



ANS 6313 Current Concepts in Reproductive Biology

Fall 2017 Syllabus

Frequency of Offering

Odd years, fall semester.

Instructor

P.J. Hansen, Dept. of Animal Sciences
Room 122 Bldg 499 (Dairy Science Building)
Phone: 2-5590 Fax: 2-5595
E-mail: Hansen@animal.ufl.edu
<http://www.animal.ufl.edu/hansen>

Purpose

This course uses in-depth discussion of recent review articles and original research publications on controversial or cutting-edge topics in reproductive biology to provide students with opportunities to 1) become aware of recent developments in reproductive biology, 2) develop critical thinking skills and 3) formulate theoretical models to underpin development of research programs. The course is designed for advanced students in reproductive biology and other biosciences.

Requirements

Consent of instructor is required and enrollment will be limited. Extensive experience in reproductive biology or a formal course in reproduction is required. It is strongly recommended that students have completed a course in molecular biology or cell biology.

Course Format

The course meets for 2 hours once weekly. Before class, students are assigned readings consisting of 2 review articles assigned by the instructor and one original research paper chosen by the students. The first hour of the class is taken up with a general discussion of the concepts illustrated in the review articles. The original research paper is evaluated in the second hour in a discussion. Each class period, one student will be assigned to choose the research paper and lead the discussion on the paper.

Time and Place

Usually, Monday, 5:00-7:00 PM, Room 102 Bldg 499 (L.E. "Red" Larson Dairy Science Building) although there will be two meetings on Thursday, 6:00-8:00 PM.

Presentations

The discussion on the review papers will be lead by Dr. Hansen but students will be given an opportunity for shaping the direction of the discussion. Discussion topics will involve (but not be limited to) the following:

- Development of models to organize concepts
- Critical evaluation of concept
- Clarification of confusing areas/concepts
- Critical evaluation experiments on which concepts are based
- Implications for other areas of reproductive biology
- Areas for future research

The research paper will be chosen by the student assigned to that topic. The paper should be a recent paper (2016-2017) that represents a key paper in the progress in that area of research. The student assigned to the paper should distribute the paper to each of the students in the lab one week before class meets. The discussion of the paper will be informal (i.e., without lots of overheads or powerpoint slides) and will focus on the following: The hypothesis, experimental design, results obtained, and significance of the results. All students will be expected to be involved in the discussion of the research paper.

Readings

Readings can be found in the electronic journal section of the University of Florida Health Science Library. In addition, Dr. Hansen will email the pdf file for each paper before class. It is expected that all students will have read every article.

For original research papers, the student assigned to find a paper should distribute the paper to each of the students in the lab one week before class meets. Distribution should be via email of the pdf file.

Grades and Grade Points

Grading is based on attendance (50%) and participation (50%). The highest grade possible for a student missing two lectures is a B+ and, for a student missing three lectures, is a B. Any student missing four or more lectures will be given an incomplete grade.

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Communication about the Class

Email will be used as the major method for communicating when not in class. Therefore, provide Dr. Hansen with your email address if one is available. Dr. Hansen's email is hansen@animal.ufl.edu

Academic Honesty

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."* You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/SCCR/honorcodes/honorcode.php>.

Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575,*
www.counseling.ufl.edu/cwc/
Counseling Services
Groups and Workshops
Outreach and Consultation

Self-Help Library
Training Programs
Community Provider Database

- *Career Resource Center*, First Floor JWRU, 392-1601, www.crc.ufl.edu/

Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation

Schedule (including review article assignments)

Aug 21 Organizational Meeting

Sept 2 Kisspeptin and the control of gonadotropin secretion

Uenoyama Y, Pheng V, Tsukamura H, Maeda KI. The roles of kisspeptin revisited: inside and outside the hypothalamus. *J Reprod Dev* 2016;62:537-545.

Kanasaki H, Oride A, Mijiddorj T, Sukhbaatar U, Kyo S. How is GnRH regulated in GnRH-producing neurons? Studies using GT1-7 cells as a GnRH-producing cell model. *Gen Comp Endocrinol* 2017; 247:138-142.

Sept 11 Seasonal breeding

Clarke IJ, Arbabi L. New concepts of the central control of reproduction, integrating influence of stress, metabolic state, and season. *Domest Anim Endocrinol* 2016; 56 Suppl:S165-179.

Dardente H, Lomet D, Robert V, Decourt C, Beltramo M, Pellicer-Rubio MT. Seasonal breeding in mammals: From basic science to applications and back. *Theriogenology* 2016; 86:324-332.

Sept 14 (Thurs) Puberty

Perry GA. Factors affecting puberty in replacement beef heifers. *Theriogenology* 2016; 86:373-378.

Leka-Emiri S, Chrousos GP, Kanaka-Gantenbein C. The mystery of puberty initiation: genetics and epigenetics of idiopathic central precocious puberty (ICPP). *J Endocrinol Invest* 2017; 40:789-802.

Oct 2 Regulation of the ovarian follicle pool

Pankhurst MW. A putative role for anti-Müllerian hormone (AMH) in optimizing ovarian reserve expenditure. *J Endocrinol* 2017; 233:R1-R13

Sun YC, Sun XF, Dyce PW, Shen W, Chen H. The role of germ cell loss during primordial follicle assembly: a review of current advances. *Int J Biol Sci* 2017; 13:449-457.

Oct 12 (Thurs) Genes involved in follicular development

LaVoie HA. Transcriptional control of genes mediating ovarian follicular growth, differentiation, and steroidogenesis in pigs. *Mol Reprod Dev* 2017, in press.

Zielak-Steciwo AE, Evans AC. Genomic portrait of ovarian follicle growth regulation in cattle. *Reprod Biol* 2016; 16:197-202.

Oct 23 Oocyte-cumulus cell interactions

Monniaux D. Driving folliculogenesis by the oocyte-somatic cell dialog: Lessons from genetic models. *Theriogenology* 2016; 86:41-53.

Russell DL, Gilchrist RB, Brown HM, Thompson JG. Bidirectional communication between cumulus cells and the oocyte: Old hands and new players? *Theriogenology* 2016; 86:62-68.

Oct 30 Environmental impacts on spermatozoa

Oliveira PF, Sousa M, Silva BM, Monteiro MP, Alves MG. Obesity, energy balance and spermatogenesis. *Reproduction* 2017; 153:R173-R185.

Ge SQ, Lin SL, Zhao ZH, Sun QY. Epigenetic dynamics and interplay during spermatogenesis and embryogenesis: implications for male fertility and offspring health. *Oncotarget* 2017, in press.

Nov 6 Control of differentiation of the preimplantation embryo

Leung CY, Zernicka-Goetz M. Mapping the journey from totipotency to lineage specification in the mouse embryo. *Curr Opin Genet Dev* 2015; 34:71-76.

Iurlaro M, von Meyenn F, Reik W. DNA methylation homeostasis in human and mouse development. *Curr Opin Genet Dev* 2017; 43:101-109.

Nov 13 Sperm interactions with the female reproductive tract

Gadella BM. Reproductive tract modifications of the boar sperm surface. *Mol Reprod Dev* 2017, in press.

Leemans B, Gadella BM, Stout TA, De Schauwer C, Nelis H, Hoogewijs M, Van Soom A. Why doesn't conventional IVF work in the horse? The equine oviduct as a microenvironment for capacitation/fertilization. *Reproduction* 2016; 152:R233-R245.

Nov 20 Interactions of the reproductive tract with gametes and embryos

Fazeli A, Holt WV. Cross talk during the periconception period. *Theriogenology* 2016; 86:438-442.

Maillo V, Sánchez-Calabuig MJ, Lopera-Vasquez R, Hamdi M, Gutierrez-Adan A, Lonergan P, Rizos D. Oviductal response to gametes and early embryos in mammals. *Reproduction* 2016; 152:R127-141.

Nov 27 Trophoblast elongation in ungulates

Hue I. Determinant molecular markers for peri-gastrulating bovine embryo development. *Reprod Fertil Dev* 2016;28:51-65.

Geisert RD, Whyte JJ, Meyer AE, Mathew DJ, Juárez MR, Lucy MC, Prather RS, Spencer TE. Rapid conceptus elongation in the pig: An interleukin 1 beta 2 and estrogen-regulated phenomenon. *Mol Reprod Dev* 2017, in press.

Dec 4 Placental function and fetal growth

Sferruzzi-Perri AN, Sandovici I, Constanica M, Fowden AL. Placental phenotype and the insulin-like growth factors: resource allocation to fetal growth. *J Physiol* 2017; 595:5057-5093.

Kalisch-Smith JJ, Simmons DG, Dickinson H, Moritz KM. Review: Sexual dimorphism in the formation, function and adaptation of the placenta. *Placenta* 2017;54:10-16.