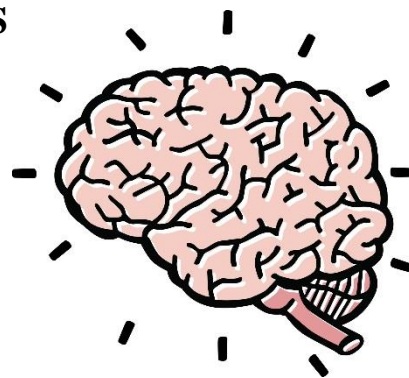


NEURODEGENERATIVE DISEASES
Biology 490 Senior Seminar, Section 1
Spring 2018



Instructor Information:

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Office Hours: Tuesday and Thursday 11:00 – 12:00 and by appointment ☺ I will meet with each student one-on-one to discuss your articles and PowerPoint slides the week before your oral presentation. We can set up these appointments by email or following class.

Course Information:

Monday and Wednesday 10:00 – 10:50 a.m. in TNR 464.

Course Description and Objectives:

This seminar course will broadly examine recent research advances in neurodegenerative diseases and pathology as well as the advantages/disadvantages of using of transgenic animal models and other animal models (i.e. drosophila, zebrafish) to study neurodegenerative diseases. **The main goal of this seminar is to contribute to your general professional development by improving your ability to communicate in the Biology or Biochemistry major in both oral and written formats.** Students will lead the presentation and discussion of a primary literature article related to a neurodegenerative disease of their choice. In addition, a literature review paper on the disease will be required. You will gain experience in the areas of literature search, scientific format, and preparation of an oral presentation. **Class attendance and participation is required.**

This course fulfills the **Capstone Experience in the Major** at the Integration Level for the GEP as well as our Biology major. The learning outcome goals are as follows:

1. Complete a project that integrates knowledge, skills, and experiences related to those General Education Program Outcomes appropriate to the discipline.
2. Demonstrate skills, processes, and resources needed to make a successful transition from college to the world beyond.

Additionally, this course fulfills the **Communication in the Major** for the GEP as well as our Biology major. The learning outcome goals are as follows:

1. Apply discipline-specific standards of oral and written communication to compose an articulate, grammatically correct, and organized presentation/piece of writing with properly documented and supported ideas, evidence, and information suitable to the topic, purpose, and audience.
2. Critique their own and others' writing/oral presentations to provide effective and useful feedback to improve their communication.

Course Grading:

The format of the course will include three components: a student presentation, a written report, and attendance/class participation. The student presentations will be worth 50 points, the written report will be worth 75 points, and student participation/attendance will be worth an additional 60 points.

Attendance at all scheduled classes is required to succeed in this seminar. **For your first unexcused absence, 3 points will be deducted from your participations points. For each additional unexcused absence, 5 points will be deducted from your participations points.** If you have a documented health emergency or a family emergency, please contact me regarding your absence and I will be as accommodating as possible. If you have a prearranged excused absence, such as a UWSP sponsored sporting event, a graduate school interview, a research conference, etc., I must be informed well before class when possible and receive documentation of your absence.

Grade Scale:

A \geq 93-100	C = 73-76
A- = 90-92	C- = 70-72
B+ = 87-89	D+ = 67-69
B = 83-86	D = 60-66
B- = 80-82	F < 60.0
C+ = 77-79	

Student Oral Presentations:

Each student will be required to give a 40-45 minute presentation and **lead the discussion** on a chosen neurodegenerative disease and a recent primary literature article investigating one aspect of the disease. Discussion leaders will be expected to provide relevant background material, a summary of the studies, and a critical evaluation of the research. Searching for appropriate literature articles and reviews will require the use of online index searches and interlibrary loan, so please plan ahead. If you are having troubles using the online indexes, please ask the instructor or see a librarian for assistance. Individual presenters will be asked to **turn in a handout** of your presentation to the instructor on the day of their presentation. Do not forget to do this! Otherwise, you will lose points.

Presentations will be graded by the instructor and will be graded on content, format, and overall knowledge of the subject matter. Participation by the audience is necessary to promote discussion and understanding of the topics being presented. Therefore, when you are not leading the discussion, you will be evaluated on your level of participation. Please read through the selected article or articles (to be sent out via email and posted onto D2L the week before the presentation). **You are to provide at least five discussion questions for the papers you were assigned.** Questions (which should be typed) must be informed and indicate to me that you read, comprehended, and contemplated the readings. Bring two copies of your questions to class; one will be handed in to me, the other you will use to aid in your discussion of the readings. **Questions must be handed in at the beginning of class to receive credit!**

Writing Assignment:

Each student will complete a term paper that will be evaluated in three phases. The first form of review will be peer evaluations of your paper (10 pts). If your paper is not complete on the date of peer evaluations, you will lose points. The first draft of your paper is worth 25 points and the final draft is worth 40 points. The paper should be 7 - 8 pages long (double spaced, 1 inch margins).

The paper should include a description of the neurological disorder you chose and a brief history of the study of it. It should include a description of the gene or genes that are mutated and result in the disease (e.g., when discovered, proteins coded for, functions of those proteins, what may activate or suppress the genes, what the mutation causes, etc.). Discuss what is not known and why the authors studied what they did. Include a review of the original research article you presented that relates to the disorder; summarize the paper (the methodology, the results, and the conclusions drawn). Also include considerations of future directions for research regarding this topic, which may come from questions you have or ones that are posed by the authors of the manuscripts selected.

Please include a Reference section that cites the **journal articles and books** that you use for the paper (use citation format below). I am asking you to write a scientific review article, thus websites are not appropriate resources for this type of paper. Therefore, no internet resources (including Wikipedia) should be included in your bibliography. You are required to include a minimum of 6 references in addition to the primary journal article that you are reviewing. So a total of 7 or more references should be listed.

Lein, E.S. et al., Genome-wide atlas of gene expression in the adult mouse brain, *Nature*, 445: 168-176 (2007).

Grading rubrics for the oral presentations and writing assignment will be posted on D2L and will be provided in separate handouts.

Comprehensive Exam:

Satisfactory completion of this 490 course requires the completion of the Biology Department's comprehensive exam. **Test scores are used to compare class averages among various populations of biology majors to assess general student learning. Scores will not be made available to you nor your instructor and will have no bearing on grades.** However, your 490 grade will be withheld until the exam is taken. The exam **will take approximately 60 minutes** and will be offered on Wednesday, May 2nd and Thursday, May 3rd from 6-7 PM in TNR 120.

Hints for Presenters:

Critical reading of primary literature is not an easy thing to master, and the only way to get good at it is to do it often. It is a skill that many of you will carry onto your professional careers. If you go onto graduate school, you may find yourself in a journal club with faculty and other graduate students doing exactly what we are doing in this seminar, reading and discussing current research. In graduate school, medical school, PA school, and several other professional careers, you will be

expected to keep up to date on current research in your area of expertise. You will be expected to identify how these studies fit into your research, what the strengths and weaknesses of the study are, and how you might even improve or add to the study.

The most challenging part of reading primary literature is identifying the important points in the paper. As a presenter, it is your task to summarize the paper and prioritize what should be discussed. Below is a rough sketch of how to go about this, but every paper is different, so you will want to keep an open mind.

Summarizing the article can be approached by asking the following questions:

1. *What questions (hypotheses) are being asked in the paper? What is the paper about? Why did they do the work?* This information is typically found in the introduction.
2. *How did the authors go about answering these questions? What was the experimental design?* This is found in the methods section.
3. *What were the findings of the paper? What are the broader implications of this research?* This information is found in the results and discussion section.

You should assume that all other students have read the paper and have a copy of the paper in front of them. They should have notes and questions they have regarding the paper. However, if a lull in the discussion occurs you can ask the audience broad topic questions such as:

- Was the methodology appropriate for the questions being asked?
- How could the experimental design be improved?
- Did the conclusions follow from the data clearly? Could other conclusions be drawn from the data that the authors did not mention? Or did they draw too big of a conclusion from their data?

SCHEDULE:

January 22	Syllabus and Overview of Course
24	Introduction into Neurodegenerative Diseases
29	Pick diseases and dates for presentation How to Read and Review a Scientific Journal Article
31	Seminar Presentation Hints and use of PowerPoints
February 5	How to Search for Research Articles
7	ALB – Hands on Search in Library Meet by computers outside room 316
12	Class Discussion of a Journal Article Discuss 1 page article review, what should you include?
14	Continue Class Discussion of Journal Article
19	Presentation of Figures from Discussion * 1 page article review due (5 pts)
21	Student Presentation
26	Student Presentation
28	Student Presentation
March 5	Student Presentation
7	*ROUGH DRAFT of Paper Due: in class PEER EVALS (10 pts)
12	Student Presentation
14	Student Presentation * FIRST DRAFTS of PAPER DUE (25 pts)
19	Student Presentation
21	Student Presentation
26	Spring Break - NO CLASS
28	Spring Break - NO CLASS
April 2	NO CLASS - STUDENT WORK DAY
4	Student Presentation
9	Student Presentation
11	Student Presentation
16	Student Presentation
18	Student Presentation
23	Presentation Make-up if needed
25	Presentation Make-up if needed
30	Overview of Semester / Assessment
May 2	*FINAL DRAFT of PAPER DUE (40 pts)
7	Presentation Make-up if needed
9	NO CLASS ☺ (hopefully...)