UCLA Engineering
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BIOENGINEERING

PRESENTS

Seeing cell histories with MEMOIR

THURSDAY, February 8, 2018
12:00 – 1:00 PM
2101 ENGINEERING V

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ABSTRACT:

Reconstructing the lineage relationships and dynamic event histories of individual cells within their native spatial context is a long-standing challenge in biology. However, many biological processes occur in optically opaque or physically inaccessible contexts such that they cannot be directly imaged. To overcome these challenges, we have developed a synthetic system for lineage tracking and event recording called MEMOIR. This system enables cells to store information in their genomes' in a format that can later be read out in situ in single cells by seqFISH. We demonstrate how this technology can be used to infer lineages based on shared mutations and how it is compatible with other same cell measurements. MEMOIR can thus provide a wealth of historical information about individual cells in their native spatial environments and is applicable across diverse biological systems.

BIOGRAPHY:

Kirsten Frieda is currently a postdoc in the lab of Michael Elowitz at Caltech where she is combining synthetic biology and imaging techniques to probe cells. Previously, she studied single molecule biophysics as a graduate student with Steve Block at Stanford and used optical traps to investigate RNA folding. As an undergraduate, Kirsten worked on some of the first single molecule fluorescence studies in bacteria with Sunney Xie at Harvard. In addition to her academic research, Kirsten has worked as a management consultant with the Boston Consulting Group advising healthcare clients.