Yanni Chen

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Education & Training

2023 -	Postdoctoral Training Advisor: Nathan G. Swenson University of Notre Dame, Notre Dame, IN, United States
2023	Doctor of Philosophy in Biology Advisor: Matthew G. Johnson Texas Tech University, Lubbock, TX, United States Dissertation: The macroevolution, phylogenomics and phylogenetic ecology of seed germination traits
2014	Master of Science in Wildlife, Aquatic, and Wildland Science and Management Advisor: Robert D. Cox Texas Tech University, Lubbock, TX, United States Thesis: The Effect of Smoke on Seed Germination: Global Patterns and Regional Prospects for the Southern High Plains
2009	Bachelor of Agriculture in Grassland Sciences Advisor: Guiqin Zhao Gansu Agricultural University, Lanzhou, Gansu, China Research: Different Wild Oat Breed Response to Salt Stress

Technical Skills

Computational	*Scripting language*: Bash for shell and bioinformatic analysis, R for data analysis and visualization, Shiny application development, Python for data analysis and visualization, Groovy for Nextflow, Go for Docker, C in git for version control, spatial data analysis in ArcGIS and QGIS. *Other skills*: parallel computing in R and Python, conda/mamba environment setup, building container, organize computational workshops.
Data Analysis	*Transcriptomic analysis*: assembly, annotation, differential gene expression, co-expression network analysis, gene set enrichment, transcriptome wide association analysis; C*omparative Phylogenetic*: phylogenetic conservatism, ancestral state reconstruction, phylogenomics in gene family evolution *Genetic diversity*: population diversity from target capture sequence
Lab Work	Non-destructive sampling for herbarium specimen; DNA and RNA extraction and validation, target capture library preparation.
Fieldwork	Grassland ecology data collection: species richness and coverage, soil seedbank collection, greenhouse and germination chamber experiments, herbarium specimen curation.

Publications

2025	**Chen, Y.**, Chen, Y., Monks, L., Rubio, V.E. et al. Linking leaf hyperspectral reflectance to gene expression. *Nature Communications Earth & Environment 6, 694 (2025)*. https://doi.org/10.1038/s43247-025-02696-1

2024	Cocciardi, J. M., Hoffman, A. M., ... & **Chen Y.**, ... & Avolio, M. L. (2024). The value of long-term ecological research for evolutionary insights. *Nature Ecology & Evolution, 8(9)*, 1584-1592.
2022	**Chen, Y.**, Schwilk, D. W., Cox, R. D., & Johnson, M. G. (2022). Including phylogenetic conservatism of shortgrass prairie restoration species does not improve species germinability prediction. *Frontiers in Ecology and Evolution*, *10*, 983192.
Under Review	**Chen, Y.**, Cox. A.J., Datta, D, Gonzalez, H., Monks, L, Rubio, V.E., Magee, L, Swenson, N.G. Transcriptomic and Hydraulic Responses in Trees to Stem Decay
Under Review	Hu, N., Bullock, M., Jackson, C., Miller C., Hunter, E., Huff, C., **Chen, Y**, Handy, S., Johnson, M. SPrOUT: A computational and targeted sequencing approach for mixed plant DNA identification with Angiosperms353
Under Review	Latvis, M., Leffler, A.J., **Chen, Y.**, Johnson, M., Perkins, L. Evaluating Species-Specific Germination Responses to Smoke Cues Across the North American Seed Market
In progress	**Chen, Y.**, Latvis M., Perkins L., A. Joshua Leffler, Cox R.D., Johnson, M. G. The Macroevolution of the Smoke-induced Seed Germination
In progress	**Chen, Y.**, Hoffman A.M., Fokar M., Johnson, M. G. The Functional Phylogenomics of KAI2, The Protein Code Gene of Karrikins receptors in *Bouteloua gracilis*

Professional Awards and Training

2023-2024	MATCH Plus: 750,000 research computing CPU core hours through ACCESS
2023	LIFE: Leveraging Innovation From Evolution Scoping Workshop (NSF funded, travel, board & lodge)
2023	SDSC Cyber Infrastructure-Enabled Machine Learning Summer Institute 2023
2023	CyberAmbassador Facilitator Training (NSF funded, travel, board & lodge)
2023	EarthCube: Advancing the Analysis of High Resolution Topography Workshop (NSF funded, travel, board & lodge)
2022	Biological and Environmental Data Education Network Meeting (NSF funded, travel, board & lodge)
2022	Evolution and Long-Term Ecology Working Group (NSF funded, travel, board & lodge)
2022	SC22 Conference, SCinet student volunteer • Support the SCinet team to set up SCinet within one week before SC conference • Work at the help desk during the SC conference week
2020 - 2023	High Performance Computing Center, Graduate Research Assistant • Took the initiative to learn workflow management systems, such as Nextflow and Snakemake • Determined appropriate config files to allow other departments to use system • Develop training to introduce concept of workflow and software installation to help attendees develop own workflows • Ensure HPCC users are aware of available support resources, such as nf-core

2018 - 2020 Department of Biological Sciences, Lab Instructors
- Taught first year and third year plant biology courses
- BIO1401 Plant Biology (6 sections over 2 semesters)
- BOT3404 Plant Evolution (2 sections over 1 semester)

2018 - 2020 E.L. Reed Herbarium, Herbarium curator (3 semesters)
- Herbarium specimen digitalization
- Specimen preparation: collecting, pest control, drying, labeling, mounting and storage

2012 - 2014 Department of Natural Resources Management, Teaching Assistant
- Rangeland Management
- Plant Identification
- Restoration Ecology

2011 - 2012 Department of Natural Resources Management, Seed Science Lab Assistant
- Managed germination chamber
- Ran seed germination experiments

Presentations

2023 "Functional Phylogenomic of KAI2 in *Bouteloua gracilis*" Botany 2023, Boise, ID (In-person, Oral)

2023 "The smoke-induced seed germination trait evolved differently between fire related endemic species and wide-spread species" Evolution 2023, Albuquerque, NM (In-person, Oral)

2022 "The Macroevolution of the Smoke-induced Seed Germination Trait" Botany 2022, Anchorage, AK (In-person, Oral)

2022 "The Macroevolution of the Smoke-induced Seed Germination Trait" Evolution 2022, Cleveland, OH (In-person, Poster)

2021 "Differential Gene Expression of Smoke Induced Seed Germination of Shortgrass Prairie Native Species" Botany 2021 (Virtual, Oral)

2020 "Phylogenomics and Habitat Restoration: Detecting the Effects of Gene Duplication and Diversification of KAI2 on Seed Germination" Botany 2020 (Virtual, Lightening)

2019 "Phylogenetic Information in Seed Morphology and Seed Germination for Shortgrass Prairie Species" Botany 2019, Tucson, AZ (In-person, Oral)

2013 "Effects of Plant-derived Smoke Products on Seed Germination" National Native Seed Conference, Santa Fe, NM (In-person, Poster)

2011 "The Effects of Smoke Water on Using Soil Seed Banks in Restore Shortgrass Prairie." Women's Studies in Higher Education Conference, Texas Tech University

Awards and Funding

- Award and Research Funding

2023 Doctoral Dissertation Completion Fellowship (~ $30,000/year, declined)

2023 Travel Awards for Society of Systematic Biologists standalone meeting (~$500, declined)

2022 Dr. John La Duke Endorsed Fellowship for Botanical Researchers ($1000)

2022 Travel Awards for Botany 2022 (NSF funded target capture data analysis workshop supporting staff)

2021 Ann Miller Gonzalez Research Grant, The Native Plant Society of Texas ($1800)

2021 Grant-in-Aid, Department of Biological Sciences, Texas Tech University ($700)

2019 Graduate Student Research Grant, Graduate School, Texas Tech University ($1000)

2013 Texas Tech Study Abroad Competitive Scholarship ($500)

2012 G.R. White Trust Endowed Fellowship from Texas Tech University ($1000)

2011 G.R. White Trust Endowed Fellowship from Texas Tech University ($1000)

2008 National Study Grant Award (China, approximate, $100)

2007 School Scholarship, Gansu Agricultural University (China, approximate, $150)

2006 School Scholarship, Gansu Agricultural University (China, approximate, $150)

- Conference Travel Funding

2023 Travel Awards for Botany 2023 ($1250)
- Department of Biological Sciences ($250)
- Texas Tech Graduate School ($500)
- Texas Tech Graduate Student Association ($500)

2023 Travel Awards for Evolution Meeting 2023 ($1760)
- Caregiver Award from Society for Study Evolution ($500)
- CloudForest Workshop Attendee Support ($1260)

2023 The fifth SSB standalone meeting ($500):
- The Society of Systematic Biologists ($500)

2022 Travel Awards for Evolution Meeting 2022 ($1750):
- Department of Biological Sciences ($250)
- Texas Tech Graduate School ($500)
- Texas Tech Graduate Student Association ($500)
- Caregiver Award from Society for Study Evolution ($500)

2019 Travel Awards for Botany 2019 ($1250):
- Department of Biological Sciences ($250)
- Texas Tech Graduate Student Association ($500)
- Texas Tech Association for Biologists ($550)

Teaching / Mentoring

2022 Mentor Courtney Miller (undergraduate) in study of bioinformatic analysis of target capture data on herbarium curation projects, funded by Honors College at Texas Tech University.

2022 “Introduction to the Workflow Management System --Nextflow & nf-core”, Instructor, High Performance Computing Center, Texas Tech University

2022 Bioinformatic Workshop Series for Processing Target Capture Data
- Organizer, West Texas Association for Botany, Texas Tech University
- Instructor for Session1 HPCC Initiative
- Instructor for Session2 Bioinformatics in Plant Research

2021 Train senior undergraduate for destructive sampling from herbarium specimen and library prep for target capture sequencing

2020	Lab instructor of Plant Biology for non-major students (BIO 1401): 6 sections over 2 semesters
2020	Lab instructor of Plant Evolution for major students focusing on independent group research using herbarium specimen (BOT 3404): 2 sections over 1 semester
2018, 2019	Herbarium Curator: coordinate herbarium research, mentor undergraduate and graduate student herbarium digitization projects
2019	Lab Instructor of Plant Biology for non-major students (BIO 1401)

Community Involvement

2022 - 2026	ACCESS Exterior Board Member
2023	Student Assistant at Botany Conference
2021 - 2023	PlantingScience: mentor and liaison for 6-12 graders
2021 - 2023	West Texas Association for Botany, Founder and President
2021 - 2023	District Advisory Committee for Gifted and Talented Program, Member
2021 - 2023	Lubbock ISD GT Parent Group, Co-founder
2020 - 2023	Women of Color in EEB: Peer Mentor Group, Mentor for another graduate student
2019 - 2023	Texas Tech Student Chapter of Botanical Society of America, Founder and President

Membership

2020 - Present	Society for the Study of Evolution, The Society of Systematic Biologists
2018 - Present	Botanical Society of America, Association of Biologists at Texas Tech University

Additional Professional Experience

2016 - 2018	Environmental Consultant, DaZhiTianCheng Group
2015	Case Coordinator, Sapient Law Group, P.C.
2014	Administrative Intern, Orangutan Foundation International
2014	Hospitality Specialist, Redoubt Mountain Lodge