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Andrew Giguere

Centre for Microbiology and Environmental Systems Science

Division of Microbial Ecology

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andrew.giguere@univie.ac.at**Education**

Ph.D. Soil Science, Oregon State University 2017

B.S. Environmental Science and Management, University of Rhode Island 2011
Minor: Geographical Information Systems and Remote Sensing**Research and Employment Experience**

Principal Investigator/Postdoctoral Researcher, Centre for Microbiology and Environmental Systems Science, Division of Microbial Ecology, University of Vienna, Vienna, Austria. 2020-presentPostdoctoral Researcher, Faculty of Engineering and Science, Aalborg University Aalborg, Denmark. PIs: Per Halkjær Nielsen, Michael Wagner 2019-2020Postdoctoral Researcher, Division of Microbial Ecology, University of Vienna, Vienna, Austria. PI: Dagmar Woebken. 2017-2019Graduate Research Assistant/ Provost Graduate Fellow, Laboratory of Environmental Microbiology, Oregon State University, Corvallis, OR PIs: Peter Bottomley, David Myrold. 2012- 2017National Science Foundation/Japan Society for the Promotion of Science Fellow Chuo University, Tokyo, Japan. PI: Yuichi Suwa. 2014Undergraduate Research Assistant, Laboratory of Soil Ecology and Microbiology, University of Rhode Island, Kingston, RI. PI: Jose Amador. 2010 - 2012Environmental Assistant, Rhode Island Department of Transportation, Providence, RI 2011**Refereed Journal Publications**

Merl T., Sedlacek C. J., Pjevac P. Fuchslueger L., Koren K^s, **Giguere A. T^s**, 2023 Visualizing small-scale subsurface NH₃ and pH dynamics surrounding nitrogen fertilizer granules and impacts on nitrification activity. Soil Biology and Biochemistry 189 109273.

- Giguere A.T***, Eichorst S.E*, Meier D., Herbold C., Richter A., Greening C., Woebken D. 2021
Acidobacteria are active and abundant members of diverse atmospheric H₂-oxidizing communities detected in temperate soils. *ISME J* 15, 363-376.
- Sedlacek C.J*, **Giguere A.T***, Dobie M.D., Mellbye M.L., Sayavedra-Soto L.A., Bottomley P.J., Wagner, M., Daims H., Pjevac P. 2020. Transcriptomic response of *Nitrosomonas europaea* transitioned from ammonia- to oxygen-limited steady-state growth. *mSystems* 5, e00562-19.
- Mellbye B.L., **Giguere A.T.**, Chaplen F., Bottomley P.J., Sayavedra-Soto L.A. 2018. Modeling biotic and abiotic nitric oxide(s) and nitrous oxide production from single and co-cultures of *N. europaea* and *N. winogradskyi*. *mSystems* 3: e0070-17
- Giguere A.T§**, Taylor A.E., Myrold D.D., Bottomley P.J., 2018. Nitrite-oxidizing activity responds to nitrite accumulation in soil. *FEMS Microbial Ecology* 94, 1-9.
- DeCrappeo N. D., DeLorenze E. J. D., **Giguere A.T.**, Pyke D.A., Bottomley P. J. 2017. Fungal and bacterial contributions to nitrogen cycling in cheatgrass-invaded and uninvaded native sagebrush soils of the western USA. *Plant and Soil* 416, 271-281.
- Giguere A.T§**, Taylor A.E., Myrold D.D., Bottomley P.J., 2017. Uncoupling of ammonia oxidation from nitrite oxidation: impacts upon nitrous oxide production in non-cropped Oregon soils. *Soil Biology and Biochemistry* 104, 30-38.
- Taylor A.E., **Giguere A.T.**, Zobebelein C. Myrold D.D., Bottomley P.J., 2016. Modeling of soil nitrification responses to temperature reveals thermodynamic differences between ammonia-oxidizing activity of archaea and bacteria. *ISME J.*, 11, 896-908.
- Mellbye B.L., **Giguere A.T.**, Bottomley P.J., Sayavedra-Soto L.A. 2016. Quorum quenching of *Nitrobacter winogradskyi* suggests quorum sensing regulates fluxes of nitrogen oxide(s) during nitrification. *mBIO* 7, 1-9.
- Mellbye B.L., **Giguere A.T.**, Chaplen F., Bottomley P.J., Sayavedra-Soto L.A. 2016. Steady state growth under inorganic carbon limitation increases energy consumption for maintenance and enhances nitrous oxide production in *Nitrosomonas europaea*. *Applied and Environmental Microbiology* 81, 5917-5926.
- Giguere A.T.**, Taylor A.E., Myrold, D.D., Bottomley P.J., 2015. Nitrification responses of soil ammonia-oxidizing archaea and bacteria to ammonium concentrations. *Soil Science Society of America Journal* 79, 1366-1374. (Featured Article in CSA News).
- Taylor A.E., Vajrала N., **Giguere A.T.**, Gitelman A.I., Arp, D.J., Myrold D.D., Sayavedra-Soto L., Bottomley, P.J., 2013. Use of aliphatic n-alkynes to discriminate soil nitrification activities of ammonia-oxidizing thaumarchaea and bacteria. *Applied and Environmental Microbiology* 79, 6544-6551 (AEM Spotlight, Nov 2013 issue).

* indicates equal contribution

§ indicates corresponding author

Manuscripts in Preparation

- Giguere A. T§**, Pjevac P., Jørgensen V. J., Nielsen P.H., Wagner M. Activity and community composition of ammonia oxidizers in a long-term agricultural fertilization experiment (202X)
- Rojas P. A., Fuchslueger L., Pjevac P., Prommer J., Sedlacek C. J., **Giguere A. T§**, Uncovering biological nitrification inhibitors and their efficacy in different soil types. (In review).

- Dietrich D., Panhölzl C., Angel A., **Giguere A.T.**, Randi D., Hausmann B., Herbold C. W., Pötsch E., Schaumberger A., Eichorst S. E., Woebken D. Plant roots affect free-living diazotroph communities in temperate grasslands despite decades of fertilization. In revision for Communications Biology (In revision)
- Klawatsch K., Urbing E., **Giguere A.T.**, Daims H., Wagner M., Pjevac P., Sedlacek C.J. A microrespirometry based approach for determining the efficacy and specificity of nitrification inhibitors (202X)
- Green H., Yanai R., **Giguere A. T.**, Fisk M., : Response of ammonia-oxidizers to nitrogen and phosphorus addition to northeastern US forest soils (202X)

Other Publications

- Sedlacek C. J., **Giguere A.T.**, Pjevac P. 2019. Is Too Much Fertilizer a Problem? Frontiers for Young Minds.

Projects Funded

- Young Independent Research Group (Zukunftskollegs).** Interplay between Biological Nitrification Inhibitors, Nitrogen Cycling and Agronomic Nitrogen Use Efficiency (playNICE). Fonds zur Förderung der wissenschaftlichen Forschung (Austrian Science Fund, FWF) € 499,215.14 (Total: €2,555,460). 2020-2025. PIs: A.T Giguere, P. Pjevac, C. J. Sedlacek, L. Fuchslueger, C. Bueschl.
- Hochschuljubiläumsstiftung/ City of Vienna Grant:** Can soil help the city breathe? The potential of urban green areas to serve as an atmospheric trace gas sink. 2018. PIs: A.T. Giguere and P. Pjevac. €12,000
- National Science Foundation/ Japan Society for the Promotion of Science:** Contributions of microorganisms to greenhouse gas emissions from volcanic soils prevalent in the Pacific Rim region. Award Abstract #1414921, 2014. PI: A.T. Giguere. (\$5,000 + ¥500,000)

Invited Conference Presentations

- Uncoupling of ammonia oxidation from nitrite oxidation, and its impact upon nitrous oxide production in a grassland soil. 2015. Soil Science Society of America meeting, Minneapolis, MN.
- How meaningful are taxonomic subdivisions of Andisols for soil biology? 2014. Oregon Society of Soil Scientists Winter Meeting, Astoria, OR.

Conference Presentations

- Application of NH₃ and pH optodes to quantify NH₃ production and diffusion from fertilizer. 2023. International Conference on Nitrification, Princeton, USA.
- Activity and community composition of ammonia oxidizers in a long-term agricultural fertilization experiment. 2022. Ecology of Soil Microorganisms, Prague, Czechia.

Activity and community composition of ammonia oxidizers in a long-term agricultural fertilization experiment. 2021. International Conference on Nitrification, Online meeting.

Transcriptomic response of *Nitrosomonas europaea* transitioned from ammonia- to oxygen-limited steady-state growth. 2019. Innovative Techniques in Microbial Ecology meeting, Aarhus, Denmark.

Uncoupling of ammonia oxidation from nitrite oxidation: Impact upon nitrous oxide production in non-cropped Oregon soils, 2016. Soil Science Society of America Meeting, Phoenix, AZ.

Uncoupling of ammonia oxidation from nitrite oxidation, and its impact upon nitrous oxide production in a grassland soil, 2015. International Conference on Nitrification, Edmonton, Canada.

Nitrification responses of ammonia-oxidizing bacteria and archaea to ammonia additions in cropped and non-cropped soils. 2013. International Conference on Nitrification, Chuo University, Tokyo, Japan.

Ad-hoc Reviewer Duties

Peer Reviewed Journals

ISME Journal, Soil Biology and Biochemistry, European Journal of Soil Science, FEMS Microbial Ecology, FEMS Microbiology Letters, Frontiers in Environmental Science, Environmental Science and Technology, Geoderma, Scientific Reports, Applied Soil Ecology

Funding Agencies

The Czech Science Foundation (GACR)

Teaching Experience

Lecturer (Upper level undergrad/graduate soil biology)	2016
Graduate teaching assistant (Introduction to soils)	2013
In addition to lectures I have supervised student research at the Bachelors, Masters and PhD student levels	

Awards

Austrian Research Promotion Agency (FFG) Career Relocation Grant (2017): €2,000

Oregon State University, Department of Crop and Soil Science Travel Award (2015): \$250

Oregon Lottery Scholarship (2014): \$2550

Provosts' Distinguished Doctoral Fellowship (2012): \$56,000

Oregon State University Graduate Student Travel Award for International Conference on Nitrification, Tokyo, Japan (2013): \$1000

Writers Fund Travel Award for International Conference on Nitrification, Tokyo, Japan (2013): \$250

Undergraduate Research Initiative: Award for Scholarly Projects Grant (2011): \$953

Memberships and Other Activities

Soil Science Society of America

Nitrification Network

Session Chair: Cultivation in the age of culture independent studies. The 11th Innovative Techniques in Microbial Ecology Meeting, Aalborg, Denmark 2017

Leadership Experience

Faculty Liaison: Association of Soil Science Graduate Students

2014-2015

Treasurer: Association of Soil Science Graduate Students

2013-2014

Extension and Outreach

KinderUni 2018: Conducting laboratory demonstrations with children (7-9 yrs)

KinderUni 2017: Conducting laboratory demonstrations with children (7-9 yrs)

University Service

Member, Search Committee, Pedologist/Soil Taxonomist, Oregon State University, Dept. of Crop Soil Science

Winter/Spring 2015

Student Member, Promotion and Tenure Committee, Oregon State University, Dept. of Crop and Soil Science

Fall 2014