

Nikon Instruments Eclipse Ti-E Inverted Microscope coupled with Nipkow spinning disk confocal imager CARV II

Location

Room D / basement / 048 (l. 2472)

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Contacts

Manager:

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Administrative tasks and technical operation, consultations.

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Administrative tasks and technical operation in manager's absence.

Head of the Laboratory of Biomathematics:

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Consultations in the field of image processing and analysis.

Usage rules

See the documents [General Usage Rules](#) and [Rules of operation](#).

Fees

Information about fees is at <https://www.fgu.cas.cz/en/articles/672-poplatky-czbi>.

Specification of the confocal microscope Nikon Ti-E / Crest CARV II

Microscope. The inverted fluorescent microscope Nikon Ti-E with motorized stage Prior Proscan III enables one to conduct multiple ROI, Tile Scan and Mark&Find experiments. The microscope is coupled with Nipkow spinning disc imager CARV II that contains a unit for confocal and FRAP imaging. The whole system is placed on an active pneumatic anti-vibration table STable© Supertech.

Available objectives:

- Nikon CFI Plan Fluor 10×, DIC, 10×/0.3 NA, WD = 16 mm
- Nikon CFI ADL 10×, Ph, 10×/0.25, WD = 6.2 mm
- Nikon CFI Plan Fluor 20×, DIC, 20×/0.5 NA, WD = 2.1 mm
- Nikon CFI S Fluor 40× Oil, DIC, 40×/1.3 NA, WD = 0.22 mm
- Nikon CFI Plan Apo Lambda 60× Oil, DIC, 60×/1.4 NA, WD = 0.13 mm
- Nikon CFI Plan Apo VC 100× Oil, DIC, 100×/1.4 NA, WD = 0.13 mm

For more information, please visit [Nikon website](#)

Illumination path. The sample can be illuminated by a halogen lamp in transmission mode or by the mercury lamp X-Cite® 120PC Q in epi-fluorescent mode. The provided spectrum ranges from 300 nm to 700 nm and the illumination path is optimized for common dyes (DAPI, GFP, Cy3, Texas Red, Cy5).

Detection path. The emission path is equipped with band pass filters that are optimized for the above mentioned dyes. The image is acquired by a cooled monochromatic 16bit CCD camera Hamamatsu Orca-R² with resolution 1344 (H) × 1024 (W), pixel size 6.45 μm × 6.45 μm, acquisition speed 16.2 fps and quantum efficiency over 70 %.

Box incubator. The system Okolab UNO-COMBINED-CONTROLLER controls the environmental parameters such as temperature (ambient temperature to 50° C), CO₂ (0 to 15 %) and relative humidity (up to 75 % for 37° C). The size of the box is 85.5 × 127.7 × 25.0 mm.

Software. The whole system is controlled through NIS-Elements AR that supports a tool for running complex tasks (module Jobs).

Useful websites

- [LAS X Core Offline](#) software for opening Leica file formats
- [Nyquist online calculator](#) for theoretical calculation of pixel and voxel size
- Fiji (Fiji is Just ImageJ):
- Bioformats (former LOCI Tools) [ImageJ](#)
- [SLIM Curve](#)
- [ImageJ world mailing list](#)
- Interactive dye spectra viewer:
 - [ThermoFisher](#) (Life Technologies) interactive Spectra Viewer
 - [Leica FluoScout](#)

- [BdBioSciences Spectrum Viewer](#)
- [BioLegend SpectraAnalyzer](#)
- Tables of fluorescent dyes spectra: www.fluorophores.tugraz.at/substance/