DEPARTMENT OF BIOCHEMISTRY

BCHM 69500-001 Syllabus
Fall, 2013

INSTRUCTOR:  Dr. Ann L. Kirchmaier
   office:  BCHM 321B
   TEL:  494-0977
   e-mail: kirchmaier@purdue.edu

Office hours:  By appointment

COURSE OBJECTIVES

In this course, we will discuss recent and historical key genetic and biochemical findings related to chromatin biology and how these observations have led to and shaped current models in the field. We will explore nucleosome composition, assembly and remodeling and their relationship to gene expression and DNA replication. We will discuss enzymes mediating biochemical modifications to DNA and histones. We will investigate how these modifications influence chromatin structure and function as well as gene regulation. We will explore the relationship between epigenetic processes and development, health and disease. This course will draw from examples in both model organisms and mammals and compare common themes as well as variations across organisms.

TEXTBOOK

No textbook is assigned for this course. Readings, discussions and lectures will be based on selected chapters (Epigenetics, C.D. Allis, T. Jenuwein, D. Reinberg, eds., CSHL Press, 2007; Genes X. J.E. Krebs, E.S. Kiilpatrick, eds., Jones & Bartlett, 2011), primary literature and reviews.

LECTURE TIME AND PLACE

T,Th 1:30 – 3:20 PM, BCHM Room 102

BLACKBOARD

The syllabus for the course, lecture notes, papers, etc. will be available via the Purdue University Blackboard site at: https://blackboard.purdue.edu/webct/logonDisplay.do?webct

ASSESSMENT

Assessment of student performance will occur through monitoring participation, group discussions, quality of presentations and performance on exams.
The grading for this course will be as follows:

- Participation: 100 points
- Presentation: 100 points
- Homework: 200 points

The cutoff values for letter grades are as follows:

- 360 points: A
- 320 points: B
- 280 points: C
- 240 points: D
- 239 points and below: F

**OBTAINING EXTRA HELP**

Dr. Kirchmaier will be available to answer your questions immediately after class, during office hours, or by appointment (arranged in class or by e-mail).

**ACADEMIC MISCONDUCT**

Academic misconduct of any kind will not be tolerated in any course offered by the Department of Biochemistry. Information on Purdue’s policies with regard to academic misconduct can be found at [http://www.purdue.edu/ODOS/osrr/integrity.htm](http://www.purdue.edu/ODOS/osrr/integrity.htm).

Any student found cheating on an exam will receive a score of zero on that exam, may receive an F in the course, and their misconduct will be reported to the Office of the Dean of Students. The Office of the Dean of Students will review the misconduct to determine if that student should be suspended or expelled from the university.

To provide you with an unambiguous definition of academic misconduct, the following text has been excerpted from "Academic Integrity: A Guide for Students", written by Stephen Akers, Ph.D., Executive Associate Dean of Students (1995, Revised 1999, 2003), and published by the Office of the Dean of Students in cooperation with Purdue Student Government, Schleman Hall of Student Services, Room 207, 475 Stadium Mall Drive West Lafayette, IN 47907-2050.

"Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, University Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72-18, December 15, 1972]

More specifically, the following are a few examples of academic dishonesty which have been discovered at Purdue University.

- substituting on an exam for another student
- substituting in a course for another student
• paying someone else to write a paper and submitting it as one’s own work
• giving or receiving answers by use of signals during an exam
• copying with or without the other person’s knowledge during an exam
• doing class assignments for someone else
• plagiarizing published material, class assignments, or lab reports
• turning in a paper that has been purchased from a commercial research firm or obtained from the internet
• padding items of a bibliography
• obtaining an unauthorized copy of a test in advance of its scheduled administration
• using unauthorized notes during an exam
• collaborating with other students on assignments when it is not allowed
• obtaining a test from the exam site, completing and submitting it later
• altering answers on a scored test and submitting it for a regrade
• accessing and altering grade records
• stealing class assignments from other students and submitting them as one’s own
• fabricating data
• destroying or stealing the work of other students

Plagiarism is a special kind of academic dishonesty in which one person steals another person’s ideas or words and falsely presents them as the plagiarist’s own product. This is most likely to occur in the following ways:

• using the exact language of someone else without the use of quotation marks and without giving proper credit to the author
• presenting the sequence of ideas or arranging the material of someone else even though such is expressed in one’s own words, without giving appropriate acknowledgment
• submitting a document written by someone else but representing it as one’s own

EMERGENCY PREPAREDNESS

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. To get information about changes in this course consult the class Blackboard site or e-mail or phone the instructor.

ON-LINE COURSE EVALUATIONS

During the last two weeks of the semester, you will be provided an opportunity to evaluate this course and your instructor(s). To this end, Purdue has transitioned to online course evaluations. On Monday of the fifteenth week of classes, you will receive an official email from evaluation administrators with a link to the online evaluation site. You will have two weeks to complete this evaluation. Your participation in this evaluation is an integral part of this course. Your feedback is vital to improving education at Purdue University. I strongly urge you to participate in the evaluation system.

CLASS ATTENDANCE

In accordance with University policy, you are expected to attend every scheduled class. If you have a valid reason for missing class such as a University-sponsored activity,
religious observances, illness, or family emergency, the instructor will assist you in
obtaining information and materials you may have missed. Students who skip class
without a valid excuse should not expect the instructor to supply class notes or provide
special help. The official university policy,
see: http://www.purdue.edu/univregs/pages/ac_regs_pro/classes.html

LECTURE SCHEDULE

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Topic</th>
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<tbody>
<tr>
<td>8/20</td>
<td>T</td>
<td>Kirchmaier Introduction/Chromatin-Chromosome Overview</td>
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<tr>
<td>8/22</td>
<td>Th</td>
<td>Kirchmaier Histone Variants</td>
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<tr>
<td>8/27</td>
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<td>Kirchmaier DNA Methylation/Hydroxymethylation</td>
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<td>8/29</td>
<td>Th</td>
<td>Student Presentation 1 DNA Demethylation</td>
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<td>9/3</td>
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<td>Student Presentation 2 Nucleosomes –Chromatin Assembly</td>
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<td>Ogas Chromatin Remodeling</td>
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<tr>
<td>9/5</td>
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<td>Homework 1 Due Bisulfite Sequencing, Detection of Hydroxymethylation, Inhibition of DNA Methylation</td>
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<td>9/10</td>
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<td>Student Presentation 3 Chromatin Remodeling</td>
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<td>9/12</td>
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<td>Briggs Histone Demethylation and Methylation</td>
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<td>9/12</td>
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<td>Homework 2 Due Small Molecule Inhibitors/Activators</td>
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<td>9/17</td>
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<td>Weake SAGA/Histone modifying complexes</td>
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<td>Student Presentation 4 Chromatin Boundaries</td>
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<td>9/19</td>
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<td>Homework 3 Due Protein Domains that Bind Chromatin Modifications</td>
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<td>9/24</td>
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<td>Anna Malkova (IUPUI) DNA Damage</td>
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<tr>
<td>9/24</td>
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<td>Anna Malkova (IUPUI) Special BCHM Seminar 3:30-4:30 WSLR116</td>
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<td>9/26</td>
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<td>Student Presentation 5 Epigenetics: S. cerevisiae Silencing</td>
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<td>Young ncRNAs</td>
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<tr>
<td>10/1</td>
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<td>Homework 4 Due ncRNA, siRNA, miRNA</td>
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<td>Student Presentation 6 S. pombe Centromeric Heterochromatin</td>
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<td>Student Presentation 7 Chromatin &amp; Splicing</td>
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<tr>
<td>10/10</td>
<td>Th</td>
<td>Kirchmaier Epigenetics – Heterochromatin /Cancer</td>
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TEACHING ASSISTANT: Tiffany Young
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e-mail: young93@purdue.edu

Office hours: Th. 3:30 PM - 4:30 PM or BCHM321 - or by appointment