



CBMS792

Research Topic: Chemical Biology

S2 Evening 2014

Chemistry and Biomolecular Sciences

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General Information

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Credit points

4

Prerequisites

Admission to MRes

Corequisites

Co-badged status

Unit description

This unit comprises study of an advanced topic in chemistry and biomolecular sciences. The area studied each year is tailored to the current student cohort. Emphasis is put on both the understanding of advanced concepts as well as their application in problem-solving and/or research environments. Chemical biology is the science of small molecules in the context of living systems. This course focuses on current topics in chemical biology, particularly experiments in which small molecules are used to probe or control biological systems in novel ways or manipulate biological systems. As the goal of the course is to familiarise students with innovative recent experimental approaches and to stimulate them to explore the boundaries of chemistry and biology, the unit will be taught extensively through the primary literature.

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:

be able to compare and contrast chemical genomics and proteomics methods

- Be able to compare and contrast the main chemical tools used in cell biology with reference to their chemical and physical basis
- Be able to write out the mechanism of action of major classes of small molecules in modulating protein pathways
- Be able to apply chemical rationale for the design, synthesis, and application of small molecules for the manipulation of biological systems
- Be able to understand the scientific language and concepts in the primary literature relevant to chemical biology.
- Be able to write out the mechanism for reactions in primary and secondary metabolism

Assessment Tasks

Name	Weighting	Due
Final Exam	50%	Week 15
assignments	40%	various
oral presentation	10%	week 9 and 13

Final Exam

Due: **Week 15**

Weighting: **50%**

3 hr plus 10 minutes reading time

On successful completion you will be able to:

- be able to compare and contrast chemical genomics and proteomics methods
- • Be able to compare and contrast the main chemical tools used in cell biology with reference to their chemical and physical basis
- • Be able to write out the mechanism of action of major classes of small molecules in modulating protein pathways
- • Be able to write out the mechanism for reactions in primary and secondary metabolism

assignments

Due: **various**

Weighting: **40%**

8 written assignments worth 5% each

On successful completion you will be able to:

- be able to compare and contrast chemical genomics and proteomics methods
- • Be able to compare and contrast the main chemical tools used in cell biology with reference to their chemical and physical basis
- • Be able to write out the mechanism of action of major classes of small molecules in modulating protein pathways
- • Be able to understand the scientific language and concepts in the primary literature relevant to chemical biology.
- • Be able to write out the mechanism for reactions in primary and secondary metabolism

oral presentation

Due: **week 9 and 13**

Weighting: **10%**

two oral presentations worth 5% each

On successful completion you will be able to:

- be able to compare and contrast chemical genomics and proteomics methods
- • Be able to compare and contrast the main chemical tools used in cell biology with reference to their chemical and physical basis
- • Be able to apply chemical rationale for the design, synthesis, and application of small molecules for the manipulation of biological systems

- Be able to understand the scientific language and concepts in the primary literature relevant to chemical biology.

Delivery and Resources

lectures

tutorials

iLearn

Unit Schedule

Lecture 5-7PM Wednesdays from week 1-13

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/

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

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Learning outcomes

- be able to compare and contrast chemical genomics and proteomics methods
- • Be able to compare and contrast the main chemical tools used in cell biology with reference to their chemical and physical basis
- • Be able to write out the mechanism of action of major classes of small molecules in modulating protein pathways
- • Be able to write out the mechanism for reactions in primary and secondary metabolism

Assessment tasks

- Final Exam
- assignments
- oral presentation

PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- be able to compare and contrast chemical genomics and proteomics methods
- • Be able to compare and contrast the main chemical tools used in cell biology with reference to their chemical and physical basis
- • Be able to apply chemical rationale for the design, synthesis, and application of small molecules for the manipulation of biological systems

Assessment tasks

- Final Exam
- assignments
- oral presentation

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- • Be able to write out the mechanism of action of major classes of small molecules in modulating protein pathways
- • Be able to apply chemical rationale for the design, synthesis, and application of small molecules for the manipulation of biological systems
- • Be able to understand the scientific language and concepts in the primary literature relevant to chemical biology.

Assessment tasks

- Final Exam
- assignments

- oral presentation

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Learning outcomes

- be able to compare and contrast chemical genomics and proteomics methods
- • Be able to compare and contrast the main chemical tools used in cell biology with reference to their chemical and physical basis
- • Be able to understand the scientific language and concepts in the primary literature relevant to chemical biology.

Assessment tasks

- Final Exam
- assignments
- oral presentation

PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

Learning outcome

- • Be able to apply chemical rationale for the design, synthesis, and application of small molecules for the manipulation of biological systems

Assessment task

- oral presentation