

BIO 345 – ANIMAL PHYSIOLOGY

Writing Assignment #2

for Group #2 (those with last names starting with L-Z)

Writing assignment: The writing assignment is intended to meet three objectives: 1) to have each student carry out independent research in the published literature on a given physiology topic; 2) to improve the scientific writing skills of each student; and 3) to expose each student to the process of peer review [yes, you will review the work of your classmates and they will do the same for you]. Here is how the writing assignment will work:

1. The class will be divided into two groups. The first group will consist of those with surnames starting with A-K, and the second with surnames starting with L-Z. This division serves to have only half of the class turn in any phase of the assignment at once, making sure I have time to look carefully over each one.
 2. On Feb 28, I will provide the topic for the **second group**. Every student in group 2 will then have two weeks to **write a 1200-word paper** (details outlined below) on that topic. Included in the two-week time frame is a mandatory **review of your paper by a fellow 345 student** (doesn't matter which group that student is in). Your "peer reviewer" should make comments and suggestions on your paper, not only for content but also for spelling, grammar and style. You must then make the appropriate changes to your paper, **have the peer reviewer sign** the revised version, and hand it in to me.
 3. I will then read and critique each one, and hand it back to you with edits, comments and suggestions. You will then have **two more weeks to make changes** to improve the paper, and **hand it back in for final grading**. You MUST staple the first version (the one I edited) to your final version upon resubmission for final grading.
 4. **FAILURE TO HAND IN ANY PART OF THE ASSIGNMENT (FIRST OR FINAL DRAFT) ON TIME WILL RESULT IN A GRADE OF ZERO FOR THE ASSIGNMENT.**
- The writing assignment is worth 15% of your final grade in this course.

Schedule for writing assignment:

	Group 1 (A-K)	Group 2 (L-Z)
Topic(s) assigned	Feb 14	Feb 28
First draft due to me	Feb 28	Mar 18
First draft will be returned to you by	Mar 20	Mar 27
Final draft due to me	Apr 3	Apr 10

Details of writing assignment:

- must contain an introduction, the main point you are trying to make, supporting (and refuting) evidence from the literature, and a summary/conclusion section.
- length: 1200 words + list of references
- double-spaced, font 12 point
- MUST include at least 5 references from the primary literature. This means *published in scientific journals*. NO material from websites/internet will be accepted; you must find actual journal articles. Some examples of journals to search in include Journal of Comparative Physiology, American Journal of Physiology, Comparative Biochemistry and Physiology, Physiological and Biochemical Zoology, Journal of Experimental

Biology and others of that nature. Use the reference format used by the Journal of Comparative Physiology. *Example of reference format:* Stokes DR, Josephson RK (2004) Power and control muscles of cicada song: structural and contractile heterogeneity. *J Comp Physiol A* 190:279-290.

When referring to one of your references within the text of your assignment, you would state “Previous work on cicadas has shown a strong relationship between muscular activity and the frequency of cicada songs (Stokes and Josephson 2004)” or “Stokes and Josephson (2004) demonstrated that the songs of cicadas”.....

- pay attention to spelling, grammar and sentence structure, as well as use of punctuation. Make sure that you write in the passive voice, that every sentence says exactly what you intend it to say and does so clearly, and that you have agreement among tenses and singular/plural forms. I will be *extremely picky* about language, grammar and clarity.

Topic for writing assignment #2:

Adaptations for life at high altitudes

Life at high altitudes (mountaintops and other habitats with high elevations) can be challenging for many reasons, but one of the most difficult physical aspects of these habitats to overcome, physiologically speaking, is the reduced amount of oxygen available. The concentration of oxygen at sea level is about 21% and the barometric pressure averages 760 mmHg. As altitude increases, the overall air pressure decreases. At 12,000 feet (3,658 meters) the barometric pressure is only 483 mmHg, and even though oxygen is still 21% of this pressure, there are roughly 40% fewer oxygen molecules for a given volume of air. A 40% drop in oxygen availability has significant impacts on metabolism for the average animal (particularly when exercising), but not for those species that are adapted for life high up. Your assignment is to research and report the physiological adaptations that these species (for example: members of the Camelidae, deer mice, some species of guinea pigs) possess that enable them to acquire and deliver oxygen to all parts of the body.

In 1200 words, describe the adaptations that vertebrate animals (non-humans) living at high altitudes have evolved that allow them to function normally in low-oxygen conditions. Be specific, and describe the mechanism of action of these adaptations AT THE PHYSIOLOGICAL LEVEL. We have just finished the section on blood transport and circulation, so it should be easy for you to understand exactly which parts of the circulation systems of high-altitude animals exhibit adaptations, and why. Think about topics we have discussed in class, such as Hb, Mb, factors affecting oxygen binding, and rates of circulation. There are other interesting adaptations that some of these animals possess that we have not talked about in class, but that are still important for increasing O₂ delivery to cells. Make sure that your report is logical, with an introduction, presentation of evidence, and some kind of conclusion.

****Make sure that you have at least 5 references from the primary literature****