**Lab Descriptions:**

一、Ariel Bazzini

Post-transcriptional Gene Regulation, Vertebrate Gene Regulation

<https://www.stowers.org/scientists/ariel-bazzini>

<https://research.stowers.org/bazzinilab/index.html>

The Bazzini-lab studies how genes are regulated at the post-transcriptional level in vertebrates. Basically, what molecular mechanism dictate the stability and the level of translation of mRNA in human cells and zebrafish embryos? And how these regulations affect development (zebrafish embryos) and human diseases? Specifically, we are looking for brilliant students interesting in working in *translation regulation mediated by small ORF*.

Thousands of translated small open reading frames (ORFs) have been identified in untranslated regions (UTRs). Further, several of the small peptides derived from these novel ORFs have been implicated in a variety of biological processes. For example, translation of small open reading frames in 5’ UTRs, referred to as **upstream-ORFs (uORFs**) often results in a decrease in the translation efficiency of the canonical ORF within the same mRNA. Translation of uORFs varies under pathologic conditions such as cancer, and mutations affecting translation of URFs are associated with various human diseases.

We have also identified a new class of translated small ORFs located within 3’UTR sequences, herein referred to as **downstream-ORF (dORFs)**. And contrary to uORFs, we demonstrated that *dORFs enhance translation of the canonical ORF* and emerge as strong and completely uncharacterized regulatory mechanism across vertebrates. ***Our goal*** *is to gain a mechanistic understanding of dORF-mediated regulation in order to assess the possible biological importance of dORF dysregulation under stress or disease conditions.*

*Students will be cloning reporter, transfecting human cells, measuring gene expression by cytometry, and will be using other molecular techniques. The students will also gain computation skills.*

[Bazzini-lab.website](https://urldefense.proofpoint.com/v2/url?u=http-3A__research.stowers.org_bazzinilab_index.html&d=DwMGaQ&c=2qwu4RrWzdlNOcmb_drAcw&r=kpkx6myn1xTUPXrBw85qcuHU2WUbZRnbj_1zcNf0sH4&m=ms-LcgVr_gdTPEbMZ4_LCLgz-A1s_xTmxMIgt0ElIX8&s=rHq8ffmoWO9hdnyhIyU27c03bpKdXEiSGUh_tm462gk&e=)

二、C. Ron Yu

Developmental Neuroscience, Neural Circuit Function, Information Processing, Cognitive Neuroscience

<https://www.stowers.org/scientists/c-ron-yu>

<https://research.stowers.org/yulab/>

三、Randall Halfmann

Aging, Protein Biophysics, Innate Immunity, Prions, Synthetic Biology

<https://www.stowers.org/scientists/randal-halfmann>

<https://research.stowers.org/halfmannlab/>

The Halfmann lab studies the role of prions and related phase transitions in aging, neurodegenerative diseases, and the immune system. Our experiments span a range of systems: yeast, human cell culture, brain organoids, in vitro, and in silico.

四、Tatjana Sauka-Spengler（具体介绍收到后发给大家）

Developmental Biology, Gene Regulatory Network, Modeling