CZECH-BIOIMAGING CONFERENCE
Imaging Principles of Life 2024

PROGRAM

Monday, 30 September

From 16:00	*Arrivals and Registration*
17:45-19:00	**OPENING SESSION**
17:45-18:00	**Conference Opening by Pavel Hozák, Director of Czech-BioImaging**
18:00-18:45	**KEY LECTURE: Uwe Himmelreich, Catholic University Leuven, Belgium** Multi-parametric, multi-modal and multi-scale imaging of infectious diseases: What is essential and what is not?
18:45-19:00	**Johanna Bischof, Euro-BioImaging ERIC** Opportunities for Researchers and Imaging Core Facility Staff
19:00-22:00	*Welcome Reception*

Tuesday, 1 October

9:00-10:30	**SESSION I** **Chaired by Kamila Hrubanová & Daniel Hadraba**
9:00-9:15	**Chiedozie K. Ugwoke, Faculty of Medicine, University of Ljubljana, Slovenia** Multimodal Label-Free Analysis of Diabetic Human Fasciae Using AFM, SHG, CARS, and FLIM
9:15-9:30	**INDUSTRY: Tomáš Pop, SVEN BioLabs s.r.o.** Transforming Precision Imaging – FLUOVIEW™ FV4000 Confocal Laser Scanning Microscope
9:30-10:00	**INVITED SPEAKER: Lalith Kumar Shiyam Sundar, Medical University of Vienna, Austria** ENHANCE: Enabling New Horizons for Advanced Networking, Code-sharing, and Education in Total-Body PET Imaging
10:00-10:15	**Karla Košpić, Faculty of Biotechnology and Drug Development, University of Rijeka, Croatia** Confocal fluorescence microscopy for in situ detection of silver nanoparticles and early indications of oxidative stress in plant cells
10:15-10:30	**INDUSTRY: Guillaume Brunetti, JEOL (EUROPE) SAS** Latest News from Jeol in Cryo Microscopy
10:30-11:00	*Coffee break*

11:00-12:30	**SESSION II** **Chaired by Vlada Filimonenko & Daniel Zicha**
11:00-11:15	**Ladislav Bumba, Institute of Microbiology of the Czech Academy of Sciences, Prague** High-resolution imaging of Bordetella adherence towards cilia of respiratory epithelial cells
11:15-11:30	**Chaturanga D. Bandara, University of Bristol, United Kingdom** Developing Correlative Cryo microscopy Workflows to Characterise Bacteria-Material Interactions at Hydrated State
11:30-11:45	**INDUSTRY: Jakub Horák, Měřicí technika Morava s.r.o.** Bruker NanoWizard PURE BioAFM: Entry-Level Simplicity, High-End Power
11:45-12:00	**Tereza Chmelíková, CEITEC, Brno University of Technology, Brno** Holographic approach to drug repurposing for anti-metastatic treatment supported by Biophotonics Core Facility
12:00-12:15	**INDUSTRY: Matyáš Krijt, TELIGHT Co.** Explore the Unseen with advanced light microscopy techniques
12:15-12:30	**Michal Franek, CEITEC, Masaryk University, Brno** Analysis of plant replication and nucleolar ultrastructure using correlative super-resolution microscopy
12:30-13:30	*Lunch*
13:30-15:00	**SESSION III** **Chaired by Kateřina Malínská & Radovan Jiřík**
13:30-13:45	**Jiří Vitouš, Institute of Scientific Instruments of the Czech Academy of Sciences, Brno** Advanced imaging of nanoparticles in mice
13:45-14:00	**Tetiana Kalachova, Institute of Experimental Botany of the Czech Academy of Sciences, Prague** Seeing the nuances: visualization of local plant defence responses and their molecular mediators
14:00-14:15	**INDUSTRY: Jason Otterstrom, Animalab s.r.o. [ONLINE]** IDEA-Bio-Medical: Introducing the Wiscan Hermes, an automated microcopy system
14:15-14:30	**Adriana Jelínková, Institute of Experimental Botany of the Czech Academy of Sciences, Prague** Live light microscopy and Electron microscopy as a crucial tools for studying plant cell development
14:30-14:45	**INDUSTRY: Andreas Nowak, SPECION, s.r.o.** Advanced Sample Preparation for Electron Microscopy with Leica Microsystems
14:45-15:00	**Amit Khairnar, International Clinical Research Center of St. Anne's University Hospital in Brno** Diffusion Kurtosis Imaging (DKI) and Magnetic Resonance Spectroscopy (MRS) Detect the Age Dependent Microstructural and Metabolite Changes in Rodent Brain
15:00-16:30	**POSTER SESSION** & *Coffee break*
16:30-18:00	**SESSION IV** **Chaired by Milan Ešner & Štěpán Kortus**
16:30-16:45	**Petra Záhumenská, Institute of Experimental Medicine of the Czech Academy of Sciences, Prague** Single-particle tracking of NMDA receptors at hippocampal synapses

16:45-17:00	**Albert Cairo, CEITEC, Masaryk University, Brno** Imaging biocondensates during plant reproduction
17:00-17:15	**INDUSTRY: Jan Vávra, Abberior Instruments GmbH** Multichannel Live Cell STED – dye combinations and imaging techniques for live cell super-resolution imaging
17:15-17:30	**Emily Langore, Institute of Experimental Medicine of the Czech Academy of Sciences, Prague** NMDA Receptor-Induced Dendritic Spine Remodelling
17:30-17:45	**INDUSTRY: Markéta Laskafeldová, TESCAN GROUP, a.s.** Volume Scanning Electron Microscopy in Life Sciences
17:45-18:00	**Narendra V. Gottumukkala, CEITEC, Masaryk University, Brno** Serving or Stealing: Tunneling nanotube mediated transfer of mitochondria in B cell malignancies
19:00-22:00	*Social Dinner*

Wednesday, 2 October

9:00-10:30	**SESSION V** **Chaired by Marie Vancová & Milan Ešner**
9:00-9:15	**Barbora Kaščáková, Department of Chemistry, University of South Bohemia in České Budějovice** Unraveling the Functional Impact of Structural Flexibility in Bacillus circulans β-Galactosidase Isoform A
9:15-9:30	**INDUSTRY: Robert Stad, Akoya Biosciences** From Spatial Discovery to Spatial Signatures, at Scale
9:30-10:00	**INVITED SPEAKER: Alena Salašová, Aarhus University, Denmark** Implementing accessible 3D imaging techniques to understand motor neuron development
10:00-10:15	**Pablo Cortes, Max Planck Institute for Infection Biology, Berlin, Germany** Shedding Light on Malaria Transmission: Using Array Tomography and CLEM to Reveal the Secrets of Parasite Organelles in Mosquitoes
10:15-10:30	**INDUSTRY: Pavel Krist, Carl Zeiss spol. s r.o.** ZEISS Celldiscoverer 7 - Adaptable Automation for Advanced Workflows
10:30-11:00	*Coffee break*
11:00-12:30	**SESSION VI** **Chaired by Ondrej Horváth & Michal Mikl**
11:00-11:15	**Kamila Burdová, Institute of Molecular Genetics of the Czech Academy of Sciences, Prague** Using high content microscopy to study DNA damage response and repair
11:15-11:30	**Klára Marečková, CEITEC, Masaryk University, Brno** Maternal depression during the perinatal period and its relationship with emotion regulation in young adulthood: An fMRI study in a prenatal birth cohort
11:30-11:45	**INDUSTRY: Dominika Egermajerová, KRD - obchodní společnost s.r.o.** IBIDI: Innovative solutions for your cells
11:45-12:00	**Jakub Gemperle, Institute of Molecular Genetics of the Czech Academy of Sciences, Prague** Spatiotemporal control of invasive behaviour of living cells using genetically modified proteins and endosomes with magnets

12:00-12:15	**Tomáš Jordánek, CEITEC, Masaryk University, Brno** Vertical topography in EEG microstates: Physiology or artifact manifestation?
12:15-12:30	**Daniel Hadraba, Institute of Physiology of the Czech Academy of Sciences, Prague** IPHYS Bioimaging facility and the user hardware case study
12:30-13:30	*Lunch*
13:30–14:45	**SESSION VII** **Chaired by Aleš Benda & Martin Mistrík**
13:30-13:45	**Jaromír Gumulec, Masaryk University, Brno** A Robust Flow-Induced Cell Deformation System for Quantifying Cell Viscoelasticity Using QPI Microscopy
13:45-14:00	**Lucia Machová Urdzíková, Institute of Experimental Medicine of the Czech Academy of Sciences, Prague** Synthesis, Modification, and Biological Behavior of NaYF:Er Nanoparticles in Cellular and In Vivo Models
14:00-14:15	**Jaromír Novák, Institute of Biotechnology of the Czech Academy of Sciences, Vestec** Miro1 in horizontal mitochondrial transfer in the tumor microenvironment
14:15-14:30	**Nada Žnidaršič, Biotechnical Faculty, University of Ljubljana, Slovenia** Multiscale imaging of arthropods by complementary imaging modalities: an integrative insight into animal structure and development and applications in the studies of invasive non-native species
14:30-14:45	**Alexey Bondar, Biology Centre of the Czech Academy of Sciences, České Budějovice** Using advanced imaging techniques to get insights into cellular signaling
14:45–15:30	**CZECH-BIOIMAGING MEETS USERS** **Chaired by Pavel Hozák**
14:45-14:55	**Pavel Hozák, Czech-BioImaging Director** Open Access, Satisfaction Questionnaire, Euro-BioImaging Opportunities
14:55-15:00	**Aleš Benda, Leader of the Imaging Methods Core Facility, BIOCEV** Updates from the Light Microscopy Core Facilities
15:00-15:05	**Marie Vancová, Leader of the Laboratory of Electron Microscopy, BC** Updates from the Electron Microscopy Core Facilities
15:05-15:10	**Michal Mikl, Leader of the Multimodal and Functional Imaging Laboratory, CEITEC** Updates from the Medical Imaging Core Facilities
15:10-15:15	**Štěpán Kortus, Leader of the Microscopy Service Centre, IEM** Irbis: Software for 3D Reconstruction and Temporal Analysis of 4D Microscopy Data
15:15-15:25	**Q&A**
15:25	**Conference Closing by Pavel Hozák, Director of Czech-BioImaging**
From 15:30	*Departures*

POSTER SESSION

P-1 **Václav Bačovský, Institute of Biophysics of the Czech Academy of Sciences, Brno**
From traditional imaging to automated AI-based ScanR microscopy – new developments in plant research

P-2 **Ondřej Černý, Institute of Microbiology of the Czech Academy of Sciences, Prague**
Bimodal Expression of Type 3 Secretion System 2 Enables Cooperative Virulence among Intracellular Salmonella Typhimurium

P-3 **Jakub Čilík, Masaryk University, Brno**
Data Management and FAIRification in MAFIL

P-4 **Daniel Hadraba, Institute of Physiology of the Czech Academy of Sciences, Prague**
IPHYS Bioimaging Facility

P-5 **Oksana Iakovenko, Faculty of Science, University of South Bohemia in České Budějovice**
High-throughput screening of peptide recognition by plant roots combining monitoring of reactive oxygen species burst and calcium spike

P-6 **Jiří Janáček, Institute of Physiology of the Czech Academy of Sciences, Prague**
Estimating volume of opaque objects from 2D projection by spherical extrusion

P-7 **Ivana Malcová, Institute of Microbiology of the Czech Academy of Sciences, Prague**
Insights into Bordetella T3SS Components Localization and Needle Tip Filament formation

P-8 **Kateřina Malínská, Institute of Experimental Botany of the Czech Academy of Sciences, Prague**
Shedding new light on plant biology – high-resolution vertical stage long-term imaging

P-9 **Polona Mrak, Biotechnical Faculty, University of Ljubljana, Slovenia**
Crustacean embryonic and postembryonic development: 3D imaging from the cellular to the whole organism level

P-10 **Jiří Navrátil, Faculty of Medicine, Masaryk University, Brno**
BioSilk 3D Invasivity Assay: Probing Caveolin-1's Role in Prostate Cancer Progression

P-11 **Betul Melike Ogan, Institute of Molecular Genetics of the Czech Academy of Sciences, Prague**
Role of FAM83H in Immune System Homeostasis

P-12 **Jakub Opelka, Biology Centre of the Czech Academy of Sciences, České Budějovice**
A reliable approach for measuring the extent of neurodegeneration in insect brains

P-13 **Dominik Pinkas, Institute of Molecular Genetics of the Czech Academy of Sciences, Prague**
Solutions for preparation and visualization of vitrified biological samples at IMG Electron Microscopy Core Facility

P-14 **Šárka Podlahová, Biology Centre of the Czech Academy of Sciences, České Budějovice**
Three-dimensional visualisation of lepidopteran silk gland morphology using X-ray micro-computed tomography scanning technique

P-15 **Petra Prokšová, BIOCEV, Faculty of Science, Charles University, Vestec**
A bit for everyone: Expanding microscopy capabilities at IMCF BIOCEV

P-16 **Helena Raabová, Institute of Molecular Genetics of the Czech Academy of Sciences, Prague**
IMG Electron Microscopy Core Facility

P-17 **Barbora Radochová, Institute of Physiology of the Czech Academy of Sciences, Prague**
Evaluation of Different Optical Clearing Techniques in 3D Visualization of Peripheral Nerve Tissue

P-18 **Ivo Šauman, Biology Centre of the Czech Academy of Sciences, České Budějovice**
3D Reconstruction of Larval and Adult Brain Neuropils of Two Giant Silk Moth Species: Hyalophora cecropia and Antheraea pernyi

P-19 **Martin Schätz, Faculty of Science, Charles University, Prague**
What can CzechBIAS do for us aka image analysis user stories?

P-20 **Hana Sehadová, Biology Centre of the Czech Academy of Sciences, České Budějovice**
Optimization of cryoSEM for quantitative and qualitative analyses of trichomes on leaves of different potato varieties

P-21 **Tomáš Slavíček, Masaryk University, Brno**
Data FAIRification use case – preparing dataset for OpenNeuro repository

P-22 **František Špoutil, Institute of Molecular Genetics of the Czech Academy of Sciences, Prague**
Complete 3D analysis of mouse teeth

P-23 **Pelin Sungur, BIOCEV, Faculty of Science, Charles University, Vestec**
Electron Microscopy and Ultrastructural Analysis at IMCF-BIOCEV

P-24 **Kanako Suzuki, Masaryk University, Brno**
Combined Confocal Microscopy and AFM to Investigate the Relationship Between Mitochondrial Structure and Cellular Stiffness

P-25 **Matilde Vale, Institute of Molecular Genetics of the Czech Academy of Sciences, Prague**
Development of gene therapy for Diamon-Blackfan Anemia (DBA)

Image courtesy of Laura Lebrón-Mora,
Laboratory of Molecular Pathogenetics,
Institute of Biotechnology,
Czech Academy of Sciences