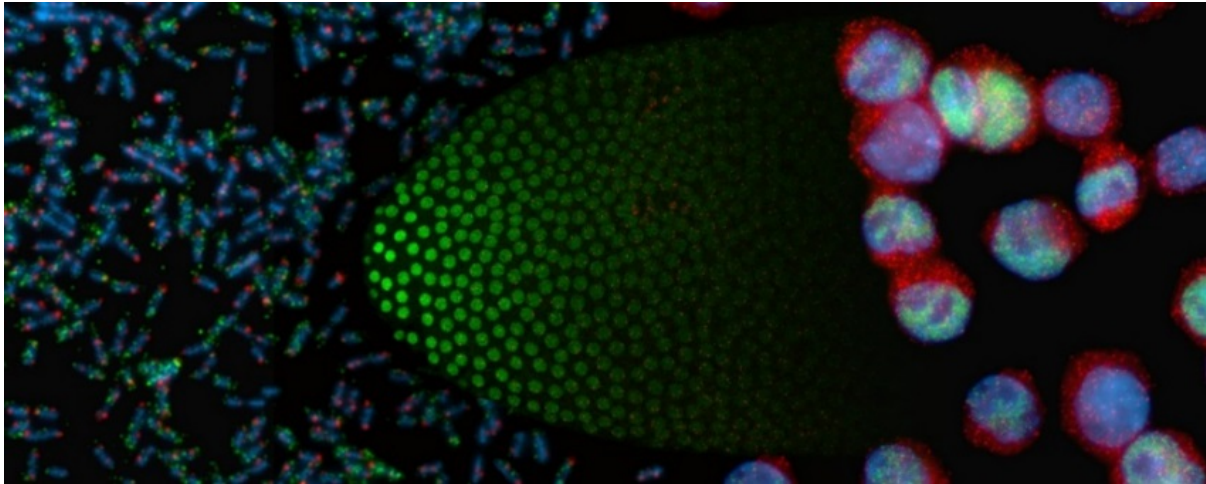


THEME 2: LIVE CELL IMAGING OF TRANSCRIPTION



Sepulveda et al., Science (2016) (left, E. coli); Xu et al., Nat. Meth. (2015) (middle, Drosophila); Skinner et al., eLife (2016) (right, mouse embryonic stem cells)

Students will participate in the following module:

MODULE: SPATIOTEMPORAL DYNAMICS OF MESSENGER RNA IN PROKARYOTES AND EUKARYOTES

Part 1: mRNA Dynamics in *E. coli*

Laboratory: [Ido Golding](#) (Baylor College of Medicine)

Students will measure the kinetics of transcription and the subsequent spatiotemporal dynamics of messenger RNA (mRNA) molecules in live *E. coli* cells.

Part 2: mRNA Dynamics in *Drosophila*

Laboratory: [Anna Sokac](#) (Baylor College of Medicine)

Students will measure the kinetics of transcription and the subsequent spatiotemporal dynamics of messenger RNA (mRNA) molecules in fruit fly (*Drosophila*) embryos. Comparisons will be drawn between the types of questions that can be addressed in the unicellular versus multicellular experimental models.

Both projects involve:

- MS2-GFP method for labeling individual RNAs in live cells/nuclei/embryos combined with other live-cell reporters
- Fluorescence imaging of living cells using wide-field or confocal microscopy
- Image analysis and simple mathematical modeling for estimating kinetic parameters