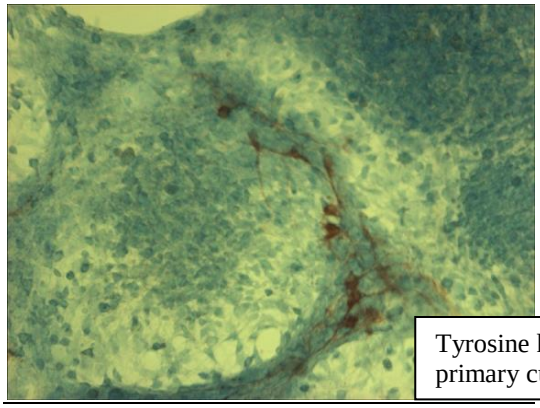

Tyrosine hydroxylase positive neurons in primary culture of rat mesencephalon.

BIO 328 Neurobiology

Barbara Christie-Pope, Ph.D.
Shea Putz

Course Description:
This course emphasizes the cellular structure, biochemistry and physiology of the nervous system with an emphasis on neurological diseases. This is a course in cellular neurobiology; unfortunately, we do not have the time to consider the sensory, motor, or cognitive components of the brain. However, some of this will be in your neuroanatomy cases.

Course Objectives: Upon completion of this course you will be able to:

1. Explain how information is processed within the brain at the molecular, cellular, and circuit level
2. Discuss the mechanisms involved in plasticity of the brain
3. Discuss current advances in research in neuroscience and brain diseases
4. Design, perform, analyze and present a research project
5. Understand and discuss the symptoms, pathology, current therapies and research into select diseases and disabilities involving the nervous system

This course supports the Educational Priorities and Outcomes of Cornell College with emphases on knowledge, inquiry, reasoning and communication.

These objectives will be achieved through lectures, exams that evaluate your comprehension of this content, concept mapping of cases in neuroscience, and a research project that you design, conduct and evaluate, culminating in an oral presentation and a full research paper.

Instructors:
Barbara Christie-Pope, Ph.D.
Office: 107, West Science
Phone: x4395
e-mail: bchristie-pope
Office Hours: I do not have scheduled office hours but am usually in my office from 11-12:30. Let me know if you need to schedule an appointment outside of this time.

Shea Putz
Office: 115B, West Science
e-mail: sputz

Meeting Times:

Monday – Friday, 9-11:00 AM
Monday – Friday, 12:30 – 3 PM, or as indicated

Notice that class starts at 9am or 12:30pm, not at 9:05am or 12:35pm. Obviously, this means BE ON TIME!

Please look at the schedule carefully. You are responsible for attending all lectures and labs; some labs may only entail examining your cell cultures and noting changes to the cells in your lab notebook, or waiting until there are zebrafish embryos for you to work with. When you are not working in the lab, you are expected to be working on case studies or neuroanatomy--- this is not a time for you to check your email and socialize! If you have 3 unexcused absences from a session (AM or PM), you will not be allowed to withdraw from this course and the highest grade you will receive is a C- regardless of your cumulative total.

Text:

Neuroscience, D. Purves, et. al., eds., 6th ed., Sinauer Asso., Inc., Sunderland, MA, 2018.
I have been asked if an earlier edition is appropriate. This decision is up to you. Please realize that you are responsible for material in the 6th ed.

Lectures: The PowerPoint presentations I use in lecture will be available on Moodle. Although I will try to put these up the night before the lecture, I finalize lectures the night before, therefore the presentations may not be available in the morning or may be different than those in the course Moodle site. All final presentations will be in the folder after the lectures.

Grading:

	Percentage of total points	**Dates**
Exams	40	Oct. 3 and Oct. 17
Concept Maps of Case Studies	20	Oct. 1 and Oct. 8
Experiment	25	
Full Draft of Introduction and M/M	3	Oct. 9, 9AM (late papers are not accepted)
Final Paper	12	Oct. 18 by 12PM
Presentation	10	Oct. 16
Quizzes	15	Sept. 28 and Oct. 12

I use the following grading scale for exams and quizzes only:

100-90	A
89-85	A-
84-80	B+
79-75	B
74-70	B-
69-65	C+
64-60	C
59-55	C-
54-50	D+
49-45	D
44-40	D-

I use the following grading scale for concept maps (Case Studies), and paper:

100-95	A
94-90	A-
89-87	B+
86-84	B
83-80	B-
79-77	C+
76-74	C
73-70	C-
69-67	D+
66-64	D
63-60	D-

Failure to complete any assignment will result in an F in the course. You must complete all assignments to be able to withdraw on the 15th day.

Exams	**40%**	**Oct. 3 and Oct. 17**

Exams: Exams consist of short answer and essay questions. You will be graded on the content and clarity of your answer. See schedule for exam coverage. Exam 2 may include material from exam 1. Each exam will include questions from any of the case studies assigned up to that point. You are responsible for understanding all of the cases, even the ones that you were not assigned. **Exams are given only at the time indicated. No exams will be given early or late for any reason unless there is an emergency.**

Concept Maps of Case Studies	**20%**	**Oct. 1 and Oct. 8**

Case Studies: Concept Maps: Sometimes a picture is worth a thousand words![1] To help with your integration of the knowledge you are acquiring about neurobiology, you must generate 2 concept maps from one of the weekly case studies. You will do this with one or two other students. Everyone must participate in designing the map.

The maps may be hand drawn or done on a computer. There are several, free map-generating software programs available online if you wish to use them. The map must be logical and inclusive of all of the information, including background information that may not be specifically in the case study but required for full understanding of the case. Your map should concentrate on the cellular and molecular mechanisms involved in the case. For example, if the problem is the lack of a protein due to a genetic mutation, you must discuss the protein, the normal function of the protein and how the lack of the protein produces particular defects or deficits. You must include the answers to all of the questions at the end of the cases embedded somewhere in your map. Indicate clearly which question you are answering on the map. **Late maps will not be accepted.**

Some of you may find that working in a group is not conducive to your learning style. However, in the world of science outside of Cornell, no one works alone. Collaboration is the key to progress. You may not do one of these on your own. If you end up doing the majority of the work, take pride in your work and realize the lack of participation from the other people in your group will become apparent on an exam when they cannot answer the questions regarding their own map. Remember that you will have questions related to the cases on the exam. Chances are that you will have different partners for each map since you are randomly assigned to a case.

Your concept maps are due Mondays at 9AM. Place them at the front of the room prior to the beginning of lecture. If lecture has started and your map is not on the front desk, it will not be accepted. We will discuss each case as a class Monday afternoon. I may call on you at random to present a case in front of the class or to answer specific questions about your case, so be prepared!

[1] See http://cmap.ihmc.us/publications/researchpapers/theorycmaps/theoryunderlyingconceptmaps.htm

Experiment	**25%**	
Draft of Introduction and M/M	**3**	**Oct. 9, 9AM (late papers are not accepted)**
Final Paper	**12**	**Oct. 18 by 12PM**
Presentation	**10**	**Oct. 16**

Lab Experiment: Teams of 2-3 students will be assigned to perform one of the projects detailed in your Lab Handout.

A. Paper: Each team will write a research paper. The paper must include **at least** two separate figures or tables in the paper, and must use at least **5 relevant primary research articles less than 7 years old (not reviews or texts**). I anticipate that these papers will be around 10 pages long.

   The paper will have following sections (label the sections) in this order:
   - Introduction
   - Materials and Methods
   - Results and Discussion (Yes, you may combine these.)
   - References Cited
   - Figures and Tables

   Email your draft and final paper to me on the assigned date. DO NOT USE GOOGLE DOCS FOR THESE PAPERS! Use WORD! I cannot make comments on Google documents, and formatting changes when going from Google docs to WORD. If you write your paper in Google docs, then transfer it to WORD, be sure that your formatting is correct! WORD is available on all campus computers.

B. **Be sure to keep a lab notebook.** Each person must have their own lab notebook, not one notebook per team! Shea and I will ask to see it sometime during the block. If your lab notebook is not up-to-date, I will dock 20 points from YOUR grade on the paper, no exceptions, no excuses. Everyone needs to keep a notebook! Do not rely on your partner(s)!

Quizzes	**15%**	**Sept. 28 and Oct. 12**

Quizzes: The quizzes cover information we discussed that week. Please keep current with your reading and reviewing of the material.

Decorum in the Classroom and Lab: Please play an active role in this course by asking questions or responding to questions. However, refrain from eating, reading materials not related to the course, and conversing with your fellow classmates during lectures/discussions. Our classroom is not a cafeteria!!!! Do not bring your breakfast, lunch or full meal to class! Coffee, tea, water, other drinks are allowed.

Personal Electronic Devices: Although Cornell College does not have a formal policy regarding the use of personal electronic devices, I do. Personal electronic devices can be very disruptive to you and to your classmates. Using these devices during instructional times is a clear sign of disrespect to both me and to your classmates who are your colleagues. Every student has the right to learn in a nondisruptive environment.

Leave your phones, iPods, MP3 players, other musical devices, blackberries, pagers, anything with an on/off button in your room or, at least, turned off and out of sight. You will not be using them in class or during class time. (If you are on call for the ambulance service, please let me know.) In addition, if you must be tethered to your cell phone, turn it off or keep it on vibrate (but make sure no one can detect the vibration!) and don't even think of looking at it during class time. Believe or not, you will survive without it. I do permit the use of a laptop for note-taking purposes only; if I determine that you are not using the computer for this sole purpose, I will ban it from the classroom or lab. I do not allow recording of my lectures unless there is a verified accommodation.

Drop Policy: College policy states that you may drop at any time during the first three days of class. If you want or need to drop this course on the 15th day, you must have attended class and completed all assignments/ exams due or administered by that day.

Accommodation for Learning Disabilities: Cornell College makes reasonable accommodations for persons with disabilities. Students should notify the Coordinator of Academic Support and Advising and their course instructor of any disability related accommodations within the first three days of the term for which the accommodations are required, due to the fast pace of the block format. For more information on the documentation required to establish the need for accommodations and the process of requesting the accommodations, see http://www.cornellcollege.edu/academic-support-and-advising/disabilities/index.shtml.

Academic Honesty Expectations: Cornell College expects all members of the Cornell community to act with academic integrity. An important aspect of academic integrity is respecting the work of others. A student is expected to explicitly acknowledge ideas, claims, observations, or data of others, unless generally known. When a piece of work is submitted for credit, a student is asserting that the submission is her or his work unless there is a citation of a specific source. If there is no appropriate acknowledgement of sources, whether intended or not, this may constitute a violation of the College's requirement for honesty in academic work and may be treated as a case of academic dishonesty. The procedures regarding how the College deals with cases of academic dishonesty appear in The Compass, our student handbook, under the heading "*Academic Policies-Honesty in Academic Work*."