Abby Atreya, BSc
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Passionate about science and discovery, I am a Presidential Fellowship recipient and aspiring professor with a strong foundation in pharmaceutical sciences, neuroscience, and clinical research. With diverse experience spanning wet lab techniques, computational modeling, teaching, and science communication, I bring curiosity, precision, and empathy to every project. I'm committed to a lifelong journey of learning, research, and mentoring the next generation of scientists. Currently my PhD specialization is shaping up to be transcriptomics, metabolomics, and single-cell RNA sequencing data analysis.

Skills:

Programming (order of proficiency): Python, R, Java

Libraries I use regularly: Scanpy, Pandas, SRNAtoolkit, Tensorflow, Anndata, SciPy, scikit-learn

Clinical Research: EDC(REDcap), EMR(EPIC), ICH-GCP, IRB Submissions

Laboratory: Plasmid preparation/amplification, Lentiviral Transduction, Cell Culture, Native Gel Electrophoresis, Drug Transfection/Incubation, Western Blotting, Tissue Preparation, Immunohistochemistry, Confocal Microscopy imaging, Experimental Design

Other: Data Management/Analysis, Proofreading, Microsoft Office, Adobe Acrobat

Current Projects

- Computational and In-vitro study of Metabolizing Enzyme Expression and Regulation in Fetal Alcohol Syndrome within the liver, possibly attributing to sudden infant death syndrome.
- By studying GFI1B's role in blood production and liver function, I aim to determine if its overexpression in FAS compensates for damaged metabolic pathways, potentially contributing to lipid accumulation, ER stress, and mitochondrial dysfunction associated with increased SIDS risk.
- Wet Lab Research on GFi1b impact on drug metabolism through its regulatory effects on hematopoietic processes
- Development of a Coagulation Medication Susceptibility Algorithm to Compile a Drug Resistance Database

Peer-Reviewed Articles

1. Dinh, L., & **Atreya, A. (**2024, December). An updated overview on long-acting therapeutics for the prevention and treatment of human immunodeficiency virus (HIV) from a pharmaceutics perspective. ResearchGate. https://researchgate.net/publication/387590169

2. **Atreya, A.** (2024, August). Unlocking the mysteries of how substances affect HIV medications by artificial intelligence: Changing the game for HIV patient care. American Association of Pharmaceutical Scientists. https://aapsnewsmagazine.org/aapsnewsmagazine/articles/new-page2/aug24/cover-story-aug24b
3. Urig, MR, Hetzer, S.M.", Glorius, A., **Ramsey, A.,** Burke, E., Herman, J., & Evanson, N.K. Astrocytes compensate for dysfunctional microglial phagocytosis chronically following traumatic brain injury and chronic variable stress.
4. Verma, P., Hooker, K., Krishnan, D., Gordon, S., Sumra, H., Boggs, A., Yin, B., & **Ramsey, A**. (2021). Prevalence of psychiatric illnesses in patients undergoing oral and maxillofacial surgery procedures in an outpatient setting. Journal of Oral and Maxillofacial Surgery, 79, e47–e48. https://doi.org/10.1016/j.joms.2021.08.069

Manuscripts in Preparation / Under Review

1. **Atreya, A.**, Eades, W., Mohammadpour, S., & Yan, B. Investigating the genetic basis of sudden infant death syndrome in the context of metabolic disorders and fetal alcohol syndrome [Manuscript in preparation].
2. **Atreya, A.**, Dinh, L., Mohammadpour, S., & Yan, B. Genetic insights into the role of biotransformation genes in sudden infant death syndrome: A comprehensive review [Manuscript in preparation].
3. **Atreya, A.**, Eades, W., & Yan, B. Data integration and machine learning model for medication interaction prediction and personalized treatment optimization [Under Review]

Presentations

“Data Integration and Machine Learning Model for Medication Interaction Prediction and Personalized Treatment Optimization” | March 2024 | **Abby Ramsey**, William Eades, Dr. Bingfang Yan

“Temporal Patterns of Glial Cells after Traumatic Brain Injuries and Chronic Variable Stress” | April 2023 | **Abby L. Ramsey**, Shelby M. Hetzer, Macy R. Urig, Nathan K. Evanson

Experience

Graduate Research Assistant | University of Cincinnati
July 2023-Present

- Collaborated with a major biotech company on a (NDA-mandated) drug delivery engineering project.

- Investigated enzyme regulation in sudden infant death syndrome.
- Analyzing metabolic disorder pathways through hepatocyte cell culture, lentiviral transduction, and flow cytometry.
- Performed LC-MS, native gel electrophoresis, and drug transfection/incubation, assessing enzyme function and cellular responses in cellular disorders.
- Developed a python-based drug-drug interaction prediction model among biologic medications for HIV management using with TensorFlow, Scipy, and Sklearn.
- Conducted molecular docking with ICM-Pro and used Bioconductor to analyze RNA-seq data on publicly available data and self-generated with my institution's genomic cores' partnership. Examined results for expression differences to validate or refute my wet lab findings.
- Prepared and submitted successful grant proposals, securing funding for specialized project funding for my team.
- Analyzed and processed patient samples as part of clinical trials, focusing on drug metabolism and interaction pathways to inform product design for safer drug formulations.

Administrative assistant | KNR Holdings, LLC
May 2020- May 2023

- Demonstrated effective communication skills by liaising with clients and international colleagues across various time zones, ensuring clear and timely updates, which improved coordination and reduced delays.
- Developed and updated work instructions to streamline the product management process, improving operational efficiency and reducing errors in invoicing and shipments.
- Created detailed reports and consolidated forms of documentation and communication across platforms to improve organization and workflow.
- Ensured product safety and quality standards were maintained by mandating quality checks on products before shipping to global clients, addressing any defective or problematic products by promptly reporting and resolving issues, leading to a reduction in product returns.

Volunteer Research Assistant | Cincinnati Children's Hospital Medical Center
August 2021-May 2023

- Researched effects of traumatic brain injuries on mice focusing on long axon secondary injury pathways and investigated possible neuroprotectants to prevent secondary brain injury after trauma.
- Currently published in The Journal of Microglia
- Performed Mouse Brain immunohistochemistry from slicing to imaging.

Medical Scribe | Cincinnati Children's

Oct 2021- Sep 2022

- Worked with up to 3 providers at a time in an urgent care setting, documenting in detail up to 90 patient electronic medical records in real time.
- Recorded and documented the stories, medical histories, physical exams, procedures, findings, and diagnoses of up to 90 patients within an 8-hour shift.
- Utilized and became proficient with EPIC software to ensure accurate and timely documentation.
  Assisted in maintaining an organized and efficient environment for patients and healthcare providers.

Clinical Intern| Bon Secours Mercy Health
May 2021- Aug 2021

- Assisted over 10 different healthcare providers including doctors, nurses, dietitians, and nurse practitioners with their day-to-day tasks in patient care settings.
- Provided support in patient transport and patient observation as needed, ensuring patient safety and comfort.
- Supervised and assisted patients with activities of daily living under the supervision of RNs.
- Actively participated in developmentally appropriate activities for patients, contributing to their overall well-being.
- Implemented infection control policies and procedures, maintaining a safe and sterile environment.
- Communicated effectively with patients, families, and healthcare providers.

Clinical Trial Assistant | GME Office at The Jewish Hospital-Mercy Health
June 2018-August 2019

- Organized and performed data entry for clinical trials, prepared weekly minutes for IRB review, and assisted with participant retention and recruitment.

Volunteer Experience:
Peer2PeerMentor Program | Arthritis Foundation
August 2019-March 2020

- 2019 Walk to Cure Arthritis Foundation Honoree
- Mentored a slightly younger teenage peer about advocating for yourself and life while managing Juvenile Arthritis

Hospital Volunteer-Patient Care Liason | The Jewish Hospital-Mercy Health
May 2015-August 2019

- Accumulated over 2000 total hours as I conducted patient advocate surveys in which patients were interviewed to obtain qualitative information about the hospital.

- Assisted in patient transport and provided support in patient observation as needed.
- Contributed to creating a safe, organized, and efficient environment for patients, families, and healthcare providers.

Junior Hospital Volunteer | Cincinnati Children's Hospital Medical Center
May 2017-August 2019

- Engaged with children in the Burnet Pediatric Primary Care unit, organizing and supervising developmentally appropriate activities to promote emotional and social well-being.
- Provided support and companionship to pediatric patients throughout various outpatient units, assisting with recreational activities .

Education

Bachelor of Science, Neurobiology | 2023 | University of Cincinnati

Graduate Certificate, Information Technology-Data Science concentration | Spring 2024 | University of Cincinnati

Master of Science, Pharmaceutical Sciences | Expected Summer 2025 | University of Cincinnati

Doctor of Philosophy, Pharmaceutical Sciences | Expected 2029 | University of Cincinnati

Science Communication Experience:
General Chemistry Teaching Assistant | University of Cincinnati (2021-2023)
Linux/FOSS Club Presenter | University of Cincinnati (2022-Present)

Certifications

CITI: Good Clinical Practice (GCP) [2019-2025] and Human Subject Research (HSR), [2019-2025]
NIDA Clinical Trials Network: Good Clinical Practice (GCP) [2024-2027]