

preliminary

# Microscopy methods in biomedicine (October 12 - 16, 2020)

|   | Monday                         | Tuesday  | Wednesday  | Thursday   | Friday  |  |  |
|---|--------------------------------|--|--|--|---|--|--|
| <b>8:15-8:45</b>  | REGISTRATION                   | X  | X  | X  | X   |  |  |
| <b>8:45-9:00</b>  | Introductory word              |  |  |  |   |  |  |
| <b>LECTURES</b>   | <b>9:00-9:45</b>               | Light microscopy instrumentation<br><i>Pavel Krist</i>                     | Introduction to live cell imaging<br><i>Ivan Novotný</i>                       | Fluorophores<br><i>Jan Sýkora</i>  | Image formation in transmission electron microscope<br><i>Oldřich Benada</i>                              | Introduction to image deconvolution<br><i>Ivan Novotný</i>           |  |
|   | <b>9:45-10:30</b>              | Contrast-enhancing techniques in optical microscopy<br><i>Martin Čapek</i> | Spining disc confocal microscopy<br><i>Michaela Efenberková</i>                | Superresolution in light microscopy: STORM, SIM, STED<br><i>Ivan Novotný</i> | Scanning electron microscopy<br><i>Oldřich Benada</i>   | Image acquisition by two-photon microscopy<br><i>David Vondrášek</i> |  |
|   | <b>10:30-11:00</b>             | Coffe break  |  |  |   |  |  |
|   | <b>11:00-11:45</b>             | Resolution and image formation in light microscopy<br><i>Ivan Novotný</i>  | Light Sheet microscopy<br><i>Helena Chmelova</i>                               | Computative high resolution methods<br><i>Michaela Efenberková</i>           | Preparing samples for TEM<br><i>Jana Nebesářová</i>   | Optical projection tomography<br><i>Martin Čapek</i>                 |  |
|   | <b>11:45-12:30</b>             | Basics of fluorescence microscopy and immunolabeling<br><i>Pavel Hozák</i> | FRET, FLIM<br><i>Michaela Efenberková</i>                                      | Quantitative phase microscopy<br><i>Martin Čapek</i>                         | Preparing samples for SEM<br><i>Jana Nebesářová</i>   | Introduction to image processing<br><i>Jiří Janáček</i>              |  |
|   | <b>12:30-13:30</b>             | LUNCH  | LUNCH WORKSHOP   | LUNCH  | LUNCH   | LUNCH  |  |
|   | <b>13:30-14:15</b>             | Multi-dimensional laser confocal microscopy<br><i>Pavel Hozák</i>          | FRAP + FCS<br><i>Michaela Efenberková</i>                                      | Methodolgy for correct microscopy<br><i>Ivan Novotný</i>                     | Advanced electron microscopy techniques<br><i>Vlada Filimonenko</i>                                       | Image analysis and visualization in 3D<br><i>Jiří Janáček</i>        |  |
|   | <b>PRACTICAL DEMONSTRATION</b> | <b>14:30-17:30</b><br>4x 45 min  | Fluorescence microscope (AxioZoom.V16, room 0.175)<br><i>ZEISS-Pavel Krist</i> | Confocal Spinning disc (Dragonfly, room 0.171)<br><i>Ivan Novotný</i>        | Superresolution: STED (Leica STED, room 0.174)<br><i>Ivan Novotný</i>                                     | TEM demonstration<br><i>Jana Nebesářová</i>                          | Preparation of digital photographic documentation for publication<br><i>Oldřich Benada, 45 min</i> |
|   |                                |  | Confocal Microscope (STED, room 0.174)<br><i>Ivan Novotný</i>                  | Light Sheet (Zeiss Z.1, room 0.173)<br><i>Helena Chmelova</i>                | Quantitative Phase Microscope (Qpi, room 0.175)<br><i>Martin Čapek</i>                                    | SEM demonstration<br><i>Oldřich Benada</i>                           | Recap + conclusion. 15 min   |
|   |                                |  | Fluorescence microscope (Leica DM6000, room 0.172)<br><i>Helena Chmelová</i>   | Photo-kinetic: FRAP (OMX, room 0.174 )<br><i>Michaela Efenberková</i>        | Computative high resolution methods: Lightning (Lecia SP8, room 0.172)<br><i>Pragolab: Martin Kopecký</i> | HPF, FS and ultramicrotomy<br><i>Dominik Pinkas</i>                  |  |
| Adjusting the microscope: Köhler illumination and Phase contrast + DIC (room 0.173)<br><i>Pragolab-Martin Kopecký</i> |                                |  | Live cell imaging (DV, room 0.171)<br><i>Anastasiya Klebanovych</i>            | Superresolution: SIM (OMX, room 0.174)<br><i>Michaela Efenberková</i>        | EM immunolabeling: detection, clustering and colocalization<br><i>Vlada Filimonenko</i>                   |  |  |