Ananya Saha

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Academic Appointments

University of Chicago   **2025-present**
Postdoctoral Scholar at Department of Ecology and Evolution   *Chicago, IL, USA*
Advisor: Dr. Sarah Cobey

Education

Emory University   **2021-2025**
PhD in Population Biology, Ecology and Evolution   *Atlanta, GA, USA*
Advisors: Dr. Rustom Antia and Dr. Katia Koelle

Indian Institute of Science   **2017-2019**
Master of Technology (Research) in Chemical Engineering, 9.4/10.0   *Bangalore, India*
Advisor: Dr. Narendra Dixit

Jadavpur University   **2013-2017**
Bachelor of Engineering in Chemical Engineering, 9.17/10.0 (Class rank 2/82) *Kolkata, India*
Advisors: Dr. Kajari Kargupta and Dr. Sudeshna Saha

Research Publications   Google Scholar

†equal contribution

- **Ananya Saha**, Hasan Ahmed, Cora Hirst, Andreas Handel, Peter Tunis, Katia Koelle and Rustom Antia. Quantifying the waning of humoral immunity. medrxiv link (**Accepted for publication at *Immunity***)

- Ida Uddbäck[†], Sarah E Michalets[†], **Ananya Saha**, Cameron Mattingly, Kirsten N Kost, M Elliott Williams, Laurel A Lawrence, Sakeenah L Hicks, Anice C Lowen, Hasan Ahmed, Allan R Thomsen, Charles J Russell, Christopher D Scharer, Jeremy M Boss, Katia Koelle, Rustom Antia, Jan P Christensen, Jacob E Kohlmeier. Prevention of respiratory virus transmission by resident memory CD8+ T cells. ***Nature*** 2024, 626, 392–400. DOI: 10.1038/s41586-023-06937-1

- Annapaola Mariniello1, Tahseen H. Nasti, Daniel Y. Chang, Masao Hashimoto, Sakshi Malik, Daniel T. McManus, Judong Lee, Donald J. McGuire, Maria A. Cardenas, Pablo Umana, Valeria Nicolini, Rustom Antia, **Ananya Saha**, Zachary Buchwald, Hayden Kissick, Ehsan Ghorani, Silvia Novello, Dario Sangiolo, Giorgio V. Scagliotti, Suresh S. Ramalingam, and Rafi Ahmed. Platinum-Based Chemotherapy Attenuates the Effector Response of CD8 T Cells to Concomitant PD-1 Blockade. ***Clinical Cancer Research*** 2024, 30 (9): 1833–1845. DOI: 10.1158/1078-0432.CCR-23-1316

- **Ananya Saha**, Narendra M. Dixit. Pre-existing resistance in the latent reservoir can compromise VRC01 therapy during chronic HIV-1 infection. ***PLoS Computational Biology*** 2020, 16(11):e1008434. DOI: 10.1371/journal.pcbi.1008434

- Pramita Sen[†], **Ananya Saha**[†], Narendra M. Dixit. You Cannot Have Your Synergy and Efficacy Too. ***Trends in Pharmacological Sciences*** 2019, 40 (11), 811-817. DOI: 10.1016/j.tips.2019.08.008

- **Ananya Saha**, Sarah E Michalets, Ida Uddbäck, Hasan Ahmed, Elizabeth Somsen, Jacob E Kohlmeier, Rustom Antia and Katia Koelle. Quantifying the effect of memory CD8+ T cells in prevention of respiratory virus transmission. ***prepared to be submitted***

- Shuvanwita Saha, **Ananya Saha**, Lyang-om Lepcha, Saibal Ganguly, Dipali Banerjee, Kajari Kargupta. Graphene-Rich G-Co-Ni Nano-Matrix: An Optimized Heterogeneous Catalyst for Hydrogen Generation based on Morphology-Performance Mapping. ***ChemistrySelect*** 2017, 2, 4309. DOI: 10.1002/slct.201700328

Teaching and Professional Experience

SISMID | Teaching Assistant   **2025**

- Worked with Dr Katia Koelle and Dr Pamela Martinez to design R codes and exercises for the module **Viral Evolution, Selection, and Diversity**.
- Facilitated live coding sessions after lectures, significantly enhancing students' understanding of technical concepts.

BIOL 351 - Immunology and Disease | Teaching Assistant   **2022**

- Designed weekly exercises and assignments with Dr Rustom Antia to facilitate student learning.
- Held weekly office hours for student discussion and graded exams to evaluate student performance.

Vantage Research, Chennai, India | Scientist   **2019 - 2021**

- Developed a Quantitative Systems Pharmacology (QSP) model of Psoriatic Arthritis, solving more than 100 ordinary differential equations (ODE).
- Implemented and simulated the model in high performance computing (HPC) cluster using *mrgsolve* R package which made the simulations 40 times faster.
- Performed local and global sensitivity analysis to find out important model parameters. Varied those parameters to identify potential therapeutic pathways.

Talks and Poster Presentations

- Poster presentation at the **Vaccinology: Horizons Across Disease, Demography and Technology** Keystone symposia conference on *Quantifying waning of humoral immunity to multiple vaccines*, Washington, DC, 2025.

- Poster presentation at the **Cold Spring Harbor Laboratory (CSHL) Systems Immunology** conference on *Quantifying waning of humoral immunity to multiple vaccines*, CSHL, NY, 2025.

- Talk at the **South Eastern Regional Virology (SERV)** conference on *Quantifying the role of resident memory CD8 T cells in prevention of respiratory virus transmission*, Atlanta, GA, 2024.

- Poster presentation at the **Ecology and Evolution of Influenza Viruses** workshop on *Quantifying the role of resident memory CD8 T cells in prevention of respiratory virus transmission*, Athens, GA, 2024.
- Poster presentation at the **HIV Vaccines Keystone Symposia** conference on *Pre-existing resistance in the latent reservoir can compromise VRC01 therapy during chronic HIV-1 infection*, Whistler, British Columbia, 2019.

Awards and Achievements

- Award of Distinction by the Infectious Disease Across Scale Training Program (IDASTP) (NIH T32)
- Scholarship to attend Statistics and Modeling in Infectious Diseases (SISMID) courses in 2022 by University of Washington Biostatistics department.
- Professional Development Support (PDS) by Emory University to attend the Advanced Immunology course organized by American Association of Immunologists (AAI).
- Bankim Chandra Bardhan Memorial Medal for securing the highest marks in Mathematics in the higher secondary H.S (+2) examination by Tripura Mathematical Society.
- Indira Bhattachariya Memorial Merit Award, 2013 from Indira Bhattachariya Memorial trust for being within the top two female students in the H.S (+2) stage examination.
- North Eastern Council (NEC) merit scholarship, Govt. of India.

Academic Training and Workshops

- Four week summer school on Complex Systems at the Santa Fe Institute, 2024
- Advanced Immunology course by the American Association of Immunologists (AAI), 2023
- Monsoon school on Physics of Life at NCBS Bangalore, 2018

Skills

- **Technical**: Mathematical Modeling, Quantitative Systems Pharmacology (QSP), Immunological data analysis
- **Statistical**: Generalized Linear Models (GLM), Linear and Nonlinear Mixed Effect Models (LMM and NLMM), Hypothesis Testing, Maximum Likelihood Analysis, Generalized Additive Models (GAM), Causal Inference
- **Mathematical**: Ordinary and partial differential equations (ODE and PDE), Numerical Methods, Stochastic simulations
- **Programing Languages**: R, C/C++
- **Software**: Matlab, RStudio, Microsoft Office, Latex

Academic Services

Manuscript reviewer for PLoS Computational Biology and Mathematical Biosciences.