ESI 2019 Project Day Technologies - EMBL

Single Plane Illumination Microscopy – novel technology for life cell imaging

TECHNOLOGY DESCRIPTION

Single Plane Illumination Microscopy (SPIM)

Fluorescence microscopy has proven to be an valuable and powerful tool for biological research. However, the light applied can cause severe damage to the specimen over time and even destroy it. Therefore long-term observations are limited with this technology. Based on specific optics set-up EMBL SPIM technology offers reduced sampling times at comparable and even higher resolution with no toxic side effects.

APPLICATION

EMBL SPIM technology addresses the needs of two main applications: Developmental biology, allowing for long term observation of living larger specimen like fish or fly embryos. Quantitative biology, aiming to elucidate cellular and subcellular kinetic processes under live conditions. Pharmaceutical industry will benefit in the fields of *in vitro* fertilization, tissue analysis and drug screening.

ADDED-VALUE AND BENEFITS

→ Low light dose
→ Long-term imaging possible
→ Higher imaging speed
→ Higher 3D resolution

TECHNOLOGY READINESS

First products have recently been launched in Life Sciences Research markets.

IP STATUS

Comprehensive patent portfolio of more than 9 patent families, covering aspects of first generation SPIM devices as well as special embodiments of the current product lines including WO 2004/053558, EP 2 801 855 A1, etc.

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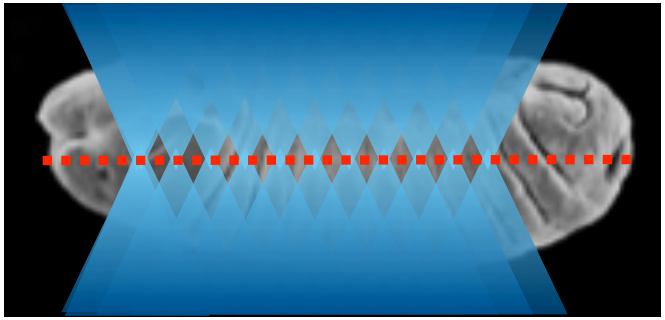
TECHNOLOGY TRANSFER

Multi Dimensional Microscopy

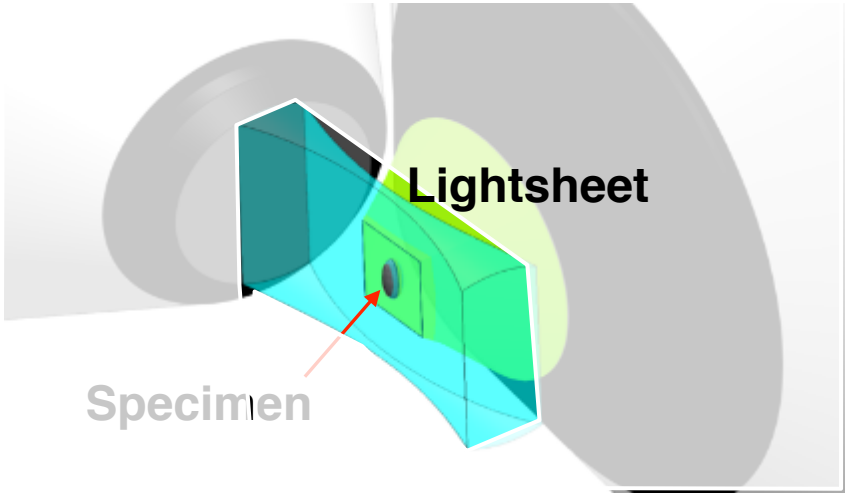
Confocal principle

point-wise scanning of area



SPIM principle

area detection by single light-sheet

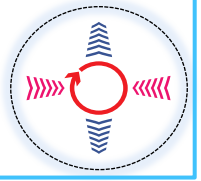


Key advantages of light-sheet compared to confocal microscopy:

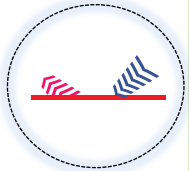
> Dramatically lower light dose
> 10^x higher imaging speed
> Higher 3D resolution
> Method of the Year 2014 (Nature)

SPIM microscopy enables destruction-free, long-term imaging of living specimen

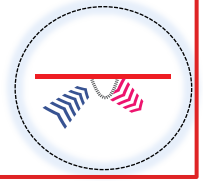
MuVi-SPIM



QuVi-SPIM



InVi-SPIM



> Developmental biology
> Larger specimen
> Long-term imaging

> **Embryonic development**

> System biology
> Functional imaging
> Long-term imaging

> **Brain development**

> Cell biology
> Cells to specimen
> Long-term imaging

> ***In vitro* fertilization**

More information:
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Thank you

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