# Angela Kaijia Jiang

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College Park, MD

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## EDUCATION

**Ph.D.** Computational Biology, Bioinformatics, Genomics — 2023 Fall - Present
*University of Maryland, College Park—National Institutes of Health Graduate Partnership Program, Bethesda, MD*
**GPA:** 4.00/4.00
**Advisors:** Dr. Brantley Hall, Dr. Xiaofang Jiang

**B.A.** Biological Sciences, Minor Chemistry — 2019 Fall - 2023 Spring
*Smith College, Northampton, MA*
**GPA:** 3.99/4.00
*Magna Cum Laude*, Highest Honors
**Thesis:** *Characterizing lineage-specific gene families in testate lobose amoebae*
**Advisor:** Dr. Laura Katz

## RESEARCH EXPERIENCE

**NIH Predoctoral IRTA Fellow** — 2024 Spring – Present
Advisor: Dr. Xiaofang Jiang
*National Library of Medicine, National Institutes of Health*

- Study evolutionary history of reductase and dehydrogenase enzymes using phylogenetic methods
- Developed a web server to analyze enzyme evolution, and delineate enzymes for use in designing mutagenesis experiments

**Graduate Research Assistant** — 2023 Fall – Present
Advisor: Dr. Brantley Hall
*College of Computer, Mathematical, and Natural Sciences, University of Maryland*

- Characterize health-relevant functions and identify key enzymes of the gut microbiome using computational methods in comparative genomics, phylogenetics, and metagenomic analyses

**Undergraduate Research Assistant** — 2021 Spring – 2023 Spring
Advisor: Dr. Laura Katz
*Biological Sciences Department, Smith College*

- Led a project on characterizing lineage-specific gene families in Arcellinida (a group of shelled amoebae) by developing a bioinformatics pipeline on transcriptomic data, resulting in a submitted first author manuscript
- Characterized protist communities in tide pools using data visualization bioinformatic tools in R and creating phylogenetic trees

**NSF Bioinformatics BRITE REU Fellow** 2022 Summer
Advisor: Dr. Sarah Davies
*Bioinformatics Department, Boston University*

- Analyzed the effect of boring sponge infection on gene expression in eastern oysters through read-mapping and using the R package DESeq2 to look for differentially expressed genes
- Conducted weighted gene correlation network analysis using the R package WGCNA

**Summer Undergraduate Research Fellow (SURF)** 2021 Summer
Advisor: Dr. Laura Katz
*Biological Sciences Department, Smith College*

- Performed field, microscopy, and molecular bench work to extract transcriptomes from Arcellinida cells from bog samples
- Led Python and R workshops to train undergraduate lab mates on using bioinformatic modules such as Biopython

## PUBLICATIONS

[1] Levy, S., **Jiang, A.K.**, Grant, M.R., Arp, G.M., Ndjite, G.M., Jiang, X.F., Hall, B. Convergent evolution of oxidized sugar metabolism in commensal and pathogenic microbes in the inflamed gut. *Nature Communications* 16, 1121 (2025). https://doi.org/10.1038/s41467-025-56332-9

*Under Review*

[4] **Jiang, A.K.**†, Zhao, J†, Jiang, X.F. "EzSEA: An Interactive Web Interface for Enzyme Sequence Evolution Analysis." (Under review at *Bioinformatics Advances*)
[3] **Jiang, A.K.**, Sehein, T.R., Gawron, R, Katz, L.A., Maurer-Alcalá, X. "Characterizing lineage-specific genes in testate lobose amoebae." (In revision at *Protist*)
[2] Ndjite, GM†, **Jiang, A.K.**†, Ravel, C.T.*, Grant, M.R., Jiang, X.F., Hall, B. "Gut Microbial Utilization of the Alternative Sweetener, D-Allulose, via AlsE." (In revision at *Communications Biology*)
[1] Arp, G, **Jiang, A.K.**, Dufault-Thompson, K, Levy, S, Zhong, A, Wassan, JT, Grant, M, Hall, B, Jiang, X.F. "Gut Bacteria Encode Reductases that Biotransform Steroid Hormones." (Under review at *Cell Host & Microbe*)

*Preprints*

[2] Ndjite, GM†, **Jiang, A.K.**†, Ravel, CT*, Grant, MR, Jiang, XF, Hall, B. "Gut Microbial Utilization of the Alternative Sweetener, D-Allulose, via AlsE." *bioRxiv*, https://doi.org/10.1101/2024.11.07.622513
[1] Arp, G, **Jiang, A.K.**, Dufault-Thompson, K, Levy, S, Zhong, A, Wassan, JT, Grant, M, Hall, B, Jiang, XF. "Gut Bacteria Encode Reductases that Biotransform Steroid Hormones." *bioRxiv*, https://doi.org/10.1101/2024.10.04.616736

* Indicates undergraduate mentored
† Indicates equal contribution

## CONFERENCES AND PRESENTATIONS

*Talks*

- **Jiang A.K.** "Characterizing the Distribution and Evolution of Health-Relevant Gut Microbial Enzymes." Computational Biology, Bioinformatics, Genomics Seminar, University of Maryland, College Park (March 2025)
- **Jiang A.K.**, Zhao J, Jiang XF. "EzSEA: An Interactive Web Interface for Enzyme Sequence Analysis." Selected for National Institutes of Health Graduate Student Symposium Elevator Pitch Competition, Bethesda, MD (February 2025)
- **Jiang A.K.**, Bove C, Ries JB, McNally EM, Davies SW. "Bored in a Changing Climate: Effect of Ocean Acidification and Boring Sponge Infection on Eastern Oyster Gene Expression." Boston University BRITE REU Symposium, Boston, MA (August 2022)

*Posters*

- **Jiang A.K.**, Zhao J, Jiang XF. "EzSEA: An Interactive Web Interface for Enzyme Sequence Analysis." National Institutes of Health Graduate Student Symposium, Bethesda, MD (February 2025)
- **Jiang A.K.**, Levy SC, Ravel C, Jiang, XF, Hall, B. "Parallel evolution of oxidized sugar metabolism in commensal and pathogenic microbes exemplifies bacterial adaptation to the inflamed gut." Intelligent Systems for Molecular Biology Conference, Montreal, Quebec, Canada (July 2024)
- **Jiang A.K.**, Levy SC, Ravel C, Jiang, XF, Hall, B. "Convergent Evolution of Oxidized Sugars Metabolism Enables Commensal Adaptation to the Gut." University of Maryland GRAD 2024 Conference, College Park, MD (April 2024)
- **Jiang A.K.**, Sehein T, Katz LA, Maurer-Alcalá X. "Characterizing Lineage-Specific Genes in Testate Lobose Amoebae (Arcellinida)." Pioneer Valley Microbiology Symposium, Amherst, MA (March 2023)
- **Jiang A.K.**, Bove C, Ries JB, McNally EM, Davies SW. "Bored in a Changing Climate: Effect of Ocean Acidification and Boring Sponge Infection on Eastern Oyster Gene Expression." Annual Biomedical Research Conference for Minority Students (ABRCMS) Conference, Anaheim, CA (November 2022)

## TEACHING EXPERIENCE

**Teaching Assistant, BSCI161 (Principles of Evolution and Ecology Lab)** 2023 Fall–2024 Spring
*Biological Sciences Department, University of Maryland, College Park*
46 students across 2 sections per semester

**General and Organic Chemistry Tutor** 2021 Fall–2023 Spring
*Spinelli Center for Quantitative Learning, Smith College*

**Chemistry Lab Report Writing Tutor** 2022 Spring
*Spinelli Center for Quantitative Learning, Smith College*

**Quantitative-Mathematics Tutor, MTH112 and MTH111** 2020 Fall–2021 Fall
*Spinelli Center for Quantitative Learning, Smith College*

**Calculus II Grader** 2020 Fall–2021 Spring
*Mathematics Department, Smith College*

## SKILLS

**Computational Skills:** Python, R, Java, C++, Shell scripting, Bash, Slurm, Git, Mathematica, LaTeX, Machine Learning, Google Cloud
**Visual:** Adobe Photoshop, Adobe Illustrator
**Lab Skills:** PCR, RNA and DNA extraction, whole transcriptome amplification, cell picking, pipetting, animal culture
**Languages:** English (native), Mandarin (professional proficiency), Spanish (elementary proficiency)
**Relevant Coursework:** Algorithmic Evolutionary Biology, Computational Genomics, Bioinformatics and Genomics, Machine Learning, Data Structures, Linear Algebra, Statistics and Probability, Multivariable Calculus, Mathematical Modelling, Evolution, Biochemistry, Microbial Diversity, Organic Synthesis, Bioorganic Chemistry, Microbiomes in Disease and Health

## HONORS/AWARDS

**ISMB Travel Fellowship, $100** (*University of Maryland, College Park*) 2024
**Dean's Fellowship, $2,500** (*University of Maryland, College Park*) 2023
**Margaret Wemple Brigham Prize, first prize in honors thesis** (*Smith College*) 2023
**Departmental Highest Honors** (*Smith College*) 2023
**Smith College Chapter of Phi Beta Kappa** (*Smith College*) 2023
**Sigma Xi Nomination** (*Smith College*) 2023
**Dean's List** (*Smith College*) 2019-2023

## PROFESSIONAL SOCIETY MEMBERSHIPS

- Phi Beta Kappa (2023-Present)

## MENTORING EXPERIENCE

Charlotte Ravel, Undergraduate Researcher (2023-Present)

## ACTIVITIES AND VOLUNTEERING

**HiStep Volunteer, National Institutes of Health** 2024
*Designed and led hands-on bioinformatics research activities for 2 high school students from disadvantaged high schools in Maryland*

**Gut Microbiome Booth Maryland Day Volunteer, University of Maryland** 2024
*Volunteered at a gut microbiome booth on Maryland Day*

**Co-Chair for Maryland Day Ecology Booth, University of Maryland** 2023-Present
*Involved in organization of an outreach booth on local Maryland wildlife ecology for Maryland Day*

**Peer Mentor for Biological Sciences Department** 2023
*Paired up with a student and met regularly to discuss undergraduate course selection and graduate school*

**Java Development Project on Avian Wildlife** 2021-Present
*Developed a Java-based avian wildlife mod for a popular computer game that amassed more than 200,000 downloads (https://github.com/frikinzi/frikinzis_fauna)*