IMCF Newsletter

BIOCEV

September 2023

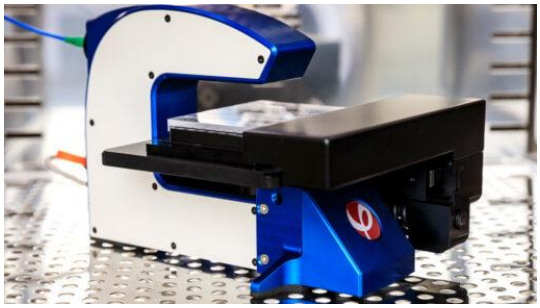
What's new at IMCF?

What new microscopes can you look forward to at IMCF?

The microscopy field is fast-evolving, so from time to time it is necessary to update also IMCF equipment. The first toy to be installed in November of this year is a RING-TIRF wide-field microscope with a FRAP module from Nikon, purchased by Zdeněk Lánský from IBT. The microscope will be operated under the open-access framework. The RING-TIRF modality allows for multi-color, homogeneous, shadow-free TIR illumination, ideal for imaging cellular structures in close proximity to the coverslip. FRAP module allows for bleaching or photoactivation of molecules in selected regions, followed by observation of their dynamics through both wide-field and TIRF imaging.

Next year more equipment may have come via Czech-Bioimaging large research infrastructure OP JAK proposal. The first of its kind in the Czech Republic would be an inverted or upright Lattice-Light Sheet microscope designed for fast, high-resolution, and very low phototoxicity 3D fluorescence acquisitions of living cells, small embryos, or animals. Another unique tool could be the point confocal microscope from Abberior Instruments, offering multi-color STED super-resolution, spectral and lifetime detection, and adaptive optics to improve 3D acquisition in thick and scattering samples. In electron microscopy, a new cryo-stage for our FIB-SEM will allow for lower contamination cryo-scanning and potentially also enable label-free cryo-FIB-SEM. Smaller investments will include a large incubator for CZ LSM880 NLO, a perfusion system for microscopy chambers, a new pulsed 488 nm laser, a sCMOS camera, and workstations for image data analysis.

HoloMonitor® – Live Cell Imaging System

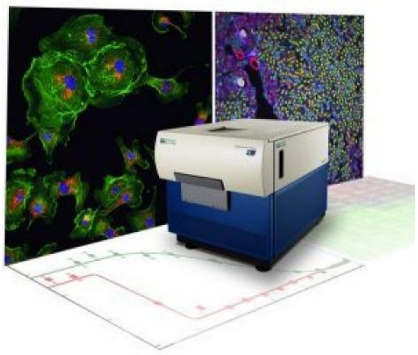


Another QPI microscope will be placed for an extended demo at IMCF facility!

The Holomonitor is a live-cell imaging system based on the principle of 2D quantitative phase imaging (QPI). The QPI technology is very subtle, label-free, and non-invasive and therefore is optimal for long live-cell imaging. The microscope is placed in a standard CO2 incubator and thus the cells are in their standard environment. Additionally, the microscope's software offers several guided imaging assays, such as Cell Proliferation, Wound Healing or Dose Response Assay. Except for assays it can be used also as a simple Cell Counter or Cell Quality Check, to see if your cells are happy before an important experiment.

If you would like to find out more, we invite you to attend the upcoming seminar **on Tuesday at 1 PM, September 19th, in the Red/Green seminar room**. On Wednesday, September, we will follow up with a demo of the HoloMonitor microscope. If you would like to bring your own samples, let us know, so we can reserve a time slot for you and discuss the sample preparation requirements.

ImageXpress®



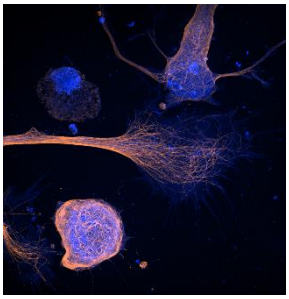
Do you need high-throughput imaging (e.g. multiple sites per well per multiwell plates) connected to robust analytical module (e.g. cell scoring, nuclei counting)? Then consider using **ImageXpress® Micro** Widefield High Content Screening System (owned by IBT, operated by IMCF BIOCEV). It features proprietary fast frame rate technology combined with three channel widefield fluorescence, phase contrast, and brightfield imaging (appropriate for histologic samples as well). After fixing the problem with automatic focus control the software has been successfully connected to extended database, so you can more comfortably acquire even bigger datasets per session! **ImageXpress® Micro** is offered for your applications in the open-access mode similar to other instruments in IMCF. For more information don't hesitate to contact your IMCF team 😊.

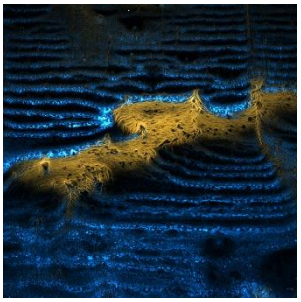
Picture of the Month

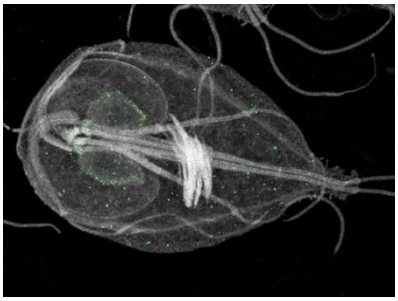
After a successful year with the IMCF Picture of the Month competition, we are changing the name, but the competition continues! This year we extended the participation to users of all microscopy facilities within the umbrella of Prague Euro-BioImaging Node, including the future members VMCF and IEM facility.

Your chance to win the cash prize, kindly sponsored by Nikon, is still high, but there will be more rivals. Detailed information for you (competitors) can be found here: http://imcf.natur.cuni.cz/IMCF/picture-of-the-month/

Let us also congratulate the winners of the Picture of the Year 2022/2023 competition:





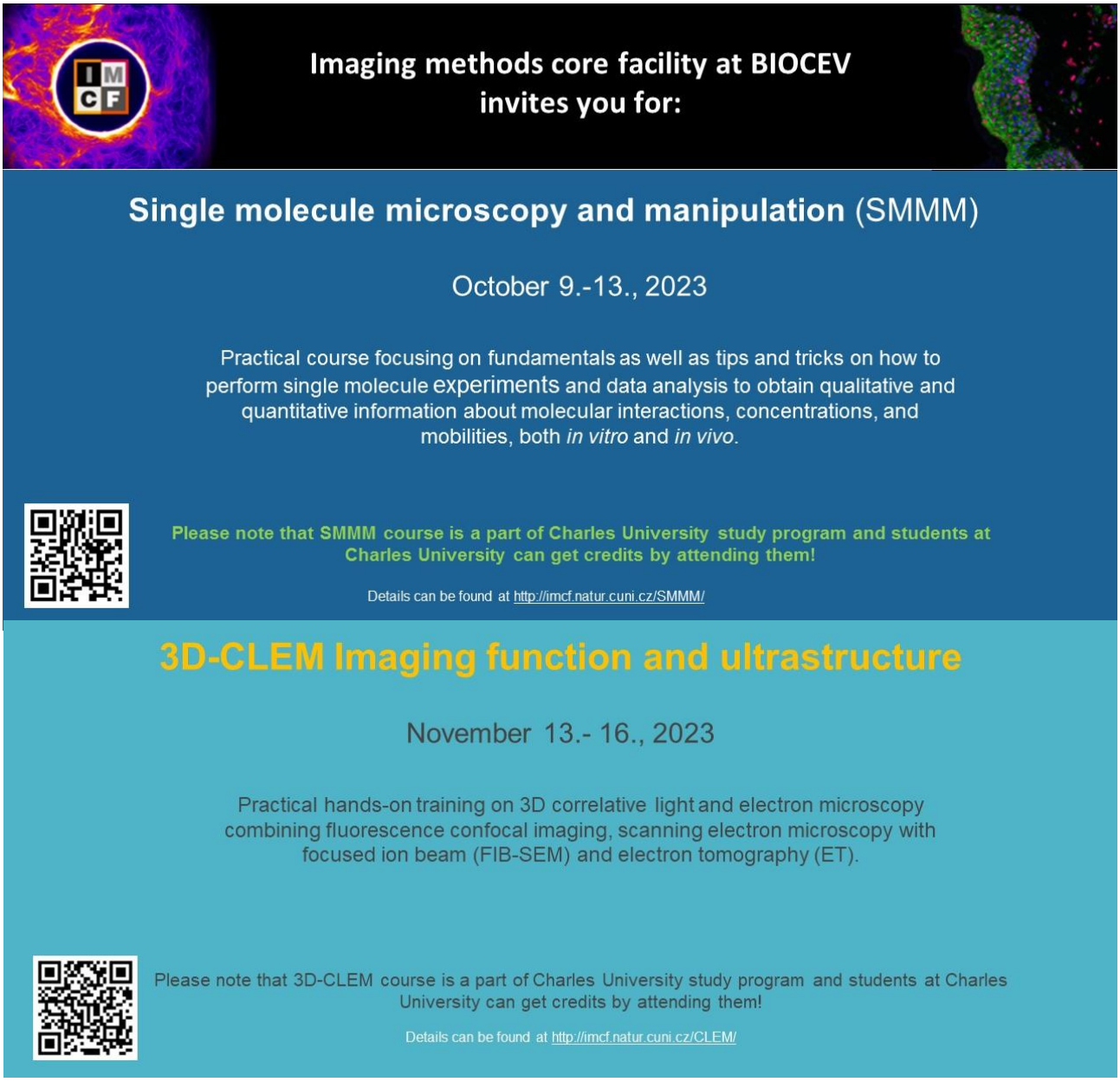


From left to right:

1. Eliška Miková - Fatal attraction (March 2023)
2. Alexandre Beber - Actin filaments and proteins on a dried coverslip (June 2022)
3. Martina Vinopalová - In the expanded world of Giardia (April 2023)

All Monthly winners can be found here: https://imcf.natur.cuni.cz/IMCF/monthly-winners/

Upcoming courses



Your IMCF team

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