Molecular Genetics 701
DNA Transactions

(http://www.biosci.ohio-state.edu/~dbisaro/html/mg701.html)

Autumn 2003, 10:30-11:18 MWF

*****107 Hamilton Hall*****

The course will cover two areas: 1) DNA replication and repair, and 2) DNA structure, recombinant DNA technology, genome projects and functional genomics. Auditors of MG701 are welcome and are encouraged to enroll for audit status.

Prerequisites:
Molecular Genetics 605-606 and Biochemistry 511 or equivalent and ten additional hours in the biological sciences above the 300 level. This is a rigorous course and the majority of the persons taking the course are graduate students. Poor background or lack of prerequisites are good reasons for not taking the course.

Instructors:
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Instructors:

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TA office hours by appointment

Text:
There is no required textbook for this course. A recommended general molecular/cellular biology text is "Molecular Biology of the Cell" by Bruce Alberts, Alexander Johnson, Julain Lewis, Martin Raff, Keith Roberts, and Peter Walter, published by Garland Science. You do not need to buy this textbook; it is a recommended general reference book. It will also be on reserve in the BPL Library. In addition, you will have access to lecture notes for this course.
MG701 is a graduate level course and the scientific literature is the only source available that adequately covers the topics that will be presented. The course will be literature based. Original research articles will be assigned in class. In some cases, these will be presented and discussed in class. In other cases, you will be expected to read and understand the papers on your own.

Tests:
There will be a mid-term examination and a final examination. The exams will cover: 1) material presented in lectures, and 2) material in the original research articles. Reading and understanding the material contained in the assigned articles will help to clarify the material presented in class.

Students are expected to take the mid-term and final exams at the regular time. Make up examinations are not given except in cases of genuine, documented emergency or illness. Graduating seniors should contact the instructors as soon as possible so that arrangements can be made for a graduating senior final. Students who have a legitimate reason for not taking the mid-term or final at the scheduled time should see the instructors as soon as possible before the exams.

The Mid-Term Examination will be held outside of the regular class time. The mid-term is tentatively scheduled on Tuesday, November 4, 2003, at a time and location to be arranged. Prior to the mid-term, there will be a help session scheduled at a time and place to be arranged. The mid-term examination will exclusively cover material from Dr. Bisaro’s lectures (lectures 1-16).

The Final Examination will be during finals week on Thursday, December 11, 2003 at 7:30 AM-9:18 AM in Postle Hall, Room 1188. Prior to the final there will be a help session at a time and place to be arranged. The final exam will exclusively cover material from Dr. Herman's lectures (lectures 16-31).

Grading:
Midterm ---- 50%
Final--------50%

Grading policy:
If you feel a mistake was made in grading your test, you must document your complaint in writing and turn the written complaint and graded test over to the appropriate instructor. The instructor will inform you of the final disposition of your complaint.

Books on Closed Reserve:
For background information not covered in this course:

Supplemental information for Dr. Bisaro’s lectures:
Tentative Course Outline:

Sept 24-Oct 29: Bisaro

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Sept 24</td>
<td>DNA structure and function</td>
</tr>
<tr>
<td>Sept 26, 29</td>
<td>Prokaryotic and eukaryotic DNA polymerases</td>
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<tr>
<td>Oct 1, Oct 3, Oct 6</td>
<td>The replication apparatus</td>
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<td>Oct 10, 13</td>
<td>Replication mechanisms</td>
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<td>Oct 22, 24, 27, 29</td>
<td>DNA repair</td>
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Oct 31-Dec 5: Herman

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<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Oct 31</td>
<td>Introduction to the Genome Age: Genome Projects and Genomics</td>
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<tr>
<td>Nov 3</td>
<td>DNA Sequencing &amp; Structural Genomics</td>
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<td>Nov 5, 7</td>
<td>Isolating Genes in the Pre-Genome Era</td>
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<td>Nov 10</td>
<td>Positional Cloning of Disease Genes: Before and After the Human Genome Project</td>
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<td>Nov 12, 14</td>
<td>Functional genomics at the DNA level: resequencing individual genomes part 2</td>
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<td>Nov 17, 19</td>
<td>Functional genomics at the RNA level: Simultaneous monitoring of global patterns of gene expression</td>
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<td>Nov 21, Nov 24</td>
<td>Functional genomics at the protein level: Proteomics</td>
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<td>Nov 26</td>
<td>Functional genomics at the organismal level: Manipulating genomes by transgenic and stem cell approaches</td>
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<td>Nov 27</td>
<td>Thanksgiving</td>
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<td>Nov 28</td>
<td>No class (Columbus Day observed)</td>
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<tr>
<td>Dec 1, 3</td>
<td>Functional genomics at the organismal level: Manipulating genomes by transgenic and stem cell approaches</td>
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<td>Dec 5</td>
<td>Functional Genomics at the level of Society; Review Session</td>
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