Lectures 38, 39, and 40 Review Questions:

1.) Describe the main anatomical structures and signaling molecules involved in the fight or flight response. What are the physiological changes that occur during short-term responses to acute stress? What is beneficial about short-term stress responses?

2.) Describe the main anatomical structures and signaling molecules involved in long-term stress responses. Compare and contrast this pathway to that which underlies short-term responses.

3.) The HPA axis is said to be regulated by negative feedback. Describe how this system works.

4.) What is the HPG axis? What is the HPA axis? How are the two related?

5.) What are the primary classes of sex hormones and what are their functions?

6.) Describe how the HPG axis regulates sperm production in human males.

7.) Describe how the HPG axis regulates menstrual cycles and follicle development in human females.

8.) Androgens are typically thought of as “male” hormones, whereas estrogens are described as “female” hormones. Is this an accurate way to think about these classes of hormones? Why or why not?

9.) How is the menstrual cycle arrested during pregnancy?

10.) Ellen Ketterson’s lab has been very interested in studying aspects of behavior in male Juncos that may represent trade-offs. What specifically are these trade-offs? How are they influenced by testosterone levels?

11.) Juncos that live on the UCSD campus appear to have originated from an ancestral population that breeds where? Relative to this ancestral population, UCSD juncos exhibit very different breeding schedules and clutch numbers. They also differ in a number of physical, behavioral, and physiological traits. How do they differ?
12) Describe the common garden experiment that was performed on the Juncos from southern California. Why was this experiment necessary, and what did it tell us about the nature of the differences outlined in the question above?

13.) Casto et al. 2001 examined the influence of testosterone on immune function in Juncos. Describe their experiment and main findings. How do these results relate to the differences in the efficacy of vaccines between the sexes in humans? How might testosterone suppress immune function?