MACQUARIE University

BIOL3120 –Human Genetics and Evolutionary Medicine

Faculty of Science and Engineering

Lecturer profile

DR OLIVER GRIFFITH

Dr Oliver Griffith

Evolutionary Genomics Lab

Department of Biological Sciences
Faculty of Sciences and Engineering

Email: oliver.Griffith@mq.edu.au

My path to Macquarie

Bachelor of Engineering UNSW
(dropped out after 2 years)

Bachelor of Science at Usyd
- Biology Major

PhD at Usyd – evolution of pregnancy in reptiles

Postdoc at Yale University – marsupial pregnancy
Postdoc at University of Melbourne
- Maternal-fetal communication

Lecturer at Macquarie – Evolutionary Genomics Lab

MACQUARIE
University

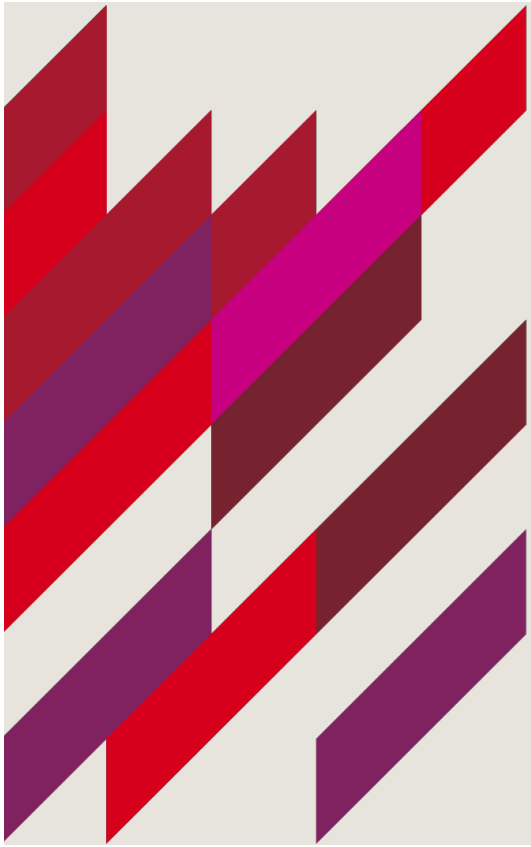
Human Genetics

With great power comes great responsibility

- Human Genome Project
- Next Generation Sequencing
- Genetic Testing
- Pre-implantation screening
- Genome Wide Associated Studies
- Personalised Medicine
- Genome Editing

BIOL3120 –Human Genetics & Evolutionary Medicine

LEARNING OBJECTIVES



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

- **ULO1:** Solve problems in human genetics using appropriate analytical methods and a variety of up to date resources.
- **ULO2:** Interpret and demonstrate understanding of the primary scientific literature.
- **ULO3:** Explain the importance of new techniques in human genetics for understanding human disease.
- **ULO4:** Explain the principles of evolutionary biology and their role in human health and disease.
- **ULO5:** Learn basic bioinformatic skills, including handling of genetic sequence data.

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BIOL3120 Unit Information

Welcome to Human Genetics and Evolutionary Medicine. This online space is your virtual classroom, where we can work together to enhance your learning and experience in the unit. Embracing this online space is an important part of this unit. There are a number of things that contribute to online community building and one of them is establishing a visual online presence. Please take the time (if you haven't already) to setup your iLearn profile and include a photograph of yourself (or an avatar if you like!) that way we can bring a little personality into this online space. Here's a guide to help.

We'll be running this unit on a Flipped Classroom model. Therefore, it's really important that you watch the online lecture content *before* attending your practical class. You'll get much more out of the unit this way and we can answer your specific questions in class. We'll also be available on zoom during your scheduled lecture slot to answer all of your questions. Please see the timetable information for the zoom link.

This unit has the following Learning Outcomes. On completion of this unit you should be able to:

1. Solve problems in human genetics using appropriate analytical methods and a variety of up to date resources

2. Interpret and demonstrate an understanding of the primary scientific literature

3. Explain the importance of new techniques in human genetics for understanding human disease

4. Explain the principles of evolutionary biology and their role in human health and disease

5. Learn basic bioinformatic skills, including handling of genetic sequence data

Week	Lectures	Practical Class	Assessments	Unit Learning Outcome
1	Introductory Lecture and Overview Intro to Evolutionary Medicine	No Practical Classes in Week 1		Explain the principles of evolutionary biology and their role in human health and disease
2	Oliver's Research Problem solving in genetics	No Practical Classes in Week 2		Interpret and demonstrate understanding of the primary scientific literature

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Timetable: Lectures and Practicals

Activity	Day	Time	Location	Lecturer/Tutor
Lecture	Released Monday Morning	Watch before tutorial	iLearn	Oliver, Emily, or a Guest Lecturer
Drop In Session	Wednesday	1-2 pm	Zoom	Oliver
Practical 1	Wednesday	9-11 am	14 Sir Christopher Ondaatje Ave - 163 Active Learning Space	Erin
Practical 2	Thursday	3-5 pm	01CC 103 Active Learning Space	Oliver
Practical 3	Thursday	12-2 pm	01CC 214 Active Learning Space	Oliver
Practical 4	Wednesday	2-4 pm	01CC 218 Active Learning Space	Callum
Practical 5	Wednesday	11 am - 1 pm	Zoom	Erin

Last modified: Wednesday, 16 February 2022, 12:23 PM

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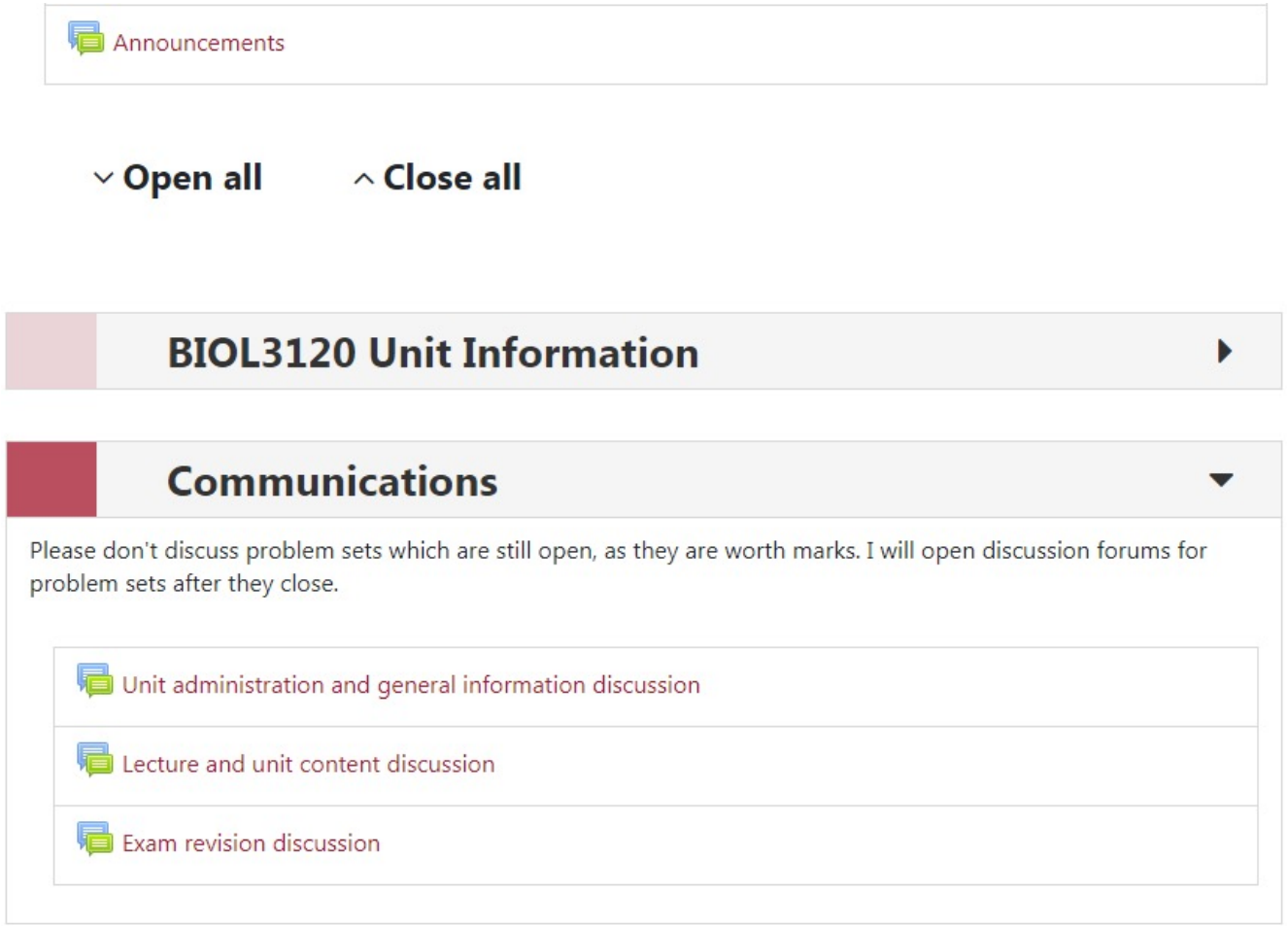

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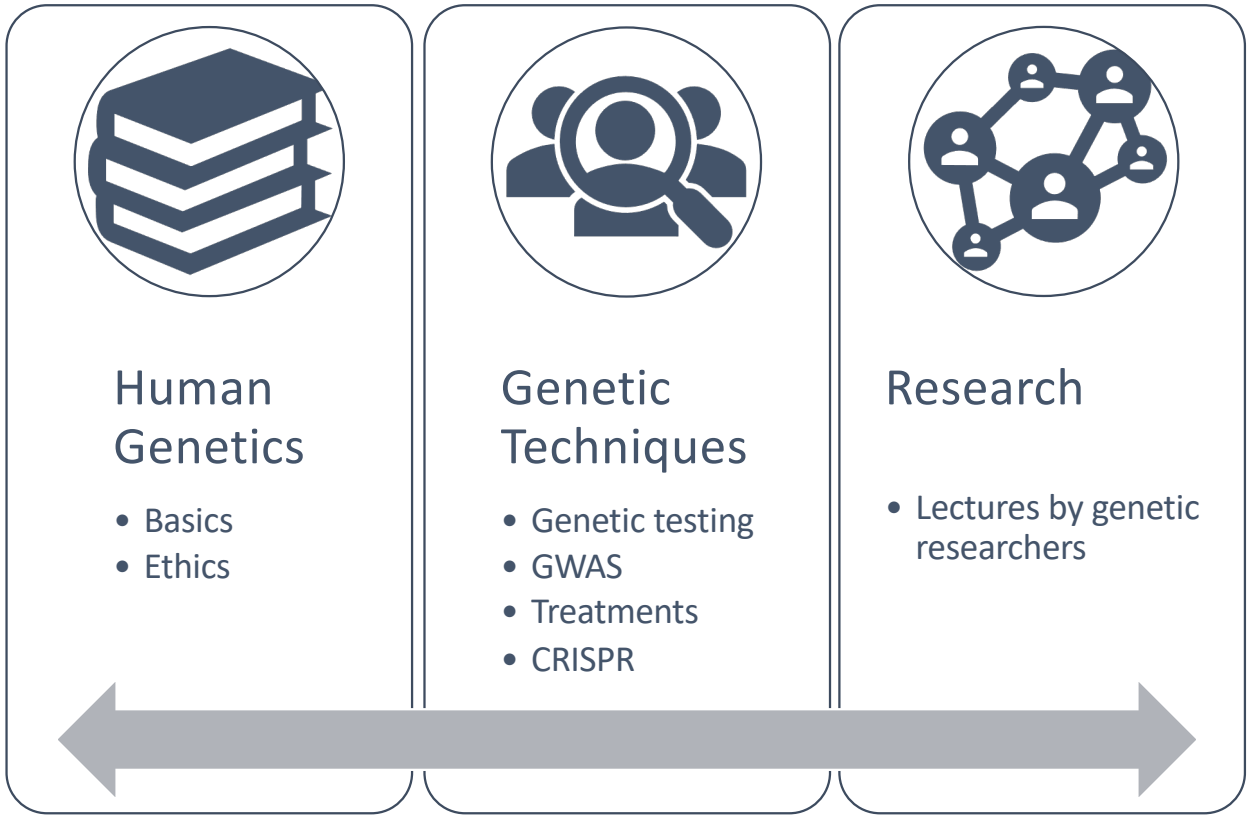
What to expect?



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Assessments

	Type of Assessment	Value	Due	Learning Outcome
AT1	Problem Sets and Practical Classes	25%	Internal Students Problem Set 1 (Week 3, Sunday 13th March) Problem Set 2 (Week 4, Sunday 20th March) Problem Set 3 (Week 5, Sunday 27th March) Problem Set 4 (Week 6, Sunday 3rd April) Problem Set 5 (Week 7, Sunday 10th April)	Solve problems in human genetics using appropriate analytical methods and a variety of up to date resources Interpret and demonstrate understanding of the primary scientific literature Explain the principles of evolutionary biology and their role in human health and disease Learn basic bioinformatic skills, including handling of genetic sequence data

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Assessments

	Type of Assessment	Value	Due	Learning Outcome
AT2	Literature Review	25%	Week 13 (11:59 pm, Friday 3rd June)	Interpret and demonstrate understanding of the primary scientific literature Explain the importance of new techniques in human genetics for understanding human disease
AT3	Final Exam	50%	Exam Period	Solve problems in human genetics using appropriate analytical methods and a variety of up to date resources Interpret and demonstrate understanding of the primary scientific literature Explain the importance of new techniques in human genetics for understanding human disease Explain the principles of evolutionary biology and their role in human health and disease Learn basic bioinformatic skills, including handling of genetic sequence data

What’s next?

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What's next?

Week	Lectures	Practical Class	Assessments	Unit Learning Outcome
1	Introductory Lecture and Overview Intro to Evolutionary Medicine	No Practical Classes in Week 1		Explain the principles of evolutionary biology and their role in human health and disease
2	Oliver's Research Problem solving in genetics	No Practical Classes in Week 2		Interpret and demonstrate understanding of the primary scientific literature
3	The Human Genome Modes of Inheritance and Population Genetics	Problem Set 1	Problem Set 1 (5%)	Explain the principles of evolutionary biology and their role in human health and disease Solve problems in human genetics using appropriate analytical methods and a variety of up to date resources
4	Heritability and Polygenics Chromosomal Mutations	Problem Set 2	Problem Set 2 (5%)	Explain the principles of evolutionary biology and their role in human health and disease Solve problems in human genetics using appropriate analytical methods and a variety of up to date resources

Flipped Classroom

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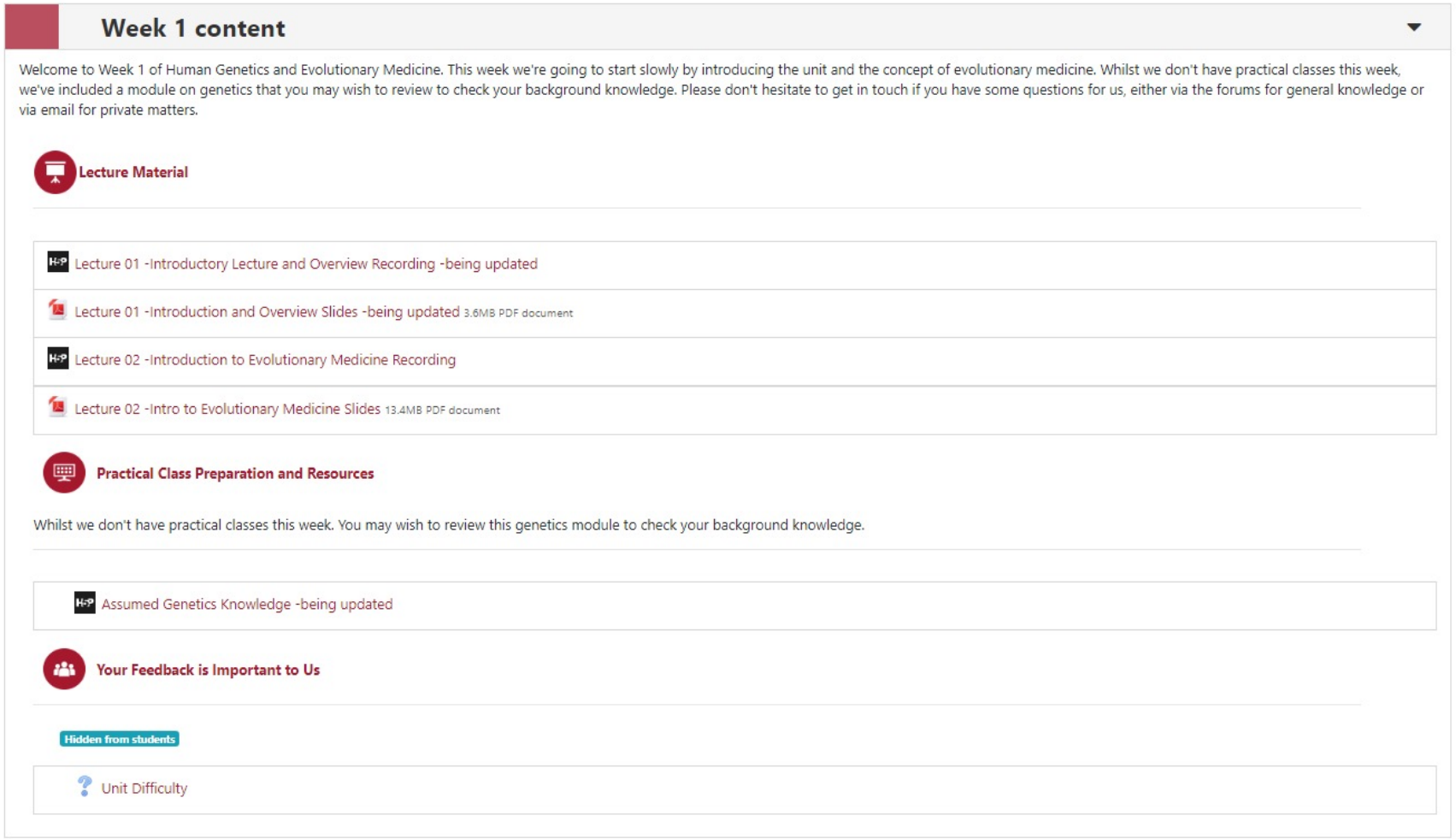
A week in the life of a BIOL3120 student



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A week in the life of a BIOL3120 student

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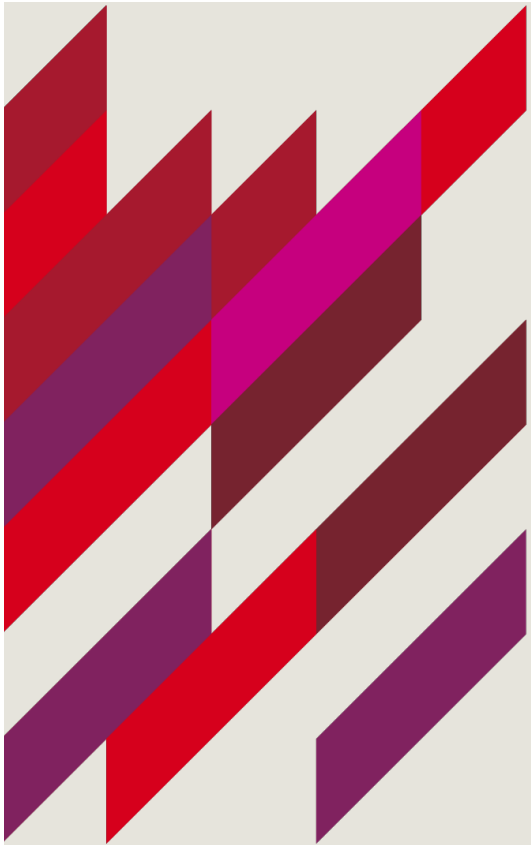
LEARNING OBJECTIVES



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