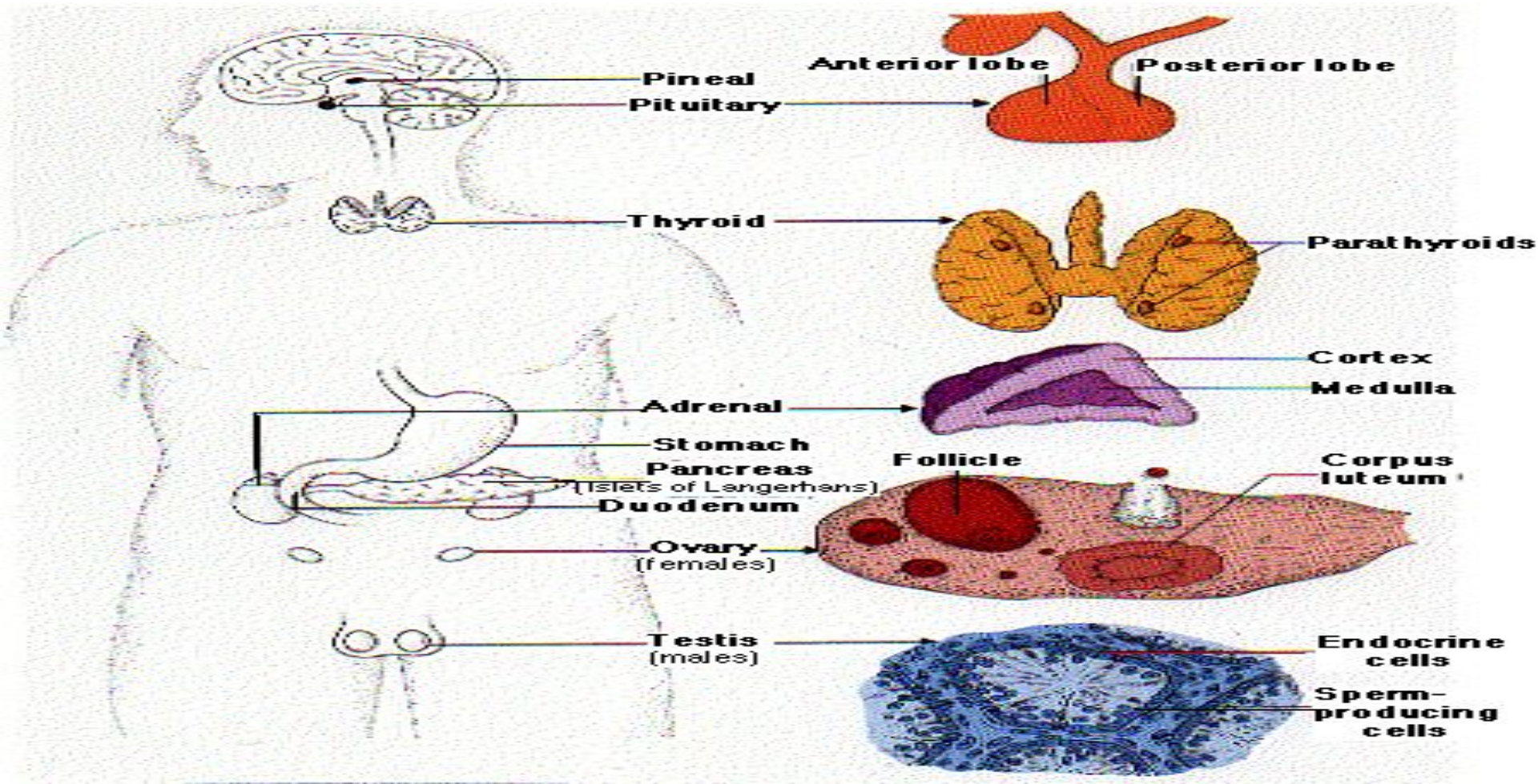
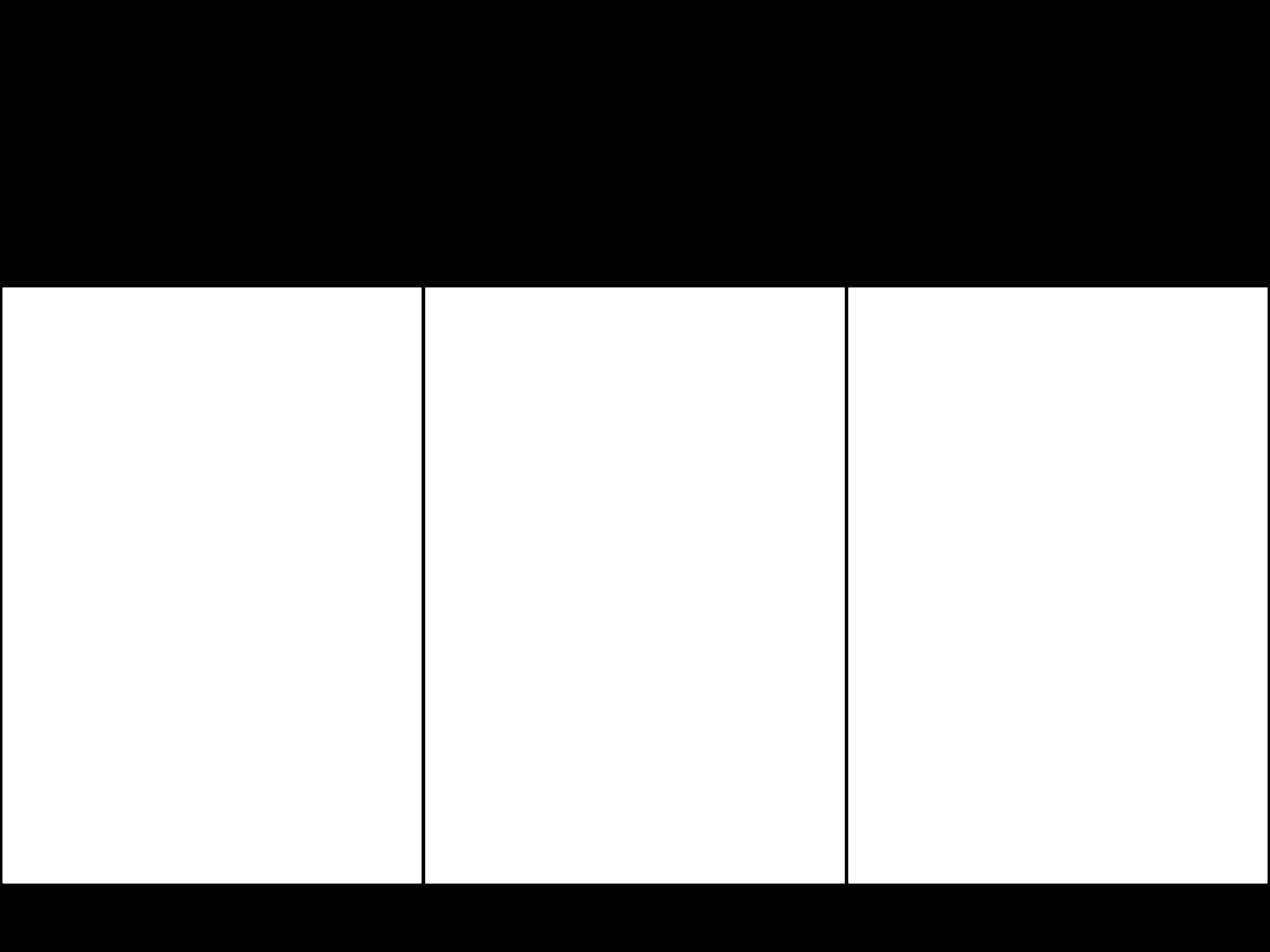


# Endocrine system

- Endocrine system regulates and coordinates the body and body activities
- Endocrine system is composed of endocrine glands





- **Hormones** are substances secreted (released) by cells that act to regulate the activity of other cells in the body
- Hormones act as chemical messengers, carrying instructions that cause cells to change their activities

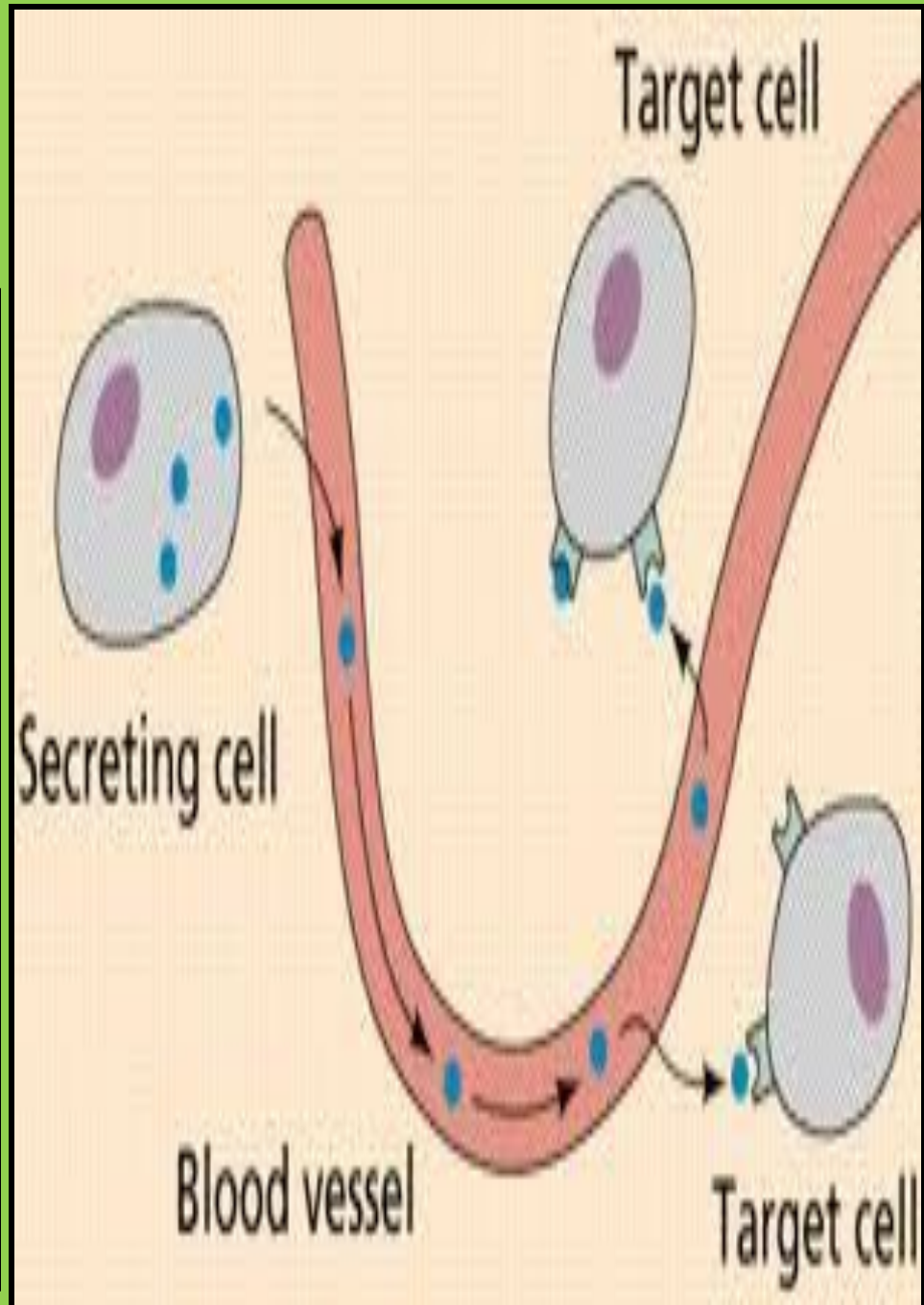
# Functions of *hormones*

1. Regulating growth, development, behavior, and reproduction
2. Coordinating the production, use, and storage of energy
3. Maintaining homeostasis
4. Responding to stimuli from outside the body



# Target cell

- A **target cell** is a specific cell that a hormone binds to and acts on (carries the message to)
- A hormone recognizes a target cell because the target cell has ***specific receptors***
- A hormone binds only to cells that have a particular receptor protein, ignoring all other cells



# The regulation of hormone secretion

- Feedback mechanisms (механизм обратной связи) play important role in the regulation:
- NEGATIVE
- POSITIVE
- Ex: parathyroid hormone stimulates the release of calcium into the blood affecting bone tissue

Parathyroid gland



PTH

$\uparrow \text{Ca}^{2+}$

Blood

Osteoclast

$\text{Ca}^{2+}$

Bone

$\downarrow \text{pH}$

$\text{Ca}^{2+}$

$\text{Ca}^{2+}$



Osteoblasts



- If blood calcium level increases, the secretion of parathyroid hormone decreases, this is negative feedback.
- If calcium level decreases, the secretion increases, this is positive feedback.

#### Regulation of Parathyroid Hormone (PTH) Levels

