Biology 6010/8010
Advanced Molecular Biology

Quarter: Fall 2015
Time: MW 5:00-7:00, 3246 Wolfe Hall
Instructor: Dr. Lirim Shemshedini, 3227 Wolfe Hall
Office Hrs: T, F 10-12

Textbook: There is no formal textbook for this class. However, Molecular Biology of the Cell (6th edition) by B. Alberts et al. is an excellent reference book on molecular biology and we recommend it.

Grades will be based upon:
- Quizzes 80
- Class Participation 20
- 2-hr Exam 100
- 2-hr Exam 100
- Final Exam 200
- 500

Exams
There will be two 2-hr in-class exams and a final exam. The final exam will cover the entire Semester. Exams will consist of the following types of questions:
- Multiple Choice
- True/False
- Definition/Short Answer
- Essay/Data Analysis

Quizzes and Papers
There will be eleven 11 sessions, with 10 min devoted to a quiz followed by a paper review. The quizzes will cover the paper(s) to be reviewed and material from the previous lectures. There will be eleven quizzes, each worth 10 points, and your three lowest quiz scores will be dropped. Students are expected to be involved in the class discussion of the paper(s). All papers must be obtained by students directly from the journals. Make sure to read both the main paper and the supplementary information.

Syllabus

August 24 Introduction/DNA and Protein Structure I
26 Introduction/DNA and Protein Structure II
31 Methods

**September**

2 *Quiz-Paper 1*/Chromatin I

7 Labor Day

9 Chromatin II

14 *Quiz-Paper 2*/Transcription I

16 Transcription II

21 Transcription III

23 *Quiz-Paper 3*/Nuclear Receptors I

28 Nuclear Receptors II/Quiz Paper 4

30 **Exam I** (covering previous materials)

**October**

5 Fall break

7 RNA Processing I

12 RNA Processing II

14 RNA Regulation

19 *Quiz-Paper 5*/Translation I

21 Translation II

26 *Quiz-Paper 6*/Postranslational Modifications and Protein Function I

28 Postranslational Modifications and Protein Function II/Quiz-Paper 7

**November**

2 **Exam II** (covering previous materials)

4 DNA Replication I

9 DNA Replication II/Quiz Paper 8
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<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tr>
<td>11</td>
<td>Veterans Day</td>
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<tr>
<td>16</td>
<td>*Genetics I</td>
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<tr>
<td>18</td>
<td>*Genetics II/Quiz-Paper 9</td>
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<td>23</td>
<td>Transposable Elements I</td>
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<td>25</td>
<td>Thanksgiving Break</td>
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<td>Transposable Elements II/Quiz-Paper 10</td>
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**December**  
2       | Homeotic Genes I |
7       | Homeotic Genes II/Quiz-Paper 11 |
9       | Gene Therapy |

**Final Exam Date:** Dec. 16 5-8 pm

*Note that*
- lecture underlined will be given by Dr. Leisner.
- lectures indicated by an asterisk will be given by Dr. John Plenefisch.
List of Papers To Be Reviewed

Paper 1  Jin, et al. (2005) MBD3L2 interacts with MBD3 and components of the NuRD complex and can oppose MBD2-MeCP1-mediated methylation silencing. **J Biol. Chem. 280**:12700-12709


Paper 3  Hsu et al. (2008) TBP, Mot1, and NC2 establish a regulatory circuit that controls DPE-dependent versus TATA-dependent transcription. **Genes Dev. 22**: 2353-2358.


Paper 5  Wierzbicki et al. (2009) RNA polymerase V transcription guides ARGONAUTE4 to chromatin **Nature Genetics 41**: 630-634.


