BIOM*6602: Early Vertebrate Development

Preamble: Reproductive biology is a rapidly changing discipline that bridges basic science and clinical practice. The applied arm of this field, reproductive biotechnology, has far reaching economic and societal implications. In human medicine, the application is mainly as a treatment for infertility with over 2 million children born as a result of this technology since the advent of in vitro fertilization in 1977. In agriculture, the technology is used for breed improvement and selection of breeding stock. With the development of somatic cell nuclear transfer and gene editing, new challenges and opportunities have arisen including increasing the number of individuals with unique and valuable genomes, the creation of embryonic stem cells and the development of research models and tools. However, a number of health, ethical and societal issues are associated with these technologies. To be able to appreciate the application, side effects and ethical issues surrounding reproductive biotechnologies, it is necessary to understand the underlying biological principles upon which these techniques are founded. Therefore, this course is designed to introduce key concepts in reproductive biology and principles of emerging reproductive technologies.

Objectives: i) To introduce the biological principles that form the basis for Reproductive Biotechnologies ii) To introduce current and emerging topics in reproductive biology iii) To provide a platform for discussion of current research in Reproductive Biotechnologies

Course delivery: The course will consist of six modules spanning topics related to, embryo health, development and response to environment, reproductive biotechnologies and trans-generational affects, and emerging concepts in reproductive biology. Each module will consist of one introductory lecture by an expert working in the discipline to provide basic concepts and current research activities followed by student discussions and presentations pertaining to the topic of the module.

Student expectations: Students are expected to do sufficient background reading in advance of each module to ensure an understanding of the basic concepts for each of the topics presented by lecturers. For each module students will be presented with a question or issue that they will research and a group of 1 to 3 will present in the form of panel discussion or round table. Group size will depend on enrolment. Presenters will submit a 2-page summary in advance of the presentation. Each student is expected to be a “presenter” for two modules. At the end of the course students will present a group roundtable debate and each student will submit a “white paper” pertaining a topic chosen by the students.

Evaluation:

Selected topic/round table 50% (25% per presentation)

Debate/round table 25% %

White Paper 25%
**Modules:**

**Note:** Lectures and discussions will be held Fridays 2 to 4 pm in rm 3648 OVC

January 13 - **Module I:** lecture – **Pavneesh Madan** (markers of embryo development)

January 20 - **Module II:** lecture- **Marie Cecilie Lavoir** (germline modifications)

January 27 – student presentations Module I

February 3 - student presentations Module II

February 10 – **Module III:** lecture – **Allison Tscherner** (small RNAs in reproduction)

February 17 - student presentations Module III

February 24 - Winter break

March 3 – **Module IV:** lecture – **Laura Favetta** (Environment impact on embryos)

March 10 – student presentations Module IV

March 17 – **Module V:** lecture- **T B D** (trans-generational effects)

Module VI: March 24 – **Rob Jones** (Gene editing)

March 31 – student presentations Module V

April 7 – ROUND TABLE: Topic TBA

Contact information:

Course Coordinators:

Dr. Allan King, Biomedical Sciences waking@uoguelph.ca

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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 coordinator in writing, with your name, id#, and e-mail contact. See the graduate calendar for
information on regulations and procedures for Academic Consideration:
http://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/sec_d0e1400.shtml

Drop Date: The last date to drop one-semester courses, without academic penalty, is MARCH 10, 2017. Refer to the Graduate Calendar for the schedule of dates:
http://www.uoguelph.ca/registrar/calendars/graduate/current/sched/sched-dates-f10.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:
http://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/sec_d0e1687.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:
http://www.uoguelph.ca/registrar/calendars/graduate/current/