

## Jamshaid Shahir, Ph.D.

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### PROFESSIONAL SUMMARY

- 10+ years coding experience (Python, R, MATLAB) in various domains including research and teaching
- 4+ years of technical writing and scientific communication experience
- Collaborated with a team of 15+ researchers to analyze single-cell cancer genomics data (Python & R) in a *Nature* study
- Published a software package in Python training graph neural networks to quantify effects of experimental perturbations in single-cell RNA-sequencing data in *BMC Bioinformatics*
- Received 2 highly prestigious fellowships and 1 travel grant to support my graduate training
- Analyzed IRB-approved survey data in R of mental health climate among UNC's student population in collaboration with psychology researchers and occupational therapists

### EDUCATION

Ph.D., Bioinformatics and Computational Biology, Department of Genetics **08/2018 – 08/2023**  
**University of North Carolina at Chapel Hill (UNC)**

B.S. Mathematics, B.S. Statistics; Minor: Computer Science **06/2014 – 05/2018**  
**University of Maryland Baltimore County (UMBC)**  
*Magna Cum Laude*, Meyerhoff Scholar

### WORK EXPERIENCE

**Postdoctoral Scientist at Max Delbrück Center** **10/2023 – Present**

- Studying structural variation in the genome with applications to cancer and inflammatory disease
- Supplying computational expertise to related projects

**Temporary Research Technician at UNC** **08/2023 – 09/2023**

- Supported computational research efforts in doctoral thesis lab and installed GPU software on lab computers
- Mentored a computational undergraduate student researching the cell cycle of embryonic stem cells
- Optimized computational image analysis pipelines for members of the lab and collaborators

**Graduate Researcher at UNC** **08/2018 – 08/2023**

- Analyzed cell cycle dynamics in differentiating human embryonic stem cells using Python in the context of image analysis and single-cell genomics
- Trained graph neural networks in TensorFlow via SLURM to study the effects of perturbations in single-cell RNA sequencing data deployed as a Python package
- Collaborated with cancer researchers at UNC on a Nature study investigating the role of ZBP1 in necroptosis by analyzing single-cell RNA sequencing data with Python and R
- Presented at 9 professional meetings, including 4 international, and gave 1 invited talk
- Was awarded \$5000 from Burroughs Wellcome Fund to support conference travel

**Freelance Writer at Towards Data Science, Medium.com** **07/2021 – Present**

- Published 8 articles on single-cell genomics methods, machine learning, and AI for a data science publication with over 680,000 readers as of January 2024
- Select articles have been featured in the weekly newsletter, editorial columns, and specialized columns
- Have receiving 55,000+ views on posts and 200+ followers
- Full list of articles found here: <https://medium.com/@jashahir>
- Earn monthly royalties from articles

**Freelance Tutor at Varsity Tutors** **08/2022 – 08/2023**

- Tutor students in the United States and Canada in mathematics, statistics, and programming
- Clientele has ranged from elementary school students to graduate students
- Have received consistently positive ratings from students and parents

**Tutor, Statistical Modeling, UNC** **08/2020 – 12/2021**

- Tutored first-year students in comprehensive statistics course using RStudio and facilitated weekly sessions to discuss core concepts and set goals for next week's session
- Topics included probability theory, Bayesian statistics, and regression analysis

- Collaborated with instructor and staff to ensure student needs were met and recruit additional students to tutoring sessions

## RELEVANT EXPERIENCE

### Co-Investigator, Stigma-Free Carolina, UNC

05/2019 – 05/2021

- Collaborated with graduate students in psychology and occupational therapy in fellowship program to evaluate the efficacy of a student-run campaign to destigmatize mental health at UNC
- Co-authored IRB application to survey UNC students and analyze resulting data in R
- Organized mental health awareness events in response to survey findings

### Instructor and Co-administrator, How to Learn to Code, UNC

06/2019, 06/2022

- Taught interactive graduate student-led course on programming in R (2019) and Python (2022) for a class of biologists spanning undergraduates and faculty
- Co-developed curriculum, recruited students, and assigned teachers

## SCIENTIFIC PUBLICATIONS

1. **Shahir JA**, Stanley N, Purvis JE. Cellograph: A semi-supervised approach to analyzing multi-condition single-cell RNA-sequencing data using graph neural networks, *BMC Bioinformatics* (2024). <https://doi.org/10.1186/s12859-024-05641-9>
2. Cho M-G, Kumar RJ, Lin C-C, Boyer JA, **Shahir JA**, Fagan-Solis K, et al. MRE11 liberates cGAS from nucleosome sequestration during tumorigenesis, *Nature* (2024). <https://doi.org/10.1038/s41586-023-06889-6>

## COMPUTATIONAL SKILLS (selected)

Programming Languages: Python | R | MATLAB

Research tools: LaTeX | Linux | SLURM | High-Performance Computing | TensorFlow | Keras | PyTorch | Mathematical Modeling | Statistical Modeling | PostgreSQL | Snakemake | ChatGPT | Docker

## HONORS AND AWARDS

### Hector Fellow Academy Best Poster Award

05/2023

- Presented “Elucidating the role of the cell cycle in stem cell fate using multiplexed imaging”
- Awarded 500 Euros for outstanding presentation at the Innovations in Single Cell Omics conference in Berlin

### Burroughs Wellcome Fund Graduate Diversity Enrichment Program

11/2021 – 09/2023

- Nominated by advisor for competitive grant to support training of 10 graduate students from underrepresented backgrounds enrolled at universities in North Carolina
- Awarded \$5000 over 2 years for conference travel and research supplies

### National Science Foundation Graduate Research Fellowship Program

08/2018 – 05/2023

- Prestigious national fellowship
- Awarded >\$100,000 in stipend to support graduate training

### Caroline H. and Thomas S. Royster Society of Fellows

08/2018 – 05/2023

- Awarded the premier doctoral fellowship program at UNC
- Provides 5 years of support, including a stipend
- Received \$2000 for conference travel

### NIH MARC U\*STAR Scholarship (now called U-RISE), UMBC

08/2016 – 05/2018

- Highly competitive, NIH-funded scholarship program at UMBC to prepare students for graduate school
- Provided full tuition and funds for conference travel
- Focused on increasing diversity of STEM workforce

### Meyerhoff Scholarship, UMBC

06/2014 – 05/2018

- Highly competitive scholarship program at UMBC to prepare students for graduate school, with a focus on increasing diversity in STEM

## CONFERENCES/PRESENTATIONS (Selected)

- **Innovations in Single Cell Omics, Berlin, Germany** 05/2023
- **Single Cell Genomics 2022, Utrecht, The Netherlands** 10/2022
- **Winter Q-Bio, O’ahu, Hawaii (2022), Maui, Hawaii (2018)** 02/2018, 02/2022