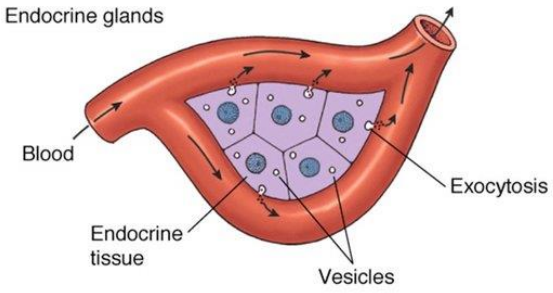
Endocrine Physiology

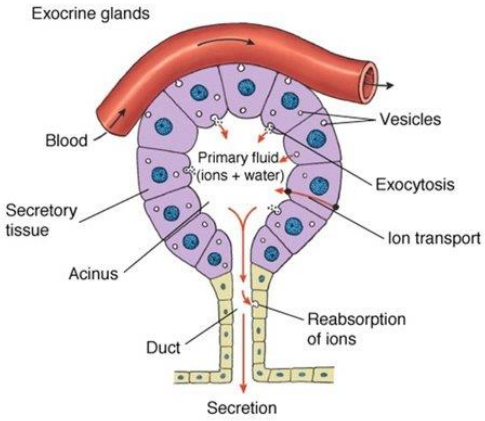
Glands: are special secreting organs which pour their secretions either directly or indirectly into the bloodstream.

Kinds of Glands:

a) Duct Glands or Exocrine Glands: Have ducts or canals through which they pour out their secretions. These include lacrimal (tear) glands, sebaceous (sweat), salivary, gastric, mammary glands.

b) Ductless or Endocrine Glands: Pour their secretions called hormones directly into the bloodstream.





Endocrine glands: are glands of the endocrine system that secrete their products, hormones, directly into the blood rather than through a duct. They are also called ductless glands because they do not have ducts to secrete their hormones.

A hormone: is a chemical substance that is secreted into the internal body fluids by one cell or group of cells and has a physiological control effect on other cells of the body.

Important Functions of hormones include:

1. Growth and development of Prompting cell or tissue
2. Food metabolism
3. Initiating and maintaining sexual development and reproduction
4. Maintaining body temperature

5. Regulating mood and cognitive functioning

Types of Hormones

Hormones are classified by various criteria:

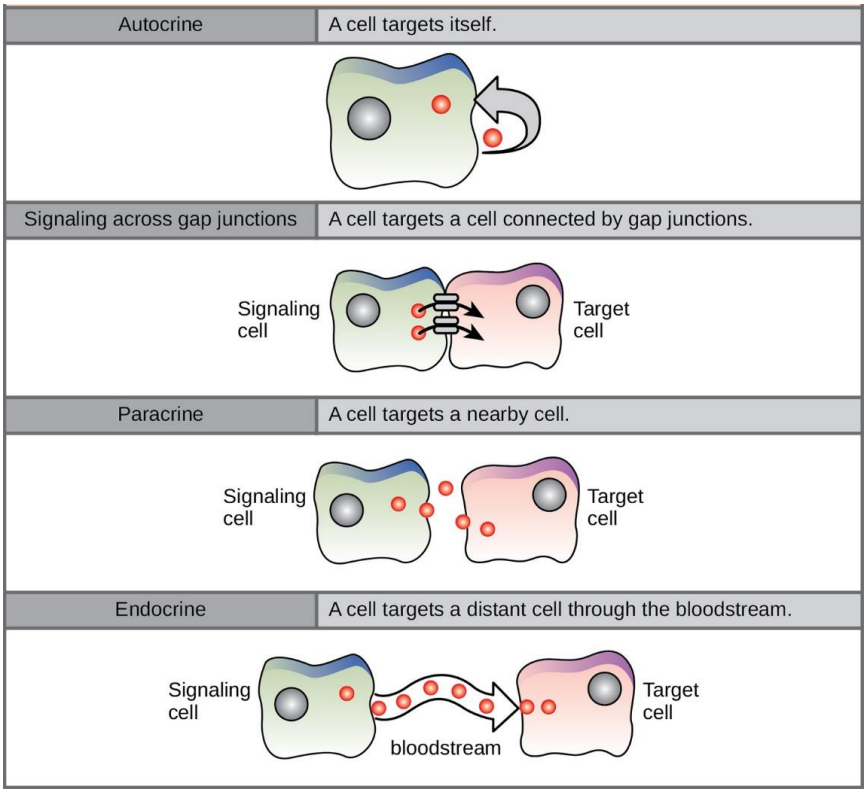
1. By Proximity of their site of synthesis to their site of action.
2. By their chemical structure.
3. By their degree of solubility in aqueous medium.

3 classes of hormones based on proximity of site of Synthesis to Site of Action:

1.Autocrine Hormones: those that act on the same cells that synthesize them.

2.Paracrine Hormones: those that are synthesized very close to their site of action.

3.Endocrine Hormones: those that are synthesized by endocrine glands and transported in the blood to target cells that contain the appropriate receptors.



Two classes of hormones based on solubility in aqueous medium: -

1.Hydrophilic Hormones: Hormones that are soluble in aqueous medium. They cannot cross the cell membrane. Examples: Insulin, Glucagon, Epinephrine.

2. Lipophilic Hormones: Hormones that are not soluble in aqueous medium, but soluble in lipid. They can easily cross the cell membrane. Examples: Thyroid hormones, Steroid hormones.

The main endocrine glands include:

Gland	**Hormone**
Pituitary gland	-Growth hormones regulate body growth (height and weight) and development. -Hormones regulate the thyroid gland (Thyroid Stimulating Hormones (TSH). -Stimulate milk production in the breasts.
Thyroid Gland	-Thyroxine -Triidothyronine: increase the rates of chemical reaction in almost all cells of the body, thus increasing the general level of body metabolism. -Calcitonin: - It promotes the deposition of calcium in the bones.
Pancreas	Insulin: It controls blood sugar levels.
Adrenal gland	Adrenaline: It is the key in regulating body's stress response.
Ovaries	-Estrogen: - It stimulates the development of the female sex organs, the breasts and various secondary sexual characteristics. -Progesterone: During pregnancy, progesterone also stimulates development of the glands in the breasts that are responsible for milk production.

Testis	-Testosterone: - It stimulates growth of the male sex organs, also promotes the development of male secondary sex characteristics.