Update Course – June 26 to 28, 2006

The Endocrine System: Reproduction, Obesity, Diabetes, Stress and Disease

Day 1. Reproduction – normal function, fertility, and inhibition

9:00-9:45

- Introductions. Registration. Overview of the three day course.

9:45- 11:45

- Differences and similarities between the nervous and endocrine system
- Nerves, Transmitters, and Receptors *versus* Glands, Hormones, and Receptors
- Introduction to the Basics of Endocrinology
- Overview of the CNS, hypothalamus, Pituitary, Glands, Hormones, cellular metabolism

11:45-12:45 Lunch

12:45-2:15

- Genetics of Sex Determination and the Endocrine Control of Reproduction
- Sex Differentiation, Puberty, Adult, and Senescence – "Viagra" and "menopause"

2:15-3:00

- Activities [the molecular bases of pregnancy and other tests]

Day 2. Obesity and Diabetes

9:00-10:45

- Fat, leptin, leptin receptors, and the endocrine control of appetite
- What defines "obesity?" -- Measurement and estimates of body fat
- What are the problems with obesity?
- Activities – Possible Lab exercises [direct and indirect fat measurements]

10:45-11:45 HHMI Video: Understanding Fat: Syndrome X and Beyond

11:45-12:45 Lunch

12:45-1:45 HHMI Video: Balancing the Fat Equation

1:45 -3:00

- Insulin and Glucagon in the regulation of blood sugar and beyond
- What is Diabetes? Type 1 and Type 2
- Activities [urine and blood sugar; other indicators]

Day 3. Stress and Disease

9:00-11:30

- What is "Stress?"
- Endocrine vs nervous system in the "stress response"
- Catecholamines – "fight - flight"
- Cortisol – glucose and other metabolism normal functions
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11:30-12:30 Lunch

12:30-1:30

- Endocrine Control of Immune responses

1:30-3:00

- Molecular analysis of disease: Introduction to the NCBI Web site
- Critical evaluation of ads and Web sites

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