



BIOM*6790 Drug Discovery: A Diversity Perspective

Winter 2023

Section(s): C01

Department of Biomedical Sciences

Credit Weight: 0.50

Version 1.00 - January 08, 2023

1 Course Details

1.1 Calendar Description

This course provides an overview of environmental chemical diversity and the role of human biological diversity in drug responses. Cultural aspects of drug use and the importance of diverse perspectives in pharmacology and toxicology will be highlighted. Students are expected to have already taken an undergraduate course in pharmacology (BIOM*3090 or equivalent).

1.2 Course Description

Drugs are utilized across the globe for a variety of reasons including medicinal, recreational, and cultural purposes. The discovery and development of drugs relies on a multitude of factors including human diversity and positionality, population and cultural diversity, and biodiversity. In this graduate course, we will examine drug discovery and development from a diversity perspective to understand biodiversity and its role in pharmacology and toxicology and how human biological diversity impacts drug responses. We will also evaluate cultural aspects of drug use, including that of specific Indigenous populations, and address ethical considerations. As we progress through the course, a major objective will be to stimulate discussions surrounding the importance of diversity that will instill an appreciation of the value of traditional knowledge from across the globe.

1.3 Timetable

Wednesdays 11:30-2:30, OVC 3648

1.4 Final Exam

There is no final exam for this course.

2 Instructional Support

2.1 Instructional Support Team

Instructor:	T. Ryan Gregory
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3 Learning Resources

3.1 Recommended Resources

Pubmed (Website)

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

Web of Science (Website)

<https://www.webofknowledge.com/>

Google Scholar (Website)

<https://scholar.google.com/>

4 Learning Outcomes

4.1 Course Learning Outcomes

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

1. Appreciate how biology, culture, positionality, and lived experiences influence development, effectiveness, and availability of biomedical interventions
2. Understand the differences between chemical and physiological diversity
3. Understand how human biological diversity in individuals and populations influences drug responses
4. Understand cultural diversity in the medicinal and recreational use of drugs
5. Have an appreciation for the value of traditional medicinal knowledge, including Indigenous holistic approaches to well-being and Two-Eyed Seeing
6. Understand the role of biodiversity in drug discovery

7. Reflect on ethical considerations in drug discovery and use

5 Teaching and Learning Activities

The first and last weeks of the course will be devoted to introductions and wrap up, respectively. The rest of the semester will be divided into five themes (two weeks each) relating to different aspects of diversity: individual diversity, population diversity, cultural diversity, biodiversity, and diversity of opinions. Readings will be provided ahead of time for each week's discussion, and students will be expected to meet (virtually or in person) in small groups to work through questions related to the readings and topic. These questions and the readings will then form the basis of the discussion in that week's class meeting. Each week, students will also be asked to find a news story or other short article relevant to that week's theme, which can be shared with the class to stimulate additional discussion.

6 Assessments

6.1 Marking Schemes & Distributions

Name	Scheme A (%)
Participation	30
Reflection 1	15
Reflection 2	15
Final Assignment	40
Total	100

6.2 Assessment Details

Participation and intellectual contributions (30%)

An overall mark determined by the instructors based the quality (not just quantity!) of contributions to class discussions, demonstrated depth of exploration and understanding of the topics, etc.

Reflection 1 (15%)

Due: Fri, Feb 17, 11:59 PM

A reflection on your own intersectional positionality from individual, population, and cultural perspectives and how this has shaped your personal views about drug discovery and use, experiences with the biomedical establishment, and how your perspective may differ from those of others.

Reflection 2 (15%)

Due: Fri, Mar 17, 11:59 PM

A personal reflection on how your understanding and appreciation of diversity has changed (or been reinforced) as a result of the course, how diversity concepts could be relevant to other areas of study that you are involved in or interested in, and thoughts on how to improve biomedical systems more generally.

Capstone Assignment (40%)

Due: Mon, Apr 10

This will be an ~8 page paper that incorporates concepts taught throughout the semester and will involve a literature search. The purpose of this reflection assignment is to have the students take an artificial compound "X" through the drug discovery and development process taking a diversity perspective. You will have a broad area of scope for the paper in terms of what kind of compound you choose to discuss (e.g. new birth control drug, psychedelic, anti-cancer, antibiotic etc). You will be encouraged to give thought to issues such as bioprospecting from an ecological/evolutionary biology perspective (based on historical identification of similar drug classes), drug development through preclinical studies (which are the appropriate models to use?), and its study and ethical use in humans (which populations? why? How would you design the study to incorporate diversity?). Potential negative ecological (e.g., excretion of metabolites, environmental impacts of production) and societal (e.g., side effects, unequal access, potential for abuse) impacts should also be considered. A description of the assignment and a rubric will be provided early in the semester.

7 Course Statements

7.1 LATE POLICY

Assignments are to be submitted electronically via the Dropbox tool in CourseLink. Late assignments will result in a 25% automatic deduction in the assignment grade up to 24 hours following the deadline and a 50% reduction in grade for assignments submitted 24-48 hours past the deadline. If the assignments are submitted later than 48 hours past the deadline they will not be graded.

IMPORTANT NOTE: By registering for this course, you are agreeing to the deadlines set out in the course outline. It is the sole responsibility of the student to ensure the file they have uploaded is not corrupted and is accessible to the instructors. Any file found to be corrupted during the marking period will automatically receive a 0 grade for the assignment. The University is seeing increasing cases of students using online 'corruption services' to get an additional extension. These cases are being deemed fraud and are a form of academic misconduct.

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.
