

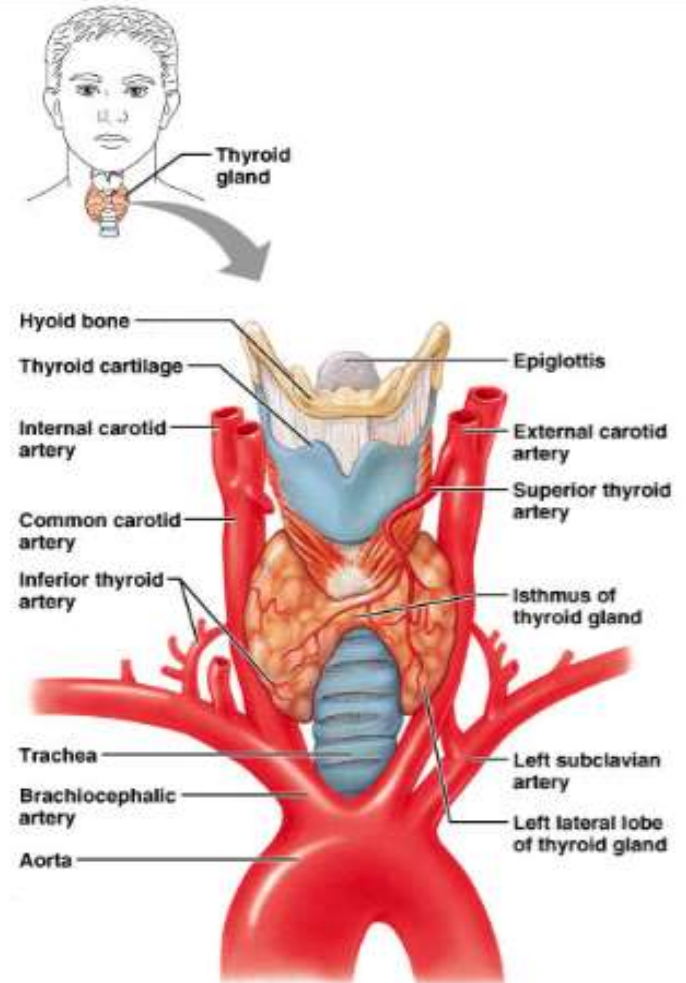
Rest of Endocrine System

EQ: Which hormone would you be the most upset to lose, why?



THYROID GLAND

The thyroid hormones **control**
your metabolism



(a)

THYROID HORMONES

- **Thyroxin (T4) & Tri-iodothyronine (T3)**

- both increase the rate at which cells release energy from carbohydrates

- **Calcitonin**

- regulates the blood concentration of calcium

Basal Metabolic Rate (BMR) : how many calories the body must consume to maintain life

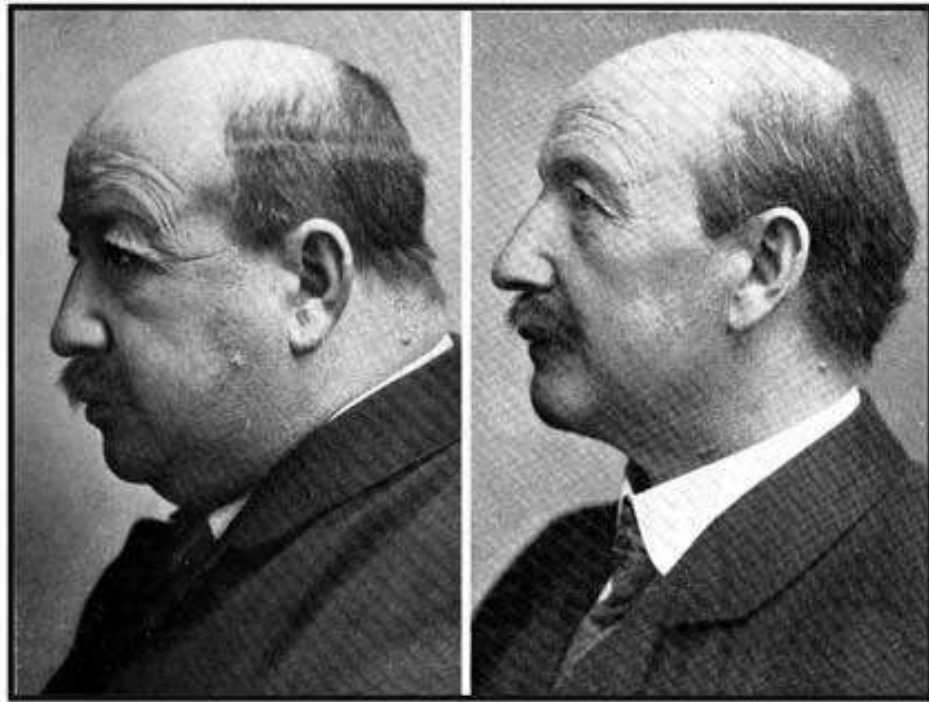
Problems with the Thyroid

- Thyroid hormone is partly made of **iodine**.
- Iodine is essential for the formation of thyroxin.
- If a person doesn't eat enough iodine, they can't make thyroid hormone.



Hypothyroidism

Before and After Treatment (in adults)



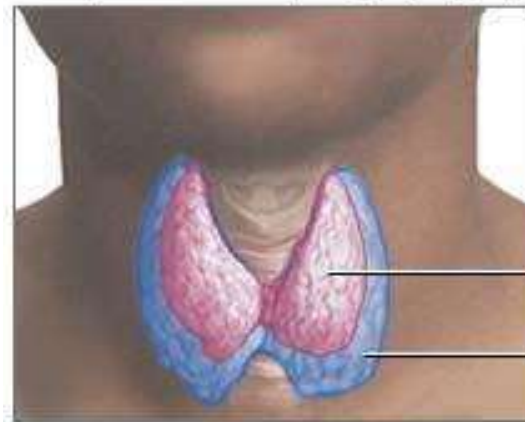
Cretinism (hypothyroidism in infants)



Hyperthyroidism (Grave's Disease)



Exophthalmos (bulging eyes)



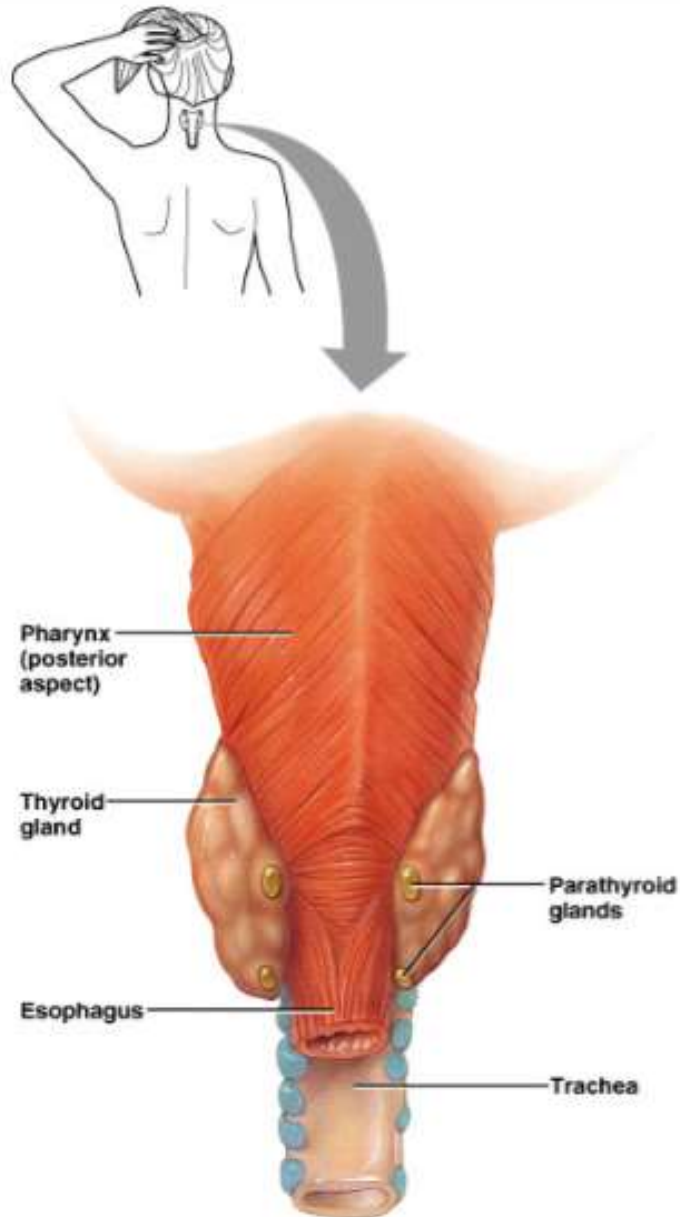
Diffuse goiter

Graves' disease is a common cause of hyperthyroidism, an over-production of thyroid hormone, which causes enlargement of the thyroid and other symptoms such as exophthalmos, heat intolerance and anxiety

Normal thyroid

Enlarged thyroid

Parathyroid Glands

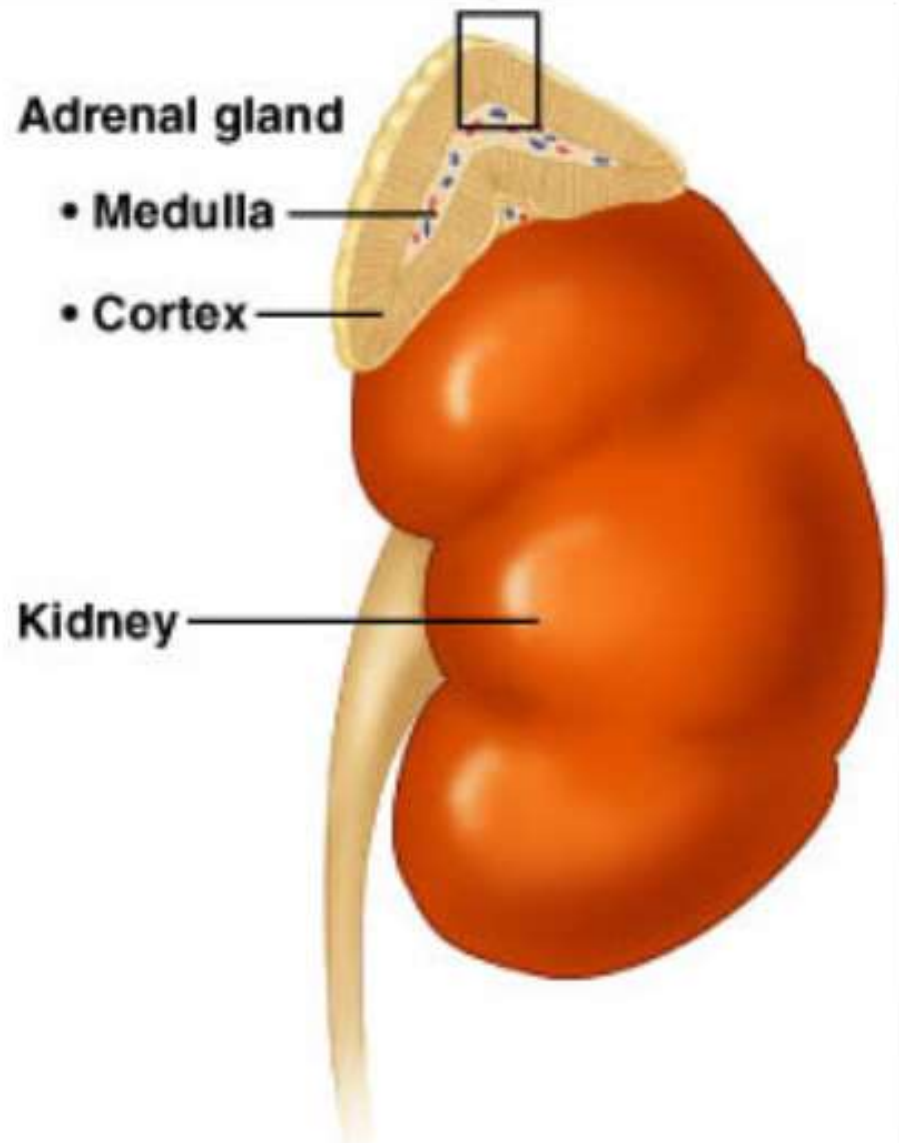


Located behind the thyroid, four tiny glands **Parathyroid Hormone (PTH)** - takes calcium from the bones to make it available in the blood

Adrenal Glands

Located at the top of the kidneys

- Adrenal Cortex
 - outer area
- Adrenal Medulla
 - inner area
- Adrenal Glands
 - Adrenaline



Adrenal Medulla

- **Epinephrine & Norepinephrine**

- increased heart rate, breathing rate, elevated blood pressure (fight or flight, response to stress)



Adrenal Cortex

- **Aldosterone**

- a mineralcorticoid
- helps kidneys conserve sodium and excrete potassium
- maintaining blood pressure

- **Cortisol**

- Glucocorticoid
- keeps blood glucose levels stable

- **Adrenal Sex Hormones**

- androgens (male) and estrogens (female)

Adrenal Gland Disorders

- Cushing's syndrome
 - hypersecretion of cortisol

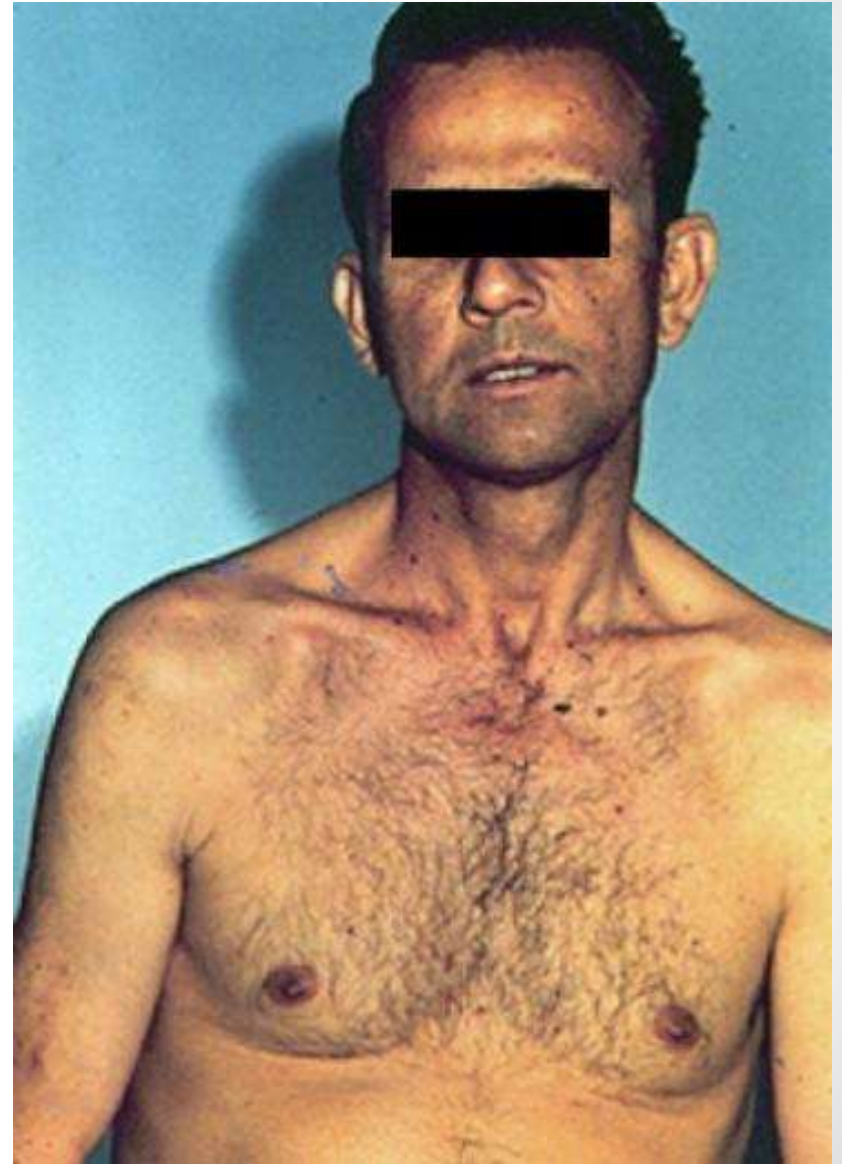


Michael Santoro and his twin sister, Paula, who had Cushing's Syndrome.

Adrenal Gland Disorders

- Addison's disease

- Hyposecretion of all adrenal cortex hormones
- Low blood pressure results
- Increased pigmentation



Other Endocrine Glands

- Pineal Gland
 - located between the cerebral hemispheres
 - secretes **melatonin**
 - important for maintaining Circadian rhythms
- Thymus Gland
 - large in young children, gradually shrinks with age
 - secretes **thymosins**
 - important to immune function
- Reproductive Glands
 - testes and ovaries
 - testosterone, progesterone, estrogen

Steroids

Anabolic steroids

- artificially produced hormones
- same as, or similar to, **androgens**
 - the male-type sex hormones in the body
 - The most powerful is **testosterone.**
- more than 100 variations of anabolic steroids



Steve Reeves – Steroid Free...

