

Dana Jian

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RESEARCH INTERESTS

Genetic Epidemiology, Statistical Genetics, Causal Inference

EDUCATION

Case Western Reserve University

- PhD Student in Epidemiology and Biostatistics August 2024 - current

University of California, Berkeley

- Bachelor of Science in Microbial Biology with Honors May 2024
 - GPA: 3.87
 - Minor in Statistics
- Honors Research Thesis: Bacteriophages as microbial modulators: Interactions and impacts on a dual disease system in Callery Pear
 - Advisor: Ph.D. Britt Koskella, Ph.D. Steve Lindow, Ph.D. Dominique Holtappels

EXPERIENCE

Undergraduate Research Apprenticeship - Pear Phage Team - Koskella Lab

September 2022 - May 2024

University of California, Berkeley

Advisor(s): Ph.D. Britt Koskella, Ph.D. Steve Lindow, Ph.D. Dominique Holtappels

- Project: PHIRE UP: Phage-Host Interactions integrated into Research on Epiphytic Ecology and Disease using Undergraduate Participation (NSF-Funded)
 - Conducted bioinformatic analysis via Bash programming with statistical methods like strain-level profiling, SNP detection, coverage analysis and linkage disequilibrium in metagenomic datasets.
 - Dataset consists of four bacterial strains and their respective bacteriophage in order to gain insight into bacteria-phage coevolution and characterize metagenomic changes in a microbial population.
 - Tracked bacteria-phage dynamics of fire and blossom blight in a pear tree phyllosphere to develop a new urban disease ecology model system to gain insight into virome-microbiome interactions through the use of temporal, spatial and longitudinal data collection and analysis.
 - Created clear and informative graphs in Excel and R to effectively communicate research findings.
 - Isolated phages and bacteria from local pear tree microbiome in order to develop basic understanding of plant microbiome and viromes. This data will further support the development of a disease ecology model that will help to inform novel methods of sustainable disease control and public health solutions.
- Honors Research
 - Explores the complex interactions between two bacterial pathogens, *Erwinia amylovora* and *Pseudomonas syringae* pv. *syringae*, and their respective bacteriophages in Callery pear. Using a combination of *in vitro* and *ex vivo* assays, how these pathogens coexist and compete under various environmental conditions, and how bacteriophages influence these interactions were investigated. This study integrates principles of biostatistics, epidemiology, and microbiome research to elucidate the role of bacteriophages in modulating microbial dynamics and disease outcomes, with significant implications for plant pathology and biocontrol strategies in agriculture.

- **Infectious Disease Research**

- Implemented bioinformatic analysis with statistical and computational techniques to align and analyze aptamer sequences in Python to conduct pairwise alignments of aptamer sequences and aptamer data processing/computational analysis.
- Isolated synthetic antibodies, aptamers, against viral protein targets, including HA H1N1 (Influenza A), SARS-CoV-2 variants, and Seneca Valley Virus (SVA), with the end goal being to design robust point-of-care (POC) lateral-flow assays (biosensors).

- **Wastewater Treatment Research**

- Developed a high-throughput method of processing wastewater samples that uses colorimetric detection and automation, coupled with biostatistical analysis.
- Determined the efficacy of wastewater treatments using a modified sanitizing protocol for the reduction of foodborne bacteria in agricultural water using normalization and log-transformation techniques.

Undergraduate Research (SPUR)- Journal Club - Kang Lab

January 2021 - May 2021

University of California, Berkeley

- Attended remote professional lab meetings and participated to present relevant scientific articles and literature.

GL4HS Intern - NASA Ames Research Center

June 2018

Mountain View, CA

- Learned introductory omics-based bioinformatics research, collected and analyzed complex biological data.
- Synthesized a competitive research proposal based on data analysis and scientific literature.
- Presented at the poster session at the end of the program
 - Simulated spaceflight suppresses immunoregulatory and inflammatory processes in rat keratinocyte cells due to the downregulation of gene Ccl20 in response to radiation

Intel International Science And Engineering Fair Finalist

June 2018

Danville, CA

Project: 'How Does Wavelength of Exposed Light Affect the Rate of Growth of the Cyanobacteria *Chroococcidiopsis sp.* and the Probability of its Survival in a Martian Environment'

- Presented poster of results over a period of a week

MERIT-BASED AWARDS AND GRANTS

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| • SPUR Student-Initiated Project Grant of \$2000 | 2023 |
| • Intel International Science and Engineering Fair Finalist | 2017 |
| ◦ NASA Second Place of \$750 | |
| ◦ University of Arizona Tuition Scholarship Award | |
| • Honorable Mention in Category at the California State Science Fair | 2017 |
| • First Place in Biology Category at the Contra Costa Science and Engineering Fair | 2017 |

PRESENTATIONS/POSTERS/PANELS AND PUBLICATIONS

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| • Honors Research Symposium, University of California, Berkeley | May 2024 |
| ◦ Bacteriophages as microbial modulators: Interactions and impacts on a dual disease system in Callery Pear | |
| • RCNR Advisory Board Student Experience Panel | April 2024 |
| • NASA Ames Research Center | |
| ◦ Simulated spaceflight and downregulation of gene Ccl20 in response to radiation | 2018 |
| • Intel International Science and Engineering Fair | 2017 |
| ◦ The effect of wavelength on <i>Chroococcidiopsis sp.</i> and the probability of its survival in simulated Martian conditions | |

PUBLICATIONS

D. Holtappels, S.A. Abelson, S.C. Nouth, G.E.J. Rickus, S.Z. Amare, J.P. Gille1, **D.Z. Jian** and B. Koskella
Genomic characterization of *Pseudomonas syringae* pv. *syringae* from Callery pear and the efficiency of associated phages in disease protection. BioRxiv. 2023

SKILLS

Technical: Proficient with Microsoft Suite, Google Platforms, **R programming, Python programming, Bash programming**

Language: Heritage Speaker in Mandarin