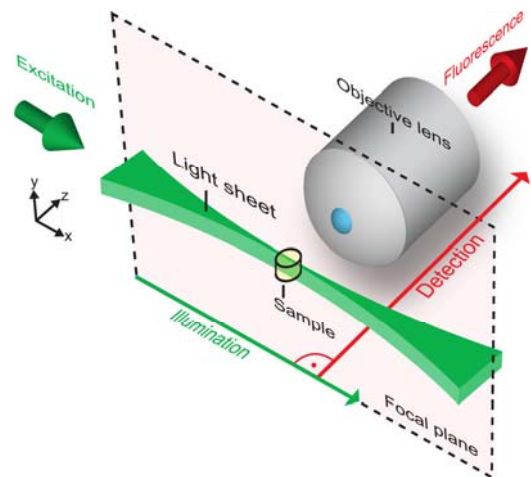


Focus on Live Imaging

Observing entire organisms using the new Lightsheet Z.1

To understand the principles of life development, there is nothing more straightforward than observing whole living embryos over long periods of time. Imagine you had access to an imaging system that could perform fluorescence imaging on large, living samples, with virtually no phototoxicity or bleaching and with high temporal resolution.

The new system from Carl Zeiss, the Lightsheet Z.1, is introducing a groundbreaking microscopic technique to achieve just that. It uses a thin sheet of light, which illuminates the sample from the side, exciting only the fluorophores within the focal plane of the objective lens. The detection beam path is arranged at a perpendicular angle to the illumination, so all light from the focus plane can be collected on the pixels of a camera at once rather than pixel by pixel as with a photomultiplier tube (PMT). This parallelization of the image collection on a camera based detector means images are collected faster and with less excitation light than in many other microscope techniques. Thus, the Lightsheet Z.1 combines the optical sectioning effect with parallel collection of the complete focal plane. This makes the data acquisition extremely fast and very light efficient.



The whole microscope is designed to suit the needs of a living sample. It is introduced into the sheet of light from above, submerged in a temperature-controllable medium. This ensures the perfect environment for keeping the sample alive and thriving. Moreover, it is freely movable in all directions – even rotation. Thus, you can watch it develop from any angle, finding the perfect view. Or using multiple views to create a complete 3D reconstruction of your sample – over time.

This workshop will give you an overview over this exciting new technology.