

Wellcome Trust Programme for Cellular Structural Biology

Transmission Electron Microscopy in Structural Biology - Course

30th November – 4th of December, 2015

Organisers: Prof Kay Grünewald and Dr Tzviya Zeev-Ben-Mordehai (STRUBI/OPIC)

Please report to the Wellcome Trust Centre for Human Genetics Reception, Old Road Campus, Headington.
All lectures in the Division of Structural Biology meeting room.

Day 1 – Monday, Nov 30th

- 10:00 – 10:30 **Lecture 1:** CryoEM introduction, news and views – **Kay Grünewald**
- 10:30 – 11:15 **Lecture 2:** The electron microscope: physics, optics, detectors – **Alistair Siebert**
- 11:15 – 12:15 **Lecture 3:** Sample preparation – **Tzviya Zeev-Ben-Mordehai & Christoph Hagen**
- LUNCH AND Q&A -----
- 13:00 – 15:00 **Practical 1 (hands on):** Negative staining and room temperature imaging
Cornelia Cazey & Lindsay Baker
- Practical 2 (hands on):** Plunge freezing and cryo imaging
Ben Vollmer, Pascale Schellenberger & Christoph Hagen

Day 2 – Tuesday, Dec 1st

- 10:00 – 10:45 **Lecture 4:** Image formation – **Lindsay Baker**
- 11:00 – 11:45 **Lecture 5:** Introduction to image processing – **Juha Huiskonen**
- LUNCH AND Q&A -----
- 13:00 – 15:00 **Practical 1 (hands on):** Negative staining and room temperature imaging
Cornelia Cazey & Lindsay Baker
- Practical 2 (hands on):** Plunge freezing and cryo imaging
Ben Vollmer, Pascale Schellenberger & Christoph Hagen

Day 3 – Wednesday, Dec 2nd

- 10:00 – 10:45 **Lecture 6:** Single particle averaging – **Juha Huiskonen**
- 11:00 – 11:45 **Lecture 7:** Introduction to tomography – **Tzviya Zeev-Ben-Mordehai**
- LUNCH AND Q&A -----
- 13:00 – 15:00 **Practical 3 (hands on):** Single particle averaging
Juha Huiskonen
- 15:00 – 15:30 **Practical 4 (Demo):** Visualisation in Chimera
Daven Vasishtan

Day 4 – Thursday, Dec 3rd

- 10:00 – 10:45 **Lecture 8:** Subtomogram averaging – **Daven Vasishtan**
- 11:00 – 11:45 **Lecture 9:** Correlative & integrative imaging – **Christoph Hagen & Rainer Kaufmann**
- LUNCH AND Q&A -----
- 13:00 – 15:00 **Practical 5 (Demo):** ‘Polaris’, direct electron detector, tomographic data acquisition, FIB milling
Alistair Siebert & Tzviya Zeev-Ben-Mordehai
- Practical 6 (hands on):** Tomographic reconstruction
Ben Vollmer, Pascale Schellenberger, Lindsay Baker & Christoph Hagen
- 15:00 – 15:30 **Practical 7 (Demo):** Visualisation with Amira (Demo)
Tzviya Zeev-Ben-Mordehai

Day 5 – Friday, Dec 4th

- 10:00 – 11:30 Test cases from STRUBI
- 11:30 – 12:00 Conclusions and wrap-up