



Room 404AB: Sunday, February 16

5:30 PM – 7:00 PM

LUMICKS

Democratizing Dynamic Single Molecule Analysis: Advancing Biological Understanding through C-Trap™ Technology and Showcasing Discoveries from Early-Career Scientists

Dynamic single-molecule research has revolutionized our understanding of biology by providing crucial insights into key molecular and cellular mechanisms, such as DNA repair, protein dynamics, and phase separation processes, among others. However, this field of science has traditionally been accessible only to experts capable of building and operating complex home-built instruments, able to produce specific DNA or protein samples, and developing sophisticated algorithms for correct single-molecule data analysis and interpretation.

To democratize access to single-molecule technologies, LUMICKS introduced the C-Trap™ as the first instrument of its kind which uniquely combines optical tweezers, single-molecule fluorescence, and automated microfluidics. This combination allows the correlation of single-molecule force and fluorescence measurements in real-time to enable the investigation of dynamic molecular mechanisms with a ready-to-go instrument.

Here, we will introduce the C-Trap™, look forward to future developments continuing the democratization of the technology, and also look back on the last year and celebrate impactful dynamic single molecule science from the last year.

We will also provide a platform for two early-career scientists to share their exciting work using the C-Trap™.

Kacey Mersch, a post-doc from the Lohman lab at WUSTL, will present and discuss his work titled “Single stranded DNA translocation and DNA helicase activities of *Mycobacterium tuberculosis* UvrD1 Dimers”. This work utilizes the unique capabilities of the C-Trap™ to dissect the mechanism of a dimeric UvrD-family helicase (UvrD1).

Yukun Wang, a postdoc from the Laboratory of Nanoscale Biophysics and Biochemistry at Rockefeller University, will present and discuss his work titled “Using the C-Trap™ technology to visualize eukaryotic transcription at the single-molecule level” where the C-Trap™ enables directly measuring details of the transcription process that have been elusive with bulk measurements.

Join us to learn more about dynamic single molecule science, future C-Trap™ developments, and for a celebration of single molecule science from the last year!

Speakers

Kacey Mersch, Postdoctoral Scholar, Washington University St. Louis

Trey Simpson, Principal Scientist, LUMICKS

Yukun Wang, Postdoctoral Scholar, The Rockefeller University