**Paper Directions from the Syllabus with alternative submission details listed in blue**

Students are to write an essay of 1500 words, plus illustrations and references, on any topic in biology that interests them. The writing process will occur in two stages. The first will count 1/3 of the available points (25 pts), and will consist of a preliminary version of the paper. Feedback will be provided for the final version, which will count the rest of the available points (50 pts). *The due dates will be announced in class but occur at roughly the mid-point of class and the end of class unless arranged otherwise with Prof. Hanna (alternatives, see below).*

The paper may contain hyperlinks, but some references must refer to peer-reviewed literature. The way to identify such literature will be described in class. The format for references needs to be like one or more of the following examples:

Rice, AB (1967) In: General Endocrinology. pp 101-105. Brown and Rush, Publishers, New York.

Smith AJ, Jones PA, and Robinson TF (2005) Analysis of the third eye hypothesis. Journal of Hypothetical Results. Volume 21: pp 460-471.

The marvelous machine. <http://www.imaginarywebsite.net>

*You may use website references but at least one of your references must be from a book other than your textbook or a scientific magazine or journal. I will describe thoughts for topic selection after reiterating the alternative submission mechanism sent to you by email and copied below.*

Please provide appropriate attribution to pictures. All quoted written material must have appropriate attribution or it is considered plagiarism which is a breach of academic honesty policies.

Examples of excellent student submissions from last semester in the correct format for this assignment will be posted on the course web site.

Description of Alternative Submission Mechanisms

Each student must write a 1500 word paper on a biological topic of their choosing. We are just past the halfway point in the semester and it was my personal feeling that a draft could be postponed to a slightly later date so that more of the course material can be covered. This may provide students with greater comfort and flexibility in choosing their topic. Additionally, I am willing to provide alternative pathways for this assignment as I want to consider your end of the semester work load. Below are listed dates and alternative mechanisms for submitting your paper.

Alternative #1: Submit a **rough draft** of the paper on **April 15 by midnight** to [hannam@rpi.edu](mailto:hannam@rpi.edu) as a **Word document attachment**. Rough drafts can be in outline format or as a written paper. Include all references to be used in the final paper. Do not hand in a poorly written draft as this will cost you points. Make an honest effort and feel free to provide comments/questions if you need guidance. The rough draft is worth up to 25 of the 75 points total for this assignment. The draft with comments will be returned electronically by April 22nd. Should you provide a draft late or not provide a draft at all, see Alternative #2. The **final paper is due on May 9** but can be turned in prior to that time but not later than midnight of 5/9. The final paper is worth 50 points. The total points for the assignment will be an addition of the points from the draft plus the points from the final paper.

Alternative #2: Write and turn in your final paper on **April 29 by midnight** to [hannam@rpi.edu](mailto:hannam@rpi.edu) as a **Word document attachment**. The assignment will be graded and returned by May 7. There is no change in format for the paper, this simply allows you to write the paper once, write it well, and receive a grade. Students choosing this option will not provide a draft and all 75 points will be associated with this effort. If the paper is late, you will receive no points.

I have chosen these options that have different deadlines so that you have flexibility in planning your time toward the end of the semester. You must choose one of the options but you have the freedom of the best choice for you. If any individual has a problem with these options, they can contact me by email with questions.

How do I choose my topic?

General advice for selecting a topic

Go to the library or access a common scientific magazine on line. In our library we have the journal *Science* (accessible online and as a magazine copy on the shelves for recent journals). This is a scholarly publication. I will choose a single issue and list some biological topics:

*Science*, Vol 337, 21 September 2012. In this issue, one can find a number of relevant topics. There is a large section on “Disease Prevention” that can be mined for topics from aspirin and cancer, vitamin D, impact on fetal success of malnutrition, and changing behavior to prevent disease. This is certainly broad ranging. Additionally, one can find articles on pigmentation patterns in domestic and wild cats, symbiotic nitrogen fixation in ocean systems, fear memory and the brain, questions about Neanderthals and burial culture, HIV vaccines, and drug discovery for treatment of Hepatitis C infections.

Or go to a popular magazine such as *National Geographic*, November 2012. In this issue you can find out why Emperor Penguins can attain significant escape velocity in exiting the ocean (something to do with air bubbles), look at beautiful pictures of emergent properties of sand patterns in dunes, discover the body adaptations of cheetahs that allow them to run so fast, discover the Moringa tree that grows quickly and can serve to battle famine and malnutrition, look at how konik horses are used to preserve natural ecosystems, and see how leeches can help locate or track tropical forest species that are difficult to follow.

However you choose a topic, get down to it and you should find something that you like and can comfortably explain in1500 words. If you have questions related to your topic, email me or discuss a topic after class.