

BioScience 2450 Spring 2014  
Thursday 10:00-11:50 PM  
343 Crawford Hall

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**Purpose of Course:** This course will promote critical scientific reading and thinking, using recent papers on a topic of interest as a focus of our discussions. To provide time for thorough discussion, most meetings will extensively examine a single major research paper. As you hopefully have discovered by now, there really are no absolute “facts” in Science – only observations and interpretations. Both of these components are subject to various limitations. To navigate the world of Science, one needs to acquire the ability to separate the rational from the dodgy. This course will provide experience toward acquiring this goal.

**Course Organization:** The focus topic for the term will be chosen at the first class meeting (Jan. 9<sup>th</sup>). We currently plan to focus on a recent Science paper (that some might say was over-hyped) concerning transcription factor binding within coding regions. Despite a number of concerns, the paper raises interesting questions including: How common is this “multiple use” of a common DNA segment? What constraints might this place on the separate functions? What really is a code and how do you know you’ve understood it? We plan to pursue these topics as well as others throughout the term.

Each of you will lead the discussion of two papers during this term (see schedule and expectations below). These assignments are random; if for some reason you cannot present on the day listed, swap dates with a classmate and inform one of the Instructors.

With the exception of the first paper (that we will provide today for discussion on Jan. 16<sup>th</sup>), Two weeks prior to the scheduled presentation, three potential papers will be turned into the instructors, who will approve/disapprove the proposed papers. The approved paper will be uploaded to CourseWeb, and the presenter is encouraged to meet with one of the instructors during the week prior to the scheduled presentation if there are any problems or questions.

The folks not presenting are expected to have thoroughly read the assigned paper and formulate a summary/evaluation in preparation for being called upon. Although the chosen paper is the focus of the class meeting, **students are expected to examine additional papers either listed in the reference section** of each paper or to peruse general reviews in the field to complement their knowledge of the topic and acquire a rational basis to intelligently discuss the paper.

Prior to the discussion of each paper, one class member (NOT the presenter) will be chosen at random to provide a two minute summary of the day's paper. The ability to successfully do this will be a part of your final grade (below).

**Presentation schedule:**

Jan. 9 Introduction, assignments

Jan 16 Dominique Barbeau

Jan 23 Hillary Cleveland

Jan 30 Chong Dai

Feb 6 Elizabeth Hildreth

Feb 13 Travis Mavrigh

Feb 20 Sarah Smith

Feb. 27 Zhihao Sun

Mar. 6 Dominique Barbeau

Mar. 13 **No class Spring Break**

Mar. 20 Hillary Cleveland

Mar 27 Chong Dai

April 3 Elizabeth Hildreth

April 10 Travis Mavrigh

April 17 Sarah Smith, Zhihao Sun

**Expectations:**

**In class summaries** should reflect roughly a page of single-spaced text, and need to encompass the following points:

- • **Very brief** summary of the paper
- • Strengths of the scientific work
- • Shortcomings of the scientific work

*Avoid recapitulating the wording of the authors and give your own personal evaluation.*

### ***Performance as Discussion Leaders***

- Always use clear speech in standard English with accurate use of grammar and precise application of scientific terminology.
- Always use uncluttered visual aids of good display quality that clearly illustrate the main points of interest. It is up to the discussion leader to produce high quality PowerPoint slides for the presentation.
  - Always check the scientific literature for relevant background information necessary to elucidate the research goals and techniques applied.
- Always plan the presentation for the background and interests of the audience as well as the available length of time.
- Always be prepared to lead a discussion of the strengths and weaknesses of the research work under consideration.

### ***Performance as Discussion Participants***

Presenters do not operate in an empty room. Active participation is expected of scientific audiences, whether the event is a research seminar, a classroom lecture, or a Ph.D. dissertation defense. In BioSci 2450, you will be expected to participate heeding the following dictates:

- Always read carefully the relevant scientific reviews and research papers that will be presented before the class meeting
- Always seek background information from the literature in advance to discover the meaning of any terms and concepts that are new to you
- Always listen attentively to the presentation and make judgements about the choices and quality of visual aids employed by the presenter
- Always be prepared to take part in a discussion of the strengths and weaknesses of the research work under consideration.

**Grading Expectations:** Your grade for the course will be based upon 3 factors:

Presentations 40% (20% each)

Participation 40%

Attendance/ In class paper summary 20%