

Mingzuyu Pan

Department of Biology, Pennsylvania State University, University Park, PA 16802
mzp5919@psu.edu · 814-769-6121

EDUCATION

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- Pennsylvania State University**, University Park, PA Aug 2023 – present
Ph.D. in Bioinformatics and Genomics (expected Mar 2028)
Advisor: Zachary A. Szpiech
- Beijing Normal University**, Beijing, China Sep 2019 – Jun 2023
B.S. in Mathematics and Applied Mathematics

RESEARCH EXPERIENCE

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- Graduate Research Assistant**, Pennsylvania State University Aug 2023 – present
Advisor: Zachary A. Szpiech
Evolutionary genetics and theoretical population genetics, with a current focus on runs of homozygosity (ROH) theory and methods. Integrating computational approaches with empirical genomic data.
- Undergraduate Research Assistant**, Peking University Mar 2022 – Jun 2023
Advisor: Jackson Champer
Developed SLiM-based simulations to compare wave speed and other spread characteristics of diverse gene drive systems in continuous one-dimensional space.

PUBLICATIONS

** corresponding author*

- Pan, M.*** & Szpiech, Z. A.* The Influence of Demographic History and Genetic Architecture on Complex Traits via Runs of Homozygosity. *bioRxiv* 2025.12.17.694908 (2026)
doi:10.64898/2025.12.17.694908.
- Gómez-Bahamón, V.*, Areta, J. I.*, Summers, J., Torres, C., Gandoy, F., **Pan, M.**, Szpiech, Z. A., Toews, D. Rapid expansion overcomes inbreeding in cross-hemisphere colonization of Barn Swallows. *bioRxiv* 2026.07.13.738246 (2026) doi:10.64898/2026.07.13.738246.
- Pan, M.** & Champer, J*. Making waves: Comparative analysis of gene drive spread characteristics in a continuous space model. *Molecular Ecology*. 32, 5673–5694 (2023).

CONFERENCE PRESENTATIONS

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- Pan M**, Szpiech ZA. The influence of demographic history and genetic architecture on complex traits via runs of homozygosity.

Poster presented at:

Population, Evolutionary, and Quantitative Genetics Conference (PEQG)	Jun 2026
Cold Spring Harbor Laboratory Biology of Genomes	May 2026
American Society of Human Genetics Annual Meeting (ASHG)	Oct 2025

FELLOWSHIPS & AWARDS

Huck Distinguished Graduate Fellowship & University Graduate Fellowship	2023 – 2028
Pennsylvania State University (first-year full support; \$5,000 annual supplement to assistantship thereafter)	
Outstanding Thesis Award for Undergraduates of Beijing City	2023
Outstanding Thesis Award, Beijing Normal University	2023
Beijing Normal University Scholarship	2020, 2021, 2022
Second Prize, Mathematical Modeling Competition for College Students in Beijing	2021

TEACHING & MENTORING

Teaching Assistant, Molecular Evolution, Pennsylvania State University	Spring 2026
Undergraduate Research Mentoring, Pennsylvania State University	Oct 2025 – Apr 2026
Mentored Mingxing Wang (now M.S. student, Yale University) on two-dimensional spatial Wright-Fisher simulations using SLiM	

PROFESSIONAL SERVICE

Reviewer, <i>PLOS Genetics</i> , <i>Journal of Molecular Evolution</i>	2026
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TECHNICAL SKILLS

Programming Python, R, C/C++, Bash
Simulation SLiM, msprime
Computing High-performance cluster computing (Slurm), Git/GitHub
Languages English (proficient), Mandarin (native)