GENETICS 5102

at Oklahoma State University

Molecular Genetics 2008

Note to potential registrants: Be sure to look under "GENE" not "BIOC" in course listings.

CID number is : 14458

Tu & Th Meetings (10:30)
Room 348B NRC

Course Information and Policies

Quick to 2008 Topic Outline

Objectives

1. To understand, at the molecular level, the organization of genetic material and its functioning in the phenotypic expression of genetic characters.

2. To understand the observational bases for interpretations and theories in molecular genetics.

3. To become competent in the interpretation of research observations in molecular genetics.

4. To develop facility in the design of research approaches to molecular genetic questions.

General Information

Important Change:

In 2008, the course will revisit a previously abandoned textbook series, the "Genes" series. In addition, it is hoped that, this year, the students will mold the course to their needs.

Texts:

- Benjamin Lewin (2006), Genes IX, Jones & Bartlett
Molecular Genetics Webtext by the instructor (see below)

Prerequisites: Biochemistry 3653 or Bisc 3014, or equivalent

Instructor: Ulrich Melcher
Department of Biochemistry and Molecular Biology
NRC 354
x46210, 377-3602, ulrich.melcher@okstate.edu

Meeting: Tu & Th 10:30-11:20
NRC 348B

Mode of teaching (updated for 2008)

This year, the first week will be devoted to discovering questions that students would like to have answered in order to be able to understand important papers in molecular genetics. See description of assignment. The remainder of the semester will be devoted to answering those questions through a combination lecture-discussion.

At the request of the Biochemistry and Molecular Biology Graduate Student Association, there will be no regular class on 18 September. Instead students are urged to attend presentations by other students at the symposium sponsored by the association. See below for details.

Examinations and Grading (2008 version):

Exams, Assignments, and grading for 2008

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Questions</td>
<td>5%</td>
<td>August 25</td>
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<td>Quiz</td>
<td>5%</td>
<td>August 26</td>
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<td>Exam I</td>
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<td>September 25</td>
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<td>Exam II</td>
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<td>Presentation</td>
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<tr>
<td>Term paper</td>
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<td>Due November 25, 10:30 am</td>
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There are two assignments at the beginning of the course. Both have as their major purpose letting the instructor know what kind of gaps in knowledge need to be filled in the course. One, an on-line quiz, also is aimed at refreshing memories on terms that you may have understood at one time, but have now forgotten. The other asks you to produce a list of questions you need answered, based on reading a literature article. For both see "Assignments" at the base of the first lecture outline.

There will be three examinations: two examinations during the semester and a final examination that is comprehensive. The latter will also cover material from the last sessions of the course. Remember, course emphasis has changed several times over the years. The kinds of questions asked this year may differ from those of previous years. Nevertheless, the formats are similar, making old exams (available from the Internet as "pdf" files, for reading by Adobe Acrobat; see Course Homepage, below) potentially useful. All three examinations contain questions that examine understanding of the experimental basis for selected interpretations in molecular genetics; that ask for interpretations of observations presented; and that ask the student to identify ways of attacking specific problems.

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Both oral and written communication are important in science and practice of both is important for graduate students. However, graduate students are usually also quite busy. Thus, for this year, communication skills may be used for multiple purposes. Those that have already performed research related to molecular genetics (either at graduate or undergraduate levels) are asked to participate in the Biochemistry & Molecular Biology Graduate Student Symposium on the 18 and 19 September by making either an oral or a poster presentation. Beginners at making presentations are strongly urged to discuss their presentations with Ulrich in considerable advance of the presentation. A written description of the research, in the style of a research manuscript, is to be submitted for the written communication requirement. This may be submitted at any time. Feedback with the possibility of resubmission will be provided if submission occurs before 18 November.
Those students that have not performed research related to molecular genetics (either at graduate or undergraduate levels) are asked to attend multiple presentations at the above mentioned symposium and choose one of them as the basis for a research proposal description. This should include sections reviewing the literature (background and significance), a main question to arise from the review, and an experimental strategy to address the question. As above, it be submitted at any time and feedback with the possibility of resubmission will be provided if submission occurs before 18 November. During the last week of the semester, time will be set aside for a brief oral presentation of the written work.

**Grade Standards**

Grades are not assigned on a curve. Rather, minimum percentages of total points will be required for assignment of each letter grade. These percentages are:

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<th>Letter grade</th>
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The required percentages may be lowered should the difficulty of the examinations or the stringency of their grading be higher than anticipated. The required percentages will not be raised. Over the past 14 years, 53% (range 36-100%) of the students completing the course received "A" grades. "B" grades were given to 39% (range 0 -64%) and 8% (range 0-18%) received lower grades.

**Learning Material**

**Course Homepage**

The homepage for Gene 5102 is located at the d2l site and mirrored at:

http://bioinfosu.okstate.edu/UM/Gene_5102/home.html

At this location you will find links to old examinations in pdf format. You will also find a link to a list of topic summaries, mirrored from d2l.

**Topic summary pages** will be available on the website and through D2L. They can be reached from the outline of topics. Each lecture outline contains links to relevant pages in the webetext. The outlines may contain references to published works. These are either seminal papers in the field or recent review articles. They are not required reading. The lists have been compiled for the convenience of students who desire further information.
Ocasional seminal papers, available through D2L, may be assigned for reading and discussion.

Webtext

A series of webpages is available. It is being improved and updated as time allows. The preface for the webtext version of this course contains instructions on navigation and information on the organization of the site. The overview page of the webtext, the starting point for exploration, is the place from which you should be able to access all material available.

Should you notice any problems in the links, in spelling, grammar, clarity, facts, etc., please jot down the page number (found near the bottom of each page), and the nature of the problem. Give or send the information to the instructor so that he can correct the page.

Additional Reading

Also recommended for understanding molecular cloning are:

- "Gene Cloning and Manipulation" by Christopher Howe (575.10724 H855g) (1995)
- "Recombinant DNA Genes and Genomes--A Short Course" by James D. Watson, Richard M. Myers, Amy A. Caudy, Jan A. Witkowski, WH Freeman (2007)

Academic Integrity

Oklahoma State University is committed to the maintenance of the highest standards of integrity and ethical conduct of its members. This level of ethical behavior and integrity will be maintained in this course. Participating in a behavior that violates academic integrity (e.g., unauthorized collaboration on homework or assignments, plagiarism, multiple submissions of the same assignment, cheating on examinations, fabricating information, helping another person cheat, having unauthorized advance access to examinations, altering or destroying the work of others, and fraudulently altering academic records) will result in your being sanctioned. Violations may subject you to disciplinary action including the following: receiving a failing grade on an assignment, examination or course, receiving a notation of a violation of academic integrity on your transcript, and being suspended from the University. You have the right to appeal the charge. Contact the Office of Academic Affairs, 101 Whitehurst, 405-744-5627, <http://academicintegrity.okstate.edu/>.

University Policies

For other university academic policies, including drop and add dates, follow this link.

Posted 13 August, 2004; Updated 22 September, 2008