Stanford



Benedikt Geier

Postdoctoral Scholar, Infectious Diseases

Curriculum Vitae available Online

Bio

BIO

B.Sc. Biology, Ludwig Maximilian University (LMU), Munich/Germany (2013)

M.Sc. Biology and bioimaging, Ludwig Maximilian University (LMU), Munich/Germany (2015)

Ph.D., Animal-Microbe Symbioses, Max Planck Institute for Marine Microbiology in Bremen/Germany (2020)

Benedikt joined the Amieva Lab from Germany in 2022. During his B.Sc. and M.Sc. programs in zoology, he became fascinated with 3D imaging approaches to study small animal microanatomy. He spent his PhD developing in situ imaging approaches to study deep-sea symbioses and fell in love with studying host-microbe interactions. In the Amieva Lab, Benedikt will advance his previously developed correlative chemical imaging techniques to resolve metabolic and cellular interactions that drive H. pylori pathogenesis in the gastric glands.

More about Benedikt's transition from deep-sea microbiology into infectious disease research can be found here:

https://scopeblog.stanford.edu/2022/08/24/unconventional-paths-deep-sea-to-the-stomach/

HONORS AND AWARDS

- "Spatial Immunometabolism during Helicobacter pylori infection", Innovation Pilot at the Stanford Center for Human Systems Immunology, funded by The Gates Foundation (2025)
- Best postdoc talk at the annual IMSIS conference in Davis, California, International Mass Spectrometry Imaging Society (IMSIS) (2025)
- Best Poster at the 15th Annual Pediatrics Research Retreat, Department of Pediatrics, Stanford School of Medicine, Stanford University (2024)
- Best Poster at the annual IMSIS conference in Montreal, International Mass Spectrometry Imaging Society (IMSIS) (2023)
- "Metabolic and cell–cell interactions of Helicobacter pylori and stem cells of the gastric glands", Human Frontier in Science Program (HFSP) long-term fellowship (2022)
- Newcomb Cleveland Prize for most outstanding scientific paper of 2022 (coauthor), American Association for the Advancement of Science (2022)
- Best talk during “IT MA(t)TERs Conference”, Max Planck Institutes for Terrestrial and Marine Microbiology (2021)
- Otto Hahn Medal for outstanding scientific achievements during doctorate studies, Max Planck Society (2021)
- Best students’ poster of the International Max Planck Research Schools program Marmic, Max Planck Institute for Marine Microbiology (2019)
- Best students’ talk at the annual ISCE conference in Atlanta, International Society of Chemical Ecology (ISCE) (2019)
- MDPI 2018 travel award, Metabolites (2018)
- MSI Award for “brilliant ideas or works achieved using mass spectrometry imaging techniques”, ImaBiotech (2018)

STANFORD ADVISORS

- Manuel Amieva, Postdoctoral Faculty Sponsor

LINKS

- Twitter: https://twitter.com/benebio3d
- Google Profile: https://g.co/kgs/SQpdsA

Publications

PUBLICATIONS

- **Visualization of metabolites and microbes at high spatial resolution using MALDI mass spectrometry imaging and in situ fluorescence labeling.** *Nature protocols*
  Bourceau, P., Geier, B., Suerdieck, V., Bien, T., Soltwisch, J., Dreisewerd, K., Liebeke, M.
  2023
- **Connecting structure and function from organisms to molecules in small-animal symbioses through chemo-histo-tomography** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Geier, B., Oetjen, J., Ruthensteiner, B., Polikarpov, M., Gruber-Vodicka, H. R., Liebeke, M.
  2021; 118 (27)
- **Hunting the eagle killer: A cyanobacterial neurotoxin causes vacuolar myelinopathy** *SCIENCE*
  Breinlinger, S., Phillips, T. J., Haram, B. N., Mares, J., Yerena, J., Hrouzek, P., Sobotka, R., Henderson, W., Schmieder, P., Williams, S. M., Lauderdale, J. D., Wilde, H., Gerrin, et al
  2021; 371 (6536): 1335-+
- **Spatial metabolomics of in situ host-microbe interactions at the micrometre scale** *NATURE MICROBIOLOGY*
  Geier, B., Sogin, E. M., Michellod, D., Janda, M., Kompauer, M., Spengler, B., Dubilier, N., Liebeke, M.
  2020; 5 (3): 498-+
- **Revision of the genus Robbea (Stilbonematinae: Desmodoridae), worldwide abundant marine nematodes with chromophoric Fe-Br inclusions and the description of a new stilbonematine genus** *ZOOLOGICAL JOURNAL OF THE LINNEAN SOCIETY*
  Scharhauser, F., Saavedra, D. E. M., Proets, P., Ott, J. A., Geier, B., Gruber-Vodicka, H. R., Polikarpov, M., Bourenkov, G., Leisch, N.
  2024
- **Multiplexed neuropeptide mapping in ant brains integrating microtomography and three-dimensional mass spectrometry imaging.** *PNAS nexus*
  Geier, B., Gil-Mansilla, E., Liutkeviciute, Z., Hellinger, R., Vanden Broeck, J., Oetjen, J., Liebeke, M., Gruber, C. W.
  2023; 2 (5): pgad144
- **Coming together-symbiont acquisition and early development in deep-sea bathymodioline mussels** *PROCEEDINGS OF THE ROYAL SOCIETY B-BIOLOGICAL SCIENCES*
  Franke, M., Geier, B., Hammel, J. U., Dubilier, N., Leisch, N.
  2021; 288 (1957): 20211044
- **Determination of Abundant Metabolite Matrix Adducts Illuminates the Dark Metabolome of MALDI-Mass Spectrometry Imaging Datasets** *ANALYTICAL CHEMISTRY*
  Janda, M., Seah, B. K. B., Jakob, D., Beckmann, J., Geier, B., Liebeke, M.
  2021; 93 (24): 8399-8407
- **Armored with skin and bone: A combined histological and mu CT-study of the exceptional integument of the Antsingy leaf chameleon Brookesia perarmata (Angel, 1933)** *JOURNAL OF MORPHOLOGY*
  Schucht, P. J., Ruehr, P. T., Geier, B., Glaw, F., Lambertz, M.
  2020; 281 (7): 754-764
- **Asynchronous division by non-ring FtsZ in the gammaproteobacterial symbiont of Robbea hypermnestra.** *Nature microbiology*
  Leisch, N., Pende, N., Weber, P. M., Gruber-Vodicka, H. R., Verheul, J., Vischer, N. O., Abby, S. S., Geier, B., den Blaauwen, T., Bulgheresi, S.
  2016; 2: 16182

- **A specific and widespread association between deep-sea Bathymodiolus mussels and a novel family of Epsilonproteobacteria** *ENVIRONMENTAL MICROBIOLOGY REPORTS*
  Assie, A., Borowski, C., van der Heijden, K., Raggi, L., Geier, B., Leisch, N., Schimak, M. P., Dubilier, N., Petersen, J. M.
  2016; 8 (5): 805-813