

Affiliate Name: Massachusetts General Hospital

Job Title: TECHNICIAN II, RESEARCH LABORATORY
Job Category: Research
Department: MGH Rheumatology & Immunology/CIID Unit
Location: Boston MA
Hours/Week: 40
Job Type: Regular
Employment Type: Full Time
Date Posted/Modified:
Job description:

A position is available for research laboratory technician at the MGH Center for Immunology and Inflammatory Diseases (CIID) Single Cell Genomics Research Program directed by Dr. Alexandra-Chloé Villani. This multidisciplinary research program focuses on developing and implementing systems immunology and genomics strategies to further our understanding of the human immune system. The Villani laboratory is also affiliated to the Broad Institute of MIT & Harvard, offering additional opportunities to collaborate and bridge with this vibrant community.

This position offers the opportunity to learn and employ the cutting-edge techniques in genomics, systems immunology, and single cell genomics to solve important problems in health and disease related to the human immune system, autoimmune diseases and cancer. Single cell genomics is revolutionizing our understanding of biology – from redefining our understanding of the types of cells, a fundamental unit in biology, to translating this knowledge to better understand disease phenotypes and the implications of this to therapeutics. We are looking for a highly motivated and talented individual with a strong interest in immunology and molecular biology to join our efforts. This position represents an exciting opportunity to work as a member of an interdisciplinary team of biologists, laboratory scientists, computational biologists, and physicians working together on transformative translational efforts that are bridging between the clinical and research interfaces. Our research program is developing and implementing unbiased experimental and computational strategies that can directly survey the human immune system in order to define at high resolution the key processes and players underlying healthy human immune responses as a foundation for understanding how immunity is dysregulated in diseases. This includes establishing a more comprehensive roadmap of the human immune system through identifying novel immune cell subpopulations across tissues using single-cell 'omics' strategies along with mapping the cellular ecosystem and associated molecular circuitry driving immune diseases. Collectively, our research program is empowering the study of the human immune system as a function of "healthy" baseline, inflammatory state, disease progression, and response to treatment with emphasis on precision medicine, ultimately paving the way for developing a comprehensive human immune lexicon that is key to promoting effective bench-to-beside translation of findings.

As part of this position, the research associate hired will be performing a variety of techniques in both BL1, BL2 and BL2+ environments. These will include but are not limited to primary tissue processing, flow cytometry and cell sorting, single-cell RNA/DNA/protein/ATAC-sequencing data generation, sequencing library construction, bulk RNA extraction and analysis, human specimens processing and analysis for RT-PCR, cell cultures for in vitro and in vivo experiments, CRISPR screens, western blotting, immunohistochemistry and image analysis. The candidate will also help manage and maintain laboratory instruments of the Single Cell Genomics Research Program. The incumbent is expected to work both independently and as a team member with investigators, staff, clinicians, fellows, and students.

ABOUT MGH – Single Cell Genomics Research Program – Villani Lab

The Massachusetts General Hospital Single Cell Genomics Research Program is a new multidisciplinary translational research group with the MGH Center for Immunology and Inflammatory Diseases focused on developing and implementing systems immunology and cutting-edge

genomics strategies to further our understanding of the human immune system in health and disease. We are leveraging these strategies to redefine “precision medicine” approaches, including using results from the laboratory to help inform the development of the next-generation of clinical trials. The Massachusetts General Hospital (MGH), a leading medical center located in the heart of Boston, is consistently ranked among the top hospitals in America. MGH is the original and largest teaching hospital of Harvard Medical School. We are also affiliated with the MGH Department of Medicine, the MGH Cancer Center, Harvard Medical School, as well as with the Broad Institute. Working in our group offers the opportunity to learn and employ the cutting-edge techniques in genomics, single cell genomics, and systems immunology to solve important problems in health and disease related to the human immune system, autoimmune diseases and cancer. Single cell genomics is revolutionizing our understanding of biology – from redefining our understanding of the types of cells, a fundamental unit in biology, to translating this knowledge to better understand disease phenotypes and the implications of this to therapeutics. This position also represents an exciting opportunity to work as a member of an interdisciplinary team of biologists, laboratory scientists, computational biologists, and physicians working together on transformative translational efforts that are bridging between the clinical and research interfaces.

PRINCIPAL DUTIES AND RESPONSIBILITIES:

- In consultation with the Principal Investigator, designs and conducts bench-level experiments and lead small independent research projects.
- Execute laboratory experiments, which may include techniques such as:
 - Isolation and purification of primary cells from mouse and human samples
 - Single-cell RNA/DNA/protein/ATAC-sequencing data generation techniques through plate-based and droplet-based approaches (not essential to know the techniques prior to applying for this position)
 - Assisting with FACS analyses and cell sorting
 - Processing and maintaining cell cultures
 - Molecular biology techniques, including DNA and RNA isolation, PCR, and quantitative PCR, sequencing library construction
 - Immunostaining for flow cytometry and microscopy
 - Spatial transcriptomic experiments
 - CRISPR screens
 - In vitro functional experiments of primary human immune cells
- Performs analysis of experimental results by identifying methodological problems and helping to identify and implement modifications in research protocols.
- Documents, compiles, and assists in interpreting experimental data and participates in lab meetings.
- Maintains accurate, up-to-date records of cell lines, primary tissue samples, and experimental samples. Maintains laboratory notebook
- Independently operate, manage, and maintain complex laboratory equipment, including liquid-handlers, Illumina sequencers, and smaller instruments
- Participates in general laboratory responsibilities, including ordering and organizing laboratory supplies. May work with vendors to address equipment, reagent, or supply issues.
- Other tasks as required or assigned.

REQUIREMENTS

- Bachelor's degree in Biology, Biochemistry, Immunology, Molecular Biology, Life Science, Engineering, or a related scientific field required.

- Ideally, 2 years of experience working in a research laboratory.
 - New graduates with some lab experience (via course work, internships, etc.) or those without any prior research experience will be considered for the Research Technician I position and are welcomed to apply.
- For Master's degree, at least one year of directly related, full-time lab experience. Talented applicants of all levels are encouraged to apply.
- Proficient in basic lab techniques required.
- Must be reliable, organized, and able to work independently as well as with other members of the team and research center
- Excellent written and oral communication skills, as well as strong organizational skills required.
- Proficiency with computer software, including web-based applications and some Microsoft Office applications (Word, Excel, PowerPoint) required.
- Knowledge of various scientific databases and publications (preferred but not required).
- Previous project management experience (preferred but not required)
- Familiarity with bioinformatics tools (Python, R, or equivalent), and/or programming language (C/C++, Java) (preferred but not required)