



# BIOL260

## Science of Sex

S3 External 2014

*Dept of Biological Sciences*

## Contents

|                                      |    |
|--------------------------------------|----|
| <u>General Information</u>           | 2  |
| <u>Learning Outcomes</u>             | 2  |
| <u>Assessment Tasks</u>              | 3  |
| <u>Delivery and Resources</u>        | 6  |
| <u>Unit Schedule</u>                 | 7  |
| <u>Policies and Procedures</u>       | 10 |
| <u>Graduate Capabilities</u>         | 12 |
| <u>Changes since First Published</u> | 17 |

### Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

## General Information

Unit convenor and teaching staff

Unit Convenor

Kate Barry

[kate.barry@mq.edu.au](mailto:kate.barry@mq.edu.au)

Contact via [kate.barry@mq.edu.au](mailto:kate.barry@mq.edu.au)

E8B111

Tutor/Marker

Anu Jayaweera

[anu.jayaweera@mq.edu.au](mailto:anu.jayaweera@mq.edu.au)

Contact via [anu.jayaweera@mq.edu.au](mailto:anu.jayaweera@mq.edu.au)

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                   |
|-----------------------------|-----------|-----------------------|
| Peer review                 | 5%        | 23/01                 |
| Quiz 1                      | 0%        | 02/01                 |
| Textbook readings/questions | 22%       | Sunday after each OCS |
| Quizzes                     | 48%       | 30/01                 |
| Poster assessment           | 25%       | 16/01                 |

### Peer review

Due: **23/01**

Weighting: **5%**

You will be required to assess five other students' posters, and your ability to review will be graded.

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

## Quiz 1

Due: **02/01**

Weighting: **0%**

Compiled of 10 questions and completed in iLearn. A variety of question types are included, for example multiple choice, true/false, short answer matching. The quiz will test your general science skills knowledge eg. referencing, plagiarism, basic science communication, library searches. You have unlimited attempts at this quiz.

On successful completion you will be able to:

- Understand and use correct biological terminology
- Read and understand scientific papers in the sexual selection literature

## Textbook readings/questions

Due: **Sunday after each OCS**

Weighting: **22%**

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 22%.

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

## Quizzes

Due: **30/01**

Weighting: **48%**

25-min quizzes compiled of 26 marks each and completed in iLearn. Will test your knowledge of associated lecture content.

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: **16/01**

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 two 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

## Delivery and Resources

### CLASSES

#### Timetable

Lectures: Available online at Echo in iLearn

OnCampus Sessions:

|      |                          |           |
|------|--------------------------|-----------|
| OCS1 | Sunday Dec 21, 9am-2pm   | E7B Mason |
| OCS2 | Saturday Jan 24, 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.mheducation.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™ is a web-based computer mediated communication package and can be accessed by most web browsers from inside or outside the University. You will have access to iLearn from 24<sup>th</sup> Nov 2014. iLearn and student email will be the principle methods of communication in this unit, so you should be checking each of them regularly (every 3 days at absolute minimum, every day is preferable). 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](mailto: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 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 | Lecturer | Broad topic | Specific topic                             |
|---------|----------|-------------|--|
| 1       | Kate B   | Intro       | Unit outline                               |
| 2       | Kate B   | Intro       | Assessment                                 |
| 3       | Kate B   | Intro       | Evolution                                  |
| 4       | Kate B   | Animal      | Why have sex? <sup>T1</sup>                |
| 5       | Kate B   | Animal      | Intro to animal reproduction               |
| 6       | Kate B   | Animal      | Animal mating systems <sup>T2</sup>        |
| 7       | Kate B   | Animal      | Sexual selection & sex roles <sup>T3</sup> |
| 8       | Kate B   | Animal      | Mate competition                           |
| 9       | Kate B   | Animal      | Mate choice                                |

|    |         |        |   |
|----|---------|--------|---|
| 10 | Anne W  | Animal | Sexual signals I <sup>T4</sup>                |
| 11 | Kate B  | Animal | Sexual signals II                             |
| 12 | Kate B  | Animal | Sexual signals III                            |
| 13 | Kate B  | Animal | Multiple mating                               |
| 14 | Kate B  | Animal | Sperm competition <sup>T5</sup>               |
| 15 | Kate B  | Animal | Cryptic male & female choice <sup>T5</sup>    |
| 16 | Kate B  | Animal | Genitalia                                     |
| 17 | Kate B  | Animal | Sexual conflict & SAC <sup>T6</sup>           |
| 18 | Malin A | Animal | Current views on sex roles                    |
| 19 | Mike G  | Human  | Sex determination                             |
| 20 | Mike G  | Human  | Gonad development <sup>T7</sup>               |
| 21 | Mike G  | Human  | Development of human genitalia <sup>T7</sup>  |
| 22 | Mike G  | Human  | Hormones, cycles, puberty, pregnancy          |
| 23 | Mike G  | Human  | Gametes, fertilisation, contraception         |
| 24 | Mike G  | Human  | Sexually transmitted infections <sup>T8</sup> |
| 25 | Mike G  | Human  | Love, neurobiology and orgasm <sup>T9</sup>   |
| 26 | Mike G  | Human  | Human mate choice                             |
| 27 | Vince R | Human  | MHC and MCC                                   |
| 28 | Andy B  | Human  | Sexual diversity I <sup>T10</sup>             |
| 29 | Andy B  | Human  | Sexual diversity II                           |
| 30 | Andy B  | Human  | Sexual diversity III                          |
| 31 | Brian A | Plant  | Plant reproduction I <sup>T11</sup>           |
| 32 | Brian A | Plant  | Plant reproduction II                         |



|    |            |       |                             |
|----|------------|-------|-----------------------------|
| 33 | Julia C    | Plant | Sexual deception in orchids |
| 34 | Marianne P | Guest | Sex in social insects       |
| 35 | Jane W     | Guest | Sex in the sea              |
| 36 | Simon G    | Guest | Sex in the bird world       |
| 37 | Phil T     | Guest | Sex in the orchard          |
| 38 | Martin W   | Guest | Sex in the lizard world     |

## OCS SCHEDULE

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

OCS2 - Discussion of topics 7-11 (not recorded), Poster session

|     | 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](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](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](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/](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 [ask.mq.edu.au](mailto:ask.mq.edu.au) and an email advising the unit convenor of the submission is also requested.

### 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 University Policy on plagiarism can be found on the official website at [http://www.mq.edu.au/policy/docs/academic\\_honesty/policy.html](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.

## 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](http://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](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help>

p/.

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

- Peer review
- Textbook readings/questions
- Poster assessment

### 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

- Peer review
- Quiz 1
- Textbook readings/questions
- Quizzes
- Poster assessment

## 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

- Peer review
- Quiz 1
- Textbook readings/questions
- Quizzes
- Poster assessment

## 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

- Peer review
- Quiz 1
- Textbook readings/questions
- Quizzes
- Poster assessment

## 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**

- Peer review
- Textbook readings/questions
- Quizzes
- Poster assessment

## **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**

- Peer review
- Textbook readings/questions
- Quizzes
- 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**

- Peer review
- Quiz 1
- Textbook readings/questions
- Quizzes
- 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

- Peer review
- Textbook readings/questions
- Quizzes
- Poster assessment

## 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

- Peer review
- Textbook readings/questions
- Quizzes
- Poster assessment

## Changes since First Published

| Date       | Description  |
|------------|--|
| 11/11/2014 | Schedule changes and assessments have changed (from 3 quizzes to weekly quizzes) |