PhD and Postdoctoral Positions in Host-Microbiome Research

The Zomorrodi Lab | Massachusetts General Hospital | Harvard Medical School

The Zomorrodi Lab at Massachusetts General Hospital (MGH) and Harvard Medical School is seeking highly motivated **PhD** and **Postdoctoral** candidates excited about studying **host-microbiome interactions** in chronic human diseases.

About us:

Our lab integrates innovative computational and experimental approaches to investigate the intricate interactions between the human host and microbiome, with a focus on metabolism and nutrition. We develop Genome-Scale Models (GEMs) of metabolism, build machine learning (ML) tools, and leverage 3D gut organoid models to understand the mechanisms by which microbiomes contribute to disease progression and therapeutic response. We also explore the applications of Natural Language Processing (NLP) and Large Language Models (LLMs) in medicine and biomedicine. The overarching goal of our research is to advance precision medicine by uncovering mechanisms driving chronic disease pathogenesis and harnessing AI to streamline clinical decision-making and improve patient care.

For more information about our lab, please visit: https://zomorrodi.mgh.harvard.edu

Open positions:

1. PhD position in computational systems biology: A PhD candidate will focus on computational analysis of host-microbiome metabolic crosstalk in Celiac Disease (CeD) using genome-scale models. This role involves large-scale computational modeling of microbiomes and host intestinal epithelial and immune cells, multi-omics data integration, and downstream statistical and ML analysis for biomarker discovery.

Required qualifications: (i) Must be admitted to a relevant PhD program at Harvard or another Boston-area university (MIT, Boston University, etc.), (ii) Undergraduate or master's degree in a quantitative field (e.g., Computational Biology, Computer/Data Science, Bioinformatics, Biostatistics, Chemical/Biomedical/Biological/Electrical Engineering) OR strong programming skills with a solid background in computational analysis

2. Postdoctoral Position in experimental microbiome research: The postdoctoral researcher will investigate host-microbiome interactions in Celiac Disease (CeD) using patient-derived 3D gut organoid models and microbial isolates. This position involves: working with human cell lines, patient-derived tissues, and microbial cultures, investigating interactions between intestinal epithelial cells, immune cells, and gut microbes, and employing next-generation sequencing (NGS) and multi-omics approaches. The postdoc will collaborate closely with co-investigators on the project.

Required qualifications: (i) PhD in a relevant field (e.g., Cell Biology, Microbiology, Immunology, Biomedical Sciences, Bioengineering, Biochemistry) with a strong publication record, (ii) Experience with human cell culture, microbial culture, or next-generation sequencing (NGS) techniques (preferred but not strictly required), (iii) Ability to quickly learn new experimental techniques, (iv) Strong verbal and written communication skills, (v) Ability to work both independently and collaboratively in a fast-paced, dynamic research environment and a rapidly evolving field.

Application process:

Interested candidates should contact Dr. Zomorrodi at azomorrodi@mgh.harvard.edu, providing a CV and a brief description of their interests. Use "PhD [or Postdoc, whichever is relevant] position in the Zomorrodi Lab" as the email subject. Applications are reviewed until the positions are filled. Shortlisted candidates will be contacted for an interview.

Research environment:

Massachusetts General Hospital (MGH) is a teaching hospital for Harvard Medical School and consistently ranks among the top hospitals in the U.S. Our lab is based in Boston, Massachusetts, in close proximity to world-class institutions, including MIT, The Broad Institute, Brigham and Women's Hospital, Boston Children's Hospital, Dana-Farber Cancer Institute, Beth Israel Deaconess Medical Center, and the Harvard T.H. Chan School of Public Health. This dynamic research environment fosters strong collaborations, intellectual exchange, and access to cutting-edge technologies.

The Zomorrodi Lab is committed to diversity and equality and encourages applications from underrepresented minorities.