Biosketch

Univ.-Prof. Dr. Wolfgang Wanek

Position in CoE: Key Researcher

Personal Details

Place of birth	Vienna, Austria
Nationality	Austrian
Children	1 (2008)
Affiliation:	University of Vienna
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Profile	ReseacherID: E-7001-2012
List of publications	ORCID: 0000-0003-2178-8258
Academic age	26 years since PhD

Academic Career and Positions Held

I finished my **MSc degree** in Plant Physiology/Botany in **1993** (Diploma grade) at the **University of Vienna**, Austria and my **PhD** in Plant Sciences at the same institution in **1996**. From **1997 to 2001** I worked as a postdoctoral researcher and as a **Research Assistant** (Universitätsassistent) at the Institute of Plant Physiology, University of Vienna, to become an **Assistant Professor** in **2001** at the Institute of Ecology and Conservation Biology, **University of Vienna**. Since 2001, I am manager/head of the SILVER Stable Isotope Facility at the University of Vienna. In **2006**, I obtained my **Habilitation** (*venia docendi*) in **Physiological Ecology and Ecosystem Research** and became an **Associate Professor** at the Department of Chemical Ecology and Ecosystem Research, and later at the Department of Microbiology and Ecosystem Science, University of Vienna. Since 2019 I hold a **full professorship** (Univ.-Prof.) at the **Centre of Microbiology and Environmental Systems Science**, University of Vienna. I am also member of the Editorial Boards of Soil Biology & Biochemistry and of Soil Systems.

Scientific Achievements and Scientific Contribution to the CoE

Scientific Achievements. I have authored **187 publications** in peer-reviewed journals (almost all Q1 journals, 9,040 citations in ISI-Clarivate, h-index 53) and 6 book chapters. In 2020 and 2022, I was awarded as a highly cited researcher in ISI-Clarivate. I held **36 invited talks** at conferences and renowned institutions, and obtained **12 research grants** as PI or Co-PI, with a total budget of **~4.8 million €**. My expertise lies in the application of stable isotopes (^{13}C, ^{15}N, ^{18}O, ^{34}S) and radioisotopes (^{33}P) to investigate **controls of metabolic and biogeochemical processes**, which are involved in the major biogeochemical **cycles of C, N, P and S**. I apply novel stable isotope experiments combined with **metabolomics (fluxomics), lipidomics and peptidomics approaches** using UPLC-Orbitrap mass spectrometry to understand microbial and plant metabolism and to decipher the complex network of primary/secondary metabolic processes.

Scientific Contribution to the CoE. To this CoE I will contribute my expertise in **isotope tracing** to understand fluxes, and to decipher **sink and source processes** and the **metabolic networks involved in biological/ biogeochemical processes**. These novel approaches will help to better understand the environmental controls and the complex community responses to global change and microbiome editing in different "green" and "red" systems, leading to further important insights into the functioning of complex systems.

10 Most Important Publications (*relevant for the CoE)

1. *Liu, S.; Jung, M.-Y.; Zhang, S.; Wagner, M.; Daims, H.; **Wanek, W.** Nitrogen Kinetic Isotope Effects of Nitrification by the Complete Ammonia Oxidizer Nitrospira Inopinata. *mSphere* **2021**, *6* (6), e00634-21. *https://doi.org/10.1128/mSphere.00634-21*.
2. *Xu, S.; Liu, X.; Sun, Z.; Hu, C.; **Wanek, W.**; Koba, K. Isotopic Elucidation of Microbial Nitrogen Transformations in Forest Soils. *Global Biogeochemical Cycles* **2021**, *35* (12). *https://doi.org/10.1029/2021GB007070*.
3. *Bhattarai, H. R.; **Wanek, W.**; Siljanen, H. M. P.; Ronkainen, J. G.; Liimatainen, M.; Hu, Y.; Nykänen, H.; Biasi, C.; Maljanen, M. Denitrification Is the Major Nitrous Acid Production Pathway in Boreal Agricultural Soils. *Commun Earth Environ* **2021**, *2* (1), 54. *https://doi.org/10.1038/s43247-021-00125-7*.
4. *Ibraim, E.; R.A., T.; Wolf, B.; Barthel, M.; Gasche, R.; **Wanek, W.**; Zhang, S.; Kiese, R.; Butterbach-Bahl, K.; Eggleston, S.; Emmenegger, L.; Six, J.; Mohn, J. Denitrification Is the Main Nitrous Oxide Source-Process in Grassland Soils According to Quasi-Continuous Isotopocule Analysis and Biogeochemical Modelling. **2022**. *https://doi.org/10.17605/OSF.IO/KUN23*.
5. *Hu, Y.; Zheng, Q.; Noll, L.; Zhang, S.; **Wanek, W.** Direct Measurement of the in Situ Decomposition of Microbial-Derived Soil Organic Matter. *Soil Biology and Biochemistry* **2020**, *141*, 107660. *https://doi.org/10.1016/j.soilbio.2019.107660*.
6. *Prommer, J.; Walker, T. W. N.; **Wanek, W.**; Braun, J.; Zezula, D.; Hu, Y.; Hofhansl, F.; Richter, A. Increased Microbial Growth, Biomass, and Turnover Drive Soil Organic Carbon Accumulation at Higher Plant Diversity. *Global Change Biology* **2020**, *26* (2), 669–681. *https://doi.org/10.1111/gcb.14777*.
7. ***Wanek, W.**; Zezula, D.; Wasner, D.; Mooshammer, M.; Prommer, J. A Novel Isotope Pool Dilution Approach to Quantify Gross Rates of Key Abiotic and Biological Processes in the Soil Phosphorus Cycle. *Biogeosciences* **2019**, *16* (15), 3047–3068. *https://doi.org/10.5194/bg-16-3047-2019*.
8. *Zheng, Q.; Hu, Y.; Zhang, S.; Noll, L.; Böckle, T.; Dietrich, M.; Herbold, C. W.; Eichorst, S. A.; Woebken, D.; Richter, A.; **Wanek, W.** Soil Multifunctionality Is Affected by the Soil Environment and by Microbial Community Composition and Diversity. *Soil Biology and Biochemistry* **2019**, *136*, 107521. *https://doi.org/10.1016/j.soilbio.2019.107521*.
9. *Noll, L.; Zhang, S.; Zheng, Q.; Hu, Y.; **Wanek, W.** Wide-Spread Limitation of Soil Organic Nitrogen Transformations by Substrate Availability and Not by Extracellular Enzyme Content. *Soil Biology and Biochemistry* **2019**, *133*, 37–49. *https://doi.org/10.1016/j.soilbio.2019.02.016*.
10. Hietz, P.; Turner, B. L.; **Wanek, W.**; Richter, A.; Nock, C. A.; Wright, S. J. Long-Term Change in the Nitrogen Cycle of Tropical Forests. *Science* **2011**, *334* (6056), 664–666. *https://doi.org/10.1126/science.1211979*.