



BIOL260

Science of Sex

S2 External 2014

Dept of Biological Sciences

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Disclaimer

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General Information

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Credit points

3

Prerequisites

12cp or admission to GCertBiotech

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 pairs to create a poster that succinctly summarises information on a sexual selection topic

Assessment Tasks

Name	Weighting	Due
<u>Textbook reading/questions</u>	20%	Sunday after each OCS
<u>Science skills quiz</u>	5%	17/08
<u>Quiz 1</u>	20%	21/09
<u>Quiz 2</u>	15%	02/11
<u>Quiz 3</u>	10%	23/11
<u>Poster assessment</u>	25%	26/10
<u>Peer review</u>	5%	08/11

Textbook reading/questions

Due: **Sunday after each OCS**

Weighting: **20%**

You will be required to read the relevant section/s of the textbook for each topic (11 in total), complete a series of questions and submit them online for marking. Each submission is worth 2%, up to a maximum of 20%.

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

Science skills quiz

Due: **17/08**

Weighting: **5%**

Online quiz. 10 questions, 60 mins. The quiz will test your ability in various science skills eg. referencing, plagiarism, basic writing, library searches. You have 3 attempts, and your highest score will be recorded.

On successful completion you will be able to:

- Understand and use correct biological terminology

Quiz 1

Due: **21/09**

Weighting: **20%**

90-min quiz compiled of 120 marks and completed in iLearn. Will test your knowledge of the animal reproduction course content (lecture 4-18).

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)

Quiz 2

Due: **02/11**

Weighting: **15%**

67-min quiz is compiled of 90 marks and completed in iLearn. Will test your knowledge of the human reproduction course content (lectures 19-30).

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)

Quiz 3

Due: **23/11**

Weighting: **10%**

45-min quiz compiled of 60 marks and completed in iLearn. Will test your knowledge of the plant reproduction and guest lecture course content (lectures 31-39).

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)

Poster assessment

Due: **26/10**

Weighting: **25%**

Based on a real data set, the idea is to take on the role of the researcher and present the research findings as if they are your own. There are three study species to choose from, and the assessment is done in pairs.

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 pairs to create a poster that succinctly summarises information on a sexual selection topic

Peer review

Due: **08/11**

Weighting: **5%**

You will be required to assess five other students' posters, and your ability to review will be graded. This is done at the on-campus poster session, and attendance is mandatory.

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
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Delivery and Resources

CLASSES

Timetable

Lectures: Three lectures per week, all available online in iLearn

Lecture 1	Tuesday 11am-12pm	X5B 100 (T1)
Lecture 2	Tuesday 4pm-5pm	X5B 100 (T1)
Lecture 3	Thursday 9am-11am	X5B 100 (T1)

Tutorials:

OCS1	Sunday Sep 14, 9am-2pm	E7B Mason
OCS2	Saturday Nov 8, 9am-1pm	E7B Mason

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 (~\$80) 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 associated readings and questions are taken directly from this book. There are also many copies held in the reserve section of the library. The second and third editions are both suitable for this unit.

Software

The poster file must be created in PowerPoint, Keynote or Open Office only, so please make sure you own or have access to one of these software programs. You are also expected to create graphs for your poster presentation, so you should own or have access to Excel or another similar program.

UNIT WEBPAGE AND TECHNOLOGY USED AND REQUIRED

Website

iLearn <http://ilearn.mq.edu.au> 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.

You are expected 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/submitting assessment tasks (*the online quizzes require a stable/fast internet connection*);
- 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).

WHAT HAS CHANGED?

There is no longer a final exam - instead there are three online quizzes. The tutorial format has been changed slightly so that students are able to discuss the set questions before they submit them for assessment. The poster is now done in pairs..

Unit Schedule

Lecture	Week	Lecturer	Broad topic	Specific topic
1	1	Kate B	Intro	Unit outline
2	1	Kate B	Intro	Assessment
3	1	Kate B	Intro	Evolution
4	2	Kate B	Animal	Why have sex? ^{T1}
5	2	Kate B	Animal	Intro to animal reproduction

6	2	Kate B	Animal	Animal mating systems ^{T2}
7	3	Kate B	Animal	Sexual selection & sex roles ^{T3}
8	3	Kate B	Animal	Mate competition
9	3	Kate B	Animal	Mate choice
10	4	Kate B	Animal	Sexual signals I ^{T4}
11	4	Anne W	Animal	Sexual signals II
12	4	Kate B	Animal	Sexual signals III
13	5	Kate B	Animal	Multiple mating & genitalia
14	5	Kate B	Animal	Sperm competition ^{T5}
15	5	Kate B	Animal	Cryptic male & female choice ^{T5}
16	6	Kate B	Animal	Sexual conflict & SAC ^{T6}
17	6	Kate B	Animal	Sexual cannibalism
18	6	Malin A	Animal	Current views on sex roles
19	7	Mike G	Human	Sex determination
20	7	Mike G	Human	Gonad development ^{T7}
21	7	Mike G	Human	Development of human genitalia ^{T7}
22	8	Mike G	Human	Hormones, cycles, puberty, pregnancy
23	8	Mike G	Human	Gametes, fertilisation, contraception
24	8	Mike G	Human	Sexually transmitted infections ^{T8}
25	9	Mike G	Human	Love, neurobiology and orgasm ^{T9}
26	9	Mike G	Human	Human mate choice
27	9	Vince R	Human	MHC and MCC
28	10	Andy B	Human	Sexual diversity I ^{T10}

29	10	Andy B	Human	Sexual diversity II
30	10	Andy B	Human	Sexual diversity III
31	11	Brian A	Plant	Plant reproduction I ^{T11}
32	11	Brian A	Plant	Plant reproduction II
33	11	Julia C	Plant	Sexual deception in orchids
34	12		Guest	
35	12		Guest	
36	12	Kate B	Internal Poster session	Not recorded
37	13		Guest	
38	13		Guest	
39	13		Guest	

OCS SCHEDULE

OCS1 - Discussion of topics 1-6 (optional, not recorded), Poster assessment details (optional, recorded)

OCS2 - Discussion of topics 7-11 (optional, not recorded), Poster session & peer review (compulsory)

	Textbook Topic	OCS
T1	Why have sex?	1
T2	Animal Mating Systems	1
T3	Sexual Selection	1
T4	Sexual Signals	1
T5	Sperm Competition	1

T6	Sexual Conflict	1
T7	Human Reproductive System	2
T8	Sexually Transmitted Infections	2
T9	Sexual Arousal	2
T10	Sexual Orientation	2
T11	Plant Reproduction	2

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://mq.edu.au/policy/docs/academic_honesty/policy.html

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

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

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

Grievance Management Policy http://mq.edu.au/policy/docs/grievance_management/policy.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

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

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/support/student_conduct/

Extensions and penalties

10% of the mark allocated for each assignment will be deducted per day that any work is

submitted late. Only a medical certificate or a letter with appropriate supporting documents outlining other serious, extenuating circumstances can be used to submit an assignment after the due date without penalty. All applications for special consideration or extension must be sought *before the due date* unless this is absolutely impossible (in which case you have 3 days from the due date). All applications for extensions of deadlines must be submitted to the unit convenor.

Plagiarism

Plagiarism involves using the work of another person and presenting it as one's own. Copying out part of any document, audio-visual material or computer-based material, is only acceptable if you use quotation marks, and you must still acknowledge the source of the information (you should always try and restate the information in your own words though, because you will be marked down for use of quotations).

Any of the following acts constitutes plagiarism unless the source of each quotation or piece of borrowed material is clearly acknowledged:

- using or extracting another person's concepts, experimental results, or conclusions
- summarising another person's work
- submitting substantially the same final version of any material as another student in an assignment where there was collaborative preparatory work
- submitting the same or substantially the same piece of work for two different tasks (self-plagiarism)

A full outline of the revised University Policy on plagiarism can be found on the official website at http://www.mq.edu.au/policy/docs/academic_honesty/policy.html. The website includes a general discussion of plagiarism, definitions, examples drawn from concrete cases, procedures that will be followed by the University in cases of plagiarism, and recommended penalties. Students are expected to familiarise themselves with the website.

Depending on the level of plagiarism, penalties range from a loss of marks to awarding of a zero for the assessment. A note will be added to the student's university file, and particularly extreme cases will be reported to a Faculty disciplinary committee.

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- summarising another person's work
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Depending on the level of plagiarism, penalties range from a loss of marks to awarding of a zero for the assessment. A note will be added to the student's university file, and particularly extreme cases will be reported to a Faculty disciplinary committee.

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 improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

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

IT Help

For help with University computer systems and technology, visit <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.

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 outcome

- Read and understand scientific papers in the sexual selection literature

Assessment tasks

- Textbook reading/questions
- Poster assessment
- Peer review

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

- 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 pairs to create a poster that succinctly summarises information on a sexual selection topic

Assessment tasks

- Textbook reading/questions

- Poster assessment
- Peer review

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 pairs to create a poster that succinctly summarises information on a sexual selection topic

Assessment tasks

- Textbook reading/questions
- Science skills quiz
- Quiz 1
- Quiz 2
- Quiz 3
- Poster assessment
- Peer review

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

- 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 pairs to create a poster that succinctly summarises information on a sexual selection topic

Assessment tasks

- Textbook reading/questions
- Quiz 1
- Quiz 2
- Quiz 3
- Poster assessment
- Peer review

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
- Read and understand scientific papers in the sexual selection literature
- Work in pairs to create a poster that succinctly summarises information on a sexual selection topic

Assessment tasks

- Textbook reading/questions
- Quiz 1
- Quiz 2
- Quiz 3
- Poster assessment
- Peer review

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 pairs to create a poster that succinctly summarises information on a sexual selection topic

Assessment tasks

- Textbook reading/questions
- Poster assessment

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 pairs to create a poster that succinctly summarises information on a sexual selection topic

Assessment tasks

- Textbook reading/questions
- Science skills quiz
- Poster assessment

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

- 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

Assessment tasks

- Textbook reading/questions
- Poster assessment
- Peer review

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

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

Assessment tasks

- Textbook reading/questions
- Poster assessment
- Peer review