

Biology Centre of CAS – Institute of Parasitology and Faculty of Science – Institute of Physics and Biophysics, University of South Bohemia, České Budějovice, Czech Republic

Biological Specimens in Electron Microscopes

4. - 8. 10. 2021 České Budějovice

Information

Programme

Registration and contact

Venue and accommodation



Description

This practical course is focused on the advanced methods of biological specimen preparation for electron microscopy. The main goal is to make participants familiar with the theoretical background and the latest practical developments in this field. The programme includes state of the art fixation, including cryo-methods, cutting of ultrathin sections from embedded or frozen samples, methods of negative staining and immunolabeling, specimen preparation for transmission and scanning electron microscopy and methods of specimen preparation for 3D electron microscopy (single particle analysis, electron tomography, array tomography and serial block-face). The results will be evaluated using electron microscopes.

The course is limited to 15 participants. It is intended for Master and PhD students, young researchers, technicians, and new EM users.

This course is supported by the program for large research infrastructures of the Ministry of Education, Youth and Sports within the project “National Infrastructure for Biological and Medical Imaging (**Czech-BioImaging** –LM2018129)“.

Organisers:

[Marie Vancová](#) (Laboratory of EM, Biology Centre CAS, České Budějovice)



Since 2021, the head of the LEM. The LEM provides state-of-art support for users to address different biological questions and access electron microscopy technology, including cryo-techniques. Her scientific interests focus on EM investigation of the structure of tissues and cells using various methods/techniques, including cryo techniques, 3D reconstructions, and immunolocalisation of molecules. She participated as a speaker and/or instructor in practical courses (Electron Microscopy and Stereology in Cell and Molecular Biology, EMBO Practical Course), workshops, etc. Lecturing experience in Electron microscopy at Faculty of Science, University of South Bohemia.

[Jana Nebesářová](#) (Laboratory of EM, Biology Centre CAS, České Budějovice)



The head of the LEM for more than 20 years. Her research interests cover particularly biological specimen preparation for electron microscopy. She has long lecturing experience at Master/Doctoral level in Electron Microscopy Techniques and Methods at Faculty of Science, South Bohemia University, Charles University; co-organisation/speaker at EMBO practical EM courses, workshops, and other courses.

Information Programme Registration and Contact Venue and Accommodation

Invited speakers:

[Vladislav Krzyžánek](#) (Institute of Scientific Instruments CAS, Brno)



Group leader of Microscopy of Biomedicine focusing on quantitative imaging by STEM (mass-thickness measurement by electron scattering), low-temperature scanning electron microscopy (cryo-SEM), correlation of signals in electron microscopy.

[Oldřich Benada](#) (Institute of Microbiology CAS, Prague)



Head of the EM group. He is generally interested in electron microscopy in microbiology (TEM, SEM, STEM) and visualisation of the macromolecules and macromolecular complexes.

[Jiří Týč](#) (Laboratory of EM, Biology Centre CAS, České Budějovice)



His main research interest is BIOIMAGING. He got his PhD in molecular biology, and during his postdoc at the Bioimaging unit at Oxford Brookes University (UK), he started with 3D EM. He focuses on electron microscopy, but he has experience also with confocal and high-resolution fluorescence microscopy. He specialises in 3D SEM techniques such as SBF-SEM (serial block-face scanning electron microscopy) and array tomography.

[Zdeno Gardian](#) (Macrocomplex group, South Bohemia University & Biology Centre of the CAS, České Budějovice)



His research interests are single-particle and image analysis, structural studies of photosynthetic reaction centres and light-harvesting complexes.

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[Tomáš Bílý](#) (Macrocomplex group, South Bohemia University & Biology Centre of the CAS, České Budějovice)



His research interests are electron tomography, image processing, 3D visualisation of cells, purified organelles and viruses.

Instructors:

Mgr. František Kitzberger, Mgr. Martina Tesařová, Mgr. Eva Ďurínová Petra Masařová, Jiří Vaněček

Programme

Monday

| | | |
|-------|--|-----------------|
| 13:00 | Welcome Address | Marie Vancová |
| 13:10 | Principles of transmission electron microscopy | Oldřich Benada |
| 14:00 | Overview of TEM sample preparation methods | Jana Nebesářová |
| 14:45 | Coffee break | |
| 15:05 | How to visualise macromolecules in TEM | Oldřich Benada |
| 16:00 | Room temperature sectioning | Jana Nebesářová |

Tuesday

| | | |
|-------|--|---------------------|
| 8:30 | Cryo methods in sample preparation | Marie Vancová |
| 9:15 | Principles of scanning electron microscopy | Vladislav Krzyžánek |
| 10:00 | Coffee break | |
| 10:20 | Immunogold labeling | Marie Vancová |
| 11:15 | Specimen preparation for SEM | Jana Nebesářová |
| 12:00 | Lunch | |
| 13:00 | Practicals | |
| 19:00 | Course dinner | |

Wednesday

| | | |
|-------|--|---------------|
| 8:30 | Electron tomography | Tomáš Bílý |
| 9:30 | Serial block-face SEM, array tomography | Jiří Týč |
| 10:20 | Coffee break | |
| 10:40 | Introduction to image processing | Zdeno Gardian |
| 11:25 | Cellular ultrastructure and interpretation of images | Marie Vancová |
| 12:10 | Lunch | |
| 13:00 | Practicals | |

Thursday

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|-------|------------|--|
| 8:30 | Practicals | |
| 12:00 | Lunch | |
| 13:00 | Practicals | |

Friday

| | | |
|-------|------------------------|--|
| 8:30 | Practicals | |
| 12:00 | Lunch | |
| 13:00 | Round table discussion | |

Registration

Registration Fees

CSMS member: 6000 CZK

CSMS non-member: 7000 CZK

Industry: 10000 CZK

The course fee includes admission, the course materials, meals and coffee breaks

Registration form (link will be added once created)

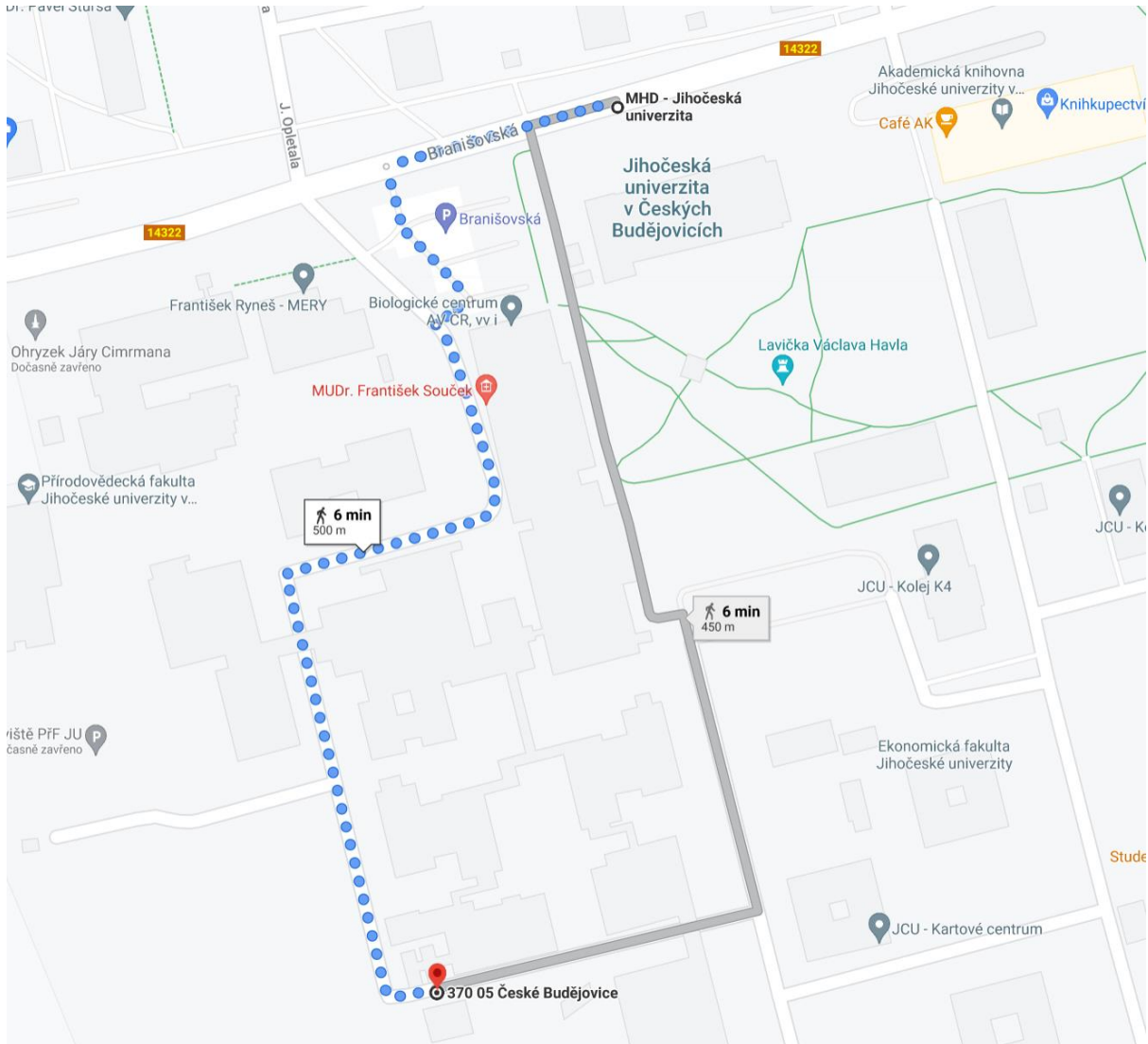
Contact: [Martina Tesařová](mailto:holland@paru.cas.cz) (holland@paru.cas.cz)

Venue and Accommodation

Venue

Laboratory of Electron Microscopy, Biology Centre ASCR - Institute of Parasitology

Branisovska 31, 370 05, Ceske Budejovice, Czech Republic



(Click on the map to open in the browser)

GPS

Loc.: 48.97609487481923, 14.447112729646566

How to get to the venue

By public transport:

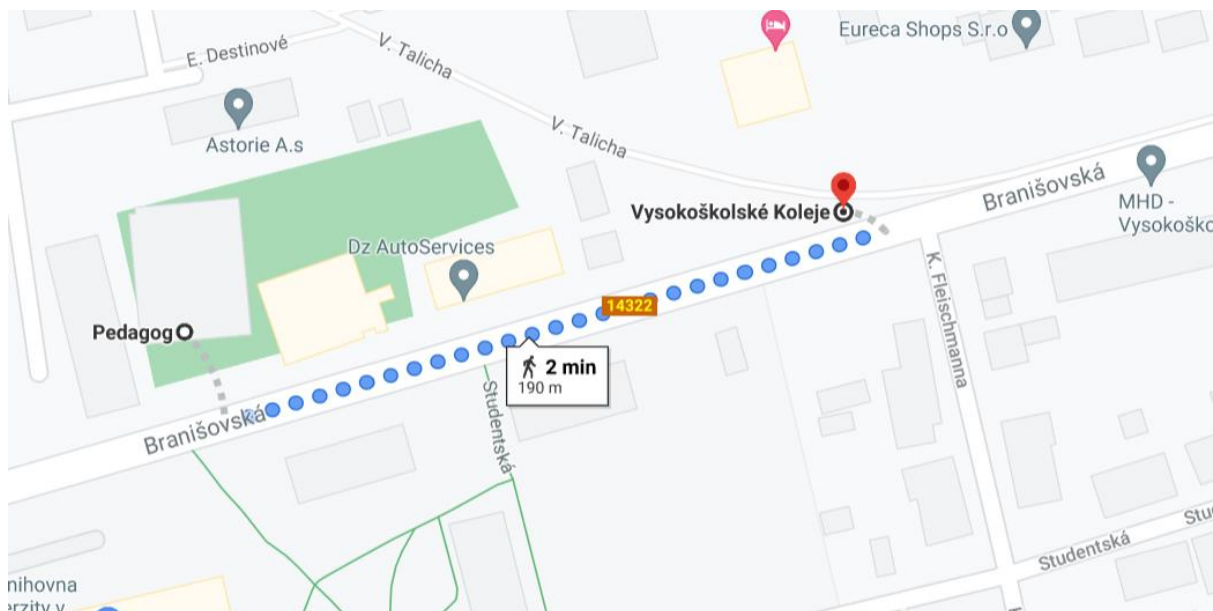
From the train station of the bus station, go the bus stop located under the Mercury shopping centre and take bus No. 3 in direction Máj – Antonína Barcala and get off at the bus stop Jihočeská Univerzita. Then cross the street to the university campus and from go to the building of the laboratory.

By car:

In case you plan to get here by the car, go to the address: Branisovska 31, 370 05, České Budějovice. You can park your car on the parking lot at the Biology Centre. (ring at the gate and tell that you participate on this course if asked). Other parking possibility is at the recommended accommodation site.

Accommodation

We are able to arrange an accommodation in the [Kolej Pedagog](#). It is a student dormitory located within the walking distance from the venue. The WiFi internet connection is available in the rooms. The CCTV monitored parking lot is located directly at the building. The address of the dormitory is: Branišovská 1800/36a, 37005, České Budějovice. If you go from the train or bus station, take bus line No. 3 in the direction of Máj – Antonína Barcala, get off at the bus stop Vysokoškolské koleje (one stop before Jihočeská Univerzita), and go approximately 200 m along the road in the direction of the bus. The dormitory will be on your right side.



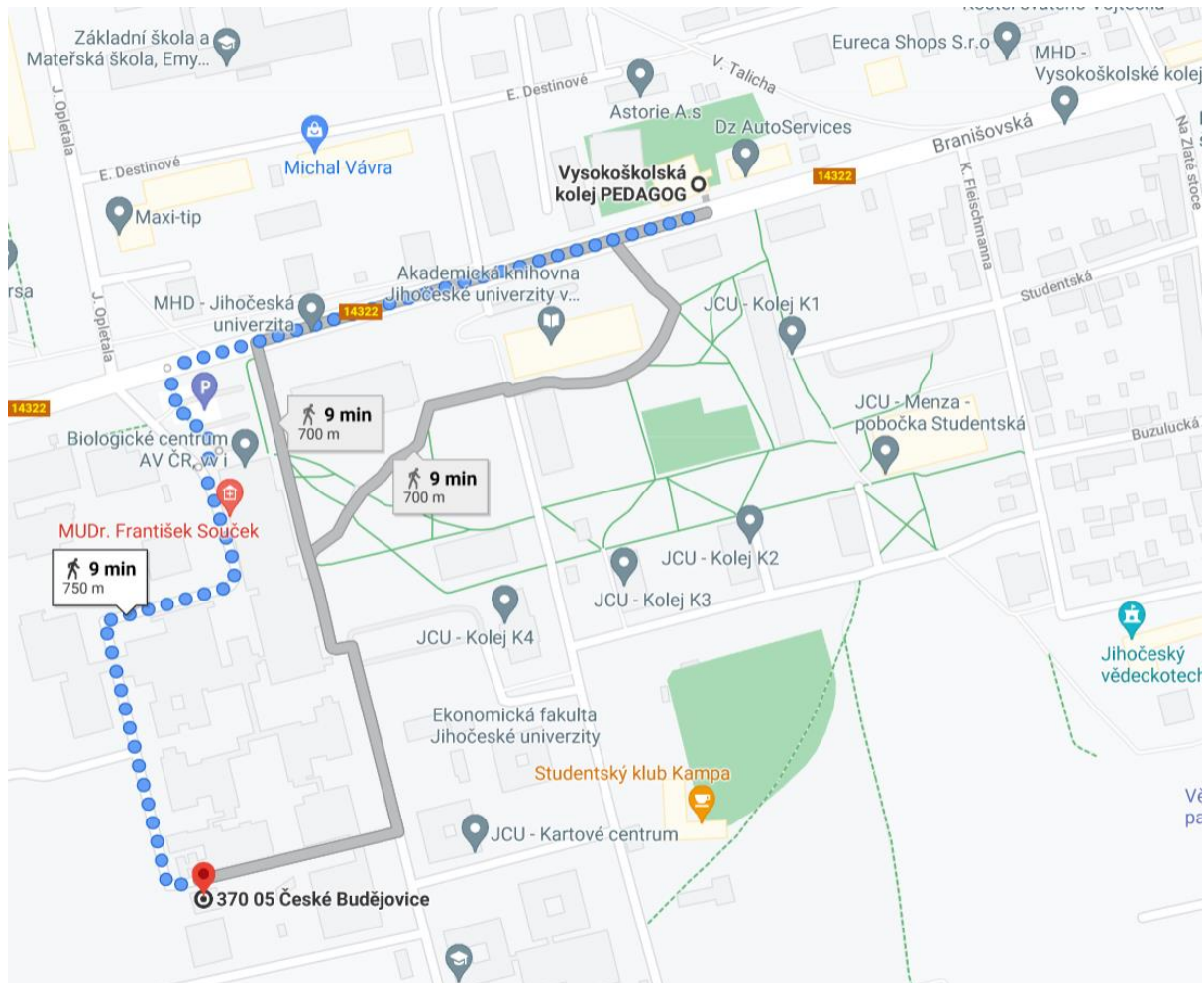
(Click on the map to open in the browser)

GPS

Loc.: 48.979752618952425, 14.451074291777873

How to get from the accommodation to the venue

Cross the street to get to the university campus, go along the main road until you go past the bus stop Jihočeská Univerzita. When possible turn left and go to the orange building of the Biology Centre. From there you shall see signs to follow or you can ask at the reception at the main entrance to the building.



(Click on the map to open in the browser)