

Inverted Lattice-Light Sheet Microscope for long-term imaging on embryonic development

Lattice light-sheet microscopy [1] provides fast volumetric images with subcellular resolution from cells to embryos. To expand its capacity to a wider range of biological applications, we implemented an inverted version of a lattice light-sheet microscope [2]. The inverted lattice light-sheet microscope adopts a two chamber-design, which separates the biological samples from the immersion liquid of the two objectives. The open-top design further allows for atmospheric control (N₂, O₂, CO₂ and humidity) besides the temperature to support the long-time embryonic development over days, and suppress the photobleaching effect. Two different sample mounting schemes are available for iLLS: a) an adaptor to hold the coverslip with samples attached upside down and dipped into the isolation chamber, and b) a sample carrier made from a 500 μ m/250 μ m thick FEP folio carrying larger samples such as embryos or cultured cells. We demonstrate live images of *Drosophila* embryos, mouse embryos and cultured cells. iLLS together with DNA-PAINT (point accumulation for imaging in nanoscale topography) also to super-resolve tubulin structure inside cultured cells is also shown.

[1] Science, vol.346, 1257998-1, 2014

[2] Nat. Meth., vol. 13, 139, 2016

Affiliation

European Molecular Biology Laboratory

Terms and Conditions

Yes

Primary author(s) : Dr YANG, Li-Ling (European Molecular Biology Laboratory); Dr MATTI, Ulf (European Molecular Biology Laboratory); Dr BALAZS, Balint (European Molecular Biology Laboratory); Ms SEIDLITZM, Silvia (European Molecular Biology Laboratory); Dr RIES, Jonas (European Molecular Biology Laboratory); Dr HUFNAGEL, Lars

Presenter(s) : Dr YANG, Li-Ling (European Molecular Biology Laboratory)

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