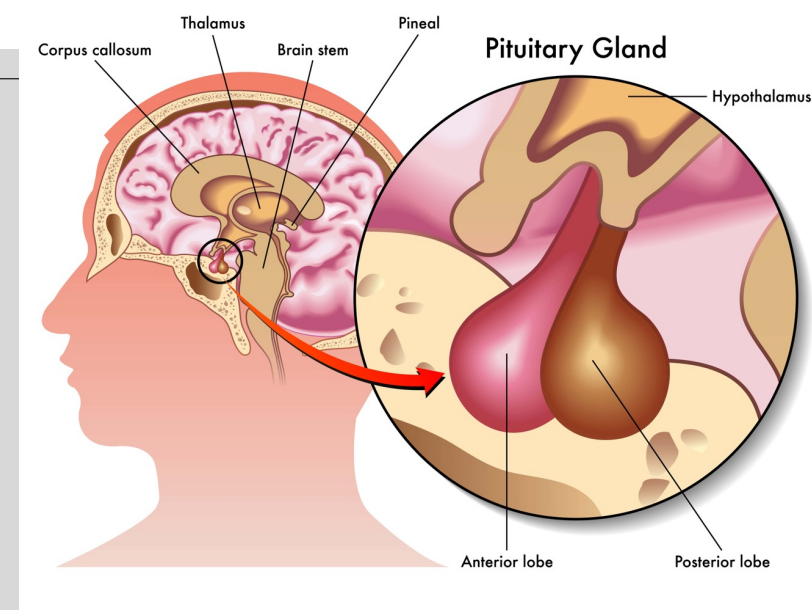




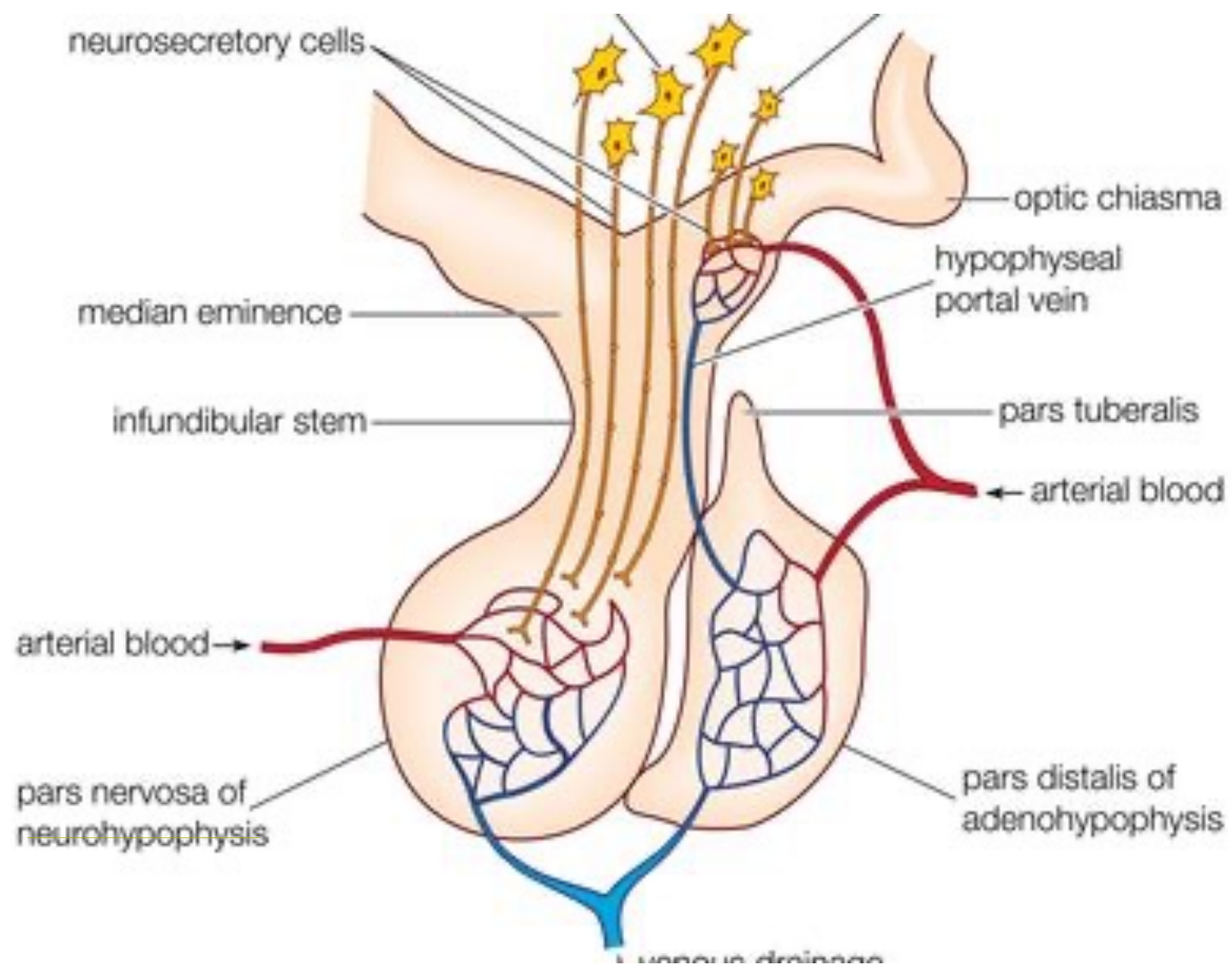
ENDOCRINE ANATOMY

HYPOTHALAMUS and PITUITARY

- Hypothalamus – below the thalamus
 - Located in the medial portions, and contains groups of neurons (each have a specific function)
- Pituitary – in the sella turcica (in the sphenoid bone)
 - Connected to the hypothalamus with infundibulum
 - 2 parts
 - Anterior – has a blood connection to the hypothalamus
 - Posterior – has a neural connection to the hypothalamus

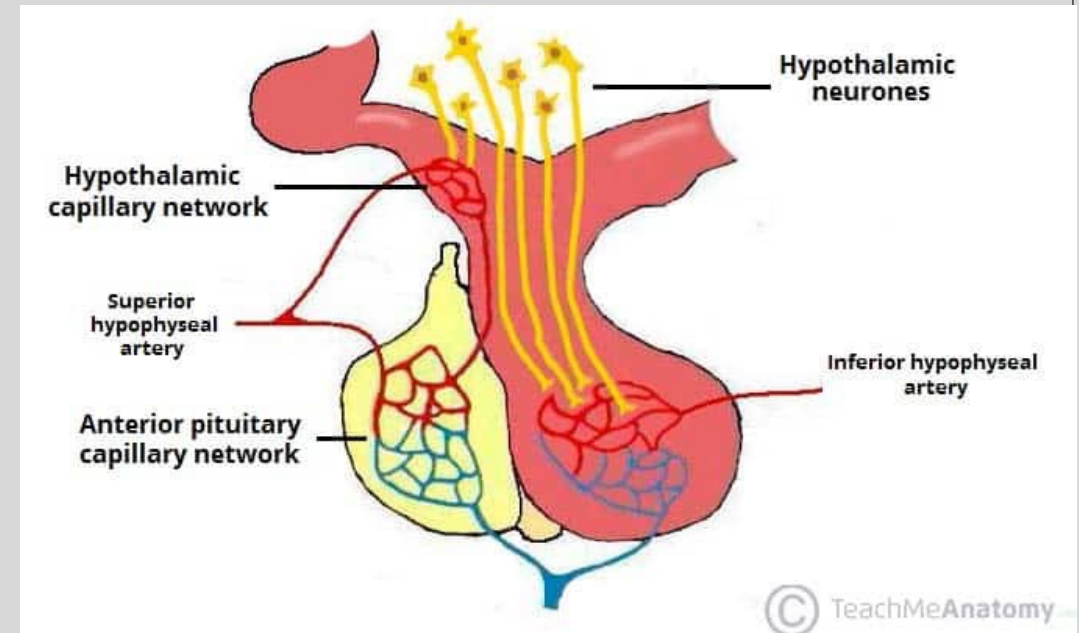


Anterior	Posterior
Blood connections to hypothalamus	Neural connections to hypothalamus
Produces and secretes	Secretes
Secretes stimulating hormones	Secretes stored ADH and oxytocin
	Extension on the hypothalamus



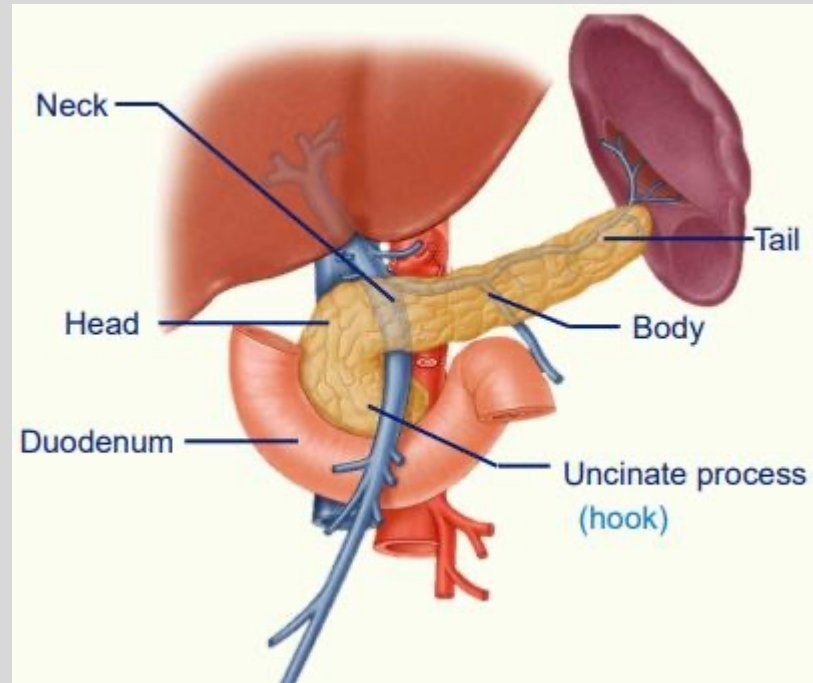
Bloody supply of pituitary

- The posterior lobe (neurohypophysis) receives blood from the inferior hypophyseal artery.
- The anterior lobe is supplied indirectly by the pituitary portal system.
- The superior hypophyseal artery supplies a capillary bed in the wall of the infundibulum.
- These capillaries drain into portal vessels, which pass into the anterior lobe (adenohypophysis), where they break up to form a second capillary bed.

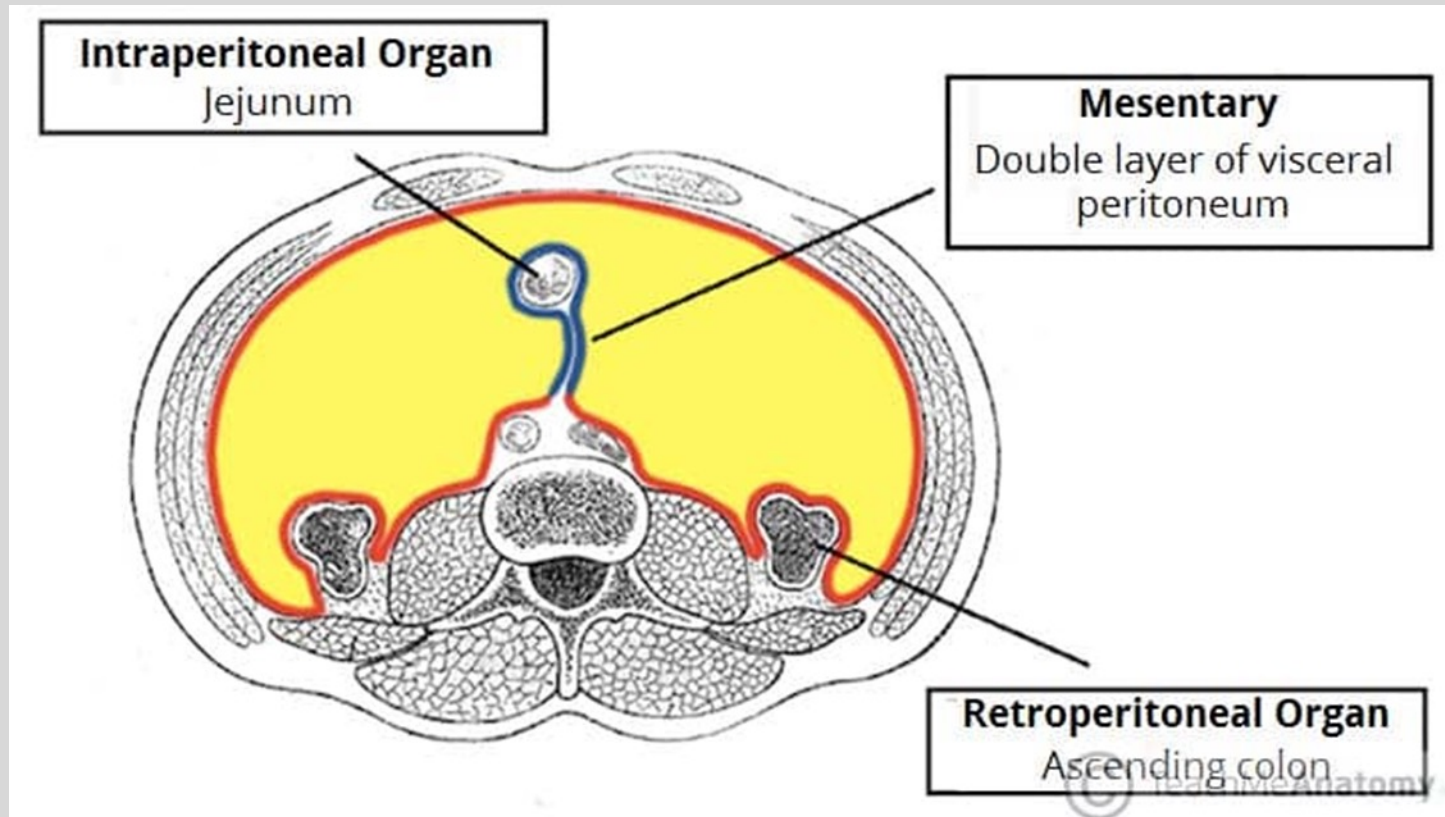


Pancreas

- 4 parts – head (uncinate process, proper head) neck, body and tail;
 - Intraperitoneal - tail
 - Retroperitoneal – head, body and neck
- Both endocrine (10%) and exocrine function (90%)
- Located – in the upper left quadrant

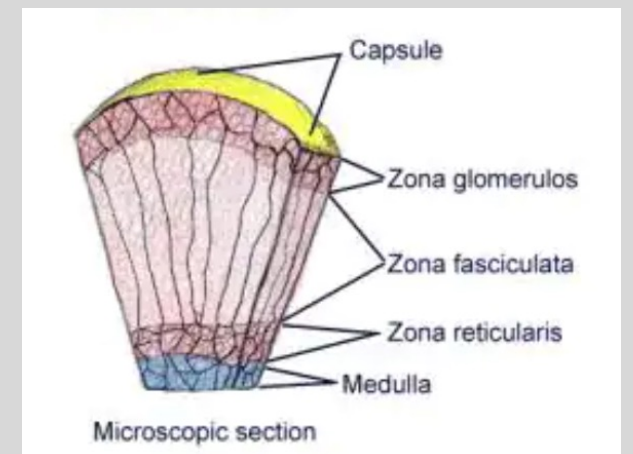
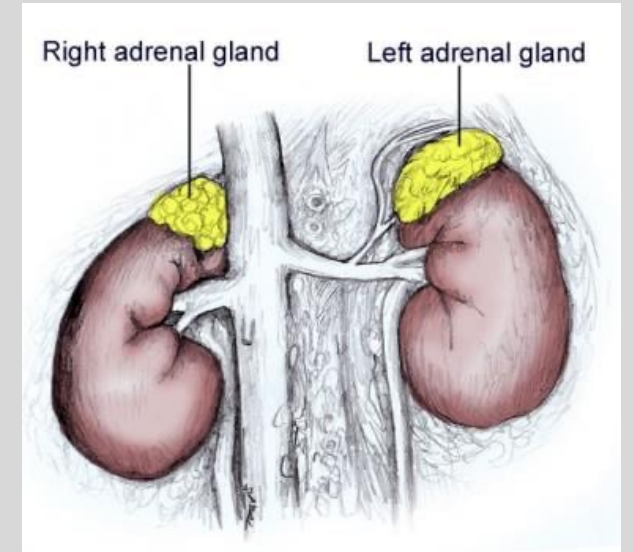


Intraperitoneal vs Retroperitoneal



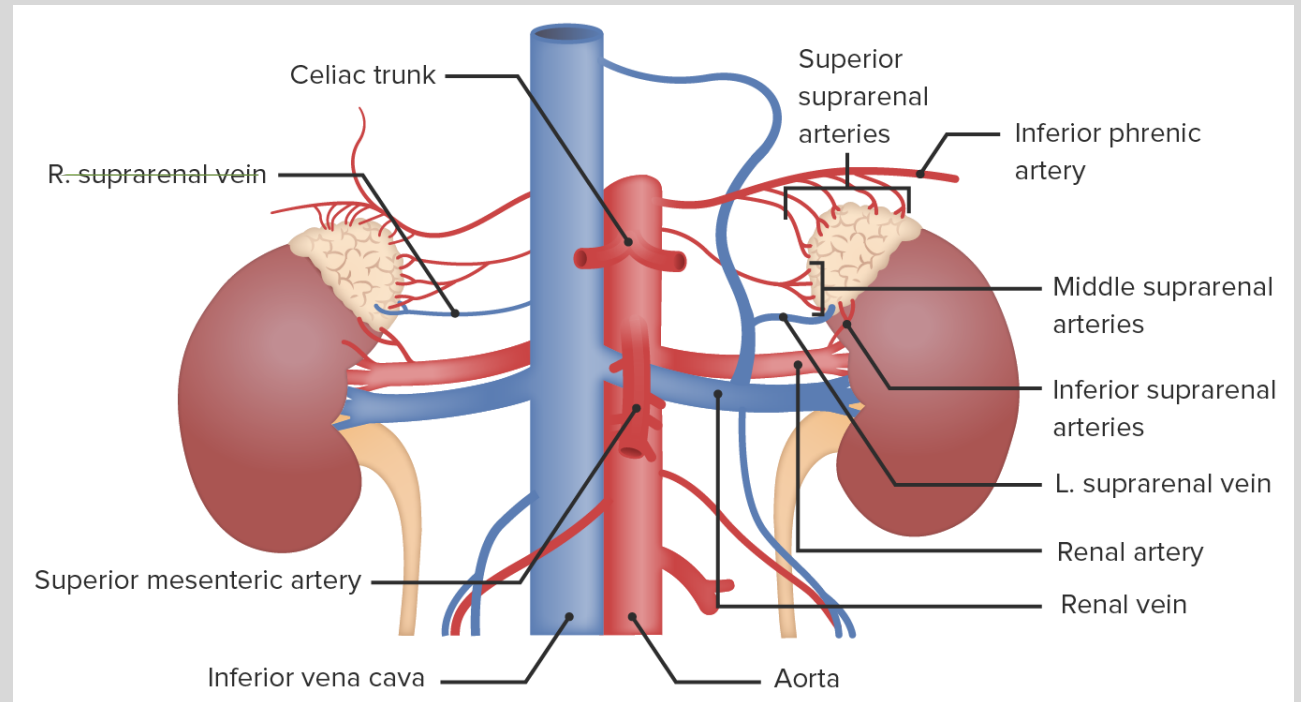
ADRENAL GLANDS

- Shape of adrenal glands
 - Right – semi-lunar
 - Left – pyramidal
- Retroperitoneal – located right above the kidney
- Structure: Capsule, Cortex (Glomerulosa, fasciculata, reticularis), Medulla
- 3 layers of the cortex
 - Zona glomerulosa (outer) – mineralocorticoids e.g aldosterone
 - Zona fasciculata (middle) – corticosteroids e.g. cortisol
 - Zona reticularis (inner) – sex hormones e.g androgens



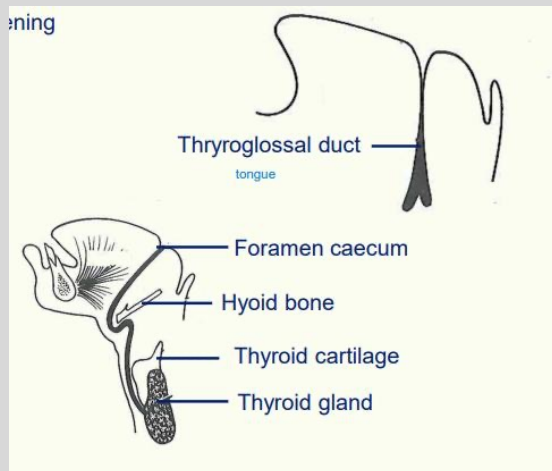
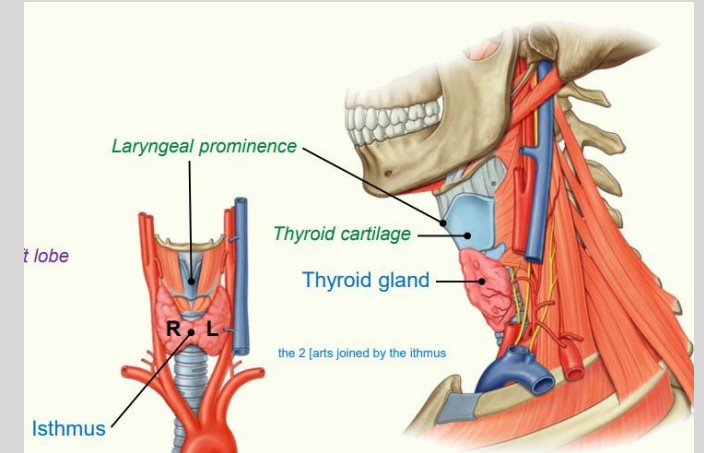
Blood supply of the adrenal glands

- Arterial supply
 - Inferior phrenic artery → superior suprarenal artery
 - Aorta → middle suprarenal artery
 - Renal artery → inferior suprarenal artery
- Venous drainage
 - IVC → Right suprarenal vein
 - Renal Vein → Left suprarenal vein



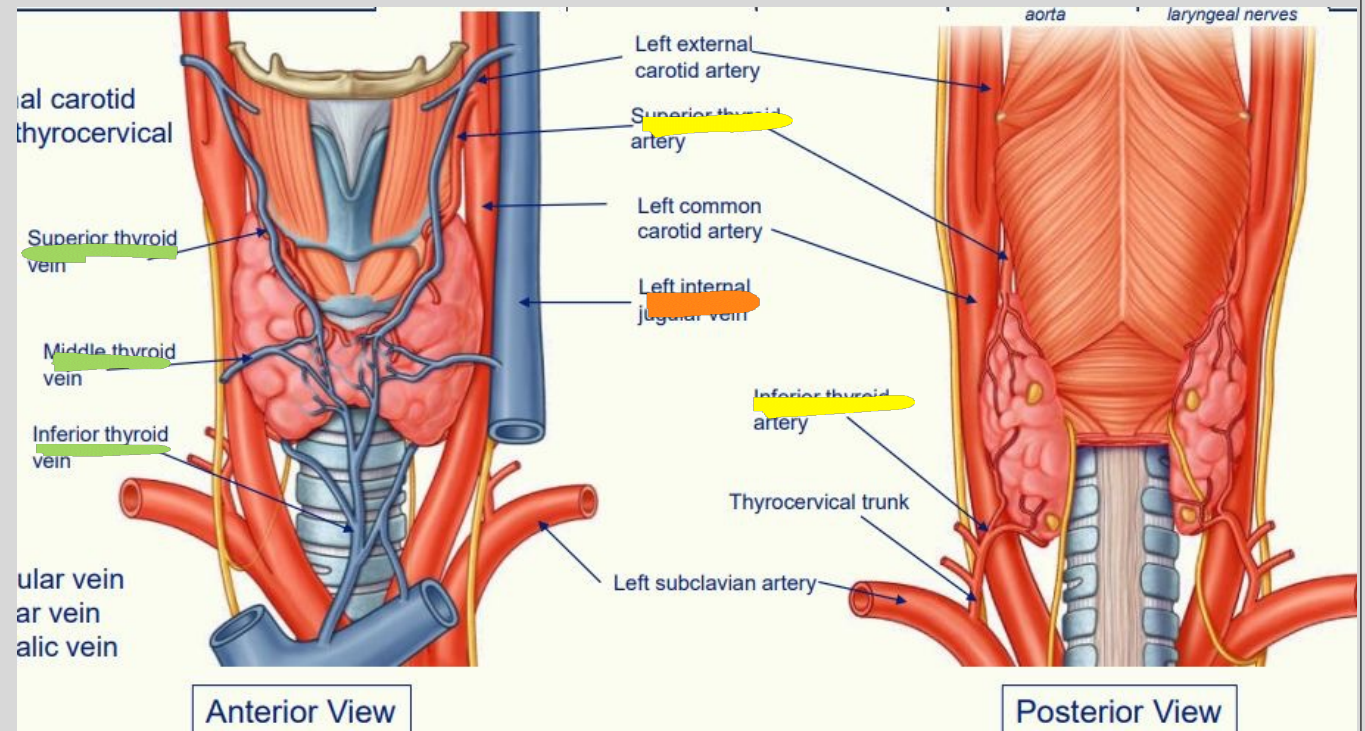
THYROID GLAND

- 2 lobes and a central isthmus – overlies the 2nd - 4th tracheal ring or C5 to T1 vertebrae
- Embryology
 - At 4 weeks, the endoderm on the tongue thickens forming an endodermal thickening
 - The endodermal thickening burrows through the tongue to form a thyroglossal duct, bringing the thyroid tissue with it
 - Goes anterior to the hyoid bone and thyroid cartilage before settling, the duct regresses
 - Remnant of the thyroglossal duct is called the foramen caecum



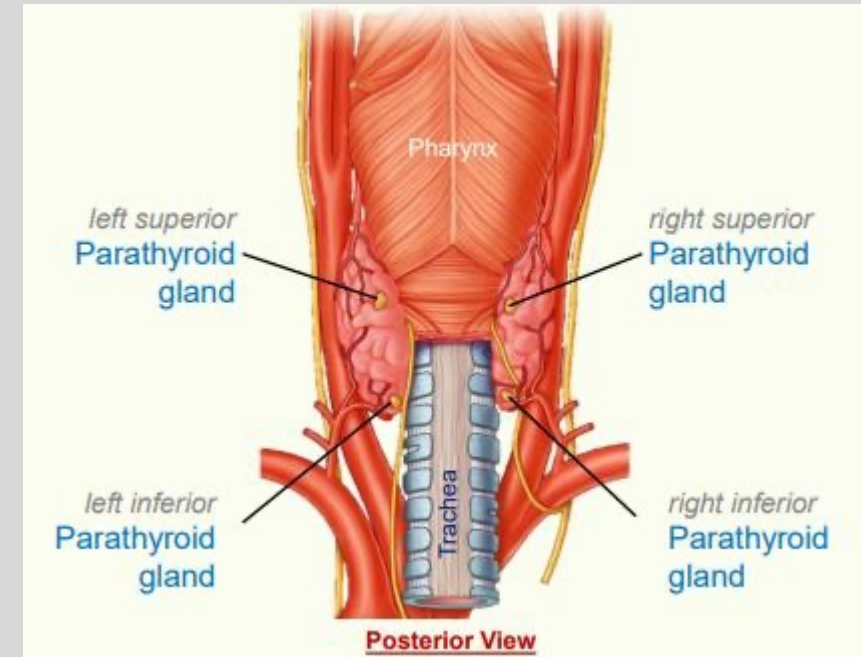
Blood supply to the thyroid gland

- Arterial
 - External carotid – Superior Thyroid Artery
 - Subclavian (thyrocervical trunk) – Inferior Thyroid Artery
- Venous Drainage
 - Internal jugular vein – Superior Thyroid Vein
 - Internal jugular vein – Middle Thyroid Vein
 - Brachiocephalic vein – Inferior Thyroid Vein



PARATHYROID GLANDS

- 4 parathyroid glands posterior to the thyroid gland
- Consists of chief cells and oxyphil cells



Hormone function

Hormone Type	Made from...	Examples
Steroid hormones	Cholesterol -> pregnenolone ->...	Mineralcorticosteroids, glucocorticosteroids, sex hormones (eg. androgens, oestrogen, progesterone)
Amino acid derived hormones	Tyrosine & tryptophan (amino acids)	Catecholamines, thyroid hormones (T3 & T4)
Peptide hormones	Chains of amino acids	Most hormones are peptide hormones (eg. oxytocin, TSH, prolactin, insulin)
Eicosanoids (fatty acid derived hormones)	Arachidonic acid	Prostaglandins

Nuclear receptor – steroid hormones and amino acid derivatives
GPCR – catecholamines

Credit to Wasiq Ahmed from the year above

Receptors and Hormones

- Up/Down Regulation
 - Downregulation of receptors – excessive amount of a ligand
 - Upregulation of receptors – after repeated exposure to an antagonist drugs or prolonged absence of the agonist
- Hormone interactions
 - Permissive – occurs when one hormone only works if/was a second hormone is present
 - Synergistic – occurs when 2 hormones act together
 - Antagonist – occurs when hormone opposes the action or another hormone

Questions NOW ->

Which of the following hormones is released from the posterior pituitary

- A. ADH
- B. Thyroid stimulating hormone
- C. Thyroid hormone
- D. Calcitonin
- E. Oestrogen

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What type of connection does the posterior pituitary have with the hypothalamus

- A. Blood connection
- B. Neural connection

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Which part of the pancreas is intraperitoneal

- A. Uncinate process
- B. Head proper
- C. Body
- D. Tail
- E. Neck

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Right adrenal vein drains into the Renal Vein

A. True

B. False

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A. True

B. False

Which of the following is a remanent of the thyroglossal duct

- A. Foramen ovale
- B. Foramen magnum
- C. Foramen caecum
- D. Foramen rotundum
- E. Foramen Spinosum

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Which of the following is the catecholamines formed from

- A. Glycine
- B. Tyrosine
- C. Lysine
- D. Leucine
- E. Isoleucine

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