

JIZHONG ZHOU

(12-31- 2022)

(See full CV at <http://www.ou.edu/ieg.html>)

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CITIZENSHIP US Naturalized date: April 12, 2001

EDUCATION

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| BS | 1978-1981 | Plant Pathology & Entomology , Hunan Agri. University, Changsha, China |
| MS | 1982-1984 | Mathematical Ecology , Hunan Agr. University, Changsha, China, |
| Ph.D. | 1990-1993 | Molecular Biology , Washington State University, Pullman, WA |
| Postdoc | 1993-1995 | Microbial ecology , Center for Microbial Ecology, Michigan State University, East Lansing, MI, Advisor, James M. Tiedje |
| | 1996-1997 | Microbial ecology , DOE Alexander Hollaender Distinguished Postdoctoral Fellow, Environmental Sciences Division, Oak Ridge National Laboratory (ORNL), Mentor, Anthony V. Palumbo |

MAJOR PROFESSIONAL EXPERIENCE

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| 2019-2020 | Visiting Professor, Department of Ecology and Evolution and Princeton Environmental Institute, Princeton University, with Dr. Simon Levin |
| 2005-Present | George Lynn Cross Research Professor and Presidential Professor, Department of Microbiology and Plant Biology, University of Oklahoma (OU), Norman, OK |
| 2022-present | Adjunct Professor, School of Computer Sciences, OU, Norman, OK |
| 2005-present | Director of the Institute for Environmental Genomics (IEG), OU, Norman, OK |
| 2015-present | Adjunct Professor, School of Civil Engineering and Environmental Sciences, OU |
| 2006-present | Adjunct Senior Scientist, Earth and Environmental Science, Lawrence Berkeley National Laboratory (LBL) |
| 2009-present | Adjunct Professor, School of Environment, Tsinghua University, Beijing, China |
| 2015-2017 | Visiting Professor, Nanyang Environment and Water Research Institute (NEWRI), Nanyang Technological University, Singapore. |
| 2013-2014 | Visiting Investigator, Department of Global Ecology, Carnegie Institution for Science, Stanford, CA, with Dr. Chris Field. |
| 2013 | Visiting Professor, Department of Civil and Environmental Engineering, University of California at Berkeley, CA with Lisa Alvarez-Cohen |
| 1997-2005 | Staff Scientist, Senior Staff Scientist, and then Distinguished R&D Staff Scientist, Environmental Sciences Division, ORNL |

MAJOR AWARDS AND HONORS

Awards

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| 2022 | ISME-IWA BioCluster Grand Prize Award (<i>for recognizing the importance and impact of interdisciplinary research at the interface of microbial ecology and water/wastewater treatment</i>) |
| 2022 | Soil Science Research Award (<i>for recognizing outstanding research contributions in soil science</i>) |
| 2019 | 2019 ASM Award for Environmental Research (<i>for recognizing an outstanding scientist with distinguished research achievements in microbial ecology and environmental microbiology</i>). |
| 2015 | The Ernest Orlando Lawrence Award in Biological and Environmental Sciences in 2014 (<i>U.S Department of Energy's scientific award established by President Dwight Eisenhower in 1959</i>). In Congressional Records (E1092, July 21, 2015). |
| 2009 | R&D 100 Award for GeoChip development by R&D Magazine, which <i>presents awards annually to the 100 most innovative scientific and technical breakthroughs of the year</i>). |

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| 2005 | Federal Laboratory Consortium (Southeast) Award for Excellence in Technology Transfer |
| 2001 | Presidential Early Career Award for Scientists and Engineers from the President of the United State of America (<i>The highest honor for young scientists and engineers in US</i>) |
| 1996 | Alexander Hollaender Distinguished Postdoctoral Fellow, DOE/ORNL |
| Honors | |
| 2021 | Among the 2021 Reuters List of World's Top 1000 Climate Scientists |
| 2020 | Fellow of International Water Association (IWA) |
| 2019-2022 | World's most cited researcher (top 0.1%) across all science & engineering fields among 9M scientists based on Elsevier's <i>Scopus</i> (https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/3). |
| 2018-2021 | Global highly cited researcher in both Microbiology, and Environment & Ecology based on the numbers of top 1% highly cited publications by Web of Science, about 7,000 in total worldwide. (https://hcr.clarivate.com/). |
| 2019-present | Most highly cited researcher (H-index > 100) according to their Google Scholar Citations, about 6,000 in total worldwide (http://www.webometrics.info/en/hlargerthan100) |
| 2018 | Fellow of Ecological Society of America |
| 2014 | George Lynn Cross Research Professor, the most prestigious honor for OU faculty (<i>most prestigious honor for OU faculty</i>) |
| 2008 | Fellow of American Association for the Advancement of Science. |
| 2007-present | Honorary Director for Chinese Association of Microbial Ecology (CAME) |
| 2005 | Presidential Professor, University of Oklahoma |
| 2005 | Fellow of American Academy of Microbiology |
| 2004-present | US Ambassador for International Society of Microbial Ecology |

MAJOR PROFESSIONAL SERVICE

Editors

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| 2021-present | Co-Editor-in-Chief for mLife |
| 2017-present | Senior Editor for ISME Journal (<i>prime journal in microbial ecology</i>) |
| 2020-present | Associate Editor for Microbiome and Environmental Microbiome |
| 2009-2019 | Senior Editor for mBio®, ASM flagship journal |
| 2014-2020 | Section Editor for Microbial Ecology and Evolution, BMC Microbiology |
| 2003-2013 | Editor, Applied and Environmental Microbiology (<i>a leading microbiology journal</i>) |

Committees

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| 2020-2021 | Committee member of DOE Ernest Orlando Lawrence Award |
| 2016-2017 | Committee member for Microbiomes of the Built Environment by the National Academies of Sciences, Engineering, and Medicine |
| 2014-2018 | Member of Steering Committee, NASA Omics Initiative, NASA, Wash DC |
| 2011-2014 | Member of Local Organizing Committee, The 15 th International Symposium on Microbial Ecology (ISME-15) |
| 2013-2016 | Member of ASM International Board's Committee on Global Engagement (CGE). |
| 2011-2019 | Member of Environmental Microbiology Committee, ASM |
| 2011-2015 | Member of Selection Committee, William A. Hinton Research Training Award, ASM |
| 2009-2014 | Founding Chair, Board of Directors, the Overseas Chinese Society for Microbiology (Sino_Micro) |
| 2009-2012 | Member, Nominations Committee for the Promega Biotechnology Award, ASM |
| 2006-2009 | Member of ASM International Committee - Task Force on China |
| 2001 | Panel member for preparing the roadmap for Genomes to Life program, US Department of Energy, in charge of writing Goal 3 on community genomics. |
| 1999-2003 | Chair for 7 th , 9 th , and 11 th International Conference on Microbial Genomes |

MAJOR RESEARCH INTEREST AND PROGRAM

Major expertise is in microbial ecology and genomics with current research focused on: (i) molecular community ecology and metagenomics, particularly in terrestrial soils and groundwater ecosystems important to climate change, bioenergy and environmental remediation, (ii) theoretical ecology, particularly network ecology, and community assembly mechanisms, (iii) experimental evolution and functional genomics of microorganisms important to environment and bioenergy, (iv) development of high throughput metagenomic technologies, and (v) bioinformatics, ecoinformatics and ecological modeling.

Major Current funded research projects. Since moving from ORNL to OU in 2006, has 42 projects in genomics and microbial ecology with a total funding of >\$45M. Had 36 projects of \$26M at ORNL.

1. Dimensions US-China: Collaborative Research: Quantifying the Impact of Eutrophication on the World's Grassland Soil Microbial Biodiversity and Functioning. National Science Foundation. Zhou (PI) with Elizabeth Borer, Eric Seabloom, and Daling Ning, \$2M in total, ~\$1.25M for J. Zhou and D. Ning (October 1, 2021, September 30, 2026). China side, Yungfeng, ~\$450K by Chinese NSF
2. MTM 2: Searching for General Rules Governing Microbiome Dynamics using Anaerobic Digesters as Model Systems. NSF. Zhou (PI) with Alan Hastings, Mathew Leibold, Qiang He, and Daling Ning, \$3M in total, ~\$1.3M for J. Zhou and D. Ning (October 1, 2020, September 30, 2025).
3. ENIGMA (Ecosystems & Networks Integrated with Genes and Molecular Assemblies): A Multi-scale Systems Approach. Department of Energy. PI, \$2,100K (Oct 1, 2021-September 30, 2024))(A part of LBL SFA: ENIGMA- Paul Adams and Adam Arkin are the Program Directors).
4. iSENTRY: An integrated Microfluidics-enabled system for phenotypic detection of biothreat agents. Department of Defense, DARPA program, Co-PI with James Samuel, Arum Han and Paul de Figueiredo etc., \$880K for J. Zhou (Dec. 1, 2018 to May, 31, 2023).

Major achievements include: (i) ground-breaking discoveries in understanding the feedbacks, mechanisms and principles of microbial systems in response to climate change, (ii) pioneering demonstrations of groundwater microbiome diversity, distribution, succession, activities stability, and their underlying mechanisms in response to heavy metals and bioremediation treatments; (iii) pathbreaking advancements in theoretical ecology of microbial systems, (iv) transformational leadership in developing a revolutionary high throughput genomic technologies for establishing linkages of microbial biodiversity to ecosystem functions; (v) pioneering advances in developing computational technologies for network analysis and community assembly mechanisms.

MAJOR PERSONNEL

Staff scientists (current): Daliang Ning (genomics, environmental engineering), Liyou Wu (Genomic technologies), Zheng Shi (ecosystem modeling), Najia Xiao (mathematics), Aifen Zhou (Molecular biology), Ying Fu (Technician), Lindsay Rice (Secretary).

Ph. D. Graduate Students (current): Jonathan Michael, 2023, Carolyn Cornell, 2022, Yupeng Fan, 2022; Zhifeng Yang, 2024; Qiuting Zhang, 2024.

Postdocs (Current): Yajiao Wang, Sijian Yang, Xiaojun Liu, Xuanyu Tao.

FELLOWSHIPS ESTABLISHED

Dr. Zhou established a Fellowship (“Jizhong Zhou-Xiaoya Shi Award”) at the School of Environment, Tsinghua University, with main purposes to recognize excellent graduate students in microbial ecology, environmental science and engineering at Tsinghua University and University of Oklahoma. Chinese Association of Microbial Ecology (CAME) – a major professional organization for microbial ecology in China, established an award under his name in 2017 to recognize Outstanding Microbial Ecologists.

MEETING ORGANIZATIONS AND INVITED TALKS

To promote public awareness of environmental sciences and technologies, during Covid-19 pandemic, Dr. Zhou has organized the influential online seminar series, *International Forum on Advanced Environmental Sciences and Technology* (iFAST)(<https://www.ou.edu/ieg/seminars>). Giving numerous invited talks at major national and international conferences, universities, and institutes, such as an ASM Divisional lecturer, and Australian Society of Microbiology Visiting Speaker for cruise lectures to various institutions,

and Special keynote talk at Chinese Academy of Sciences under the special seminar series, "Sciences and China".

Ph.D. STUDENTS, POSTDOCS, and VISITING SCHOLARS TRAINED (both OU and TU)

Trained 50 Ph.D. graduates, 90 Postdocs, and 177 visiting scholars that now occupy positions in universities, industry, government and non-profits, 47% females across all years, 65% female currently. Among these they have become leaders: Dean/Deputy Dean (5), Department Chairs or Section Heads (10), Editors of scientific journals (25), Endowed/Distinguished Professorships (12), Scientific Society President/Vice President (10), Early Career Awards (18), other significant awards (50).

MAJOR SIGNIFICANT PUBLICATIONS AND PATENTS

Summary of publications:

- Over 600 peer reviewed publications, h-index of **135**, over 65,000 citations (GS); h-index of **117**, >48,000 citations (Web of Sci)
- **33** publications in Science, Nature-branded journals, and PNAS
- **>160** in Nature indexed journals and other prestigious journals.

Impacts: A top 0.1% globally highly cited researcher by all three major complementary metrics based on Elsevier's Scopus ([link](#)), Web of Science ([link](#)), and Google Scholar ([link](#)). Among the 2021 Reuters List of World's Top 1000 Climate Scientists

Representative publications

1. Wu et al. 2022. Reduction of microbial diversity in grassland soil is driven by long-term climate warming. **Nature Microbiology**. **7**, 1054–1062
2. Xiao, et al. 2022. Disentangling Direct from Indirect Relationships in Association Networks. **Proc. Nat. Acad. Sci.**, 119 No. 2 e2109995119, <https://doi.org/10.1073/pnas.2109995119>.
3. Yuan et al. 2021. Climate Warming Enhances Microbial Network Complexity and Stability. **Nature Climate Change**, 10.1038/s41558-021-00989-9. (**Hot paper, Top 0.1% highly cited hot paper**)
4. Guo et al. 2020. Gene-informed decomposition model predicts lower soil carbon loss due to persistent microbial adaptation to warming. **Nature Communications**. **11**, 4897.
5. Ning et al. A quantitative framework reveals ecological drivers of grassland soil microbial community assembly in response to warming. **Nature Communication**, 11:4717 (**Top 1% highly cited**)
6. Gao, et al. 2020. Stimulation of soil respiration by elevated CO₂ is enhanced under nitrogen limitation in a decade-long grassland study, **Proc. Nat. Acad. Sci.**, 117: 33317-33324.
7. Wu et al. 2019. Global diversity and biogeography of bacterial communities in wastewater treatment plants. **Nature Microbiology**, 4:1183–1195. (**hot paper, top 0.1% highly cited**)
8. Guo et al. 2019. Climate warming accelerates temporal scaling of grassland soil microbial biodiversity. **Nature Ecol & Evol.**, 3, 612–619.
9. Ning et al. 2019. A General Framework for Quantitatively Assessing Ecological Stochasticity. **Proc. Nat. Acad. Sci.**, 116: 16893-16898 (**Top 1% highly cited**).
10. Guo et al. 2018. Climate Warming Leads to Divergent Succession of Grassland Microbial Communities. **Nature Climate Change**. 8:813-818.
11. Xue et al. 2016. Tundra soil carbon is vulnerable to rapid microbial decomposition under climate warming. **Nature Climate Change**, 6: 595-600, doi:10.1038/nclimate2940. (**Top 1% highly cited**)
12. Zhou et al. 2016. Temperature mediates continental-scale diversity of microbes in forest soils. **Nature Communication**, 7:12083, doi:10.1038/ncomms12083. (**Top 1% highly cited**)
13. Zhou et al. 2014. Stochasticity, Succession and Environmental Perturbations in a Fluidic Ecosystem. **Proc. Nat. Acad. Sci.**, 111: E836-E845. (**Top 1% highly cited**)
14. Zhou et al. 2012. Microbial Mediation of Carbon Cycle Feedbacks to Climate Warming. **Nature Climate Change**, 2:106-110. (**Top 1% highly cited**)
15. Hazen et al. Deep-sea oil plume enriches Indigenous oil-degrading bacteria. **Science**, 330: 204-208. (**Top 1% highly cited**)
16. Liu et al. 1997. Thermophilic Fe(III)-reducing bacteria from the deep subsurface: The evolutionary implications. **Science** 277: 1106-1109