

## Curriculum Vitae – S. Emil Ruff

### Personal

Work Address: Marine Biological Laboratory  
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Google Scholar <https://scholar.google.com/citations?user=XG5POTsAAAAJ&hl=de>  
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LinkedIn: <https://www.linkedin.com/in/s-emil-ruff-591a97143/>  
Publons: <https://publons.com/author/553014/emil-ruff#profile>  
Twitter: <https://twitter.com/EmilRuff>  
Lab Homepage: <https://rufflab.org/>

### Academic Employment

- Since 11/2018* **Assistant Scientist (eq. Assistant Professor):** “Microbial ecology and ecophysiology.” Faculty and PI of bridge group between the Ecosystems Center and the Josephine Bay Paul Center, Marine Biological Laboratory, Woods Hole, MA, USA
- Since 05/2021* **Scientific Consultant:** “Molecular ecology and microscopy.” Microbial Diversity Summer Course, Marine Biological Laboratory, Woods Hole, MA, USA
- 11/2017 – 10/2018* **Postdoctoral Research Fellow:** “Biological methane cycling in groundwater aquifers.” – **Advisors:** Prof. Marc Strous; Prof. Bernhard Mayer at Applied Geochemistry Group, Department of Geoscience, University of Calgary, Calgary
- 11/2015 – 10/2017* **AITF/Eyes High Postdoctoral Research Fellow:** “Groundwater metagenomics: From environmental monitoring to viral evolution.” – **Advisor:** Prof. Marc Strous at EBG Group, Department of Geoscience, University of Calgary, Calgary
- 05/2017 – 11/2017* **Independent Consultant** – Scientific advisor on: Microbial population structure and environmental ontologies within the Census of Deep Life. Marine Biological Laboratory, Woods Hole, MA, USA
- 01/2014 – 10/2015* **Postdoctoral Researcher:** “Community assembly and function of biogeochemically relevant seafloor microorganisms.” – **Advisors:** Profs. Antje Boetius, Rudolf Amann at Department for Molecular Ecology, MPI for Marine Microbiology, Bremen

### Academic Education

- 09/2010 – 12/2013* **Dissertation** (Magna cum laude): “Microbial community ecology of marine methane seeps” – **Advisors:** Profs. Antje Boetius, Rudolf Amann at Max Planck Institute for Marine Microbiology, Bremen, and Prof. Ulrich Fischer at University of Bremen
- 11/2009 – 08/2010* **Master thesis** (Magna cum laude): „Microbial communities of marine methane seeps at Hikurangi margin (New Zealand)“ – **Advisors:** Prof. Antje Boetius at Max Planck Institute for Marine Microbiology, Bremen, and Prof. Andreas Stolz at University of Stuttgart
- 10/2003 – 08/2010* **Studies of Technical Biology**, University of Stuttgart
- Bachelor thesis** (Magna cum laude): „Metallization of tobacco mosaic viruses to produce ferrofluids with enhanced magnetoviscosity.“ – **Advisors:** Prof. Christina Wege at Department for Molecular Biology and Plant Virology, University of Stuttgart and Dr. Alexander Bittner at MPI for Solid State Research, Stuttgart

## Awards/Stipends

- 2021 “Simons Early Career Investigator in Marine Microbial Ecology and Evolution Award”; PI; Simons Foundation
- 2017 Publons Peer Review Award – Top Reviewers of University of Calgary - 4<sup>th</sup> rank
- 2015 Postdoctoral Fellowship (2 years) – Alberta Innovates Technology Futures/Eyes High University of Calgary, Alberta, Canada – 70,000 CAD p.a. plus Benefits
- 2012 Poster Award at Gordon Research Conference – Marine Microbes 2012, Barga, Italy
- 2012 MarMic Teaching Award – Best Tutorial 2012, Bremen, Germany
- 2011 4<sup>th</sup> price at MBL Scientific Photography Contest 2011, Woods Hole, MA, USA
- 2011 National Science Foundation Scholarship – MBL Summer Course tuition, Woods Hole, MA, USA
- 2011 MarMic Teaching Award – Best Practical Course 2011, Bremen, Germany
- 2004 Ferienakademie Scholarship – Tuition for Summer School for Biotechnological Processes and Applications, Sarntal, Italy

## Grants

### Awarded

- 2021 “Simons Early Career Investigator in Marine Microbial Ecology and Evolution Award”; PI; Simons Foundation - **\$666,666**
- 2021 “Follow the methane: Assessing the contribution of methanogenesis-derived carbon to higher trophic levels”; PI; FICUS2022 (DOE) – Microbiome sequencing and metabolomics of 80 samples; 870 h of instrument time and analysis including nanoSIMS, X-Ray Tomography, Quadrupole ICP-MS – **~\$200,000** (870h x\$225/h)
- 2020 “Collaborative Research: NSF2026: EAGER: Is Plastic Degradation Occurring in the Deep Ocean Water Column?”; (Co-PI); NSF – **\$231,808**, Award - 2033860
- 2020 “Microbial Community Nitrogen Metabolism in Rapidly-Changing Arctic Soils.”; (Co-PI); Microbiome Center Pilot Project - **\$20,000**
- 2020 “*Nematostella vectensis*: a sea anemone model for investigating the effects on environmental pollutants on Cnidarians and their associated microbiome.”; (PI); Microbiome Center Pilot Project - **\$10,000**
- 2020 “Gene expression of the *Nematostella vectensis* microbiome during tentacle regeneration”; (PI); McDonnell Initiative @ MBL Sequencing Grant - **\$10,000**
- 2020 “Underground allies: dynamic interactions among *Spartina* grass and sulfur-cycling microbes in the rhizosphere”; (Co-PI); Moore Foundation - **\$621,884**
- 2017 “Microbial ecology of prairie mud mounds in Alberta: Unexplored ecosystems fuelled by discharge of subsurface muds.” (PI); Census of Deep Life (CoDL) Sequencing Grant – **\$1,500**
- 2017 “Heterotrophy in Guaymas Basin hydrothermal sediments: A missing link between subsurface-derived energy and seafloor productivity.” (PI); CoDL Sequencing Grant – **\$1,500**
- 2015 “Abundance, distribution and metabolic capabilities of organisms affiliated to *Atribacteria* (Candidate division JS1)” (PI); Deep Life Community Pilot Project Program – **\$25,000**

### Pending

- 2021 “NSFGEO-NERC: POWERING LIFE - Pairing Omics With Energy Rates In Global Marine Subseafloor Ecosystems”; (PI); NSF-NERC - **\$819,590**
- 2021 “BIORETS A Collaborative Program: MBL - STEM Professional Advancement in Research and Knowledge (MBL-SPARK)”; (Co-PI); NSF - **\$599,627**
- 2021 “Controlled Environment Facilities for the Marine Biological Laboratory”; (Co-PI); NSF - **\$426,922**

## Publications

23 peer-reviewed publications • >840 citations • h-index:12 • i-10 index:16 • (\*corresponding author)

### In revision

**Ruff SE\*** “Recent Insights into Microbes and Metabolisms Degrading Organic Biopolymers and Macromolecules” *Frontiers in Microbiology* (in revision).

### Published or accepted

#### 2021

Klein S, Frazier V, Readdean T, Lucas E, Diaz-Jimenez EP, Sogin M, **Ruff SE\***, Echeverri K (2021) „Common environmental pollutants negatively affect development and regeneration in the sea anemone *Nematostella vectensis* holobiont.” *Frontiers in Ecology and Evolution* (accepted).

Pérez Castro S, Borton MA, Regan K, Hrabe de Angelis I, Wrighton KC, Teske AP, Strous M, **Ruff SE.\*** “Degradation of biological macromolecules supports uncultured microbial populations in Guaymas Basin hydrothermal sediments.” *The ISME Journal* (advanced online).  
<https://doi.org/10.1038/s41396-021-01026-5>

Media coverage of the article: Invitation to write a “Behind the Paper” popular science article on the Nature Portfolio Microbiology blog website <https://naturemicrobiologycommunity.nature.com/>

Teske A, Wegener G, Chanton JP, White D, MacGregor B, Hoer D, de Beer D, Zhuang G, Saxton MA, Joye SB, Lizarralde D, Soule SA, **Ruff SE.** (2021) “Microbial communities under distinct thermal and geochemical regimes in axial and off- axis sediments of Guaymas Basin.” *Frontiers in Microbiology*, 12, 633649. <https://www.frontiersin.org/articles/10.3389/fmicb.2021.633649/full>

Souza FFC, Mathai PP, Pauliquevis T, Balsanelli E, Pedrosa FO, Souza EM, Baura VA, Monteiro RA, Cruz LM, Souza RAF, Andreae MO, Barbosa CGG; Hrabe de Angelis I, Sánchez-Parra B, Pöhlker C, Weber B, **Ruff SE**, Reis RA, Godoi RHM, Sadowsky MJ, Huergo LF. (2021) “Influence of Seasonality on the Aerosol Microbiome of the Amazon Rainforest.” *Science of the Total Environment*, 760, 144092.  
<https://www.sciencedirect.com/science/article/pii/S0048969720376233?via%3Dihub>

#### 2020

Chakraborty, A.; **Ruff, S. E.**; Dong, X.; Ellefson, E. D.; Li, C.; Brooks, J. M.; Bernard, B. B.; Hubert, C. J. R. (2020) “Hydrocarbon seepage in the deep seabed links subsurface and seafloor biospheres.” *Proceedings of the National Academy of Sciences USA*, 117, 11029-11037.  
<https://www.pnas.org/content/117/20/11029>

Media coverage of the article (selection):

MBL press release: <https://www.mbl.edu/blog/window-to-another-world-team-finds-life-bubbling-up-to-the-seafloor-with-petroleum-from-deep-below/>

Phys.Org: <https://phys.org/news/2020-05-window-world-life-seafloor-petroleum.html>

Science Daily: <https://www.sciencedaily.com/releases/2020/05/200501184314.htm>

Environmental News Network: <https://www.enn.com/articles/63403-window-to-another-world-life-is-bubbling-up-to-seafloor-with-petroleum-from-deep-below>

Wang, Y.; Wegener, G.; **Ruff, S. E.**; Wang, F. (2020) „Anaerobic alkane oxidation in methyl/alkyl-coenzyme M reductase containing archaea.” *Environmental Microbiology*, advanced online.  
<https://sfamjournals.onlinelibrary.wiley.com/doi/full/10.1111/1462-2920.15057>

**Ruff\*, S. E.** (2020) “Microbial communities and metabolisms at hydrocarbon seeps.” Chapter in Book: “Marine Hydrocarbon Seeps – Microbiology and Biogeochemistry of a Global Marine Habitat”; Book Series: *Springer Oceanography*, Eds. Teske, A.; Carvalho, V.  
<https://link.springer.com/book/10.1007/978-3-030-34827-4>

Kuloyo, O.; **Ruff, S. E.**; Cahill, A.; Connors, L.; Zorz, J. K.; Nightingale, M.; Mayer, B.; Strous, M. (2020) „Methane oxidation and methanotroph population dynamics in groundwater mesocosms”. *Environmental Microbiology*, 22, 1222-1237.  
<https://sfamjournals.onlinelibrary.wiley.com/doi/full/10.1111/1462-2920.14929>

Bhatnagar, S.; Cowley, E. S.; Kopf, S. H.; Pérez Castro, S.; Kearney S.; Dawson, S. C.; Hanselmann, K.; **Ruff\*, S. E.** (2020) „Microbial community dynamics and coexistence in a sulfide-driven phototrophic bloom.” *Environmental Microbiome*, 15:3.  
<https://environmentalmicrobiome.biomedcentral.com/articles/10.1186/s40793-019-0348-0>

Media coverage of the article (selection):

Environmental News Network: <https://www.enn.com/articles/61821-making-lemonade-chance-observation-leads-to-insight-on-microbial-bloom-formation>

Bright Surf: <https://www.brightsurf.com/news/article/012320501597/making-lemonade-chance-observation-leads-to-study-of-microbial-bloom-formation.html>

Newsbreak: <https://www.newsbreak.com/news/1495452074776/making-lemonade-chance-observation-leads-to-study-of-microbial-bloom-formation>

## **2019**

Cramm, M.A.; Chakraborty A.; Li C.; **Ruff S. E.**; Barker Jørgensen B.; Hubert C. R. J.; (2019) "Freezing tolerance of thermophilic bacterial endospores in marine sediments." *Frontiers in Microbiology*, 10:945. <https://www.frontiersin.org/articles/10.3389/fmicb.2019.00945/full>

**Ruff\*, S. E.**; Felden, J.; Gruber-Vodicka, H. R.; Marcon, Y.; Knittel, K.; Ramette, A.; Boetius, A. (2019). "In situ development of a methanotrophic microbiome in deep-sea sediments." *The ISME Journal*, 13, 197-213. <https://www.nature.com/articles/s41396-018-0263-1>

Media coverage of the article (selection):

The Molecular Ecologist: <https://www.molecularecologist.com/2019/01/the-silent-thunder-down-under-mud-volcanoes-and-the-microbes-that-love-them/>

GIT Laborportal: <https://www.git-labor.de/news/aus-der-wissenschaft/mikrobielle-methanfilter-eine-spezialisierte-mikroben-gemeinschaft>

Naturschutz: <http://naturschutz.ch/news/wie-in-der-tiefsee-ein-filter-fuer-treibhausgas-entsteht/127382>

VBIO: <https://www.vbio.de/aktuelles/wissenschaft/wie-in-der-tiefsee-ein-filter-fuer-treibhausgas-entsteht/>

## **2017**

Saad, S.; Bhatnagar, S.; Tegetmeyer, H. E.; Geelhoed, J. ; Strous, M.; **Ruff\*, S. E.** (2017). "Transient exposure to oxygen and nitrate reveals ecophysiology of benthic microbial populations." *Environmental Microbiology*, 19, 4866-4881.  
<https://onlinelibrary.wiley.com/doi/full/10.1111/1462-2920.13895>

Cahill, A.; Steelman, C.; Forde, O.; Kuloyo, O.; **Ruff, S. E.**; Mayer, B.; Mayer, K. U.; Strous, M.; Ryan, C.; Cherry, J.; (2017) "Methane Mobility and Fate in Groundwater Determined from a Controlled Release Field Experiment." *Nature Geoscience*, 10, 289-294.  
<https://www.nature.com/articles/ngeo2919>

Media coverage of the article (selection):

RD Mag: <https://www.rdmag.com/article/2017/04/explosive-methane-gas-found-groundwater>

Resilience: <http://www.resilience.org/stories/2017-04-12/methane-leaks-from-groundwater-affect-wells/>

CanTech Letter: <https://www.cantechletter.com/2017/04/explosive-methane-gas-leaks-contaminating-groundwater-study-concludes/>

The Tyee: <https://thetyee.ca/News/2017/04/11/Methane-Leaks-from-Energy-Wells-Affects-Groundwater/>

## **2016**

**Ruff, S. E.**; Kuhfuss, H.; Wegener, G.; Lott, C.; Ramette, A.; Wiedling, J.; Knittel, K.; Weber, M. (2016) "Methane seep in shallow-water permeable sediment harbors high diversity of anaerobic methanotrophic communities, Elba, Italy." *Frontiers in Microbiology*, 7:374.  
<https://www.frontiersin.org/articles/10.3389/fmicb.2016.00374/full>

Media coverage of the article:

Il Tirreno: [http://iltirreno.gelocal.it/piombino/cronaca/2017/03/25/news/gli-scientiati-teseschi-sulle-tracce-del-metano-in-mezzo-al-mare-1.15087792?refresh\\_ce](http://iltirreno.gelocal.it/piombino/cronaca/2017/03/25/news/gli-scientiati-teseschi-sulle-tracce-del-metano-in-mezzo-al-mare-1.15087792?refresh_ce)

Il Tirreno: <http://video.gelocal.it/iltirreno/locale/alla-scoperta-del-vulcano-di-fango-dello-scoglio-d-affrica-le-straordinarie-immagini-degli-scientiati/78582/80111>

Wegener, G.; Krukenberg, V.; **Ruff, S. E.**; Kellermann, M. Y.; Knittel, K. (2016). "Metabolic capabilities of microorganisms involved in and associated with the anaerobic oxidation of methane." *Frontiers in Microbiology*, 7:46. <https://www.frontiersin.org/articles/10.3389/fmicb.2016.00046/full>

Dowell, F.; Cardman, Z.; Dasarathy, S.; Kellermann, M. Y.; Lipp, J.; **Ruff, S. E.**; Biddle, J. F.; McKay, L.; MacGregor, B.; Lloyd, K. G.; Albert, D.; Mendlovitz, H.; Hinrichs, K.-U.; Teske, A. (2016). "Microbial communities in methane- and short chain alkane-rich hydrothermal sediments of Guaymas Basin." *Frontiers in Microbiology*, 7:17. <https://www.frontiersin.org/articles/10.3389/fmicb.2016.00017/full>

Stagars, M. H.; **Ruff, S. E.**; Amann, R.; Knittel, K. (2016). "High diversity of anaerobic alkane-degrading microbial communities in marine seep sediments based on (1-methylalkyl)-succinate synthase genes." *Frontiers in Microbiology*, 6:1511. <https://www.frontiersin.org/articles/10.3389/fmicb.2015.01511/full>

## **2015**

**Ruff\*, S. E.**; Biddle, J.; Teske, A.; Knittel, K.; Boetius, A.; Ramette, A. (2015). "Global dispersion and local diversification of the methane seep microbiome." *Proceedings of the National Academy of Sciences USA*, 113, 4015-4020. <https://www.pnas.org/content/112/13/4015>

Media coverage of the article (selection):

Radio Interview: <https://detektor.fm/wissen/forschungsquartett-methan-quellen>

Newspaper Article: 1/3 page in the Bremen newspaper "Weserkurier"

Der Standard (Austrian Newspaper): <http://derstandard.at/2000013073573/Methanquellen-ziehen-fremdartiges-Leben-an>

Nature Education: <http://www.nature.com/scitable/blog/eyes-on-environment/methanemunching-microbes-limit-global-warming>

Science Daily: <https://www.sciencedaily.com/releases/2015/03/150316185444.htm>

Newswise: <http://www.newswise.com/articles/seeps-are-microbial-hotspots-homes-to-cosmopolitan-microorganisms>

## **2014**

**Ruff, S. E.**; Probandt, D.; Zinkann, A.-C.; Iversen, M.; Klaas, C.; Würzberg, L.; Rödiger-Krombholz, N.; Wolf-Gladrow, D.; Amann, R.; Knittel, K. (2014). „Indications for algae-degrading benthic microbial communities in deep-sea sediments along the Antarctic Polar Front.“ *Deep-Sea Research Part II*, 108, 6-16. <https://www.sciencedirect.com/science/article/pii/S0967064514001441>

Felden, J; **Ruff, S. E.**; Ertefai, T.; Inagaki, F.; Hinrichs, K.-U.; Wenzhöfer, F. (2014). „Anaerobic methanotrophic communities of a 5346 m-deep vesicomyid clam colony in the Japan Trench.“ *Geobiology*, 12, 183-199. <https://onlinelibrary.wiley.com/doi/full/10.1111/gbi.12078>

## **2010-2013**

**Ruff\*, S. E.**; Arnds, J.; Knittel, K.; Amann, R.; Wegener, G.; Ramette, A.; Boetius, A. (2013). „Microbial communities of marine methane seeps at Hikurangi margin (New Zealand).“ *PLoS ONE*, 8, e72627. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0072627>

Wu, Z.; Müller, A.; Degenhard, S.; **Ruff, S. E.**; Geiger, F.; Bittner, A. M.; Wege, C.; Krill, C. E. (2010). „Enhancing the magnetoviscosity of ferrofluids by the addition of biological nanotubes“. *ACS Nano*, 4, 4531-4538. <https://pubs.acs.org/doi/10.1021/nn100645e>

Wu, Z.; Zierold, R.; Müller, A.; **Ruff, S. E.**; Ma, C.; Khan, A. A.; Geiger, F.; Sommer, B. A.; Knez, M.; Nielsch, K.; Bittner, A. M.; Wege, C.; Krill, C. E. (2010). „Preparation and magneto-viscosity of nanotube ferrofluids by viral scaffolding and ALD on porous templates“. *Physica Status Solidi B*, 247, 2412-2423. <https://onlinelibrary.wiley.com/doi/abs/10.1002/pssb.201046208>

## Supervision (selection)

- 07/2021 – present Marine Biological Laboratory, Woods Hole, USA  
**Supervisor** – Postdoctoral research in microbial ecology (M. A. Moynihan)  
“Ecophysiology of novel lineages of anoxygenic phototrophic Chlorobi”
- 01/2019 – 12/2020 Marine Biological Laboratory, Woods Hole, USA  
**Supervisor** – Postdoctoral research in microbial ecology (S. Pérez-Castro)  
“Microbial macromolecule degradation in hydrothermal sediments”
- 06/2020 – 08/2020 Marine Biological Laboratory, Woods Hole, USA  
**Supervisor** – Metcalf Summer for Undergraduate Research Fellows (A. Ellerstein)  
“Investigating Sulfide Oxidizers in *Spartina Alterniflora* Root Samples”
- 06/2020 – 08/2020 Marine Biological Laboratory, Woods Hole, USA  
**Supervisor** – Metcalf Summer for Undergraduate Research Fellows (J. Riley)  
“Searching for Methanotrophs in *Spartina Alterniflora* Rhizospheres”  
[J Riley received a Beckman Scholars Program Fellowship after this summer internship](#)
- 06/2020 – 08/2020 Marine Biological Laboratory, Woods Hole, USA  
**Supervisor** – Virtual Summer Project in Bioinformatics (G. Burns)  
“Investigating Sulfur-cycling microbes in *Spartina Alterniflora* Rhizospheres”
- 10/2019 – 12/2019 Marine Biological Laboratory, Woods Hole, USA  
**Supervisor** – Semester in Environmental Science student project (K. Miranda)  
“Impact of Nitrogen Loading on Diazotrophs in New England Salt Marshes”
- 06/2019 – 08/2019 Marine Biological Laboratory, Woods Hole, USA  
**Supervisor** – Summer student project (A. Palmer)  
“Methods in microbial ecology”  
[A Palmer received a Boston University graduate scholarship after the internship](#)
- 01/2016 – 09/2019 University of Calgary, Calgary, Canada  
**Co-Supervisor** – PhD Thesis Section in microbial ecophysiology (K. Kuloyo)  
“Ecophysiology of methanotrophs in contaminated groundwater aquifers”
- 10/2017 – 07/2018 University of Calgary, Calgary, Canada  
**Supervisor** – Student project in microbial ecophysiology (I. Hrabe-De Angelis)  
Topic: “Microbial metabolisms involved in the biological formation of ethane”
- 04/2017 – 11/2017 University of Calgary, Calgary, Canada  
**Co-Supervisor** – MSc Thesis Section in microbial ecology (M. Cramm; 7 months)  
“Thermophilic endospore longevity in deep sediment of the Nankai Trough over geologic timescales”
- 05/2016 – 08/2016 University of Calgary, Calgary, Canada  
**Supervisor** – Student project in microbial ecology (S. Cho; 12 weeks)  
Topic: “Microbial ecology of groundwater aquifers”
- 07-08/2015 Marine Biological Laboratory, Woods Hole, MA, USA  
**Supervisor** – Student project in microbial ecology (K. Garcia; 7 weeks)  
Topic: “A microbial biofilm on the exoskeleton of the water bug *Ranatra fusca*”
- 01/2014 – 07/2014 Max Planck Institute for Marine Microbiology, Bremen, Germany  
**Co-Supervisor** – PhD Thesis Section in microbial ecophysiology (S. Saad; 7 months)  
Topic: “Selective effects of transient oxygen and nitrate exposure on sulfate-reducing/fermentative consortia”
- 09/2012-04/2013 Max Planck Institute for Marine Microbiology, Bremen  
**Co-supervisor** – Master thesis in molecular ecology (B. Angelov; 6 months)  
Topic: “Succession and functional shifts in marine deep subsurface microbial communities exposed to mud volcanism.”



## Teaching (selection)

- 09/2021 – 03/2022 Marine Biological Laboratory, Woods Hole, MA, USA  
**Lecturer and Supervisor** – Semester in Environmental Science  
“Chemosynthesis”; “Data visualization”; “Microbial Ecology”
- 06/2021 – 08/2021 Marine Biological Laboratory, Woods Hole, MA, USA  
**Course Faculty** – Microbial Diversity Course  
Course organization, supervision of students and projects, lectures on several topics including whole cell staining, microbial ecology, data visualization
- 11.02.2021 Boston University  
**Guest lecturer** – Marine Biogeochemistry Course (for Undergraduates)  
“Microbial mutualism and coexistence in a sulfide-driven phototrophic bloom”
- 09/2019 – 03/2020 Marine Biological Laboratory, Woods Hole, MA, USA  
**Lecturer and Supervisor** – Semester in Environmental Science  
“Methods in Microbiology”; “Bacterial Production”; “Microbial Ecology”
- 20.09.2019 Marine Biological Laboratory, Woods Hole, MA, USA  
**Lecturer** – Microbes Across Environments Course  
“Syntrophy in C – Methane-fueled microbial food webs in the deep sea”
- 14.07.2019 Marine Biological Laboratory, Woods Hole, MA, USA  
**Lecturer** – Microbial Diversity Course  
“Microbial community dynamics in a sulfide-driven phototrophic bloom”
- 05.06.2019 Marine Biological Laboratory, Woods Hole, MA, USA  
**Lecturer** – Logan Science Journalism Program  
“Fantastic Beasts and where to find them – The Deep Biosphere”
- 10-11/2017 University of Calgary, Calgary, Canada  
10-11/2016 **Lecturer** – Course GLGY 699 L01 - Selected Topics in Geology  
“Visual Communication”; “Scientific Writing”
- 07-08/2015 Marine Biological Laboratory, Woods Hole, MA, USA  
07-08/2014 **Teaching Fellow** – Microbial Diversity Course (8 weeks)  
Expertise: Whole cell hybridization methods and microscopy
- 03/2012 Max Planck Institute for Marine Microbiology, Bremen  
**Teaching Assistant** – Marine geology course for *MarMic* students (4 weeks)
- 02/2012 Max Planck Institute for Marine Microbiology, Bremen  
02/2011 **Teaching Assistant** – Molecular ecology course for *MarMic* students (4 weeks)

## Invited Talks (selection)

- 16.11.2021 “Conquering an unfavorable habitat – How pelagic blooms of anoxygenic phototrophs thrive in the presence of oxygen.” **Invited Speaker** – Plant and Microbial Biology Seminar, North Carolina State University, **Raleigh**, NC, USA
- 13.04.2021 “Microbial degradation of biological macromolecules” **Invited Speaker** – UMass CNS Microbiology Seminar, University of Massachusetts Amherst, USA, **Virtual**
- 19.03.2021 “Microbial degradation of biological macromolecules: Uncultured thermophilic heterotrophs and their role in the carbon cycle of hydrothermal sediments.” **Keynote speaker** – Symposium 15 - Annual Conference of the Association for General and Applied Microbiology (VAAM), Germany, **Virtual**
- 10.02.2021 “Microbial mutualism and coexistence in a sulfide-driven phototrophic bloom” **Invited Speaker** – Microbiology and Molecular Genetics Seminar, University of California Davis, CA, USA, **Virtual**

- 05.12.2019 "Unite and Conquer – How eating together increases biodiversity, influences biogeography, and alters biogeochemistry" **Invited Speaker** – Biology Seminar, Woods Hole Oceanographic Institution, **Woods Hole**, USA
- 01.11.2018 "Diversity and turnover of subsurface microbial communities based on ribosomal and metabolic genes." **Invited Speaker** – Deep Life Community Meeting, **Shanghai**, China
- 28.06.2018 "Contextual data: Valuable information associated with sequence data." **Invited Speaker** – Genome-centric Metagenomics Workshop 2018, **Calgary**, Canada
- 26.05.2017 "The Census of Deep Life: Diversity and biogeography of microorganisms in the deep subsurface." **Invited speaker** – Workshop on Global Models of the Slow Geological Carbon Cycle, Vernadsky Institute, Russian Academy of Sciences, **Moscow**, Russia
- 30.03.2017 "Submarine mud volcanoes: Microbial life and carbon flux at the interface between seafloor and subsurface." **Invited speaker** – Geoscience Seminar, Newcastle University, **Newcastle**, UK
- 23.03.2017 "Submarine mud volcanoes: Microbial life and carbon flux at the interface between seafloor and subsurface." **Invited speaker** – 3<sup>rd</sup> DCO International Science Meeting, **St. Andrews**, UK
- 10.05.2016 "Spatiotemporal dynamics of microbial communities in sediments." **Invited speaker** – Deep Life Community Workshop on Origins and Movement of Subsurface Organisms, **Los Angeles**, CA, USA
- 21.06.2014 "The Omics of Mud Volcanism: Microbial Community Succession and Functional Shifts in Response to Seafloor Disturbances." **Invited speaker** – Gordon Research Seminar – Marine Microbes, **Waltham**, MA, USA

### **Professional Responsibilities (selection)**

- International Engagement* **Member** of the Early Career Scientist Committee of the International Society for Microbial ecology (ISME) – since 07/2021
- Institutional Responsibilities* **SES Committee member** – Organization of topics, lectures, and lab modules for the Semester in Environmental Science (SES) – since 2019  
**Hiring Committee member** – 1 position in 2019 (Blair Paul), 3 positions in 2020 (Mirta Teichberg, James McClelland, Ketil Koop-Jacobsen)  
**Pod member** – Unlearning Racism in the Geosciences (URGE), 2021 – Improving Diversity, Equity, and Inclusion of BIPoC in science and research  
**Curator** of sequencing data and projects and advisor on contextual data collection and curation at the data archive VAMPS (<https://vamaps2.mbl.edu/>)  
**(Co)-Organization** of Invitational Seminars 2015-2018 – Guest speakers include: Karen Lloyd (U of Tennessee), Dirk De Beer (MPI Bremen), Cody Sheik (U of Minnesota), Roland Hatzenpichler (Montana State U)  
**Member** of the Work Council 2014 - 2015 at MPI for Marine Microbiology, Bremen
- Conference Organization* **Session Chair** – VAAM 2022, Fachgruppe Umweltmikrobiologie – Session: „Soil Microbial Interaction and Functioning” – Keynote: Janet Jansson (PNNL)  
**Panel Chair** – IOC-UNESCO Ocean Best Practices Workshop 2021 – Session: Coordinating Genomic Sampling Across a European Infrastructure – Panel on Marine Sediment Sampling  
**Session Chair** – GRC Marine Microbes 2016 – Session: “Environmental Shaping of Functional Traits and Community Structure.”  
**Social Chair** – GRC Marine Microbes 2016 - Organization of social events, poster talks, and invited speakers
- Editorial Responsibility* **Guest Editor** – Frontiers in Microbiology – Special Research Topic (2020) “Microbial Communities and Metabolisms Involved in the Degradation of Cellular and Extracellular Organic Biopolymers” <https://www.frontiersin.org/research-topics/13356/microbial-communities-and-metabolisms-involved-in-the-degradation-of-cellular-and-extracellular-orga> – 7 articles, >16,000 views



## Peer Review

**Reviewer for journals** – 40+ reviews for PNAS, Nature Communications, The ISME Journal, Environmental Microbiology, Molecular Ecology, and 14 other journals. For a full list see: <https://publons.com/author/553014/emil-ruff#profile>  
**Reviewer for organizations** – 3 proposal reviews for National Science Foundation, 1 for Agence Nationale de la Recherche

## Professional Memberships

Since 2008 Gesellschaft zur Förderung des Naturkundemuseums Stuttgart e.V.  
Since 2014 International Society for Microbial Ecology  
Since 2017 Association for General and Applied Microbiology (Germany)  
Since 2020 MBL Society, Marine Biological Laboratory

## Science Outreach (selection)

28.07.2021 “Microbes Munch Methane: How microbes reduce methane emissions from the oceans.” **Invited speaker** – Creating a Climate for Change through Art and Science Public lecture series, Highfield Hall and Gardens, **Falmouth**, USA

08.12.2020 “Breathing Without Air: The Microbial Superheroes of our Backyard.” **Webinar speaker** – Semester in Environmental Science Public Webinar Series, Woods Hole, MA, USA, **Virtual**

04.09.2020 Newspaper Article – Stuttgarter Nachrichten, Stuttgart, Germany  
**Full-page Report and Interview** – Research and Virtual Teaching during COVID lockdown <https://www.stuttgarter-nachrichten.de/inhalt.wissenschaftler-aus-stetten-meeresbiologe-doziert-von-stetten-aus.938111e6-f087-43b0-ac1f-ef0741422e22.html>

16.02.2019 Falmouth Science Fair – Lawrence Middle School, Falmouth, USA  
**Mentor** – Middle School Science Projects

23.09.2018 Science meets Art Workshop – Beakerhead Festival, Calgary, Canada  
**Organizer and Host** – “Small Things, Big Painting – Colors and Patterns of the Microcosmos”

12.04.2017 Newspaper Article – Waiblinger Kreiszeitung, Waiblingen, Germany  
**Full-page Report and Interview** – Expedition to Guaymas Basin

21.05.2015 Forschungsquartett – detektor.FM (Internetradio), Leipzig  
**Interview** – „Methanquellen: Oasen der Tiefsee“

11.10.2012 Klima Orakel – Section in the weekly *Handelsblatt* online  
**Author** – „Wie Mikroorganismen das Klima beeinflussen“

02.06.2012 Lange Nacht der Wissenschaft – Max Planck Science Gallery, Berlin  
**Speaker** – „Mikroben der Tiefsee - Leben am Energielimit“

09.12.2011 Max Planck Institute for Marine Microbiology – Bremen  
**Interview** for “H<sub>2</sub>B – Studieren, forschen, leben in Bremen und Bremerhaven“, a PR-Supplement in the weekly newspaper *Die Zeit*

20.05.2011 Happy Hour – Radiostation Bremen 4  
**Interview** – „Junge Forscher der marinen Mikrobiologie in Bremen“

02/2011 Ozeaneum – Deutsches Meeresmuseum, Stralsund  
**Scientific advisor** for an exhibit on the Census of Marine Life

05/2006 – 08/2010 Museum of Natural History, Stuttgart  
**Tour guide** for school classes, children, families and adults

05/2009 – 07/2010 Wilhelma – Zoological Botanical Gardens, Stuttgart  
**Tour guide** for school classes

## **Music**

- 2020 - present Drummer of the band "Deaf Puppy"
- 2010 - 2015 Guitarist, singer, and songwriter of the band "Hoof and Mouth"  
Concerts in Germany  
Germany Tour 2013  
Bremen Music Video Award 2012
- 2003 - 2012 Trombone player, backing singer and songwriter of the band "Nu Sports"  
Concerts in Germany, Spain, Switzerland  
Germany Tour 2009 and 2011  
Japan Tour 2008 and 2010  
Concert in the German Movie Series "Tatort" 2010
- 2003 – 2010 Trombone player, backing singer and songwriter of the band "area52"  
Concerts in Germany  
Czech Republic Tour 2005
- 1999 – 2001 Trombone player of the band "Funkophonics"
- 1992 – 2001 Trombone player in the high school big band
- 1988 – 2001 Trombone player in the town band

## **Discography**

- 2015 Hoof and Mouth – "Sight and Sound"
- 2013 Hoof and Mouth – "Heart and Head"
- 2011 Hoof and Mouth – "Live By The River"
- 2010 Nu Sports/The Spymaker – "Beer and Sushi"
- 2009 The Spymaker/Nu Sports – "Sushi and Beer"
- 2009 Nu Sports – "Life Kills"
- 2008 Nu Sports – "Phoenix"
- 2006 Nu Sports – "Four Songs"
- 2005 area52 – "The Red Album"
- 2000 Funkophonics – "Jeansons"