



# Pituitary

EQ: Why is it important to have both the anterior and posterior portions of the pituitary gland?

# What is the system?

1. Made up of glands that produce and secrete **hormones** (chemical messengers)
2. Regulation of growth, metabolism, sexual development
3. Responses to stress and injury
4. Internal balance of body systems (homeostasis)

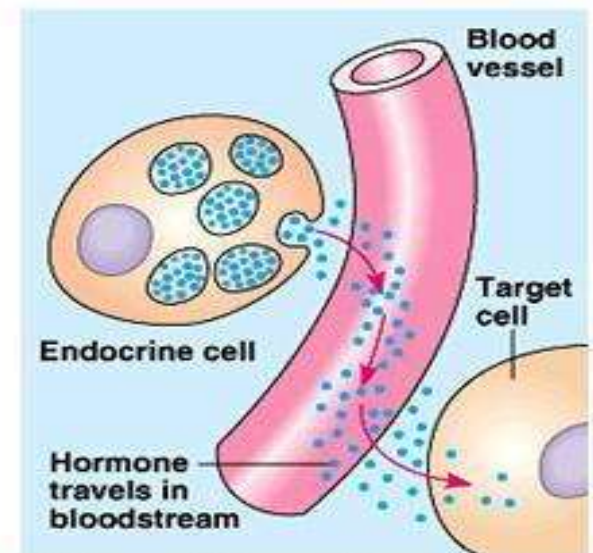
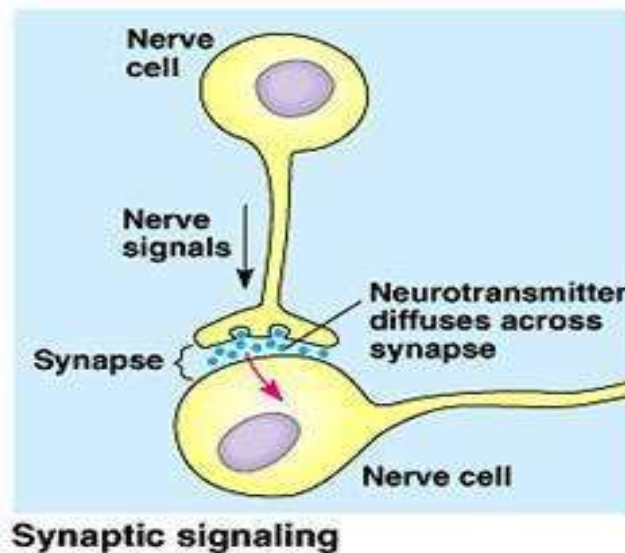
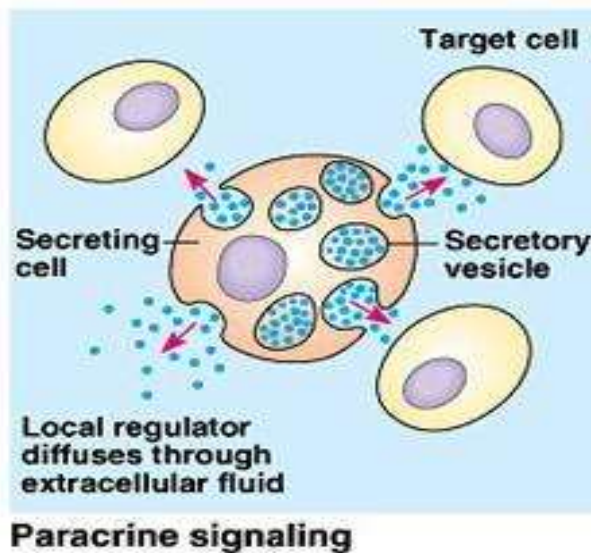


# BIG IDEA

**HORMONES** are chemical messengers that act on target cells (or organs)

**Endocrine** – secretions inside the body

**Exocrine** – secretions outside the body (sweat)



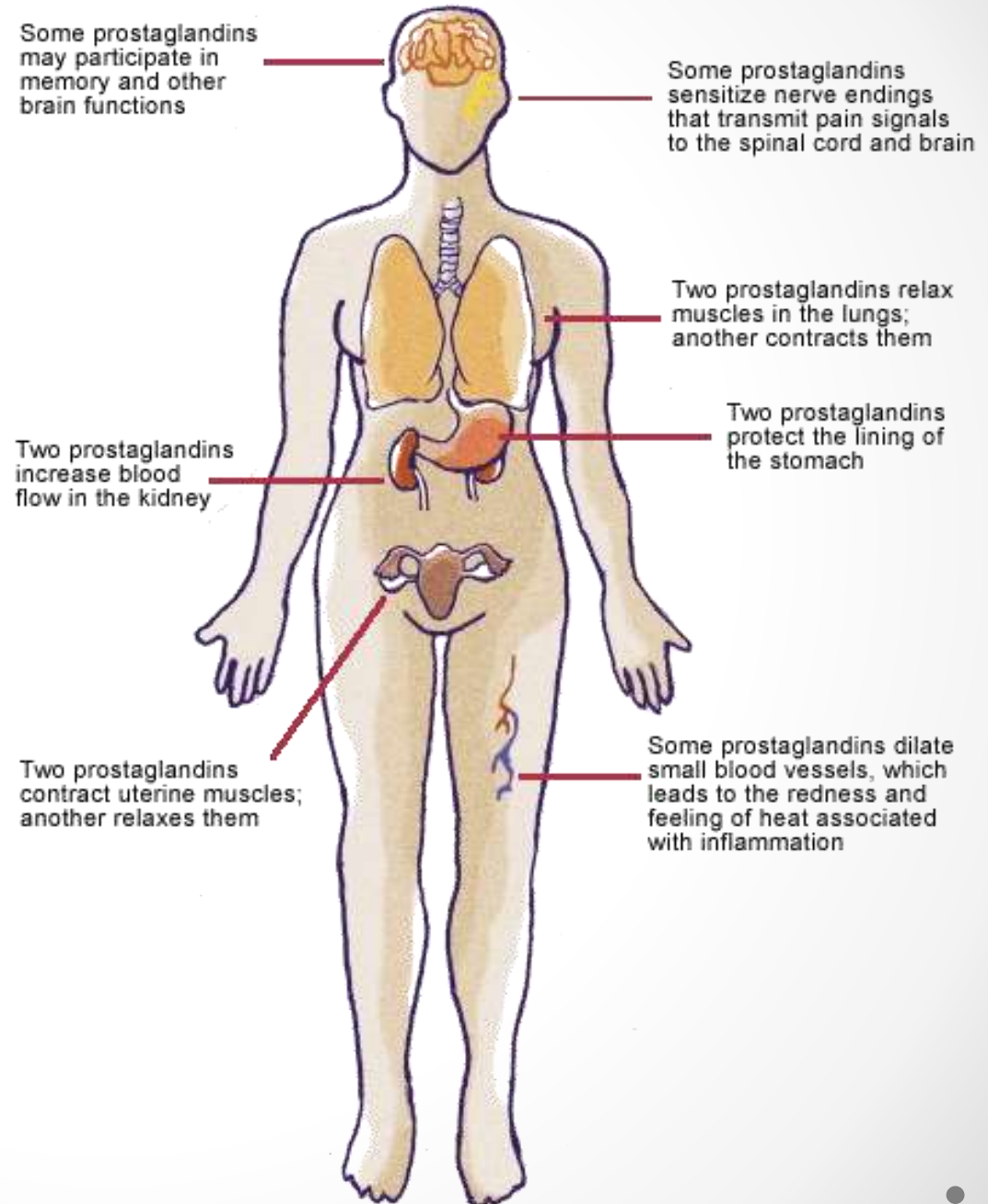
paracrine signaling

(a) Local signaling

endocrine signaling

# Hormone Chemistry – 3 Types

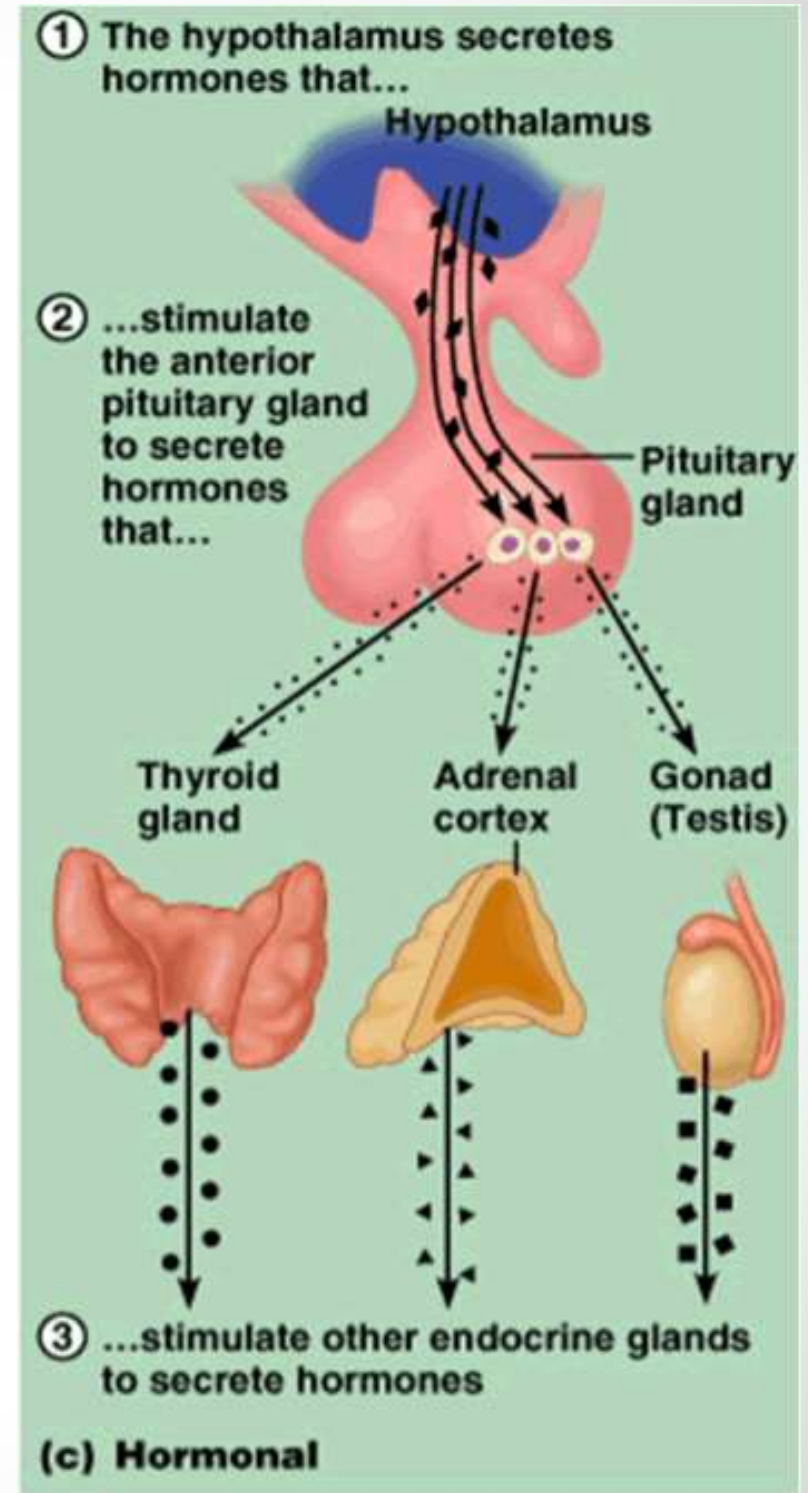
- Steroids - (made from cholesterol) sex hormones, etc.
- Non steroid hormones – (amino acid based molecules)
- Prostaglandins (lipid based) - act locally, on nearby organs



# Hormone Control

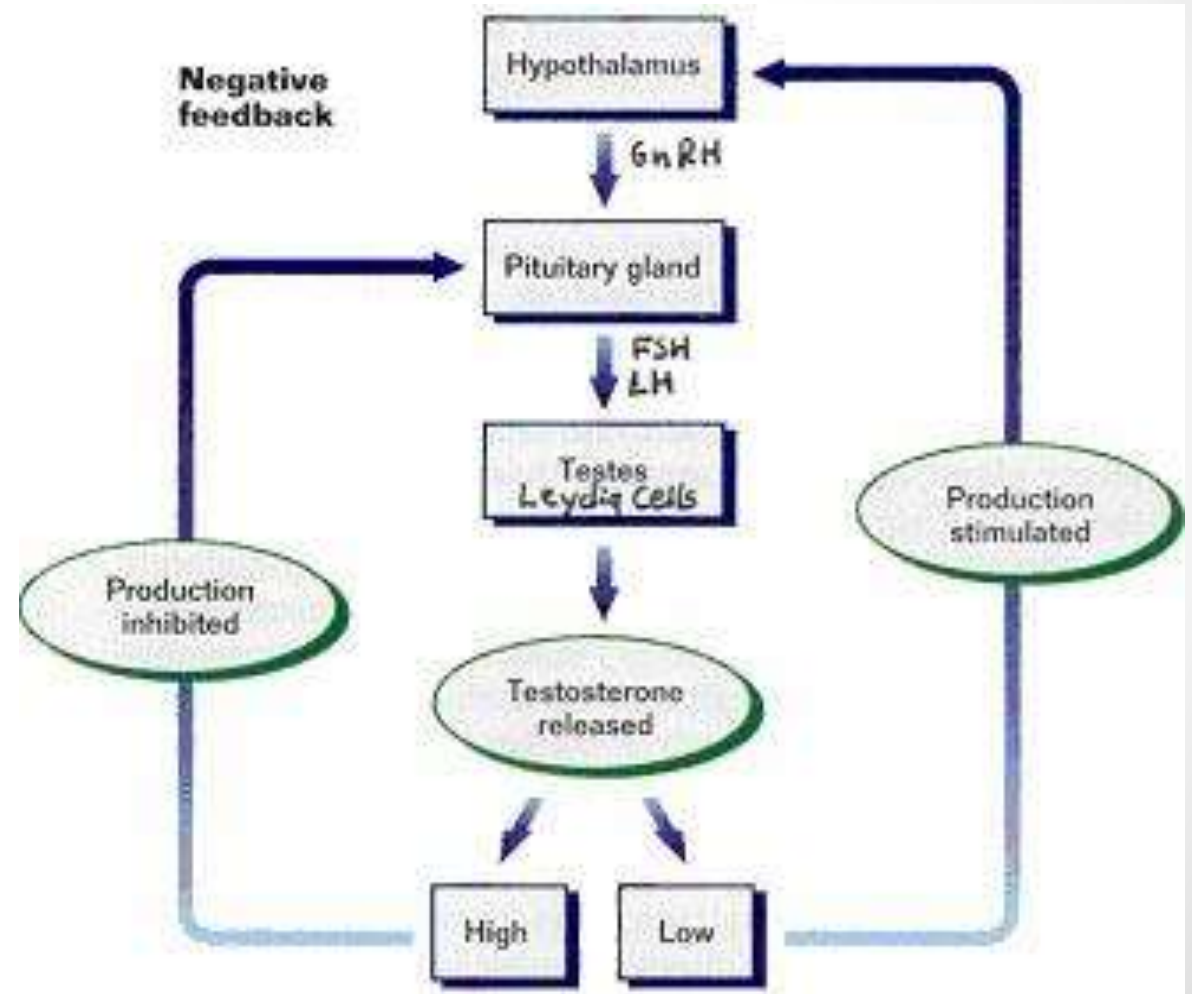
The **pituitary** is often called the “master gland”

Its actions are controlled by the **hypothalamus** in the brain.



# Control of Hormones

Negative feedback system



# Anterior Pituitary Hormones

- **Prolactin or PRL**
  - stimulates milk production
  - can affect sex hormone



- **Growth hormone or GH**

- stimulates growth in childhood
- important for maintaining a healthy body composition
- can affect fat distribution in the body.

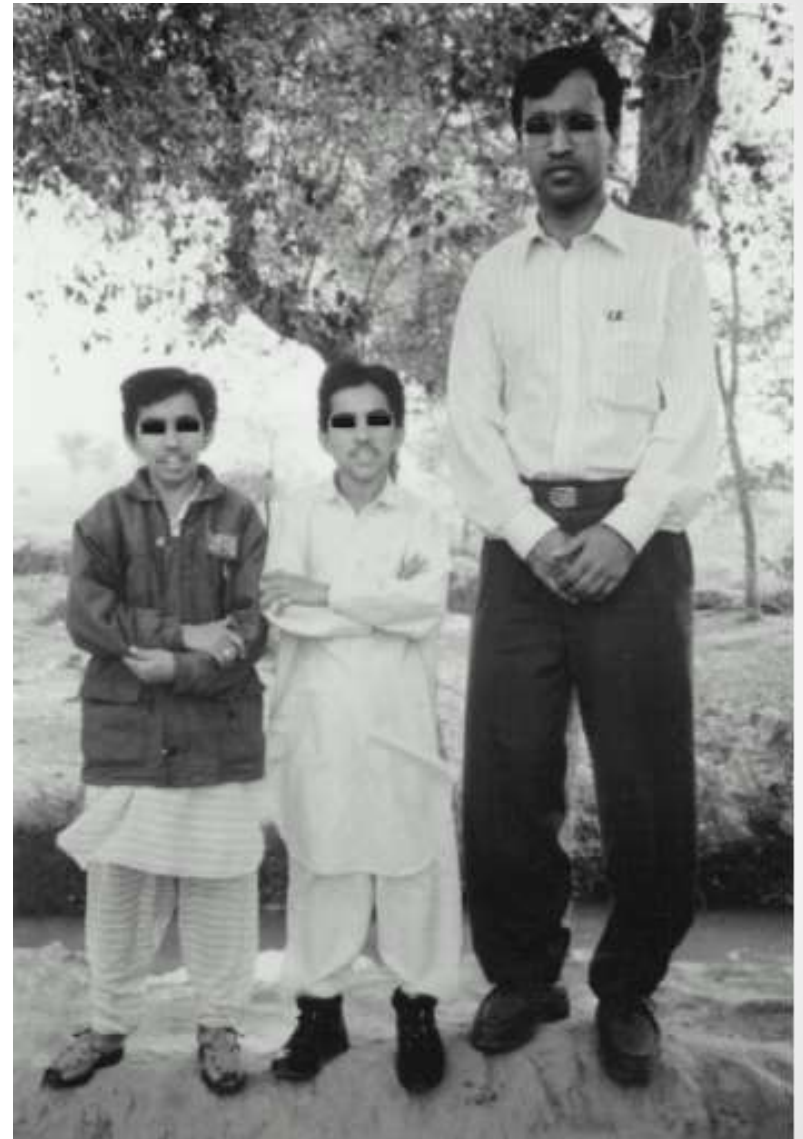
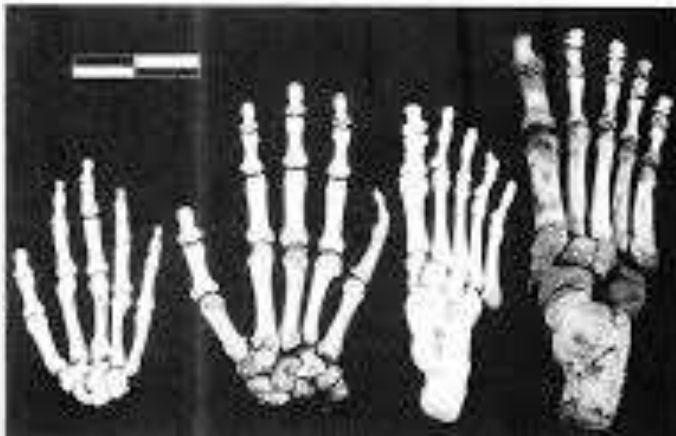
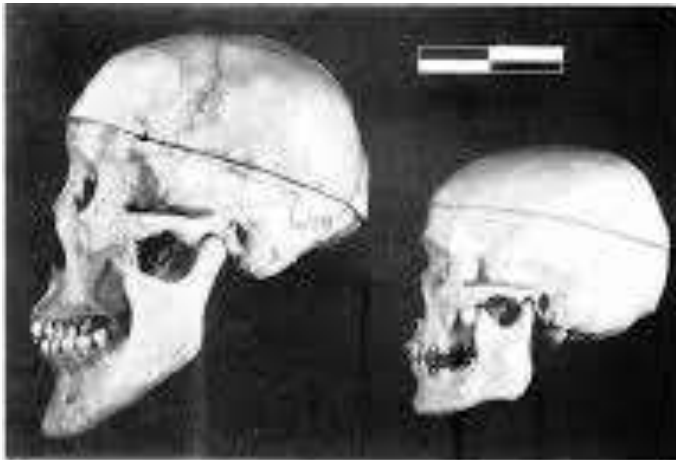




- Problems with the pituitary gland can result in

## Dwarfism

- Over secretion of growth hormone in adulthood leads to the condition called **Acromegaly**

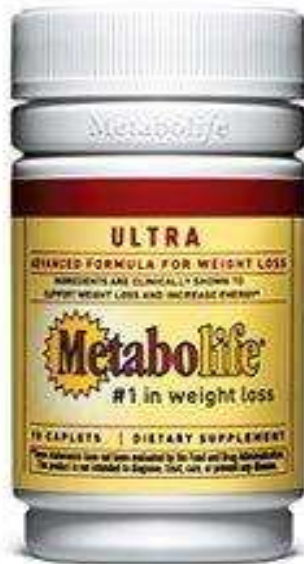


- **Adrenocorticotropin or ACTH**

- stimulates production of cortisol by the adrenal glands.

- **Thyroid-stimulating hormone or TSH**

- stimulates the **thyroid gland** to make thyroid hormones



- **Luteinizing hormone or LH**

- regulates testosterone in men and estrogen in women

- **Follicle-stimulating hormone or FSH**

- promotes sperm production in men
- stimulates the ovaries to release eggs in women.

- LH and FSH work together to allow normal function of the ovaries or testes.



# Posterior Pituitary Hormones

- **Oxytocin**

- causes milk letdown in nursing mothers and **contractions during childbirth.**

- **Antidiuretic hormone or ADH**

- also called vasopressin
- stored in the back part of the pituitary gland
- **regulates water balance**

