

JIZHONG ZHOU

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

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CITIZENSHIP US Naturalized date: April 12, 2001

EDUCATION

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

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
2005-present	Director of the Institute for Environmental Genomics (IEG), OU, Norman, OK
2015-present	Professor, School of Civil Engineering and Environmental Sciences, OU, Norman, OK
2006-present	Adjunct Senior Scientist, 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

2021	2021 Award for Excellence in Research in the Natural Sciences. Vice President for Research and Partnerships, University of Oklahoma.
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).
2013	OU VPR Research Award for Exceptional Achievements in Research and Creative Activity
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> .
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 (*The highest honor for young scientists and engineers in US*)
- 2001 Environmental Sciences Division Distinguished Scientific Achievement Award, ORNL
- 1996 Alexander Hollaender Distinguished Postdoctoral Fellow, DOE/ORNL
- Honors**
- 2020 Fellow of International Water Association (IWA)
- 2020 World's most cited researcher (99.9% percentile) across all science & engineering fields among 8M scientists based on Elsevier's Scopus (<https://doi.org/10.1371/journal.pbio.3000918>).
- 2018-2019 Global highly cited researcher in Cross-field based on the numbers of top 1% highly cited publications by Web of Science, about 6,200 in total worldwide. (<https://hcr.clarivate.com/>).
- 2019-present Most highly cited researcher (H-index > 100) according to their Google Scholar Citations, about 4,800 in total worldwide (<http://www.webometrics.info/en/hlargerthan100>)
- 2018 Fellow of Ecological Society of America
- 2017 National Chair Professor, Tsinghua University
- 2014 George Lynn Cross Research Professor, the most prestigious honor for OU faculty (the most prestigious honor for OU faculty)
- 2010-2013 One-Thousand Talent Scholar (Class B).
- 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

- 2021-present Co-Editor-in-Chief for mLife
- 2017-present Senior Editor for ISME Journal (*prime journal in microbial ecology*)
- 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 (*a leading microbiology journal*)

Committees

- 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 15th International Symposium on Microbial Ecology (ISME-15)
- 2013-2016 Member of ASM International Board's Committee on Global Engagement (CGE).
- 2011-present Member of Environmental Microbiology Committee, Public and Scientific Affairs Board, 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 7th, 9th, and 11th 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 39 projects in genomics and microbial ecology with a total funding of >\$43M. 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. From Genomes to Ecosystems: Systems-Level Mechanistic Understanding of Microbial Stress Responses at Chromium Contaminated Sites. DoE. PI, \$3,500K (Oct. 1. 2017-Sept. 30, 2022)(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 Nov. 30, 2022).

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

MAJOR PERSONNEL

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

Ph. D. Graduate Students (current): Jonathan Michael, 2023, Carolyn Cornell, 2022, Colin Bates, 2020; Yupeng Fan, 2022; Zhifeng Yang, 2024; Qiuting Zhang, 2024.

Postdocs (Current): Ya Zhang, Yajiao Wang; Linwei Wu, Jialiang Kuang, Ouyang Yang, Sijian Yang, Xiaojun Liu.

Visiting Students and Scholars (current). None.

FELLOWSHIP 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. Similar Fellowship (“Cindy and Jizhong Zhou Graduate Student/Post-doctorate Travel Award in Environmental Science and Technology”) has been established at OU for graduate students in Arts & Sciences, Environmental Engineering, and Computer Sciences.

INVITED TALKS

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 49 Ph.D. graduates, 89 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 (16), other significant awards (49).

MAJOR SIGNIFICANT PUBLICATIONS AND PATENTS

Summary of publications:

- Over 500 peer reviewed publications, h-index of **121**, over 53,000 citations (GS); h-index of **107**, over 39,000 citations (Web of Sci)
- **31** publications in Science, Nature-branded journals, and PNAS
- **>150** in Nature indexed journals and other prestigious journals.
- **Impacts:** Globally highly cited researcher by all three complementary metrics
 - ✓ World's most cited researcher (99.91% percentile, **without self citations**) across all science & engineering fields among 8M scientists based on Elsevier's *Scopus* (<https://doi.org/10.1371/journal.pbio.3000918>). ranked at top **75** of >55K environmental scientists worldwide in 2019.
<https://scholar.google.com/citations?user=4ho6TVUAAAAJ&hl=en>
 - ✓ Among the top 0.1% of the world's highly cited researchers (fewer than 6,200 scholars across 21 research fields globally)
 - ✓ Most highly cited researcher (H-index > 100) according to their Google Scholar Citations (<http://www.webometrics.info/en/hlargerthan100>), (fewer than 4,800 globally).

Representative publications by themes

A. Experimental genomics technologies

1. Zhou et al. 2015. High-Throughput Metagenomic Technologies for Complex Microbial Community Analysis: Open and Closed Formats. *mBio* 6:e02288-14 (**top 1% highly cited**).
2. Zhou et al. 2011. Reproducibility and Quantitation of Amplicon Sequencing-Based Detection. *ISME J*, 5:1303-1313 (**top 1% highly cited**).
3. Zhou et al. 2013. Random Sampling Process Leads to Overestimation of β -Diversity of Microbial Communities. *mBio* 4: e00324-13.
4. He et al. 2007. GeoChip: A comprehensive microarray for investigating biogeochemical, ecological, and environmental processes. *ISME J*, 1: 67-77 (**Among the 5 top-cited papers for the first 10 years**).
5. Zhou et al. 1996. DNA recovery from soils of diverse composition. *Appl. Environ. Microbiol.* 62: 316-322 (>3,600 citations) (**Among the 20 most cited papers in AEM history, since 2008**)

B. Computational technologies

1. Ning et al. 2020. A quantitative framework reveals ecological drivers of grassland soil microbial community assembly in response to warming. *Nature Communication*, 11:4717.
2. Ning et al. 2019. A General Framework for Quantitatively Assessing Ecological Stochasticity. *Proc. Nat. Acad. Sci.*, 116: 16893-16898.
3. Deng et al. 2016. Network succession reveals the importance of competition in response to emulsified vegetable oil amendment for uranium bioremediation. *Environ. Microbiol.*, 18: 205-218; (**top 1% highly cited**).
4. Deng, Y., Y. Jiang, Y. Yang, Z. He, F. Luo, and **J.-Z. Zhou**. 2012. Molecular Ecological Network Analyses. *BMC Bioinformatics*, 13:113 (**top 1% highly cited**)

5. Zhou J., Deng Y., Luo F., He Z., Yang Y. 2011. Phylogenetic molecular ecological network of soil microbial communities in response to elevated CO₂. *mBio* **2**:e00122-11. (*top 1% highly cited*)
6. Zhou et al. 2010. Functional Molecular Ecological Networks. *mBio* **1**:e00169-10

C. Environmental remediation

1. Wu, et al. 2019. Global diversity and biogeography of bacterial communities in wastewater treatment plants. *Nature Microbiology*, **4**:1183–1195. (*top 1% highly cited*)
2. Zhou et al. 2014. Stochasticity, Succession and Environmental Perturbations in a Fluidic Ecosystem. *Proc. Nat. Acad. Sci.*, **111**: E836-E845. (*top 1% highly cited*)
3. Hazen et al. 2010. Deep-sea oil plume enriches Indigenous oil-degrading bacteria. *Science*, **330**: 204-208. (*top 1% highly cited*).
4. Xu et al. 2010. Responses of microbial community functional structures to pilot-scale uranium *in situ* bioremediation. *ISME J* **4**:1060-1070
5. Liu et al. 1997. Thermophilic Fe(III)-reducing bacteria from the deep subsurface: The evolutionary implications. *Science* **277**: 1106-1109.

D. Climate change biology

1. Yuan et al. 2021. Climate Warming Enhances Microbial Network Complexity and Stability. *Nature Climate Change*, **10**.1038/s41558-021-00989-9.
2. Gao et al. 2021. Stimulation of soil respiration by elevated CO₂ is enhanced under nitrogen limitation in a decade-long grassland study, *Proc. Nat. Acad. Sci.*, doi.org/10.1073/pnas.2002780117.
3. Guo et al. 2020. Gene-informed decomposition model predicts lower soil carbon loss due to persistent microbial adaptation to warming. *Nature Communications*. **11**, 4897. doi:10.1038/s41467-020-18706-z.
4. Guo et al. 2019. Climate warming accelerates temporal scaling of grassland soil microbial biodiversity. *Nature Ecol & Evol.*, **3**, 612–61.
5. Guo et al. 2018. Climate Warming Leads to Divergent Succession of Grassland Microbial Communities. *Nature Climate Change*. **8**:813-818.
6. Xue et al. 2016. Tundra soil carbon is vulnerable to rapid microbial decomposition under climate warming. *Nature Climate Change*, **6**: 595-600 (*top 1% highly cited*)
7. Zhou et al. 2012. Microbial Mediation of Carbon Cycle Feedbacks to Climate Warming. *Nature Climate Change*, **2**:106-110. (*top 1% highly cited*)

E. Theoretical ecology

1. Buzzard et al. 2019. Continental scale structuring of forest and soil diversity via functional traits. *Nature Ecol. & Evol.*, **3**, 1298–1308
2. Zhou and Ning. 2017. Stochastic Community Assembly: Does It Matter in Microbial Ecology? *Microbiology and Molecular Biology Reviews*, **81**:e00002-17 (*top 1% highly cited*)
3. 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*)
4. Zhou et al. 2008. Spatial Scaling of Functional Gene Diversity across Various Microbial Taxa. *Proc Nat. Acad. Sci.* **105**: 7768-7773.
5. Zhou et al. 2002. Spatial and resource factors influencing high soil microbial diversity. *Appl. Environ. Microbiol.* **68**: 326-334