Hi everyone! My name is Katelyn Brooks, I am a sophomore pre-nursing major, and I will be the master tutor for A&P 2 this semester. This week Dr. Taylor will continue talking about the Endocrine system (Ch. 22) and its functions, so this document will cover the entirety of that chapter.

**Remember that the Tutoring Center offers free individual and group tutoring for this class.** Our Group Tutoring sessions will be every Wednesday from 6:00-7:00 PM CST. You can reserve a spot at [https://baylor.edu/tutoring](https://baylor.edu/tutoring).

**Keywords:** Lipid-soluble, Water-soluble, Second-messenger system, Digestive phase, Interdigestive phase

-The endocrine system is the study of hormones in the human body, and all hormones that the body produces can be classified as either lipid-soluble or water soluble.

-The image below shows the characteristics of water and lipid-soluble hormones, and in order to answer quiz and exam questions you will need to associate the characteristics with the correct classification.

**Characteristics of Lipid-soluble hormones**
- Most are lipid based (except TH)
- Bound in blood
- Slow (Long) clearance time
- Long latency
- Long-term effects
- Binds to intracellular receptors
- Usually affects gene transcription

**Characteristics of Water-soluble hormones**
- Amino acid based
- Unbound in blood
- Fast clearance
- Short latency
- Short-term effects
- Binds to membrane receptors and use second messengers inside target
- Usually affects existing enzymes

- The easiest way to begin memorizing the hormones is to use the classification of lipid and water-soluble and learn the short list of lipid-soluble hormones. Once you know this list you will be able to assume that all other hormones not listed are water-soluble which is a great short cut when answering test questions.
Lipid-Soluble Hormones

1. **STEROIDS** (Lipid-based)
   A. Sex Hormones: Testosterone, Estrogen, Progesterone
   B. Corticosteroids
      - Glucocorticoids: Cortisol (Hydrocortisone)
      - Mineralocorticoids: Aldosterone
      - Gonadocorticoids: Androgenic hormones

2. **THYROID** (Thyroid Hormone-TH) (amino acid-based)

Other Lipid-Soluble chemicals that affect other cells

- Calcitriol (active vitamin D)
- Prostaglandins (local, paracrine secretions); an eicosanoid
- Leukotrienes (eicosanoids secreted from white blood cells)

- Pages 431-440 include all of the hormones, their origin, stimulus, target, and effect. You will need to identify all four of those for each hormone listed. I would strongly suggest studying these by making flashcards with that information on it and going through them each day. The image below is a good example of a type of chart that you can make while studying the hormones.

- Another key point that you will need to be familiar with is the products involved with the second-messenger systems of water-soluble hormones.
*please note that you do not need to memorize the steps of the second-messenger system, you will just need to be able to associate the names of the products involved*

- The final part of chapter 22 takes your knowledge of the different hormones in the body and applies them to metabolic processes. You should know which hormones are active during the periods below:
  - **Digestive phase**: during food consumption. Also known as the absorptive period.
  - **Interdigestive phase**: after food consumption. Also known as the post absorptive period.
- The image below is a great big picture resource for this chapter as well as future chapters that you will cover, so please take your time and make sure that you can explain what is being depicted.

*all images are taken from Dr. Taylor’s textbook, *Human Anatomy & Physiology, 1st Edition*
Practice Questions

1. Which of the following hormones would most likely bind to a membrane receptor and stimulate existing enzymes?
   A. Calcitriol
   B. Cortisol
   C. CRH
   D. Corticosteroids
   E. Calbindin

2. ___ is related to _____ in the same way that _____ is related to _____
   A. CRH…ACTH…GHIH…hGH
   B. TRH…thyroxine…CRH…glucocorticoids
   C. Calcitriol…calbindin…calcidiol…calcitonin
   D. PRL…dopamine…somatostatin…somatomedins
   E. ANP…ADH…cholecystokinin…EPO.

3. Which of the following is most closely related to interdigestive periods?
   F. Insulin
   G. Glycogen phosphorylase
   H. Parasympathetic
   I. Less hGH
   J. Protein synthesis

Answers
1. C
2. B
3. G