VT wastewater treatment facility