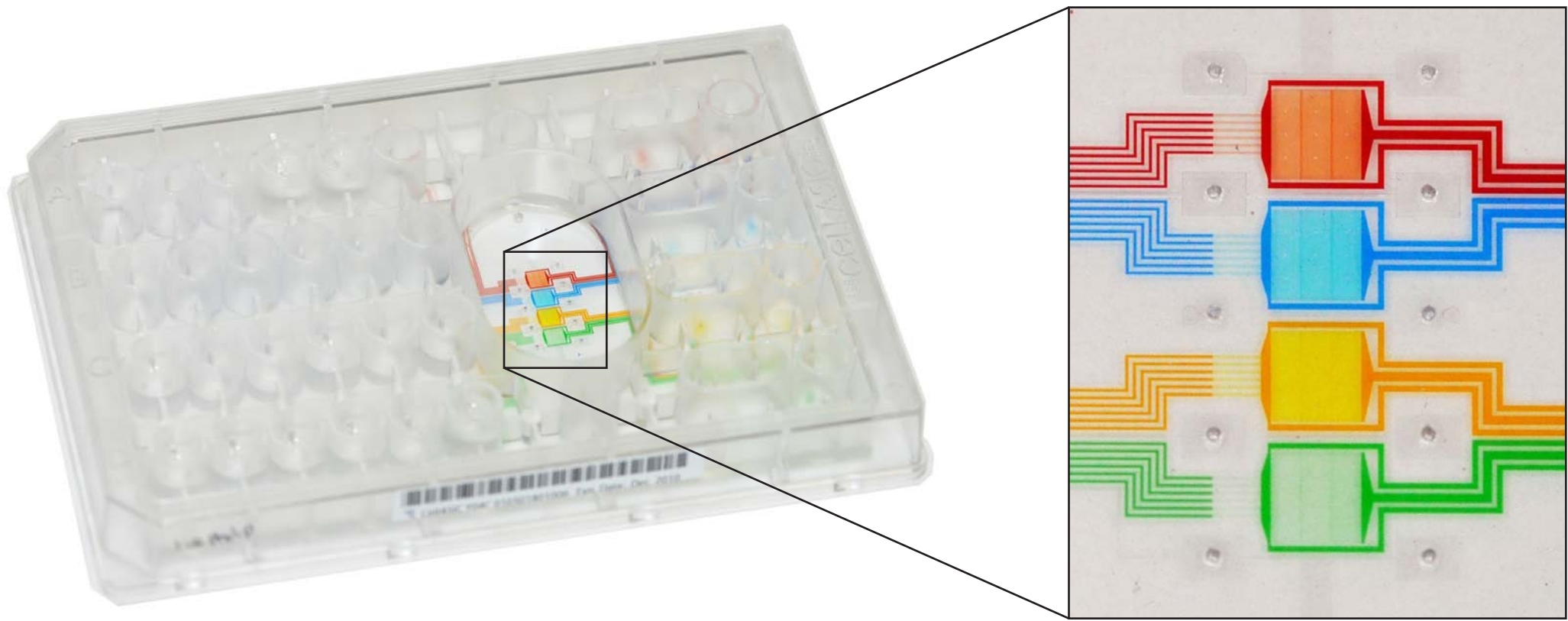


MICROFLUIDIC PERFUSION SYSTEM FOR YEAST MICROSCOPY

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Microfluidic Perfusion Plate

We developed a microfluidic plate for live cell imaging that maintains yeast in a single focal plane for long term, high magnification perfusion experiments. The plate contains 4 parallel flow units, each with 6 upstream solution inlets. The chambers accommodate cells from 4-10 micron in size.



Microfluidic Plate

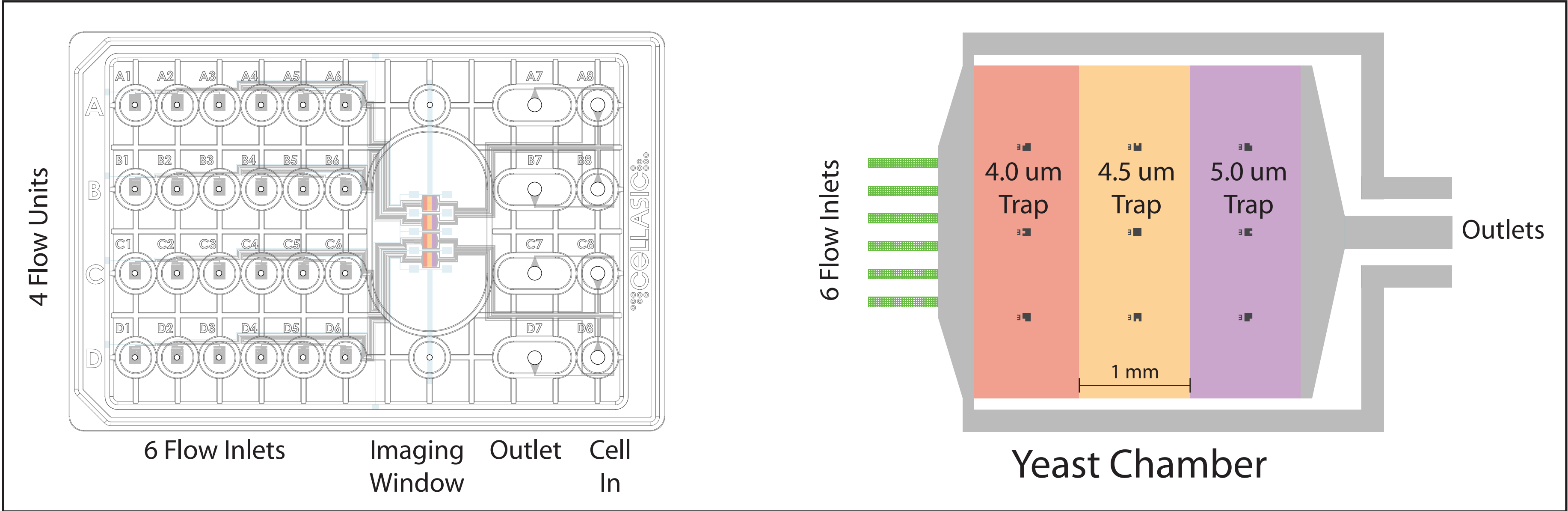
Yeast Chambers



Flow Control System

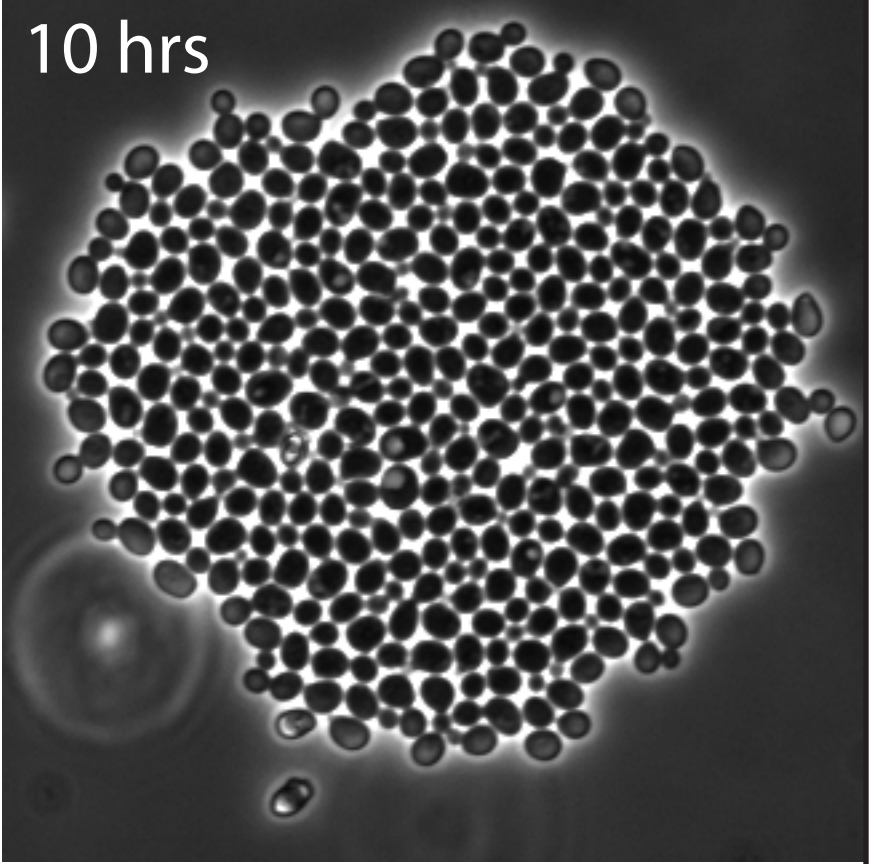
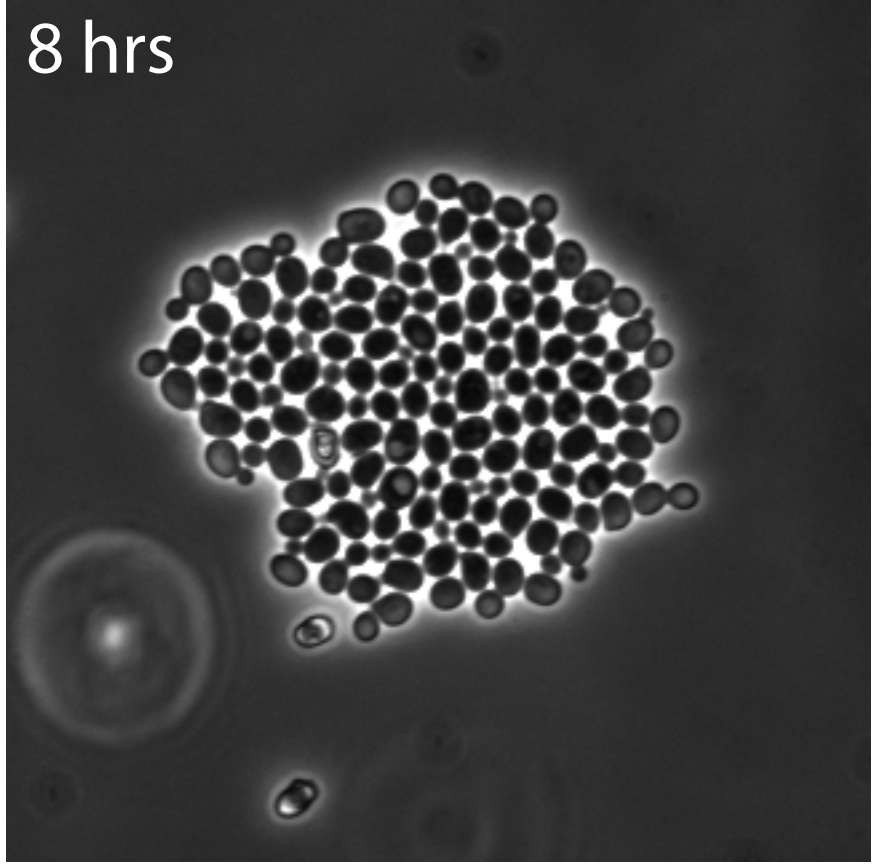
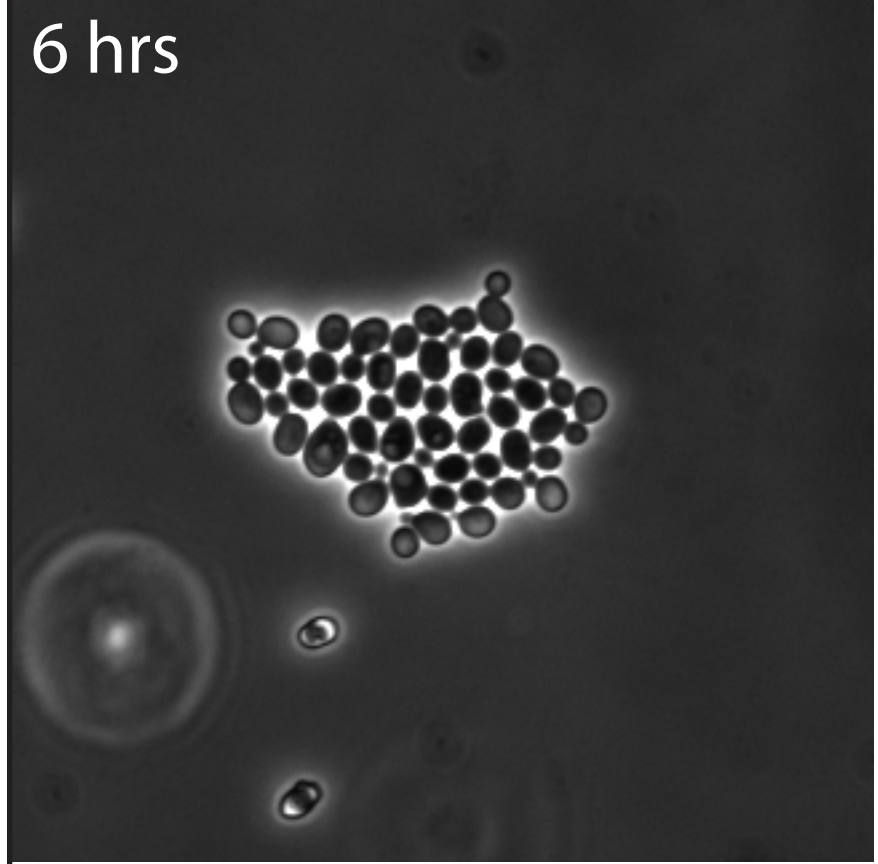
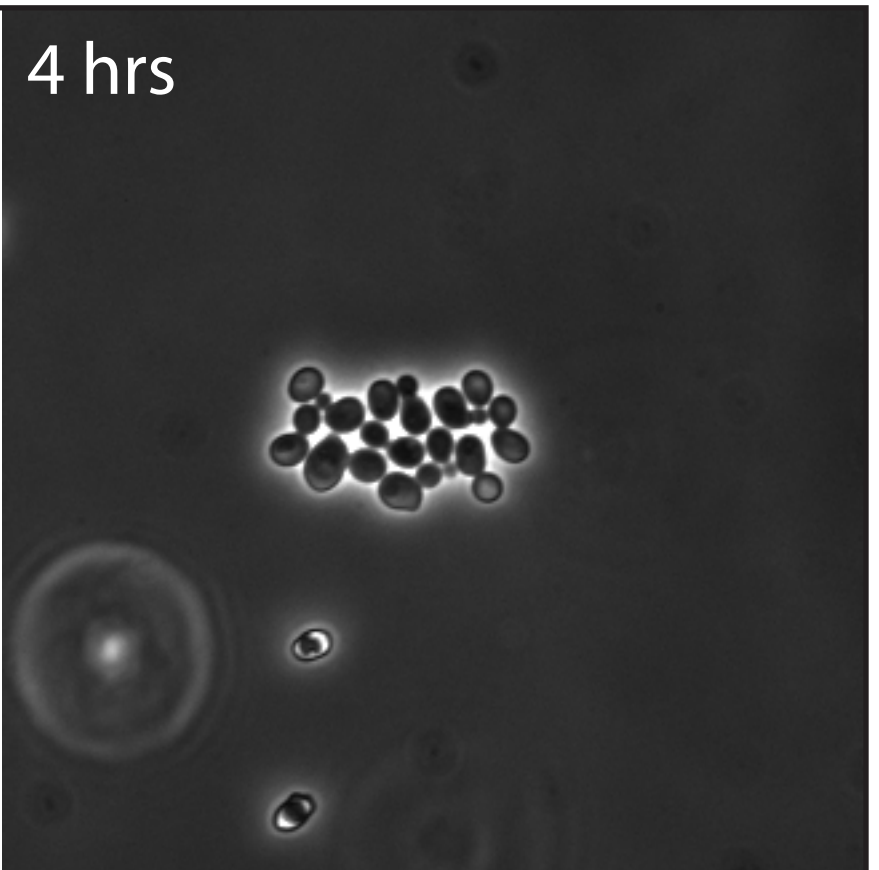
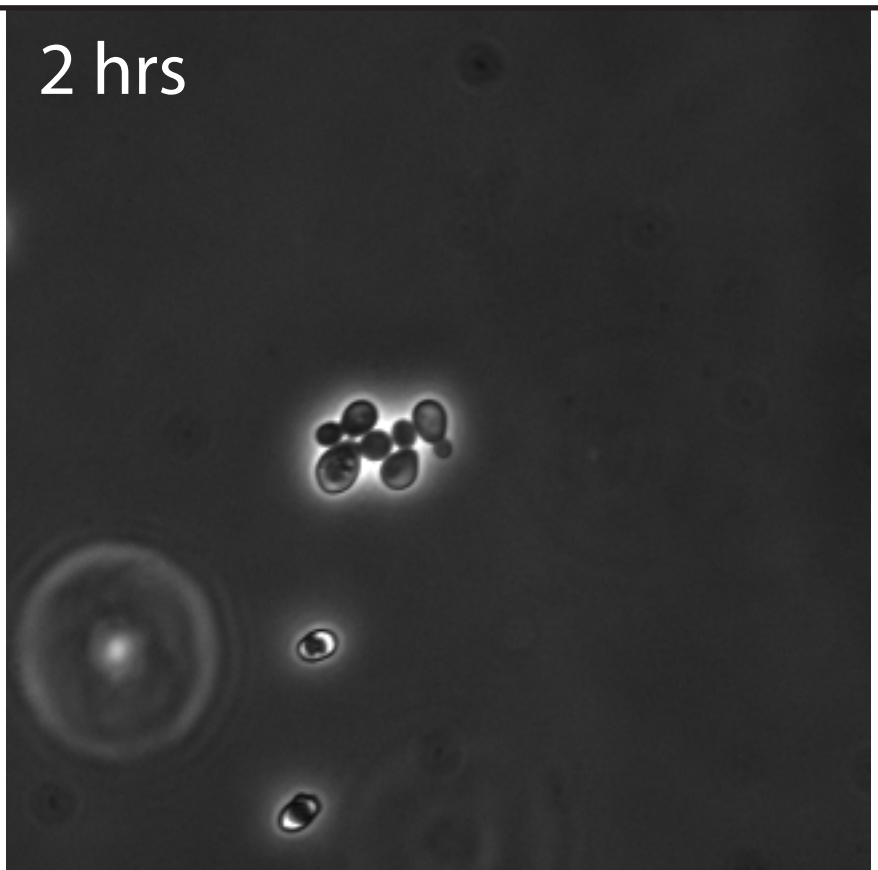
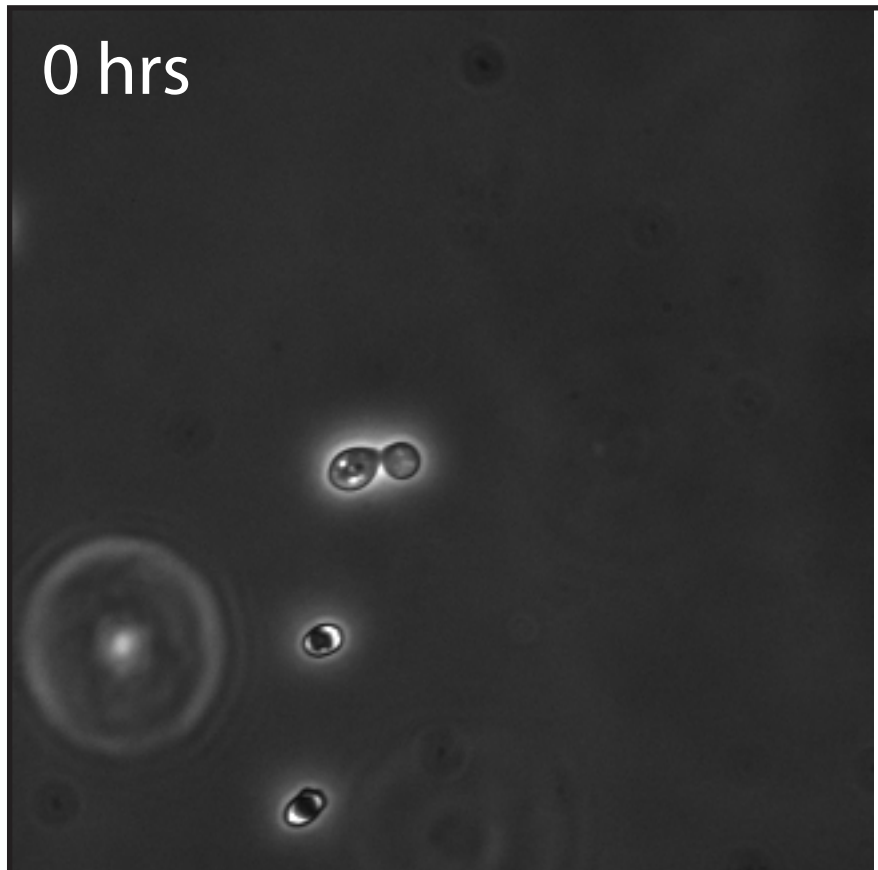
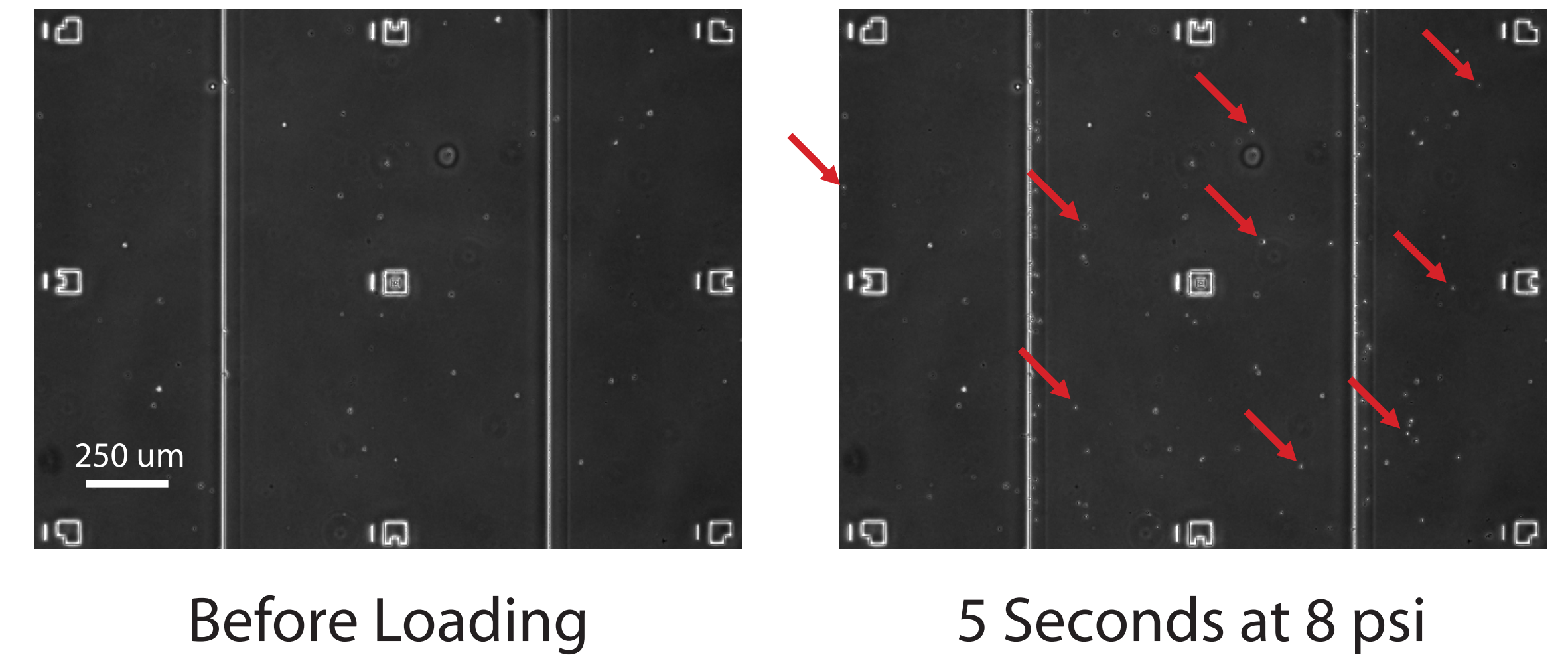
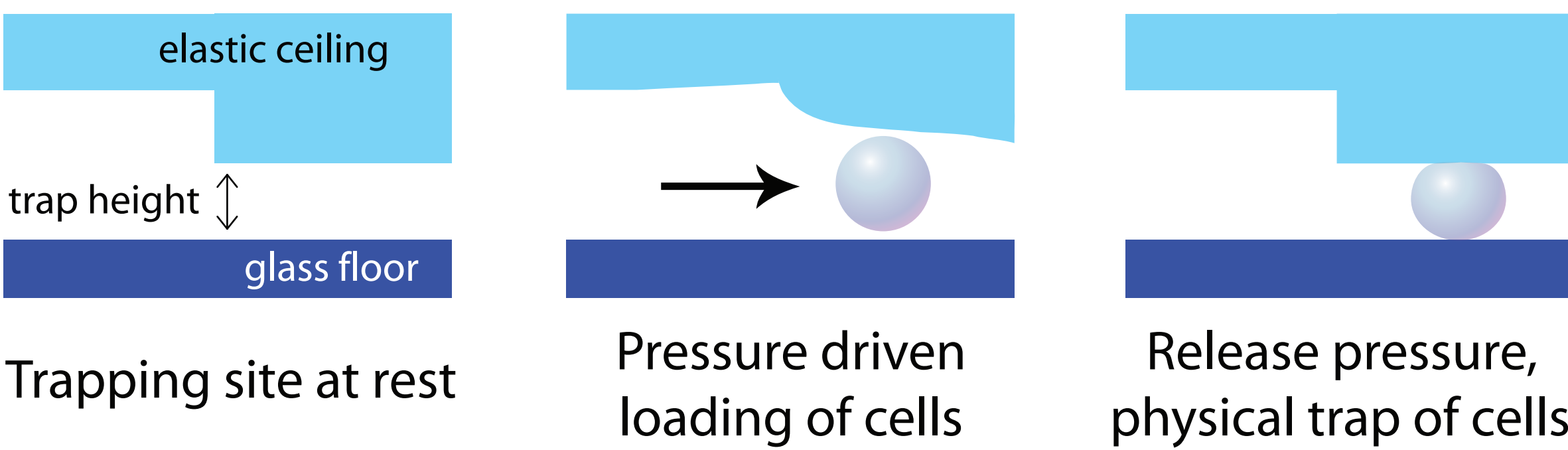
Key Features

- Maintains cells and daughters in single focal plane with perfusion
- Clear optics with #1.5 thickness (170 μm) glass coverslide bottom
- Different height traps for yeast cell size variations

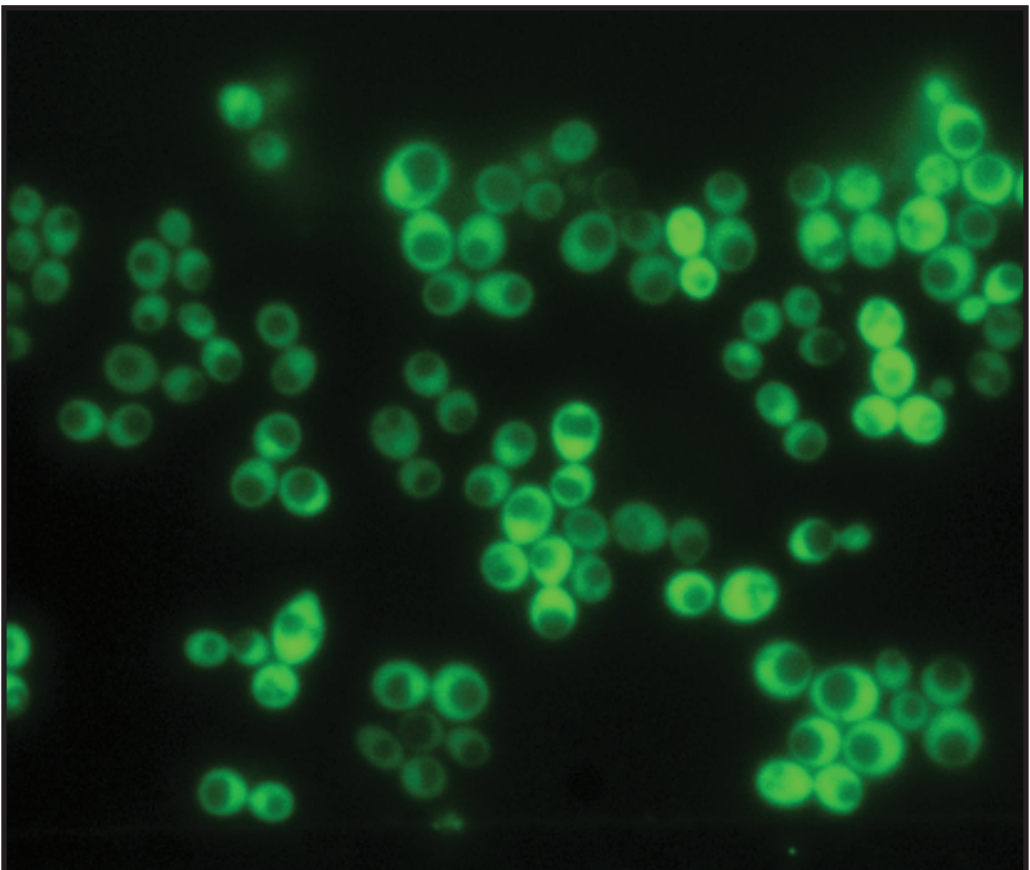


Yeast Live Cell Imaging

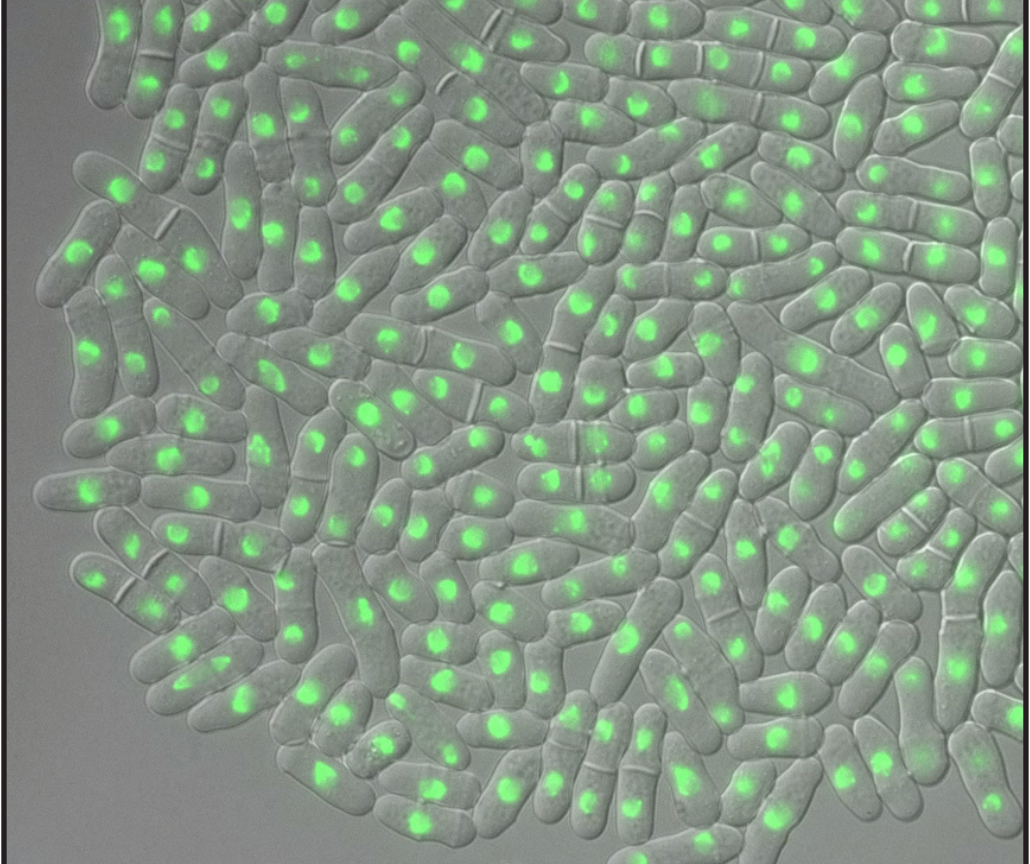
Cell Trapping Mechanism



S. cerevisiae cultured in the microfluidic chamber over 10 hours. Perfusion rate of 4 $\mu\text{l/hr}$ of SC complete medium at 30°C. Cells imaged in the 4.0 μm trap with a 40X objective.

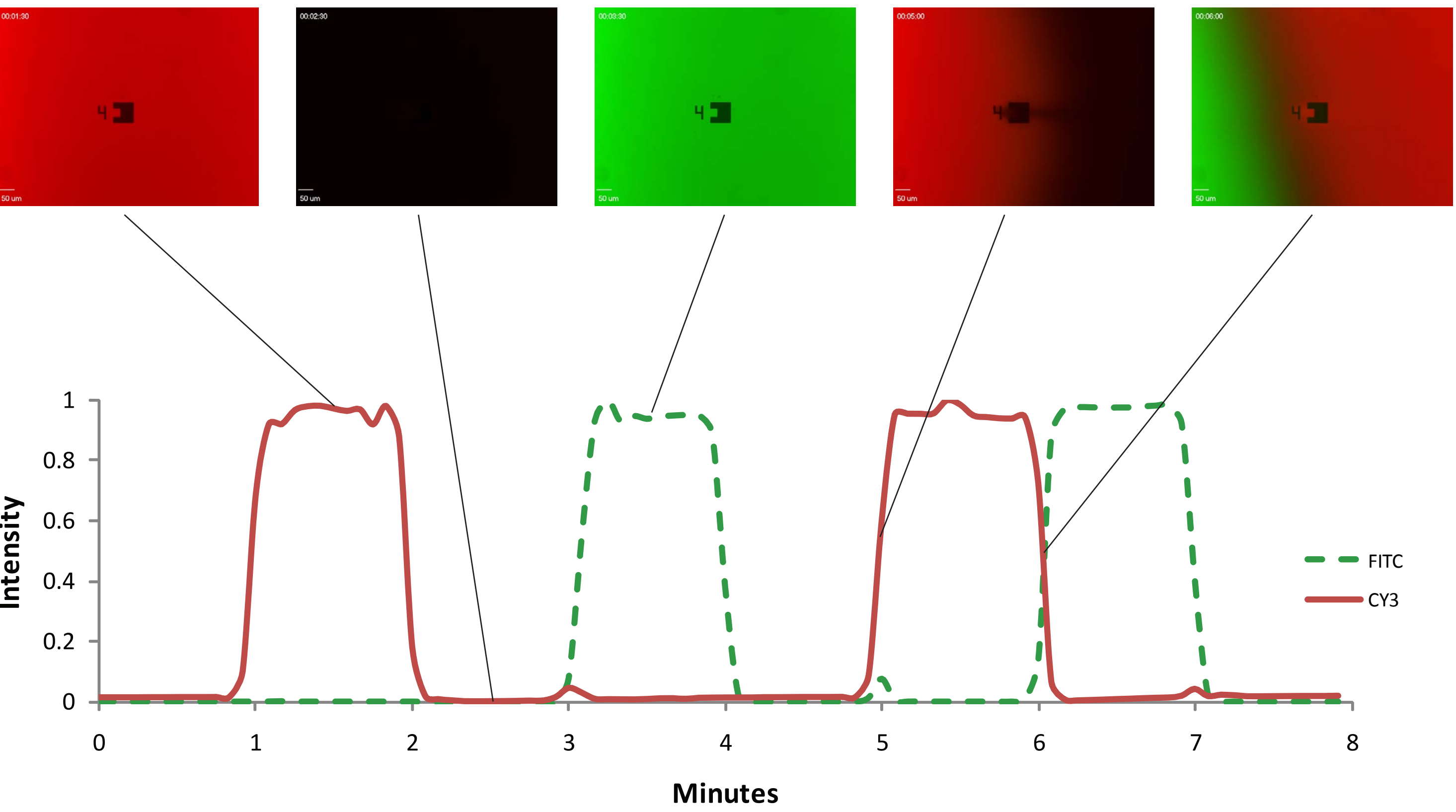


Budding Yeast

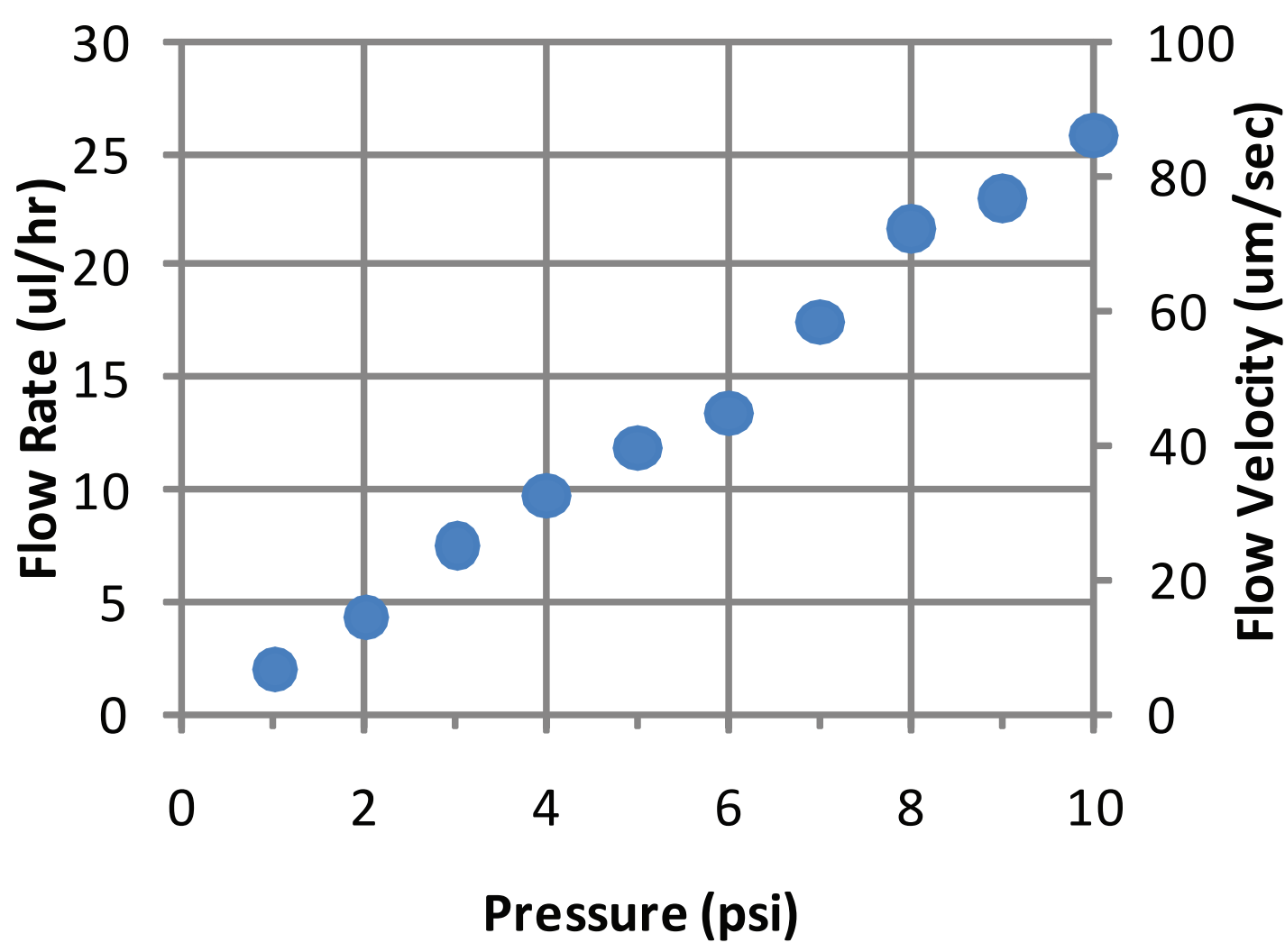


Fission Yeast

Dynamic Solution Exposure



Flow Rates



Switch Times

