



BIOL260

Science of Sex

X2 2012

Biological Sciences

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General Information

Unit convenor and teaching staff

Unit Convenor

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Other Staff

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Credit points

3

Prerequisites

12cp or admission to GradCertBiotech

Corequisites

Co-badged status

Unit description

Topics related to sex pervade our culture, media, politics, relationships and everyday life.

Despite this, many of us have never had the opportunity to learn why sex evolved. What are the real differences between males and females? What is the chemistry that makes partners attractive? Why are the sexual strategies and behaviours of different species so diverse?

What hormones control our maturation, reproductive cycles and pregnancy? This unit takes a broad approach, using examples (some quite bizarre) from the animal and plant worlds. At the same time, we cover in-depth the sexual biology and behaviour of our own intriguing species.

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:

Understand and use correct biological terminology

Explain the difference between asexual and sexual reproduction, and have an

understanding of why sexual reproduction has evolved.

Identify the various animal (and plant) mating systems and the strategies used by males and females from each.

Recall specific examples of species from each of the mating systems presented during lectures.

Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection).

Read and understand scientific papers in the sexual selection literature.

Work in groups to give a poster presentation that succinctly summarises information on a sexual selection topic.

Assessment Tasks

Name	Weighting	Due
<u>Weekly readings</u>	8%	End of each week
<u>Quiz 1</u>	2%	30/07-12/08
<u>Quiz 2</u>	10%	03-09/09
<u>Major assessment A</u>	5%	16/09
<u>Major assessment B</u>	13%	14/10
<u>Major assessment C</u>	2%	28/10
<u>Major assessment D</u>	10%	28/10
<u>Quiz 3</u>	10%	29/10-04/11
<u>Final exam</u>	40%	TBA

Weekly readings

Due: **End of each week**

Weighting: **8%**

You will be required to read the relevant section/s of the textbook for each weekly topic, answer a series of questions and submit them as a doc or pdf online in iLearn. Marks are based solely on adequate completion of the questions. There are no questions in weeks 5, 9, 12 & 13, and the questions in week 1 are optional.

On successful completion you will be able to:

- Understand and use correct biological terminology
- Explain the difference between asexual and sexual reproduction, and have an understanding of why sexual reproduction has evolved.
- Identify the various animal (and plant) mating systems and the strategies used by males and females from each.
- Recall specific examples of species from each of the mating systems presented during lectures.
- Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection).
- Read and understand scientific papers in the sexual selection literature.

Quiz 1

Due: **30/07-12/08**

Weighting: **2%**

1-hour quiz compiled of 8 questions and completed in iLearn. A variety of question types are included, for example multiple choice, true/false, short answer matching. The test will be open in **weeks 1 & 2** and will test your general science skills knowledge eg. referencing, plagiarism, basic writing skills, library searches. It is HIGHLY recommended that you listen to the associated workshop audios and read the guides at <http://bio.mq.edu.au/science-workshop> before attempting this quiz. You have 3 attempts, and your highest score will be recorded in the iLearn grade book.

On successful completion you will be able to:

- Understand and use correct biological terminology

Quiz 2

Due: **03-09/09**

Weighting: **10%**

1-hour quiz compiled of 30 multiple-choice questions and completed in iLearn. The quiz will be open in **week 6** and will test your knowledge of the lecture content up to and including week 5 (lectures 1-15). You have only one attempt at this quiz.

On successful completion you will be able to:

- Understand and use correct biological terminology
- Explain the difference between asexual and sexual reproduction, and have an understanding of why sexual reproduction has evolved.
- Identify the various animal (and plant) mating systems and the strategies used by males

and females from each.

- Recall specific examples of species from each of the mating systems presented during lectures.
- Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection).

Major assessment A

Due: **16/09**

Weighting: **5%**

This is a 300-word summary of your poster content, similar to what is expected for the abstract of a scientific paper. Submission is online via turnitin by the end of **week 7**.

On successful completion you will be able to:

- Understand and use correct biological terminology
- Explain the difference between asexual and sexual reproduction, and have an understanding of why sexual reproduction has evolved.
- Identify the various animal (and plant) mating systems and the strategies used by males and females from each.
- Recall specific examples of species from each of the mating systems presented during lectures.
- Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection).
- Read and understand scientific papers in the sexual selection literature.
- Work in groups to give a poster presentation that succinctly summarises information on a sexual selection topic.

Major assessment B

Due: **14/10**

Weighting: **13%**

Completed in groups of three (randomly allocated after the census date). Based on one of three research areas under the umbrella heading of MALE MATING STRATEGIES, the idea is to take on the role of the researcher/s and present the research findings as if they are your own. More detailed instructions and various resources are available in iLearn under 'Poster presentation'.

Submission is online via turnitin *and* the peer review tool. An A2 colour hardcopy is required for the poster session during OCS 2 - a bulk print run has been organized with an online printery so

as to keep the costs down to ~\$8 per poster/~\$2.70 per student (which should be paid to the unit convenor during OCS 1 or 2).

10% of your mark comes from your tutor, the other 3% is made up of peer review marks.

On successful completion you will be able to:

- Understand and use correct biological terminology
- Explain the difference between asexual and sexual reproduction, and have an understanding of why sexual reproduction has evolved.
- Identify the various animal (and plant) mating systems and the strategies used by males and females from each.
- Recall specific examples of species from each of the mating systems presented during lectures.
- Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection).
- Read and understand scientific papers in the sexual selection literature.
- Work in groups to give a poster presentation that succinctly summarises information on a sexual selection topic.

Major assessment C

Due: **28/10**

Weighting: **2%**

You will be required to grade at least three other posters, and your ability to mark appropriately (compared to other students and the convenor) will be graded. You will be provided with online examples and given detailed instructions on what is expected in OCS 1. Your reviews are due by the end of **week 11**.

On successful completion you will be able to:

- Understand and use correct biological terminology
- Explain the difference between asexual and sexual reproduction, and have an understanding of why sexual reproduction has evolved.
- Identify the various animal (and plant) mating systems and the strategies used by males and females from each.
- Recall specific examples of species from each of the mating systems presented during lectures.
- Outline and understand evolutionary processes, especially in relation to sexual selection

(rather than natural selection).

- Read and understand scientific papers in the sexual selection literature.

Major assessment D

Due: **28/10**

Weighting: **10%**

Online review outlining how well you think the group worked together, and how much each of you contributed. Instructions on how to fill out the rubric will be given during OCS 1. An initial submission should be completed at the same time you submit your poster (end of week 9), and then the actual review is due at the end of **week 11**. This tool will allow your tutor to add an individual component to this assessment (average of all group member's marks plus your ability to mark related to other group members).

On successful completion you will be able to:

- Work in groups to give a poster presentation that succinctly summarises information on a sexual selection topic.

Quiz 3

Due: **29/10-04/11**

Weighting: **10%**

1-hour quiz compiled of 30 multiple-choice questions and completed in iLearn. The quiz will be open for the whole of **week 12** and will test your knowledge of the lecture content up to and including week 11 (lectures 16-30). You have only one attempt at this quiz.

On successful completion you will be able to:

- Understand and use correct biological terminology
- Explain the difference between asexual and sexual reproduction, and have an understanding of why sexual reproduction has evolved.
- Identify the various animal (and plant) mating systems and the strategies used by males and females from each.
- Recall specific examples of species from each of the mating systems presented during lectures.
- Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection).

Final exam

Due: **TBA**

Weighting: **40%**

3-hour written exam. A mixture of multiple choice questions (100) and short answer questions (11) covering all lecture material presented in the unit (weekly reading material is not directly examinable). The exam is conducted under exam conditions and is held during the formal university exam period. Please check the exam timetable in September for the exact date and time.

On successful completion you will be able to:

- Understand and use correct biological terminology
- Explain the difference between asexual and sexual reproduction, and have an understanding of why sexual reproduction has evolved.
- Identify the various animal (and plant) mating systems and the strategies used by males and females from each.
- Recall specific examples of species from each of the mating systems presented during lectures.
- Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection).

Delivery and Resources

Website

Lecture graphics and audio files will be available in iLearn <http://ilearn.mq.edu.au>

iLearn™ is a web-based computer mediated communication package and can be accessed by most web browsers from inside or outside the University. iLearn and student email will be the principle method of communication in this unit, and you should be checking each of them regularly (every 3 days at absolute minimum). If you have a personal email account that you check more often, please forward your student email to that account.

We expect you to use iLearn for:

- Regularly checking subject announcements;
- Discussing lectures and readings with lecturers/tutors and other students;
- Downloading lecture materials;
- Downloading reference materials;
- Completing/submitted assessment tasks;
- Receiving feedback for assessment tasks;

- Checking your grades.

How do you log in?

Use your Macquarie OneID to login. If you are having problems logging in after ensuring you have entered your username and password correctly, you should contact Student IT Help, Email: help@mq.edu.au, Phone: (02) 9850 4357 (in Sydney) or 1 800 67 4357 (toll-free outside Sydney).

Required unit materials

Textbook

Barry, K.L. & Holwell, G.I. 2012. *The science of sex (third edition)*. McGraw-Hill Publishers, Sydney.

This textbook was designed specifically for BIOL260, and you can purchase a hardcopy of the book (~\$70) from the University Coop Bookshop or an e-book (~\$55) direct from the publisher's website (<https://create.mcgraw-hill.com/shop/#/catalog/details/?isbn=9781121500389>). Much of the lecture material corresponds with chapters in the text, and the weekly readings and questions are taken directly from this book. There are also 6 copies (2nd edition) held in the reserve section of the library. The second and third editions are both suitable for this unit.

What has changed?

The major assessment is now a poster presentation done in groups of three with a large peer review component. The weekly questions come from the textbook and answers are submitted online. The midsemester test is now two online quizzes.

Unit Schedule

Timetable

OCS:

On Campus Session 1 Aug 4th 9am – 2pm, E8A120 (red lab)

On Campus Session 2 Oct 27th 9am – 2pm, E8A120 (red lab)

Students living outside of Sydney are given the option of taking part in OCSs via Skype (send contact request to 'scienceofsex' once you have downloaded the free software from www.skype.com), however, approval from the unit convener must be sought before OCS 1.

Lectures:

All 36 lecture audio files will be available in iLearn from week 1, but it is suggested that you follow the week numbers provided on the following page so as not to fall behind.

Online:

The unit convenor will be online for two 1-hour periods each week: Tuesday 8-9pm and Saturday 10-11am. These are not compulsory sessions, but are strongly recommended if you have questions relating to the weekly lectures or readings. Click on the chat link in the relevant week to gain access.

LECTURE SCHEDULE

Lecture Week Lecturer Topic

1. 1 Mike Why have sex?
2. 1 Mike Sex determination
3. 1 Mike Gonad development
4. 2 Mike Development of human genitalia
5. 2 Mike Sexual dimorphism
6. 2 Mike Hormones, cycles, puberty, pregnancy
7. 3 Mike Gametes, fertilisation, contraception
8. 3 Mike Sexually transmitted infections
9. 3 Mike Love, neurobiology and orgasm
10. 4 Andy Sexual diversity I
11. 4 Andy Sexual diversity II
12. 4 Marie Human mating strategies I
13. 5 Marie Human mating strategies II
14. 5 Marie Human mating strategies III
15. 5 Vince MHC and MCC
16. 6 Kate Intro to animal reproduction
17. 6 Kate Animal mating systems
18. 6 Kate Sexual selection & sex roles
19. 7 Kate Mate competition
20. 7 Kate Mate choice
21. 8 Kate Sexual signals – visual
22. 8 Anne Sexual signals – vibratory
23. 8 Kate Sexual signals – chemical

- 24. 9 Kate Multiple mating & genitalia
- 25. 9 Kate Sperm competition & cryptic female choice
- 26. 10 Kate Sexual conflict
- 27. 10 Kate Sexual cannibalism
- 28. 10 Nik Sexually antagonistic co-evolution
- 29. 11 Graham Plant reproduction I
- 30. 11 Graham Plant reproduction II
- 31. 11 Julia Sexual deception in orchids
- 32. 12 Jane Love in the sea
- 33. 12 Phil Love in the orchard
- 34. 12 Marianne Love in social insects
- 35. 13 Simon Love in the bird world
- 36. 13 Martin Love in the lizard world

ONCAMPUS SESSION SCHEDULE

OCS 1 - Aug 4th 9am - 2pm (E8A120)

Introduction to the unit

Introduction to assessment in the unit

Introduction to iLearn and the BIOL260 iLearn website

Q & A session

Introduction to biological and evolutionary concepts for nonscience students

OCS 2 - Oct 27th 9am - 2pm (E8A120)

Poster session

Teacher evaluation surveys

Final exam information

Q & A session

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://www.mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy <http://www.mq.edu.au/policy/docs/assessment/policy.html>

Grade Appeal Policy <http://www.mq.edu.au/policy/docs/gradeappeal/policy.html>

Special Consideration Policy http://www.mq.edu.au/policy/docs/special_consideration/policy.html

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

Student Support

Macquarie University provides a range of Academic Student Support Services. Details of these services can be accessed at: <http://students.mq.edu.au/support/>.

UniWISE provides:

- Online learning resources and academic skills workshops http://www.mq.edu.au/learning_skills/
- Personal assistance with your learning & study related questions.
- The Learning Help Desk is located in the Library foyer (level 2).
- Online and on-campus orientation events run by Mentors@Macquarie.

Student Services and Support

Students with a disability are encouraged to contact the [Disability Support Unit](#) who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

Details of these services can be accessed at <http://www.student.mq.edu.au/ses/>.

IT Help

If you wish to receive IT help, we would be glad to assist you at <http://informatics.mq.edu.au/help/>.

When using the university's IT, you must adhere to the [Acceptable Use Policy](#). The policy applies to all who connect to the MQ network including students and it outlines what can be done.

Graduate Capabilities

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

Learning outcomes

- Read and understand scientific papers in the sexual selection literature.
- Work in groups to give a poster presentation that succinctly summarises information on a sexual selection topic.

Assessment tasks

- Weekly readings
- Major assessment A
- Major assessment B
- Major assessment C
- Major assessment D

Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

Learning outcomes

- Understand and use correct biological terminology
- Explain the difference between asexual and sexual reproduction, and have an understanding of why sexual reproduction has evolved.
- Identify the various animal (and plant) mating systems and the strategies used by males and females from each.
- Recall specific examples of species from each of the mating systems presented during lectures.
- Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection).
- Read and understand scientific papers in the sexual selection literature.
- Work in groups to give a poster presentation that succinctly summarises information on a sexual selection topic.

Assessment tasks

- Weekly readings
- Major assessment A
- Major assessment B

- Major assessment C

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- Understand and use correct biological terminology
- Explain the difference between asexual and sexual reproduction, and have an understanding of why sexual reproduction has evolved.
- Identify the various animal (and plant) mating systems and the strategies used by males and females from each.
- Recall specific examples of species from each of the mating systems presented during lectures.
- Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection).
- Read and understand scientific papers in the sexual selection literature.
- Work in groups to give a poster presentation that succinctly summarises information on a sexual selection topic.

Assessment tasks

- Weekly readings
- Quiz 1
- Quiz 2
- Major assessment A
- Major assessment B
- Major assessment C
- Major assessment D
- Quiz 3
- Final exam

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- Identify the various animal (and plant) mating systems and the strategies used by males and females from each.
- Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection).
- Read and understand scientific papers in the sexual selection literature.
- Work in groups to give a poster presentation that succinctly summarises information on a sexual selection topic.

Assessment tasks

- Weekly readings
- Quiz 2
- Major assessment A
- Major assessment B
- Quiz 3
- Final exam

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- Explain the difference between asexual and sexual reproduction, and have an understanding of why sexual reproduction has evolved.
- Identify the various animal (and plant) mating systems and the strategies used by males and females from each.

- Recall specific examples of species from each of the mating systems presented during lectures.
- Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection).
- Read and understand scientific papers in the sexual selection literature.
- Work in groups to give a poster presentation that succinctly summarises information on a sexual selection topic.

Assessment tasks

- Weekly readings
- Quiz 2
- Major assessment A
- Major assessment B
- Quiz 3
- Final exam

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Learning outcomes

- Recall specific examples of species from each of the mating systems presented during lectures.
- Work in groups to give a poster presentation that succinctly summarises information on a sexual selection topic.

Assessment tasks

- Weekly readings
- Major assessment A
- Major assessment B

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcomes

- Understand and use correct biological terminology
- Explain the difference between asexual and sexual reproduction, and have an understanding of why sexual reproduction has evolved.
- Identify the various animal (and plant) mating systems and the strategies used by males and females from each.
- Recall specific examples of species from each of the mating systems presented during lectures.
- Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection).
- Read and understand scientific papers in the sexual selection literature.
- Work in groups to give a poster presentation that succinctly summarises information on a sexual selection topic.

Assessment tasks

- Weekly readings
- Quiz 1
- Major assessment A
- Major assessment B
- Major assessment D
- Final exam

Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

Learning outcomes

- Explain the difference between asexual and sexual reproduction, and have an understanding of why sexual reproduction has evolved.
- Identify the various animal (and plant) mating systems and the strategies used by males and females from each.

- Recall specific examples of species from each of the mating systems presented during lectures.
- Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection).
- Read and understand scientific papers in the sexual selection literature.
- Work in groups to give a poster presentation that succinctly summarises information on a sexual selection topic.

Assessment tasks

- Weekly readings
- Major assessment A
- Major assessment B
- Major assessment D

Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

Learning outcomes

- Explain the difference between asexual and sexual reproduction, and have an understanding of why sexual reproduction has evolved.
- Identify the various animal (and plant) mating systems and the strategies used by males and females from each.
- Recall specific examples of species from each of the mating systems presented during lectures.
- Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection).
- Read and understand scientific papers in the sexual selection literature.
- Work in groups to give a poster presentation that succinctly summarises information on a sexual selection topic.

Assessment tasks

- Weekly readings
- Major assessment A
- Major assessment B

- Major assessment C
- Major assessment D