Yale University

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Postdoctoral Associate in Generative AI, Causal Inference, and Regulatory Genomics

The Liu Lab (https://liuq-lab.com) in the Department of Biostatistics at Yale University is looking for a highly motivated **Postdoctoral Associate** to join a growing research program at the intersection of generative AI, causal inference, regulatory genomics.

The Liu Lab develops statistically principled and AI-powered computational methods for analyzing massive, heterogeneous and complex biomedical datasets. We are building the next-generation computational frameworks that connect genetic variation, molecular regulation, perturbation response, and disease phenotypes. The overarching goal is to develop trustworthy AI systems that can move beyond prediction toward mechanistic understanding and causal discovery in biomedicine.

The Liu Lab builds on a strong track record in AI-powered causal inference, Bayesian generative models, and computational genomics, with recent work published in leading journals, such as *JASA, Nature Communications, PNAS, Genome Biology*. Yale offers an exceptional research environment, with close connections across biostatistics, computational biology, genetics, and medicine. The postdoctoral associate will also have priority access to the Yale Center for Research Computing, including a large-scale GPU infrastructure with **250+ GPUs**, among them 80+ NVIDIA H200 GPUs and 60+ NVIDIA B200 GPUs.

The postdoctoral associate will lead an ambitious project, focusing on building trustworthy causal AI systems to identify causal genes, regulatory elements, and molecular pathways linking genotype to phenotype. This is a highly interdisciplinary project in close collaboration with **Dr. Hongyu Zhao** (Biostatistics) and **Dr. Steven Reilly** (Genetics), integrating expertise in statistical genetics, computational genomics, and experimental genetics.

This position is ideal for candidates who want to develop cutting-edge computational methods on high-impact biomedical questions. The lab provides a highly interdisciplinary environment spanning AI, statistics, genomics, and public health. Postdoc will receive mentorship in method development, biological collaboration, grant writing, and career development. The goal is to help trainees grow into future leaders in academia or industry.

Applicants should hold or expect to soon receive a Ph.D. in **computer science, computational biology, statistics, biostatistics, or a related field**. Strong candidates will have experience in one or more of the following areas: **deep learning, generative modeling, causal inference, foundation models or computational genomics**. Strong programming skills in Python are expected, along with experience in PyTorch or TensorFlow and Linux-based high-performance computing. We especially value intellectual curiosity, creativity, strong communication skills, and enthusiasm for interdisciplinary research.

Interested applicants should send a CV, a cover letter briefly describing the previous research experience and future research interests, to **Dr. Qiao Liu** (qiao.liu@yale.edu).