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## BIOL 486, Senior Seminar, Cancer Biology, Spring 2013

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Authors	Miller, Mary
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**BIO 486 Senior Seminar**  
**CANCER BIOLOGY**  
**CRN 23182**

Time: Monday, Wednesday and Friday, 11:00 – 11:50 am

Location: FJD

Course Instructor: Dr. Mary Miller, [millerm@rhodes.edu](mailto:millerm@rhodes.edu), FJ 104-W

Office Hours: Wednesday 12:00 – 2:00 pm, FJ 104W

Moodle Site: <http://moodle.rhodes.edu/course/view.php?id=9486>

**Goals:**

Rhodes requires all of its students to participate in a senior capstone experience. The purpose of this experience is to allow students to integrate knowledge from different sources while refining their writing and speaking skills. In this class we will accomplish these objectives as part of a seminar concerning the molecular basis of cancer. A seminar course is one in which the participants teach and learn from each other through reading and discussion – the success or failure of this experience depends profoundly on the participation of the students.

Specifically, my goals for this senior seminar are to give you the opportunity to:

1. Learn and appreciate the molecular basis of cancer
2. Refine your critical thinking skills and the ability to integrate different sources of information into a coherent picture
3. Understand and evaluate how science is done by finding, reading and discussing primary literature
5. Develop your speaking and writing skills

To achieve these goals, the first and second parts of the course will be organized and run differently, although both sections will require you to read and discuss primary literature. To begin with, it is important for everyone in the class to learn basic background information about the molecular basis of cell growth, and disruptions of this that contribute to cancer. In another type of course I might simply provide a series of lectures on these topics, but a seminar course provides you with the opportunity to learn by doing. Therefore, in the first lectures of the course you will work to create a presentation describing a method or technique commonly used in cancer biology research. This series of presentations will serve as a source for you and your classmates as you begin to read primary literature articles. In the second set of presentations you will begin to speak the “language of cancer” by giving presentations that describe specific signal transduction pathways that are important in the development of cancer – focusing on how problems within these pathways contribute to cancer development. In addition to gaining this foundational understanding of the molecular basis of cancer and the methods used to study cancer, each student will also give a brief presentation on an assigned journal article.

During the remaining time of the semester, each student will give a more formal presentation to the class on a special topic that s/he has chosen. This will allow you to become the expert in that subject. Based on your experiences in the first half of the course, you should be well prepared to read and synthesize information from the primary literature and present it to a group in a clear and organized format. You will also have had practice in leading your classmates through a critique and discussion of a primary research paper in your first presentation, which will be part of your topic presentation.

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**Course requirements:**

**You MUST SHOW UP and turn assignments in ON TIME! It is your personal responsibility to be AWARE OF DUE DATES and to complete your work on time. YOU WILL NOT BE REMINDED WHEN ITEMS ARE DUE. If you fail to turn in assignments on time or if you fail to show up to class (or are consistently late), YOUR GRADE WILL BE REDUCED BY A HALF OF A LETTER GRADE OR MORE AT THE PROFESSOR'S DISCRETION.**

You are required to use PowerPoint (PTT) for ALL of your presentations; AND YOUR PPT FILES MUST BE TURNED IN BEFORE CLASS BY THE DEADLINE (NO LAST MINUTE PUTTING TOGETHER OF YOUR PPTS!). We have had trouble with online presentation tools, so I require that you use PPT – YOU MAY NOT TURN IN A LINK TO A WEB SITE WHERE YOU CONSTRUCTED YOUR PRESENTATION. You may also provide handouts, use overheads or write on the board to teach the class what they need to know to understand the papers. Make sure that you make arrangements ahead of time for any equipment that you need. (Part of giving a good presentation is being prepared.) Just remember that you want people listening to you, not reading a book's worth of handouts. We will be very tight on time – so ALL of these arrangements must be made before class starts. Failure to do so will result in a reduction in points.

No assignments may be turned in beyond the scheduled time unless medical or personal emergency warrants it, and in this case a point reduction of 10% will still be applied. In such cases, the professor must be consulted for approval **prior** to the deadline or as soon after as possible. Missed assignments for unexcused reasons will receive a grade of 0. In some cases, students may obtain permission from the professor to complete an assignment prior to the scheduled deadline. The course schedule is very tight – there will not be time to reschedule presentations, so work ahead and be prepared to present your work on the assigned date.

**The honor code applies to all work done in this course.**

It should go without saying that your conduct in this course must adhere in every regard to the Rhodes College Honor Code. This system is critical to maintaining the Rhodes Community, and we must all be diligent in our responsibilities. For more information on the Rhodes honor code system go to <http://www.rhodes.edu/campuslife/1478.asp>. There are specific writing assignments in this course – you may not plagiarize. There is a short plagiarism worksheet that you will complete and sign and turn in to Dr. Miller that should help you gauge your understanding of this concept. It is your responsibility to come to a full understanding of proper writing practices. Failure to adhere to the Honor Code (in any form, including plagiarism), will result in failure of this course at the instructors discretion. Please be aware of the following:

1. All individual assignments are to be done by you with no help from others.
2. When evaluating papers or presentations of peers it is your duty to be fair, honest with your criticism, and unbiased by your friendship with the presenter/author.
3. Any work submitted for this class must not have been used for a previous class or a class you are taking concurrently. **BE CAREFUL HERE!!!**
4. All work will be analyzed for plagiarism via the Turn it in software.

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**Grading Policy**

A total of 500 points can be earned in this course:

- A. PowerPoint Presentation of Technique (50 pts)
- B. PowerPoint Presentation of Pathway (50 pts)
- C. PowerPoint Presentation on an assigned journal article (100 pts)
- D. PowerPoint presentation on a special topic (topics chosen by you) (100 pts)
- E. Outline and Paper on the special topic (100 pts)
- F. Addressing Comments of Reviewers for the Topic Paper (20 pts)
- G. Peer evaluations of papers and presentations/Questions (60 pts)
- H. Class participation (20 pts)

**Grading scale:**

<u>Points</u>	<u>Grade</u>
465-500	A
450-464	A-
435-449	B+
415-434	B
400-414	B-
385-399	C+
365-384	C
350-364	C-
335-349	D+
315-334	D
300-314	D-
299 and below	F

**Explanation of Graded Assignments:**

**A. PowerPoint Presentation of Technique (50 pts)**

We will begin the semester with a tutorial on Presentations – since a bulk of your grade for the course will involve them. Your first assignment will involve researching an assigned technique, and identifying a figure that uses this technique. You will teach the class about the technique and describe how the data from that technique might appear in a Figure.

You will take NO MORE THAN 10 minutes to present a specific technique. These presentations will significantly help you and your peers come to terms with the primary literature as you prepare for your upcoming assignments. This section will be brief, so you must be well prepared and organized to get you point across. It should include

1. A general statement of why a person would use this technique
2. The general steps required to carry out the technique (general, no recipes or protocols)
3. The controls that a person would include when doing this technique

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4. What the data from this technique would look like – you must identify a Figure from a paper or website and present this Figure to the class.

**B. PowerPoint Presentation of Pathway (50 pts)**

Your second presentation will involve a detailed description of an assigned pathway, focusing on how this pathway impacts cancer development. There are instructions and a rubric for this assignment for you on Moodle.

**C. Presentation on a journal article (articles assigned to student) - 100 pts**

In preparation for the class presentations, **all** students are to read **all** journal articles. Each student (including the presenter) is required to turn in two questions for the paper on Moodle, prior to the presentation (see instructions below). The presenter should also read any other background texts or journal articles that are necessary to acquire a clear understanding of the article and subject to be discussed. Your presentation should be 20 minutes, with 5 minutes for questions and discussion (which you should encourage). Your presentation will be a formal discussion of the research paper you were assigned. It should be fully and properly referenced and include the following:

1. An explanation of the research question investigated
2. Why it was investigated (the importance or significance of the question)
3. A description of the methods used and why; including a thorough discussion of a subset of the figures. You will likely not have time to present all of the data in the paper, be thoughtful about what you present.
4. The major results of the study (this in conjunction with #3 should be the majority of the presentation).
5. The conclusion(s) of the author(s)
6. At least one question you can ask of the class to stimulate discussion (there will be 5 minutes that I expect to be a discussion of the paper that you presented – you will lead and encourage this discussion). Your answers should be very short to allow additional questions to be asked.

**D. Presentation on special topics (topics chosen by student) - 100 pts**

Each student will choose a topic to research and present to the class. The goal of these presentations is to increase the class's knowledge of cancer biology as students teach each other about special topics of interest. **YOUR TOPIC MUST INCORPORATE A MOLECULAR MECHANISM THAT SERVES AS A BASIS FOR CANCER.** These presentations are scheduled starting in February, so you should begin your research **early** in the term so that you have time to acquire and read the relevant literature. It often takes a long time to track down the appropriate journal articles and to read enough to fully understand the latest research on a topic. Although you may use other types of sources (reviews, books, websites), your presentation should contain a synthesis of current primary literature (since 1995). One of your primary literature articles (approved by me) should be assigned to the class, and half of your presentation should focus on this reading. A pdf copy of the primary literature paper that you are assigning to the class and An outline of your talk should be emailed to me **two weeks before the presentation.**

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**10 points of your oral presentation will be awarded for turning in your pdf of the primary research article that you are assigning to the class two weeks before your talk.**

The format of the presentation may vary slightly depending on the topic, but each presentation should include the following sections:

1. Overview of the topic (background information, context, significance)
2. Presentation and critique of the assigned research article (see 1-6 above)
3. Summary
4. Discussion of questions from class

For some topics, when you look at the primary literature you will see two types of articles. The first type includes case studies or clinical trials. For example, if you were interested in how gene therapy might be used in cancer treatment, case studies or clinical trials would report how many cancer patients in a population received gene therapy and how this treatment altered the patient's cancer. The other type of article is "basic science" and its focus is often mechanistic. Typically, these papers describe laboratory research, particularly experiments to demonstrate causation or the mechanism of causation. Some examples would be a study of the mode of cell entry or targeting of a viral vector used in gene therapy for cancer. Your presentation (and your paper) must include a good foundation of **basic science articles**, and the article you assign to the class must be **basic science**. **Papers describing clinical trials ARE NOT APPROPRIATE** for your presentation.

You will have 40 minutes for your PowerPoint presentation, with an additional ten minutes allotted for discussion. To avoid exceeding these time limits, be sure to practice your presentation! One point that is critical to remember: *Your talk should be created independently as an oral presentation of the information. It should be an engaging, easy to follow lecture that prompts questions and discussion from your audience. It should NOT be a reading of the research paper you plan to turn in. The texts of papers and oral presentations are very, very different.*

**E. Paper on research topic -- 100 pts**

Your paper is due at the start of class one week after the oral presentation and it may incorporate aspects of the class discussion (ie, if you learn something during the oral presentation, you should incorporate it into your paper). The paper should be typewritten, double-spaced, with a 10-12 font size and 1 inch margins. It should be about 12-15 pages long (not including figures or literature cited section). You will submit an electronic version of your paper for anonymous evaluation by your peers (see section on Paper Evaluations below). The content of your paper should be divided as follows:

1. Introduction: This part should provide background and explain why the topic is important or of interest. There should be substantial depth here beyond the textbooks we have used in class, but it should be written so that anyone in the class can understand it. It should draw on a diversity of primary literature.
2. Discussion: This is the logical, organized presentation of the topic. It should cover the key questions and answers (if known) using recent primary literature on the topic. It also may

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include substantial discussion of controversies found in the literature. It is important to discuss more than the one paper that you assigned to the class. You need to integrate information from many papers into this section. This will be the bulk of your paper, and you may divide this section by using headers that describe the main points.

3. Summary: This brief section should recap the key points or conclusions. It should consist of a broader discussion of what you have presented, and suggest where future research in this topic should go.
4. Literature Cited. Here are all the citations, i.e. the authors' names, dates, etc. from each source you used in your paper. Each paper listed here should be referenced in your paper, and each reference in your paper should be listed in this section. See "Referencing and Literature Citation" on the next page for more information.

**10 points of your paper will be awarded for turning in your outline on time.**

Each section, especially the introduction and discussion, should be extensively and appropriately referenced. At least **five** of the references cited should be primary literature. How do you know what is primary literature? Be sure that you are clear on this before you proceed! Your paper will be read and evaluated by two anonymous reviewers so be sure to follow the guidelines provided with the course.

**F. Revision of Paper (20 pts)**

You will incorporate the comments from your peers and Dr. Miller and submit a revised version of your paper that reflects these comments. You will also turn in a separate document that lists each comment, and how you chose to address the comment as described here:

- A. You have made a change in the document to address the comment. In this case indicate the page number within the revised document where the changes were made.
- B. You have chosen to not make the changes suggested by the reviewer. In this case you must explain why you did not address the comment in your revision.
- C. There were conflicting comments in from the reviewer's. In this case explain why you followed the advice of one reviewer verses another.

**G. Peer evaluation of special topics research papers (30 pts.) and questions (30 pts)**

No credit will be given for evaluations or questions that are superficial or reflect an inability to critique.

Throughout the semester you will be submitting two questions about the papers that you will be reading. Once you submit your questions, read the other questions submitted by your classmates and come to class ready to discuss and ask questions about the paper that you read.

Two students will be assigned to do anonymous evaluations of each research paper. Copies of the numerical grades and evaluations they complete will be given to the author of the paper and used by the author to make corrections to his/her paper.

**H. Class participation (20 pts)**

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A seminar is only as good as its participants, and for a class to be excellent; everyone needs to be there ready to talk. You are required to attend all classes and be on time. Remember, the goal of a seminar is for us to learn from one another. If you are confused during a presentation, stop the presenter and ask a question. Your participation in that capacity will probably help others in the class to understand the concept better as well! Remember, you will have an opportunity to participate in almost every class that we have – take advantage of this opportunity!

At the end of the semester your performance will be rated approximately as follows:

- 20 pts -- participated frequently (at least once in all classes) and added substance to the discussion
- 18 pts -- participated frequently (at least once in all classes)
- 15 pts -- participated occasionally (not every class period)
- 10 pts -- participated rarely (once every couple of weeks), or questions and comments did not contribute much to the discussion
- 5 pts -- said something once or twice,
- 0 pts -- did not participate

**Statement on inclement weather**

January, February, and March can prove to be problematic in regard to winter weather conditions. Rhodes' extreme weather policy provides for making a decision to close or to delay the opening time at the College when weather conditions warrant.

There are three specific provisions for communicating such decisions to all students, faculty and staff. These procedures will be used only if Rhodes closes or if its daily schedule is altered to accommodate extreme weather that presents danger for those who must commute to school and those who must move around on the campus safely.

The procedures are:

1. A message will be left in a voice-mail box which can be accessed by all students, faculty and staff. The number for this box is 843-3943.
2. The decision will be communicated to the following local media stations. The decision will be announced during their regular programming.

- WMC-TV, Channel 5
- WREG-TV, Channel 3
- WMC AM 790
- WREC AM 600
- WKNO FM 91.1
- WMC FM 100
- WEGR FM Rock 103

Please do not call local media stations for closing or opening information.

3. Information will also be available on the campus cable station LYNX119.

**It is incredibly rare for me to cancel class.**

**If Rhodes is open, I will get here. If Rhodes is open – COME TO CLASS.**