Superresolution Imaging in Live *C. Crescentus* Cells Using Photoswitchable EYFP

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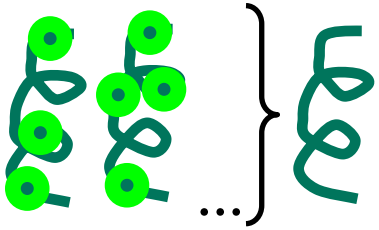
Superresolution Imaging Using Active Control of Single Molecules

A single, isolated emitter is localized with high precision

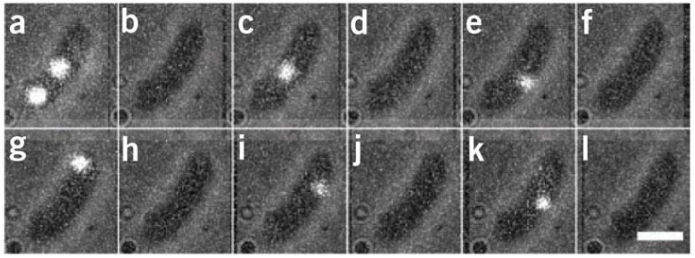
But many closely spaced emitters cannot be distinguished

The solution:

1. Sequentially activate sparse subsets of a denser ensemble
2. Reconstitute a final image from these subsets



Reactivation of Single EYFP-MreB Molecules in Live *Caulobacter* Cells



Scale bar: 1 μm

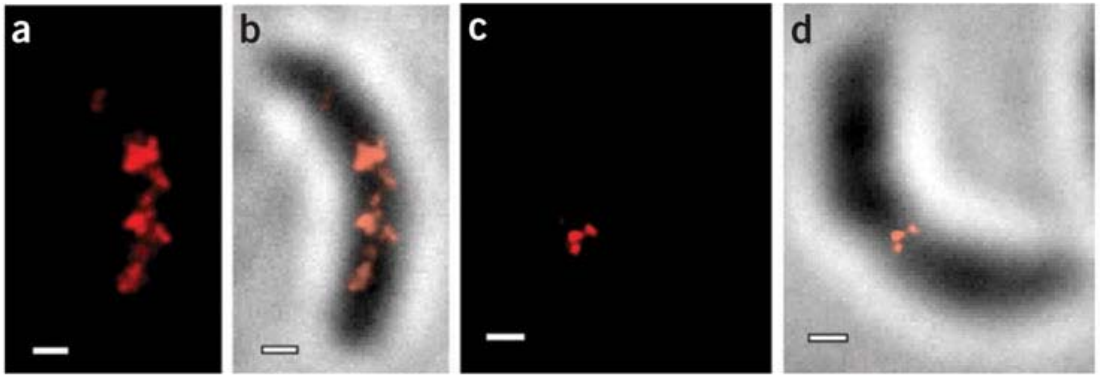
Time-Lapse Superresolution Images of Cell-Cycle-Dependent MreB Structures in Live *Caulobacter* Cells

The commonly used, monomeric EYFP enables imaging of intracellular protein structures beyond the optical resolution limit ('superresolution imaging') in living cells.

By combining photoinduced activation of single EYFP fusions and time-lapse imaging, we obtained sub-40-nm resolution images of the filamentous superstructure of the bacterial actin protein MreB in live *Caulobacter crescentus* cells.

These studies demonstrate that EYFP is a useful emitter for *in vivo* superresolution imaging.

Scale bar: 300 nm



MreB helix in the stalked cell

Midplane ring of MreB molecules in the predivisional cell