

BIOM*6602

Fall 2017-Winter2018

Preamble:

Reproductive biotechnology, the applied aspects of reproductive biology, has important economical, societal and medical implications. In human medicine, the application is mainly as a treatment for infertility with over 5 million children born as a result of this technology since the advent of in vitro fertilization in 1977. In livestock species over half a million embryos are transferred each year. Among these there is a rapidly increasing proportion of embryos that are produced in vitro. The production of embryos in the laboratory requires considerable manual dexterity, expertise and experience as well as theoretical knowledge and problem solving skills. There is a number of career opportunities associated with reproductive biotechnologies that range from laboratory technicians, sales, marketing and product development to regulatory affairs. The aim of this course is to provide exposure to various embryo production and related settings as well as hands-on laboratory experience. The course will consist of laboratory training in bovine in vitro embryo production, seminars and/or field trips and group discussions.

Objectives:

1. To introduce students to various Reproductive Biotechnologies
2. To provide hands-on experience in selected Reproductive Biotechnologies
3. To provide a platform for discussion of current research in reproductive biotechnology.
4. To provide an opportunity to 'network' with reproductive biotechnologists

Evaluation:

Evaluation of written assignments and laboratory performance will be by the course coordinators and, where applicable, by others associated with the course delivery as follows:

Laboratory Experience: 40%

Each student will 'shadow' members of the bovine IVF research group for a 4-week period to learn basic bovine fertilization techniques. It is expected that each student will have sufficient experience to independently collect oocytes, process frozen semen for fertilization and produce blastocyst stage embryos. Students will also job shadow at one or more fertility clinics. Students will be evaluated on their laboratory performance (25%) a brief quiz (10%) and a two-page summary of activities observed during job shadowing (5%).

Written Assignments: 40%

Two essay topics will be assigned during the course. Each will be evaluated at 20% of the final grade.

Journal Paper Critique: 20%

Each student will write a summary, evaluation and critique of 2 Journal papers (to be provided) each worth 10% of the final grade.

Lectures/Discussions/visits (Dates TBA):

I: Animal Care and Research

1. Anna Bolinder: Assistant Director of Animal Care Services, University of Guelph

II: Research Ethics:

1. Sandra Auld: Research Ethics Officer, University of Guelph.

III: Introduction to Assisted Reproductive Technology:

1. Crystal Chan: together with BIOM4110 lecture – Winter 2018 – Date TBA

IV Job Shadowing and placements:

1. Ontario Network of Experts (ONE) in Fertility: Mike Neal, Director, Burlington On
2. Mount Sinai Hospital
3. Adam Haight: Veterinarian, Fradon Holsteins Woodstock On
4. Katie Hickey: Andrologist, Eastgen, Guelph On

Assignments:

1: Hands-On” training in IVF with Liz St John (40%)

The laboratory component will consist of the training and the independent completion of producing bovine embryos to day 9.

Due date Fall 2017

2: Term paper (20%)

Animal Research Act: Each student will prepare a 1500 -word paper on the historical background, rational, current rules and legal obligations pertaining to the Animal

Research Act: In addition there should be a discussion of the implications of the act for embryo research, embryo transfer and research funding. Provide a list of relevant references and websites that were consulted..

Due date TBA

3: Term paper (20%)

Human Assisted reproduction legislation: Each student will prepare a 1500 -word paper on the historical background, rational, current rules and legal obligations pertaining to assisted human reproduction: In addition there should be a discussion of the implications of the act for research and funding and a list of relevant references and websites that were consulted.

Due date TBA

4: Paper critique (20%)

A 1500 word critique of a recent paper in pertaining to human ART or in vitro embryo production. Please consult with Dr. King/Dr.Favetta : Due date TBA.

HANDS ON TRAINING/LABORATORY TRAINING

Each student will be required to:

- Attend 1-hour group seminar. A 1-hour group seminar outlining how to do in vitro embryo production in our laboratory will be mandatory prior to beginning the practical lab work. A training and observation session for everyone will occur in the following week. TBA
- Attend 1 training session where you will observe, take notes and ask questions.
- Observe other students involved in IVF research
- Together, you and your partner will then complete 1 IVP run while Liz St John observes and help you.
- You will each independently complete 1 IVP run.

Grading – 40 marks based on:

- Attendance and Punctuality. Success in IVP is highly dependent upon following the schedule and timing. 5 marks
- Attentiveness to Details. 5 marks
- Quiz. 10 marks
- Skill/Techniques/Embryo Production. 15 marks
- Clinical visits. Two page summary of one of the visits. 5 marks

Contact Information:

Course Coordinators: Dr. W. Allan King – waking@uoguelph.ca

Dr. Laura Favetta – lfavetta@uoguelph.ca
Ms. Elizabeth St. John- estjohn@uoguelph.ca

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_d0e1702.shtml