Postdoctoral Position — Buchwalter Lab, UCSF

Transposon control, heterochromatin, and the nuclear lamina

The Buchwalter Lab at the University of California, San Francisco is seeking a postdoctoral researcher to lead a recently funded project investigating how the nuclear lamina promotes robust repression of repetitive elements / retrotransposons.

We recently discovered that the nuclear lamina enhances retrotransposon repression through a mechanism that acts orthogonally to histone methylation: in naïve pluripotent cells, retrotransposons are activated by displacement from the lamina even though they remain marked by H3K9 methylation (*Marin et al., Nat Cell Biol 2025*). Retrotransposon activation has implications for genome integrity, inflammation, and neurodegeneration. The successful candidate will define how lamina-mediated and chromatin-mediated repression intersect to establish and maintain retrotransposon repression, using:

- **Long-read sequencing** to profile expression, chromatin state, and lamina association of retrotransposons
- **dCas9-directed epigenome editing** to test whether reinforcing heterochromatin can compensate for lamin loss and repress retrotransposons
- **Mouse embryonic stem cell** models of pluripotency and differentiation to probe how repression is established, alongside analyses of retrotransposons in the aging brain to explore how repression is maintained over lifespan

There is substantial room for the postdoc to shape the direction of the work and develop independent lines of inquiry.

About the lab

The Buchwalter Lab studies the cell biology of the genome. We blend the classic tools of molecular cell biology with the modern assays of genomics and systems biology to define the function and dynamic regulation of the genome by its nuclear environment. Specifically, we study the dynamic interplay between the genome and the surrounding nuclear lamina, which is a protein meshwork that scaffolds heterochromatin and sustains nuclear integrity.

The lab is part of UCSF's Cardiovascular Research Institute and is embedded in a vibrant Bay Area community spanning UCSF, Gladstone, and UC Berkeley, with deep local expertise in chromatin, stem cell biology, and genomic technologies.

We are looking for someone with

- A PhD (or expected completion soon) in molecular biology, genomics, cell biology, genetics, or a related field
- Expertise in **transposable element / retrotransposon biology and/or heterochromatin / epigenetics**
- Experience with mammalian stem cell culture, molecular biology, and genomics

- Familiarity with sequencing data analysis and comfort working at the bench–computation interface (or eagerness to develop computational skills)
- Scientific curiosity, rigor, and the ability to drive a project independently while contributing to a collaborative team

Experience with long-read sequencing and bioinformatic analysis of repetitive elements is a plus but not required. Animal experience is welcome but not essential — the project's mouse component is one of several aims and can be supported through collaboration and training.

What we offer

- A well-funded, intellectually distinctive project at the intersection of nuclear architecture, transposon biology, stem cell biology, and aging
- Mentorship toward independence, including support for fellowship and grant applications and a clear path toward a first-author publication
- A supportive, collegial lab environment that values both scientific rigor and quality of life
- Salary and benefits per UCSF / NIH scale, commensurate with experience

How to apply

Please email **abigail.buchwalter@ucsf.edu** with:

1. A brief cover letter describing your research experience, interests, and what draws you to this project
2. Your CV
3. Contact information for three references

Applications will be reviewed on a rolling basis until the position is filled. The anticipated start date is flexible, with the project beginning in fall 2026.

UCSF is an equal opportunity employer. We are committed to building a diverse research community and strongly encourage applications from candidates of all backgrounds.

Abby Buchwalter, PhD | Associate Professor, UCSF Cardiovascular Research Institute
https://buchwalter-lab.github.io