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CONTACT INFORMATION Department of Statistics and Data Science  
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SUMMARY I am a Ph.D. student in the Department of Statistics & Data Science at Carnegie Mellon University. I primarily do work related to analysis of biomedical data. Currently, I am focused on statistical methods for wastewater-based epidemiology.

EDUCATION

Current	<b>Ph.D. Statistics</b> , Carnegie Mellon University, Pittsburgh, PA USA <i>Advised by F. William Townes</i>
2024	<b>M.S. Statistics</b> , Carnegie Mellon University, Pittsburgh, PA, USA
2021	<b>B.S. Data Science</b> , University of Michigan, Ann Arbor, MI USA
2021	<b>B.F.A. Jazz Studies</b> , University of Michigan, Ann Arbor, MI USA

AWARDS Phi Beta Kappa. Inducted 2021.

## RESEARCH Preprints

- [1] **Rosengart AL**, Bidwell AL, Wolfe MK, Boehm AB, Townes FW. Spatio-temporal variability of the Pepper Mild Mottle Virus biomarker in wastewater (2024). <https://arxiv.org/abs/2408.12012>.

## Peer-Reviewed Journal Articles

- [1] Rahimikollu J, Xiao H, **Rosengart A**, Rosen ABI, Tabib T, Zdinak PM, He K, Bing X, Bunea F, Wegkamp M, Poholek A, Joglekar A, Lafyatis R, Das J. SLIDE: Significant Latent Factor Interaction Discovery and Exploration across biological domains. *Nature Methods* (2024). doi:10.1038/s41592-024-02175-z.
- [2] Wheeler J, **Rosengart A**, Jiang Z, Tan K, Treutle N, Ionides EL. Informing policy via dynamic models: Cholera in Haiti. *PLoS Computational Biology* (2024). doi:10.1371/journal.pcbi.1012032.
- [3] Li SR, Moheimani H, Herzig B, Kail M, Krishnamoorthi N, Wu J, Abdelhamid S, Scioscia J, Sung E, **Rosengart A**, Bonaroti J, Johansson PI, Stensballe J, Neal MD, Das J, Kar U, Sperry J, Billiar TR. High-dimensional proteomics identifies organ injury patterns associated with outcomes in human trauma. *Journal of Trauma and Acute Care Surgery* (2023). doi:10.1097/ta.0000000000003880.
- [4] Abdelhamid SS, Scioscia J, Vodovotz Y, Wu J, **Rosengart A**, Sung E, Rahman S, Voinchet R, Bonaroti J, Li S, Darby JL, Kar U, Neal MD, Sperry J, Das J, Billiar TR. Multi-Omic Admission-Based Prognostic Biomarkers Identified by Machine Learning Algorithms Predict Patient Recovery and 30-Day Survival in Trauma Patients. *Metabolites* (2022). doi:10.3390/metabo12090774.

## Class Projects and Other Unpublished Work

- [1] Shen A, Rosengart A. Can ChatGPT Predict the Weather? A Study of the Universality of the Self-Attention Mechanism. Carnegie Mellon 10-716 (Advanced Machine Learning). Spring 2024.
- [2] Rosengart A, Scharfstein K, Thivierge G. Variational and Proximal Causal Effect Estimation in the Presence of Unmeasured Confounding. Carnegie Mellon University 10-708 (Probabilistic Graphical Models). Winter 2023.

## TALKS

### Invited

- [1] Significant Latent Factor Interaction Discovery & Exploration. CSI Retreat, Center for Systems Immunology, University of Pittsburgh. October 2022.

### Formal Presentations

- [1] Wastewater-based Epidemiology. CDC Site Visit, Delphi Research Group, Carnegie Mellon University. June 2023.
- [2] Characterizing Variability in Pepper Mild Mottle Virus for Wastewater Epidemiology. CDC Center for Forecasting and Analytics Site Visit, Delphi Research Group, Carnegie Mellon University. June 2024.

## WORK EXPERIENCE

2023 Summer

### Laboratory Researcher

*University of Pittsburgh, Center for Systems Immunology*

Applied large language modeling tools to prediction tasks in protein binding. Led code composition and documentation for construction, training, and use of protein binding Transformer.

2022 Spring-Summer

### Laboratory Researcher

*University of Pittsburgh, Center for Systems Immunology*

Developed methodology for identification of putative mechanisms of disease from multi-omic biomedical data. Composed and documented code.

2021 Summer

### Trauma ATLAS Intern

*Pittsburgh Trauma Research Center, University of Pittsburgh*

Analyzed scale, multi-omics data from experimental trials in trauma patient treatments. Composed sample code scripts for data cleaning, visualization, and gene set enrichment analysis to fellow researchers. Implemented consensus-based feature selection for dimension reduction.

2021 Spring

### Undergraduate Research Trainee

*Department of Statistics, University of Michigan*

Trained in performing time series analysis and statistical modeling of stochastic processes for epidemiological study using partially observed Markov processes.

2020 Fall

### Laboratory Researcher

*Center for Biologic Imaging, University of Pittsburgh*

Worked on the development of efficient and accurate computational methodologies for analysis of large-scale experimental biomedical imaging data. Adapted preexisting software and the development of a software pipeline for cleaning, manipulating, and mapping terabyte-scale mouse brain imaging slices to the Allen Mouse Brain Atlas.

TEACHING  
EXPERIENCE

- 2022 Fall                    **36-401 Modern Regression**  
*Teaching Assistant*  
Undergraduate course on applied data analysis.
- 2023 Spring                **36-615 Software for Large-Scale Data**  
*Teaching Assistant*  
Graduate course on distributed data systems and analysis.
- 2023 Spring                **36-616 Computational Methods for Statistics**  
*Teaching Assistant*  
Graduate course on computing tools for data analysis.
- 2023 Fall                    **36-613 Data Visualization**  
*Teaching Assistant*  
Graduate course on methods and practices for data visualization.
- 2023 Fall                    **36-614 Data Engineering and Distributed Environments**  
*Teaching Assistant*  
Graduate course on computing tools for data science.
- 2024 Spring                **36-315 Statistical Graphics and Visualization**  
*Teaching Assistant*  
Undergraduate course on methods and practices for data visualization.
- 2024 Fall                    **36-613 Data Visualization**  
*Teaching Assistant*  
Graduate course on methods and practices for data visualization.
- 2024 Fall                    **36-614 Data Engineering and Distributed Environments**  
*Teaching Assistant*  
Graduate course on computing tools for data science.

TECHNICAL  
SKILLS

R, Python, L<sup>A</sup>T<sub>E</sub>X, Shell