

Department of Physiology and Pharmacology Physiology 4520b: Stem Cells and Regenerative Medicine

Course outline for Winter 2021



Although this academic year might be different, Western University is committed to a **thriving campus**. We encourage you to check out the [Digital Student Experience](#) website to manage your academics and well-being. Additionally, the following link provides available resources to support students on and off campus: <https://www.uwo.ca/health/>.

1. Technical Requirements:



Stable internet connection



Laptop or computer



Working microphone



Working webcam

2. Course Overview and Important Dates:



Mode	Dates	Time	Frequency**	Attendance
Virtual synchronous*	Tuesday	2:30–3:30 pm	Every second week	Optional
Virtual asynchronous	N/A	2 hours	weekly	N/A

*Virtual synchronous sessions will be recorded for later viewing

**A schedule will be posted

*Details about design and delivery of the course are listed below in Section 4

Classes Start	Reading Week	Classes End	Study day	Exam Period
January 11	February 13 - 21	April 12	April 13	April 14 - 30

*March 14, 2021: Last day to drop a second-term half course or a second-term full course without penalty

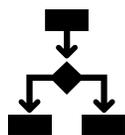
3. Contact Information



Course Coordinator	Contact Information
David Hess	dhess@robarts.ca
Instructor(s) or Teaching Assistant(s)	Contact Information
Tyler Cooper (Lecturer)	tcoope2@uwo.ca
John Diguglielmo (Lecturer)	john.diguiglielmo@schulich.uwo.ca
Yehia Moharrem (Teaching Assistant)	ymoharr@uwo.ca
Kaiyuan Wang	

4. Course Description and Design

Central concepts in regenerative medicine are explored, with a focus on the preclinical development of stem cell therapies. Emphasized are: fundamentals of tissue-specific (post-natal) stem cell isolation, expansion and functional characterization using xenotransplantation into immunodeficient mouse models and transgenic mouse models for the treatment of human hematopoietic disorders, ischemic vascular diseases, diabetes, and diseases of the gastrointestinal system and skin. The role of stem cells in the development of cancer will also be discussed.



Mode	Dates	Time	Frequency
Virtual synchronous	Tuesday	2:30 – 3:30 pm	biweekly
Virtual asynchronous	N/A	2 hours	weekly

A recording will be provided for synchronous sessions

All course material will be posted to OWL: <http://owl.uwo.ca>. Any changes will be indicated on the OWL site and discussed with the class.

If students need assistance, they can seek support on the [OWL Help page](#). Alternatively, they can contact the [Western Technology Services Helpdesk](#). They can be contacted by phone at 519-661-3800 or ext. 83800.

[Google Chrome](#) or [Mozilla Firefox](#) are the preferred browsers to optimally use OWL; up you're your browsers frequently. Students interested in evaluating their internet speed, please click [here](#).

5. Learning Outcomes

Upon successful completion of this course, students will be able to:

- To understand fundamental concepts in stem cell biology and current laboratory techniques employed to study stem cell functions *in vitro* and *in vivo*.
- To discuss the promise and controversy over the use of different stem cell types and their potential for treating human disease.
- To understand the challenges surrounding the use of stem cell transplantation in the treatment of hematopoietic disorders, ischemic vascular disease, diabetes, and cancer.
- To understand the development of rational cell-based therapies from basic science, through clinical trials, to standard of care.
- To critically evaluate novel and emerging regenerative therapies for human disease.

6. Course Content and Schedule



Week	Dates	Topic	Instructor
1	Jan 11 – 17	Fundamental concepts in stem cell biology: A historical perspective	David Hess
2	Jan 18 – 24	Hematopoietic stem cell biology and hematopoiesis	David Hess
3	Jan 25 – 31	Development of clinical transplantation strategies for hematopoietic disease	David Hess
4	Feb 1 – 7	Circulating progenitor cells that mediate vessel regeneration	David Hess
5	Feb 8 – 14	Pre-clinical and clinical transplantation strategies to treat ischemic diseases	David Hess
6	Feb 15 – 21	Reading Week	N/A
7	Mar 2nd 2:30 – 4:30 pm	Mid-term exam (35%)	David Hess
8	Mar 1 – 7	Roles of multipotent stromal cells in tissue repair / regeneration	David Hess
10	Mar 8 – 14	Cell based strategies for diabetes therapy: Replacement versus regenerative therapies	David Hess
11	Mar 15 – 21	Stem cells of the GI system: Genetics tools for the generation of intestinal organoids	Tyler Cooper
12	Mar 22 – 28	Clinical applications for GI stem cells: From cystic fibrosis to cancer	Tyler Cooper
13	Mar 29 – Apr 4	Multipotent skin progenitor cells in wound healing	John Diguglielmo
14	Apr 5 – 11	Understanding the cancer stem cell hypothesis	John Diguglielmo

7. Online Participation and Engagement



- Students are expected to participate and engage with content as much as possible
- Students can participate during live review sessions on Zoom or post questions on Owl after watching the recording
- Students can also participate by interacting in the blog forums with their peers and instructors

8. Evaluation

Below is the evaluation breakdown for the course. Any deviations will be communicated.

Assessment	Format	Weighting	Due Date
Blog assignment / discussion forum	Written expert comment (200-300 words) on assigned blog topic	Total = 15% Expert Comment: accuracy (3%), insightfulness (3%), responses (3%) General discussion / participation (6%)	You are the expert for 1 out of 5 blog topics and a participant in the discussion on 3 additional blogs. Each blog runs concurrent with a 2-week module in the course
Midterm Exam	Written short- and long-answer questions on timed (2 hours) virtual exam	Total = 35% Short Answer: 4 questions worth 5 marks each Long Answer: Choose 1 of 2 questions worth 15 marks each	March 2, 2021
Final Exam	Written short- and long-answer questions on timed (3 hours) virtual exam	Total = 50% Short Answer: 4 questions worth 5 marks each Long Answer: Choose 2 of 4 questions worth 15 marks each	TBD - See posted final exam schedule



- All assignments are due at 11:55 pm EST unless otherwise specified
- Written assignments will be submitted to Turnitin (statement in policies below)
- Students will have unlimited submissions to a draft checker Turnitin link for the blog assignment
- Rubrics will be used to evaluate assessments and will be posted with the instructions
- After an assessment is returned, students should wait 24 hours to digest feedback before contacting their evaluator; to ensure a timely response, reach out within 7 days

Click [here](#) for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work which is clearly above average
B	70-79	Good work, meeting all requirements, and eminently satisfactory
C	60-69	Competent work, meeting requirements
D	50-59	Fair work, minimally acceptable
F	below 50	Fail

Information about late or missed evaluations:

- Late assessments without a self-reported absence or approved submitted documentation to academic counselling will be subject to a late penalty 20 %/day
- Late assessments with a self-reported absence should be submitted within 24 hours of submission of the last day of the self-reported absence
- A make-up test will be offered for mid-term and final exams
- If a make-up assessment is missed, the student will receive an INC and complete the task the next time the course is offered

9. Communication:



- Students should check the OWL site every 24 – 48 hours
- A weekly update will be provided on the OWL announcements
- Students should email their instructor(s) and teaching assistant(s) using OWL “messages”
- Emails will be monitored daily; students will receive a response in 24 – 48 hours
- This course will use the OWL forum for discussions
- Students should post all course-related content on the discussion forum so that everyone can access answers to questions
- The discussion forums will be monitored daily by instructors or teaching assistants

10. Office Hours:



- Office hours will be held remotely using Zoom at set times by the instructor.
- Students will be able to sign up for an appointment using Zoom (Sign Up on OWL)
- Students will be able to drop into biweekly review sessions session on every second Thursday at 2:30 pm
- Group review sessions will be held, recorded, and posted for everyone to view

11. Resources



- All resources will be posted in OWL

12. Professionalism & Privacy:



Western students are expected to follow the [Student Code of Conduct](#). Additionally, the following expectations and professional conduct apply to this course:

- Students are expected to follow online etiquette expectations provided on OWL
- All course materials created by the instructor(s) are copyrighted and cannot be sold/shared
- Recordings are not permitted (audio or video) without explicit permission
- Permitted recordings are not to be distributed
- Students will be expected to take an academic integrity pledge before some assessments
- All recorded sessions will remain within the course site or unlisted if streamed

13. How to Be Successful in this Class:



Students enrolled in this class should understand the level of autonomy and self-discipline required to be successful.

1. Invest in a planner or application to keep track of your courses. Populate all your deadlines at the start of the term and schedule time at the start of each week to get organized and manage your time.
2. Make it a daily habit to log onto OWL to ensure you have seen everything posted to help you succeed in this class.

3. Follow weekly checklists created on OWL or create your own to help you stay on track.
4. Take notes as you go through the lesson material. Treat this course as you would a face-to-face course. Keeping handwritten notes or even notes on a regular Word document will help you learn more effectively than just reading or watching the videos.
5. Connect with others. Try forming an online study group and try meeting on a weekly basis for study and peer support.
6. Do not be afraid to ask questions. If you are struggling with a topic, check the online discussion boards or contact your instructor(s) and or teaching assistant(s).
7. Reward yourself for successes. It seems easier to motivate ourselves knowing that there is something waiting for us at the end of the task.

14. Western Academic Policies and Statements

Absence from Course Commitments

[Policy on Academic Consideration for Student Absences](#)

If you are unable to meet a course requirement due to illness or other serious circumstances, you must seek approval for the absence as soon as possible. Approval can be granted either through a **self-reported absence** or via the **Academic Counselling** unit. Students have two self-reports to use throughout the academic year; absence from course commitments including tests, quizzes, presentations, labs, and assignments that are worth 30% or less can be self-reported. Self-reported absences cover a student for 48 hours (yesterday + today or today + tomorrow). Your instructor will receive notification of your consideration; however, you should contact your instructor immediately regarding your absence. Students are expected to submit missed work within 24 hours of the end of the 48-hour period. Please review details of the [university's policy on academic consideration for student absences](#).

If you have used both their self-reported absences or will miss more than 48 hours of course requirements, a Student Medical Certificate (SMC) should be signed by a licensed medical or mental health practitioner and you should contact academic counselling. Academic Counselling will be operating virtually this year and can be contacted at scibmsac@uwo.ca.

Accommodation for Religious Holidays

The policy on Accommodation for Religious Holidays can be viewed [here](#).

Special Examinations

A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents. To provide an opportunity for students to recover from the circumstances resulting in a Special Examination, the University has implemented Special Examinations dates. These dates as well as other important information about examinations and academic standing can be found [here](#).

Academic Offenses

"Scholastic offences are taken seriously, and students are directed [here](#) to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence.

Accessibility Statement

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Accessible Education (AE) at 661-2111 x 82147 for any specific question regarding an accommodation or review [The policy on Accommodation for Students with Disabilities](#).

Correspondence Statement

The centrally administered **e-mail account** provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner. You can read about the privacy and security of the UWO email accounts [here](#).

Turnitin and other similarity review software

All assignments will be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. Students will be able to view their results before the final submission. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between Western University and [Turnitin.com](#).

15. BMSUE Academic Policies and Statements

Copyright and Audio/Video Recording Statement

Course material produced by faculty is copyrighted and to reproduce this material for any purposes other than your own educational use contravenes Canadian Copyright Laws. You must always ask permission to record another individual and you should never share or distribute recordings.

Rounding of Marks Statement

Across the Basic Medical Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.4 becomes 74, and 74.5 becomes 75. Marks WILL NOT be bumped to the next grade or GPA, e.g. a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark "bumping" will be denied.

16. Support Services

The following links provide information about support services at Western University.

[Academic Counselling \(Science and Basic Medical Sciences\)](#)

[Appeal Procedures](#)

[Registrarial Services](#)

[Student Development Services](#)

[Student Health Services](#)