Endocrine Ed – <https://www.biomanbio.com/HTML5GamesandLabs/Physiogames/endocrine_edhtml5page.html>

Control Ed's endocrine glands to regulate his blood sugar, fight or flight response, sleepiness and more!  You will learn about feedback loops (negative feedback) and will need to apply this knowledge to new situations in this amusing animated experience!

Hormones and Feedback:

1. Hormones are secreted by an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gland.
2. They travel by which method? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ have receptors for the hormones.
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is like being in balance or a teeter totter.
5. Once homeostasis is achieved, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ turns off production of the hormone. This is called negative feedback.

Complete the diagram:

Pituitary 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (effect)

Without feedback, what would happen to a person’s height? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Questions:

1. How does a feedback loop work?

2. What would happen if negative feedback did not occur?

3. What is the role of the brain?

Adrenaline and Stress:

1. List several effects of adrenaline:
2. Adrenaline gets the body ready for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Game: control Ed’s adrenaline

What is one thing that will raise his adrenaline level?

Quiz:

1. In which situation would adrenaline most likely be secreted by the adrenal glands?
2. When sufficient adrenaline has been secreted, production stops. This is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ feedback.

Melatonin and Sleep:

1. Melatonin production is high when it is \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. It is secreted by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gland.
3. Do melatonin levels remain constant during the night? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Blood Sugar Hormones:

1. What four areas are affected by insulin (they have insulin receptors)?
2. Insulin causes cells to \_\_\_\_\_\_\_\_\_\_\_\_\_ sugar and therefore \_\_\_\_\_\_\_\_\_\_\_\_\_ blood sugar levels.
3. Glucagon causes the \_\_\_\_\_\_\_\_\_\_\_\_\_ to release sugar and cause a \_\_\_\_\_\_\_\_\_\_\_ in blood sugar levels.

Game: When you exercise, blood sugar levels \_\_\_\_\_\_\_\_\_\_\_\_ causing the release of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to bring those levels back to normal ranges.

Quiz:

Matching: hormones to their function

\_\_\_\_\_ 1. Raises blood sugar A. adrenaline

\_\_\_\_\_ 2. Helps you sleep B. glucagon

\_\_\_\_\_ 3. Increases muscle strength C. Insulin

\_\_\_\_\_ 4. Lowers blood sugar D. melatonin

5. Calcitonin lowers blood calcium adding that calcium to the \_\_\_\_\_\_\_\_\_\_\_\_.

6. The parathyroid \_\_\_\_\_\_\_\_\_\_\_ blood calcium by taking the calcium from the \_\_\_\_\_\_\_\_\_\_\_.

7. Once homeostasis is reached, hormone release will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

8. If blood sugar levels are too high, \_\_\_\_\_\_\_\_\_\_\_\_ is released.

9. If blood sugar levels are too low, \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is released.

10. Antidiuretics (ADH) help the body retain water by affecting the \_\_\_\_\_\_\_\_\_\_\_\_\_ (organ).

11. You would most likely produce ADH when: