

Endocrine System Anatomy Part-2

By

Ram Balak Mahto

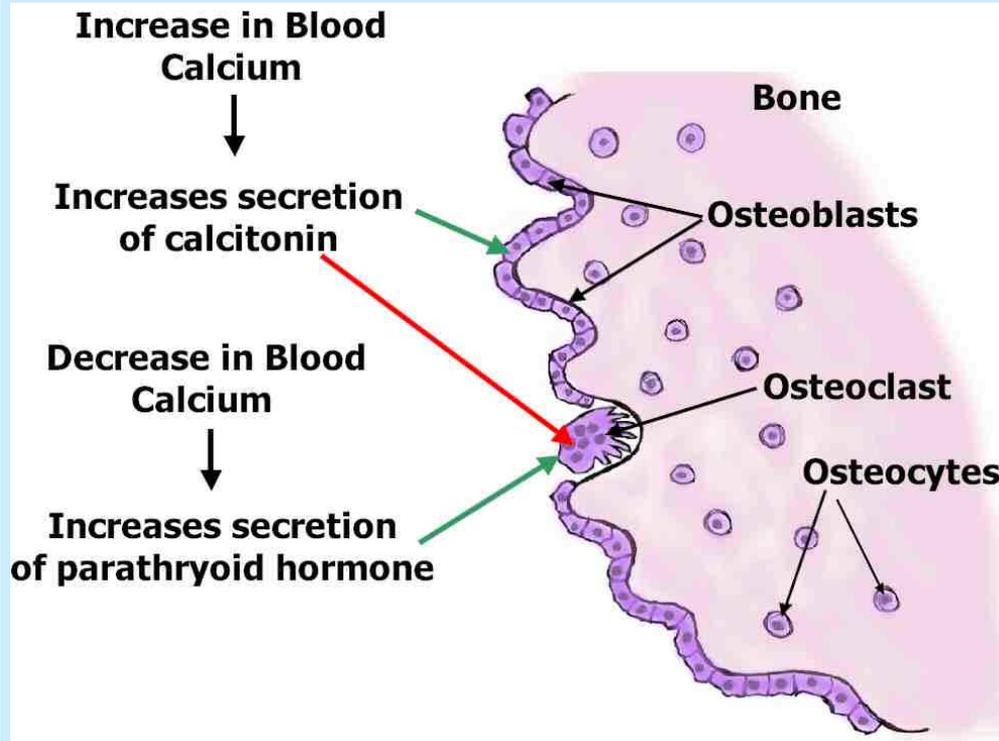
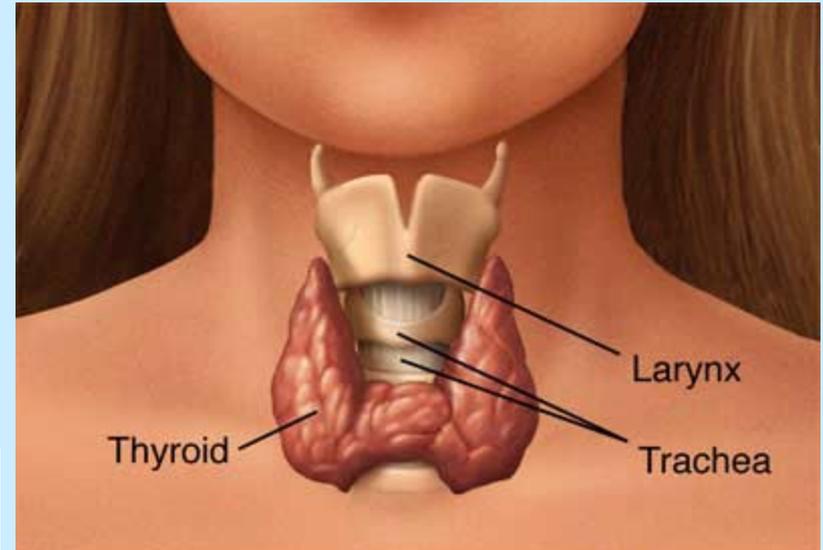
Guest faculty

Zoology department

V.S.J College Rajnagar Madhubani

Secretions of the thyroid gland...

The thyroid gland plays a vital role in metabolism and regulates the body's metabolic processes.



Calcitonin: influences bone and calcium metabolism; maintains a homeostasis of calcium in the blood plasma

Secretions of the thyroid gland...

Thyroxine (T4) and triiodothyronine (T3): essential to BMR – basal metabolic rate (the rate at which a person's body burns calories while at rest); influences physical/mental development and growth

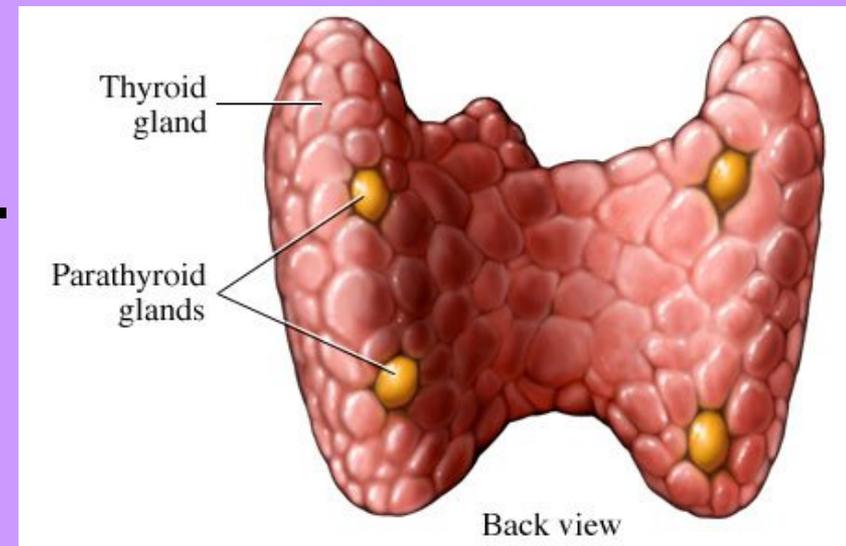
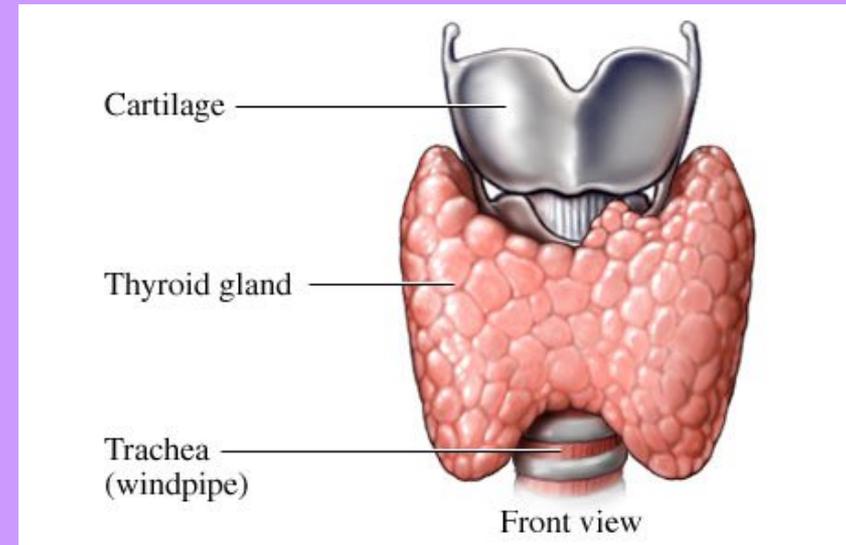


Hyposecretion of T3 and T4 = cretinism, myxedema, Hashimoto's disease

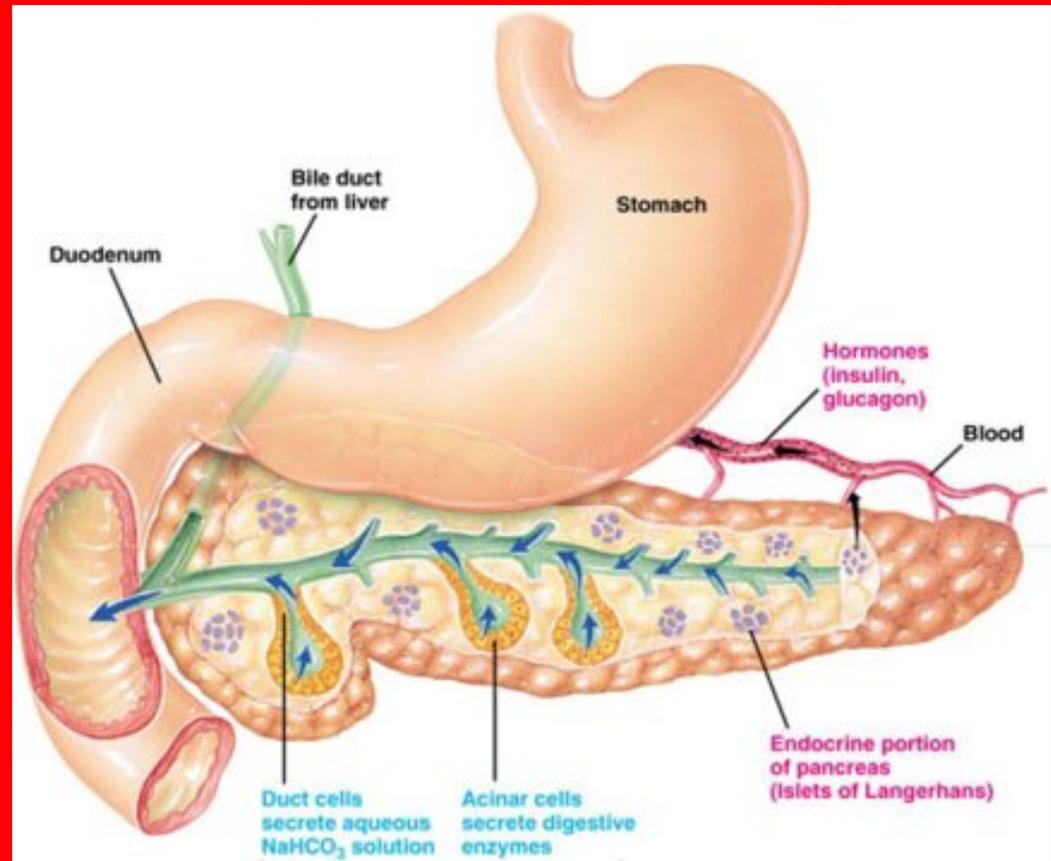
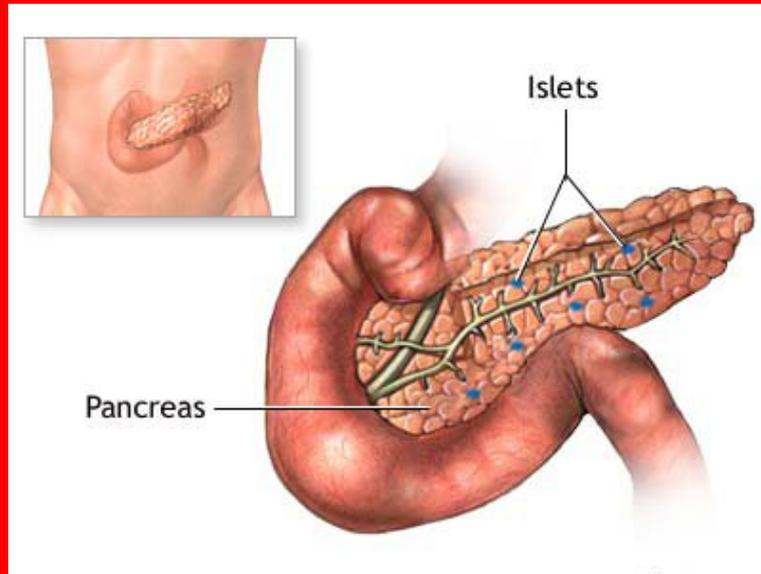
Hypersecretion of T3 and T4 = Grave's disease, goiter, Basedow's disease

Secretions of the parathyroid gland...

The two pairs of parathyroid glands are located on the dorsal or back side of the thyroid gland. They secrete parathyroid (PTH) which plays a role in the metabolism of phosphorus. Too little results in cramping; too much results in osteoporosis or kidney stones.



The islets of Langerhans...



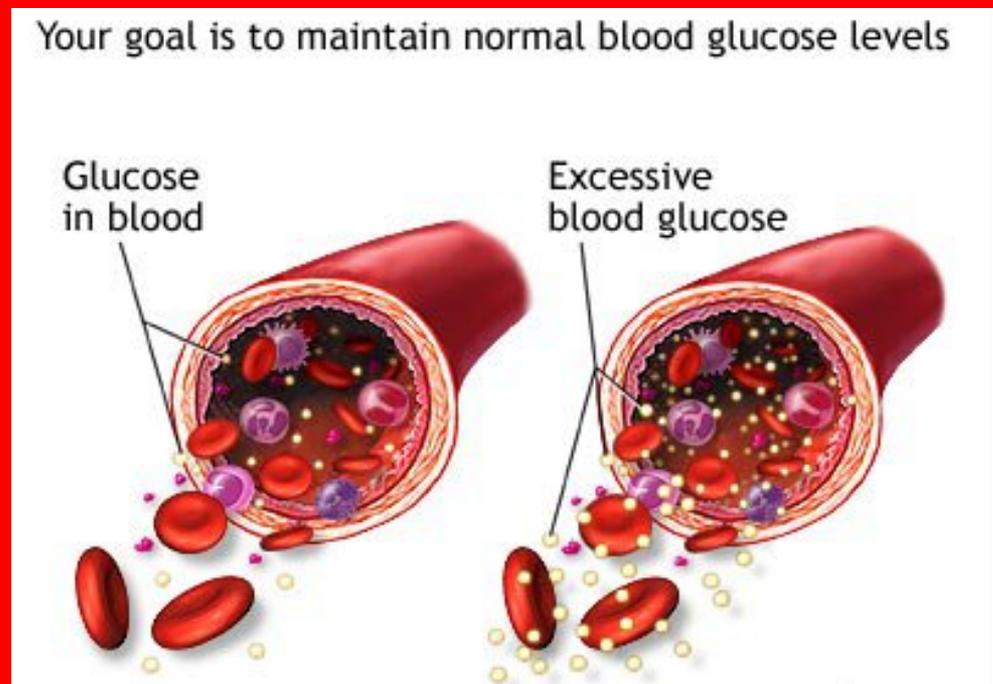
The islets of Langerhans are small clusters of cells located in the pancreas.

Secretions from the islets of Langerhans...

Alpha cells facilitate the breakdown of glycogen to glucose. This elevates the blood sugar.

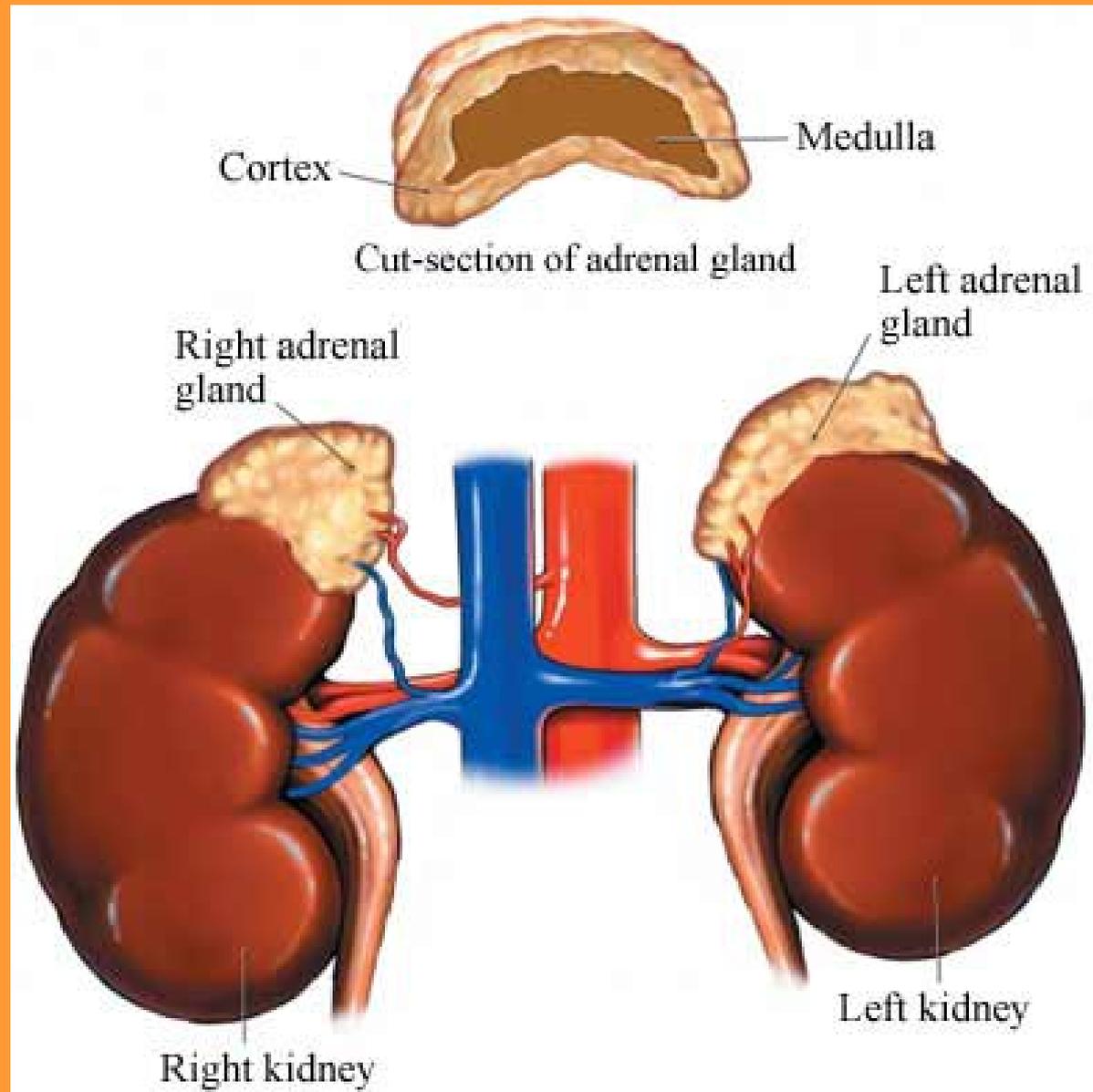
Delta cells suppress the release of glucagon and insulin.

Beta cells secrete the hormone insulin, which is essential for the maintenance of normal blood sugar levels. Inadequate levels result in diabetes mellitus.



The adrenal glands...

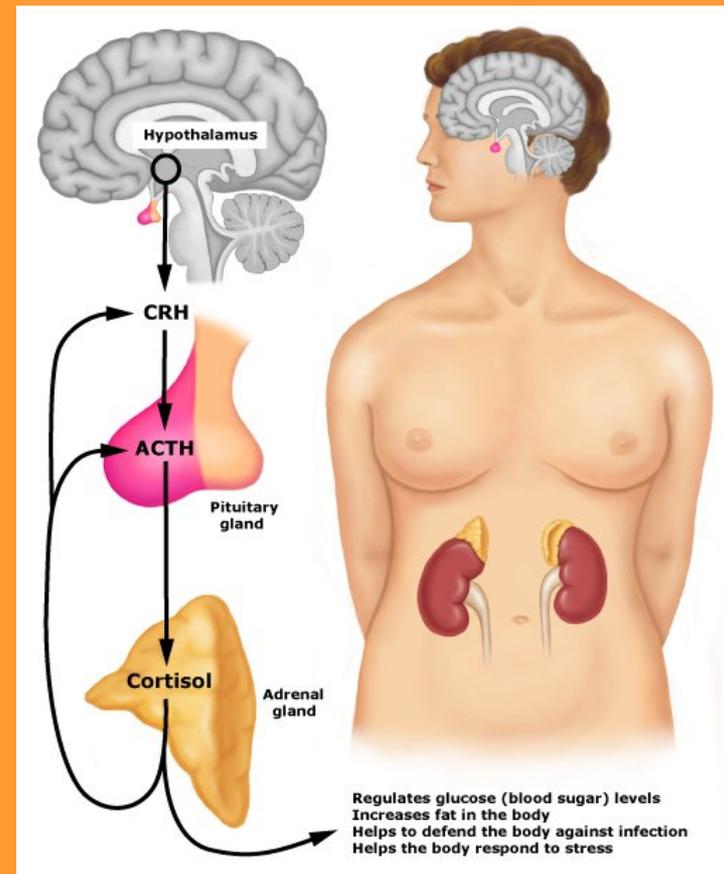
The triangular-shaped adrenal glands are located on the top of each kidney. The inside is called the medulla and the outside layer is called the cortex.



Secretions from the adrenal cortex...

Cortisol: regulates carbohydrate, protein, and fat metabolism; has an anti-inflammatory effect; helps the body cope during times of stress

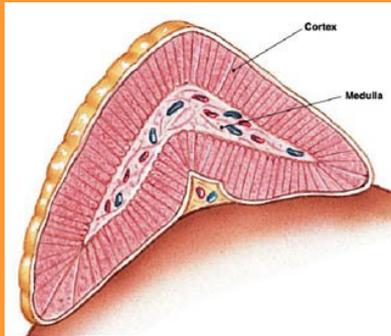
Hyposecretion results in Addison's disease; hypersecretion results in Cushing's disease



Corticosterone: like cortisol, it is a steroid; influences potassium and sodium metabolism

Secretions from the adrenal cortex...

Aldosterone: essential in regulating electrolyte and water balance by promoting sodium and chloride retention and potassium excretion.



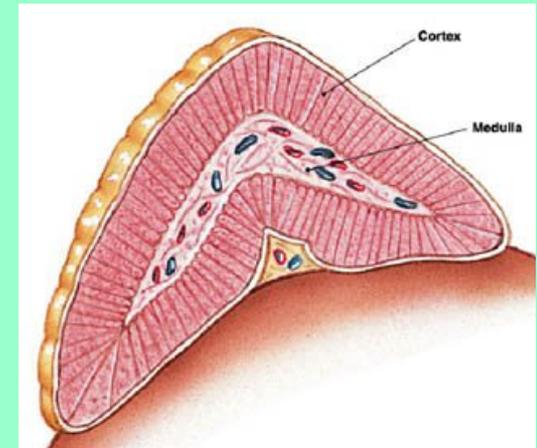
Androgens: several hormones including testosterone; they promote the development of secondary sex characteristics in the male.



Secretions from the medulla...



- Place the victim in shock position
- Keep the person warm and comfortable
- Turn the victim's head to one side if neck injury is not suspected



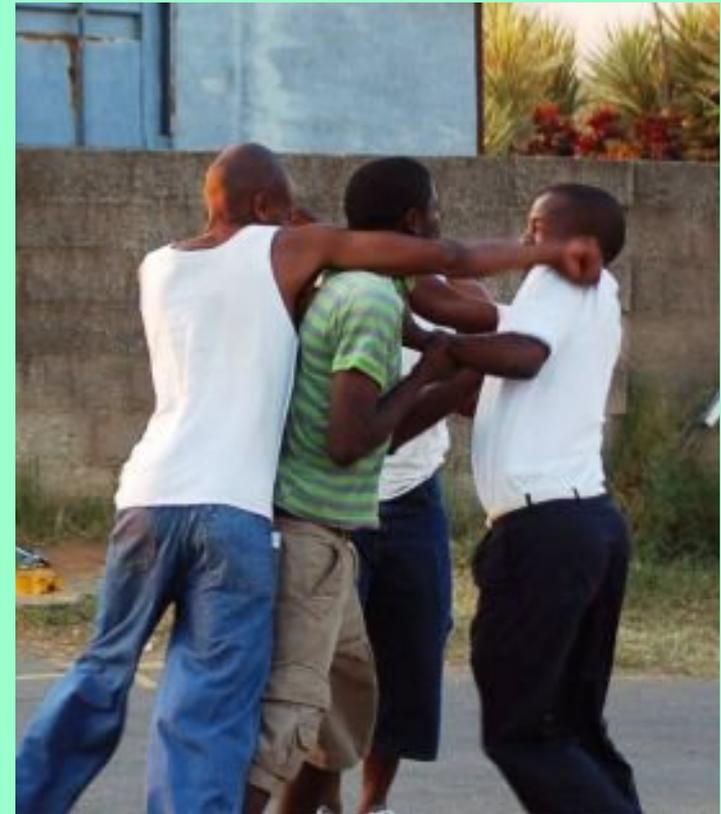
Dopamine is used to treat shock. It dilates the arteries, elevates systolic blood pressure, increases cardiac output, and increases urinary output.

Secretions from the adrenal medulla...



Epinephrine is also called adrenalin. It elevates systolic blood pressure, increases heart rate and cardiac output, speeds up the release of glucose from the liver... giving a spurt of energy, dilates the bronchial tubes and relaxes airways, and dilates the pupils to see more clearly. It is often used to counteract an allergic reaction.

Secretions from the adrenal medulla...

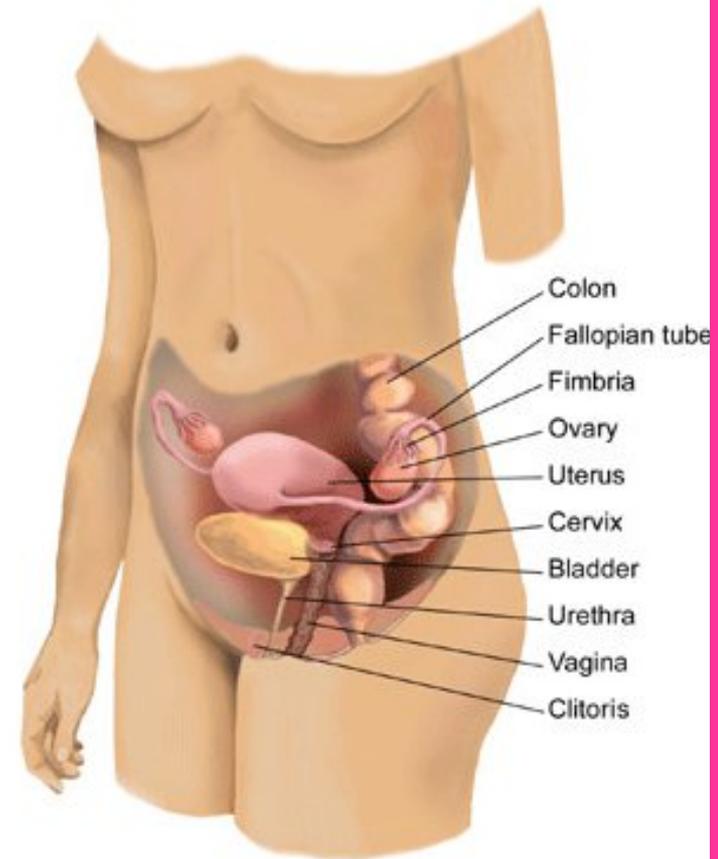


Norepinephrine, like epinephrine, is released when the body is under stress. It creates the underlying influence in the *fight or flight response*. As a drug, however, it actually triggers a drop in heart rate.

Secretions of the ovaries...

The ovaries produce several estrogen hormones and progesterone. These hormones prepare the uterus for pregnancy, promote the development of mammary glands, play a role in sex drive, and develop secondary sex characteristics in the female.

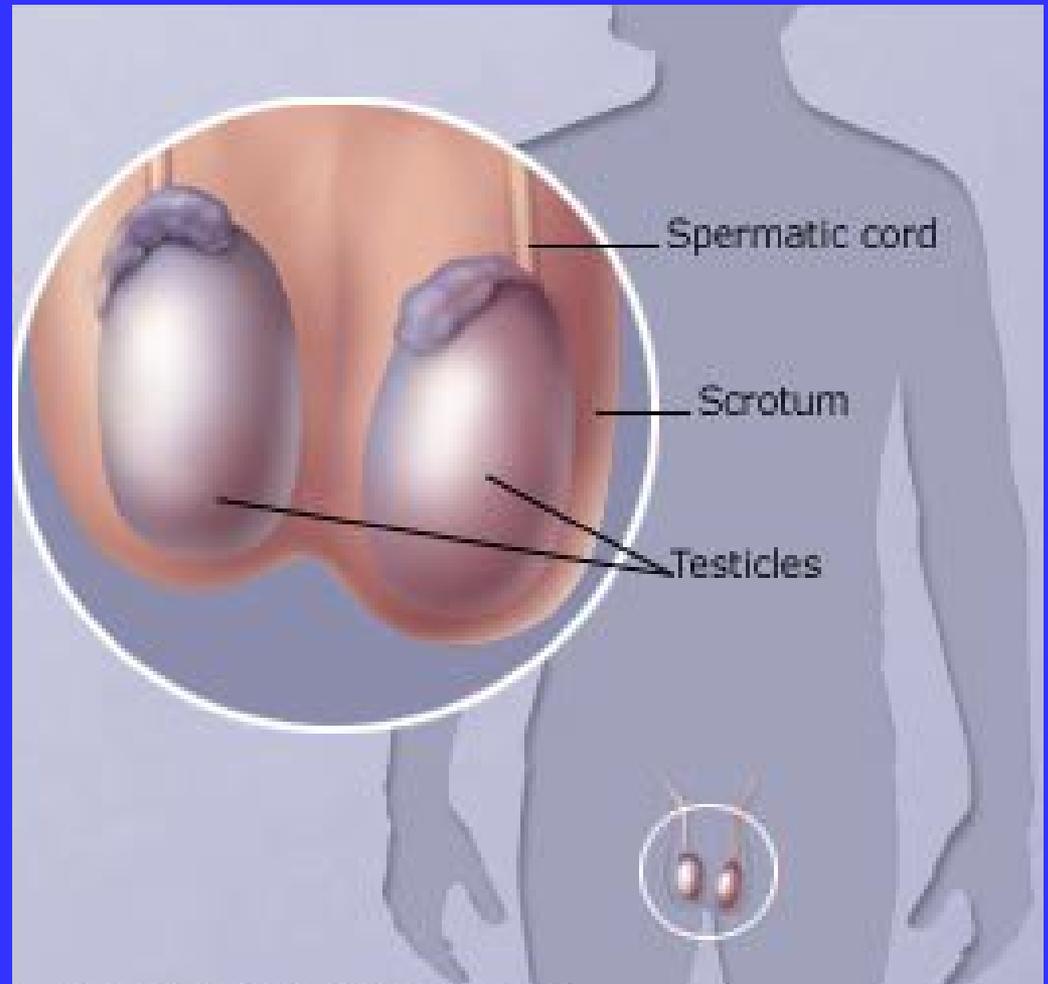
The Female Reproductive System



Estrogen is essential for the growth, development, and maintenance of female sex organs.

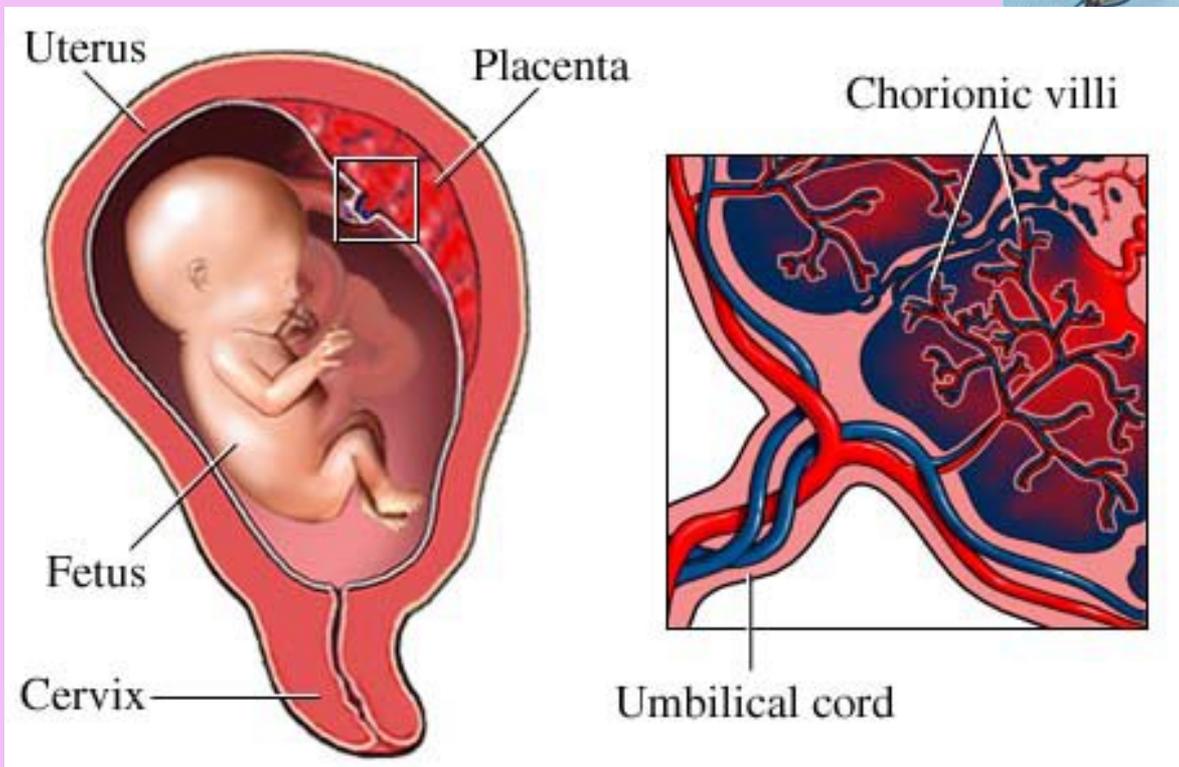
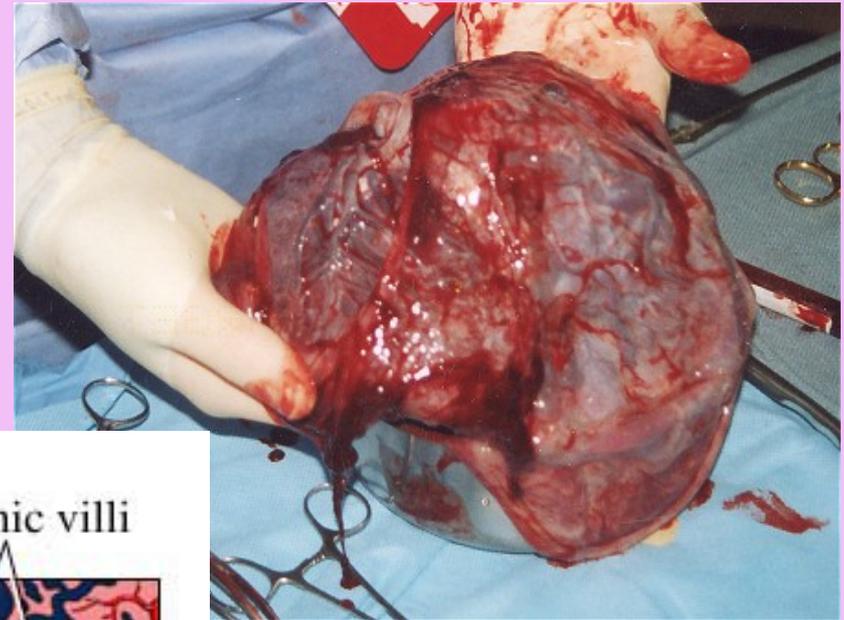
Secretions of the testes...

The testes produce the male sex hormone called **testosterone**. It is essential for normal growth and development of the male sex organs. Testosterone is responsible for the erection of the penis.



Secretions of the placenta...

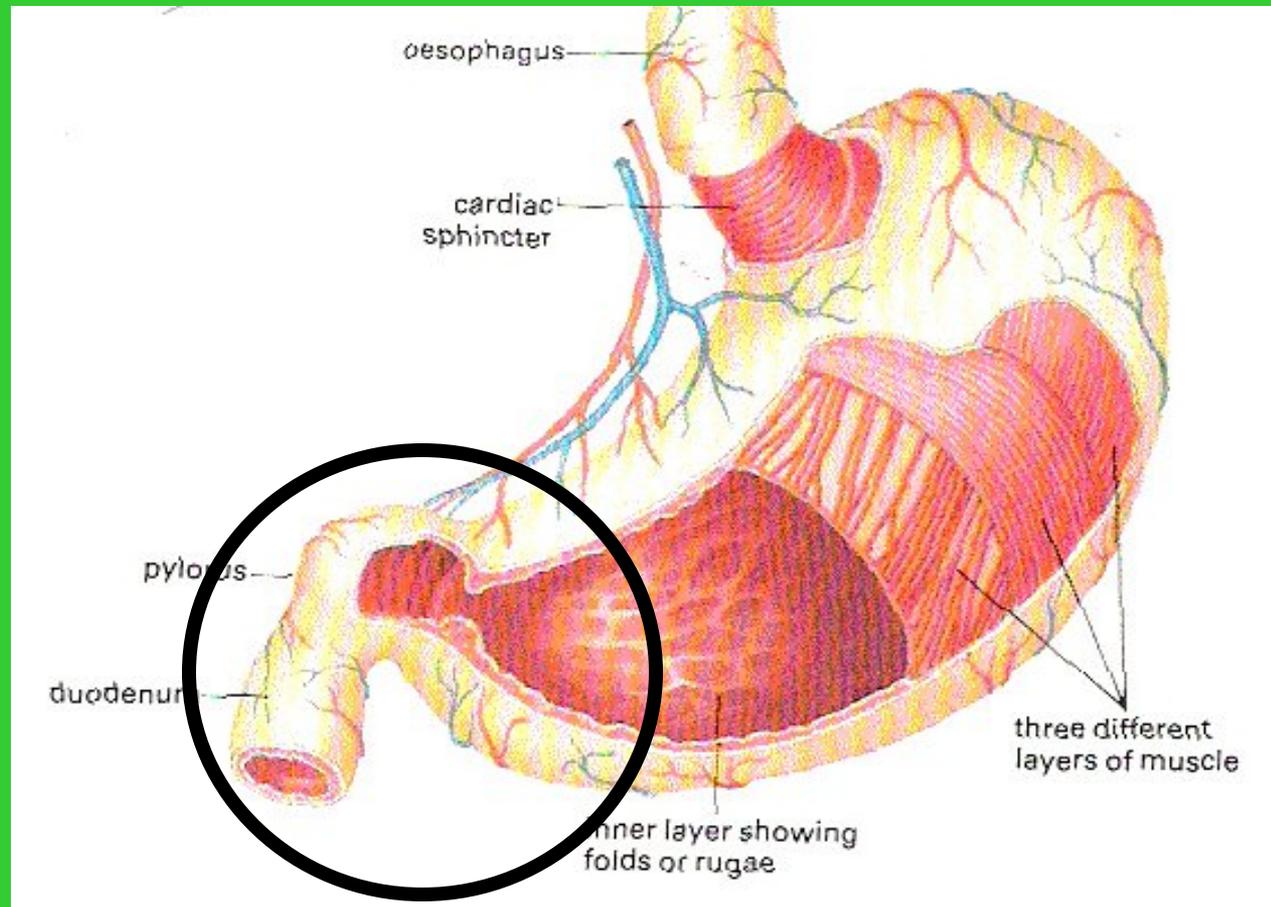
During pregnancy, the placenta serves as an endocrine gland.



It produces chorionic gonadotropin hormone, estrogen, and progesterone.

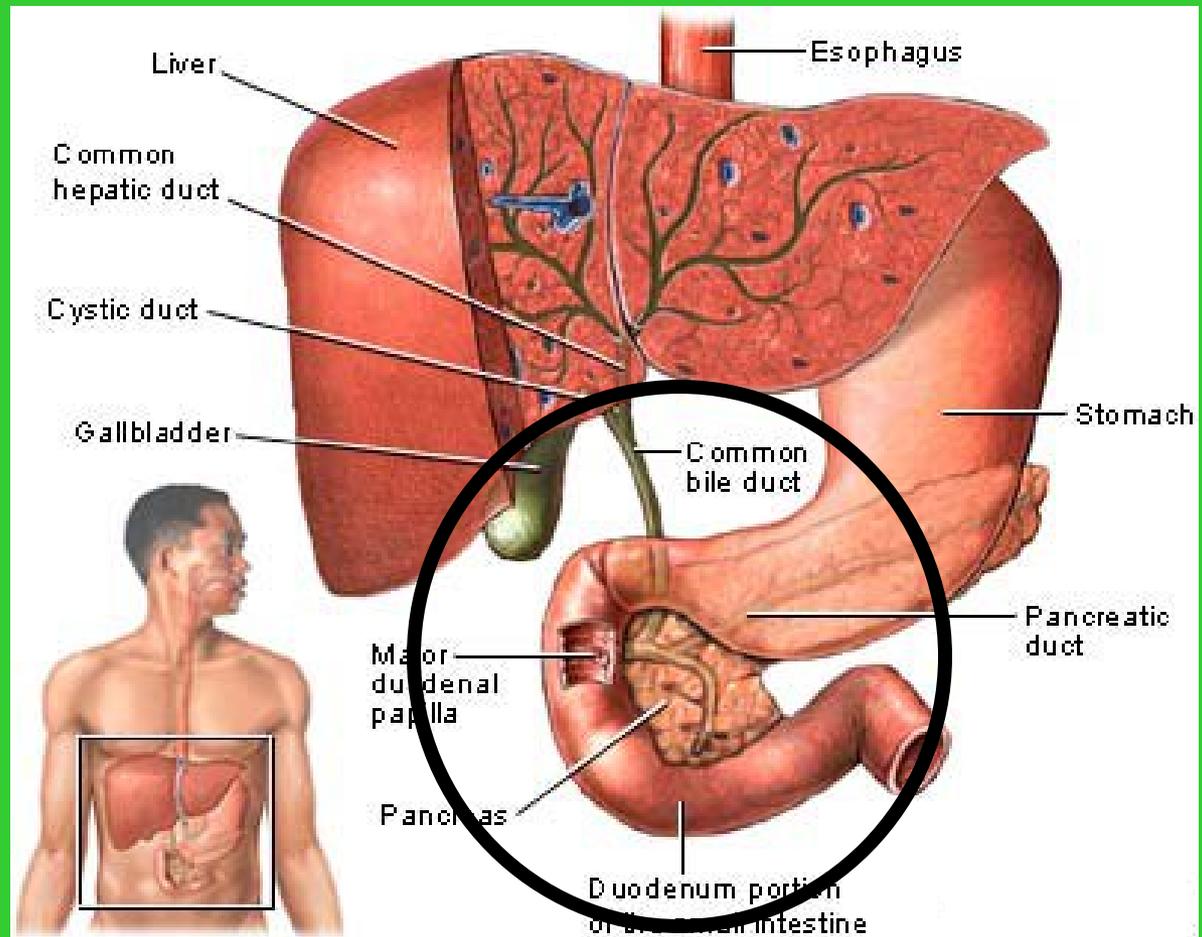
Secretions of the gastrointestinal mucosa...

The mucosa of the pyloric area of the stomach secretes the hormone gastrin, which stimulates the production of gastric acid for digestion.



Secretions of the gastrointestinal mucosa...

The mucosa of the duodenum and jejunum secretes the hormone secretin, which stimulates pancreatic juice, bile, and intestinal secretion.



Secretions of the thymus...

The thymus gland has two lobes, and is part of the lymphatic system. It is a ductless gland, and secretes thymosin. This is necessary for the Thymus' normal production of T cells for the immune system.

