KARL J. ROMANOWICZ

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EDUCATION

Current	PhD Candidate, Ecology and Evolutionary Biology, University of Michigan Advisor: George W. Kling, PhD
2019	MS, Ecology and Evolutionary Biology, University of Michigan Curriculum Degree
2013	MS, Applied Ecology, Michigan Technological University Thesis: *Plant-Mediated Effects on Microbial Diversity in Mesocosms of an Oligotrophic Bog* Advisor: Erik A. Lilleskov, PhD
2010	BS, Applied Ecology and Environmental Science, Michigan Technological University Additional Major in Forestry; *Xi Sigma Pi* Honorary Forestry Society

APPOINTMENTS

2017-	Graduate Research, Department of Ecology & Evolutionary Biology, University of Michigan Dr. George W. Kling Laboratory
2013-17	Research Associate, School of Natural Resources & Environment, University of Michigan Dr. Donald R. Zak Laboratory
2011-13	Graduate Research, School of Forest Resources & Environmental Science, Michigan Technological University, *with* Northern Research Station, USDA Forest Service Dr. Erik A. Lilleskov Laboratory
2008-10	Undergraduate Research, School of Forest Resources & Environmental Science, Michigan Technological University, *with* Northern Research Station, USDA Forest Service Dr. Erik A. Lilleskov Laboratory

TEACHING

Graduate Student Mentor

2020-21 BIO171 Introductory Biology: Ecology and Evolution – University of Michigan

Graduate Student Instructor

2018-21 BIO171 Introductory Biology: Ecology and Evolution – University of Michigan
2017-19 BIO110 Global Change: The Science of Sustainability – University of Michigan

Undergraduate Student Instructor

2010 FW3200 Biometrics and Data Analysis – Michigan Technological University
2010 FW4140 Vegetation Modeling – Michigan Technological University

AWARDS

2019 Teaching Excellence Award for Program in Biology (BIO171) – University of Michigan
2016 Editor's Choice Publication – FEMS Microbiology Ecology
2012 Presentation Merit Award – Michigan Technological University
2010 Most Outstanding Undergraduate in Ecology – Michigan Technological University

PUBLICATIONS

Peer-Reviewed (*Citations:* 241; *h-index:* 6; *i10-index:* 6)

1. Lamit LJ, **Romanowicz KJ**, Potvin LR, Lennon JT, Tringe SG, Chimner RA, Kolka RK, Kane ES, Lilliskov EA. Peatland microbial community responses to plant functional group and drought are depth-dependent. *Molecular Ecology* **2021**, *30(20)*: 5119-5136. https://doi.org/10.1111/mec.16125
2. **Romanowicz KJ**, Crump BC, Kling GW. Rainfall alters permafrost soil redox conditions, but meta-omics show divergent microbial community responses by tundra type in the Arctic. *Soil Systems* **2021**, *5(17)*: 1-30. https://doi.org/10.3390/soilsystems5010017
3. Zak DR, Argiroff WA, Freedman ZB, Upchurch RA, Entwistle EM, **Romanowicz KJ**. Anthropogenic N deposition, fungal gene expression and an increasing soil carbon sink in the Northern Hemisphere. *Ecology* **2019**, *100(10)* e02804. https://doi.org/10.1002/ecy.2804
4. Entwistle EM, **Romanowicz KJ**, Argiroff WA, Freedman ZB, Morris JJ, Zak DR. Anthropogenic N deposition alters the composition of expressed class II fungal peroxidases. *Applied & Environmental Microbiology* **2018**, *84(9)*: e02816-17. https://doi.org/10.1128/AEM.02816-17
5. **Romanowicz KJ**, Zak DR. Activity of an introduced earthworm (*Lumbricus terrestris*) increases under future rates of atmospheric nitrogen deposition in northern temperate forests. *Applied Soil Ecology* **2017**, *120C*: 206-210. https://doi.org/10.1016/j.apsoil.2017.08.007
6. Lamit LJ, **Romanowicz KJ**, Potvin LR, Rivers A, Singh K, Lennon JT, Tringe SG, Kane ES, Lilleskov EA. Patterns and drivers of fungal community depth stratification in *Sphagnum* peat. *FEMS Microbiology Ecology* **2017**, *93(7)*: fix082. https://doi.org/10.1093/femsec/fix082
7. **Romanowicz KJ**, Freedman ZB, Upchurch RA, Argiroff WA, Zak DR. Active microorganisms in forest soils differ from the total community yet are shaped by the same environmental factors: the influence of pH and soil moisture. *FEMS Microbiology Ecology* **2016**, *92(10)*: fiw149. https://doi.org/10.1093/femsec/fiw149 ***Editor's Choice***
8. Freedman ZB, **Romanowicz KJ**, Upchurch RA, Zak DR. Differential responses of total and active soil microbial communities to long-term experimental N deposition. *Soil Biology & Biochemistry* **2015**, *90*: 275-282. https://doi.org/10.1016/j.soilbio.2015.08.014
9. **Romanowicz KJ**, Kane ES, Potvin LR, Kolka RK, Lilleskov EA. Understanding drivers of peatland extracellular enzyme activity in the PEATcosm experiment: mixed evidence for enzymic latch hypothesis. *Plant and Soil* **2015**, *397*: 371-386. https://doi.org/10.1007/s11104-015-2746-4

PRESENTATIONS

Departmental Presentations

1. **Romanowicz KJ**. Microbial controls on the degradation of permafrost soil carbon following thaw. Department of Ecology & Evolutionary Biology, University of Michigan. December 11, 2018.
2. **Romanowicz KJ**. Plant mediated constraints on microbial diversity in peatland mesocosms. School of Natural Resources and Environment, University of Michigan. March 25, 2013.

Conference Presentations

1. **Romanowicz KJ**, Crump BC, Kling GW. Microbial response to rainfall-altered redox conditions in permafrost soils differs by tundra type. Ecological Society of America 106th Annual Meeting. 2021.
2. **Romanowicz KJ**, Crump BC, Kling GW. The microbial response to rainfall in arctic tundra soils. Arctic Long Term Ecological Research (ARC-LTER) 34th Annual Meeting, Woods Hole, MA. 2021.
3. **Romanowicz KJ**, Freedman ZB, Upchurch RA, Zak DR. Soil moisture constraints differentiate metabolically active microorganisms from the total community in forest soils. Ecological Society of America 101st Annual Meeting, Fort Lauderdale, FL. 2016.

4. **Romanowicz KJ**, Freedman ZB, Zak DR. Chronic nitrogen deposition affects the active bacteria in a northern hardwood forest. Argonne National Laboratory Meeting, St. Charles, IL. 2014.
5. **Romanowicz KJ**, Potvin LR, Kane ES, Kolka RK, Chimner RA, Lilleskov EA. Incorporating peatland plant communities into the Enzymic 'Latch' hypothesis: can vegetation influence carbon storage mechanisms? American Geophysical Union Fall Meeting, San Francisco, CA. 2012.
6. **Romanowicz KJ**, Tringe SG, Lennon JT, Lilleskov EA. Discerning shifts in peatland microbial communities following plant functional group manipulations to better understand their role in soil carbon cycling. Argonne National Laboratory Meeting, Bloomingdale, IL. 2012.
7. **Romanowicz KJ** and Lilleskov EA. Can peatland plant communities influence carbon storage mechanisms? Ecosystem Science Center 8th Annual Graduate Research Forum, Michigan Technological University. 2012. ***Merit Award***
8. **Romanowicz KJ**, Chimner RA, Lilleskov EA. Plant species composition in northern peatland ecosystems may have significant effects on C cycling. Ecosystem Science Center 7th Annual Graduate Research Forum, Michigan Technological University. 2011. ***Honorable Mention***
9. **Romanowicz KJ**, Kratz CJ, Kane ES, Chimner RA, Lilleskov EA. Plant species composition in northern peatland ecosystems may have significant effects on future biogeochemical cycling. Wisconsin Wetlands Association 16th Annual Conference, Baraboo, WI. 2011.

Conference Collaborations

1. Freedman ZB, **Romanowicz KJ**, Upchurch RA, Cline LC, Zak DZ. Don't miss the microbes for the trees: Anthropogenic N deposition suppresses saprotrophic fungal activity across northern hardwood forest ecosystem. Ecological Society of America 102nd Annual Meeting, Portland, OR. 2017.
2. Lilleskov EA, Kane ES, Chimner R, Kolka R, Lennon JT, Lamit LJ, Ontl T, **Romanowicz KJ**, Wiedermann L, Veverica T. Hydrology and plant functional groups alter carbon cycling in *Sphagnum* peatlands: the PEATcosm experiment. Society of Wetland Scientists Annual Meeting, San Juan, Puerto Rico. 2017.
3. Lilleskov EA, Lamit LJ, Lennon JT, **Romanowicz KJ**, Tringe SG, Kane ES, Potvin LR, Weidermann MM, Chimner RA, Kolka RK. Fungal community response to water table and plant functional group manipulations in the PEATcosm experiment: evidence for the Gadgil Effect? Mycological Society of America Annual Meeting, University of California Berkeley. 2016.
4. Lilleskov EA, Kane ES, Chimner RA, Kolka RK, Lennon JT, Potvin LR, Ontl TA, **Romanowicz KJ**, Lamit LJ. PEATcosm: experimental insights into climate change effects on peatland carbon cycling and trace gas flux. ASA, CSSA, & SSSA Annual Meeting, Minneapolis, MN. 2015.
5. Kane ES, Lilleskov EA, Potvin LR, Kolka RK, Veverica T, **Romanowicz KJ**, Ontl TA, Lamit LJ, Chimner RA. Understanding peat redox and decomposition environment with different plant functional types and a drier climate: considering more than just water table position. ASA, CSSA, & SSSA International Annual Meeting, Long Beach, CA. 2014.
6. Upchurch RA, Freedman ZB, **Romanowicz KJ,** Zak DR. Chronic nitrogen deposition alters the functional potential of soil microbial communities in northern hardwood forests. Ecological Society of America 99th Annual Meeting, Sacramento, CA. 2014.
7. Warner AJ, Entwhistle EM, Zak DR, **Romanowicz KJ**, Freedman ZB. Global change and microbial communities in Michigan's forests. Undergraduate Research Opportunity Program Spring Research Symposium, University of Michigan. 2014.
8. Lilleskov EA, **Romanowicz KJ**, Chimner RA, Kane ES, Pypker TG, Kolka RK, Potvin LR. Role of ericoid mycorrhizal fungi in peatland carbon cycling. Mycological Society of America 79th Annual Meeting, University of Alaska Fairbanks. Symposium 5: 145. 2011.

RESEARCH SUPPORT

Research Grants *($11,935 total)*

1. Rackham Candidate Research. 2021. Rackham Graduate School, University of Michigan. $3,000
2. Block Grant Research. 2021. Ecology & Evolutionary Biology, University of Michigan. $1,385
3. Block Grant Research. 2020. Ecology & Evolutionary Biology, University of Michigan. $2,300
4. Block Grant Research. 2019. Ecology & Evolutionary Biology, University of Michigan. $2,500
5. Rackham Pre-Candidate Research. 2019. Rackham Graduate School, University of Michigan. $1,500
6. Graduate Research Supplies. 2019. Ecology & Evolutionary Biology, University of Michigan. $250
7. Graduate Research Supplies. 2018. Ecology & Evolutionary Biology, University of Michigan. $250
8. Undergraduate Research Support. 2010. Ecosystem Science Center, Michigan Tech University. $750

Fellowships *($3,500 total)*

1. Undergraduate Research Fellowship. 2010. Influences of environmental variables on biogeochemical processes of northern peatland ecosystems. Michigan Technological University. $3,500

Training Grants *($2,185 total)*

1. Microbial Metagenomics Tuition. 2011. Michigan State University. $500
2. Graduate Training in Microbial Metagenomics at Michigan State University. 2011. Ecosystem Science Center, Michigan Technological University. $1,685

Travel Grants *($1,600 total)*

1. AGU Fall Meeting. 2012. American Geophysical Union. $850
2. AGU Fall Meeting. 2012. Graduate Student Government, Michigan Tech University. $250
3. AGU Fall Meeting. 2012. Ecosystem Science Center, Michigan Technological University. $500

PROFESSIONAL DEVELOPMENT

Professional Societies

1. American Geophysical Union (*since 2012*)
2. Ecological Society of America (*since 2010*)

Journal Reviewer

(1) Biogeosciences, (2) Ecological Processes, (3) Soil Biology & Biochemistry, (4) FEMS Microbiology Ecology, (5) Environmental Science and Pollution Research

RESEARCH PROFICIENCY

Bioinformatics and Statistical Software

1. R: Software environment for statistical computing and graphics
2. QIIME: Microbiome analysis from raw DNA sequencing data
3. MOTHUR: Bioinformatics tool for analyzing 16S rRNA gene sequences
4. ANVI'O: Analysis and visualization platform for microbial 'omics

Molecular Biology

1. Microbial genomic DNA extraction
2. Microbial total RNA extraction
3. PCR/RT-PCR amplification
4. Amplicon primer design
5. Molecular cloning
6. Enzyme assays
7. Cell culturing

Metagenomics & Metatranscriptomics

1. DNA amplicon library generation (16S PCR)
2. Genomic DNA library generation (Nextera XT)
3. Total RNA library generation (Truseq LT)
4. DNA/RNA library QA/QC (Qubit, Bioanalyzer)
5. DNA amplicon sequencing (Illumina, PacBio)
6. Metagenomics sequencing (Illumina)
7. Metatranscriptomics sequencing (Illumina)