Nur M Shahir, PhD

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EDUCATION

University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

- Ph.D. in Bioinformatics and Computational Biology — Aug 2014 – May 2020
  - Dissertation: Inflammatory Bowel Disease Differentially Affects Region Specific Composition and Aerotolerance Profiles of Mucosally-Adherent Bacteria
  - Adviser: Dr. Terrence S. Furey, Dr. Shezad Z. Sheikh
  - Committe: Dr. Michael I. Love, Dr. Ian Carroll, Dr. Yufeng Liu
  - Focus: Inflammatory Bowel Disease, gut microbiota, bioinformatics, 16S amplicon sequencing.

University of Maryland, Baltimore County, Baltimore, Maryland, USA

- M.S. in Statistics — Aug 2011 – Dec 2013
  - Track: Biostatistics
  - Thesis: Longitudinal Analysis of Urea Cycle Disorder Patients
  - Adviser: Dr. DoHwan Park

Massachusetts Institute of Technology, Springfield, Pennsylvania, USA

- B.S. in Mathematics — 2006 – 2010

RELEVANT INDUSTRY EXPERIENCE

Booz Allen Hamilton Remote

- Lead Scientist — Aug 2022 – Oct 2024
  - Served as a federal contractor bioinformatician, contributing to public health genomic surveillance, pathogen genomics, and large-scale human genomics projects across CDC and NIH.
  - Redesigned and optimized public health genomics workflows to align with Nextflow nf-core standards, implementing rigorous pipeline validation and automated unit testing. Streamlined collaboration through Git, ensured reproducibility via Docker containerization, and enhanced project delivery efficiency by integrating Agile tracking in JIRA.
  - Engineered reproducible bioinformatics pipelines with Snakemake on high-performance computing (HPC) clusters, enabling robust rare variant detection and uncovering genetic associations with ulcer development in sickle cell disease.
  - Designed and implemented bioinformatics pipelines in R and Python on Google Cloud Platform (GCP) via the NIH All of Us Researcher Workbench, spanning genomic data ingestion, QC, and advanced downstream analysis. Delivered cloud-native, production-ready workflows that accelerated large-scale genomic insights for precision medicine applications.

RESEARCH EXPERIENCE

Davenport Lab, Pennsylvania State University

- Postdoctoral Fellow — Jun 2020 – Jul 2022
  - Piloted a benchmarking study on computational approaches to identify viral transcripts from bulk and single-cell RNA sequencing data, assessing the accuracy and precision of transcript identification.
  - Designed bioinformatics workflows in snakemake for efficient data processing on HPC computing environments, employing tools including samtools, bwa, bowtie2, Kraken2, and STAR, and utilizing R for downstream analysis and visualization.
  - Mentored undergraduate students, enhancing their research skills and academic performance.

Furey Lab, University of North Carolina at Chapel Hill

- Graduate Research Assistant — Nov 2014 – May 2020
  - Identified key microbial associations using R for data analysis and visualization of 16S rRNA amplicon data from IBD patients and controls.
  - Developed a consensus analysis method in R with DEseq2 and Lefse, significantly enhancing the understanding of microbial dysbiosis in IBD.
  - Presented research findings at various conferences, including the American Society of Human Genetics, to engage the scientific community.
  - Authored a peer-reviewed journal article, contributing to the advancement of knowledge in the field of microbial dysbiosis.

PUBLICATIONS

Shahir, NM, et.al, "Crohn's Disease Differentially Affects Region-Specific Composition and Aerotolerance Profiles of Mucosally Adherent Bacteria." *Inflammatory bowel diseases*, vol. 26, no. 12, pp. 1843–1855, 2020.

PRESENTATIONS

EXTERNAL TALKS

- *Crohn's Disease Differentially Affects Intestinal Region Composition and Aerotolerance Profiles of Mucosally-Adherent Bacteria*, Remote May 2020
  Virtual Microbiome Summit
- *IBD differentially affects region specific composition and aerotolerance profiles of mucosal-adherent bacteria*, Remote May 2020
  MIT and UNC Joint Virtual Microbiome Seminar Series

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

- *Crohn's Disease and the Intestinal Microbiota*, Chapel Hill, NC Dec 2016
  Genetics Research Colloquium
- *Alterations in the Mucosal-Adherent Enteric Microbiota Between CD and nonIBD*, Chapel Hill, NC Oct 2016
  Translations Medicine Closed Door Talks
- *A distinct microbiota signature characterizes patients with penetrating Crohn's disease*, Chapel Hill, NC Oct 2015
  Center for Gastrointestinal Biology and Disease
- *Analysis of the Composition and Diversity of the Colonic Mucosa Microbiota in Crohn's Disease*, Chapel Hill, NC May 2015
  Bioinformatics and Computational Biology Curriculum New Student Talks
- *Identification of SERPINA1 Splice Variants from Next-Gen Sequencing Data*, Chapel Hill, NC Oct 2014
  Bioinformatics and Computational Biology Research in Progress Talks

HONORS & AWARDS

- NIH T32 Training Grant 2015
  Bioinformatics and Computational Biology Predoctoral Training Grant

PROFESSIONAL AFFILIATIONS & ACTIVITIES

Joint Society of Earth Scientists and Global Think Tank on Climate Resiliency, North Attleborough, Massachusetts, USA

- Member 2009 – Present

CAMPUS ACTIVITIES

First Volunteers Club, First American University

- President — Aug 2006 – Aug 2007
  - Lorem ipsum dolor sit amet, consectetur adipiscing elit.
  - Curabitur vitae laoreet velit, vel ultricies est. Nam nec elit ac ante facilisis ultrices.
    - Wel turpis efficitur, non lacinia orci maximus.
    - Proin rhoncus, felis vel hendrerit lacinia.
  - Integer sit amet turpis dolor. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nunc at orci eu leo vulputate finibus sed et sem.
  - Suspendisse volutpat sapien et mi cursus, gravida ornare mauris sollicitudin.

OTHER WORK EXPERIENCE

Alpha Engineering Firm, Oakland, Ohio, USA

- Project Officer, Department of Meteorological Sciences, Research & Development Division — Oct 2007 – Jan 2008
  - Nullam venenatis egestas nisl eget elementum.
  - Nulla finibus justo vel turpis efficitur, non lacinia orci maximus. Proin rhoncus, felis vel hendrerit lacinia, enim ipsum ultricies massa, sit amet interdum nisi massa sit amet justo.
  - Etiam vitae eros mollis, consectetur quam quis, molestie massa.

LANGUAGES

- English: Native language.
- Spanish: Fluent (speaking, reading, writing).
- Latin: Intermediate (reading); basic (speaking, writing).

SKILLS

TEX, LATEX, XELATEX, MATLAB, Mathematica, Maple, R, Tableau, Adobe Photoshop, Adobe Illustrator, Microsoft Word, Microsoft Excel, Microsoft PowerPoint.

INTERESTS

Digital photography, typography, swimming.

REFERENCES

- **Professor Jonathan Public**
  Professor of Geology and Mechanical Engineering
  First American University
  1000 First Avenue, Springfield, Massachusetts 22222, USA
  jonathanpublic@example.com • +1 (555) 222-2222
- **Dr Alice Bob Carol**
  Director, Research & Development
  Alpha Engineering Firm
  20 North Street, Oakland, Ohio 33333, USA
  alicebobcarol@example.com • +1 (555) 333-3333