CIMST Summer School
14th September 2011
Practical day in serial section electron microscopy

Steps to obtain 3D information about synapses

1. Fixation of tissue
   - perfusion of animals
   - immersion fixation of tissue
2. Vibratome slicing of tissue
3. Contrasting of samples
4. Embedding/polymerisation in resins
5. Ultrathin serial sectioning
6. Contrasting
7. Imaging at the electron microscope
8. Alignment of images
9. Tracing of elements of interest
10. 3D rendering

Methods to analyse the data

- Fractional counters (stereological approach)
- Per-unit -length counting (morphological approach)

Literature

Reconstruct software: http://synapses.clm.utexas.edu/
Schedule of the practicum

09:00-10:00  Organisation and explanations about practicum and SSEM
10:00-11:00  Trimming block and cutting first semithins
11:00-12:00  Cutting ultrathin sections and collecting serial sections
12:00-13:00  Lunch
13:00-14:30  Imaging at the transmission electron microscope
14:30-16:30  Alignment images, Tracing elements and 3D rendering
16:30-17:00  Basic quantitative methods for 3D volumes