



Institute for integrative Genome Biology Seminar Series

You are cordially invited to attend:

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University of California, San Francisco



**Assessing the dynamics of chromatin domains at the
single cell level**

Date: Friday, March 3rd

Time: 12:00 pm - 1:00 pm

Location: Auditorium + [Zoom](#)

Host: Dr. Katie Dehesh

Abstract:

Cellular specification depends in part on the ability to partition the genome in such a manner that information irrelevant to the lineage is heritably repressed. The formation of gene-repressive heterochromatin is a major contributor to this pattern. The pattern is in part established by the heterochromatin spreading reaction, which propagates gene repressive structures outwards from DNA-encoded nucleation sites. The dynamics of these structures in cells are poorly understood, as are the requirements for their epigenetic inheritance.

To resolve these dynamics, we probed the intrinsic dynamics and mitotic fidelity of spreading events in fission yeast using a system that quantitatively describes the spreading reaction in live single cells.

Surprisingly, we find that the dominant form of heterochromatin in fission yeast, nucleated from noncoding RNA elements, spreads in a spatially and temporally labile manner: Spreading outcomes are stochastic, multimodal, and fluctuate dynamically across time. In contrast, other loci have features that enable highly stable inheritance. We probed the requirements both for heterochromatin spreading, as well as stable inheritance and I will share some of our findings in this talk.