Practical module Scanning electron microscopy

Goals
• Transfer of knowledge from theory to practice
• Development of basic lab skills
• Enabling participants to process and examine samples by scanning electron microscopy

Target audience
• young scientists aspiring to use SEM for their research

Content
Sample preparation
• Sample collection and handling
  – tissue blocks
  – single cells
  – particles
  – material may be supplied by participants or will be provided by the Division of Veterinary Anatomy
• Fixation
  – Chemical fixation with different fixatives
  – plunge freezing (optional)
• Labeling
  – Use of colloidal gold-labeled antibodies or lectins
• Dehydration
  – Critical point drying
  – Chemical drying
• Mounting of samples
• Metal coating
  – sputter coating
  – electron beam evaporation
• Artifacts
  – promoting the awareness of artifacts resulting from inadequate sample preparation

Handling of a high resolution field emission scanning electron microscope (Zeiss DSM982)
• Select adequate detector and working distance
• Optimize microscope settings as required for best imaging results
  – Select proper high voltage
  – Select appropriate detector
  – Adjust focus properly
  – Perform proper correction of astigmatism
  – Select adequate brightness and contrast settings
  – Avoid imaging artifacts
• Perform image acquisition and data transfer
Duration
- 2 days

Number of participants
- 2 – 4

Mode of inscription
- address applications to Dr. S. Tschanz, Institute of Anatomy
 mailto:stefan.tschanz@ana.unibe.ch
- the module will be carried out on demand as agreed upon

Prerequisites
- Completion of basic module and passed exam.

Number of ECTS points
- 1

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