# Introduction to Deep Learning Tools in Genomics

## *Sponsored by the Genomics Research and Technology Hub*

**When:** Tuesday, September 23, 2025

**Time:** 9:00 AM to 2:30 PM **-** Morning refreshments (8:30) and lunch will be provided.

**Where:** Sprague Hall, Room 105

**Required:** Personal laptop (Mac or Windows) and HPC3 account

**Instructors:** Jenny Wu, PhD and Ivan Chang, PhD

**Registration is required:** $50 **-** Register Here

**Please note registration is limited to 15 attendees**

This workshop will introduce the applications of deep neural networks to genomics including variant calling, motif discovery, analysis of gene expression, single cell and image analysis using *deepVariant*, *deepBind*, *cellpose*, etc. We will introduce basic concepts in ML and discuss common model architectures and training. We will also touch upon foundation models in single cell analysis such as scGPT. A hands-on session is emphasized and will showcase how to use Python to train a simple model on HPC3 and perform common analysis tasks in genomics. **Attendees are encouraged to bring their own project data for analysis and discussion.**

## Agenda

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| **8:30 – 9:00 AM** | Morning Refreshments |
| **9:00 – 10:15 AM** | Introduction to Deep Learning Applications in Genomics (Jenny Wu, PhD) |
| **10:15 – 10:30 AM** | *Break* |
| **10:30 – 11:45 AM** | Training ML/DL Models on HPC3 (Ivan Chang, PhD) |
| **11:45 AM – 12:30 PM** | *Lunch* |
| **12:30 – 2:30 PM** | Q and A and Hands-On Session (Jenny Wu, PhD and Ivan Chang, PhD) |