A11 · Growth and metabolism: hGH, thyroxine and blood calcium · Practice key

This is the worked key. Every practice question is worked step by step.

Worked examples

Read these first. There is one for each kind of question in this lesson.

Example 1 · Predict hormone levels when a loop breaks

The thyroid gland of a patient makes almost no thyroxine. Predict the level of TSH.

1. Step 1: hypothalamus, pituitary gland (TSH), thyroid gland (thyroxine).
2. Step 2: the thyroid gland has failed.
3. Step 3: thyroxine comes after the break, so it is low.
4. Step 4: nothing inhibits the pituitary gland, so TSH rises.

Answer: TSH is high.

Example 2 · Choose between two antagonistic hormones

Blood calcium is too low. Which hormone is released, and from where?

1. The hormone that raises blood calcium is PTH.
2. PTH comes from the parathyroid glands.

Answer: PTH, from the parathyroid glands.

Practice

Questions 1 to 4 are easy. Questions 5 to 8 are medium. Questions 9 and 10 are harder.

EASY

1. State what the letters hGH stand for.

1. h is for human.
2. hGH is human growth hormone.

EASY

2. Name the gland that releases thyroxine.

1. It is in the neck.
2. It is the thyroid gland.

EASY

3. Name the element the thyroid gland needs to make thyroxine.

1. It is added to table salt.
2. It is iodine.

EASY

4. Name the hormone that lowers blood calcium.

1. The thyroid gland releases it.
2. It is calcitonin.

MEDIUM

5. State what thyroxine does to the metabolic rate. Say what happens to body temperature.

1. Thyroxine raises the metabolic rate.
2. Cells release more energy as heat, so the person feels warmer.

MEDIUM

6. Explain the difference between gigantism and dwarfism.

1. Gigantism: too much hGH in childhood. The bones grow too long.
2. Dwarfism: too little hGH in childhood. The bones do not reach full length.

MEDIUM

7. State what TSH does, and name the gland that releases it.

1. TSH makes the thyroid gland release thyroxine.
2. The anterior lobe of the pituitary gland releases TSH.

MEDIUM

8. Explain what "antagonistic hormones" means. Give one pair.

1. They are two hormones with opposite effects.
2. PTH raises blood calcium, and calcitonin lowers it.

HARDER

9. A person takes too many thyroxine pills. Use the loop to predict the level of TSH. Explain.

1. Thyroxine in the blood is high.
2. It inhibits the hypothalamus and the pituitary gland.
3. So TSH is low.

HARDER

10. A person eats no calcium for a week, yet blood calcium stays normal. Explain how, and name one cost to the body.

1. Blood calcium starts to fall, so PTH is released.
2. PTH makes the bones release calcium into the blood.
3. The cost: the bones lose calcium.