

ARYAHI DEORUKHKAR

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EDUCATION

Case Western Reserve University, Cleveland, OH | Graduation: May 2025 | Cumulative GPA: 3.789

Bachelor of Science Candidate in Biochemistry, Minor in Chemistry

Specializations in Cancer Biology, Quantitative Health Science, and Metabolism

RESEARCH EXPERIENCE

CWRU Center for RNA Science and Therapeutics | Luna Lab

2023 - Present

- Designing a RNA-seq pipeline for determining the editing efficiency of circular-ADAR-recruiting RNAs using short and long-read sequences.
- Analyzed RNA recruitment in subcellular structures in APEX-seq data within hepatocytes.
- Implemented limma and voom RNA-seq analysis tools and packages.

UCLA Bruins-in-Genomics Summer Research Program | NSF REU | Hoffmann Lab

Summer 2024

- Conducted scRNA-seq analysis to benchmark and compare an in-lab cell type annotation pipeline to Bone Marrow Map (BMM) for hematopoietic stem and progenitor cells (HSPCs) using Seurat.
- Determined correspondence between identifiers and the importance of resolution-matching in scRNA-seq.
- Received the Excellence in Research Award after presenting findings to a panel of faculty and students at the program's concluding symposium.

CRISPR Biotechnology Laboratory | Under guidance of Dr. Nathan Howell

Summer 2024

- Designed gRNA plasmids and deleted Bmal1 from U2OS cells using CRISPR-cas9 for two-site cleavage.
- Verified the successful creation of plasmids using Sanger sequencing and chromatogram analysis.
- Evaluated editing efficiency of cells via PCR analysis and GFP expression.

RUSH University and Medical Center | Summer Research Program | Bishehsari Lab

Summer 2023

- Designed rBLAST pipelines to aid microbiome studies by predicting virome phylogenetic distributions from fecal RNAseq data. Gained proficiency in Bowtie2, RNASSTAR, Galaxy, and parallelization using snow.
- Identified differentially expressed lncRNAs using DESeq2 and hierarchical cluster analysis in mice under conditions of alcohol consumption, prebiotic intake, and eating at the wrong time. Conducted pathway analysis using Reactome, STRING, and RNACentral.
- Stained MIA PaCa-2 cells for markers of epithelial-mesenchymal transition in pancreatic fibrosis.
- Presented RNA-seq findings at the completion of the program to a group of researchers and faculty, including the dean and the assistant dean of the graduate college.

HHMI SEA-PHAGES Program | Independent Research | Under guidance of Dr. Robert Ward

2021 - 2022

- Discovered, named, amplified, and characterized the novel actinobacteriophage, Sensa.
- Designed and executed an independent research experiment to evaluate whether repressor-mediated immunity offers a more accurate model for phage subclustering and phylogeny.

- Used bioinformatics methods (Welch unpaired t-test for distances between integrase/repressor genes in conserved vs recombination events in 224 temperate *Gordonia* phages) and wet lab techniques (lysogen amplification and immunity assays).
- Presented a poster at the 2022 National HHMI Annual SEA-Symposium, the Spring 2022 CWRU Intersections Research Symposium, and a faculty presentation with the Dean of the College of Arts and Sciences. Work was recognized in the CWRU CAS Winter 2023 Art|Sci Magazine.
- Annotated genomes of phages Ecliptus, Mareelih, LitninMcQueen, and PatrickStar. Confident in maneuvering DNA Master, PECAAN, NCBI BLAST, MUSCLE, SplitsTree, SignalP, ApE, Phamerator, and PET.
- Incorporated wet lab techniques such as spot tests, plaque assays, DNA extraction and purification, designing primers, PCR, restriction enzyme digest, and Transmission Electron Microscopy.

WORK EXPERIENCE

Federal Work Study | Biology Preparatory Lab Technician Fall 2023

- Prepared materials for undergraduate lab courses in the biology department, including bacterial cultures, top agar, and petri dishes. Completed autoclave and blood pathogen trainings.

Teaching Assistant Spring 2023

BIOL 224L: Bacteriophage Genome Annotation and Analysis Lab

- Assisted students in navigating bioinformatics tools to annotate *Gordonia* and *Azotobacter* phage genomes.
- Advised the design of independent research projects and moderated journal club discussions.
- Put forth principles of good teamwork and fostered an environment of curiosity.

Teaching Assistant Fall 2022

BIOL 222L: Introductory Laboratory in Biology

- Introduced topics on phage biology and wet lab techniques to students.
- Oversaw and counseled student presentations, lab journals, and final papers.
- Coordinated lab projects and facilitated smooth operation of numerous concurrent experiments.

ORGANIZATIONS AND POSITIONS

Undergraduate Research Society 2021 - Present

Presidential Advisor | 2024-2025

Co-President | 2023-2024

Mentor in Mentor-Mentee Program | 2023-2024

Director of Public Relations | 2022-2023

Discussions: The Undergraduate Research Journal of CWRU 2021 - Present

Editor-in-Chief | 2024-2025

Assistant Director of Review | 2023-2024

Reviewer and Copy-editor | 2021-Present

Undergraduate Society for Bioethics and Health Humanities 2022 - Present

General Body Member

CWRU Undergraduate Biochemistry Society 2022 - Present

General Body Member

VOLUNTEER EXPERIENCE

University Hospitals Rainbow Babies: Neonatal Intensive Care Unit | 70 Hours 2023 - Present
Read books to infants in the NICU as a read-a-latte volunteer; provided comfort during moments of distress.

Community-Based Rehabilitation Program - Charoti, India | 336 Hours Summer 2022, Summer 2023
Shadowed doctors at New Kasa Hospital (rural) in the OPD, women’s care, and emergency wards. Documented patient symptoms and observed case studies, prognosis, and treatment in triage. Educated people on malaria prevention and assisted in polio vaccination camps. Ran blood and urine tests in the pathology lab.

University Hospitals: Center of Emergency Medicine | 60 Hours 2022 - 2023
Assisted care in high-pressure settings by comforting patients, transferring biospecimens for labs, executing pharmacy runs, and stocking supplies.

Epic Family and Urgent Care | 65 Hours 2021 - 2023
Worked with the healthcare team to effectively facilitate clinical operations. Took patient vitals, heard their concerns, and tried to follow a narrative-driven approach towards understanding sickness.

AWARDS AND HONORS

UCLA Excellence in Research Award	2024
CWRU Undergraduate Research Society: Research Scholar	2022 - Present
Research-A-Thon Competition: Second Place	2021 - 2022, 2022 - 2023
CWRU: Dean’s High Honors	4 Semesters
CWRU: Dean’s Honors	2 Semesters