

## **Abstract**

Attaining three-dimensional data at high throughput is a grand challenge in microscopy. Here we demonstrate a novel solution that enables the collection of 3D positions in thousands of cells each minute by merging two technologies: point-spread-function engineering and imaging flow cytometry. We apply our approach to monitor DNA compaction in yeast, measure the efficiency of DNA editing in stem cells, and characterize the uptake of nanoparticles in cancer cells. Finally, I will discuss how we can merge complementary technologies in flow-based systems to expand the information content of biological measurements.