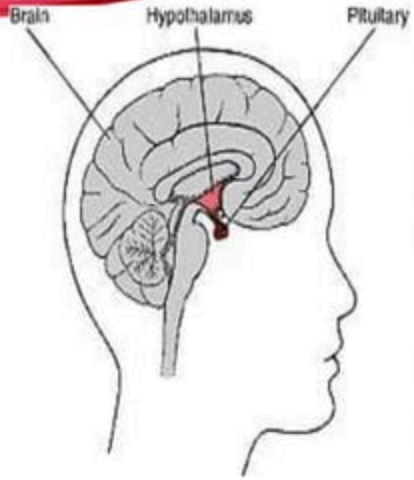
THE ENDOCRINE GLANDS

By Dianne V. del Rosario

- Endocrine glands are glands of the endocrine system that secrete their products, hormones, directly into the blood rather than through a duct.
- Endocrine glands are scattered masses of tissue found in various parts of the body.
- These endocrine glands secrete special chemical messengers.
- Hormones are directly released into the bloodstream. Why?
- These chemicals are as essential as the nervous system to the integration of the organism's activities and to the maintenance of homeostasis. Homeostasis is attained when the rate of internal activites is balanced, neither too fast, nor too slow. Such a balance is essential for the individual's survival.
- Homeostasis is the tendency of a body to maintain a balance among internal physiological conditions. It is the body's self-regulating tendency.
- And the endocrine glands determine homeostasis to a great extent.

- The functioning of the nervous system depends on secretions called hormones. The endocrine glands play an important role in growth, sexual and maternal behavior, and individual's characteristic level of energy and mood, and his reaction to stress.
- Some endocrine glands are controlled by the nervous system whereas others respond to the internal state of the body.

THE PITUITARY GLAND



- This major endocrine gland is partly an outgrowth of the brain and is joined to it.
- The pituitary gland has been called the "master gland" because it produces the largest number of different hormones.

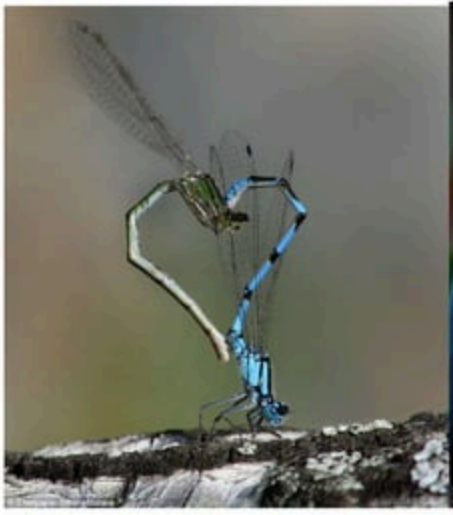
- Two independently functioning parts of the pituitary gland are the posterior pituitary and the anterior pituitary.
- Hormones released by the former, known as oxytocin, influence the contraction of the uterus during child birth and the excessive ejection of milk from the mammary glands.
- In addition, vasopressin regulates the amount of water in the body cells thus indirectly controls blood pressure.

- The functions of the anterior pituitary hormones include control of the timing and amount of body growth.

Too little of this hormone can lead to a condition called "dwarfism"

While oversecretion causes giantism.

Courtship, mating and reproductive behavior in many animals involve a complex interaction between the activity of the nervous system and the influence of the anterior pituitary on the sex glands.



THE ADRENAL GLANDS

They are extremely important in neural functioning and in the ability of the body to cope with stress.

The inner of the core of the adrenal gland secretes epinephrine, also called "adrenalin" and norepinephrine (noradrenalin).

The release of epinephrine causes nervousness, perspiration, constrictions of the blood vessels in the stomach and intestines and makes heart beat faster.

Norepinephrine stimulates the release of hormones called "steroids" which cause the liver to release stored sugar so the body has energy for quick action.

Cortisone (a hormone) a synthetic form steroid

THE THYROID GLAND

- One important element in the hormone produced by this gland is iodine.
- Underactivity of the thyroid gland results in "hypothyroidism" which is characterized by laziness, and dullness on the part of the organism.
- When this occurs in infancy, the condition is known as "cretinism".

cretinism

- lack of thyroxine from birth
- or before birth
- could be from lack of thyroid gland
- or lack of iodine in mother
- severe and irreparable mental defects
- stunted growth
- reduced growth and function of many organs

Thyroid Disorders

Hypothyroidism – insufficient T3 & T4

- During infancy – results in intellectual disability, stunted growth, abnormal bone formation (cretinism)
- During adulthood – low metabolic weight, sluggishness, poor appetite, and sensitivity to cold

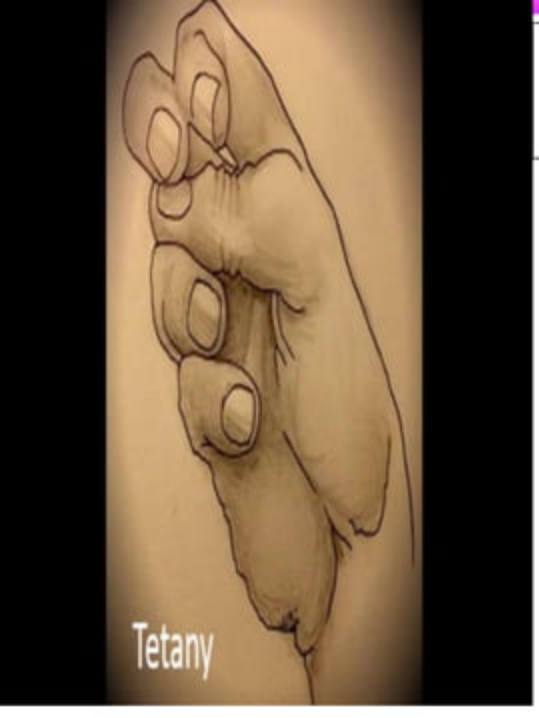
Infantile hypothyroidism

Hyperthyroidism – excess T3 & T4

- Results in high metabolic rate, hyperactivity, weight loss, sensitivity to heat, and exophthamia (protruding eyes)
- **Grave's Disease**
  - Autoimmune Disorder: Antibodies target the thyroid gland and mimic TSH. **Thyroid antibodies** overstimulate thyroid gland, resulting in hyperthyroidism

Grave's disease may cause exophthalmia

- Hypothyroidism is often accompanied by a goiter in the neck. A lack of iodine in the diet is a contributing factor in many goiter cases.
- The person with too much thyroid secretion (hyperthyroidism) is just the opposite --- he is overly active and is prone to loss of weight and insomnia.



THE PARATHYROID GLANDS

- These are two pairs of small pea shaped glands close to the thyroid glands.
- Parathormone regulates the utilization of calcium and phosphorous in the body,
- Undersecretion of this hormone results in a condition known as tetany, which is characterized by intermittent, involuntary muscle twitching and spasms. If too much parathormone is present, the nervous system becomes desensitized and poor physical coordination results.

THE GONADS

- The gonads are the sex and puberty glands which produce the sperm and egg cells for reproduction.
- They secrete hormones called "androgens" for the males and "estrogen" for the females which have an important effect for the personality of the individual.
- They are responsible for the development of the secondary sex characteristics of the biologically mature man and woman.
- If the gonads are removed from female animals, male characteristics often develop.


Playboy

THE PANCREAS

- Located near the stomach, secretes two hormones which control the level of blood sugar or glucose in the bloodstream. Glucogon releases glucose in the bloodstream from the glycogen stored in the liver.
- Insulin enables glucose to move out of the blood into the cells of muscles and other tissues. IF too much or too little of either both hormone is present, the person may suffer from hypoglycemia (low blood sugar) or diabetes milletus (high blood sugar) also called hyperglycemia.

Summary of the Functions of the Endocrine Glands

- The ductless or endocrine glands are of major significance to both physiology or psychology.
- Their chemical secretions, the hormones are chemical secretions, the hormones are major agents (along with the nervous system) in the internal regulation of bodily functions as well as the embryological development and subsequent growth of the organism.
- The most important endocrine glands are the: gonads, the adrenal, the thyroid, the pancreas and the pituitary.
- Although much is known about glands, many questions remain as to the roles of hormones in determining behavior. A new branch of psychology and physiology called “behavioral endocrinology” has emerged to find answers to these questions.

Thank You for Listening!!!!!!!!