Serina L. Robinson

1. PERSONAL INFORMATION

Email: serina.robinson[at]eawag.ch, **Tel:** +41 58 765 6423
OrcID: 0000-0001-6947-7913; **Google Scholar:** 0bXdVF8AAAAJ&hl
Languages: English: native, Norwegian: C1, German: B2

2. PROFESSIONAL EXPERIENCE

April 2026 – Present | **ETH Zürich, Assistant Professor**
Department of Environmental Systems Science (D-USYS)
Institute of Biogeochemistry and Pollutant Dynamics
Zürich, CH

Sept 2021 – Present | **Research group leader**
Department of Environmental Microbiology
Swiss Federal Institute of Aquatic Science and Technology (Eawag)
Dübendorf, CH

Aug 2020 – Aug 2021 | **ETH Postdoctoral research fellow**
Advisor: Prof. Dr. Jörn Piel, Institute of Microbiology
Eidgenössische Technische Hochschule (ETH) Zürich, Zürich, CH

Jan 2019 – July 2019 | **National Science Foundation Ph.D. research fellow abroad**
Dept. of Bioinformatics, Advisor: Prof. Dr. Marnix Medema
Wageningen University & Research, Wageningen, the Netherlands

Aug 2015 – Aug 2016 | **Fulbright research fellow,** Advisor: Prof. Dr. Mette M. Svenning
UiT: the Arctic University of Norway, Tromsø, Norway

Aug 2013 – May 2015 | **EPA GRO research Fellow,** Advisor: Dr. Carlie A. Lalone,
U.S. Environ. Protection Agency Mid-continent Ecology Div., Duluth, USA

3. EDUCATION

Sept 2016 – May 2020 | **Ph.D., Microbiology**, defended May 27, 2020, Advisor: Prof. Dr. Larry Wackett, University of Minnesota – Twin Cities, Minneapolis, MN, USA

Sept 2018 – April 2020 | **M.Sc., Bioinformatics and Computational Biology (dual degree with Ph.D.)** University of Minnesota – Twin Cities, Minneapolis, USA

Sept 2011 – May 2015 | **B.A., Chemistry, B.A. Norwegian,** *summa cum laude*
Saint Olaf College, Northfield, MN, USA

4. SELECTED TEACHING & EDUCATIONAL ACTIVITIES

- Yearly, fall semesters: 752-4001-00L *Microbiology*, ETHZ, core D-USYS/D-HEST course
- Yearly, spring semesters: 701-0220-00L *Practical Course in Microbiology*, ETHZ, D-USYS
- February 2025: Workshop organizer for SCNAT Rigi course: 'Microbiome meets metabolism'
- June 2023: PEAK course lecturer, 'Transformationsprozesse von Spurenstoffen' (in German)
- June 2023: 'Applied Meta'omics' metagenomics workshop leader and lecturer, ETHZ
- Oct 2021: Lorentz Center scientific workshop co-organizer and leader, Leiden, NL
- March 2021: P GL Bio I *Microbiology Practicum* (D-BIOL), lab group leader, ETHZ

5. SELECTED ORAL PRESENTATIONS

- Invited for July 2026, Invited speaker, EMBO | EMBL Symposium, Heidelberg, DE
- Aug 2025, Invited speaker, Swiss Society of Microbiology, Interlaken, CH
- Jun 2025, Oral presentation, Bundesamt für Umwelt BAFU, Bern, CH

- Jun 2025, Invited speaker, SNE Chemical Biology meeting, Champéry, CH
- Jan 2025, Invited conference session convener, session chair, and speaker, Society for Industrial Microbiology and Biotechnology NP Meeting, San Diego, California, USA
- Nov 2024, Invited speaker, Swiss Society of Toxicology Annual Meeting, Basel, CH
- June 2024 Invited speaker, Microbial Secondary Metabolites in Microbiomes Symposium, DK
- May 2024, Invited speaker, 4th Synthetic Biology of Natural Products Meeting, MX
- Jan 2024, Invited speaker, Swiss Microbiomes Forum, ETH Zürich, CH
- Jan 2024 Invited online speaker, Oregon State University, Corvallis, Oregon, USA
- Sept 2023 Invited speaker, ETH Zürich Genetic Diversity Center Symposium, Zürich, CH
- August 2023 Invited speaker, Swiss-UK Synthetic Biology Symposium. UNIL, Lausanne, CH
- August 2023 Invited speaker, Society for Industrial Microbiology and Biotechnology Annual Meeting (SIMB, Major international symposium), Minneapolis, Minnesota, USA
- Dec 2022 Invited speaker, University of Applied Sciences (FHNW), Muttenz, CH
- August 2022 Speaker, International Society for Microbiology Ecology Conference, EPFL, CH
- May 2022 Invited Speaker, EPFL Environmental Engineering Seminar Series, Lausanne, CH
- April 2022 Speaker, Life Sciences Switzerland (LS^2) Annual Meeting, UZH, CH
- February 2020 Nominated best talk from Gordon Research Seminar, invited speaking slot at the Gordon Research Conference in Marine Natural Products, Ventura, California, USA

6. AWARDS, GRANTS, FELLOWSHIPS, AND SCHOLARSHIPS

- 2026-2031 ERC Starting Grant (solo-PI)
- 2025 American Chemical Society Environmental Au Rising Stars Award
- 2024-2028 Horizon Europe Grant (EU RIA HORIZON-CL6-2024-CircBio-01-10 grant, co-PI)
- 2023-2027 Swiss National Science Foundation Ambizione (solo-PI)
- 2022-2024 Helmut Horten Foundation New Investigator Grant (solo-PI)
- 2022-2025 Pierre Mercier Foundation funding (solo-PI)
- 2021 ETH Zürich Postdoctoral Fellowship Award
- 2021 Human Frontiers in Science Postdoctoral Fellowship (declined to accept ETH fellowship)
- 2020 Dr. Marvin and Hadassah Bacaner Award for outstanding PhD research
- 2020 Beatrice Z. Milne and Theodore Brandenburg Award for outstanding PhD thesis
- 2019 National Academy of Sciences Cozzarelli Prize for outstanding paper (PNAS)
- 2016 U.S. Fulbright Fellowship
- 2016 National Science Foundation Graduate Research Fellowship (NSF GRFP)
- 2015 Arnold and Mabel Beckman Foundation Research Scholarship
- 2014 Environmental Protection Agency Greater Research Opportunities Fellow

7. DISSEMINATION & PUBLIC OUTREACH

- 2026: ETHZ PFAS & Food Dialogue (public-facing communication event)
- 2025: Working group, Eawag-Empa PFAS stakeholder / public education event (in German)
- 2025: “Nano” on 3sat/SRF1 documentary interview: ‘PFAS biodegradation’
- 2021: American Society for Microbiology blog post contributor on undergraduate research

8. PROFESSIONAL ACTIVITIES

- 2024 – Present: PI member, World Food System Center (WFSC), ETHZ
- 2023 – Present: PI member, Microbiology and Immunology (MIM) Graduate Program, ETHZ
- Regular peer review of articles including for *Nature, Nature Communications, Cell Press, ES&T*
- Grant review including: DFG, EMBL EIPOD-LinC, ETH Applied Research Partnership, JGI CSP
- Associate journal editor: *Federation of European Microbiology Societies (FEMS) Microbes*
- Society memberships: Society for Industrial Microbiology and Biotechnology (SIMB), Life Sciences Switzerland (LS^2) member, International Society for Microbial Ecology (ISME)
- Seminar organization committee for Environmental Microbiology & Eawag seminar series

SELECTED PUBLICATIONS (past 5 years)

#denotes corresponding or co-corresponding authorship

Selected peer-reviewed publications:
Publications since starting independent position September 2021:

1. Terlouw, B.R., Huang, C., Meijer, D., Cediel-Becerra, J.D., Rothe, M.L., Jenner, M., Zhou, S., Zhang, Y., Fage, C.D., Tsunematsu, Y., van Wezel, G.P., **Robinson, S.L**., Alberti, F., Alkhalaf, L.M., Chevrette, M.G., Challis, G.L., Medema, M.H., (2025) PARAS: high-accuracy machine-learning of substrate specificities in nonribosomal peptide synthetases. Accepted to *JACS Au*. on *bioRxiv* at doi: 10.1101/2025.01.08.631717.

2. Kalt, M., Ceppi, E., **Robinson, S.L.** and Fenner, K., (2026) Breaking it down: Unveiling the roles of chemical structure, concentrations and technology on micropollutant biotransformation in wastewater treatment plants. *Water Research*, 3 (292):125283.

3. Probst, S. I., Felder, F. D., Poltorak, V., Mewalal, R., Blaby, I. K., & **#Robinson, S. L.** (2025) Enzymatic carbon–fluorine bond cleavage by human gut microbes. *Proceedings of the National Academy of Sciences*, 122(24), e2504122122.

4. Blin, K., Loureiro, C., Louwen, N. L., Navarro-Muñoz, J. C., Gerstmans, H., **Robinson, S. L.,** ... & Zdouc, M. M. (2025). Strategies for community-sourced biocuration in bioinformatics: a case study on MIBiG 4.0*. Briefings in Bioinformatics*, 26(6), bbaf659.

5. Cavallaro, A., Probst, S., Duft, T., Rieder, M., El Fateh, O.A., Stricker, J., Gabrielli, M., **Robinson, S.L.**, Hammes, F., (2025) Variable inhibition of different *Legionella* species by antagonistic bacteria. *Appl. Env. Microb.*, 91 (10), e01164-25.

6. Feng, M., Varliero, G., Perez-Mon, C., **Robinson, S.L.,** Weihong, Q., Stierli, B., Frey, B. (2025) Permafrost thawing by soil transplantation alters the functional genetic potential of the alpine permafrost microbiome. *Geoderma*. doi: 10.1016/j.geoderma.2025.117339.

7. Zünd, J.N., Mujezinovic, D., Reichlin, M., Plüss, S., … **Robinson, S.L.,** Lacroix, C., Pugin, B. (2025) Novel cross-feeding human gut microbes metabolizing tryptophan to indole-3-propionate are promoted by pectin fiber. *Gut Microbes. 17(1), 2501195.* doi: 10.1080/19490976.2025.2501195

8. Zdouc, M. M., Blin, K., ...**Robinson, S.L**… [community science paper, 100+ authors]…Weber, T., Medema, M.H. (2025) MIBiG 4.0: advancing biosynthetic gene cluster curation through global collaboration. *Nucleic acids research*, *53*(D1), D678-D690. doi: 10.1093/nar/gkae1115

9. Eckert, J.A., Bösch, N.M., Hubrich, F., **Robinson, S.L.,** Piel, J. and Vagstad, A.L., 2025. The natural diversity of acyltransferases reveals versatility and specificity in the synthesis of gene-encoded lipopeptides. *Phytochemistry Letters*, *69*, p.103859.

10. Marti, T.D., Schweizer, D., Yu, Y., … Probst, S.I., **#Robinson, S.L.** (2024). Machine learning reveals signatures of promiscuous microbial amidases for micropollutant biotransformations. *ACS Environmental Au*. *5*(1), 114-127. doi: 10.1021/acsenvironau.4c00066

11. Attrah, M., Schärer, M., Esposito, M., Gionchetta, G., Bürgmann, H., Lens, P., Fenner, K.F., van de Vossenberg, J., **#Robinson, S.L.** (2024) Disentangling abiotic and biotic effects of treated wastewater on stream biofilm resistomes enables discovery of a new planctomycete beta-lactamase. *Microbiome*. 12, 164. doi: 10.1186/s40168-024-01879-w.

12. #Wackett, L.P. and **#Robinson, S.L.,** (2024) A prescription for engineering PFAS biodegradation. *Biochemical Journal*, *481*(23), 1757. doi: 10.1042/BCJ20240283

13. Seller-Brison, C., Brison, A., Yu, Y., **Robinson, S.L.** and Fenner, K., (2024) Adaptation towards catabolic biodegradation of trace organic contaminants in activated sludge. *Water Research*, p.122431. doi: 10.1016/j.watres.2024.122431.

14. Feng, M., **Robinson, S.L**., Qi, W., Edwards, A., Stierli, B., van der Heijden, M., Frey, B. and Varliero, G., (2024) Microbial genetic potential differs among cryospheric habitats of the Damma glacier. *Microbial Genomics*, *10*(10), p.001301. doi: 10.1099/mgen.0.001301.

15. Yu Y., Trottmann, N.F., Schaerer, M.R., Fenner, K., **#Robinson, S.L.**, (2024) Substrate promiscuity of xenobiotic-transforming hydrolases from stream biofilms impacted by treated wastewater. *Water Research*. 256, 121593. doi: 10.1016/j.watres.2024.121593.

16. **#Robinson, S.L.** (2023) Structure-guided metagenome mining to tap microbial functional diversity. *Current Opinion in Microbiology.* doi: 10.1016/j.mib.2023.102382.

17. Bopp, C.E., Bernet, N.M., Meyer, F., Khan, R., **Robinson, S.L.,** Kohler, H.P.E., Buller, R. and Hofstetter, T., (2023) Elucidating the Role of O_2 Uncoupling for the Adaptation of Bacterial Biodegradation Reactions Catalyzed by Rieske Oxygenases*. ACS Environmental Au.* doi: 10.1021/acsenvironau.4c00016.

18. Mullowney, M.W., Duncan, K.R., Elsayed, S.S., Garg, N., van der Hooft, J.J.,…van Westen, G.J.P., Hirsch, A.K., Linington, R.G., **#Robinson, S.L.,** Medema, M.H. (2023) Artificial intelligence for natural product drug discovery. *Nature Reviews Drug Discovery.* doi: 10.1038/s41573-023-00774-7.

19. Feng, M., Varliero, G., Qi, W., Stierli, B., Edwards, A., Robinson, S., ... & Frey, B. (2023). Microbial dynamics in soils of the Damma glacier forefield show succession in the functional genetic potential. Environmental Microbiology, 25(12), 3116-3138. 10.1111/1462-2920.16497

20. Marti, T.D., Schärer, M.R., #**Robinson, S.L.** (2023) Microbial biocatalysis within us: the underexplored xenobiotic biotransformation potential of the urinary tract microbiota. *CHIMIA,* 77 (6), 424-431. doi: 10.2533/chimia.2023.424.

21. Fraley, A., **Robinson, S.L.,** and Piel, J., (2023) The versatile natural product enzymology of marine microbial communities. *Aldrichimica ACTA*. 55(3), 55-75.

22. Terlouw, B. R., Blin, K., …**Robinson S.L.,** …Weber, T., Medema, M. H. (2023). MIBiG 3.0: a community-driven effort to annotate experimentally validated biosynthetic gene clusters. *Nucleic Acids Research*, *51*(D1), D603-D610. doi:10.1093/nar/gkac1049.

23. Paoli, L., Ruscheweyh, H.J., Forneris, C.C., Hubrich, F., Kautsar, S., Bhushan, A., Lotti, A., … **#Robinson, S.L**., #Piel, J.P., #Sunagawa, S. (2022) Biosynthetic potential of the global ocean microbiome. *Nature,* 1-8. doi: 10.1038/s41586-022-04862-3. #co-corresponding.

24. Scott, T.A., Verest, M., Farnung, J., Forneris, C.C., **Robinson, S.L.,** Ji, X., Hubrich, F., Chepkirui, C., Richter, D.U., Huber, S., Rust, P., Streiff, A.B., Zhang, Q., Bode, J.W., Piel, J.P. (2022) Widespread microbial utilization of ribosomal β-amino acid-containing peptides and proteins. *Chem*, *8*(10), 2659-2677. doi: 10.1016/j.chempr.2022.09.017.

25. Hubrich, F., Bösch, N.M., Chepkirui, C., Morinaka, B.I., Rust, M., Gugger, M., **Robinson, S.L.**, Vagstad, A.L., Piel, J. (2022) Ribosomally derived lipopeptides containing distinct fatty acyl moieties. *Proceedings of the National Academy of Sciences (PNAS),* 119(3).

26. Paoli, L. & **Robinson, S.L.**, (2022) A wealth of new biosynthetic pathways from the global ocean microbiome. *Nature,* doi: 10.1038/d41586-022-01545-x.

27. Guo, F., McAuliffe, J.C., Bongiorni, C. Latone, J.A., Pepsin, M.J., Chow, M.S., Dhaliwal, R.S., Hoffmann, K.M., Brazil, B.T., Heng, M.H., **Robinson, S.L.**, Wackett, L.P., Whited, G.M. A procedure for removal of cyanuric acid in swimming pools using a cell-free thermostable cyanuric acid hydrolase. (2022) *Journal of Industrial Microbiology and Biotechnology,* 49(2), kuab084.doi: 10.1093/jimb/kuab084.

28. Mason-Jones, K.M., **Robinson, S.L**., Veen, G.F., Manzoni, S.M., van der Putten, W.H. (2022) Microbial storage and its implications for soil ecology. 16, 617–629. *The ISME Journal*, doi: 10.1038/s41396-021-01110-w.

29. **#Robinson, S.L,** (2021) Artificial intelligence for microbial biotechnology: beyond the hype. *Microbial Biotechnology,* 15(1), 65-69. doi: 10.1111/1751-7915.13943.

30. **#Robinson, S.L.**, Piel, J., Sunagawa, S. A. (2021) A roadmap for metagenomic enzyme discovery. *Natural Product Reports,* 38(11), 1994-2023. doi: 10.1039/D1NP00006C.

31. **Robinson, S.L.,** Biernath, T., Rosenthal, C., Young, D., Wackett, L.P., Martinez-Vaz, B.M. (2021) Development of the organonitrogen biodegradation database: teaching bioinformatics and collaborative skills to undergraduates. *Journal of Biology & Microbiology Education,* 22(1), ev22i1.2351. doi: 10.1128/jmbe.v22i1.2351.

32. Tracanna, V., Ossowicki, A., Petrus, M.L.C., Overduin, S., Terlouw, B.R., George Lund, G., **Robinson, S.L**., Warris, S., Schijlen, E.G.W.M., van Wezel, G.P., Raaijmakers, J.M., Garbeva, P. Medema, M.H. (2021) Dissecting disease-suppressive rhizosphere microbiomes by functional amplicon sequencing and 10X metagenomics. *mSystems,* 6(3), e01116-20. doi: 10.1128/mSystems.01116-20.

33. **#Robinson, S.L.,** Terlouw, B.R., Smith, M.D., Pidot, S.J., Stinear, T.P., Medema, M.H., Wackett, L.P. (2020) Global analysis of adenylate-forming enzymes reveals β-lactone biosynthesis pathway in pathogenic *Nocardia*. *Journal of Biological Chemistry.* 295(44), 14826-14839. doi: 10.1074/jbc.RA120.013528.

34. Wackett, L.P. & **Robinson, S.L**. (2020) The ever-expanding limits of enzyme catalysis and biodegradation: polyaromatic, polychlorinated, polyfluorinated, and polymeric compounds. *Biochemical Journal,* 477(15), 2875–2891. doi: 10.1042/BCJ20190720.

35. **#Robinson, S.L.**, Smith, M.D., Richman, J.E., Aukema, K.G., Wackett, L.P. (2020) Machine learning-based prediction of activity and substrate scope for OleA enzymes in the thiolase superfamily. *Synthetic Biology*, 5(1), ysaa004. doi: 10.1093/synbio/ysaa004.

36. Smith M.D., **Robinson S.L.**, Molomjamts M.M., Wackett L.P. (2020) *In vivo* assay reveals microbial OleA thiolases initiating hydrocarbon and β-lactone biosynthesis. *mBio,* 11(2), e00111-20. doi: 10.1128/mBio.00111-20.

PATENTS:

Robinson, S. L., Christenson, J.K. & Wackett, L.P. (2020) Biological production of β-lactones. U.S. Patent Application. 16/510,298, filed 13 February, 2020.

PRE-PRINTS:

Yu, Y., Zhang, K., Steiner, V. M., Poltorak, V., Probst, S. I., **Robinson, S. L.**, Hutter, J., Satoh, H. & Fenner, K. (2026). An enzyme-level benchmark based on environmental bacterial laccases for predicting contaminant fate in water. *bioRxiv*, 2026-01. doi: 10.64898/2026.01.27.701970