

Curriculum Vitae
Mengting Maggie Yuan, Ph.D.

Education

2011-2017 Ph.D., Microbiology, University of Oklahoma
 2007-2011 B.Eng., Environmental Engineering, Tsinghua University, Beijing, China

Professional Experience

2022-present Assistant Project Scientist
 Dept. of Environmental Science, Policy, and Management, UC Berkeley
 2017-2022 Postdoctoral Researcher, Soil microbial ecology,
 Dept. of Environmental Science, Policy, and Management, UC Berkeley
 2011-2017 Graduate Research Assistant, Climate change microbial ecology
 Dept. of Microbiology and Plant Biology, University of Oklahoma
 2009-2011 Undergraduate Research, Fresh water ecology
 School of Environment, Tsinghua University

Funding

9/2022-8/2025 Fungal-Bacterial Interactions: Bridging Soil Niches in Regulating Carbon and Nitrogen Processes. Awarded by US Department of Energy. Co-I
 FY 2022/2023 UC ANR Research & Extension Center System New Academic Booster Grant

Publications

* Indicates first or equal contribution author

1. **Yuan M***, Guo X, Wu L, Zhang Y, Xiao N, Ning D, Shi Z, Zhou X, Wu L, Yang Y, Tiedje J and Zhou J. (2021) Climate warming enhances microbial network complexity and stability. *Nature Climate Change*, 11, 343–348. *ESI Top 1% highly cited*
2. Guo X, Gao Q, **Yuan M***, Wang G, Zhou X, Feng J, Shi J, Hale L, Wu L, Zhou A, Tian R, Liu F, Wu B, Chen L, Jung C, Niu S, Li D, Xu X, Jiang L, Escalas A, Wu L, He Z, Van Nostrand J, Ning D, Liu X, Yang Y, Schuur E, Konstantinidis K, Cole J, Penton C, Luo Y, Tiedje J and Zhou J. (2020). Gene-informed decomposition model predicts lower soil carbon loss due to persistent microbial adaptation to warming. *Nature Communications*, 11, 4897.
3. Xue K, **Yuan M***, Shi Z, Qin Y, Deng Y, Cheng L, Wu L, He Z, Van Nostrand J, Bracho R, Natali S, Schuur E, Luo C, Konstantinidis K, Wang Q, Cole J, Tiedje J, Luo Y and Zhou J. (2016) Tundra soil carbon is vulnerable to rapid microbial decomposition under climate warming. *Nature Climate Change*, 6, 595. *Highlighted by the Washington Post*
4. **Yuan M***, Kakouridis A, Starr E, Nguyen N, Shi S, Pett-Ridge J, Nuccio E, Zhou J and Firestone M. (2021) Fungal-bacterial co-occurrence patterns differ between AMF and non-mycorrhizal fungi across soil niches (2021) *mBio*, 12:e03509-20.
5. Guo X, **Yuan M***, Lei J, Shi Z, Zhou X, Li J, Deng Y, Yang Y, Wu L, Luo Y, Tiedje J and Zhou J. (2022) Climate warming restructures seasonal dynamics of grassland soil microbial communities. *mLife*, <https://doi.org/10.1002/mlf2.12035>.

6. **Yuan M***, Zhang J, Xue K, Wu L, Deng Y, Deng, J, Hale L, Zhou X, He Z, Yang Y, Van Nostrand J, Schuur E, Konstantinidis K, Penton C, Cole J, Tiedje J, Luo Y and Zhou J. (2018). Microbial functional diversity covaries with permafrost thaw-induced environmental heterogeneity in tundra soil. *Global Change Biology*, 24(1), 297-307.
7. Ji M, Fan X, Cornell CR, Zhang Y, Yuan M, Tian Z, Sun K, Gao R, Liu Y and Zhou J. (2023) Tundra soil viruses mediate responses of microbial communities to climate warming. *mbio*, e03009-22
8. Santos-Medellín C, Estera-Molina K, **Yuan M**, Pett-Ridge J, Firestone M and Emerson J. (2022) Spatial turnover of soil viral populations and genotypes overlain by cohesive responses to moisture in grasslands. *PNAS*, 119(45): e2209132119
9. Xue K, **Yuan M***, Xie J, Li D, Qin Y, Hale L, Wu L, Deng Y, He Z, Van Nostrand J, Luo Y, Tiedje J and Zhou J. (2016) Annual removal of aboveground plant biomass alters soil microbial responses to warming. *mBio*, 7(5):e00976-00916.
10. Wu L, Zhang Y, Guo X, Ning D, Zhou X, Feng J, **Yuan M**, Liu S, Guo J, Gao Z, Ma J, Kuang J, Jian S, Han S, Yang Z, Ouyang Y, Fu Y, Xiao N, Liu X, Wu L, Zhou A, Yang Y, Tiedje J and Zhou J. (2022) Reduction of microbial diversity in grassland soil is driven by long-term climate warming. *Nature Microbiology*, 7(7), 1054-1062
11. Xiao N, Zhou A, Kempfer M, Zhou B, Shi Z, **Yuan M**, Guo X, Wu L, Ning D, Van Nostrand J, Firestone M and Zhou J. (2022) Disentangling direct from indirect relationships in association networks. *PNAS*, 119(2):e2109995119
12. Fossum C, Estera-Molina K, **Yuan M**, Herman D, Chu-Jacoby I, Nico P, Morrison K, Pett-Ridge J and Firestone M. (2022) Belowground allocation and dynamics of recently fixed plant carbon in a California annual grassland soil. *Soil Biology and Biochemistry*, 165, 108519
13. Ma X, Wang T, Shi Z, Chiariello N, Docherty K, Field C, Gutknecht J, Gao Q, Gu Y, Guo X, Hungate B, Lei J, Niboyet A, Le Roux X, **Yuan M**, Yuan T, Zhou J and Yang Y. (2022) Long-term nitrogen deposition enhances microbial capacities in soil carbon stabilization but reduces network complexity. *Microbiome*, 10, 112
14. Escalas A, Paula F, François Guilhaumon F, **Yuan M**, Yang Y, Wu L, Liu F, Feng J, Zhang Y and Zhou J. (2022) Macroecological relationships highlight the functional differences between rare and common microbial genes. *ISME J*, 16:726–737
15. Cheng J, Yang Y, **Yuan M**, Gao Q, Wu L, Qin Z, Shi Z, Schuur E, Cole J, Tiedje J and Zhou J. (2021) Winter warming rapidly increases carbon degradation capacities of fungal communities in tundra soil: potential consequences on carbon stability. *Molecular Ecology*, 30:926-937.
16. Gao Y, Ding J, **Yuan M**, Chiariello N, Docherty K, Field C, Gao Q, Gu B, Gutknecht J, Hungate B, Le Roux X, Niboyet A, Qi Q, Shi, Z, Zhou J and Yang Y. (2021) Long-term warming in a Mediterranean-type grassland affects soil bacterial functional potential but not bacterial taxonomic composition, *Biofilms and Microbiomes*, 7:17.
17. Ceja-Navarro J, Wang Y, Ning D, Arellano A, Ramanculova L, **Yuan M**, Byer A, Craven K, Saha M, Brodie E, Pett-Ridge J and Firestone M. (2021) Protist diversity and community complexity in the rhizosphere of switchgrass are dynamic as plants develop. *Microbiome*, 9, 96.
18. Pett-Ridge J, Shi S, Estera-Molina K, Nuccio E, **Yuan M**, Rijkers R, Swenson T, Zhalnina K, Northen T, Zhou J and Firestone M. (2021) Rhizosphere carbon turnover from cradle to grave: the role of microbe–plant interactions. In: Gupta V, Sharma A. (eds) *Rhizosphere Biology: Interactions Between Microbes and Plants*. *Rhizosphere Biology*, Springer, Singapore.
19. Yang S, Zheng Q, Yang Y, **Yuan M**, Ma X, Chiariello N, Docherty K, Field C, Gutknecht J, Hungate B, Niboyet A, Le Roux X and Zhou J. (2020) Fire affects the taxonomic and functional composition

- of soil microbial communities, with cascading effects on grassland ecosystem functioning. *Global Change Biology*, 26:431-442.
20. Liang Y, Xiao X, Nuccio E, **Yuan M**, Zhang N, Xue K, Cohan F, Zhou J and Sun B. (2020) Differentiation strategies of soil rare and abundant microbial taxa in response to changing climatic regimes. *Environmental Microbiology*, 22:1327-1340.
 21. Ning D, **Yuan M**, Wu L, Zhang Y, Guo X, Zhou X, Yang Y, Arkin A, Firestone M and Zhou J. (2020) A quantitative framework reveals ecological drivers of grassland soil microbial community assembly in response to warming. *Nature Communications*, 11:4717.
 22. Tao X, Feng J, Yang Y, Wang G, Tian R, Fan F, Ning D, Bates C, Hale L, **Yuan M**, Wu L, Gao Q, Lei J, Schuur E, Yu J, Bracho-Garillo R, Luo Y, Konstantinidis K, Johnston E, Cole J, Penton C, Tiedje J and Zhou J. (2020) Winter warming in Alaska accelerates lignin decomposition contributed by Proteobacteria. *Microbiome*, 8:84.
 23. Feng J, Wang C, Yang Y, Yan Q, Zhou X, Tao X, Ning D, **Yuan M**, Qin Y, Shi Z, Guo X, He Z, Van Nostrand J, Wu L, Bracho-Garillo R, Penton C, Cole J, Konstantinidis K, Luo Y, Schuur E, Tiedje J and Zhou J. (2020) Warming-induced permafrost thaw exacerbates tundra soil carbon decomposition mediated by microbial community. *Microbiome*, 8:3.
 24. Shi Z, Yin H, Van Nostrand J, Voordeckers J, Tu Q, Deng Y, **Yuan M**, Zhou A, Zhang P, Xiao N, Ning D, He Z, Wu L and Zhou J. (2019) Functional gene array-based ultra-sensitive and quantitative detection of microbial populations in complex communities. *mSystems*, 4:e00296-19.
 25. Guo X., Zhou X, Hale L, **Yuan M**, Ning D, Feng J, Shi Z, Li Z, Feng B, Gao Q, Wu L, Shi W, Zhou A, Fu Y, Wu L, He Z, Van Nostrand J, Qiu G, Liu X, Luo Y, Tiedje J, Yang Y and Zhou J. (2019) Climate warming accelerates temporal scaling of grassland soil microbial biodiversity. *Nature Ecology & Evolution*, 3, 612–619
 26. Feng J, Penton C, He Z, Van Nostrand J, **Yuan M**, Wu L, Wang C, Qin Y, Shi Z, Guo X, Schuur E, Luo Y, Bracho R, Konstantinidis K, Cole J, Tiedje J, Yang Y and Zhou J. (2019) Long-term warming in Alaska enlarges the diazotrophic community in deep soils. *mBio*, 10:e02521-18
 27. Yang S, Zheng Q, **Yuan M**, Shi Z, Chiariello N, Docherty K, Dong S, Field C, Gu Y, Gutknecht J, Hungate B, Le Roux X, Ma X, Niboyet A, Yuan T, Zhou J and Yang Y. (2019) Long-term elevated CO₂ shifts composition of soil microbial communities in a Californian annual grassland, reducing growth and N utilization potentials. *Science of the Total Environment*. 652: 1474-1481.
 28. Wang, Z., Lu, G., **Yuan M**, Yu, H., Wang, S., Li, X., Deng, Y. (2019) Elevated temperature overrides the effects of N amendment in Tibetan grassland on soil microbiome. *Soil Biology and Biochemistry*, 136, doi: 10.1016/j.soilbio.2019.107532
 29. Shi Z, Wu L, Lin Y, Wilcox K, Souza L, Jiang L, Jiang J, Jung C, Xu X, **Yuan M**, Guo X, Wu L, Zhou J and Luo Y. (2018) Successional change in species composition alters climate sensitivity of grassland productivity. *Global Change Biology*, 24: 4993-5003.
 30. Guo X, Feng J, Shi Z, Zhou X, **Yuan M**, Tao X, Hale L, Yuan T, Wang J, Qin Y, Zhou A, Fu Y, Wu L, He Z, Van Nostrand J, Ning D, Liu X, Luo Y, Tiedje J, Yang Y and Zhou J. (2018) Climate Warming leads to divergent succession of grassland microbial communities. *Nature Climate Change*, 8:813-818.
 31. Guo X, Zhou X, Hale L, **Yuan M**, Ning D, Shi Z, Qin Y, Liu F, Wu L, He Z, Van Nostrand J, Liu X, Luo Y, Tiedje J and Zhou J. (2018) Taxonomic and functional responses of soil microbial communities to annual removal of aboveground plant biomass. *Frontiers in Microbiology*, 9:954.

32. Feng W, Liang J, Hale L, Jung C, Chen J, Zhou J, Xu M, **Yuan M**, Wu L, Bracho R, Pegoraro E, Schuur E and Luo Y. (2017) Enhanced decomposition of stable soil organic carbon and microbial catabolic potentials by long-term field warming. *Global Change Biology*, 23:4765-4776.
33. Cheng L, Zhang N, **Yuan M**, Xiao J, Qin Y, Deng Y, Tu Q, Xue K, Van Nostrand J, Wu L, He Z, Zhou X, Leigh M, Konstantinidis K, Schuur E, Luo Y, Tiedje J and Zhou J. (2017) Warming enhances old organic carbon decomposition through altering functional microbial communities. *ISME J*, 11:1825-1835.
34. Johnston E, Rodriguez-R L, Luo C, **Yuan M**, Wu L, He Z, Schuur E, Luo Y, Tiedje J, Zhou J and Konstantinidis K. (2016) Metagenomics reveals pervasive bacterial populations and reduced community diversity across the Alaska tundra ecosystem. *Frontiers in Microbiology*, 7(579).
35. Tu Q, **Yuan M**, He Z, Deng Y, Xue K, Wu L, Hobbie S, Reich P and Zhou J. (2015) Fungal communities respond to long-term CO₂ elevation by community reassembly. *Applied and Environmental Microbiology*, 81(7), 2445-2454.
36. Deng J, Gu Y, Zhang J, Xue K, Qin Y, **Yuan M**, Yin H, He Z, Wu L, Schuur E, Tiedje J and Zhou J. (2015) Shifts of tundra bacterial and archaeal communities along a permafrost thaw gradient in Alaska. *Molecular Ecology*, 24(1), 222-234.
37. Wu L, Wen C, Qin Y, Yin H, Tu Q, Van Nostrand J, Yuan T, **Yuan M**, Deng Y and Zhou J. (2015) Phasing amplicon sequencing on Illumina Miseq for robust environmental microbial community analysis. *BMC Microbiology*, 15(1), 125.
38. Luo C, Rodriguez-R L, Johnston E, Wu L, Cheng L, Xue K, Tu Q, Deng Y, He Z, Shi Z, **Yuan M**, Rebecca S, Li D, Luo Y, Schuur E, Chain P, Tiedje J, Zhou J and Konstantinidis K. (2014) Soil microbial community responses to a decade of warming as revealed by comparative metagenomics. *Applied Environmental Microbiology*, 80:1777-1786. (Picked up as AEM Spotlight)
39. Li Y, He J, He Z, Zhou Y, **Yuan M**, Xu X, Sun F, Liu C, Li J, Xie W, Deng Y, Qin Y, Van Nostrand J, Xiao L, Wu L, Zhou J, Shi W and Zhou X. (2014) Phylogenetic and functional gene structure shifts of the oral microbiomes in periodontitis patients. *ISME J*, 8, 1879.
40. Yang Y, Wu L, Lin Q, **Yuan M**, Xu D, Yu H, Hu Y, Duan J, Li X, He Z, Xue K, Van Nostrand J, Wang S and Zhou J. (2013) Responses of the functional structure of soil microbial community to livestock grazing in the Tibetan alpine grassland. *Global Change Biology*, 19:637-648.

Honors and Awards

- 2017 Institute for Environmental Genomics (IEG) Excellent Student Award
 2016 George L. and Cleo Cross Graduate Student Endowed Scholarship, University of Oklahoma
 2014 American Society of Microbiology Student Travel Grand

Synergistic Activities

Invited Talks and Seminars at Lawrence Livermore National Laboratory (2022), Department of Plant and Soil Sciences - University of Kentucky (2022), iFAST James Tiedje symposium (2022), The College of Resources and Environmental Sciences - Nanjing Agricultural University (2019), Enviro-lunch seminar-series - UC Merced (2021), Tsinghua Shenzhen International Graduate School (2021), Institute of Soil Science & Research Center for Eco-Environmental Sciences - Chinese Academy of Sciences (2019), Peking University (2019), and UC Berkeley (2017)

Conference oral and poster presentations at Genomic Science Program Annual PI Meeting (2015, 2019, 2022), AGU Fall Meeting (2019), Chinese Microbial Ecology Conference (2019), ISME Symposia (2012, 2016), ESA Annual Meeting (2013, 2015) and ASM Meeting (2013, 2014)

Teaching and Mentoring: One Ph.D thesis, one M.S. thesis, 5 undergraduate research/thesis at UC Berkeley. Instructor for Introduction to Microbiology Lab session, Dept. Microbiology and Plant Biology, University of Oklahoma

Organizer/convener for Sessions “Microbial Community Assembly and Diversity Formation” and “Microbial Ecology” at ESA Annual Meeting (2014)

Reviewer for Nature Ecology and Evolution, The ISME Journal, Global Chang Biology, Environmental Microbiology, Soil Biology and Biochemistry, mSystems, ISME Communications, Molecular Ecology, Frontiers in Microbiology, Plos One, Phytobiomes, Science of the Total Environment, Communications Biology, Geoderma, mLife, iMeta, and Agronomy Journal

Guest Editor for Agronomy, Frontiers in Plant Science, and Frontiers in Bioengineering and Biotechnology

Research highlighted in media by The Washington Post, Mongabay, Chinese Science Daily