

Graduate course (ANSC 4xx/6xxT): Undergraduate students can participate with permission from the instructor.

Course Title: Advanced Animal Biotechnology: Perspectives from Current Literature

When offered: Spring Semester (Odd years only)

Course Description:

The course offers lectures and discussions illustrating current advances in Animal transgenesis and biotechnology. The course has a strong focus on comparative invertebrate and vertebrate animal transgenesis with model organisms for discussion ranging from lower invertebrates (*C.elegans*, *D. melanogaster*) to mice and large animals. Additionally, special topics like Stem Cell Biology will also be covered. Lectures will be scheduled on Tuesdays with students discussing assigned readings from the original literature on Thursdays.

Credits: 3

Pre-requisites: ANSC327; Recommended ANSC437 and 497

Course Time and Location:

2.00-3.15 pm on Tuesdays and Thursdays in ANS xxxx

Instructor:

Dr. Bhanu Telugu
Department of Animal Sciences
Office: 2121 Animal Sciences Center
Lab: Bldg 230, ABBL, USDA
Email: btelugu@umd.edu

Required Materials:

Prerequisites: ANSC327 Molecular and Quantitative Animal Genetics (or equivalent)

Required:

Biotechnology: Academic Cell Update, David P. Clark & Nanette J. Pazdernik, 2012.

Elsevier ISBN: 978-0-12-385063-8

Course Documents posted on ELMS

Recommended Additional Reading:

Animal Transgenesis and Cloning. L.-M. Houdebine.2003. Wiley Press.

Biotechnology Unzipped: Promises & Reality. E. Grace. 2006. Joseph Henry Press.

Attendance: It is the student's responsibility to inform the instructor of any intended absences for religious observances in advance. Notice should be provided as soon as possible but no later than the end of the schedule adjustment period. Regular attendance and participation in this class is the best way to grasp the concepts and principles being discussed. However, in the event that a class must be missed due to an illness, the policy in this class is as follows:

- For every medically necessary absence from class (lecture, recitation, or lab), a reasonable effort should be made to notify the instructor in advance of the class. When returning to class, students must bring a note identifying the date of and reason for the absence, and acknowledging that the information in the note is accurate.

- If a student is absent more than 3 times, the instructor may require documentation signed by a health care professional.
- If a student is absent on days when tests are scheduled or papers are due he or she is required to notify the instructor in advance, and upon returning to class, bring documentation of the illness, signed by a health care professional.
- See: <http://www.umd.edu/catalog/index.cfm/show/content.section/c/27/ss/1584/s/1540>

Class responsibilities:

- Come on time to every class
- Turn cell phones off!
- Be prepared – review subject matter ahead of time (Chapters/ELMS-Blackboard)
- Ask questions –class participation counts!
- If you use your laptop for notes, remember no web surfing or email correspondence during class or you will be asked to revert to pen and paper note taking.

Evaluation and Grading System:

Class Participation: 25%

Midterm 25%

Project proposal 40 %

Project Presentation 10%

The class participation grade will be based primarily on level of interaction during class discussions and ability to understand the scientific content under discussion. Questions will be posed during class, and you will be expected to participate in the class discussions by raising your hand to answer these questions and/or answering those questions directly posed to you by the instructor. Asking questions is also strongly encouraged. There will be no make-up exams or assignments unless an official reason is applicable. The weight of a missed exam or assignment(s) will be added to the weight of the final examination. Solid letter grades will be assigned objectively according to the schedule below. Plus/minus grading system will be applied to letter grades A through D on the class-delimiting scores, e.g., 89 will earn a B+ while 90 will earn an A –.

Grading Scale

A= 90 – 100

B = 80 – 89

C = 70 – 79

D = 60 – 69

F = 59 and below

Academic Dishonesty (taken from the University of Maryland Graduate Catalog):

Any of the following acts, when committed by a student, shall constitute academic dishonesty:

- Cheating: intentionally using or attempting to use unauthorized materials, information or citation in an academic exercise.
- Fabrication: intentional and unauthorized falsification or invention of any information or citation in an academic exercise.
- Facilitating academic dishonesty: intentionally or knowingly helping or attempting to help another violate any provision of this code.
- Plagiarism: intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise.

Students suspected of any form of academic dishonesty will receive a “J” grade and will be referred to the Office of Judicial Affairs.

The University Senate requires that students include the following signed statement on each examination or assignment: “I pledge on my honor that I have not given nor received any unauthorized assistance on this examination (or assignment).”

Please review the university policies on academic integrity (which include what happens if you are caught doing something you shouldn't) at the following address:
<http://www.president.umd.edu/policies/docs/iii100a.pdf>.

Academic dishonesty will not be tolerated. The UM libraries have also put together a useful summary of guidelines in less legalistic language that you may find helpful:
<http://www.lib.umd.edu/guides/honesty.html>

For Students having Academic Difficulties:

If you are experience difficulties keeping up with the academic demands of this course, contact the Learning Assistance Service, 2201 Shoemaker Building (301-314-7693).

Their educational counselors can help with time management, reading, note-taking, and exam-preparation skills. If you have a learning disability, the instructor will make necessary accommodations in the administration of examinations, including allowing extra time. Please note, however, that this must be coordinated through the Disability Support Services office (0126 Shoemaker), which requires documentation of diagnosis for eligibility (see <http://www.counseling.umd.edu/DSS/eligibility.html> for details).

Course Evaluation: (from www.courseevalum.umd.edu): Course evaluations are part of the process by which the University of Maryland seeks to improve teaching and learning. Results are also used for promotion and tenure decisions. Your participation in this official system is critical to its success. All information submitted to CourseEvalUM is confidential. Instructors and administrators can only view group summaries of evaluations; individual submissions cannot be identified. Participation ensures that your opinions will count. Summary results are posted for student review each term at Testudo. The University of Maryland will announce when CourseEvalUM opens for comments, usually a few weeks before the end of the semester; CourseEvalUM will close before the final exam is held.

Dates (tentative)

DATE	CLASS TOPIC
Tues. Jan. 22	Introduction to course/Reading assignment
Thurs. Jan. 24	History of Stem Cell Research
Tues. Jan. 29	Embryonic Stem Cells
Thurs. Jan 31	Class discussion (Led by: Bhanu Telugu)
Tues. Feb 5	Adult Stem Cells
Thurs. Feb 7	Class discussion (Led by: Bhanu Telugu)
Tues. Feb. 12	Cellular Reprogramming (Cloning and other procedures)
Thurs. Feb. 14	Discussion (Led by:XX)
Tues. Feb. 19	Cellular Reprogramming (Induced Pluripotent Stem Cells)
Thurs. Feb. 21	Discussion (Led by:XX)
Tues. Feb. 20	Applications of Cellular Reprogramming technologies
Thurs. Feb. 26	Discussion (Led by:XX)

Tues. Feb. 28	Stem Cells in Large Animals and/ or other animals
Thurs. March 5	Discussion (Led by:XX)
Tues. March 7	Therapeutic Cloning and Ethics of Cloning
Thurs. March 12	Project outline due
Tues. March 14	Mid-term exam
Thurs. March 19	Spring Break
Tues. March 21	Spring Break
Thurs. March 26	Spring Break
Tues. March 28	Transgenics
Thurs. April 2	Discussion (Led by:XX)
Tues. April 4	Large animal transgenics
Thurs. April 9	Discussion (Led by:XX)
Tues. April 11	GMOs in animals
Thurs. April 16	Discussion (Led by:XX)
Tues. April 18	Final project “ <i>Applications of Animal Biotechnology in Sustainable Agriculture</i> ” Presentations
Thurs. April 23	Final project “ <i>Applications of Animal Biotechnology in Sustainable Agriculture</i> ” Presentations
Tues. April 30	Peer-review
Thurs. May 2	TBA

Project Outlines are due **April 16th, 2013** either as an electronic copy during the class period or by 11:59 pm by email (btelugu@umd.edu).

Your project outline is limited to **TWELVE** written pages in NIH RO1 grant format. Your project proposal should be based on the Use of Animal Biotechnology in Sustainable Agriculture. However, it is important that your proposed idea be new. If there is a paper published that answers your question (check pubmed), it is not a valid project idea. You can have one additional page for references and any figures you wish to include. Discussion with your lab mates, friends, professors, is encouraged. Science is almost always done, or at least improved, by team interactions and discussions.

Format – Word Document, Times New Roman or Arial, 12 point font, 1 inch margins. You need a very brief abstract and introduction (background and significance).

Abstract and Specific Aims/Milestones (*A general write up of why you want to do this, why someone should give you money to do it, what you plan to do and how. Specific Aims/Milestones are usually separated from the abstract and are listed with a simple sentence per Aim/Milestone.*)

Background and Significance (*A longer introduction with more why you are interested in the question/problem/product, why your reader should be interested, and the relevance.*)

Experimental Design/Project Plan (*Each Specific Aim/Milestone should have its own sections. Explain what you will do, predictions, and possible interpretations of the results. Also, if there are any expected technical challenges, how will you overcome them (or what alternate techniques will you use)?*)