

BL4225 Advanced Microscopy and Image Analysis Seeing is Believing

(BL4225 online module handbook version 87)

Credits: 15

Semester: 1

Module Organiser

Dr Marcus Bischoff

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Pre-requisite Modules:

Before taking this module you must pass BL3303 or pass BL3315

Anti-requisite Modules:

You cannot take this module if you take BL5420

Post-requisite Modules:

Additional Module

Information:

[Please check MMS regularly for additional module information](#)

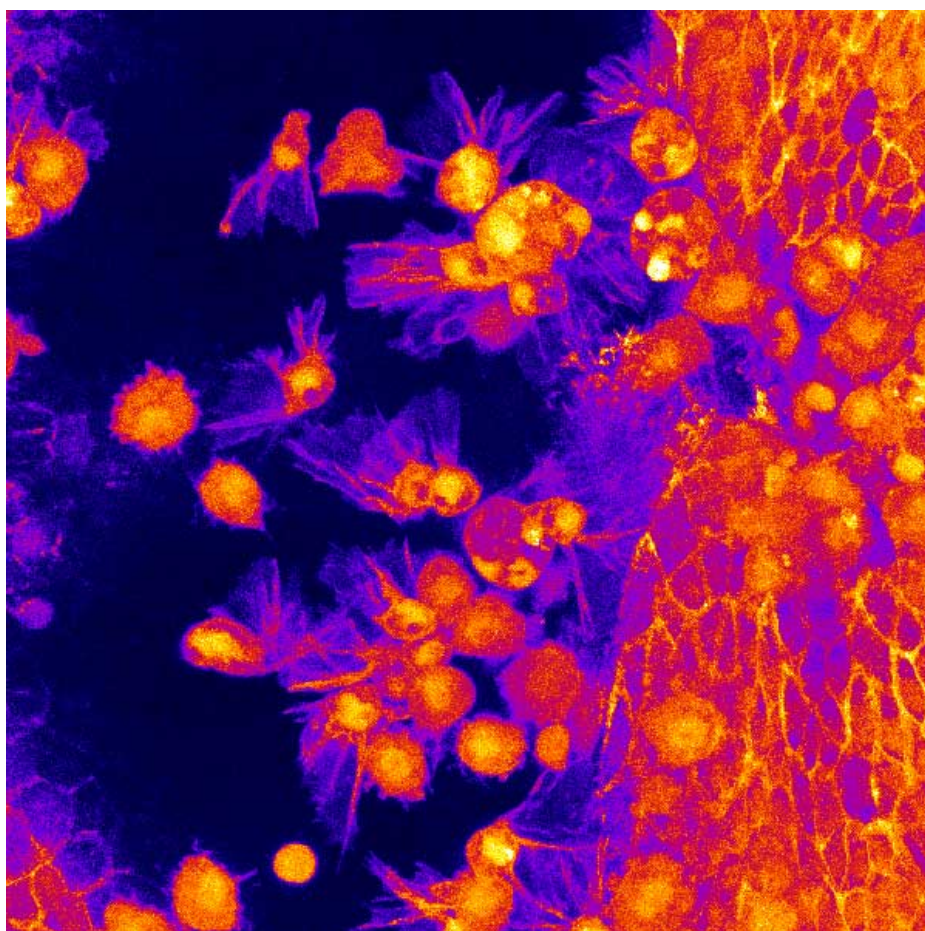


image: Fluorescently labeled hemocytes (macrophage-like cells, left) and histoblasts (precursors of the adult abdominal epithelium, right) during *Drosophila* metamorphosis.

This module will introduce you to advanced imaging techniques, such as Confocal, Super-resolution, TIRF and Electron Microscopy and how these techniques have been utilised to address fundamental questions in Cell and Developmental Biology. You will get the opportunity to research techniques that are at the forefront of modern Biology and to develop skills in ImageJ analysis of imaging data, a skill that will be central to the advancement of bioscience in the coming years. Activities will be supplemented with research talks from academics at the cutting edge of their field.

[BL4225View content for BL4225 \(2023/4\) in the Module Management System \(MMS\)](#)

[View the current Biology Online Module Catalogue for BL4225](#)

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BL4225: Timetable

Legend (not all modules have every event type):

lecture	tutorial	workshop	practical	other
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Semester 1: Week 1

DATE & TIME	VENUE	STAFF	EVENT
Monday 11-09-2023 11:00 to 13:00	Biomolecular Sciences Building Seminar Room	Dr Marcus Bischoff -	Lecture L1: Introduction to microscopy 2023-4_BL4225_L1
Friday 15-09-2023 11:00 to 13:00	Medical and Biological Sciences Building Seminar Room 1	Dr Marcus Bischoff -	Lecture L2: Fluorescence and confocal microscopy 2023-4_BL4225_L2

Semester 1: Week 2

DATE & TIME	VENUE	STAFF	EVENT
Monday 18-09-2023 11:00 to 13:00	Medical and Biological Sciences Building Seminar Room 1	Dr Jens Tilsner Dr Marcus Bischoff	Lecture L3: Super-resolution microscopy + ImageJ Workshop 1 2023-4_BL4225_L3

Semester 1: Week 3

DATE & TIME	VENUE	STAFF	EVENT
Tuesday 26-09-2023 09:00 to 11:00	Mathematical Institute Tutorial Room 1D	ju32 Dr Marcus Bischoff	Lecture L4: TIRF microscopy and single molecule imaging + ImageJ Workshop 2 2023-4_BL4225_L4

Semester 1: Week 4

DATE & TIME	VENUE	STAFF	EVENT
Thursday 05-10-2023 14:00 to 16:00	Medical and Biological Sciences Building Seminar Room 1	Dr Judith Sleeman Dr Stefan Pulver	Lecture L5: Using fluorescence techniques to study protein function + Measuring and manipulating neural activity with light 2023-4_BL4225_L5

Semester 1: Week 5

DATE & TIME	VENUE	STAFF	EVENT
Monday 09-10-2023 12:00 to 14:00	Biomolecular Sciences Building Seminar Room	Dr Marcus Bischoff -	Lecture L6: Electron microscopy + ImageJ Workshop 3 2023-4_BL4225_L6

Semester 1: Week 7

DATE & TIME	VENUE	STAFF	EVENT
Friday 27-10-2023 11:00 to 13:00	Bute Building Tutorial Room C26	Dr Marcus Bischoff Dr Judith Sleeman	Other O1: Student presentations 2023-4_BL4225_O1

Semester 1: Week 8

DATE & TIME	VENUE	STAFF	EVENT
Monday 30-10-2023 11:00 to 13:00	Bute Building Tutorial Room C26	Dr Marcus Bischoff Dr Judith Sleeman	Other O2: Student presentations 2023-4_BL4225_O2
Friday 03-11-2023 09:00 to 11:00	Medical and Biological Sciences Building Seminar Room 1	Dr Marcus Bischoff Dr Judith Sleeman	Other O3: Student presentations 2023-4_BL4225_O3

Semester 1: Week 9

DATE & TIME	VENUE	STAFF	EVENT
Monday 06-11-2023 11:00 to 13:00	Biomolecular Sciences Building Seminar Room	Dr Marcus Bischoff -	Workshop W1: ImageJ Workshop 4 2023-4_BL4225_W1

Semester 1: Week 10

DATE & TIME	VENUE	STAFF	EVENT
Monday 13-11-2023 11:00 to 13:00	Biomedical Sciences Building tba	Dr Marcus Bischoff -	Workshop W2: Microscope demonstration <small>2023-4_BL4225_W2</small>

BL4225: Reading List

[BL4225Click for BL4225 reading list](#)

BL4225: Assessment

1.5-hour Written Examination = 20%, Coursework = 80%

[BL4225View coursework assessment details for BL4225 \(2023/4\) in MMS](#)

The following related information applies to all Biology modules:

School of Biology Marking Criteria:	See JH booklet info (st-andrews.ac.uk)
Late submission of continuous assessment work:	All late submissions of coursework that do not require electronic submission should be made via the Biology Teaching Office, Level 2, BMS Building, North Haugh.
Exam details:	See School of Biology UG Handbook JH booklet info (st-andrews.ac.uk) : All Biology exams will be conducted online for 2022-23.
Exam timetable:	See Timetables - Exams - University of St Andrews (st-andrews.ac.uk)
Expected attendance:	See JH booklet info (st-andrews.ac.uk) for detailed attendance requirements.
Good Academic Practice & Avoiding Academic Misconduct:	See JH booklet info (st-andrews.ac.uk)
University Student Handbook:	University Student Handbook
School and University regulations in the School and University Undergraduate Handbook relating to absence reporting, penalties and rules for late submission of work, extensions for coursework, return of coursework, S-coding, good academic practice and Academic Alerts.:	JH booklet info (st-andrews.ac.uk) University Student Handbook

Who to ask

(Information in this section applies to all Biology Modules)

Before contacting staff, students should check the content of the Biology Undergraduate Handbook, the module handbook and specific task instructions.

Questions about

General teaching matters
Rescheduled or cancelled events
Lecture or practical content
Completing assessed practical assignments
Completing assessments
Marking on continuous assessment
Marking on exams
Rearranging practical days
Absence and/or extensions
Difficulties with academic progress which impact more than one module:
Overall performance, progress or future directions:
Disability:
For advice and support on any issue e.g. academic, financial, international, personal or health matters, or if you are unsure of who to go to for help:

University assistance with urgent matters out of office hours:

Contact

Biology Teaching Office (bioteach@st-andrews.ac.uk)
Check your University email
The lecturer who presented the material
The lecturer who set the assignment
Module Organiser (Dr Marcus Bischoff mb273@st-andrews.ac.uk)
The Demonstrator or Module Organiser (Dr Marcus Bischoff mb273@st-andrews.ac.uk)
Module Organiser (Dr Marcus Bischoff mb273@st-andrews.ac.uk)
Module Organiser (Dr Marcus Bischoff mb273@st-andrews.ac.uk)
Module Organiser (Dr Marcus Bischoff mb273@st-andrews.ac.uk)
and the Biology Teaching Office (bioteach@st-andrews.ac.uk)
Year Coordinator
See School of Biology UG Handbook for list:
[JH booklet info \(st-andrews.ac.uk\)](#)
Advisor of Studies
Disability Coordinator (biodisabilities@st-andrews.ac.uk)
Advice & Support Centre
Address: 79 North Street, St Andrews
Email: theasc@st-andrews.ac.uk
Web: <https://www.standrews.ac.uk/ask-a-question/>
Tel: 01334 462020
Tel: 01334 476161
Web:
<https://www.st-andrews.ac.uk/students/advice/counselling/incrisis/>

Biology Teaching Office:

We are happy to hear from you about teaching matters. The School of Biology Teaching Office is open Monday to Friday 09.00 - 13.00 and 14.00 - 17.00. School of Biology staff will respond to your emails during these hours. Our team will provide a response to you within three working days.

Biology Teaching Office (Level 2), University of St Andrews, Biomolecular Sciences Building, North Haugh, St Andrews, Fife KY16 9ST

Email: bioteach@st-andrews.ac.uk

Tel: 01334 46 3602 or 3566

BL4225: Contributing Staff

[Dr Marcus Bischoff](#)
(Module Organiser)

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[Dr Judith Sleeman](#)

Senior Lecturer in Cell and
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jes14@st-andrews.ac.uk

[Dr Jens Tilsner](#)

Lecturer

jt58@st-andrews.ac.uk

BL4225: Learning Outcomes

Students completing module BL4225 successfully should be able to:

- Acquire an understanding of different imaging techniques
- Understand their applications in Cell and Developmental Biology
- Be familiar with image processing and analysis techniques
- Find and critically evaluate information/literature
- Produce a concise figure legend
- Give a presentation, group discussion
- Use Excel and ImageJ, basic statistical analysis
- Produce a scientific figure

BL4225: Acquired Skills

Practical Skills

- Image analysis
- Image processing

Transferable Skills

- Long individual presentation on given topic (>15 min)
- Critically evaluating sources/information
- Finding literature
- Sourcing figures/tables
- Data analysis
- Descriptive statistics
- Produce graphs/figures
- Use other data analysis software

Policies

(Information in this section applies to all Biology Modules)

- The procedures and regulations followed by the School of Biology are outlined in the [University Handbook](#) and in the School of Biology UG handbook [JH booklet info \(st-andrews.ac.uk\)](#)
- All coursework associated with the module must be completed and submitted by its due date.
- Specific School regulations relating to absence reporting, penalties and rules for late submission of work, extensions for coursework, return of coursework, S-coding, Good Academic Practice and Academic Alert are stated in the School of Biology UG handbook [JH booklet info \(st-andrews.ac.uk\)](#) and students are required to carefully read these regulations.
- Students are also referred to the University Handbook, available at: <http://www.st-andrews.ac.uk/studenthandbook/>