



# PHIX2060

## Bioethics, Genes and Biotechnology

Session 2, Online-flexible 2022

*Department of Philosophy*

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## General Information

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By appointment

Credit points

10

Prerequisites

40cp at 1000 level or above

Corequisites

Co-badged status

### Unit description

This unit introduces students to a selection of the most pressing ethical questions and concerns raised by current and recent developments in the so-called 'biotech revolution', especially in the sphere of genetic technology. The first section of the unit provides an introduction to ethical reasoning, to issues of social justice and to the relationship between social values, scientific enquiry and research ethics in the context of biotechnology. The second section focuses on the ethics of gene technology in the spheres of human medicine and reproduction, including: genetic screening/testing; gene editing and therapies; genetic enhancement; and human reproductive cloning. In the third section we explore the impact of biotechnologies on other aspects of human, non-human animal and environmental welfare including: genetic engineering of plants and animals (GMOs); biofortification of food; bio-prospecting; and commercial exploitation of human genetic material. The unit is an ethics unit, not a science unit, and prior scientific knowledge is not required.

## Important Academic Dates

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

## Learning Outcomes

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

**ULO1:** demonstrate a sound understanding of the major ethical issues posed by specific biotechnological advances.

**ULO2:** analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literature.

**ULO3:** develop and apply skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences

**ULO4:** construct sound arguments in support of your own ethical positions, judgements and values.

**ULO5:** Express in written communication with improved clarity of thought, expression, and argumentation.

## General Assessment Information

**Extensions:** Extensions must be sought via the MQ Special Consideration application procedure, in advance of the due date. Extensions will only be granted for medical or equivalent reasons, supported by documentation (medical certificate or equivalent). Please note that workload in other units, and employment outside of university, will not be accepted as grounds for an extension.

**LATE SUBMISSION POLICY:****Late Assessment Submission Penalty**

Unless a Special Consideration request has been submitted and approved, **a 5% penalty (of the total possible mark) will be applied each day a written assessment is not submitted, up until the 7th day (including weekends).** After the 7th day, a mark of '0' (zero) will be awarded even if the assessment is submitted. Submission time for all written assessments is set at 11.55pm. A 1-hour grace period is provided to students who experience a technical issue.

This late penalty will apply to non-timed sensitive assessment (incl essays, reports, posters, portfolios, journals, recordings etc). **Late submission of time sensitive tasks** (such as tests/exams, performance assessments/presentations, scheduled practical assessments/labs etc) **will only be addressed by the unit convenor in a Special consideration application. Special Consideration outcome may result in a new question or topic.**

## Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Online intro and film reflection</u>	10%	No	11.55pm Fri 5 Aug (end of Week 2)
<u>Online quizzes</u>	20%	No	11.55pm on Sunday of each week (Weeks 3-12 only)
<u>Essay</u>	30%	No	EITHER 11.55pm Fri 16 Sept OR 11.55pm Fri 4 Nov
<u>Active Participation and Engagement</u>	15%	No	Continuous
<u>Online examination</u>	25%	No	University Examination Period

### Online intro and film reflection

Assessment Type <sup>1</sup>: Participatory task

Indicative Time on Task <sup>2</sup>: 2 hours

Due: **11.55pm Fri 5 Aug (end of Week 2)**

Weighting: **10%**

Students introduce themselves online and post a brief reflection on the film in Lecture 1

On successful completion you will be able to:

- demonstrate a sound understanding of the major ethical issues posed by specific

biotechnological advances.

- develop and apply skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences
- Express in written communication with improved clarity of thought, expression, and argumentation.

## Online quizzes

Assessment Type <sup>1</sup>: Quiz/Test

Indicative Time on Task <sup>2</sup>: 20 hours

Due: **11.55pm on Sunday of each week (Weeks 3-12 only)**

Weighting: **20%**

10 online quizzes

On successful completion you will be able to:

- demonstrate a sound understanding of the major ethical issues posed by specific biotechnological advances.
- analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literature.
- Express in written communication with improved clarity of thought, expression, and argumentation.

## Essay

Assessment Type <sup>1</sup>: Essay

Indicative Time on Task <sup>2</sup>: 30 hours

Due: **EITHER 11.55pm Fri 16 Sept OR 11.55pm Fri 4 Nov**

Weighting: **30%**

Students complete a 1500 word argumentative essay.

On successful completion you will be able to:

- demonstrate a sound understanding of the major ethical issues posed by specific biotechnological advances.
- analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literature.

- develop and apply skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences
- construct sound arguments in support of your own ethical positions, judgements and values.
- Express in written communication with improved clarity of thought, expression, and argumentation.

## Active Participation and Engagement

Assessment Type <sup>1</sup>: Participatory task

Indicative Time on Task <sup>2</sup>: 15 hours

Due: **Continuous**

Weighting: **15%**

Students actively participate in 70% of online discussion boards demonstrating familiarity with readings and contributing actively to discussions.

On successful completion you will be able to:

- demonstrate a sound understanding of the major ethical issues posed by specific biotechnological advances.
- develop and apply skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences
- construct sound arguments in support of your own ethical positions, judgements and values.
- Express in written communication with improved clarity of thought, expression, and argumentation.

## Online examination

Assessment Type <sup>1</sup>: Examination

Indicative Time on Task <sup>2</sup>: 25 hours

Due: **University Examination Period**

Weighting: **25%**

Students complete a 1.5hr timed online examination during the Examinations period.

On successful completion you will be able to:

- demonstrate a sound understanding of the major ethical issues posed by specific biotechnological advances.
- analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literature.
- develop and apply skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences
- construct sound arguments in support of your own ethical positions, judgements and values.
- Express in written communication with improved clarity of thought, expression, and argumentation.

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<sup>1</sup> If you need help with your assignment, please contact:

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

<sup>2</sup> Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

## Delivery and Resources

**NOTE:** It is expected that students will attend/listen to **ALL LECTURES** and will **complete ALL ASSESSMENT COMPONENTS** in this unit. You do not need to have passed each assessment to pass the unit, but it is expected that all assessments are attempted. The final examination will cover all sections of the unit.

**General Submission Procedure:** Essays and Essay Self-Assessments must be submitted via TurnItIn at the correct link provided on the Unit iLearn site. You may only make ONE submission, and you will NOT be able to view your TurnItIn match similarity report for your assessment, before you submit it. You must ensure that you use the correct link for your assessment, and that you upload the correct final version of your assessment. No re-submissions permitted.

### **DELIVERY:**

Lectures in this unit will be in-person (on-campus) and available online via Echo360 and the unit iLearn site.

Tutorials/STGAs will be either on campus or on zoom.

**READING:** All required readings are available in Leganto on the unit iLearn site. Supplementary reading is required for Essays. Suggestions for Supplementary Reading will be provided in lectures and on iLearn.

## Unit Schedule

### SECTION I: (WEEKS 1–5) FRAMEWORKS FOR AN ETHICS OF BIOTECHNOLOGY

**WEEK 1 (beginning July 25): What is ethics? What is ethical reasoning? (A/Prof Lotz)**

*Required reading:*

Cohen, S.: 'What is Ethics?

**NOTE: NO TUTORIALS/STGAs in Week 1.**

**WEEK 2 (beginning Aug 1): How can ethical theories help us think about bioethics and biotechnology? (A/Prof Lotz)**

**Part I: Consequentialist and Autonomy-based ethics.**

*Required reading:*

Thomson, A.: 'Moral Principles and Moral Theories'.

Grace, D. and Cohen, S.: Chapter 1 pp.15-20, sections on 'Consequentialism' and 'Nonconsequentialism' in *Business Ethics: Problems and Cases*.

**NOTE: Online Discussion Exercise due: by 11.55pm Fri 5 August.**

**WEEK 3 (beginning Aug 8): How can ethical theories help us think about bioethics and biotechnology? (A/Prof Lotz)**

**Part II: Rights-based, Virtue-based, and Care-based ethics.**

*Required reading:*

Rachels, J. Chapter 11, 'Feminism and the Ethics of Care', pp. 133-142.

Grace, D and Cohen, S.: Chapter 1 pp.21-24, section on 'Virtue Ethics' in *Business Ethics: Problems and Cases*.

**WEEK 4 (beginning Aug 15): Does biotech have lessons to learn from eugenic history? (A/Prof Lotz)**

*Required reading:*

Wikler, D. and Barondess, J. 'Bioethics and Anti-Bioethics in Light of Nazi Medicine: What Must We Remember?'

Buchanan, A. et al: Excerpt from 'Eugenics and Its Shadow'

*Optional additional reading:*



Buchanan, A. et al: Excerpt from 'Genes, Justice and Human Nature.'

**WEEK 5 (beginning Aug 22): How do we do ethical science and research? (Prof Lipworth)**

*Required reading:*

Emanuel, E et al. 'What Makes Clinical Research Ethical?' *Journal of the American Medical Association (AMA)*, Vol. 283, No. 2 May24/31: 2701-2711.

Glass, B. 'The Ethical Basis of Science.'

**SECTION II (WEEKS 6–10): BIOTECHNOLOGY IN HUMAN HEALTH AND REPRODUCTION**

**WEEK 6 (beginning Aug 29): Human embryo research – Do human embryonic stem cells have moral status? What about synthetic embryos [SHEEFs]? (A/Prof Lotz)**

*Required reading:*

Harris, J. 'Stem Cells, Sex and Procreation'

Pera, M. et al. 'What if stem cells turn into embryos in a dish?'

*Optional additional reading:*

Aach J. et al. 'Addressing the ethical issues raised by synthetic human entities with embryo like features'. *eLife* 2017;6: e20674. DOI: 10.7554/eLife.20674

**WEEK 7 (beginning Sept 5): Would anything be wrong with human cloning for procreative purposes? (A/Prof Lotz)**

*Required reading:*

Brock, D. 'Cloning Human Beings: An Assessment of the Ethical Issues Pro and Con.'

*Optional additional reading:*

Holm, S. 'A Life in the Shadow: One Reason Why We Should Not Clone Human Beings.'

Kass, L. 'The Wisdom of Repugnance.'

***MONDAY 12 SEPT – FRIDAY 24 SEPT (inclusive): MID SEMESTER BREAK***

**\* ESSAY OPTION 1 DEADLINE: 11.55pm Friday 16 September**

**WEEK 8 (beginning Sept 26): Genetic screening, testing and diagnosis – Is it always**

### **better to know? (Prof Lipworth)**

*Required reading:*

Clarke, A. 'Genetic Screening and Counselling.'

Steinbock, B. 'Preimplantation Genetic Diagnosis and Embryo Selection.'

### **WEEK 9 (beginning Oct 3): Should we edit the human genome for future generations? (Prof Lipworth)**

**NB:** Monday Oct 3 is a public holiday. There will be **no on-campus lecture or tutorials/STGAs this week**. Instead this week's lecture is recorded and available in Echo360. On-campus lectures resume in Week 10. Please remember to listen to the lecture this week!

*Required reading:*

Chadwick, R. 'Gene Therapy.'

Smolensky, S. 'CRISPR/Cas9 and Germline Modification: New Difficulties in Obtaining Informed Consent'

*Optional additional reading:*

Elias, S. and Annas, G.: 'Somatic and Germline Gene Therapy.'

Warren, MA. 'The Moral Status of the Gene.'

### **WEEK 10 (beginning Oct 10): If genetic therapy is ok, what about genetic enhancement?(Prof Lipworth)**

*Required reading:*

Singer, P. 'Parental Choice and Human Improvement'.

Ter Meulen, R *et al*: 'Ethical Issues of Enhancement Technologies'.

*Optional additional reading:*

Resnik, D and Vorhaus, D. 'Genetic Modification and Genetic Determinism'.

## **SECTION III (WEEKS 11-12): BIOTECHNOLOGY IN WIDER CONTEXT – COMMERCE AND FOOD**

### **WEEK 11 (beginning Oct 17): Should human genes be privately ownable and commercially exploitable? (Prof Lipworth)**

*Required reading:*

Chadwick, R. and Hedgecoe, A. 'Commercial Exploitation of the Human Genome'

*Optional additional reading:*

Munzer, S. 'Property, Patents and Genetic Material'

## **WEEK 12 (Oct 24): Synthetic and food biotechnology: Solving environmental and food scarcity problems? (Prof Lipworth)**

*Required reading:*

Scott, D. 'The Technological Fix Criticisms and the Agricultural Biotechnology Debate'

Rogers, W. 'Ethical Issues in Synthetic Biology: A Commentary'

*Optional additional reading:*

Thompson, P. 'Ethical Issues in Food Biotechnology'

**\* ESSAY OPTION 2 DEADLINE: 11.55pm Friday 4 November**

## **Policies and Procedures**

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

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

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

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

## **Student Code of Conduct**

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

## **Results**

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released

directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

## Student Support

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

## The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the Academic Integrity Module](#)

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

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

## Student Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support](#) including information about finances, tenancy and legal issues

## Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

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

## Changes from Previous Offering

Changes to topics and readings. Removal of timed online test, replaced by 10 online quizzes.