

IRA ZIBBU

zibbuira@msu.edu — [GitHub](#) — [ira-zibbu.github.io](#)

Second Year PhD Student

Department of Microbiology, Genetics and Immunology
Michigan State University

RESEARCH INTERESTS

Experimental evolution, bacterial genome evolution, next-generation sequencing, bioinformatics, molecular biology

PUBLICATIONS

Published

- **Zibbu, I.**, Wilke, C.O., Barrick, J.E. (2025) *seabreeze*: A Pipeline for Analyzing Structural Variation Between Bacterial Genome Assemblies. *Journal of Open Source Software*, 10(111), 8065. <https://doi.org/10.21105/joss.08065>

In preparation

- Gifford, I., **Zibbu I.**, Barrick J.E. (2025) Experimental studies of *Escherichia coli* evolution.

PRESENTATIONS AND AWARDS

- | | |
|--|-------------|
| Global Open Genetic Engineering Conference <i>Paper and poster</i> | 2023 |
| <ul style="list-style-type: none">• Title: Duonco, a dual nanovesicle drug delivery system for breast cancer• Won best experimental project award and gold medal | |
| iGEM Grand Jamboree, Porte de Versailles <i>Presentation and poster</i> | 2022 |
| <ul style="list-style-type: none">• Title: Duonco, a dual nanovesicle drug delivery system for breast cancer• Won gold medal, nominated for best therapeutics, best safety and security, best education, best inclusivity | |
| All India iGEM Meetup, Indian Institute of Science <i>Presentation and poster</i> | 2022 |
| <ul style="list-style-type: none">• Title: Duonco, a dual nanovesicle drug delivery system for breast cancer• Runner up for best poster presentation and best wet lab project among 15 teams | |
| Synaptic Hacks, hosted by Simply Neuroscience <i>Neuroscience hackathon</i> | 2021 |
| <ul style="list-style-type: none">• Won first place in undergraduate category for developing TileSweep, a game to assess cognitive impairment | |

EDUCATION

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|--|----------------------------------|
| Microbiology, Genetics and Immunology Program Michigan State University | August 2025 – Present |
| <ul style="list-style-type: none">• Dual Major PhD Program with Ecology, Evolution and Behaviour• Advisor: Jeffrey E. Barrick• Research focus: Incipient speciation & chromosomal rearrangements in <i>E. coli</i> evolution experiments | |
| Cell and Molecular Biology PhD (transferred to MSU) University of Texas at Austin | August 2024 – August 2025 |
| <ul style="list-style-type: none">• Advisor: Jeffrey E. Barrick | |
| Integrated MS in Biology with Minor in Data Science IISER Thiruvananthapuram | August 2019 – May 2024 |
| <ul style="list-style-type: none">• Advisors: Jeffrey E. Barrick & Sabari Sankar Thirupathy• Thesis title: Chromosomal Rearrangements Over 75,000 Generations of a Long-Term Evolution Experiment with <i>Escherichia coli</i> | |

GRANTS AND FELLOWSHIPS

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| Council for Scientific and Industrial Research Junior Research Fellowship (CSIR JRF) | 2022 |
| <ul style="list-style-type: none">• Awarded the CSIR JRF national Ph.D fellowship and qualified for assistant lectureship with rank 121 among 62,655 candidates (fellowship not availed as of 2025) | |
| oSTEM Graduate Application Scholarship | 2024 |
| <ul style="list-style-type: none">• Scholarship to gender and sexuality minorities pursuing graduate studies in STEM | |
| Khorana Scholars Program | 2023 |
| <ul style="list-style-type: none">• Fellowship to support 3 month research project at the University of Texas at Austin | |
| Frederick Gardner Cottrell Foundation iGEM Impact Grant | 2022 |
| <ul style="list-style-type: none">• Awarded grant for 2022 iGEM project: Duonco, a dual nanovesicle drug delivery system for breast cancer | |
| Department of Science and Technology INSPIRE Fellow | 2019 – 2024 |
| <ul style="list-style-type: none">• National fellowship to support undergraduate research for 5 years | |

PUBLIC TALKS

- "Replaying the Tape of Life"** | *Kealing Middle School, Austin* **2024**
"Long Read Alignment with Minimap – A Chalk Talk" | *BioML Society, Austin* **2025**

SCIENCE COMMUNICATION AND MENTORSHIP

- India Asks Why Podcast, hosted by IndiaBioscience** | *Audio Editor* **2021-2022**
 - Audio editor for the [first season of India Asks Why](#), a podcast about everyday science
- Exhibit A** | *Founding member, editor-in-chief* **2019-2021**
 - Led a team of 15 writers and editors, planned and coordinated content writing, edited and typeset editions
- Team iGEM IISER TVM 2023** | *Advisor* **2023**
 - Guiding and mentoring the 17-member team with experimental design and execution on their project Oasys, a blood-based biomarker detection kit
- IISER Thiruvananthapuram Mentors Program** | *Student mentor* **2023**
 - Mentoring 4 second year undergraduate students with academic and soft skills

UNDERGRADUATE RESEARCH EXPERIENCE

- School of Biology, IISER Thiruvananthapuram** **January 2023 – May 2023**
Minor Project in Data Science, PI: Dr. Ramanathan Natesh
Thiruvananthapuram, India
 - Title: Comparative analysis of machine learning scoring functions (ML SFs) in molecular docking and structure-based virtual screens. [\[GitHub\]](#)
- International Genetically Engineered Machine (iGEM) 2022** **January 2022 – November 2022**
Synthetic biology competition PI: Dr. Sandhya Ganesan, Prof. S Murty
Thiruvananthapuram, India
 - Title: Duonco, a dual nanovesicle drug delivery system for breast cancer. [\[Wiki\]](#)
- School of Mathematics, IISER Thiruvananthapuram** **May 2021 – July 2021**
Summer project in mathematical biology, PI: Dr. Dond Asha Kisan
Thiruvananthapuram, India
 - Title: Keller-Segel Models of Chemotaxis. [\[GitHub\]](#)
- School of Biology, IISER Thiruvananthapuram** **August 2019 – November 2019**
Semester project in insect ecology, PI: Dr. Ullasa Kodandaramaiah
Thiruvananthapuram, India
 - Title: Investigating the effect of diet on the life-history traits of the butterfly *Mycalesis mineus*