



Department of Microbiology & Immunology (Keywords: transposable elements, cancer evolution, tumor immunology, innate immunity, viral mimicry, computational genomics)

The University of Rochester seeks a post-doctoral scholar to collaborate full-time on research investigates how transposable elements shape cancer evolution, innate immune responses, and the tumor microenvironment by integrating computational biology, functional genomics, and experimental cancer models. Current projects focus on developing mathematical and AI-driven models of tumor evolution, integrating single-cell and spatial multi-omics datasets, and identifying mechanisms by which transposable elements regulate immune surveillance, genome stability, and therapeutic response. The successful candidate will develop and apply mathematical models of tumor evolution, evolutionary theory, machine learning, and statistical genomics to investigate how transposable elements drive cancer progression and immune selection. Experience with, or a strong interest in, mathematical modeling, evolutionary biology, statistical genetics, or machine learning is highly desirable.

Work location: On campus in Rochester, NY.

Key Responsibilities:

The scholar, after initial training period, the successful candidate will develop and lead an independent research program focused on cancer evolution, transposable elements, and tumor immunology leveraging mathematical modeling, artificial intelligence, and multi-omics approaches to uncover mechanisms of disease progression. The scholar will collaborate extensively with clinicians, physician-scientists, experimental biologists, and computational researchers to translate large-scale genomic and clinical data into biological discoveries and therapeutic insights. Responsibilities include designing and conducting computational and/or experimental studies, integrating multi-omics and clinical datasets, mentoring trainees, contributing to collaborative publications and grant applications, and actively participating in interdisciplinary research initiatives across the University of Rochester.

Qualifications:

- Ph.D. in Computational Biology, Bioinformatics, Biostatistics, Cancer Biology, Immunology, Molecular Biology, Population Genetics, or a related field.

- Experience in at least one of the following areas: computational genomics, next-generation sequencing analysis, cancer biology, immunology, functional genomics, or transposable element biology.
- Strong programming skills in R and/or Python, proficiency in Bash/shell scripting, and experience working in Linux/Unix and high-performance computing (HPC) environments are required. Familiarity with Git, workflow management systems (e.g., Snakemake or Nextflow), and cloud computing is a plus.
- Familiarity with single-cell, spatial transcriptomics, or other multi-omics analyses is highly desirable.
- Strong communication and scientific writing skills, with a demonstrated record of research productivity through impactful peer-reviewed publications.
- Ability to work both independently and collaboratively in an interdisciplinary research environment.

Benefits:

The University of Rochester has an active Postdoc Association that provides highly enriched environment for the fellows including career development workshops. More information about postdoc activities and opportunities is available on this webpage, <https://ccc.rochester.edu/pda/home/>

- Competitive salary and benefits package.
- Access to University of Rochester's extensive resources and research facilities
- Opportunities for collaboration with leading scholars, clinicians, and industry experts
- Support for attending academic conferences and workshops

To apply, email the following documents to SunS3@mskcc.org & marc_ambrosi@urmc.rochester.edu

1. A cover letter explaining your interest
2. A curriculum vitae (CV) with list of peer-reviewed publications
3. Contact information for three academic references

Applications will be reviewed on a rolling basis until the position is filled.

For inquiries about the position, please contact Siyu Sun, SunS3@mskcc.org

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candidates, for all persons consistent with our values and based on applicable law.

