Course Description
This course investigates epigenetic phenomena: heritable alternate states of gene activity that do not result from an alteration in nucleotide composition (mutations). Epigenetic mechanisms regulate normal development and their dysregulation has been implicated in a variety of diseases including cancer and behavioral diseases. Recently it has become apparent that Epigenetics is the interface between the environment and the genomic information; epigenetic mechanisms are important for proper stress responses. Amongst the epigenetic mechanisms we will discuss in this course are chromatin assembly and remodeling, histone modifications, DNA methylation, polycomb repression, non-coding RNAs and 3D chromatin organization. The class size is limited to 30 students.

Textbook
There is no assigned textbook for the class. We will assign general review articles as background reading. A textbook we used in the past is “Epigenetics”, editors Allis, Jenuwein, Reinberg from CSHL (IsBN-13:978-087969724); copies of which will be on hold at the Biomedical Library. This book is now pretty out of date.

Website
The Blackboard course website (https://courseweb.upenn.edu) will be our main website and is only available to class participants. Here you will find the slides for my lectures, the guest lectures and the student presentations. The scientific articles for the student presentations and additional assigned readings will also be posted at this site. Information on how to prepare presentations and proposals is also available here.

Course format
The course is a combination of lectures, students presenting current scientific literature, and research talks by invited faculty speakers from across campus whose research is related to Epigenetics. All research presentation will be preceded by a lecture aimed at giving relevant background information. Students will work with the current scientific literature. This course format emphasizes critical analysis of the papers being discussed and will focus on the current questions in Epigenetics and how they are being addressed experimentally.

Student Presentations
Every student is asked to give an oral presentation about a recent scientific publication. The publications will be related to the subject matter discussed in the lecture prior to the
Presentations. Presentations should be approx. 30 minutes long and in addition to a thorough and critical discussion of the findings should include background information as well as future directions. Following each presentation there will be time for questions and discussion. Depending on the size of the class one or two students will present per paper per timeslot. Maximally two papers will be presented per meeting time.

**Grading**

Your grade will be based on your **oral presentation** (30%): your understanding and interpretation of the material presented, the organization of your presentation, the background and future direction section, and the clarity of the visual aids you use. Your grade will also be based on your **exams** (a total of 60% for your two in class midterms. The remaining 10% of the grade are based on participation. This consists of two things: 1. Each student is expected to hand in a brief question for each of the papers being presented by their fellow students. The questions are due at the beginning of the class session (prior to the presentations). 2. Students are expected to participate in discussions following student presentations and faculty research presentations.

Note: **graduate students as well as ALL students taking CAMB483** will receive 22.5% credit for the oral presentation and for each midterm, as well 10% credit for participation. In addition, the students will be asked to write a short research proposal as their final assignment (see separate instructions on the course website) worth 22.5% credit.