Newsletter

What's new at IMCF? *April 2023*

Investments 2023-2026

Do you miss any method, instrument, accessory, software, or anything else microscopy related at IMCF? Please let us know your wishes soon (by email, in person, by phone,…), as we are just finalizing our plan for new investments for instruments, software upgrades and replacements. We are open for your suggestions not only for small fixes, like new sample holders or missing software licenses, but also greater investments like brand new technologies too.

The IMCF investment plan is a part of Czech-BioImaging large research infrastructure application for OP JAK.

CzechBioimaging call for research project

Who can apply?

Anyone whose project is advanced or innovative from a methodological (microscopy) point of view. You can get up to 100-150k CZK for your project.

How you should proceed:

- First, contact the facility staff and introduce the idea of the project.
- Then a meeting will be arranged to discuss the project in a detail.
- After the meeting, the biological and methodological part of the proposal will be written by the user and sent to the facility.
- The facility will revise the proposal and add the budget for the project.

The deadline for submission is 15th April. However, the internal deadline for the imaging facility is **11th April!** Within 4 days, the facility will cooperate with the user on revisions of the proposal.

More details can be found on the CzechBioImaging website.

Team changes

Flow Cytometry

Radek Bura who joined us a year ago is leaving and will be replaced by Michaela Kolařík Zázvorková, who joined us fully from 1st of April!

Electron Microscopy

Our long-time colleague Lenka Koptašiková, who has been with us since 2017, is leaving to her new senior position in England. Her successor is Pelin Sungur from Turkey:

Newsletter

Dobry den! My name is Dr. Pelin Sungur, from Turkey. I have just joined the Imaging Methods Core Facility at BIOCEV to take over the position of electron microscopist previously held by RNDr. Lenka Koptašiková who is leaving abroad by the end of March. I will be mainly responsible for support of sample preparation methods & workflows and for TEM analysis, where I will leverage on my previous experience with resin embedding, ultramicrotomy, staining, plunge freezing, TEM imaging at room and cryo temperatures and with 3D-EM tomography. I obtained my PhD in Chemistry from Friedrich Schiller University Jena in Germany and worked at two microscopy core facilities, SUNUM (Istanbul) and in CEITEC (Brno). I am very excited to support projects, users and research here at BIOCEV and to further develop my expertise in a nicely equipped EM-laboratory here.

We want to thank Lenka and Radek for their work in IMCF and wish them all the best in their new jobs! 😊

Data analysis

New NIS Elements AI license

Due to increased interest in image segmentation of your data with the help of artificial intelligence (AI), we have arranged for one extra software license of NIS Elements with AI module and currently up to 3 users can benefit from the software functionalities at once. You can find the necessary information about software availability and the reservation procedure on our website in the „Data Analysis tools" and „How to access" sections.

Public data sharing with OMERO

Developed by the Open Microscopy Environment (OME), OMERO is a data management platform for the storage, annotation, and exploration of image datasets. IMCF runs the OMERO server allowing their users to easily peruse their high-resolution multidimensional images at home using simply a web browser without the need to locally download large datasets. Several key features such as metadata management, rendering adjustments, or ROI creation tools are implemented. In order to share and publish your data to the world, we have now introduced the option to make it publicly accessible. Make sure that your data are FAIR (**F**indable, **A**ccessible, **I**nteroperable, and **R**eusable).

OMERO
Findable
Accessible
Interoperable
Reusable

![IMCF] Newsletter

Light microscopy

Live cell measurements

Recently, we noticed increased demand for live cell and live tissue experiments in our core facility. Most of our light microscopes can be fitted with stage-top incubators allowing to maintain stable environment of the sample. We would like to draw your attention to the possibility of measurements at hypoxic conditions, i.e., with oxygen level lower than in atmosphere (21%). This allows for measurements at true physiological conditions (since O2 levels in healthy body tissues ranges between 5-14%), imaging of living anaerobic organisms, or inducing pathological situations.
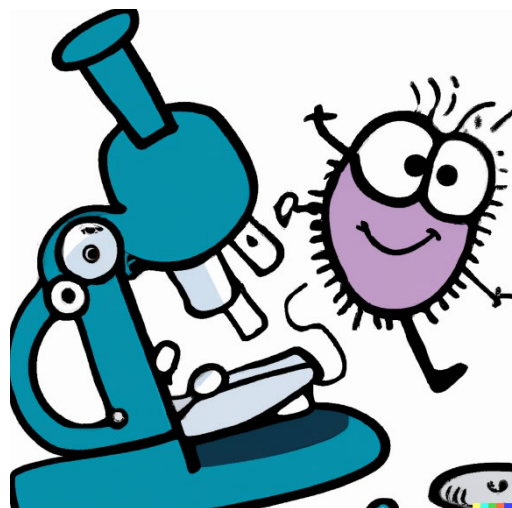
Picture generate by open AI system DALL-E

Upcoming courses

Cryo-Imaging of Biological Samples

April 24th – 26th 2023

We would like to invite you to the practical course "Cryo-Imaging of Biological Samples" which will be held in April at IMCF BIOCEV. The lectures will cover the theoretical principles of electron and fluorescence microscopy and will be accessible to a wider audience. During hands-on sessions, registered participants will gain practical experience with basic tools and operations in cryo-electron and cryo-fluorescence microscopy, including sample preparations of different types of biological samples (e.g., microtubules, vesicles, bacteriophages, etc.) and their imaging under cryo-conditions.
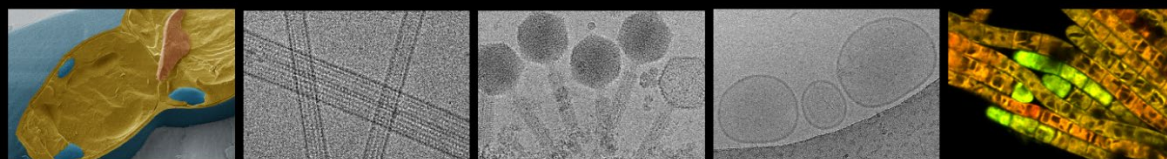
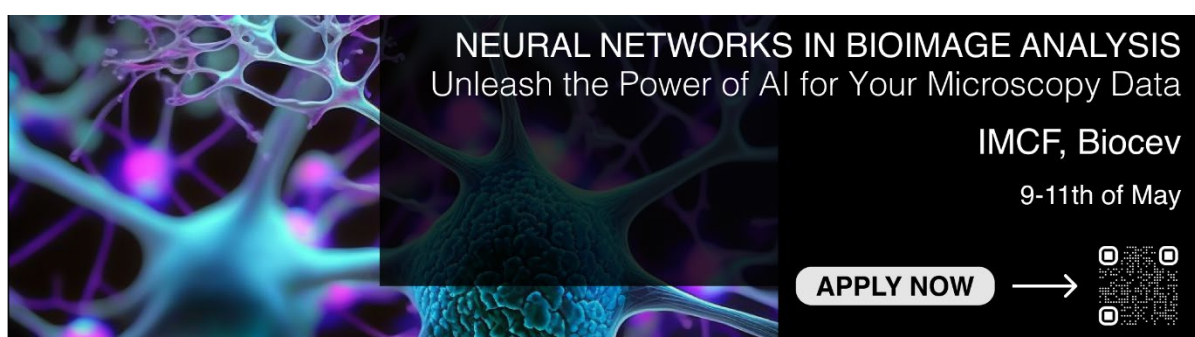## Neural Networks in Bioimage Analysis course

May 9th-11th 2023

Practical course focused on providing a basic understanding of machine learning and deep learning and practical implementation of techniques utilizing artificial intelligence (AI) for the most frequent image processing tasks, such as segmentation, classification, and denoising. Unlike conventional methods, neural networks can learn complex patterns from data and can generalize from it to recognize features in images that it has not seen before. The course will introduce both free and commercial software options for AI-assisted image analysis that require very little or zero coding experience. Register now, the capacity is limited.

Single Particle Analysis and Cryo-Electron Tomography course

May 15th-19th 2023

SPACET 2023 will be an excellent opportunity to learn more about cryo-electron microscopy (cryoEM) and its applications in structural biology, which complements our more cell biology-oriented Cryo-Imaging of Biological Samples workshop. During the SPACET workshop, you will have the chance to hear experts in the field, participate in hands-on demonstrations, and network with other researchers who share your interest in cryoEM. SPACET workshop covers a range of topics, including sample preparation, imaging and data processing. We will focus on single-particle analysis (SPA) and cryo electron tomography (cryo ET), as well as discuss the latest developments and techniques in the field.
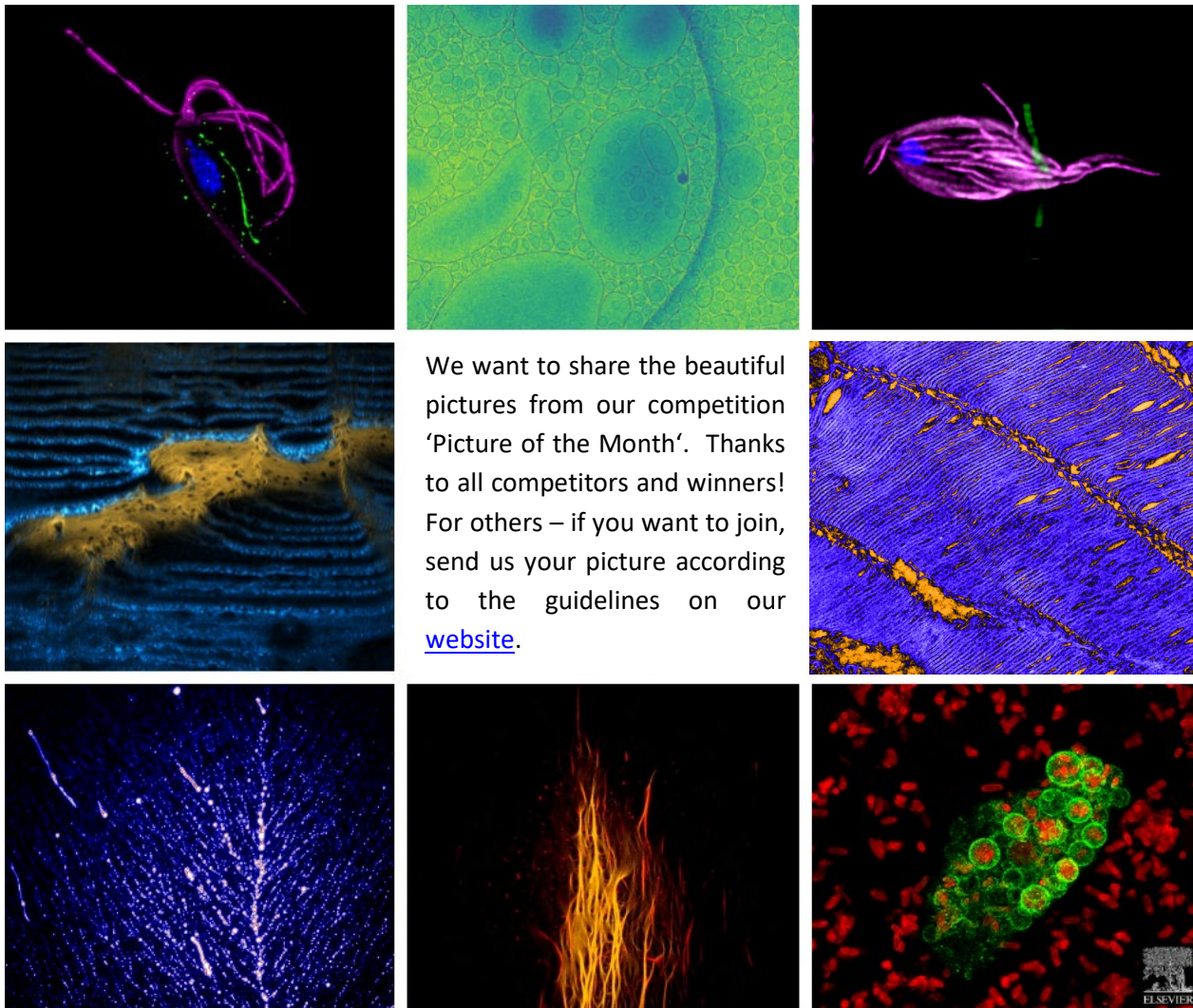

List of all IMCF workshops can be found here and Czech-BioImaging courses are listed here

Newsletter

Picture of the month

We want to share the beautiful pictures from our competition 'Picture of the Month'. Thanks to all competitors and winners! For others – if you want to join, send us your picture according to the guidelines on our website.

Your IMCF team

www.imcf.natur.cuni.cz/IMCF

www.twitter.com/IMCF_BIOCEV

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