ANIMAL SCIENCE 8415
Survey in Epigenetics

Winter Semester 2010
MWF - 2pm (classroom - S146)

Instructor: Rocío Melissa Rivera, Ph.D.

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Office Hours: After class or by appointment

Requirements: Instructor consent. Biochemistry 7270 is highly recommended.

1. Course Description:
This course will introduce graduate students to the various areas of epigenetics and the research concerning epigenetics in eukaryotes (with special emphasis on mammals). The course is designed to be a combination of lectures, paper discussions, and research talks by invited faculty speakers working in epigenetics.

2. Textbook:
A recommended (not required) textbook for the class is “Epigenetics” (by C. David Allis, Thomas Jenuwein, Danny Reinberg, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, First Edition, 2007; ISBN-13: 978-0-87969-724-2). I have several copies in my office that you can borrow for periods of 24 hrs. I expect these books to be treated with much care. Please DO NOT mark the books in any way. I also have several other books which deal with epigenetics as part of my personal library. You may use them but I request that you do not keep them for more than a few hours since I will be using them to prepare for class.

3. Course Policies:
The grading scale will be as follows:

   87% & above -- A
   73% to 86% -- B
   60% to 72% -- C
   below 60% -- F
1) There will be a total of 3 exams. The first two exams will count as 40% of the final grade (200 possible points). The third exam will be part of the research proposal and will count as 16% (80 points) of the final grade.

2) Research proposal (200 possible points) – This portion of the grade will be in the form of homework, an exam, and an oral presentation. Late homework will be docked 10% for each late day (e.g. 0.5 point off/day for the Hypothesis).

   Hypothesis – 5 point - group grade
   Summary (500 words) - 10 points - group grade
   Written proposal – 50 points - group grade
   • Background and Significance = < 2 pages
   • Research design and methods = < 3 pages
   Exam - 80 points - individual grade
   Oral report – 55 points - group grade

   For the exams and oral report you will be expected to follow the scientific method. _Observation, Hypothesis, Experimentation_ (e.g. procedures to use), _Analysis/Conclusion_.

3) Class participation/paper discussions (100 possible points = _20% of the final grade_). The 20% will be divided in 10% (50 points) for class participation and 10% (50 points) for the paper discussions. For each discussion the papers will be handed out at least 2 weeks in advance.

4) There will be no final exam

5) Absences - I will not keep attendance. Missed lectures will be the student's responsibility. If the student must miss a paper discussion because of official University business (e.g. scientific meeting) the student will have to write a one page summary for each paper due no later than the date and time of the discussion. Advance notice and documentation to corroborate the needed absence from the paper discussion will be expected. In the event that the student misses a paper discussion due to sickness the student must contact Dr. Rivera prior to missing the discussion to arrange a way in which to make up the missed participation points.

**Topics**

- History of Epigenetics
- Overview and concepts
- Methods in epigenetics
- DNA methylation
- DNA methyltransferases
- Histone variants
Histone modifications
Histone modifying enzymes
Polycomb/Trithorax group proteins
Epigenetic regulation of transcription
non-coding RNAs
Heterochromatin formation
Genomic imprinting
Dosage compensation (X-chromosome inactivation)
Nuclear transplantation and reprogramming
Transgenerational epigenetic inheritance
Epigenetics and human disease

4. Academic Dishonesty:

Academic integrity is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards breaches of the academic integrity rules as extremely serious matters. Sanctions for such a breach may include academic sanctions from the instructor, including failing the course for any violation, to disciplinary sanctions ranging from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, collaboration, or any other form of cheating, consult the course instructor.

5. Americans With Disabilities Act:

If you need accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please inform me immediately. Please see me privately after class, or at my office.

Office location: 164 ASRC Office hours: by appointment

To request academic accommodations (for example, a notetaker), students must also register with the Office of Disability Services, (http://disabilityservices.missouri.edu), S5 Memorial Union, 882-4696. It is the campus office responsible for reviewing documentation provided by students requesting academic accommodations, and for accommodations planning in cooperation with students and instructors, as needed and consistent with course requirements. For other MU resources for students with disabilities, click on "Disability Resources" on the MU homepage.

6. Intellectual Pluralism:
The University community welcomes intellectual diversity and respects student rights. Students who have questions concerning the quality of instruction in this class may address concerns to either the Departmental Chair or Divisional leader or Director of the Office of Students Rights and Responsibilities (http://osrr.missouri.edu/). All students will have the opportunity to submit an anonymous evaluation of the instructor(s) at the end of the course.