

# 1. Light Microscopy

## 1.1 Fluorescence Microscopy

- 1.1.1 Cryo fluorescence microscopy (CryoFM)
- 1.1.2 Deconvolution widefield microscopy (DWM)
- 1.1.3 Increased resolution confocal microscopy/Image Scanning microscopy
- 1.1.4 Laser scanning confocal microscopy (LSCM/CLSM)
- 1.1.5 Lattice light-sheet microscopy (LLS)
- 1.1.6 Objective-coupled planar illumination (OCPI)
- 1.1.7 Spinning disk confocal microscopy (SDCM)
- 1.1.8 Structured illumination microscopy (SIM)
- 1.1.9 Total internal reflection fluorescence microscopy (TIRF)
- 1.1.10 Two-photon microscopy (2P)

## 1.2 Fluorescence Nanoscopy

- 1.2.1 4Pi microscopy
- 1.2.2 Reversible optical fluorescence transitions (RESOLFT)
- 1.2.3 Single molecule localization microscopy (SMLM)
- 1.2.4 Stimulated emission depletion microscopy (STED)

## 1.3 Mesoscopic Imaging

- 1.3.1 Light-sheet mesoscopic imaging (SPIM or dSLSM)
- 1.3.2 Optical projection tomography (OPT)
- 1.3.3 Photoacoustic imaging (PAI)

## 1.4 Label-free Imaging

- 1.4.1 Coherent anti-Stokes Raman scattering microscopy (CARS)
- 1.4.2 Fourier transform infrared imaging (FTIR)
- 1.4.3 Polarization microscopy (PM)
- 1.4.4 Quantitative phase imaging (QPI)
- 1.4.5 Raman Spectroscopy (RS)
- 1.4.6 Second/Third harmonic generation (SHG/THG)
- 1.4.7 Stimulated Raman scattering microscopy (SRS)

## 1.5 Functional Imaging and Specialized Methodologies

- 1.5.1 Anisotropy/Polarization microscopy
- 1.5.2 Expansion microscopy
- 1.5.3 Feedback microscopy
- 1.5.4 Fluorescence (cross-)correlation spectroscopy (FCS/FCCS)
- 1.5.5 Fluorescence lifetime imaging (FLIM)
- 1.5.6 Fluorescence recovery after photobleaching (FRAP)
- 1.5.7 Fluorescence resonance energy transfer (FRET)
- 1.5.8 High throughput microscopy/high content screening (HTM/HCS)
- 1.5.9 High-speed imaging
- 1.5.10 Imaging at Biosafety Level >1
- 1.5.11 Intravital microscopy (IVM)
- 1.5.12 Microdissection
- 1.5.13 Phosphorescence lifetime imaging (PLIM)
- 1.5.14 Photomanipulation
- 1.5.15 Tissue clearing
- 1.5.16 Voltage/pH/Ion imaging

## 2 Electron Microscopy

### 2.1 Ultrastructural Analysis in 2D

- 2.1.1 Large scale Electron Microscopy
- 2.1.2 Transmission Electron Microscopy of chemically fixed samples
- 2.1.3 Transmission Electron Microscopy of cryo-immobilized samples

### 2.2 Ultrastructural Analysis in 3D (volume EM)

- 2.2.1 Array tomography
- 2.2.2 Electron Microscopy tomography
- 2.2.3 Focused Ion Beam Scanning Electron Microscopy (FIB-SEM)
- 2.2.4 Serial Blockface Scanning Electron Microscopy (SB-SEM)
- 2.2.5 Serial section transmission Electron Microscopy (ssTEM)
- 2.2.6 STEM tomography

### 2.3 Ultrastructural Localization of Molecules

- 2.3.1 Genetic encoded Electron Microscopy probes
- 2.3.2 Immuno-gold Electron Microscopy on thawed cryo-sections (Tokuyasu method)
- 2.3.3 Immuno-gold Electron Microscopy on resin sections
- 2.3.4 Post-embedding correlative light and electron microscopy (post-CLEM)
- 2.3.5 Pre-embedding correlative light and electron microscopy (pre-CLEM)
- 2.3.6 pre-embedding immunolabeling

### 2.4 Cryo Electron Microscopy

- 2.4.1 Cryo Electron Tomography (cryoET)
- 2.4.2 Cryo Focused Ion Beam (cryoFIB)
- 2.4.3 Cryo Scanning Electron Microscopy (cryoSEM)
- 2.4.4 Cryo Transmission Electron Microscopy (cryoTEM)

### 2.5 Scanning Electron Microscopy

- 2.5.1 Elemental analysis
- 2.5.2 Scanning Electron Microscopy (SEM)

## 3 Multimodal correlative microscopy

### 3.1 Light Microscopy and Electron Microscopy

- 3.1.1 Cryo correlative light and electron microscopy (cryoCLEM)
- 3.1.2 Post-embedding correlative light and electron microscopy (post-CLEM)
- 3.1.3 Pre-embedding correlative light and electron microscopy (pre-CLEM)

### 3.2 Live-cell imaging and Electron Microscopy

- 3.2.1 Live-cell correlative light and electron microscopy (live CLEM)

### 3.3 X-ray and Electron Microscopy

- 3.3.1 Correlative X-ray and Electron Microscopy (CXEM)

#### 4 Animal and plant imaging with biomedical technologies

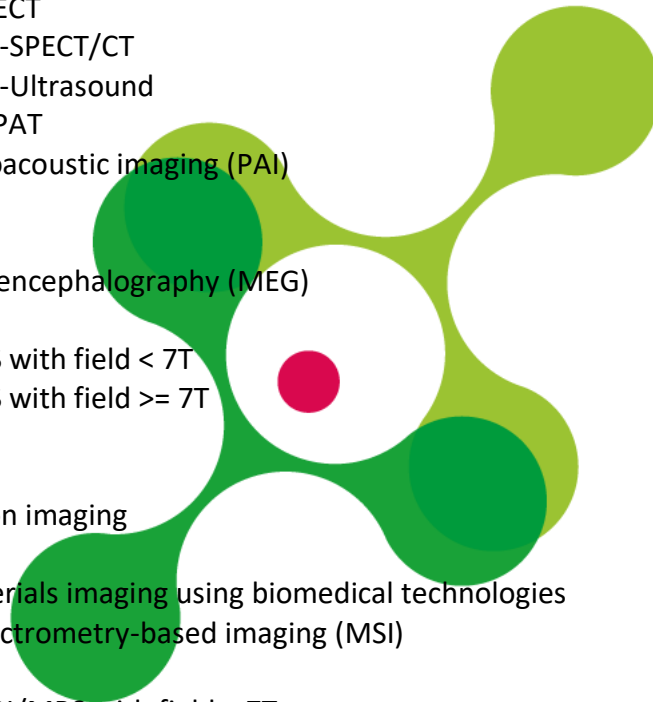
- 4.1 in vivo optical imaging
- 4.2 Intravital Microscopy
- 4.3 micro-CT
- 4.4 micro-MRI/MRS with field < 7T
- 4.5 micro-MRI/MRS with field  $\geq$  7T
- 4.6 micro-PET
- 4.7 micro-PET/CT
- 4.8 micro-PET/MRI
- 4.9 micro-SPECT
- 4.10 micro-SPECT/CT
- 4.11 micro-Ultrasound
- 4.12 OCT/PAT
- 4.13 Photoacoustic imaging (PAI)

#### 5 Human Imaging

- 5.1 Magnetoencephalography (MEG)
- 5.2 MRI-PET
- 5.3 MRI/MRS with field < 7T
- 5.4 MRI/MRS with field  $\geq$  7T
- 5.5 PET
- 5.6 PET/CT
- 5.7 Population imaging

#### 6 Ex-vivo and materials imaging using biomedical technologies

- 6.1 Mass Spectrometry-based imaging (MSI)
- 6.2 micro-CT
- 6.3 micro-MRI/MRS with field < 7T
- 6.4 micro-MRI/MRS with field  $\geq$  7T
- 6.5 Phase Contrast Imaging (PCI)



- 7 Image Data and Image Analysis
  - 7.1 Biological image data services
    - 7.1.1 Image analysis
  - 7.2 Medical image data services
    - 7.2.1 Challenges Framework
    - 7.2.2 Image analysis
    - 7.2.3 Population Imaging

- 8 Other Technologies

- 8.1 Sample characterization

- 8.1.1 Atomic Force Microscopy (AFM)
    - 8.1.2 Mass Spectrometry-based imaging (MSI)
    - 8.1.3 Micro X-ray Fluorescence Spectrometry (XRF)
    - 8.1.4 Traction Force Microscopy (TFM)

