Week 3 (21 September – 25 September 2015)

Microscopy

Contact: Dr Paul Appleton

Course objectives and aims

The aims of the microscopy course are:

1. To introduce techniques to prepare samples of cells and tissues for immunofluorescence light microscopy.
2. To compare the different types of microscope used to visualising these cells.
3. To examine the use of fluorescent protein fusions (e.g. GFP) to localise proteins in cells.
4. To learn how to process microscope images and extract quantitative information from them.
5. To understand the principles and techniques of electron microscopy.

Monday 21 September	**Venue**	
9.00-9.30 9.30-10.30 10.45 – 12.30	Introduction to Course: Paul Appleton (tea&coffee booked) The Dundee Imaging Facility: Sam Swift Introduction to electron microscopy: Alan Prescott	Meet at main reception. LMF Meeting Room
Demonstration in 2 Groups: Electron Microscopy		
13.30-16.00	**1:** TEM (Alan Prescott) Preparing sampled for TEM, resin and cryo-sectioning. Imaging and recording using plate camera and CCD camera. **2:** SEM (Martin Kierans) Preparing samples for SEM. Acquiring images on the SEM, ESEM, EDAX and cryo-SEM	Meet in LMF Meeting Room
16.00-17.00	Introduction to Practical ' Fixing and Staining Cells' (Paul Appleton)	the 3 bays next to writing rooms 2 L3-222, 2 L3-223, and 2 L3-224, which are located in JBC2 South side (middle of lab).
Tuesday 22 September		
Practical: Paul Appleton and Ian Newton		
09.30-15.00	Preparing cells for microscopy Fixing cells for light microscopy Immunolabelling of cells Mounting cells and tissues	the 3 bays next to writing rooms 2 L3-222, 2 L3-223, and 2 L3-224, which are located in JBC2 South side (middle of lab).
15.00 – 17.00	Transmitted light Imaging (Sam Swift, Paul Appleton)	LMF
Wednesday 23 September		

Light Microscopy Systems Practical (Session 1)		
9.30-13.00	Widefield fluorescence deconvolution microscopy – DeltaVision Systems, fixed and live imaging (Sam Swift, Paul Appleton)	LMF
Light Microscopy Systems and Image Analysis Practical in 2 Groups (Session 2)		
14.00-17.00	**1.** Laser scanning confocal and multi-photon microscopy (Paul Appleton) **2.** Image Analysis (Graeme Ball)	LMF
Thursday 24 September		
Light Microscopy Practical in 2 Groups (Session 3)		
09.30-13.00	**1.** Histology and histochemistry (Calum Thomson) **2.** OMX super resolution Microscopy (Bavishna Balagopal)	LMF
14.00-16.30	**Tom Owen-Hughes** **WT SRB**	
Friday 25 September		
Light Microscopy Systems and Image Analysis Practical in 2 Groups (Session 4)		
09.30-13.00	**1.** Laser scanning confocal microscopy, multi-photon microscopy (Paul Appleton) **2.** Image Analysis (Graeme Ball)	LMF
14.00-16.00	Supervised imaging on widefield and confocal microscopes (Paul Appleton, Calum Thomson)	LMF
16.00-17.00	Summary session for questions and feedback (Paul Appleton)	LMF Meeting Room