University of Guelph
College of Biological Science
Department of Molecular and Cellular Biology

MCB*4010 Advanced Cell Biology

Winter 2016

Instructor:
Dr. Marc Coppolino, Department of Molecular and Cellular Biology
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Office hours: Monday and Wednesday, 1:00-2:30pm; or by appointment

Course schedule:
Monday, Wednesday, Friday 10:30 – 11:20 AM (January 11th to April 8th, 2016)
Macdonald Stewart Hall, room 209

Synopsis:
This course will examine the cellular and molecular biology of signal transduction and how this influences eukaryotic cell function. The major theme is an understanding of how cells receive, transduce and respond to environmental stimuli. Topics will include regulation of biochemical signalling, intracellular trafficking, cell-ECM interactions, as well as the consequences of deregulated signal transduction for disease, primarily cancer.
[0.5 credit] *Prerequisite:* MCB*2050.

Course Resources:
Lectures and other resources for this course will be available on the MCB*4010 Courselink web page:

MCB*4010 W16 (01) Advanced Cell Biology

A textbook is not required for this course. Material will be presented in lectures and selected research papers. Supplementary reading material is also available on reserve in the Library:

The Biology of Cancer by Robert Weinberg
Molecular Cell Biology 5th Edition by Harvey Lodish

Learning Outcomes:
There will be a series of lectures on the indicated topics of signal transduction. Much of the material discussed will derived from recently published review articles and original research papers.

By the end of this course, successful students will be able to:

1. Describe the molecular components, and mechanisms that regulate them, of signal transduction pathways responsible for controlling cell function, proliferation, and death.
2. Explain how mutations in genes controlling signal transduction pathways can contribute to altered cellular function and the development of diseases, including cancers.
3. Describe the methods commonly used by cell biologists to study intracellular signalling and the influence it has on cellular processes.
4. Evaluate the methods used in cell biology, and the interpretation of experimental outcomes, in the context of recent research in the field.
5. Critically analyse the findings published in the current literature in cell biology, and assess the significance and implications of the studies.
6. Communicate, effectively, their understanding of recent research in cell biology in written form.

Course Content:

(i) General Overview:
Lectures will cover 5 main topics: (i) Signal Transduction, (ii) Protein Targeting and Intracellular Traffic, (iii) Cell Adhesion, Cytoskeleton and Extracellular Matrix, (iv) Exosomes, and (v) Cell Biology of Cancer. Lecture material will be largely centred on findings published in the current literature. The midterm exams and final exam will cover material presented in lecture and in discussed papers.

(ii) Schedule of Topics

- Signal Transduction (weeks 1-4)
- Protein Targeting and Intracellular Traffic (weeks 5-6)
- Cell Adhesion, Cytoskeleton and Extracellular Matrix (week 7-8)
- Exosomes (week 9)
- Cell Biology of Cancer (weeks 10-12)

Grade Assessment

The learning outcomes, described above, will be assessed as follows:

Midterm examination #1	Wed. Feb 3	25%
Midterm examination #2	Wed. Mar. 9	30%
Final examination		45%

Important Dates

- Jan. 11 (Mon.): First lecture, 10:30am
- Feb. 3 (Wed.): Midterm exam #1, 10:30am
- Feb. 15-19 (Mon. – Fri.): Winter break, NO CLASSES
- Mar. 9 (Wed.): Midterm exam #2, 10:30am
- Mar. 11 (Fri.): Course drop deadline (40th class day)
- Mar. 25 (Fri): Holiday, NO CLASS
- Apr. 19 (Tues.): Final exam, , location to be determined

Course and University Policies

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact, and be prepared to provide supporting documentation. See the undergraduate calendar for information on regulations and procedures for Academic Consideration: Undergraduate Calendar - Academic Consideration

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Centre for Students with Disabilities as soon as possible.

For more information, contact CSD at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website: Centre for Students with Disabilities

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic

offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:
Undergraduate Calendar - Academic Misconduct

E-mail Communication

As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

Drop Date

The last date to drop one-semester courses, without academic penalty, is the 40th class day. To confirm the actual date please see the schedule of dates in the Undergraduate Calendar. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar: Undergraduate Calendar - Dropping Courses

Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or electronically copied (including the use of a cell phone camera) without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Grading

The instructor and a teaching assistant employed by the department of Molecular and Cellular Biology will mark the midterms and final exams. The teaching assistant is a graduate student in the department who is familiar with the content of the course. Students who do not write one of the midterm exams because of illness or compassionate reasons will have the weight of the midterm transferred to the final exam.

Campus Resources

The Academic Calendar is the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs: Academic Calendars

If you are concerned about any aspect of your academic program:

- make an appointment with a program counsellor in your degree program. B.Sc. Academic Advising or Program Counsellors

If you are struggling to succeed academically:

- There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist. The Learning Commons

If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance. Counselling Services

- Student Health Services is located on campus and is available to provide medical attention. Student Health Services

- For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations. Stress Management and High Performance Clinic

If you have a documented disability or think you may have a disability:

- The Centre for Students with Disabilities (CSD) can provide services and support for students with a documented learning or physical disability. They can also provide information about how to be tested for a learning disability. For more information, including how to register with the centre please see: Centre for Students with Disabilities