

CONTACT	<p>Department of Biostatistics and Bioinformatics Emory University 1518 Clifton Rd NE Atlanta, GA 30322</p>	<p>✉ E-mail: hannah.b.waddel@emory.edu Homepage: hbwddl.github.io/ LinkedIn: linkedin.com/in/hannah-b-waddel/ GitHub: github.com/hbwddl ORCID: 0000-0001-5970-2750</p>
EDUCATION	<p>Emory University, Atlanta, Georgia 2025</p> <ul style="list-style-type: none"> • Ph.D. Biostatistics • Advisors: Dr. Max Lau, Dr. Lance Waller • Dissertation Title: “Phylogenetic inference incorporating pathogen diversity and outbreak data” <p>Emory University, Atlanta, Georgia 2021</p> <ul style="list-style-type: none"> • M.S. Biostatistics <p>University of Utah, Salt Lake City, Utah 2018</p> <ul style="list-style-type: none"> • B.S. Mathematics, <i>Summa Cum Laude</i> 	
EMPLOYMENT	<ul style="list-style-type: none"> • Biostatistics Intern Summer 2023 Sanofi Vaccines Division, Swiftwater, Pennsylvania (remote) <ul style="list-style-type: none"> ◦ Re-analyzed phase II vaccine clinical trial data from over 7,000 patients across 6 trials to assess the impact of the trial protocols’ inclusion criteria and follow-up times ◦ Completed trainings in international clinical research standards and good clinical practice • Biostatistics Collaboration Core 2019-Present Department of Biostatistics and Bioinformatics, Emory University (part-time) <ul style="list-style-type: none"> ◦ Participated in close consultation and collaboration with researchers from the schools of medicine and public health on design and implementation of studies at all stages of research ◦ Provided statistical collaboration and/or HPC cluster support on 17 research projects, resulting in coauthorship on 6 manuscripts (2 published, 1 revised and resubmitted, 3 submitted and under review) • Actuarial Intern Summer 2016 Willis Towers Watson, Denver, Colorado <ul style="list-style-type: none"> ◦ Used proprietary software and programming language to calculate expected yearly payments to companies’ pension plans ◦ Completed project recommending more accurate pension mortality assumptions to an international company with over 14,000 employees in their pension plan 	
RESEARCH PROJECTS	<ul style="list-style-type: none"> • “Dissecting the evolutionary dynamics of influenza A virus within and between naturally infected swine” <ul style="list-style-type: none"> ◦ Developing joint phylodynamic epidemiological-evolutionary model to integrate disease testing data and pathogen genetic sampling to infer the transmission dynamics of multiple circulating disease variants (as seen in influenza and SARS CoV-2 outbreaks, for example) ◦ Implementing large-scale yet efficient C++ algorithm to fit stochastic model to sampling data and perform high-dimensional data imputation for outbreaks ◦ Developing and unit-testing R package to distribute method, along with functions for summarization, visualization, and remote HPC cluster interaction (over 24,000 lines of C++, R, and shell code) ◦ Work done through the Emory Molecules and Pathogens to Populations and Pandemics (MP3) initiative • “ScTree: Scalable and robust mechanistic integration of epidemiological and genomic data for transmission tree inference” <ul style="list-style-type: none"> ◦ Developed scalable algorithm to integrate pathogen genomic data and clinical epidemiological data in order to infer transmission tree (who-infected-whom) of disease outbreaks ◦ Achieved exponential gain in computation efficiency by an over thousand-fold reduction of model dimension, while still maintaining model accuracy and robustness ◦ Developed R package to distribute method and summarize + visualize results (over 29,000 lines of C++, R, and shell code) 	

PUBLICATIONS **Articles**

1. Dorbu, A. D., **Waddel, H. B.**, Chadha, M., López de Romaña, D., Arabi, M., Moore, R. H., Mehta, C., & Pachón, H. (2025). Nutritional Anemia Reductions Due to Food Fortification Among Women of Childbearing Age: A Literature Review and Bayesian Meta-Analysis. *Maternal & Child Nutrition*, e13801. <https://doi.org/10.1111/mcn.13801>
2. Sadan, O., **Waddel, H. B.**, Moore, R., Feng, C., Mei, Y., Pearce, D., Kraft, J., Pimentel, C., Mathew, S., Akbik, F., Ameli, P., Taylor, A., Danyluk, L., Martin, K. S., Garner, K., Kolenda, J., Pujari, A., Asbury, W., Jaja, B. N. R., Macdonald, R. L., Cawley, C. M., Barrow, D. L., & Samuels, O. (2022). Does intrathecal nicardipine for cerebral vasospasm following subarachnoid hemorrhage correlate with reduced delayed cerebral ischemia? A retrospective propensity score-based analysis. *Journal of Neurosurgery*, 136(1), 115-124. PMID: 34087804
3. Akbik, F., **Waddel, H. B.**, Jaja, B. N. R., Macdonald, R. L., Moore, R., Samuels, O. B., & Sadan, O. (2021). Nicardipine Prolonged Release Implants for Prevention of Delayed Cerebral Ischemia after Aneurysmal Subarachnoid Hemorrhage: A Meta-Analysis. *Journal of Stroke and Cerebrovascular Diseases*, 30(10), 106020. PMID: 34365121
4. Nadel, B. B., Lopez, D., Montoya, D. J., Ma, F., **Waddel, H. B.**, Khan, M. M., Mangul, S., & Pellegrini, M. (2021). The Gene Expression Deconvolution Interactive Tool (GEDIT): accurate cell type quantification from gene expression data. *GigaScience*, 10(2) PMID: 33590863

Preprints/Pending

1. **Waddel, H. B.**, Koelle, K. V., Lau, M. S. Y., (2024). ScTree: Scalable and robust mechanistic integration of epidemiological and genomic data for transmission tree inference. *Under revision*. Preprint available on bioRxiv.
2. Howard, M., Wilmot, G., Jorgensen, C., Cahn, S., **Waddel, H. B.**, Ali, N., Pagano, J., & Rosen, A. (2024). Development and Evaluation of a Novel Reproductive Educational Tool for Patients with Spinocerebellar Ataxia. *Under review*.
3. Quillin, A. L., **Waddel, H. B.**, Druss, J., & Laney, D. A. (2024). Optimizing detection of early gastrointestinal symptoms in young children with Fabry disease. *Under review*.
4. Moubadder, L., Bliss, M., Maliniak, M., **Waddel, H. B.**, Switchenko, J., Chang, H., Kramer, M., & McCullough, L. (2024). Increasing access, equitability, and rigor in the assessment of Neighborhood Mortgage Discrimination. *Under revision*. Preprint available at Research Square.

CONFERENCE PARTICIPATION

- **Waddel, H. B.**, Koelle, K. V., Lau, M. S. Y., “Scalable and robust mechanistic integration of epidemiological and genomic data for phylodynamic inference”, Oral Presentation, *Epidemics9*, Bologna, Italy, 2023
- **Waddel, H. B.**, Adler, F.A., “The Community Ecology of the Music Canon”, Poster, *National Conference on Undergraduate Research*, Edmond, OK, USA, 2018
- **Waddel, H. B.**, Adler, F.A., “The Community Ecology of the Music Canon”, Poster, *Utah Conference on Undergraduate Research*, Cedar City, UT, USA, 2018

HONORS AND AWARDS

- **First Place, Senior PhD Student Presentation Day** 2023
Emory University Department of Biostatistics
- **Scholarship** 2022
Summer Institute in Statistics and Modeling in Infectious Disease, U. of Washington
- **Gibson Senior Award** 2018
Department of Mathematics, University of Utah
- **Emeritus Librarian Scholarship** 2017
J. Willard Marriott Library, University of Utah
- **Pi Mu Epsilon Mathematics Honor Society** 2017
Department of Mathematics, University of Utah
- **National Merit Scholarship** 2013

GRANTS AND FELLOWSHIPS	<ul style="list-style-type: none"> ● Laney Graduate Fellowship 2018 Laney Graduate School, Emory University ● Independent Research Experience Undergraduate Grant (\$1,000) 2018 Department of Mathematics and Department of Biology, University of Utah Title: “The Community Ecology of the Music Canon” ● Independent Research Experience Undergraduate Grant (\$2,000) 2017 Department of Mathematics and Department of Biology, University of Utah Title: “The Community Ecology of the Music Canon” ● ORCA Undergraduate Student Mentoring Grant (\$1,500) 2016 Office of Research and Creative Activities, Brigham Young University Title: “Transcription Factor Interactions in Developing Hair Cells” ● ORCA Undergraduate Student Mentoring Grant (\$1,500) 2015 Office of Research and Creative Activities, Brigham Young University Title: “Sensory Integration in Zebrafish Larvae”
	<p>TEACHING Instructor</p> <ul style="list-style-type: none"> ● Co-Instructor, Intro to Epidemiology and Biostatistics (HGC 707) Fall 2022 ● SPSS Short Course (Part of HGC 740C) Summer 2022, 2023, 2024 ● Statistical Methods I Lab (BIOS 500L) Fall 2020 <p>Teaching Assistant</p> <ul style="list-style-type: none"> ● Statistical Practice I (BIOS 580) Fall 2022, Fall 2023 ● Biostatistical Methods II (BIOS 591P) Spring 2020-Spring 2024 ● Statistical Methods I Lab (BIOS 500L) Fall 2019 <p>Guest Lectures</p> <ul style="list-style-type: none"> ● “Clean Code to Deal with Dirty Data”, Statistical Practice I (BIOS 580), 2024 ● “Introduction to the Command Line and the HPC Cluster”, Doctoral Seminar in Epidemiologic Practice (EPI 790R), 2024
	<p>SERVICE</p> <ul style="list-style-type: none"> ● Georgia Statistics Day 2024 Student volunteer coordinator ● Ad-hoc Reviewer 2023 Journal of the Royal Society Interface ● Graduate Student Network executive committee 2020-Present National Institute of Statistical Sciences (NISS) <ul style="list-style-type: none"> ○ Founding member of the NISS Graduate Student Network with a mission to support the graduate students at NISS-affiliated academic departments throughout their graduate programs and in their early career ○ Planned and hosted quarterly events to support GSN’s mission including webinars, career fairs, panels, and networking socials ● National Institute of Statistical Sciences (NISS) Graduate Student Research Conference 2021-2024 Conference organizing committee ● Archival Volunteer 2021-2023 Computer Museum of America <ul style="list-style-type: none"> ○ Organizing and describing documentation and other textual materials which relate to the museum’s hardware and software collections ● Student Council Representative 2019-2022 Department of Biostatistics and Bioinformatics, Emory University ● COVID-19 Geospatial support 2020 Georgia Department of Public Health

TECHNICAL SKILLS	<ul style="list-style-type: none"> • Programming and Software: Advanced proficiency in R, SPSS, SAS. Intermediate proficiency in R package development and testing, Rshiny; Python; C++; Bash/Unix; Linux system administration; Git/Github; and ArcGIS Software. Basic proficiency in Docker (and Rocker); SQL; PySpark; HTML/CSS. • Statistics: Generalized linear models; Bayesian hierarchical modeling; spatial statistics; causal inference and observational studies via propensity score modeling and instrumental variables; survival analysis; meta-analysis; infectious disease modeling; stochastic processes; time-series analysis; probability theory; fitting Bayesian models via Markov Chain Monte Carlo using Metropolis-Hastings, JAGS (Just Another Gibbs Sampler), or INLA (Integrated Nested Laplace Approximation)
AFFILIATIONS	<ul style="list-style-type: none"> • American Statistical Association (ASA) • International Biometric Society (IBS), Eastern North American Region (ENAR) • Association for Computing Machinery (ACM)
OTHER	<ul style="list-style-type: none"> • Society of Actuaries Exam P (Probability) 2016