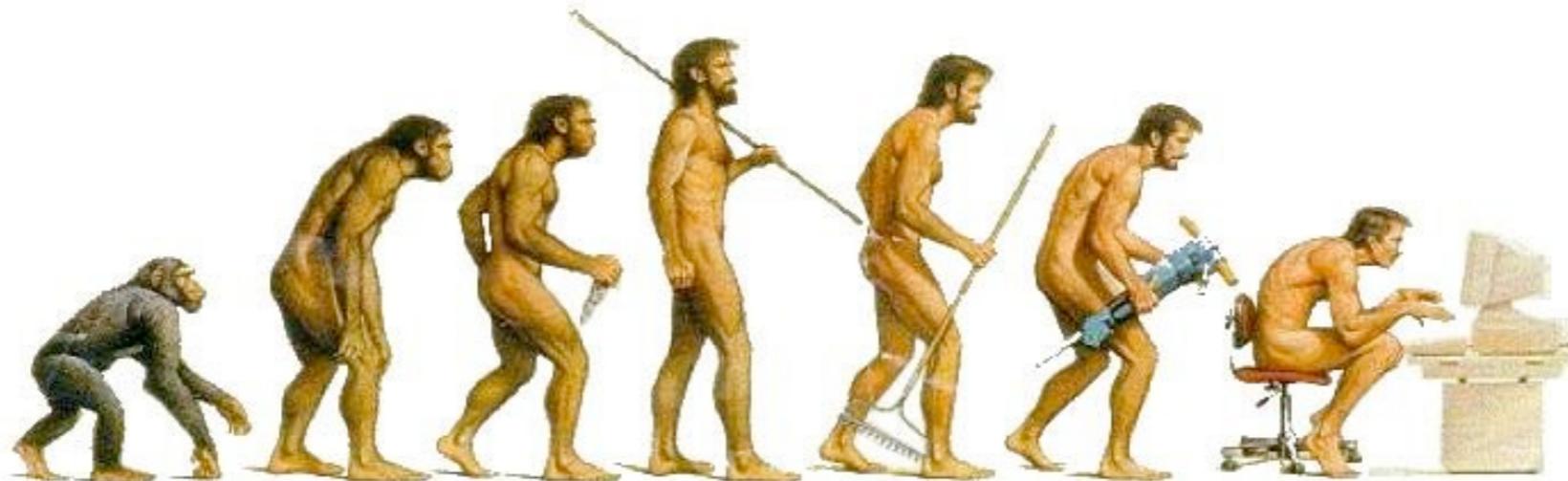# Summer Institute in Statistical Genetics

Module 07: **Applications in Population Genetics**

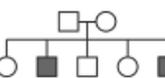**Instructors**: Ryan Hernandez & Timothy O'Connor
TAs: Nobu Masaki and Ruoyi Cai

Ryan Hernandez, co-Instructor

- Professor, Department of Bioengineering and Therapeutic Sciences

- co-Director, Biological and Medical Informatics (BMI) Graduate Program

- co-Director, Post-baccalaureate Research Opportunities to Promote Equity in Learning (PROPEL) & UCSF PREP

- co-Associate Dean for Diversity, Equity, and Inclusion

- Director, UCSF Initiative for Digital Transformation

- Contact:

  - ryan.hernandez@ucsf.edu

QBI

Bakar Computational Health
Sciences Institute

UCSF

ihg Institute for Human Genetics

Department of Bioengineering and Therapeutic Sciences
a joint department of the UCSF Schools of Pharmacy and Medicine

Tim O'Connor, PhD, co-Instructor

- Associate Professor

- Institute for Genome Sciences - UMB

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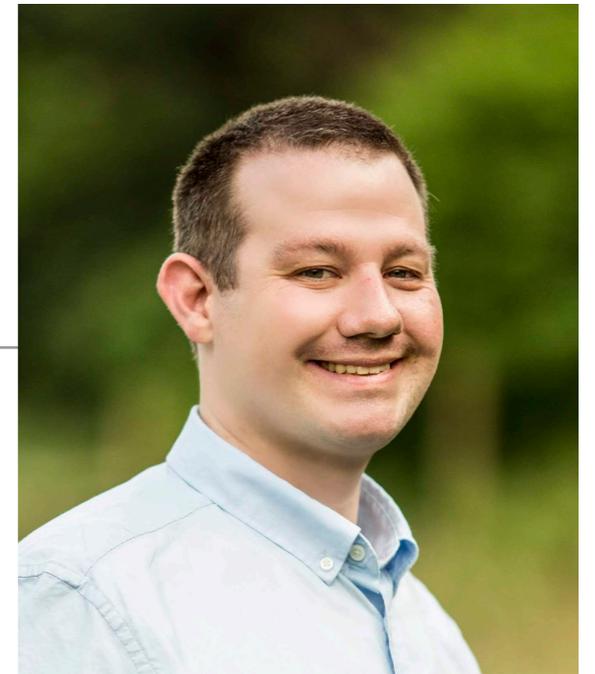
Nobu Masaki, TA

- 3rd year Ph.D. student in biostatistics at the University of Washington.

- My research interests are in population genetics

- I have been working on a project with Professor Sharon Browning on estimating the length distribution of gene conversion tracts in humans.

- I graduated from Carleton College in 2020 with a BA in statistics.
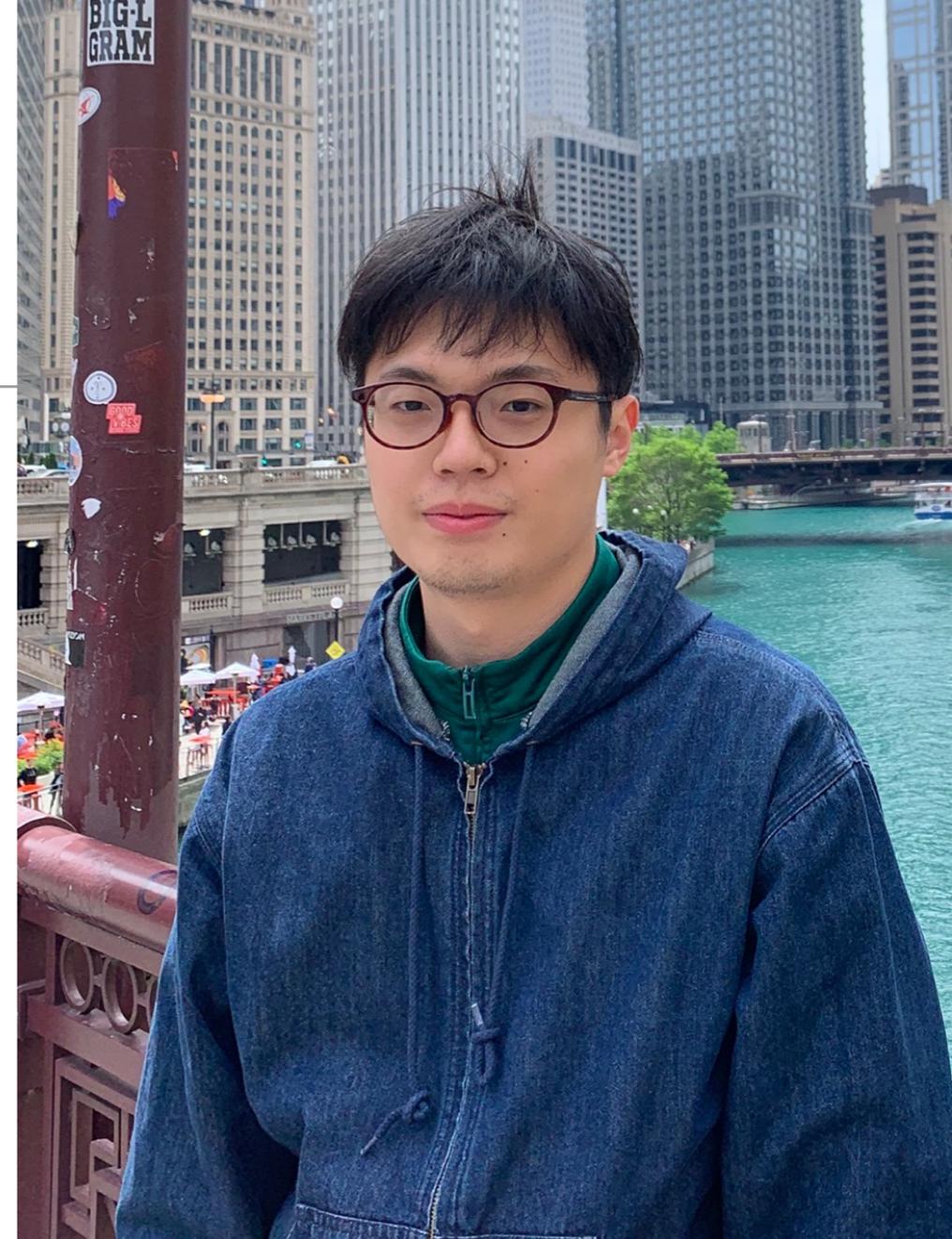
Ruoyi Cai, TA

- Fourth-year Ph.D. student in the Department of Biostatistics at the University of Washington with Professor Sharon Browning

- Our primary area of interest involves utilizing identity-by-descent (IBD) information among predominantly unrelated individuals.

- We've developed an IBD-based method to infer X chromosome effective population size in the recent past, which can then be combined with autosomal effective population size to explore sex-specific demographic history.

- Additionally, our current project involves leveraging IBD segments to identify genetic variants associated with human complex traits.

Introduction and Course Overview

- We will present live lectures, and interactive computational exercises.

- Questions and interruptions are encouraged!

    - Please raise your hand, or if we don't notice you immediately then interrupt us!

- Ask questions on Slack!

Introduction and Course Overview

- Interactive computational exercises

    - We expect you to download all the software necessary for the computational sessions and make sure they work.

    - We will give introductions to the software and general ideas in a live session

    - Instructors and TAs will cycle through the room to help trouble shoot.

Have fun!!

- We are hear to talk about a bunch of topics in a short period of time…

- There is no way to remember everything!!

- The best way to learn this stuff is by talking about it, so try to meet someone new!