In General

The exam will consist of 50 multiple choice questions with 4 alternatives each. To successfully answer the questions you may be required to incorporate information from more than 1 slide or even 1 lecture. This means that you should not try and memorize the information, rather <u>understand</u> it. Physiology cannot be memorized (as with Anatomy). The exam shall consist of the following lectures:

• Digestion I, II, III, IV, Reproduction I, II, III.

Bring your student ID, a good eraser and at least 1 pre-sharpened dark pencil to the exam.

<u>Disclaimer</u>: This study guide is NOT meant to be a comprehensive list of everything you need to know but it gives you a very good start.

The Specifics

Digestion I

- 1. Know the anatomy of the alimentary tract and the 6 functions of the tract.
- 2. Know the microanatomy of the small intestine and the function of villi and microvilli.
- 3. Understand where along the alimentary tract you might find villi and why.

Digestion II

- 1. Know the process of deglutition and the anatomy of the upper digestive tract.
- 2. Know the importance of the esophageal sphincters.
- 3. Know the anatomy of the stomach and how and when the stomach empties its contents.
- 4. Understand the neural influence on the stomach and how motility is regulated.
- 5. Know how motility is regulated in the small and large intestine.
- 6. Be able to describe segmentation in the small intestine.
- 7. Understand how the ileocecal valve operates.
- 8. Know the anatomy of the large intestine and how it empties during defecation.

Digestion III

- 1. Know the pH of secretion in different parts of the alimentary tract.
- 2. Know the phases of digestion and what secretions are produced in each phase.
- 3. Know the functions of saliva.
- 4. Understand what secretions the stomach produces and when they are produced in detail.
- 5. Understand the physiological mechanisms of inhibitors of stomach secretions.
- 6. Know the anatomy of the pancreas; what cells produce the secretions and what those secretions do.
- 7. Know the hormones that affect the pancreas and how they operate.
- 8. Understand how the liver aids in fat digestion and what hormone regulates fat digestion.
- 9. Know the secretions of the small and large intestines and why they are important.

Digestion IV

- 1. Be able to recognize the chemical structure of carbohydrates, proteins and fats.
- 2. Know the sources of carbohydrates, proteins and fats, and <u>where</u> in the alimentary tract each is digested and how.
- 3. Understand the mechanism of enterohepatic circulation.
- 4. Know where along the digestive tract fluid is absorbed and how much.
- 5. Understand the physiological mechanisms of how carbohydrate, fat and protein are absorbed.
- 6. Know what substances are absorbed across the wall of the colon and their location.
- 7. Understand mechanisms leading to constipation, diarrhea and lactose intolerance.

Bio 269 Lecture Exam 4 Study Guide *Authored by Dr. Giovanni Casotti*

Reproduction I

- 1. Know the detailed pathway of oogenesis including the name of each stage, the ploidy of the oocyte at different stages, the stages of meiosis at different locations of the pathway.
- 2. Know each of the steps of the ovarian cycle in detail.
- 3. Know the two phases of the ovarian cycle and how the timing of each phase varies on women on a regular and irregular cycle.
- 4. Know the hormonal control mechanism of the ovarian cycle in detail.
- 5. Identify two gonadotropic hormones and when their levels rise during the ovarian cycle.
- 6. Understand when levels of estrogen and progesterone levels are high and low and why.
- 7. Know the phases of the uterine cycle and what happens in each phase.
- 8. Finally, understand the importance of timing between the ovarian and uterine cycles in order to achieve a successful pregnancy.

Reproduction II

- 1. Understand all of the mechanisms involved in allowing sperm to reach the secondary oocyte and sperm capacitation once they arrive at the egg.
- 2. Understand factors that decrease sperm survival.
- 3. Understand the events from fertilization to embryo implantation and the importance of hormones such as human chorionic gonadotropin, estrogen and progesterone during pregnancy.
- 4. Understand the mechanism of hormone regulation of birth, lactation and the milk letdown reflex.
- 5. Understand how different female pills work to prevent fertilization and pregnancy.

Reproduction III

- 1. Know the pathway sperm must take from manufacture to release from the male.
- 2. Know how sperm are manufactured and their regulation (as influenced by hormones) in spermatogenesis.
- 3. Know what the accessory glands in males are and how they aid in sperm survival.
- 4. Know the anatomical structure of sperm.
- 5. Know the processes involved in sperm delivery to the female.