Mammalian Reproductive Biology – BIOM*4110

Semester: Winter 2016 (2-2) [0.50]

Lectures: Monday and Wednesday 8:30-10:20 a.m. (Rm 1642 OVC)

Overview

This multidisciplinary course provides an introduction to various aspects of mammalian reproduction of medical and veterinary significance. The course will cover the normal physiology and gross and micro-anatomy of the female and male reproductive systems. Placentation, pregnancy and post-partum physiology will also be addressed. The impact of the reproductive biology on social and economic issues will be discussed.

Objectives

Upon completion of this course, the students will understand:

- the fundamental anatomy, histology, physiology and endocrinology of the male and female reproductive systems in various mammalian species;
- the basic patterns and periodicity of reproductive processes in mammals;
- the basic diagnostic methods and approaches to solving problems in reproductive sciences/medicine;
- major ethical and socio-economic aspects of reproductive biology;
- the basic principles of scientific communication, oral and written, pertaining to reproductive physiology/medicine.

Methods of Presentation

The materials and issues will be presented in the form of lectures, labs and/or demonstrations. In addition, there will be a visit to the Toronto Zoo to showcase role of reproductive technologies in conservation and propagation of species.

Methods of Evaluation

Students will be expected to actively participate in the regular classroom discussions. They will also prepare oral and written presentations and reports. One of the course objectives is to provide all students with the opportunity to learn the basics of reproductive biology and then apply that understanding to the solving of reproductive problems. Thus, evidence of sufficient command of the basic science will be an integral part of all evaluations. Utilization of the current scientific literature in preparing the presentations will be expected.

Classroom participation & discussion

Students are strongly encouraged to participate in class discussions. They will be expected to provide evidence of having read both popular and scientific literature and to have thought about varying aspects of reproductive biology. The grade will recognize and reward your effort in reading, thinking and presenting your ideas in class.

Instructor/Course Coordinator:

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Course Manual

Each lecturer will provide handouts, which will be posted on Courselink, as per the policy of the university. Students will be expected to be familiar with the manual content so as to be able to answer questions based on the material.

Reading Material

Because of rapid advancements in reproductive biology, no single textbook appears to be sufficiently up-to-date or comprehensive enough to be recommended for the course. However, we will use Essential Reproduction (7TH Edition) by Johnson MH and Everitt BJ (2013) as a base model for this course.

Some of the other books that can be consulted are:

Guyton AC (2016) Textbook of Medical Physiology, 13th Edition Philadelphia.

Cunningham JG (2012) Textbook

Exam worth: 5%

Ignite Talks (Student Presentations)

Ignite (Ignite Talks) is a series of events where speakers have five minutes to talk on a subject accompanied by 20 slides, for 15 seconds each, automatically advanced. However for this course the modified Ignite talks will be 10 minutes long. The speaker will be allowed to use maximum of 40 slides without any automatic advancement.

Students are encouraged to submit drafts of the presentations for a feedback before the day of presentation.

Ignite Talks will be graded based on the following criteria:

Content, analysis of facts and synopsis of current understanding of the subject, organization of material, quality of visual aids, delivery of scientific content and brevity.

Exam worth: 20%

Repro Dragon's Den (Student Group Presentations/Written Proposals)

In consultation with the instructors, students (divided into groups) will work on a topic in reproductive biology. The students should be assimilating the material presented in the course and come up with a new idea for a scientific grant or a business idea. The written report can be in form of a 5-page scientific grant proposal (NSERC format) or a 5-page business proposal. Both the proposals should be written in grammatically correct English.

Scientific grant proposals/Business proposals will be graded on the following criteria:

Content, identification of problem, innovativeness for addressing the solution, evidence of analysis and thoughtful consideration to previous literature, clarity of presentation, grammar and spellings.

Exam worth: 25%

Repro Amazing Race

Team of two will race in competition to answer puzzles/questions based on exhibits related to reproductive biology across OVC. The exhibits would be related to topics covered during lectures and will help to review the whole course before the final exam. After answering the questions/solving a puzzle at the station, they will get a clue to go to the next station on campus and follow the same procedure. A total of six stations will be set up. The team to answer all questions correctly in the shortest possible time will be winners and will be awarded special prize donated by some Sponsors.

Exam worth: 20%

Final Exam

This exam will comprise of multiple choice questions designed to test the students integration of the material presented up to this time. In addition, some of the questions will test logic, ability of student to analyze, present or discuss scientific data from scientific literature.

Exam worth: 30%

Of Veterinary Physiology, 5th Edition. Philadelphia.

Knobil E and Neill JD (2005) Physiology Of Reproduction, Academic Press, San Diego, CA.

Reece WO (2004) Duke's Physiology Of Domestic Animals, 12th Edition, Cornell University Press.

Yongquist RS and Threlfall WR (2007) Current Therapy In Large Animal Theriogenology, 2nd Edition, Saunders.

Senger PL (2005) Pathways To Pregnancy And Parturition, 2nd Edition, Current Conceptions Inc.

In addition, the mini reviews and supplements to *Reproduction* (official journal of the Society for Reproduction and Fertility) and *Biology of Reproduction* (official journal of the Society for the Study of Reproduction) provide excellent summaries on a variety of topics related to reproductive biology and medicine.

The following journals may also be consulted for the latest comprehensive reviews on many aspects of reproductive biology, embryology and biotechnology.

Animal Reproduction Science
Biology Of Reproduction
Dom. Animal Endocrinology
Endocrinology
Fertility And Sterility
Human Reproduction
Reproduction
Reproductive Biology
Repro. Biol. & Endocrinology
Repro. Fertility & Dev.
Repro. In Domestic Animals
Theriogenology

BIOM*4110 Mammalian Reproductive Biology – Schedule Winter 2016

Wk	Class # & Date	Topic	Lecturer
1	1 Jan 11, 2016	Course intro Reproductive Biology Around Us - Overview	Pavneesh Madan
	2 Jan 13, 2016	Review: Anatomy of Female & Male Reproductive Tract; Reproductive Endocrinology	Madan
2	3 Jan 18, 2016	Review: Reproductive Endocrinology (Contd)	Madan
	4 Jan 20, 2016	Reproductive Endocrinology (Contd) & 'mIgnite Talks' Introduction	Madan
3	5 Jan 25, 2016	Genetic & Environmental Determinants of Sex	Allan King
	6 Jan 27, 2016	Disorders of sexual development	King
4	7 Feb 01, 2016	Making Sperm & Eggs	Laura Favetta
	8 Feb 03, 2016	Making Embryos	Favetta
5	9 Feb 08, 2016	Implantation and placentation	Chandra Tayade
	10 Feb 10, 2016	Parturition & Post Partum	Madan
6	11 Feb 15, 2016	Winter Break	
	12 Feb 17, 2016	Winter Break	
7	13 Feb 22, 2016	'Ignite Talks' (Student Presentations)	
	14 Feb 24, 2016	'Ignite Talks' (Student Presentations)	
8	15 Feb 29, 2016	'Ignite Talks' (Student Presentations)	
	16 Mar 02, 2016	Guidance session for "Repro Dragon's Den"/Proposal and Info on Amazing Repro Race	Madan/King
9	17 Mar 07, 2016	Body image, Anorexia, Obesity & Reproduction	Andrea LaMarre
	18 Mar 09, 2016	Regulating and Restoration of Fertility in Humans	Crystal Chan
10	19 Mar 14, 2016	Reproductive Aging	King
	20 Mar 16, 2016	Addictions, Mental Health & Reproduction	Franseco Leri
11	21 Mar 21, 2016	Endocrinology of Stress in Reproduction	Neil MacLusky
	22 Mar 23, 2016	"Repro Dragon's Den" & Proposal Submission	Invited Panel
12	23 Mar 28, 2016	"Repro Dragon's Den" & Proposal Submission	Invited Panel
	24 Mar 30, 2016	Applications of Reproductive Biotechnologies	Gaby Mastromonaco
	Field Trip Apr 2, 2016 (Saturday)	Field trip to "Toronto Zoo", 2000 Meadowvale Rd, Toronto, ON M1B 5K7	Mastromonaco
13	25 Apr 04, 2016	The "Amazing Repro Race"	Madan/King
	26 Apr 06, 2016	Course wrap up and Q/A	Madan/King
	27 Apr 20, 2016	Final Exam	