



MCB*6310 Advanced Topics in Molecular and Cellular Biology

Fall 2021

Section(s): C01

Department of Molecular and Cellular Biology

Credit Weight: 0.50

Version 1.00 - September 04, 2021

1 Course Details

1.1 Calendar Description

This course will consider fundamental cellular processes from multiple perspectives: biochemistry, cell biology, microbiology, molecular biology and genetics, and plant biology. Topics will vary from semester to semester but a multi-disciplinary approach to advanced concepts and experimental strategies will be a common theme.

1.2 Course Description

Molecular signalling mechanisms and pathways are key to understanding basic biological functions and underscore the cause of many diseases, including cancer and infection. Signalling within and between cells is a complex and refined communication tool harnessed by the immune system and invaders, and can be exploited for novel therapeutic interventions to improve global health.

In this graduate level course, we will focus on signalling mechanisms in disease with an emphasis on cancer biology and infectious diseases. We will explore a diversity of signalling cascades under different conditions, gaining an understanding of regulatory mechanisms and uncovering new biological insights. In addition, we will survey techniques used to study signalling events and we will extrapolate beyond current studies to provide ideas for future research and discovery. These goals will be achieved through scientific readings, student-led

presentations, immersive discussions, and writing exercises based on the proposal of new fundable ideas in the form of a grant review panel.

This course is intended for any graduate students in the Molecular and Cellular Biology Department curious about the interdisciplinarity of biological sciences and the future of drug discovery from multiple perspectives, providing a productive and thought-provoking learning environment.

1.3 Timetable

Classes will occur face-to-face **Thursdays at 2:30-5:20** in ROZ 107.

1.4 Final Exam

No exam.

2 Instructional Support

2.1 Instructional Support Team

Instructor: Jennifer Geddes-McAlister
Email: jgeddesm@uoguelph.ca
Office: SSC 4457
Office Hours: By appointment

Instructor: Jim Uniacke
Email: juniacke@uoguelph.ca
Telephone: 519-824-4120 x54739
Office: SSC2244
Office Hours: by appointment

3 Learning Resources

3.1 Recommended Resources

CourseLink (Website)

<https://courselink.uoguelph.ca>

Course material, news, announcements, and grades will be regularly posted to the MCB*6310 CourseLink site. You are responsible for checking the site regularly.

NCBI Pubmed (Website)

<https://pubmed.ncbi.nlm.nih.gov/>

This site will be the primary resource for the preparation of your presentation and grant proposal.

3.2 Additional Resources

Writing Resources (Other)

<https://www.lib.uoguelph.ca/writing-studying/writing-resources-workshops>

The University of Guelph Library provides an array of writing resources and workshops. Participants are encouraged to consult these resources when preparing the grant review document for this class.

4 Learning Outcomes

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1.
 - Understand the role of signalling in disease
 - Provide examples of techniques and technologies used to study signalling mechanisms
 - Identify and define similarities and differences of signalling mechanisms across diseases
 - Gain experience reading scientific papers and presenting the results and purpose to a diverse audience
 - Gain practice with scientific writing and become familiar with the grant review process
 - Improved critical thinking skills
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5 Teaching and Learning Activities

5.1 Schedule of Activities

September 9

Introduction to Signalling in Infectious Diseases and an overview of writing resources (Dr. Jennifer Geddes-McAlister).

Timeline for first and second presentations

Review Course Outline and course expectations

September 16

Introduction to Signaling in Cancer Biology and an overview of grant writing and reviewing (Dr. Jim Uniacke)

Timeline for grant review panel

Outline of grant review assignments

September 23 (Presentations in groups of 2 students)

First round of presentations - A focus on techniques and technologies in signalling

Presentation 1.1 - Signalling in Infectious Diseases (Presenter: TBA; Title: TBD)

Presentation 1.2 - Signalling in Cancer Biology (Presenter: TBA; Title: TBD)

Presentation 1.3 - Signalling in Infectious Diseases (Presenter: TBA; Title: TBD)

September 30

Presentation 1.4 - Signalling in Cancer Biology (Presenter: TBA; Title: TBD)

Presentation 1.5 - Signalling in Infectious Diseases (Presenter: TBA; Title: TBD)

Presentation 1.6 - Signalling in Cancer Biology (Presenter: TBA; Title: TBD)

October 7

Presentation 1.7 - Signalling in Infectious Diseases (Presenter: TBA; Title: TBD)

Presentation 1.8 - Signalling in Cancer Biology (Presenter: TBA; Title: TBD)

Presentation 1.9 - Signalling in Infectious Diseases (Presenter: TBA; Title: TBD)

October 14

Presentation 1.10 - Signalling in Cancer Biology (Presenter: TBA; Title: TBD)

Presentation 1.11 - Signalling in Infectious Diseases (Presenter: TBA; Title: TBD)

Presentation 1.12 - Signalling in Cancer Biology (Presenter: TBA; Title: TBD)

October 21 (Presentations in groups of 2 students)

Second round of presentations - A focus on results and applications

Presentation 2.1 - Signalling in Infectious Diseases (Presenter: TBA; Title: TBD)

Presentation 2.2 - Signalling in Cancer Biology (Presenter: TBA; Title: TBD)

Presentation 2.3 - Signalling in Infectious Diseases (Presenter: TBA; Title: TBD)

October 28

Presentation 2.4 - Signalling in Cancer Biology (Presenter: TBA; Title: TBD)

Presentation 2.5 - Signalling in infectious Diseases (Presenter: TBA; Title: TBD)

Presentation 2.6 - Signalling in Cancer Biology (Presenter: TBA; Title: TBD)

November 4

Presentation 2.7 - Signalling in Infectious Diseases (Presenter: TBA; Title: TBD)

Presentation 2.8 - Signalling in Cancer Biology (Presenter: TBA; Title: TBD)

Presentation 2.9 - Signalling in Infectious Diseases (Presenter: TBA; Title: TBD)

Individual guidance for grant writing

November 11

Presentation 2.10 - Signalling in Cancer Biology (Presenter: TBA; Title: TBD)

Presentation 2.11 - Signalling in infectious Diseases (Presenter: TBA; Title: TBD)

Presentation 2.12 - Signalling in Cancer Biology (Presenter: TBA; Title: TBD)

Individual guidance for grant writing

November 18

NO CLASS - Time provided to work on grant writing assignment

November 19*

Distribution of grants for review

November 25

Grant review panel I

December 2

Grant review panel II

Wrap-up

6 Assessments

6.1 Marking Schemes & Distributions

Tentative

1. Presentation I (slides = 20%; speech = 20%; content - 30%; leading discussion = 30%): **25%**
2. Presentation II (slides = 20%; speech = 20%; content - 30%; leading discussion = 30%): **25%**
3. Grant writing and review (content = 15%; figures and formatting = 5%; grammar and scientific style = 5%; feedback during review = 10%): **35%**
4. Overall participation: **15%** (2% available for each presentation week: 0.5 - 1% for attendance and 1-1.5% for pre-submission of 2-3 questions for the presented paper(s))

6.2 Submitting Semester Assignment

The grant writing exercise will include a 4-page grant on a topic selected from any of the presentations/papers covered in class. The grant will be submitted and distributed for feedback from your peers. A double-blind peer review process will be used. Grading will be based on content, formatting, grammar, incorporation of figures/tables, and quality of feedback.

Grants will be graded by each instructor and two peer reviewers. An average of the scores will account for 25% of the grant writing exercise grade. The remaining 10% will be based on the quality of feedback during the review process.

7 Department of Molecular and Cellular Biology

Statements

7.1 Academic Advisors

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](#)

7.2 Academic Support

If you are struggling to succeed academically:

- Learning Commons: 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. <http://www.learningcommons.uoguelph.ca/>
- Science Commons: Located in the library, the Science Commons provides support for physics, mathematic/statistics, and chemistry. Details on their hours of operations can be found at: <http://www.lib.uoguelph.ca/get-assistance/studying/chemistry-physics-help> and <http://www.lib.uoguelph.ca/get-assistance/studying/math-stats-help>

7.3 Wellness

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. <https://www.uoguelph.ca/counselling/>
- Student Health Services is located on campus and is available to provide medical attention. <https://www.uoguelph.ca/studenthealthservices/clinic>

- 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.
<http://www.selfregulationskills.ca/>

7.4 Personal information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) <http://www.e-laws.gov.on.ca/index.html>. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes.

For more information regarding the Collection, Use and Disclosure of Personal Information policies please see the Undergraduate Calendar.
(<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/intro/index.shtml>)

7.5 Course Offering Information Disclaimer

Please note that course delivery format (face-to-face vs online) is subject to change up to the first-class day depending on requirements placed on the University and its employees by public health bodies, and local, provincial and federal governments. Any changes to course format prior to the first class will be posted on WebAdvisor/Student Planning as they become available.

8 University Statements

8.1 Email Communication

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

8.2 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. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration
<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions
<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

8.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

8.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

8.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day.

For Guelph students, information can be found on the SAS website

<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website

<https://www.ridgetownc.com/services/accessibilityservices.cfm>

8.6 Academic Integrity

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 encourages academic integrity. 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.

Undergraduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

8.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

8.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

8.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

8.10 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

8.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>
- <https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.
