

## Our Group

We follow a multidisciplinary and collaborative research program focused on discovering genetic, epigenetic, and regulatory pathways and processes that govern normal cell physiology and are disrupted in human diseases. We are focused on developing and implementing cutting-edge computational and experimental strategies that enable a systems view of complex biological phenotypes, such as tumor progression and neurodegenerative diseases. Given the diversity in our backgrounds and expertise, we are affiliated with the Departments of Biochemistry & Biophysics and Urology at UCSF, as well as the Helen Diller Family Comprehensive Cancer Center, Parker Institute for Cancer Immunotherapy, and the Bakar Computational Health Sciences Institute.

We take advantage of large data analytics, computational modeling, *in vitro* characterization in cell-line and stem-cell based models, and *in vivo* validation in mice to reveal the underlying regulatory pathways that underlie complex human diseases such as cancer progression and neurodegenerative diseases. Our mission is to combine data science and mechanistic basic research with translational medicine to rapidly translate knowledge gained at the bench to the clinic.

## Education

As a multidisciplinary group, we have a strong commitment to training and re-training members of the lab, according to their interests, in a variety of fields and sub-fields, from data science and bioinformatics to RNA biology and biochemistry to stem cell biology and *in vivo* modeling of human diseases.

## Postdoctoral position in post-transcriptional regulation and RNA biology

Our lab is especially interested in revealing the molecular mechanisms that govern RNA life-cycle in the cell and how they are dysregulated in the context of disease. Widespread gene expression reprogramming is a hallmark of many complex diseases and we have previously shown post-transcriptional regulatory programs are major players in the emergence of pathological cellular states. We both develop and adopt modern genomics and RNA biology tools to identify, characterize, and dissect post-transcriptional regulators of RNA dynamics and their roles in human disease.

Postdoc candidates with backgrounds in molecular biology, biochemistry, and RNA biology are encouraged to [apply](#).

## Postdoctoral position in computational biology

We develop, deploy, and apply machine learning and statistical frameworks that are designed, often from the ground up, to parse and deduce regulatory interactions from both bulk and single cell data. As a part wet-lab group, we have the capabilities to collect the right kind of data in the right models, which is often a roadblock for effective benchmarking of computational tools. Similarly, we have the required expertise to readily test the generated hypotheses and empirically evaluate and functionally validate the *in silico* predictions. Through our collaborations with physicians and physician-scientists at the Helen Diller Cancer Center, we enjoy access to large clinical datasets, such whole-genome and whole-exome, as well as transcriptomic and single-cell genomic datasets.

Candidates with expertise in data science, computational biology, and genomics are encouraged to [apply](#).

## Postdoctoral position in cancer systems biology

We extensively generate and use xenograft models of human cancers to study metastasis in a variety of cancer types, including breast, colon, prostate, and *etc.* We use state-of-the-art genomic technologies, both at bulk and single cell levels, to understand the molecular mechanisms through which cancer cells become more metastatic. We have developed a scalable and generalizable platform for discovery and validation of key players in metastatic progression of human cancers.

Candidates with expertise in cancer biology and *in vivo* mouse models are encouraged to [apply](#).

## Postdoctoral position in systems biology of neurodegenerative diseases

In collaboration with Dr. Faranak Fattahi (UCSF) and Dr. Hamed Najafabadi (McGill), we are taking advantage of stem cells models of neurodegenerative disease to study the role of RNA-binding proteins and post-transcriptional regulation in various neuropathies. We encourage candidates interested in these areas of research to [contact us](#).

## Commitment to diversity

We have a strong commitment to promoting diversity in STEM fields and collaborate with a number of organizations and groups at UCSF that focus on mentorship, training, and representation. The Summer Research Training Program at UCSF ([S RTP](#)) provides opportunities for undergraduates to join us for a summer-long learning experience. The [CURE](#) internship program offers a similar opportunity for high school students. We encourage students to apply to these programs or [contact us](#) directly.