BIOL1110

Genes to Organisms

Session 2, Special circumstances, Other 2021

Archive (Pre-2022) - Department of Biological Sciences

Contents

Session 2 Learning and Teaching Update

The decision has been made to conduct study online for the remainder of Session 2 for all units WITHOUT mandatory on-campus learning activities. Exams for Session 2 will also be online where possible to do so.

This is due to the extension of the lockdown orders and to provide certainty around arrangements for the remainder of Session 2. We hope to return to campus beyond Session 2 as soon as it is safe and appropriate to do so.

Some classes/teaching activities cannot be moved online and must be taught on campus. You should already know if you are in one of these classes/teaching activities and your unit convenor will provide you with more information via iLearn. If you want to confirm, see the list of units with mandatory on-campus classes/teaching activities.

Visit the MQ COVID-19 information page for more detail.

General Information

Unit convenor and teaching staff

Convener
Jaco Le Roux
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Lecturer
Oliver Griffith
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Administration
Jessica O'Hare
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Credit points
10

Prerequisites

Corequisites

Co-badged status

Unit description
This unit deals with the nuts and bolts of life on earth. Throughout the unit there is a single unifying theme - that all of the processes that give rise to life are derived from DNA. We show students that DNA controls life by acting as a blueprint for the construction of proteins, and that those proteins build cells which act as the basic structural and functional units of all life. To demonstrate these processes to students, we start by talking about the structure and function of DNA to show how it can act as a simple code for the construction of proteins. Students are then shown how proteins are constructed from the DNA code, and how those proteins can be used to build and maintain cells. Having established these basic principles, the unit then goes on to explain how cells construct multicellular organisms during development, and how the proper functioning of those organisms is maintained by regulating cellular activity. We also demonstrate that the DNA code is essentially immortal because it can be copied from generation to generation, from cell to cell.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: Define how biological information is encoded in the structure of the genetic molecule, DNA

ULO2: Describe how large macromolecules, such as nucleic acids and proteins are constructed from simpler building blocks

ULO3: Explain how eukaryotic cells are constructed, in terms of the structure and functions of organelles

ULO4: Describe how genetic information is transmitted through the generations, and the evolutionary process

ULO5: Discuss modern applications of genetics and genomics

ULO6: Analyse scientific data and use the basic elements of scientific writing to write reports

Assessment Tasks

Name	Weighting	Hurdle	Due
Mid-semester test	15%	No	10/09/2021
Paper dissection	25%	No	03/10/2021
Practical quizes	10%	No	Weekly (on Monday @ 12pm)
Database project	10%	No	Sep 5, Oct 17, Nov 7 2021
Final exam	40%	No	Formal exam period (exact date TBA)

Mid-semester test

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 13 hours
Due: **10/09/2021**
Weighting: **15%**

The mid-semester test will consist of multiple choice questions covering all lecture material up discussed to that point. The test will be conducted online under timed conditions.

On successful completion you will be able to:

- Define how biological information is encoded in the structure of the genetic molecule, DNA
- Describe how large macromolecules, such as nucleic acids and proteins are constructed from simpler building blocks
- Describe how genetic information is transmitted through the generations, and the evolutionary process

Paper dissection

Assessment Type [1]: Report
Indicative Time on Task [2]: 25 hours
Due: **03/10/2021**
Weighting: **25%**

A library of at least 10 public research papers will be made available to students. Students must select one paper (or choose a paper in which they are interested, with the approval of the convenors) and analyse the structure, underlying research, and implications of the paper, following the set of questions provided.

On successful completion you will be able to:

- Discuss modern applications of genetics and genomics
- Analyse scientific data and use the basic elements of scientific writing to write reports

Practical quizes

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 10 hours
Due: **Weekly (on Monday @ 12pm)**
Weighting: **10%**

Pre-prac quizzes to test preparedness and comprehension.

On successful completion you will be able to:

- Define how biological information is encoded in the structure of the genetic molecule, DNA
- Describe how large macromolecules, such as nucleic acids and proteins are constructed from simpler building blocks

- Explain how eukaryotic cells are constructed, in terms of the structure and functions of organelles
- Describe how genetic information is transmitted through the generations, and the evolutionary process

Database project

Assessment Type [1]: Report
Indicative Time on Task [2]: 13 hours
Due: **Sep 5, Oct 17, Nov 7 2021**
Weighting: **10%**

The PeerWise database will be available to students throughout the Session. Students must write and submit questions based upon lecture content, and answer questions of other students.

On successful completion you will be able to:

- Explain how eukaryotic cells are constructed, in terms of the structure and functions of organelles
- Describe how genetic information is transmitted through the generations, and the evolutionary process
- Discuss modern applications of genetics and genomics
- Analyse scientific data and use the basic elements of scientific writing to write reports

Final exam

Assessment Type [1]: Examination
Indicative Time on Task [2]: 40 hours
Due: **Formal exam period (exact date TBA)**
Weighting: **40%**

Assesses all material covered in practicals as well as the material in all lectures. This exam will be invigilated and held during the Formal Examination Period.

On successful completion you will be able to:

- Define how biological information is encoded in the structure of the genetic molecule, DNA
- Describe how large macromolecules, such as nucleic acids and proteins are constructed

from simpler building blocks
- Explain how eukaryotic cells are constructed, in terms of the structure and functions of organelles
- Describe how genetic information is transmitted through the generations, and the evolutionary process
- Discuss modern applications of genetics and genomics

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[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

LECTURES

(1) Two 1-hour online lecture recordings per week (starting in week 1)

(2) Mondays 11am-12pm: live Zoom lecture Q&A session (optional attendance starting in week 2; you must listen to the lecture recordings from the previous week before attending the Zoom session)

PRACTICALS

There are nine practicals in this unit. In Session 2 2021 our units will run face-to-face block sessions for practicals, while keeping an online version available for those students who choose to continue their studies online.

To check detailed information on unit assessments, visit the unit iLearn site.

EXTERNAL BLOCK SESSIONS (ON CAMPUS)
(1) Saturday 21st August 9am-5pm; Pracs 1,2,4 (06WW106)
(2) Sunday 22nd August 9am-5pm; Prac 3 (online)
(3) Tuesday 14th September 9am-5pm; Pracs 5, 6, 8 (06WW106)
(4) Wednesday 15th September 9am-5pm; Pracs 7,9 (online)

EXTERNAL BLOCK SESSIONS (ONLINE)

(1) Saturday 21st August 9am-5pm
(2) Sunday 22nd August 9am-5pm
(3) Tuesday 14th September 9am-5pm
(4) Wednesday 15th September 9am-5pm

Please choose between attending block sessions on campus or online

Unit Schedule

Week of Session	Dates	Lectures (Online - recording)	Lecturer	Zoom Question Session (Online - live on Monday)
1	26 - 30 Jul	Lecture 1: Introduction	Jaco Le Roux	Jaco Le Roux
		Lecture 2: The scientific method	Oliver Griffith	Oliver Griffith
2	2 - 8 Aug	Lecture 3: DNA: The molecule of heredity	Kerstin Bilgmann	Jaco Le Roux
		Lecture 4: DNA replication	Kerstin Bilgmann	Jaco Le Roux
3	9 - 15 Aug	Lecture 5: Genes & Genomes	Oliver Griffith	Oliver Griffith
		Lecture 6: Transcription	Kerstin Bilgmann	Jaco Le Roux
4	16 - 22 Aug	Lecture 7: Translation	Kerstin Bilgmann	Jaco Le Roux
		Lecture 8: Proteins	Kerstin Bilgmann	Jaco Le Roux
5	23 - 29 Aug	Lecture 9: Gene regulation	Kerstin Bilgmann	Jaco Le Roux
		Lecture 10: Chromosomes	Kerstin Bilgmann	Jaco Le Roux
6	30 Aug - 5 Sep	Lecture 11: The cell	Oliver Griffith	Oliver Griffith
		Lecture 12: Mitosis	Kerstin Bilgmann	Jaco Le Roux
7	6 - 12 Sep	Lecture 13: Meiosis	Kerstin Bilgmann	Mid-semester test for internals (Online)
	13 - 19 Sep	Mid-semester break		
	20- 26 Sep	Mid-semester break		

8	27 Sep - 3 Oct	Lecture 14: Mendelian genetics I	Kerstin Bilgmann	Jaco Le Roux
		Lecture 15: Mendelian genetics II	Kerstin Bilgmann	Jaco Le Roux
9	4 - 10 Oct	Lecture 16: Molecular evolution	Kerstin Bilgmann	Jaco Le Roux
		Lecture 17: Population genetics	Kerstin Bilgmann	Jaco Le Roux
10	11 - 17 Oct	Lecture 18: Genetic tools	Oliver Griffith	Oliver Griffith
		Lecture 19: Biological membranes	Oliver Griffith	Oliver Griffith
11	19- 24 Oct	Lecture 20: Cell signalling	Oliver Griffith	Oliver Griffith
		Lecture 21: Prokaryotes	Ian Paulsen	Jaco Le Roux
12	25 Oct - 29 Nov	Lecture 22: Revision	Jaco Le Roux	Jaco Le Roux
13	1 - 7 Nov	Q&A zoom session (No lectures or practicals)		Oliver Griffith or Jaco Le Roux
14	8 - 14 Nov	Final exam		

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.edu.au) and use the search tool.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of

Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- Getting help with your assignment
- Workshops
- StudyWise
- Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.