

RNA Innovation Seminars

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[Zoom Registration](#)

“Imaging single- mRNA translation dynamics in living color”

Tim Stasevich, PhD

Associate Professor

Dean and Pingping Tsao Professor of Biochemistry
CSU Monfort Professor, Boettcher Investigator
Colorado State University



Abstract

My lab is creating technology to image mRNA translation in real time and with single-molecule precision in living cells. In this talk, I will introduce our technology and describe how it can be used to amplify fluorescence from newly synthesized proteins as they are being translated from single mRNAs. I will show how we quantify these signals to determine the size, shape, subcellular localization, and mobilities of mRNA translation sites, as well as their protein synthesis dynamics. I will then highlight a few recent applications of our technology, focusing mainly on a new biosensor we have developed to quantify how individual regulatory factors impact single mRNA translation dynamics. Using this biosensor, we provide evidence that human Argonaute2 (Ago2) shuts down translation by down regulating translation initiation on the minutes timescale and helping usher translationally silent mRNAs into P-bodies on the hours timescale. I will conclude by discussing new fluorescent intrabodies my lab is engineering to light up nascent and mature proteins in multiple colors. As these intrabodies can be encoded on plasmids, they can easily be adapted by other labs to image gene activity in diverse living systems.