

BL3315 Genes Cells and Development

(BL3315 online module handbook version 35)

Credits: 20

Semester: 2

Module Organiser

Prof Dave Ferrier

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Pre-requisite Modules:

Before taking this module you must pass 2 modules from {BL2301, BL2302, BL2304, BL2308}

Anti-requisite Modules:

Post-requisite Modules:

Additional Module

Information:

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



image: Homeotic four-wing fly

This module deals with the fascinating and rapidly changing field of developmental biology from a genetic and cellular perspective. It examines how an organism develops from an egg to an adult, how the cell types and organs are specified, and how lost or damaged body parts can be regenerated or replaced. There will be a focus on some of the typical model species used in cell and developmental biology, including fruit flies, nematodes, mice and frogs, but this will be expanded to include other valuable comparative models, such as chickens, sea squirts, annelids, cnidarians and flatworms. The course will encompass multiple biological levels, from genes, through cells and embryos, to the organism's evolutionary history. As such this module is of wide relevance to a range of other biological disciplines, particularly biomedicine.

[BL3315View content for BL3315 \(2023/4\) in the Module Management System \(MMS\)](#)

[View the current Biology Online Module Catalogue for BL3315](#)

[BL3315View BL3315 \(2023/4\) in the University of St Andrews Module Catalogue](#)

Contents:

- Cover
- Contents
- Timetable
- Reading List
- Assessment
- Who To Ask
- Contributing Staff
- Learning Outcomes
- Acquired Skills
- Policies

BL3315: Timetable

Legend (not all modules have every event type):

lecture	tutorial	workshop	practical	other
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Semester 2: Week 1

DATE & TIME	VENUE	STAFF	EVENT
Monday 15-01-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Prof Dave Ferrier -	Lecture L1: Introduction to the module <small>2023-4_BL3315_L1</small>
Tuesday 16-01-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Prof Dave Ferrier -	Lecture L2: Introduction to the principles of Cell & Developmental Biology <small>2023-4_BL3315_L2</small>
Wednesday 17-01-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Prof Dave Ferrier -	Lecture L3: Review of some key techniques <small>2023-4_BL3315_L3</small>

Semester 2: Week 2

DATE & TIME	VENUE	STAFF	EVENT
Monday 22-01-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	jew7 -	Lecture L4: Caenorhabditis elegans: a nematode model system <small>2023-4_BL3315_L4</small>
Tuesday 23-01-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Prof Dave Ferrier -	Lecture L5: Regeneration I <small>2023-4_BL3315_L5</small>
Wednesday 24-01-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Prof Dave Ferrier -	Lecture L6: Regeneration II (Hydra practical introduction) <small>2023-4_BL3315_L6</small>

Semester 2: Week 3

DATE & TIME	VENUE	STAFF	EVENT
Monday 29-01-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Dr Marcus Bischoff -	Lecture L7: Insect segmentation <small>2023-4_BL3315_L7</small>
Monday 29-01-2024 14:00 to 17:00	Medical and Biological Sciences Building Biology Teaching Lab	Prof Dave Ferrier -	Practical P1: Regeneration Practical <small>2023-4_BL3315_P1</small>
Tuesday 30-01-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Dr Marcus Bischoff -	Lecture L8: Cell polarity <small>2023-4_BL3315_L8</small>
Tuesday 30-01-2024 14:00 to 17:00	Medical and Biological Sciences Building Biology Teaching Lab	Prof Dave Ferrier -	Practical P2: Regeneration Practical <small>2023-4_BL3315_P2</small>
Wednesday 31-01-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Dr Marcus Bischoff -	Lecture L9: Morphogenesis <small>2023-4_BL3315_L9</small>
Thursday 01-02-2024 14:00 to 17:00	Medical and Biological Sciences Building Biology Teaching Lab	Prof Dave Ferrier -	Practical P3: Regeneration Practical <small>2023-4_BL3315_P3</small> Also, assessed talk sign-up and poster introduction and allocation.
Friday 02-02-2024 14:00 to 17:00	Medical and Biological Sciences Building Biology Teaching Lab	Prof Dave Ferrier -	Practical P4: Regeneration practical <small>2023-4_BL3315_P4</small>

Semester 2: Week 4

DATE & TIME	VENUE	STAFF	EVENT
Monday 05-02-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Prof Dave Ferrier -	Lecture L10: Ciona: an invertebrate chordate model system <small>2023-4_BL3315_L10</small>

Tuesday 06-02-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Prof Dave Ferrier -	Lecture L11: Zebrafish, a genetically tractable vertebrate 2023-4_BL3315_L11
Wednesday 07-02-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Prof Dave Ferrier -	Lecture L12: Cutting and pasting vertebrate embryos I: the frog 2023-4_BL3315_L12

Semester 2: Week 5

DATE & TIME	VENUE	STAFF	EVENT
Monday 12-02-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Prof Dave Ferrier -	Lecture L13: Cutting and pasting vertebrate embryos II: the chicken 2023-4_BL3315_L13
Tuesday 13-02-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Dr Marcus Bischoff -	Lecture L14: Early mammalian development 2023-4_BL3315_L14
Wednesday 14-02-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	jew7 -	Lecture L15: Developmental biology and medicine 2023-4_BL3315_L15

Semester 2: Week 6

DATE & TIME	VENUE	STAFF	EVENT
Monday 19-02-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Prof Dave Ferrier -	Tutorial T1: Problem Solving Question tutorial 2023-4_BL3315_T1
Tuesday 20-02-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Prof Dave Ferrier -	Tutorial T2: Formative multiple choice quiz 2023-4_BL3315_T2
Wednesday 21-02-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Prof Dave Ferrier -	Tutorial T3: Revision Q&A tutorial 2023-4_BL3315_T3

Spring Break: 26-Feb-2024 to 01-Mar-2024

Semester 2: Week 7

DATE & TIME	VENUE	STAFF	EVENT
Monday 04-03-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Dr Susan Gurney -	Lecture L16: Gene regulation in development I 2023-4_BL3315_L16
Monday 04-03-2024 14:00 to 17:00	Bute Building Lecture Theatre A	Prof Dave Ferrier Dr Susan Gurney	Other O1: Assessed Talks 2023-4_BL3315_O1
Tuesday 05-03-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Dr Susan Gurney -	Lecture L17: Gene regulation in development II 2023-4_BL3315_L17
Tuesday 05-03-2024 14:00 to 17:00	Bute Building Lecture Theatre A	Prof Dave Ferrier Dr Susan Gurney	Other O2: Assessed talks 2023-4_BL3315_O2
Wednesday 06-03-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Dr Susan Gurney -	Lecture L18: Gene regulation in development III 2023-4_BL3315_L18
Wednesday 06-03-2024 14:00 to 17:00	Bute Building Lecture Theatre A	Prof Dave Ferrier Dr Susan Gurney	Other O3: Assessed Talks 2023-4_BL3315_O3
Thursday 07-03-2024 09:00 to 17:00	Medical and Biological Sciences Building Biology Teaching Lab	Dr Marcus Bischoff -	Practical P5: Drosophila wing development practical 2023-4_BL3315_P5
Friday 08-03-2024 09:00 to 17:00	Medical and Biological Sciences Building Biology Teaching Lab	Dr Marcus Bischoff -	Practical P6: Drosophila wing development practical 2023-4_BL3315_P6

Semester 2: Week 8

DATE & TIME	VENUE	STAFF	EVENT
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Monday 11-03-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Prof Dave Ferrier -	Other O4: Formative exam essay practise 2023-4_BL3315_O4
Tuesday 12-03-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	jew7 -	Lecture L19: Stem cells and their therapeutic applications 2023-4_BL3315_L19
Wednesday 13-03-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	jew7 -	Lecture L20: Developmental neurobiology 2023-4_BL3315_L20

Semester 2: Week 9

DATE & TIME	VENUE	STAFF	EVENT
Monday 18-03-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	jew7 -	Other O5: Brain organoid debate/discussion 2023-4_BL3315_O5 Further details will be provided in advance of this class.
Tuesday 19-03-2024 11:00 to 12:00	tba locations will be confirmed in advance	Prof Dave Ferrier mb273/smrw/cm107	Other O6: Exam essay feedback tutorials 2023-4_BL3315_O6 Tutor-student allocations will be confirmed via e-mail prior to the tutorial.
Wednesday 20-03-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Dr Carmel McDougall -	Lecture L21: Spiralian cell & developmental biology I 2023-4_BL3315_L21

Semester 2: Week 10

DATE & TIME	VENUE	STAFF	EVENT
Monday 25-03-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Dr Carmel McDougall -	Lecture L22: Spiralian cell & developmental biology II 2023-4_BL3315_L22
Tuesday 26-03-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Dr Carmel McDougall -	Lecture L23: Evo-Devo I - The urbilaterian and developmental toolkit 2023-4_BL3315_L23
Wednesday 27-03-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Dr Carmel McDougall -	Lecture L24: Evo-Devo II - Hox genes in Evo-Devo 2023-4_BL3315_L24

Semester 2: Week 11

DATE & TIME	VENUE	STAFF	EVENT
Monday 01-04-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Dr Carmel McDougall -	Lecture L25: Evo-Devo III - Evo-Devo essentials I 2023-4_BL3315_L25
Tuesday 02-04-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Dr Carmel McDougall -	Lecture L26: Evo-Devo IV - Evo-devo essentials II 2023-4_BL3315_L26
Tuesday 02-04-2024 14:00 to 17:00	Bute Building Bell Pettigrew Museum	Prof Dave Ferrier Dr Carmel McDougall	Other O7: Assessed Poster session 2023-4_BL3315_O7 Posters to be mounted on boards by midday - see handbook for details
Wednesday 03-04-2024 11:00 to 12:00	Purdie Building Lecture Theatre D	Prof Dave Ferrier -	Lecture L27: Feedback and revision class 2023-4_BL3315_L27

BL3315: Reading List

[BL3315Click for BL3315 reading list](#)

BL3315: Assessment

3-hour Written Examination = 50%, Coursework = 50%

[BL3315View coursework assessment details for BL3315 \(2023/4\) 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 (Prof Dave Ferrier dekf@st-andrews.ac.uk)
The Demonstrator or Module Organiser (Prof Dave Ferrier dekf@st-andrews.ac.uk)
Module Organiser (Prof Dave Ferrier dekf@st-andrews.ac.uk)
Module Organiser (Prof Dave Ferrier dekf@st-andrews.ac.uk)
Module Organiser (Prof Dave Ferrier dekf@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 \(st-andrews.ac.uk\)](http://www.st-andrews.ac.uk/jh-booklet-info)
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

BL3315: Contributing Staff

[Prof Dave Ferrier](#)
(Module Organiser)

Reader in Biology and Deputy
Director of the Scottish Oceans
Institute

dekf@st-andrews.ac.uk

[Dr Marcus Bischoff](#)

Lecturer

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[Prof Dave Ferrier](#)
(Module Organiser)

Reader in Biology and Deputy
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[Dr Susan Gurney](#)

Associate Lecturer in Biology

smrw@st-andrews.ac.uk

[Dr Carmel McDougall](#)

Lecturer in Marine Biology

cm107@st-andrews.ac.uk

BL3315: Learning Outcomes

Students completing module BL3315 successfully should be able to:

- Understand the principles and historical background that underpin modern cell & developmental biology.
- Appreciate the place of cell & developmental biology in biological science and the rapid new advances being made.

BL3315: Acquired Skills

Practical Skills

- Compound Microscopy
- Fixing and preserving specimens
- Measuring structures using microscopes
- Purpose and practice of dissection
- Stereomicroscopy

Transferable Skills

- Group discussion - participating
- Preparing group poster on given topic
- Q+A poster session
- Short group presentation on given topic (up to 15 min)
- Short individual presentation on given topic (up to 15 min)
- "Short" practical write-up (e.g. completed worksheet)
- Handout (for presentation or poster)
- Summary
- Timed essay
- Critically evaluating sources/information
- Finding literature
- Sourcing figures/tables
- Generating questions
- Lab safety awareness
- Reflective analysis
- Problem-solving questions
- Concentrations
- Dilutions
- Volumes
- Lab or field notebook
- Designing experiments
- Generate class dataset
- Working in pairs/small groups

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/>