

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, Small Lecture Theatre

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.

Microscopy Basics

Tuesday 19th January (repeated Tuesday through Friday): 2 pm to 4.30 pm, CTIR-MR-284

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 3.30 pm, Small Lecture Theatre

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 – workshop dates to follow.

Research Seminar:

Thursday 28th January: 3.30 pm to 4.30 pm, WTB Seminar Room (Back)

Dr. Paul Felts, Centre for Anatomy and Human Identification

Histological Techniques

Week 4: Fluorescence Microscopy

Tuesday 2nd February: 3 pm to 4.30 pm, Small Lecture Theatre
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 3 pm to 4.30 pm, WTB Seminar Room (Front)
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: 2 pm to 3 pm, WTB Seminar Room (Back)
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 (3 pm onwards).

Guest Speaker:

Thursday 11th Feb: 3 pm to 4 pm, WTB Seminar Room (Back)
Dr. Ian Dobbie, University of Oxford
SIM and Super Resolution Light Microscopy

Week 6: Imaging Tissue

Tuesday 16th February: 2.30 pm to 3.30 pm, CTIR-MR-284
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 of technology in the Tissue Imaging Facility (dates to follow).

Research Seminar:

Thursday 18th February, 3 pm to 4 pm, WTB Seminar Room (Front)
Prof. Inke Nathke, School of Life Sciences
Confocal and Multiphoton Imaging

Week 7, Electron Microscopy

Tuesday 23rd February: 2.30 pm to 3.30 pm, Small Lecture Theatre

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 of technology in the Electron Microscopy Facility (dates to follow).

Research Seminar and Guest Speaker:

Thursday 25th February, 3 pm to 5 pm, WTB Seminar Room (Back)

Prof. Tom Owen Hughes, School of Life Sciences

Cryo Electron Microscopy

Week 8, Non-optical Imaging Technology

Tuesday 1st March, 3.30 pm to 4.30 pm, Small Lecture Theatre

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, 3 pm to 4.30 pm, WTB Seminar Room (Front)

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: 2 pm to 3 pm, WTB Seminar Room (Front)

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 (3pm onwards).

Research Talk and Guest Speaker:

Thursday 10th March, 3 pm to 4 pm,

Dr Lucy Collinson, Francis Crick Institute

Electron Microscopy

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

Tuesday 15th March: 3.30 pm to 4.15 pm, WTB Seminar Room (Back)

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: 4.15 pm to 5.30 pm

Prof. Kees Weijer, School of Life Sciences

Dr. Anisha Kubasik-Thayil, University of Edinburgh

Novel Imaging approaches

Week 11: Associated Technology

Tuesday 22nd March, 3 pm to 5 pm, WTB Seminar Room (Back)

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 11: Drop in Session and Guest Speaker

Thursday 24th March, 11am to 12 noon

Prof. Jason Swedlow, School of Life Sciences

Image Analysis

Week 11: Drop in Session and Guest Speaker

Thursday 24th March, 12pm to 1pm, WTB Seminar Room (Back)

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

Seminar (Title TBC)

Seminar will be followed by Drop in Session (2pm to 4pm)

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.