



# MCB\*6500 MSc Research Topics in Molecular and Cellular Biology

01

Fall 2022

Section(s): 01

Department of Molecular and Cellular Biology

Credit Weight: 1.00

Version 1.00 - August 31, 2022

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## 1 Course Details

### 1.1 Calendar Description

This mandatory two semester course emphasizes the development and refinement of the skills of scientific communication. Students submit a written thesis proposal and present a public seminar on a contemporary subject in the molecular biosciences. MCB MSc students normally complete this course within the first two semesters of their program. Students will register in each semester and receive a grade of INP (in progress) at the end of the first semester and a grade at the end of the second semester.

### 1.2 Course Description

Welcome to the graduate program in Molecular and Cellular Biology! One of the MCB graduate degree requirements is the completion of the two-semester course MCB\*6500 (for M.Sc. students). In this course, you will prepare a written research proposal related to your thesis research project and present it to the department in a seminar. These tasks will help you develop both the written and oral communication skills you will need to write and defend your thesis, as well as help you to prepare for a career in science or a science-related field upon your graduation. This document is the Course Outline for MCB\*6500 and outlines all the requirements. Please read this outline carefully. If you have any questions, please ask the Course Coordinator, Dr. Andrew Bendall.

### 1.3 Timetable

Timetable and due dates for written Research Proposals and dates of seminars will be emailed to each student. See also section 5.5 below and the Courselink

(<https://courselink.uoguelph.ca/d2l/home>) pages for MCB\*6500.

## 1.4 Final Exam

Not applicable.

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## 2 Instructional Support

### 2.1 MCB\*6500/7500 F'22 Teaching Team

**Dr. Andrew Bendall, Course Coordinator**

abendall@uoguelph.ca

**Dr. Ray Lu**

rlu@uoguelph.ca

**Ms. Jillian Cockwell, Graduate Program Assistant**

cockwelj@uoguelph.ca

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## 3 Learning Resources

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## 4 Learning Outcomes

### 4.1 Learning Outcomes

As you move from passive learning during your undergraduate studies to *active* involvement in your research field, you are going to create new knowledge and put your own ideas forward to be tested through scientific inquiry and experimentation, instead of just learning what others have done and published.

These courses are focused on the development of your *intellectual independence and your ability in discovery research*. You will learn how to study the literature, select and critically study important papers, summarize them, identify their strength and weakness, and

think about their significance. Most importantly, you will learn how to *synthesize* what you have read: that is, rather than just reading specific research papers or reviews one at a time and in isolation, you will *integrate them into a coherent whole*, making a "mental map" of how they fit together so that you can create a story to share with others. For example, you read a 2001 paper that hypothesizes that one particular gene is regulated by another; and a subsequent publication came out in 2007 that validate this hypothesis; but then a 2015 paper concluded, "No, it's not so". Finally, a recent paper published last year resolved the apparent contradiction by showing that the hypothesis is correct in yeast but is incorrect in mammals. What you have now assembled is a *narrative*: a sequence of contributions that fit together to make a story, advancing our knowledge of the subject. Making coherent sense out of these distinct facts is *integration*. Learning to do this is an important part of your maturation as a graduate student. Based on your understanding of the state of the field, you will then explain the contribution that you hope to make. Finally, in the seminar, you will convey all these ideas to your audience.

**Reading the scientific literature:** A naive reader will take everything he or she reads "for granted", as the plain truth, nothing but the truth simply because it has been published. A sophisticated reader recognizes that every author - even a scrupulously honest author - has a particular point of view, with biases, preconceptions, or misunderstandings that colour their work and that impact their interpretation of the results they obtained. Sorting out the true from the false, the brilliant from the mediocre, the innovative from the mundane - these are aspects of critical analysis. They are examples of the most general question that we all must grapple with: what is the nature of the "good"?

On the other hand, the understanding and wisdom you are developing as a graduate student will bring little reward unless you can express them in words that others can follow and understand. Therefore, another key aspect of the course is the development of your communication skills, both in written and oral forms. Scientific writing is a specialized art: you need to learn the rules and practices of good general writing, and you also need to learn the disciplinary conventions. The skills you develop now will serve you throughout your career - when you write manuscripts, prepare your thesis, and, later, when you write grant applications, contract proposals, technical reports, and so on.

**Originality:** Your written and oral presentations for this course are understood to be *your own original creative work*. Putting your name on your presentations is a type of warranty, certifying that you are the author of the work and you are responsible for its content. The scientific community is deeply aware of the problem of plagiarism. This is because our most important outputs are our words, data, and drawings. Baseball players can point to their home runs; contractors can show off the houses and high rise buildings they have built; but most scientists can only show how good they are by their publications - their *ideas and discoveries*. If someone else takes credit for those ideas, the real author feels violated. A person who advances his or her career by presenting other peoples' ideas as his own is

cheating - gaining an undeserved advantage over his or her peers.

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## 5 Teaching and Learning Activities

### 5.1 Summary of your tasks

In the first semester, Fall 2022, students write a **Research Proposal (RP)** describing their research plans and attended the seminar presentations given by the students (**in an MS Teams meeting**) who started their graduate programs one semester earlier.

In the second semester (Winter 2023), students will give an oral presentation and attend the presentations given by their classmates.

*New Fall 2022 students* in their first semester will write a Research Proposal (RP) due Dec 2, 2022 and will attend the seminar presentations given by the *Summer 2022 students*.

### 5.2 The Research Proposal

This component of the course provides you with an opportunity to develop and refine your skills in scientific communication. The emphasis is on writing skills in the context of developing a thesis proposal. You are NOT expected to present preliminary data from your thesis research.

The Research Proposal (RP) is prepared under the guidance of your Advisor and Advisory Committee members. The **Literature Review** section gives an introduction to your area of research, a description of the significance of the research, and a discussion of relevant background literature with focus on the key experiments leading to your proposal. The **Research Proposal** component includes a clear, testable hypothesis and specific objectives, experimental approaches (including rationale for choice of the experimental systems and techniques), possible pitfalls or limitations (and how they might be circumvented) anticipated outcomes and how they will be interpreted.

The PR for **MCB\*6500** should be ~3500 – 4000 words or about *15 pages* long, consisting of approximately 10 pages of literature review and 5 pages of research proposal. Note that the title page, reference list, tables, and figures as well as figure legends are not counted as part of the page-length. Bibliography references must include article titles. for both in-text citation and the reference list, please use the format as for the journal ***Molecular and Cellular Biology***.

The literature review/research proposal must be prepared double-spaced, using a standard 12-point font (e.g., Times New Roman) and 1" margins. Please do not use extra-wide margins and do not leave blank lines between paragraphs. Provide page numbers for your entire document except the cover page. Reproducing some tables and figures from the literature is acceptable, as long as you provide citation for the sources in the figure legend. However, you are encouraged to prepare your own figures and tables, as it will allow you to focus on the specific message that you want to convey.

### 5.3 RP Submission and Grading

Submit an electronic copy of your RP by email to **each member of your Advisory Committee and the Course Coordinator**. Also deposit an electronic copy (PDF format) in the Dropbox on CourseLink. Each member of your Advisory Committee will evaluate your RP independently and submit a grade to the Course Coordinator. These grades will be averaged (grade A). Two members from the faculty panel will submit grades (grades B and C). The three grades (A+B+C) will be averaged to give the final grade. The RP evaluations will be returned to you two weeks before your Brown-Bag seminar.

### 5.4 The "Brown Bag" Seminar

In the second semester, you will make your oral presentation ("Brown-Bag" seminar, based on your Research Proposal), providing you with the opportunity to develop your skills in scientific communication. You will prepare the seminar under the guidance and direction of your thesis advisor. Your seminar should be 30 minutes long, followed by a question period. **Presentations that deviate more than 5 min from this timing will be penalized 5%.**

**Prior to the start of the Winter 2023 semester, you must sign up for a seminar slot: The Graduate Program Assistant, Jillian Cockwell, will send an announcement by email when the sign-up period begins. Students should ensure that their Advisors and Advisory Committee members are available to attend, before confirming their seminar dates.**

You must submit your **seminar title** and an **abstract** (250 words) by email to the Graduate Program Assistant by **Wednesday (noon)** of the week before your seminar. **A 5% penalty will be applied for late submissions.**

### 5.5 Schedule and Checklist

When?	What?	☒
<b>Friday, September 9</b>  <b>@12:00 noon</b>	<b>First class meeting.</b> All new graduate students are required to attend. <i>Advisors and second-semester graduate students are also welcome to attend. This is an opportunity to ask any questions you might have!</i>	
<b>Fridays @ 12:00 noon</b>	Attend the Friday noon "Brown-Bag" seminar presentations by the graduate students who started their graduate program in May 2022. Seminar notices will be distributed to MCB Department members one week in advance. <b>All students are required to attend <u>all</u> of these seminar presentations. Attendance will be recorded. Expected absenteeism should be reported to the Course Coordinator prior to the date, providing an appropriate reason. An incomplete grade will be assigned for undocumented absenteeism.</b>	
<b>Later in the semester</b>	The Graduate Program Assistant will contact students during the first semester to organize and schedule your seminar slot for next semester. By this time you will have established your Advisory Committee. <b>Remember to register again for the second semester of the course.</b>	
<b>Friday, December 2, 2022</b>  <b>@ 12:00 noon</b>	Submit by e-mail an <u>electronic</u> copy of your RP to the Course Coordinator and each member of your Advisory Committee. Deposit an electronic copy in the Courselink Dropbox. The graded RPs will normally be	

	<p>returned to you two weeks before your "Brown-Bag" seminar.</p> <p><b>A penalty of 10% per day will be applied for any late submission.</b></p>	
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## 6 Assessments

### 6.1 Marking Schemes & Distributions

**Research Proposal: 50%** (*Fall 2022 students* are to submit the RP on Dec 2, 2022)

**"Brown Bag" Presentation: 50%** (*Summer 2022 students* present in Fall 2022; *Fall 2022 students* present in Winter 2023)

#### Grading rubrics:

The grading rubrics for all of the components of the course are posted at: **<https://www.uoguelph.ca/mcb/graduate-studies/brown-bag-seminars>** and are also posted in **Courselink**. The faculty will use these rubrics to evaluate your performance. You should review them; they provide a guide to the expectations for successful completion of each component of the course.

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## 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 make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

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.

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