

Bio 363 Endocrinology Laboratory

Spring 2010

This is a laboratory course that is designed to complement the lecture course in Endocrinology. Enrollment in the lecture course is required to take the laboratory course. Labs will meet in the Physiology Lab, Hoffberger Room 127. This room is open for your use Monday through Friday and on the weekends when needed.

Most of the experiments will consist of structured exercises that generally outline what is to be studied. You will receive a handout for each laboratory as a guide. However, I will expect you to take the initiative and make decisions about some parts of the experimental design and implementation for each exercise. You will need to read the references posted on **Blackboard** and design your experiments before coming to the laboratory session.

Due to the nature of hormone action and the techniques employed, many of the lab exercises that we undertake will take more than one week to complete. Thus, some of the laboratory exercises may overlap with others. The planned exercises will cover specific areas of endocrine physiology, but there is not enough time to perform a lab for every topic covered in the lecture course. You will also be required to care for your animals during the course of an experiment. This will involve checking on the animals daily, or as needed, to make sure they have food, water, bedding and the proper experimental treatment.

Lab Reports: You will be required to write a lab report for each laboratory exercise once it is completed. Due dates will be announced during the course of the semester. The lab reports will include an **Abstract, Introduction, Materials and Methods, Results, Discussion and References.**

Grading: Final grades will be calculated as follows:

Uca Lab	30%
Cortisol Lab	30%
Group project	30%
Subjective Grade	10%

Subjective grade includes preparation for lab, understanding of material, ability to work in a group, attention to detail and promptness to lab. All students are bound by the standards of the Academic Honor Code found at www.goucher.edu/documents/general/AcademicHonorCode.pdf.

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Tentative Laboratory Schedule

<u>WEEK</u>	<u>DATE</u>	<u>TOPIC</u>
Week 1	Jan 26	Introduction to Course
Week 2	Feb 2	Lab Exercise 1: Basic Methodology for Discovering Endocrine Structures using the sinus gland from <i>Uca pugilator</i> , as a model system; Work to be accomplished: Effects of Gland Removal and Replacement Therapy
Week 3	Feb 9	Lab Exercise 1 continued: Preliminary Identification of Active Substances in <i>Uca</i> sinus gland. Work to be accomplished: Begin biochemical analysis of active components of the sinus gland.
Week 4	Feb 16	Lab Exercise 1 continued: Further Characterization of Active Substances in <i>Uca</i> sinus gland. Work to be accomplished: Define molecular weight of active components
Week 5	Feb 23	Lab Exercise 2: Measuring Hormones in Blood; Cortisol Radioimmuno-Assay in Goldfish, <i>Carassius auratus</i> . Work to be accomplished: RIA Protocol and validation of the assay, including; Standard Curve; specificity; sensitivity; spike cortisol, and Intra Assay Variation.
Week 6	Mar 2	Lab Exercise 2 continued: Cortisol RIA data analysis Work to be accomplished: Data Analysis for the cortisol RIA using the Prism statistical package. Non-linear curve analysis using a Four Parameter Logistic Equation to fit the standard curve and determine unknowns.
Week 7	Mar 9	Lab Exercise 2 continued: Regulation of Plasma Cortisol in Goldfish: Work to be accomplished: Design and carry out experiments to demonstrate the negative feedback regulation of the HPA axis in goldfish.

Week 8	Mar 16	SPRING BREAK
Week 9	Mar 23	Lab Exercise 2 continued: Regulation of Plasma Cortisol Work to be accomplished; Run cortisol RIA with standard curve and plasma samples from regulation experiment.
Week 10	Mar 30	Lab Exercise 2 continued: Regulation of plasma cortisol; Work to be accomplished: Statistical analysis of RIA with Prism statistical program
Week 11	Apr 6	The last 4 weeks will be devoted to planning, carrying out, analyzing an independent project by each group. I will make suggestions as to the types of experiments, which are possible given our equipment and budget. Each group will make an oral presentation of their work and will write individual lab reports as noted below.
Week 12	Apr 13	Group projects
Week 13	Apr 20	Group projects
Week 14	Apr 27	Presentation of Group projects
Week 15	May 4	Final Reports due for independent project Individual reports will include: Materials and methods Results Discussion and Critique Course Evaluations