

### 17.1 - Introduction to the Endocrine System & Hormone Chemistry

- 1 What is a hormone? What are the five steps of hormone endocrine system function?
- 2 Compare and contrast the function of the nervous system and endocrine system.
- 3 What type of molecules are the precursors for all hormones? How do hormones mix with water? Significance? How will hormone chemistry affect the hormone's "half-life"? Explain in terms of "being bound". Give examples of each type.
- 4 What two features are exhibited by hormone receptors? Where are hormone receptors located? Explain.
- 5 Why do hormones have a large affect on cellular functions?
- 6 How may a target cell increase or decrease the effect a hormone has on the cell? What are these changes called?
- 7 What two feedback loops are used may be used to regulate hormone secretions? Use the thyroid and oxytocin to illustrate these mechanisms. Sketch the mechanisms.
- 8 Different hormones interact with each other differently. Explain how hormone interactions differ in synergistic effects, permissive effect, and antagonistic effect.
- 9 Hormones don't last forever. What two organs are most responsible for "clearing hormones" from the blood?

### 17.2 - Endocrine Hormones (origin - target tissue - metabolic effect)

- 10 What is the significance of the hypothalamo-pituitary-target tissue axis? What does this teach us about the endocrine system? How many hormones are released by the hypothalamus? What is the target tissue for these hormones?
- 11 The pituitary is a gland with two distinct tissue type. What are these areas called and what type of tissue is in each location? How is the pituitary connected to the hypothalamus?
- 12 The anterior and posterior pituitary receives hormones from the hypothalamus, however. How the hormones reach the pituitary using different methods. Explain. What new arrangement of blood vessels is used? Significance?
- 13 What are the two hormones released from the posterior pituitary? Where are they synthesized? Delivered to posterior pituitary by? Each hormones primary function(s)?

The Science Department provides a list of hormone students as part of your learning objectives. You need to know where the hormones are synthesized, the target tissue, how the hormone changes the metabolism of the target tissue, and how the hormone is regulated. I have provided a handout with the hormones and the critical information you need to know for the lecture exam. You need to start to memorize this information ASAP. In lecture, I will cover some of these hormones in my lecture,

- 14 What cells have receptors for growth hormone? How long does growth hormone last after it is secreted by the pituitary? How does growth hormone influence cellular metabolism for longer periods? When does GH secretions peak? What happens to GH secretions as we age? What happens to muscle mass between age 30 and 75? And if weight also increases during this period then what do you know?
- 15 What are the effects of GH? Why is GH described as “glucose sparing hormone”? (see slide 22 & 23)
- 16 What two hormones are secreted by the thyroid gland? How is each hormone regulated? Illustrate with diagram. What is an essential ingredient for one of these hormones? If it is lacking what occurs? What is another endocrine gland on the posterior surface of the thyroid gland? What is this hormones function and how is it regulated?
- 17 We studied the function of the adrenal gland’s medulla as part of the ANS. So now, what hormones are produced by the cortex of the adrenal gland? What is the outcome for each of these hormones?
- 18 What type of gland is the pancreas? Explain What do we call the group of cells that produce pancreatic hormones? What are the cells called that make each hormone? Hormone names? Function of each? Their targets, function, and regulation?
- 19 What cells do not need insulin to transport glucose into their cells? Why do you think these tissues evolved this way?
- 20 How does glucagon shift metabolism? Name specific events.
- 21 What hormones are hyperglycemic hormones? What does this mean?
- 22 What hormone is hypoglycemic?
- 23 Why is Type 1 diabetes mellitus called insulin dependent diabetes mellitus? What causes this condition? What is the treatment?
- 24 Why is Type 2 diabetes mellitus called non-insulin dependent diabetes mellitus? What causes this condition? What is the treatment?
- 25 What is the origin and original meaning of the word diabetes? What are the classic symptoms of diabetes mellitus?
- 26 If diabetes mellitus is not controlled then what is the pathology of this disease?
- 27 What is gestational diabetes?
- 28 What is diabetes insipidus?

### C17.3 Homeostasis and Stress

- 29 What is stress not? What will stress do to any disease?
- 30 How will the body respond to stress? Three stages? Key events in each stage?
- 31 What happens if someone is unable to “escape” from their stressor?