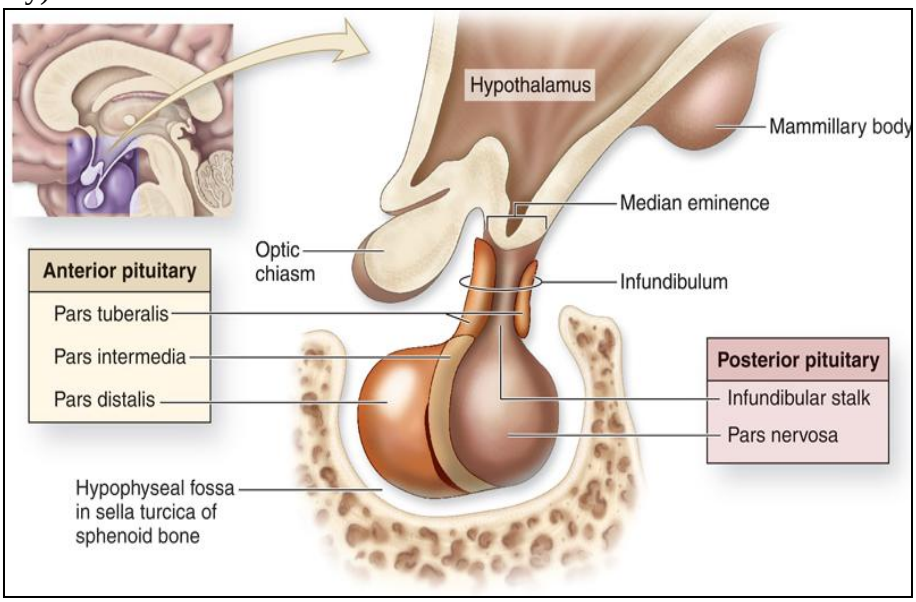
Unit IV – Problem 6 – Anatomy, Embryology and Histology of Pituitary Gland

- Pituitary gland is also known as hypophysis cerebri. It is located in hypophyseal fossa of sphenoid bone (which is known as: sella turcica) and found in middle cranial fossa above the sphenoidal air sinus. Pituitary gland is considered as the master of endocrine glands in the body (regulating their functions).
- **Structure of pituitary gland:**
  - **Oval in shape weighing 500-900 mg (less than 1g !)**
  - **Divided into two lobes:**
    - ✓ Anterior (adenohypohpysis): further subdivided into
      - ❖ Pars tuberalis.
      - ❖ Pars intermedia.
      - ❖ Pars distalis.

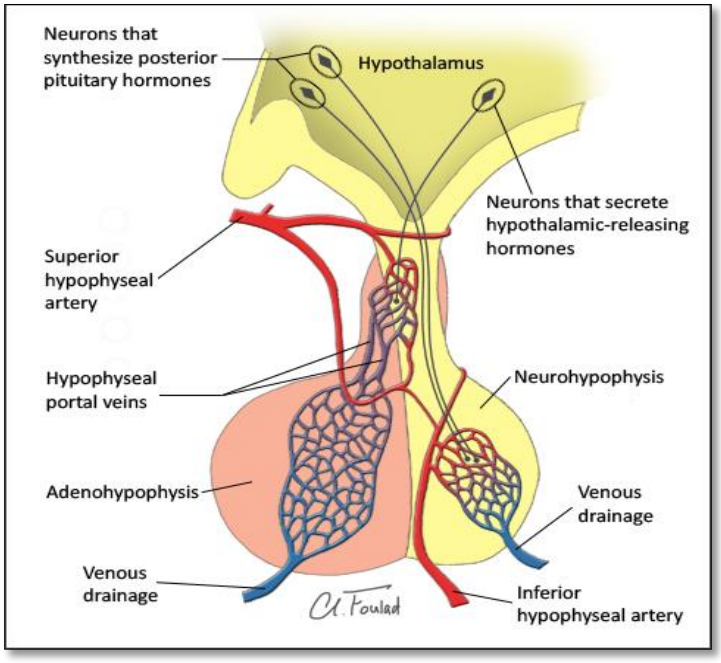
      Note: adenohypophysis secretes: TSH, ACTH, FSH, LH, GH and prolactin.
    - ✓ Posterior (neurohypophysis): further subdivided into
      - ❖ Infundibular stalk.
      - ❖ Pars nervosa.

      Note: nuerohypophysis is connected to hypothalamus through hypothalamo-hypophyseal tract. It stores oxytocin and ADH.
  - A fold of dura mater known as (diaphragm sellae) covers the pituitary gland and has an opening for the passage of infundibulum (pituitary stalk) which is connecting the gland with hypothalamus.
- **Relations of the pituitary gland:**
  - **Anteriorly and superiorly**: optic chiasma.
  - **Inferiorly**: sphenoidal bone with sphenoidal air sinus.
  - **Posteriorly**: mamillary bodies.
  - **Laterally**: cavernous sinuses, internal carotid arteries and the following cranial nerves: III (oculomotor), IV (trochlear), VI (abducens), V1 (ophthalmic) and V2 (maxillary).



- **Blood supply of pituitary gland:**
  - **Arterial supply**: superior and inferior hypophyseal arteries (branches of internal carotid artery).
    - ✓ Superior hypophyseal artery: supplying pars tuberalis, median eminence and infundibulum. It also forms the hypophyseal portal system which is connecting hypothalamus with anterior pituitary gland.
    - ✓ Inferior hypophyseal artery: supplying posterior lobe of pituitary gland.

- **Venous drainage**: hypophyseal veins (which are draining into cavernous sinuses).



- **Embryology**: all what you need to know are the following two important points
  - **Anterior pituitary gland (adenohypohpysis)**: it is derived from oral ectoderm (Rathke's pouch).
  - **Posterior pituitary gland (neurohypophysis)** it is derived from neuroectoderm.
- **Histology of pituitary gland:**
  - **Anterior pituitary gland contains the following cells under the microscope:**
    - ✓ Acidophils (α-cells): secreting GH and prolactin.
    - ✓ Basophils (β-cells): secreting TSH, ACTH, LH and FSH.
    - ✓ Chromophobes (no color).
  - **Posterior pituitary gland contains the following under the microscope:**
    - ✓ Herring bodies which are storing neurosecretory products of hypothalamus (oxytocin and ADH).