Xiaoru Dong

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EDUCATION

University of Florida May 2024 (Expected)
PhD in Biostatistics Major GPA 3.63/4.00
Advisor: Rhonda Bacher

University of Illinois at Urbana-Champaign Dec 2018
Bachelor of Science in Statistics Major GPA 3.89/4.00

EXPERIENCE

Graduate Research Assistant, University of Florida Aug 2019-Present

- Collaborate with Dr. Todd Brusko and Dr. Philip Efron and their teams at the University of Florida College of Medicine on data analysis projects in immunology and surgery, focusing on diseases like type 1 diabetes and sepsis.
- Utilize R to conduct advanced analysis on scRNA-seq and bulk RNA-seq data, identifying critical disease-associated factors and biomarkers.
- Apply machine learning methods, such as random forest and lasso, to analyze high-dimensional omics datasets, such as genomic, epigenomic, cytokine, and immunophenotyping data.
- Contribute to study design, data analysis, and the publication of findings in scientific journals.
- Develop novel computational methods for scRNA-seq data analysis using R, such as the creation of innovative algorithms for data-driven scRNA-seq trajectory evaluation aimed at identifying the most accurate trajectory.
- Provide mentorship and support in R programming to lab members, aiding in data analysis tasks and troubleshooting issues.

Graduate Teaching Assistant , University of Florida Aug 2019-May 2023

- Mentored undergraduate and graduate students across various departments in 5 classes such as Public Health Computing, Biostatistical Methods, and Statistical Analysis of Genetic Data, enhancing engagement and performance in both online and in-person classes (20+ students per class).
- Provided weekly office hours for coding guidance in R and SAS, clarifying complex concepts and contributing to the students' practical understanding of statistical analysis.
- Led interactive classroom discussions and facilitated group activities to encourage critical thinking and foster a collaborative learning environment.
- Created and implemented innovative teaching materials, including assignments and digital learning platforms (Canvas), leading to improved student learning outcomes and course effectiveness.
- Delivered detailed grading and constructive feedback, contributing to measurable improvements in student performance and academic success.

PUBLICATIONS & PREPRINTS

Key: † indicates co-first authors; * indicates corresponding authors.

Dong, X., Leary, J. R., Yang, C., Brusko, M. A., Brusko, T. M., & Bacher, R*. (2023). *Data-driven selection of analysis decisions in single-cell RNA-seq trajectory inference* (p. 2023.12.18.572214). bioRxiv. https://doi.org/10.1101/2023.12.18.572214

Shapiro, M. R.†, **Dong, X**.†, Perry, D. J.†, McNichols, J. M., Thirawatananond, P., Posgai, A. L., Peters, L. D., Motwani, K., Musca, R. S., Muir, A., Concannon, P., Jacobsen, L. M., Mathews, C. E., Wasserfall, C. H., Haller, M. J., Schatz, D. A., Atkinson, M. A., Brusko, M. A., Bacher, R. L. *, & Brusko, T. M*. (2023). Human immune phenotyping reveals accelerated aging in type 1 diabetes. *JCI Insight*. https://doi.org/10.1172/jci.insight.170767

Jacobsen, L. M. †, Diggins, K. †, Blanchfield, L. †, McNichols, J. A., Perry, D. J., Brant, J., **Dong, X.**, Bacher, R., Gersuk, V. H., Schatz, D. A., Atkinson, M. A., Mathews, C. E., Haller, M. J., Long, S. A. *, Linsley, P. S. *, & Brusko, T. M*. (2023). Responders to low-dose ATG induce CD4 T cell exhaustion in type 1 diabetes. *JCI Insight.* https://doi.org/10.1172/jci.insight.161812

Dong, X., & Bacher, R. (2023). Analysis of Single-Cell RNA-seq Data. In B. Fridley & X. Wang (Eds.), *Statistical Genomics* (Vol. 2629, pp. 95–114). Springer US. https://doi.org/10.1007/978-1-0716-2986-4_6

Dong, X., & Bacher, R. (2022). Data-driven assessment of dimension reduction quality for single-cell omics data. *Patterns*, *3*(3), 100465. https://doi.org/10.1016/j.patter.2022.100465

Darden, D. B., **Dong, X.,** Brusko, M. A., Kelly, L., Fenner, B., Rincon, J. C., Dirain, M. L., Ungaro, R., Nacionales, D. C., Gauthier, M., Kladde, M., Brusko, T. M., Bihorac, A., Moore, F. A., Loftus, T., Bacher, R., Moldawer, L. L., Mohr, A. M., & Efron, P. A.* (2021). A Novel Single Cell RNA-seq Analysis of Non-Myeloid Circulating Cells in Late Sepsis. *Frontiers in Immunology, 12*, 696536. https://doi.org/10.3389/fimmu.2021.696536

Ross, J. J., Wasserfall, C. H., Bacher, R., Perry, D. J., McGrail, K., Posgai, A. L., **Dong, X.,** Muir, A., Li, X., Campbell-Thompson, M., Brusko, T. M., Schatz, D. A., Haller, M. J., & Atkinson, M. A. (2021). Exocrine Pancreatic Enzymes Are a Serological Biomarker for Type 1 Diabetes Staging and Pancreas Size. *Diabetes, 70*(4), 944–954. https://doi.org/10.2337/db20-0995

PRESENTATIONS

"Data-driven Evaluation of Trajectories in Single-Cell RNA-sequencing Data." International Biometric Society Eastern North American Region (ENAR) Annual Meeting. March 2023. Nashville, TN, USA.

"Immune Phenotypic Profiling across the Human Lifespan Demonstrates Accelerated Immune Aging in Subjects with Type 1 Diabetes." 2022 College of Medicine Research Day. April 2022. University of Florida, Gainesville, FL, USA.

"Analyzing Inclusion Criteria of 7000 Cochrane Systematic Reviews." Undergraduate Research Symposium. April 2018. University of Illinois at Urbana-Champaign, Champaign, IL, USA.

"Distortions in Scientific Literature - A Replication Analysis of Greenberg's Citation Network of 302 Alzheimer's Science Research Papers." Undergraduate Research Symposium. April 2018. University of Illinois at Urbana-Champaign, Champaign, IL, USA.

ACADEMIC SERVICE

Journal reviewer

- BMC Bioinformatics, Scientific Reports

HONORS & AWARDS

Mark C. K. Yang Student Presentation Award	Oct 2023
Student Competition Award, American Statistical Association Florida Chapter	March 2023
Certificate in Data Science	Nov 2018
Successful Participant Award, Mathematical Contest in Modeling	Jan 2016

SKILLS

- **Programming Languages:** Proficient in R/Rstudio for data analysis and visualization, complemented by skills in SAS and Python for diverse statistical applications.
- **Statistical Analysis Techniques**: Proficient in a variety of statistical methods for biomedical research, including multivariate analysis and machine learning algorithms. Experienced with bioinformatics tools for RNA-seq analysis, notably Seurat and DESeq2.
- **Data Coordination:** Skilled in managing and coordinating multi-site data, ensuring data integrity and consistency across collaborative research projects.
- **Consulting & Mentorship:** Effective in providing statistical consulting and mentorship, aiding researchers and students in data analysis and interpretation across diverse fields.
- **Communication:** Fluent in English and Chinese languages, with strong written and verbal communication skills, facilitating cross-cultural collaboration and documentation.