

Biosketch

Univ.-Prof. Dr. rer. nat. Holger Daims

Position in CoE: Key Researcher

Personal Details

Place of birth	Cologne, Germany
Nationality	German
Children	1 (2008)
Affiliation:	University of Vienna
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Profile	ResearcherID: I-8410-2012
List of publications	ORCID: 0000-0002-4195-0913
Academic age	21 years since PhD



Academic Career and Positions Held

I earned my **Master's degree** in Microbiology in 1997 from the **RWTH Aachen University** (Germany) and received my **PhD** from the **Technische Universität (TU) Munich** (Germany) in 2001. From 2001 to 2003, I worked as a **postdoctoral researcher** with Karl-Heinz Schleifer and Michael Wagner at the TU Munich, with a research stay at the University of Queensland, Brisbane (Australia) in 2002. Subsequently, I moved to the **University of Vienna** where I became a **research group leader** ("Universitätsassistent") and founding member of the Division of Microbial Ecology headed by Michael Wagner. In 2010, I entered the newly established tenure track career path at the University of Vienna as **Assistant Professor**, and in 2012 I obtained my habilitation (*venia docendi*) in Microbiology and was promoted to **Associate Professor**. In 2017, I became **Full Professor** in Microbial Ecophysiology at the University of Vienna. Since 2018, I am the **head of the interdisciplinary Comammox Research Platform** of the University of Vienna. I was **Associate Editor** of the journal SGM Microbiology (2006–2012) and **Editorial Board member** of the ISME J. (2007–2018) and Appl. Environ. Microbiol. (2013–2016). I am Editorial Board member of Environ. Microbiol. (since 2017) and Board of Experts member for the Austrian Microbiome Initiative (AMICI, since 2017).

Scientific Achievements and Scientific Contribution to the CoE

Scientific Achievements. Since 1999, I have authored **94 publications** in peer-reviewed journals and **11 book chapters**. My research focuses on **nitrifying microorganisms, wastewater microbiology, and imaging methods** to analyze microbial communities. In 2015, my group discovered together with M. Wagner **complete ammonia oxidizers (comammox organisms)**, a finding that has opened new perspectives on nitrogen cycling in natural ecosystems, water treatment, and agriculture. My research is widely recognized. I have given **62 invited talks**, my **h-index is 53** (Web of Science), and I am listed as **highly cited researcher in 2021** (Clarivate). I received the **ISME-IWA Bio Cluster Award** for research on microbial ecology and water treatment, the **Vienna Future Award** (City of Vienna), the **Focus of Excellence Award** (Faculty of Life Sciences, University of Vienna), and the **Ars Docendi Recognition Award** (govt. of Austria, for excellent teaching).

Scientific Contribution to the CoE. I will mainly contribute to our CoE by leading a WP on microbial interaction networks, and by participating in WPs on microbial responses to pulse perturbations, nitrous oxide emissions from microbial communities, and interdomain molecular signaling. Further, I will support the CoE with expertise in image analysis based on software that I develop and that has already been used in >450 published studies in microbiology.

10 Most Important Publications (*relevant for the CoE)

1. *Kits, K. D.; Jung, M.-Y.; Vierheilig, J.; Pjevac, P.; Sedlacek, C. J.; Liu, S.; Herbold, C.; Stein, L. Y.; Richter, A.; Wissel, H.; Brüggemann, N.; Wagner, M.; **Daims, H.** Low Yield and Abiotic Origin of N₂O Formed by the Complete Nitrifier *Nitrospira Inopinata*. *Nat Commun* **2019**, *10* (1), 1836. <https://doi.org/10.1038/s41467-019-09790-x>.
2. *Riva, A.; Kuzyk, O.; Forsberg, E.; Siuzdak, G.; Pfann, C.; Herbold, C.; **Daims, H.**; Loy, A.; Warth, B.; Berry, D. A Fiber-Deprived Diet Disturbs the Fine-Scale Spatial Architecture of the Murine Colon Microbiome. *Nat Commun* **2019**, *10* (1), 4366. <https://doi.org/10.1038/s41467-019-12413-0>.
3. *Lee, K. S.; Palatinszky, M.; Pereira, F. C.; Nguyen, J.; Fernandez, V. I.; Mueller, A. J.; Menolascina, F.; **Daims, H.**; Berry, D.; Wagner, M.; Stocker, R. An Automated Raman-Based Platform for the Sorting of Live Cells by Functional Properties. *Nat Microbiol* **2019**, *4* (6), 1035–1048. <https://doi.org/10.1038/s41564-019-0394-9>.
4. ***Daims, H.**; Lebedeva, E. V.; Pjevac, P.; Han, P.; Herbold, C.; Albertsen, M.; Jehmlich, N.; Palatinszky, M.; Vierheilig, J.; Bulaev, A.; Kirkegaard, R. H.; von Bergen, M.; Rattei, T.; Bendinger, B.; Nielsen, P. H.; Wagner, M. Complete Nitrification by *Nitrospira* Bacteria. *Nature* **2015**, *528* (7583), 504–509. <https://doi.org/10.1038/nature16461>.
5. *Koch, H.; Lückner, S.; Albertsen, M.; Kitzinger, K.; Herbold, C.; Spieck, E.; Nielsen, P. H.; Wagner, M.; **Daims, H.** Expanded Metabolic Versatility of Ubiquitous Nitrite-Oxidizing Bacteria from the Genus *Nitrospira*. *Proc. Natl. Acad. Sci. U.S.A.* **2015**, *112* (36), 11371–11376. <https://doi.org/10.1073/pnas.1506533112>.
6. *Palatinszky, M.; Herbold, C.; Jehmlich, N.; Pogoda, M.; Han, P.; von Bergen, M.; Lagkouvardos, I.; Karst, S. M.; Galushko, A.; Koch, H.; Berry, D.; **Daims, H.**; Wagner, M. Cyanate as an Energy Source for Nitrifiers. *Nature* **2015**, *524* (7563), 105–108. <https://doi.org/10.1038/nature14856>.
7. *Koch, H.; Galushko, A.; Albertsen, M.; Schintlmeister, A.; Gruber-Dorninger, C.; Lückner, S.; Pelletier, E.; Le Paslier, D.; Spieck, E.; Richter, A.; Nielsen, P. H.; Wagner, M.; **Daims, H.** Growth of Nitrite-Oxidizing Bacteria by Aerobic Hydrogen Oxidation. *Science* **2014**, *345* (6200), 1052–1054. <https://doi.org/10.1126/science.1256985>.
8. *Lückner, S.; Wagner, M.; Maixner, F.; Pelletier, E.; Koch, H.; Vacherie, B.; Rattei, T.; Damsté, J. S. S.; Spieck, E.; Le Paslier, D.; **Daims, H.** A *Nitrospira* Metagenome Illuminates the Physiology and Evolution of Globally Important Nitrite-Oxidizing Bacteria. *Proc. Natl. Acad. Sci. U.S.A.* **2010**, *107* (30), 13479–13484. <https://doi.org/10.1073/pnas.1003860107>.
9. *Schulz, F.; Yutin, N.; Ivanova, N. N.; Ortega, D. R.; Lee, T. K.; Vierheilig, J.; **Daims, H.**; Horn, M.; Wagner, M.; Jensen, G. J.; Kyrpides, N. C.; Koonin, E. V.; Woyke, T. Giant Viruses with an Expanded Complement of Translation System Components. *Science* **2017**, *356* (6333), 82–85. <https://doi.org/10.1126/science.aal4657>.
10. *Kits, K. D.; Sedlacek, C. J.; Lebedeva, E. V.; Han, P.; Bulaev, A.; Pjevac, P.; Daebeler, A.; Romano, S.; Albertsen, M.; Stein, L. Y.; **Daims, H.**; Wagner, M. Kinetic Analysis of a Complete Nitrifier Reveals an Oligotrophic Lifestyle. *Nature* **2017**, *549* (7671), 269–272. <https://doi.org/10.1038/nature23679>.