

Research Assistant Positions in Statistical Genetics and Computational Biology

The Functional Genomics Lab at the Center for Statistical Genetics in the G.H. Sergievsky Center and Department of Neurology at Columbia University Vagelos College of Physicians and Surgeons currently has openings for graduate student researchers for Fall 2023, for **first year Master students or junior PhD students** currently enrolled in a graduate program at Columbia University. Students will be working on problems across a wide range of disciplines including computational biology, data science/statistics/biostatistics, bioinformatics, human and medical genetics, epidemiology, neurology and brain sciences. Students will receive training in genetics, statistics, bioinformatics and programming, and gain rich practical experiences working with human data spanning the Central Dogma of Biology.

Projects for Fall 2023 are centered around discoveries of brain functional genomics regulations relevant to Alzheimer's disease (AD). A diverse source of multi-omics data is available to support inference on molecular mechanisms of functional genomics landscape in human brains as well as how they potentially contribute to AD. Typically, new statistical and computational challenges surface as we explore the data, which will motivate and lead to methodology and software development. The following projects are available for student researchers:

- Benchmarking, profiling, engineering and improving a few existing and emerging statistical tools developed in the lab for statistical fine-mapping and colocalization analysis; including carrying out numerical studies using simulation approaches.
- Discovering *cis* regulation network (or “co-regulation”) for molecular phenotypes, using approaches developed in the lab and possibly other methods.
- Discovering context specific (tissue, cell type, age, sex, biomarkers) molecular phenotype loci (QTL) in brains and blood relevant to their role in blood-brain barrier and the regulation leading to neurodegenerative disorders.
- Other more advanced projects on multi-omics data analysis methods and applications are available to highly motivated student candidates with solid background knowledge on related fields.

Development of high quality open-source software, benchmarks and/or analysis pipelines are required for these projects. Performing reproducible research is a must.

Successful candidates will work with Gao Wang, Assistant Professor of Neurological Sciences, and the Lab currently consisting of 3 postdocs, 1 staff scientist, 1 PhD student and 3 master students. In particular, candidates will be working closely under the supervision of postdocs in the lab.

To apply, please email your curriculum vitae and a link to your github.com profile (if you have it) to Gao Wang (wang.gao@columbia.edu), using the subject header *Research Assistant Application*. The positions are open until filled and applications will be reviewed on a rolling basis. Informal inquiries are welcome.