

**CCS Biology Colloquium: 2009**  
**Weds, 3 - 4:30pm** (sometimes longer)  
Old Little Theater, 160B

Faculty: John Latto, x 5399 – Latto@lifesci  
Claudia Tyler, 455-5711 - Tyler@lifesci  
Bruce Tiffney, x 3827 - Bruce.Tiffney@CCS  
Armand Kuris, x 3998 - Kuris@lifesci

Course blog: <http://ccsbio.blogspot.com/>

**Week 1, 9/30 (Latto, Tyler, Tiffney, Kuris)**

In class: General introduction, lay out course, introduce people, etc.

For next week: We will hand out the syllabus (in your hands!) together with instructions for five assignments due at various times during the quarter. You will also receive several readings which illuminate what science is and the ways in which it may be done. Read these and come prepared to discuss at the next meeting.

Due: Nothing.

**Week 2, 10/7 (Tiffney, Tyler)**

In class: Discuss the materials you have read & try to arrive at a consensus as to what science is and is not.

For next week: A paper from the primary literature. Read and carefully study this paper for next week's class. Use the "Guide to Reading the Primary literature" and the associated worksheet provided in the syllabus. Fill out the worksheet as you read the paper and respond to the questions posed. Note that a scientific paper is an interaction between a writer and a reader, moderated by two or more (generally anonymous) colleagues who review the paper before publication. We will hand out an "Instructions to authors" and an "Instructions to reviewers" to place this process in context.

Due: Nothing.

**Week 3, 10/14 (Kuris, Latto)**

In class: We will discuss the paper with the intent of sharpening your skills at reading scientific literature.

For next week: Consult the Science Citation Index project (= SCI Project = Web of Science) instructions provided in the syllabus. You are to follow said instructions in the intervening weeks.

Due: Your primary literature worksheet.

**Week 4, 10/21 (Latto, Tiffney)**

In class: Bring your laptop computer. We will use CCS's wireless internet to tour the electronic library resources appropriate to your future CCS research plans.

For next week: - keep working on SCI project (due next week). Start thinking about the Seminar assignment (the instructions for which were handed out with the syllabus). This requires you to visit one seminar in one of the biology departments and briefly summarize its content (see sheet). You may hand

this sheet in at any time after attending the seminar, but it is absolutely due on the last day of class (12/2)

Due: Nothing

### **Week 5, 10/28 (Kuris, Tyler)**

In class: Discuss SCI findings. Do papers get used "accurately"? Did you find examples of dubious science?

For next week: Commence thinking about the writing project, which requires you build on your knowledge of the Web of Science. Further instructions were presented in the syllabus. This is due 11/18. Late submissions NOT accepted, as we wish to read & return to you.

Due: SCI project form

### **Week 6, 11/4 (Foltz, Kuris, Tiffney, Latto, Tyler)**

In class: Presentations by undergraduate & graduate students and faculty – “How I got to where I am today!”

For next meeting (11/18): Instructions for faculty/researcher web page search exercise were provided with the syllabus. Follow the instructions and be prepared to discuss what you discovered in week 8. Write up your findings on two faculty/research staff web pages and hand in by week 10.

Due: Nothing

### **Week 7, 11/11**

No class – UC holiday, **VETERAN’S DAY**

### **Week 8, 11/18 (Kuris, Tiffney, Latto, Tyler)**

In Class: The faculty of the course will lead you through a discussion of the faculty, researchers & resources available to you at UCSB.

For next week: Nothing new

Due: Writing Exercise / Literature review.

### **Week 9, 11/25**

No class - enjoy eating a feathered dinosaur.

### **Week 10, 12/2 (Latto, Tyler, Tiffney, Kuris)**

In class: Discuss forming a plan of action - where you are going from here based upon all that you have assembled in this course. Be ready to cite some juicy possibilities you have garnered from your Web search.

Due: Review of faculty web pages. Seminar review (if not already submitted).

**Primary Literature Reading Guide and Worksheet**  
**Biology Colloquium, 2009**

**Due 10/14**

Reading and completely understanding a scientific publication in the primary literature (a peer-reviewed publication of original research) is an intellectual challenge and a learned skill. To fully understand any such paper it is generally necessary to be or to become familiar with the field, which may entail reading works cited in the introduction and/or the discussion, thus familiarizing yourself with some of the preceding and related studies (often by the same author, or others as cited).

In an addition, you need to approach the paper like a detective, seeking clues in an orderly manner, clues that will help you to evaluate the quality and import of the paper. The following series of questions will guide you in this process. Try to answer each question with a short sentence or phrase as you read the paper provided. Use a similar mental checklist in reading any subsequent paper of interest.

What is the hypothesis? If the hypothesis is not apparent, can you state what the question was, or even more vaguely, why the work was done?

Was the study an experiment? Why? If not, what was it?

What prediction(s) of the hypothesis did the author(s) choose to test?

What was the test of the prediction?

If the test was experimental, what was the purpose of each treatment? Which were experimental treatments and which controls? Was there sufficient replication?

Were the results reported clearly and evaluated appropriately (e.g., Statistics)?

Did the discussion follow logically from the results

Did the author(s) appear to treat opposing views fairly (Indeed, did they acknowledge alternative interpretations?)

What were the new findings? How did they contribute to the larger aspects of science (create a new theory, add to an existing one?)

What is the author(s)' next question - Where does the research go from here?

What would you like to know if you were pursuing this line of research?

**Science Citation Index (Web of Science)  
Exercise Instructions.  
Biology Colloquium, 2009**

**Due date: October 28**

Note: This exercise requires both Library research & submission of a two page summary

Logic: Bibliographies allow you to track an idea back in time. The SCI permits you to go forward in time and see how a paper was used by future workers. Suppose that you are seeking papers that cite Lopez, A. 1975. Nature 251:313-316, during the years 1980-83. You will use the citation index and enter the Lopez article and then specify that you wish to see papers that cite it between 1980 and 1983. The SCI might then list out.....

Smith, A. 1980.....

Wong, S. 1980.....

Cohen, D. 1983....

You can then pursue these individual references to see how they used Lopez, 1975.

We will assign each student a multi-year window to seek out articles that have cited the assigned reference during this time frame.

The general ISI website is <http://isiknowledge.com>, although in general you will access ISI through the "research" link of the UCSB's library portal. (Go to library, select research then select "Article indexes and databases), then cruise down to "Web of Science". If you were interested in pursuing particular subjects via key words, use the "General Search".

However, for this exercise we will use the "cited reference search". Turn off the Social Science and Arts and Humanities options, then follow the menu. Once you have located papers that cited the original paper, locate the place(s) in the paper where the original reference was cited, and report how the paper was used by filling in the SCI Worksheet for each of the citing references you find (worksheet below). We will discuss your findings in section - *be prepared to hand the worksheet in at this class, along with photocopies of (1) the title page of the citing paper and (2) the page where the original article was cited.*

**SCI Worksheet**

NAME \_\_\_\_\_

Cited Reference:

Citing paper:

One sentence summary of the citing paper (What was it about?):

How many times was reference cited?

How was reference used? (What did it contribute to the citing paper? What was it cited for?)

Was it cited accurately? (Did they get the quote or data “right”?)

Was it cited appropriately? (Was the citation pertinent to the argument at hand?)

## SEMINAR ASSIGNMENT Biology Colloquium 2009

**Due: By the last meeting, December 2**, but may be submitted at any time earlier. This exercise requires that you attend one professional seminar in either the EEMB or MCDB departments and write a 1-2 page evaluation of it.

During the quarter, you are responsible to go to one seminar in either EEMB or MCDB. In listening to the seminar, you should set up a mental check list and run through it, much as you did for the reading of the research paper. Evaluate the talk on:

- What is the problem?
- What is the approach to its solution?
- Are the methods appropriate?
- Are the conclusions justified by the methods & findings?
- Have all alternate interpretations been explored?
- Was it logically organized?
- Was it engagingly presented?

We strongly recommend going to the talk with several students from the CCS seminar so that you can all exchange input and thoughts (Science *is* a group activity). This may alert you to different ways of thinking about the seminar, questions to ask, etc.

**Write a one - two page summary** of the talk and your praise and or criticism. The real desire is that you treat the talk like you were reading a paper. The format is different, but the basic qualities should be the same.

- think of one question you might ask the speaker

To find out what's cooking go to

**<http://www.lifesci.ucsb.edu/>**

Then skip down to the third link from the bottom - Seminars and Events. Then select Biological Sciences (includes all) or MCDB or EEMB - or BMSE if you wish (It will be more esoteric)

**Writing Exercise**  
**Biology Colloquium, 2009**

**Due: By 11/18** This exercise requires that you summarize five literature papers (which you find using your new database searching skills) in a written format.

Your task (which you have no choice but to accept) is to select a particular organism (species, or a type of virus) of interest to you. Be careful to select one that is not going to lead you into a young Ph.D. thesis.

You must clear your choice with one of the course instructors.

Seek out basic information on that item using the various search tools that you now have in hand. You want to use the web resources to lead you to primary, refereed, literature. Do not rely on un-refereed sources, and **especially** do not rely on web sites.

Find five papers on this topic. It is your responsibility to ensure that all five are on different aspects of the topic. Examples of **different** aspects would be molecular genetics, behavior, development, ecology, physiology, functional anatomy, biochemistry, and systematics.

Briefly summarize each of the five papers. Evaluate its context, breadth and clarity. Can you detect any deficiencies? Do not exceed five double-spaced pages in this exercise.

## **UCSB Researchers: Web Assignment Biology Colloquium, 2009**

**Due:** Your written summary is due by week 10 (12/2), but be prepared to talk about your findings in week 8 (11/18)). This exercise requires that you surf the web, find two faculty or researcher web pages at UCSB, and summarize aspects of each.

UCSB houses a wide range of research resources, both bipedal and physical. We will explore these in the meeting of 11/18, with each faculty member in the course summarizing opportunities & resources. However, you need not rely just upon us. With the advent of the Web, you can go to the home pages of many scientists & read about what they are doing in their own words. Often these resources also provide citations to recent papers which you can check out. This gives a fine introduction to the options before you - and not just in biology. Go cruise environmental studies, geography, anthropology, the biochemistry portion of Chemistry & Biochemistry, Biomaterials, etc. - there are lots of things "going on" on campus. Further, do not just look at the departments - research institutes like the Neurobiology Research Institute, the Marine Science Institute, the Institute for Coastal Studies are on campus. These house professional researchers who are very happy to work with students, and who have web pages. Be certain to check out these sources. Not just MCDB and EEMB.

To get you out there and clicking, you are required to seek out two faculty or researcher web pages in an area (or areas) of your interest. Briefly summarize the interest of each researcher. How active are they? How well funded? What indication do you have of their concern or interest in student participation in research? Write a 1-2 page (double spaced) summary of your findings for each faculty / researcher.