

Dundee Imaging Facility

Training Workshop and Seminar Programme

Week 1: Introduction to the Dundee Imaging Facility

Tuesday 12th January: 3.30 pm to 4.15 pm

Dr. Sam Swift, Director of the Dundee Imaging Facility

Seminar: Introduction to the Dundee Imaging Facility

- Available technologies in the Imaging Facility
- Imaging applications
- Know your points of contact
- How to arrange access

Followed by short tours of the facility.

Week 2: Microscopy Basics

Tuesday 19th January (repeated Tuesday through Friday): 2pm to 4.30pm

Dr. Bavishna Balagopal, Imaging Applications Specialist and OMX Lead

Seminar: Microscopy Basics from an Optics Perspective

- Basic principles of microscopy
- Kohler illumination
- Bright Field and Dark Field
- Phase contrast
- Fluorescence microscopy

Workshop: Hands on training using home built microscopy kits.

Week 3: Sample Preparation

Tuesday 26th January: 2.30 pm to 4.30 pm

Dr. Paul Appleton, Imaging Applications Specialist

Seminar: Light Microscopy Sample Preparation

- Methods for preparing biological samples for conventional transmitted light and fluorescence imaging
- Conventional wax histology
- Wax and cryosectioning
- Wholmount (unsectioned) samples.

Practical demonstration of wax and frozen sample sectioning and staining.

Research Seminar:

Thursday 28th January: 3.30pm to 4.30pm

Dr. Paul Felts, Centre for Anatomy and Human Identification

Histological Techniques

Week 4: Fluorescence Microscopy

Tuesday 2nd February: 3pm to 4.30pm

Dr. Sam Swift, Director of the Dundee Imaging Facility

Workshop on Fluorescence Microscopy

- Understanding the fluorescent light path
- Objective lenses
- Detectors
- Signal to noise ratio
- Tips and tricks.

Research Seminar:

Thursday 4th February 3pm to 4.30pm:

Prof. Tomo Tanaka, School of Life Sciences

Prof. Kate Storey, School of Life Sciences

Fluorescence Imaging in Cells and Tissue

Week 5, Super Resolution Microscopy

Tuesday 9th February: 2pm to 4.30 pm

Dr. Bavishna Balagopal, Imaging Applications Specialist and OMX Lead

Seminar : Super resolution microscopy and the OMX

- Limitations of conventional imaging techniques
- Concept of super resolution microscopy
- Super resolution variants
- Structured illumination microscopy and the OMX microscope

Practical session on the OMX SIM.

Guest Speaker:

Thursday 11th Feb: 3pm to 4pm.

Dr. Ian Dobbie, University of Oxford

SIM and Super Resolution Light Microscopy

Week 6: Imaging Tissue

Tuesday 16th February: 2.30 pm to 4.30 pm

Dr. Paul Appleton, Imaging Applications Specialist

Seminar: Fluorescence and label-free deep tissue imaging techniques

- Non linear illumination
- Two photon laser scanning microscopy
- Second harmonic imaging
- Third harmonic imaging.

Demonstration: technology in the Tissue Imaging Facility.

Research Seminar:

Thursday 18th February, 3pm to 4pm

Prof. Inke Nathke, School of Life Sciences

Confocal and Multiphoton Imaging

Week 7, Electron Microscopy

Tuesday 23rd February: 2.30 pm to 4.30 pm

Dr. Alan Prescott, Light and Electron Microscopy Applications Specialist

Seminar: Sample preparation and Imaging approaches in Transmission and Scanning Electron Microscopy

- Sample preparation
- Scanning Electron Microscopy
- Transmission Electron Microscopy
- Applications

Demonstration: technology in the Electron Microscopy Facility.

Research Seminar and Guest Speaker:

Thursday 25th February, 3pm to 5pm

Prof. Tom Owen Hughes, School of Life Sciences

External Speaker (TBC)

Electron Microscopy

Week 8, Non-optical Imaging Technology

Tuesday 1st March, 3.30 pm to 4.30 pm

Dr. Yongchang Fan, Electron Microscopy Applications Specialist

Seminar: Non-optical imaging modalities in the Dundee Imaging Facility

- Atomic Force Microscopy
- High Resolution Ultrasound

Student Talk and Guest Speaker:

Thursday 3rd March, 3pm to 4.30pm

Dr. Holly Lay, University of Glasgow

Ms. Valerie Bentivegna, Phoqus Student

High Resolution Ultrasound and Tissue Imaging approaches

Week 9, Image Analysis

Tuesday 8th March: 2pm to 4.30pm

Dr. Graeme Ball, Image Analyst

Seminar: Working with Image data

- Designing experiments for analysis
- Basic image processing and analysis
- Making figures
- Image analysis software.

Overview/tour of our image analysis facilities; bring your own image analysis problems.

Research Talk and Guest Speaker:

Monday 14th March, 3pm to 5pm

Prof. Jason Swedlow, School of Life Sciences

External Speaker (TBC)

Image Analysis and Processing applications

Week 10, The Physics and Life Science (PaLS) lab

Tuesday 15th March: 3.30 pm to 4.15 pm

Dr. David McGloin, Associate Dean of Physics

Seminar: The PaLS concept

- What is the PaLS lab?
- Current projects
- Opportunities for collaboration

Research Seminar and Guest Speaker:

Tuesday 15th March: 4.15pm to 5.30pm

Prof. Kees Weijer, School of Life Sciences

Dr. Anisha Kubasik-Thayil, University of Edinburgh

Novel Imaging approaches

Week 11: Associated Technology

Tuesday 23rd March, 3pm to 5pm

Dr. Sharon King, Tayside Tissue Bank, School of Medicine

Dr. Paul Andrews, Phenotypic Screening, School of Life Sciences

Associated Technologies: Tissue Bank and High Throughput

Week 12: Summary and Drop in Session

Tuesday 30th March, 9.30am – 12.30pm

Drop in session

An opportunity to come and talk to us, bring your own samples and trouble shoot any problems you may be having. All of the Dundee Imaging Facility staff will be available to answer questions and all of the systems will be available for use. We will be joined by Dr. Alison North, Senior Director of the BioImaging Resource Centre, The Rockefeller University.

Guest Speaker:

Tuesday 30th March, 12.30pm-1.30pm

Dr. Alison North, BioImaging Resource Centre at The Rockefeller University:

Seminar (Title TBC)