What Is the Endocrine System?

Worksheet

The endocrine system is a collection of glands (like the pituitary, thyroid, adrenal glands, and pancreas) that secrete hormones into the blood to control body processes such as growth, metabolism, and stress response.

Questions

1. Which gland is often called the 'master gland'?

A) Thyroid
B) Pituitary gland
C) Pancreas
D) Adrenal gland

2. How do hormones typically travel to their target cells?

A) Through nerves
B) Through the bloodstream
C) Through muscles only
D) They don't travel

3. Which hormone lowers blood glucose levels?

A) Glucagon
B) Adrenaline
C) Insulin
D) Growth hormone

4. What keeps hormone levels from rising or falling too far?

A) Random chance
B) Negative feedback loops
C) The nervous system only
D) Muscle contraction

5. Blood sugar rises after a meal - how does insulin bring it back down?

6. You're suddenly frightened - how does adrenaline change your body in seconds?

7. How does growth hormone affect a teenager's height over a year?

8. Define: What is the endocrine system?

9. Define: What is a hormone?

10. Define: Name two major endocrine glands.

Answer Key

1. B) Pituitary gland - The pituitary gland controls many other endocrine glands by releasing regulatory hormones.

2. B) Through the bloodstream - Hormones are secreted directly into the blood and carried throughout the body.

3. C) Insulin - Insulin, from the pancreas, helps cells absorb glucose, lowering blood sugar.

4. B) Negative feedback loops - Negative feedback loops detect hormone levels and adjust secretion to maintain balance.

5. 1) Beta cells in the pancreas detect high blood glucose 2) They release insulin into the blood 3) Insulin binds receptors on liver, muscle, and fat cells 4) Cells absorb glucose from the blood and store it as glycogen 5) Blood glucose falls back to a normal ~90 mg/dL range.

6. 1) The brain signals the adrenal glands during a stressful event 2) Adrenal medulla releases adrenaline (epinephrine) into the blood 3) Adrenaline binds receptors in the heart and lungs 4) Heart rate rises from ~70 to 120+ beats per minute and airways widen 5) The body enters 'fight-or-flight' mode within seconds.

7. 1) The pituitary gland releases growth hormone (GH), mostly during deep sleep 2) GH travels through the blood to the liver 3) The liver produces IGF-1, which stimulates bone growth plates 4) Long bones lengthen gradually over months 5) A healthy teen may grow several centimeters per year during a growth spurt.

8. A network of glands that secrete hormones into the blood to regulate body processes.

9. A chemical messenger released by a gland that travels in the blood to affect target cells.

10. The pituitary gland (master gland) and the thyroid gland (metabolism).