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# seeing science

## SeeingScience

BY KATHARINE MILLER

### Seeing Inside

The bright light needed to see molecular activity inside a living cell can quickly alter or even halt the very thing scientists want to observe. But a new technique developed by **Eric Betzig, PhD**, Group Leader at the Janelia Research Campus, offers fantastic 3-D resolution of living

cells for longer time periods without phototoxicity. Called lattice light-sheet microscopy, the technique uses ultrathin light sheets derived from two-dimensional optical lattices. Rapidly scanned plane-by-plane through the specimen, these light sheets provide excellent illumination with minimal damage to the cell. Betzig, who won the 2014 Nobel Prize for Chemistry for other work, calls lattice light-sheet microscopy “the high-water mark” of his career. □

*Lattice light-sheet microscopy allows the imaging of molecules inside living cells. Here, HeLa cells progress through mitosis with chromosomes (in orange) and the 3-D growth and retraction of microtubule components shown as points with lines colored according to their velocity. Credit: Betzig Lab, HHMI/Janelia Research Campus; Mimori-Kiyosue Lab, RIKEN Center for Developmental Biology. Reprinted with permission from B-C Chen et al., Lattice light-sheet microscopy: Imaging molecules to embryos at high spatiotemporal resolution, Science 346:6208 (2014).*

