

Biosketch

Assoc.–Prof.ⁱⁿ Dr.ⁱⁿ Jillian Petersen

Position in CoE: Key Researcher

Personal Details

Place of birth	Brisbane, Australia
Nationality	Australian
Children	2 (2010, 2013)
Affiliation:	University of Vienna
E-Mail	jillian.petersen@univie.ac.at
Twitter	@jillpeterplan
Profile	ResearcherID: GVU-6351-2022
List of publications	ORCID: 0000-0002-9852-3445
Academic age	12 years since PhD



Academic Career and Positions Held

After undergraduate studies in my native Australia, I was accepted into the International **Max Planck Research School** for Marine Microbiology in Bremen, Germany, where I did my **MSc** (2006) and **PhD** (2009) degrees. I stayed at the Max Planck Institute for Marine Microbiology in Bremen as a PostDoc and senior scientist in the laboratory of Nicole Dubilier until I established my **own research group** in **2015** at the **University of Vienna** with a competitive Vienna Research Group grant from the Vienna Science and Technology Fund (WWTF). This grant came with a tenure track professorship, which began in 2016. Due to outstanding achievements during assistant professorship, I was invited to apply early for tenure and promotion to **associate professor**, which were awarded in July **2020**. I established the Early-Career Scientist Committee for the International Society for Microbial Ecology (ISME) and was inaugural chair from 2019–2021. Activities included organizing the virtual *Unity in Diversity meeting* in 2020. I am a member of ISME's International Board since 2020. In 2021, I became Editor-in-Chief of The ISME Journal. I am also a member of the **FWF Board** (Kuratorium), and member of the Young Academy of the Austrian Academy of Sciences (ÖAW).

Scientific Achievements and Scientific Contribution to the CoE

Scientific Achievements. I have published **33 papers** in peer-reviewed journals (including as first or last author in Nature, Nature Microbiology, eLife, PNAS; 963 total citations, WoS h-Index 19). I have given **30 invited talks** at national or international conferences and institutions, and chaired two international conferences. I have acquired more than **4 million €** in third-party funding, including an **ERC Starting Grant** in 2018. I have led major breakthroughs in understanding the diversity, function, and genomic basis of **host-microbe interactions in marine chemosynthetic symbioses**. These symbioses form the basis of entire ecosystems in the deep sea, and play important roles in maintaining coastal ecosystem health. I recently established and lead an international consortium of researchers that will, through the Wellcome Sanger Aquatic Symbiosis Genomics program, sequence the genomes of 50 lucinid clams and their chemosynthetic symbionts.

Scientific Contribution to the CoE. I bring more than 10 years' experience studying **host-microbe interactions** in natural environments from the deep sea to coastal ecosystems. I have established methods for studying these systems in the lab in experimental aquaria, and in natural environments. I bring expertise in understanding the evolution and the genomic basis of host-microbe interactions in non-traditional model organisms. A particular strength of the experimental systems in my lab is their strong links to the environment,

making them ideal for understanding how environmental factors drive host-microbe interactions from ecological to evolutionary timescales.

10 Most Important Publications (*relevant for the CoE)

1. *Osvatic, J. T.; Wilkins, L. G. E.; Leibrecht, L.; Leray, M.; Zauner, S.; Polzin, J.; Camacho, Y.; Gros, O.; van Gils, J. A.; Eisen, J. A.; **Petersen, J. M.**; Yuen, B. Global Biogeography of Chemosynthetic Symbionts Reveals Both Localized and Globally Distributed Symbiont Groups. *Proc. Natl. Acad. Sci. U.S.A.* **2021**, *118* (29), e2104378118. <https://doi.org/10.1073/pnas.2104378118>.
2. **Petersen, J. M.**; Yuen, B. The Symbiotic “All-Rounders”: Partnerships between Marine Animals and Chemosynthetic Nitrogen-Fixing Bacteria. *Appl Environ Microbiol* **2021**, *87* (5), e02129-20. <https://doi.org/10.1128/AEM.02129-20>.
3. Leray, M.; Wilkins, L. G. E.; Apprill, A.; Bik, H. M.; Clever, F.; Connolly, S. R.; De León, M. E.; Duffy, J. E.; Ezzat, L.; Gignoux-Wolfsohn, S.; Herre, E. A.; Kaye, J. Z.; Kline, D. I.; Kueneman, J. G.; McCormick, M. K.; McMillan, W. O.; O’Dea, A.; Pereira, T. J.; **Petersen, J. M.**; Petticord, D. F.; Torchin, M. E.; Vega Thurber, R.; Videvall, E.; Weislo, W. T.; Yuen, B.; Eisen, J. A. Natural Experiments and Long-Term Monitoring Are Critical to Understand and Predict Marine Host–Microbe Ecology and Evolution. *PLoS Biol* **2021**, *19* (8), e3001322. <https://doi.org/10.1371/journal.pbio.3001322>.
4. *Cardini, U.; Bartoli, M.; Lückner, S.; Mooshammer, M.; Polzin, J.; Lee, R. W.; Micić, V.; Hofmann, T.; Weber, M.; **Petersen, J. M.** Chemosymbiotic Bivalves Contribute to the Nitrogen Budget of Seagrass Ecosystems. *ISME J* **2019**, *13* (12), 3131–3134. <https://doi.org/10.1038/s41396-019-0486-9>.
5. *Yuen, B.; Polzin, J.; **Petersen, J. M.** Organ Transcriptomes of the Lucinid Clam *Loripes orbiculatus* (Poli, 1791) Provide Insights into Their Specialised Roles in the Biology of a Chemosymbiotic Bivalve. *BMC Genomics* **2019**, *20* (1), 820. <https://doi.org/10.1186/s12864-019-6177-0>.
6. Ansoerge, R.; Romano, S.; Sayavedra, L.; Porras, M. Á. G.; Kupczok, A.; Tegetmeyer, H. E.; Dubilier, N.; **Petersen, J.** Functional Diversity Enables Multiple Symbiont Strains to Coexist in Deep-Sea Mussels. *Nat Microbiol* **2019**, *4* (12), 2487–2497. <https://doi.org/10.1038/s41564-019-0572-9>.
7. Assié, A.; Leisch, N.; Meier, D. V.; Gruber-Vodicka, H.; Tegetmeyer, H. E.; Meyerdierks, A.; Kleiner, M.; Hinzke, T.; Joye, S.; Saxton, M.; Dubilier, N.; **Petersen, J. M.** Horizontal Acquisition of a Patchwork Calvin Cycle by Symbiotic and Free-Living Campylobacterota (Formerly Epsilonproteobacteria). *ISME J* **2020**, *14* (1), 104–122. <https://doi.org/10.1038/s41396-019-0508-7>.
8. **Petersen, J. M.**; Kemper, A.; Gruber-Vodicka, H.; Cardini, U.; van der Geest, M.; Kleiner, M.; Bulgheresi, S.; Mußmann, M.; Herbold, C.; Seah, B. K. B.; Antony, C. P.; Liu, D.; Belitz, A.; Weber, M. Chemosynthetic Symbionts of Marine Invertebrate Animals Are Capable of Nitrogen Fixation. *Nat Microbiol* **2017**, *2* (1), 16195. <https://doi.org/10.1038/nmicrobiol.2016.195>.
9. Sayavedra, L.; Kleiner, M.; Ponnudurai, R.; Wetzel, S.; Pelletier, E.; Barbe, V.; Satoh, N.; Shoguchi, E.; Fink, D.; Breusing, C.; Reusch, T. B.; Rosenstiel, P.; Schilhabel, M. B.; Becher, D.; Schweder, T.; Markert, S.; Dubilier, N.; **Petersen, J. M.** Abundant Toxin-Related Genes in the Genomes of Beneficial Symbionts from Deep-Sea Hydrothermal Vent Mussels. *eLife* **2015**, *4*, e07966. <https://doi.org/10.7554/eLife.07966>.
10. **Petersen, J. M.**; Zielinski, F. U.; Pape, T.; Seifert, R.; Moraru, C.; Amann, R.; Hourdez, S.; Girguis, P. R.; Wankel, S. D.; Barbe, V.; Pelletier, E.; Fink, D.; Borowski, C.; Bach, W.; Dubilier, N. Hydrogen Is an Energy Source for Hydrothermal Vent Symbioses. *Nature* **2011**, *476* (7359), 176–180. <https://doi.org/10.1038/nature10325>.