

# **Domestic Animal Stem Cell Biology and Regenerative Medicine**

Winter 2019 0.5 Credits

BIOM\*6712

## **Course Coordinator:**

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## **Course Co-Coordinator(s):**

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## **General Course Objectives:**

The learning objective of this graduate level course is to assist the students in gaining a general understanding of topics pertaining to the overall field of regenerative medicine and provide students an opportunity to hone their skills in knowledge gathering and communication of knowledge. Overview lectures and seminars pertaining to stem cell, selected tissue biology or other areas within regenerative medicine are provided by a diverse group of faculty members from the Comparative and Translational Regenerative Medicine Network at the University of Guelph. More in-depth understanding of stem cell and or tissue biology in a specific area is obtained through a written literature review. By critically reviewing current published manuscripts in the field and orally presenting them in a friendly small group setting the students will retain the information better and build confidence in their scientific writing and public speaking skills.

## **Specific Course Objectives:**

- Understand what stem cells are and how they are isolated or generated
- Understand stem cell characterization, maintenance and differentiation methods
- Appreciate how (stem) cell-based therapies are being advocated/explored in human and veterinary medicine
- Appreciate what the field of regenerative medicine encompasses
- Critically evaluate current scientific literature in the field and compare it to the information provided to the general public
- Enhance the students scientific writing and presentation skills

## **Class Size**

Maximum of 20 students.

## **Course Design**

The course is offered as weekly seminar series/journal club plus an independent study project, with the instructor providing students with guidance throughout the program.

The course consists of a brief class introduction to the topic of regenerative medicine. Learning material and a oral introduction to the methodology of literature review and scientific

writing are provided in the beginning of the course. Hereafter, weekly seminars will be provided on a broad range of topics related to regenerative medicine as conducted at the University of Guelph. In addition to these class activities each student will complete a written literature review and an oral presentation. The literature review is to be written as a review paper of and formatted as per author guidelines of a specific journal. The topic of the literature review will be decided by the instructor in consultation with the student. The oral presentation of the literature review will be given in front of the instructor and at least two additional faculty members. The presentation is expected to be 12 minutes in duration with a brief 3-minute questioning period after the presentation.

### **Evaluation:**

- Written Literature Review
  - Review paper itself (abstract and text body) 50%
  - Annotated bibliography discussing top 10 references of paper 15%
- Oral Presentation of Literature Review 25%
- Class and seminar participation 10%

### **Written Literature Review**

The topic of the review paper must be approved by the course coordinator by **Feb 1<sup>st</sup>** and handed in by **Mar 29<sup>th</sup>** at the latest. In order to ensure appropriate reference focus and selection the annotated bibliography is due by **Mar 1<sup>st</sup>**. The manuscript is to be formatted as per author guidelines of a journal selected with the approval of the course coordinator. However, regardless of the journal guidelines the manuscript must not exceed 4000 words and 10 double-spaced pages (not including references, Figures and Tables) using 12-point Times New Roman font and 1 inch margins.

### **Oral Presentation of Literature Review**

In addition to the above guidelines students are expected to grade the presentations of their peers. The grades will be averaged and weighted with 10% compared to 30% from each faculty member. A minimum of two faculty members will contribute to this grade, e.g the average student grades will be multiplied with 0.1 and each faculty member grade will be multiplied with 0.3 and these 4 weighted grades are added together for the final grade.

**Location: Room 1642 in Biomed Sci, OVC, Fridays at 10.00 – 11.20 AM on below dates.**

**Schedule** (*subject to change based on number of students and faculty availability*)

- **Jan 11** Course introduction and stem cell introduction (Prof. Koch)
- **Jan 18** Introduction to scientific review and writing (Prof. Koch)
- **Jan 25** Class critical review of articles (Prof. Koch)
- **Feb 1** 1<sup>st</sup> Seminar: Prof. Mark Hurtig: Osteoarthritis: Challenges and Opportunities for Regenerative Medicine
- **Feb 8** 2<sup>nd</sup> Seminar: Prof. Mark Hurtig: Synovial Joint Cellular Therapies
- **Feb 15** 3<sup>rd</sup> Seminar: Prof. Andrea Clark: Investigating The Mechanisms By Which Integrin Alpha1beta1 Protects The Knee From Osteoarthritis
- **Feb 22** **No Class – Winter Break**
- **Mar 1** 4<sup>th</sup> Seminar: Prof. Thomas G. Koch: Status After A Decade With Equine Cord Blood MSCs
- **Mar 8** 5<sup>th</sup> Seminar: Prof. Matt Vickaryous: Where Biology Meets Biomedicine: Tales Of Regeneration From Lizards In The Lab

- **Mar 15** 6<sup>th</sup> Seminar: Prof. Jim Petrik: Angiogenic Mechanisms Associated With Tissue Regeneration
- **Mar 22** 7<sup>th</sup> Seminar: TBD
- **Mar 29** 8<sup>th</sup> Seminar: TBD
- **April 5** 9<sup>th</sup> Seminar: TBD
- **April 12** **Presentation day**

### **Assignment deadlines**

- **Feb 1** Topic of written literature review due for approval by Prof. Koch
- **Mar 1** Annotated bibliography due **before midnight** (electronic word file)
- **Mar 29** Written Literature review due **before midnight** (electronic word file)

### **Standard University of Guelph Statements Regarding Graduate Courses**

#### **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.

#### **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 in writing, with your name, id#, and e-mail contact. See the graduate calendar for information on regulations and procedures for Academic Consideration: <https://www.uoguelph.ca/registrar/calendars/graduate/2018-2019/>

#### **Drop Date**

The last date to drop one-semester courses, without academic penalty, is the 40th day of class in the semester. Two-semester courses must be dropped by the last day of the add period in the second semester. Refer to the Graduate Calendar for the schedule of dates: <https://www.uoguelph.ca/registrar/calendars/graduate/2018-2019/sched/sched-dates-w11.shtml>

#### **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. The Academic Misconduct Policy is detailed in the Graduate Calendar: [https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/sec\\_d0e2632.shtml](https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/sec_d0e2632.shtml)

#### **Recording of Materials**

Presentations which are made in relation to course work—including lectures—cannot be recorded in any electronic media without the permission of the presenter, whether the instructor, a classmate or guest lecturer.

#### **Resources**

The Graduate Calendar is the source of information about the University of Guelph's procedures, policies and regulations which apply to graduate programs:  
<https://www.uoguelph.ca/registrar/calendars/graduate/2018-2019/>