BRINGING TWO WORLDS TOGETHER:
COMBINING LIGHT SHEET WITH TRUE CONFOCAL IMAGING

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KEY WORDS: Light sheet microscopy, Confocal imaging, in vivo imaging, fast recording, time lapse experiments

Light sheet microscopy is a gentle method of imaging light-sensitive samples or fast biological processes in whole organisms. The specimen is illuminated in a single plane, which reduces phototoxic effects and protects the sample. By moving the sample along the plane, imaging of three-dimensional structures is realized. A high-speed camera allows the imaging of fast cellular processes. Light sheet imaging is therefore an ideal tool for observations of developing organisms in real time and 3D.

Light sheet microscopy usually requires a dedicated optical setup on a specialized system, where the illumination and the detection objectives are perpendicular to each other. The new light sheet module DLS (Digital LightSheet) from Leica Microsystems uses a unique mirror device, which integrates the light sheet illumination and detection beam path into the vertical axis of an inverted Leica TCS SP8. Once a TCS SP8 is turned into a light sheet instrument there is no compromise on microscope or confocal functionality.

Confocal users benefit from the synergy of light sheet and confocal microscopy since the same system allows exploring any sample with the method the most appropriate for the current research question. Due to the unique arrangement of light sheet and confocal microscopy, familiar sample handling can be employed and confocal photo manipulation methods can be combined with light sheet experiments.

The light sheet module is fully integrated into the Leica TCS SP8 modular imaging platform and expands its imaging options. Every inverted Leica TCS SP8 can be upgraded to a light sheet microscope whenever required.