UDAAN

2025

Pookies

Control and Coordination

Biology | Lecture - 05

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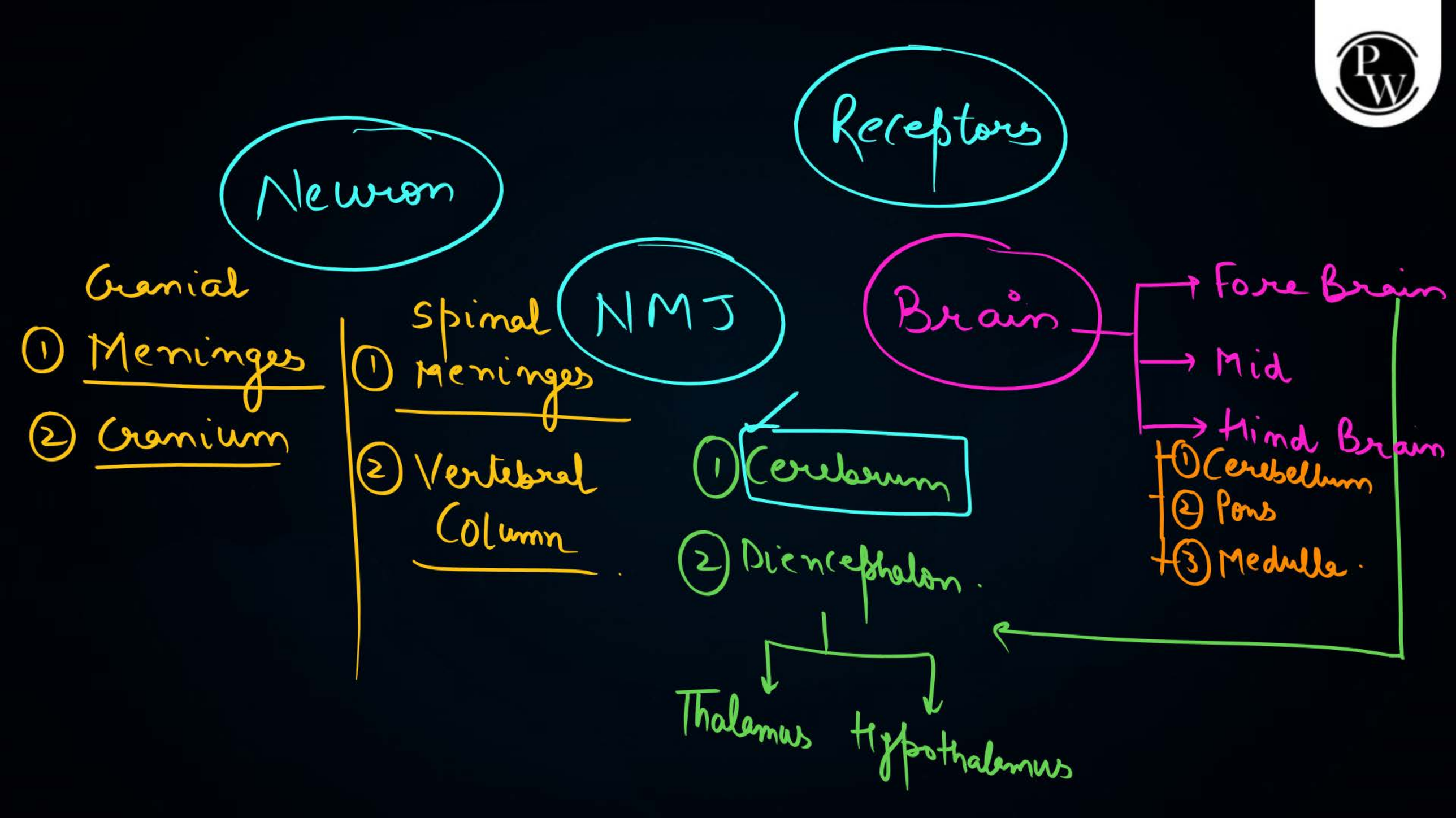
Topics to be covered

1. Human endocrine system
2. Feedback mechanism
3. MCQ practice and Homework


Neuron
Receptors
Cranial
① Meninges
② Cranium
Spinal
① Meninges
② Vertebral Column
NMJ
Brain
Fore Brain
Mid
Hind Brain
① Cerebellum
② Pons
③ Medulla
① Cerebrum
② Diencephalon
Thalamus
Hypothalamus

Q. Think and answer

#Q. The outermost layers of meninges is(W.B./NTSE stage-I 2015)

D → Dura Mater
A → Arachnoid Mater
P → Pia Mater

CSF

A Myelin membrane

B Arachnoid mater

C Dura mater

D Pia mater

Q. Think and answer

Olfactory receptors

#Q. When we smell a flower, which one of the following first receives the scent? (Orrisa/NTSE Stage-1/Control coordination/2013)

A. Dendrite of motor neuron

B. Dendrite of sensory neuron {Receptor → CNS}

C. ~~Axon~~ of motor neuron

D. ~~Axon~~ of sensory neuron

Q. Think and answer

Which of the following activity will not be controlled by medulla ?

A. Maintenance of posture while driving a bike {Cerebellum}

B. Solving a mathematics equation {Cerebrum}

C. Salivation seeing upon tasty food {Medulla}

D. Both A and B

CONTROL AND COORDINATION

NERVOUS SYSTEM

(Associated with Neurons)

ENDOCRINE SYSTEM

(Associated with Hormones)


ME
THEMETAPICTURE.COM

A hormone called **adrenaline** is released by the **adrenal glands** into the blood when the body is in a **stressful and emergency situation**

The following processes are carried out once adrenaline is released. → Hormones

- Increases heart beats (faster) ,
- Increases berating rate .
- Increases blood flow towards the heart, liver, skeletal muscles.
- Increases levels of glucose and fatty acids in the blood.

Muscles

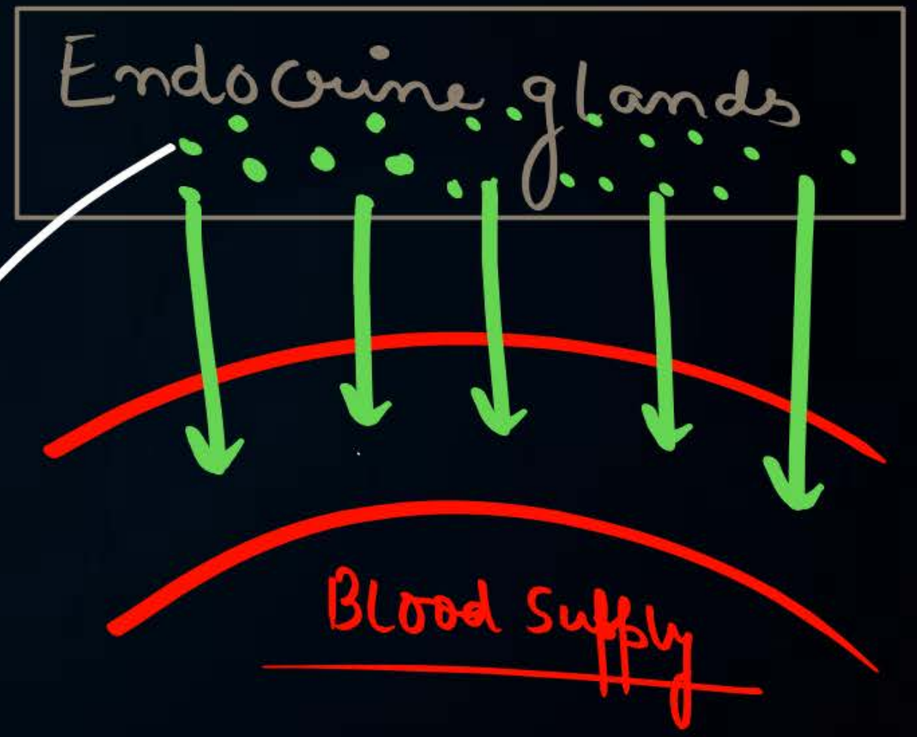
Cope up with Stressful Situation

Energy

WHAT ARE HORMONES ?

'Hormones are chemical substances that act like messenger molecules in the body '

- Hormones are secreted in small quantities by →



Types of glands

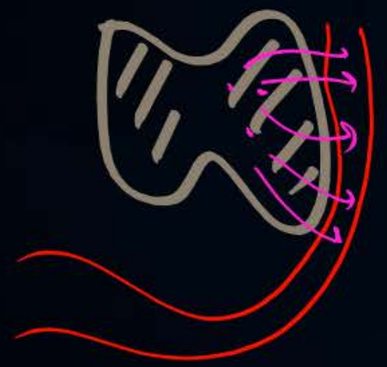
#Ch

Hormone

Endocrine gland

(Duct-Less glands)

- Secretes "Hormone"



Exocrine gland

(Duct-glands).
↳ Tube

- Secrete Saliva, Sweat, tears, milk, digestive juice

Endocrine Glands	Exocrine Glands
Ducts	
Do not have ducts	Have ducts
Route of Secretion	
Secretory products are released directly into the bloodstream, eventually reaching the target organ	Secretory products are released to an internal organ or the external surface through a duct
Secretory Products	
Hormones	Sweat, enzymes, tears, milk
Examples	
Thyroid glands, Pituitary glands, Adrenal glands	Salivary glands,Sweat glands, Pancreas, Liver

Human Endocrine system

Made up of Various Endocrine glands

Hormone

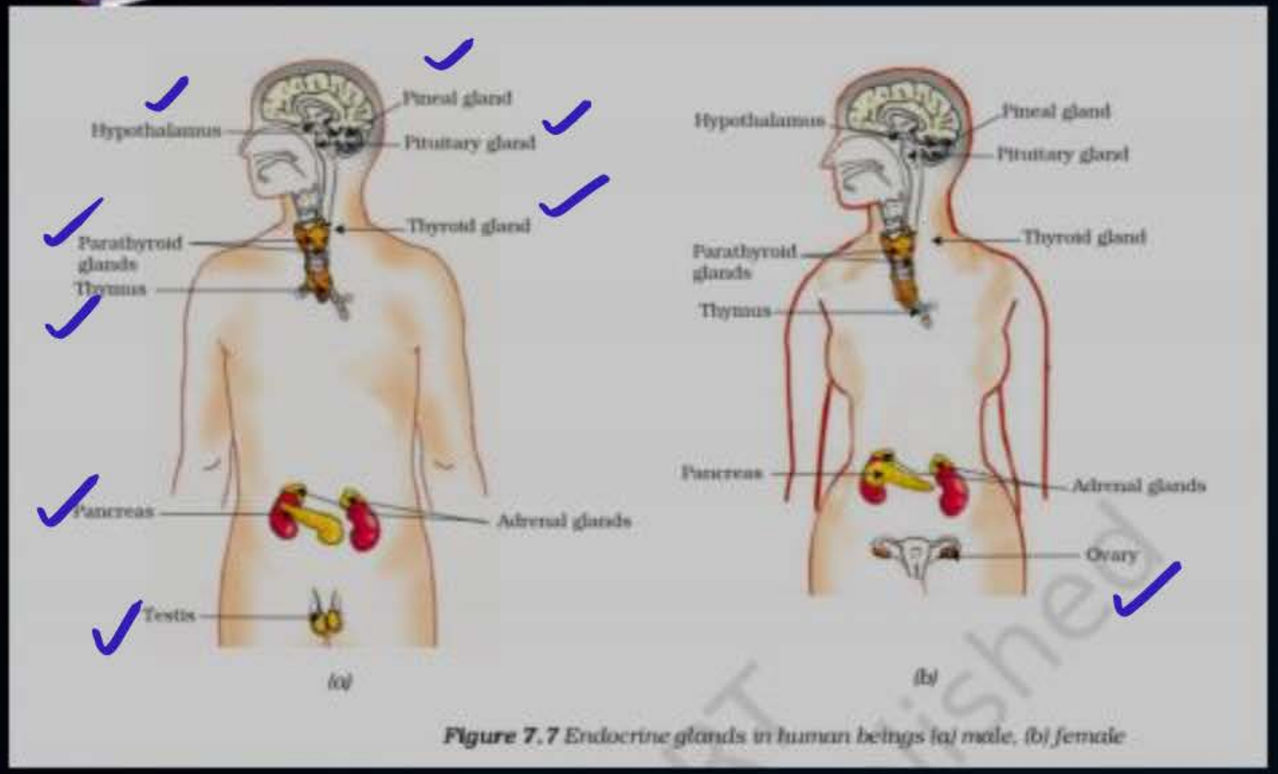
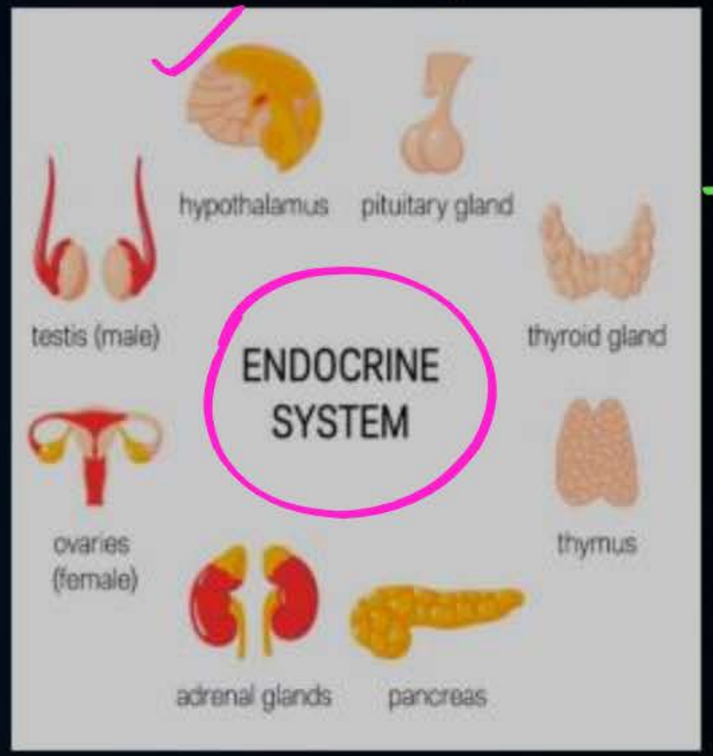
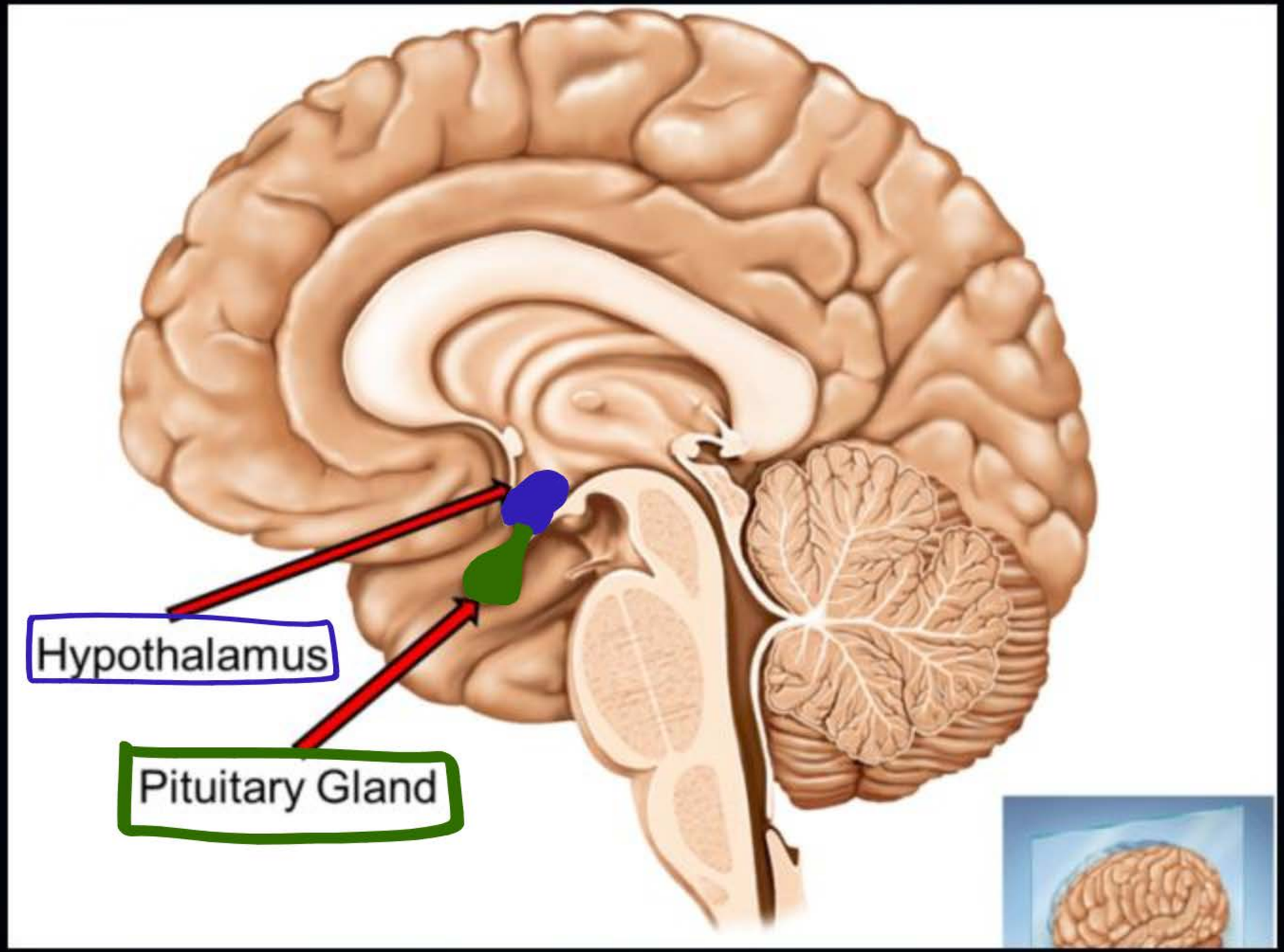


Figure 7.7 *Endocrine glands in human beings (a) male, (b) female*




Hypothalamus
Pituitary Gland

"Control Centre of Endocrine System" → **Hypothalamus**

"Releasing hormones" produced by hypothalamus stimulates pituitary gland to secrete hormones.

Also Called → "Master gland" → **Pituitary Gland**

Hypothalamus

Hypothalamus influences a number of your body's functions, including:

- Temperature regulation
- Food intake
- Sleep and wakefulness
- Thirst
- Emotional behaviour

Pituitary Gland

→ "Master gland"

- **Growth hormone** (GH) - → Control normal growth & development

- **Vasopressin / ADH** - → Anti-Diuretic hormone. Control volume of urine by controlling reabsorption of water

- **Oxytocin**-
  - Child birth
  - Release of milk from mammary glands.

Growth hormone

Hypo Secretion of GH

Below / Less

"Dwarfism"

Hyposecretion of GH- dwarfism

He Pingping
2 ft 5.37 in

Hypersecretion of GH- gigantism

Sultan Kosen (R)
8 ft 1 in

Hyper Secretion of GH

More / high

"Gigantism"

Question

Dwarfism results due to

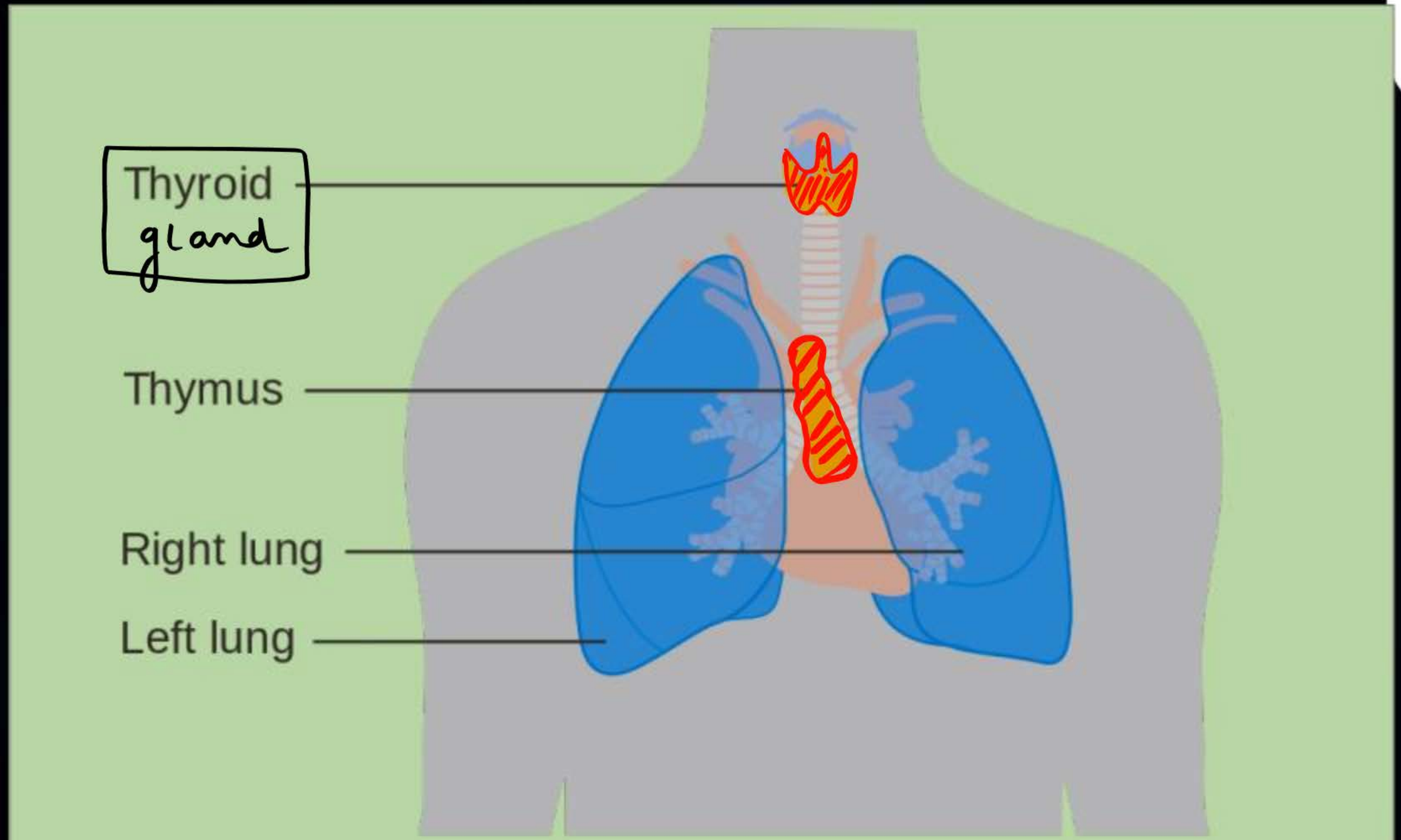
→ dwarf.

A Excess secretion of thyroxin

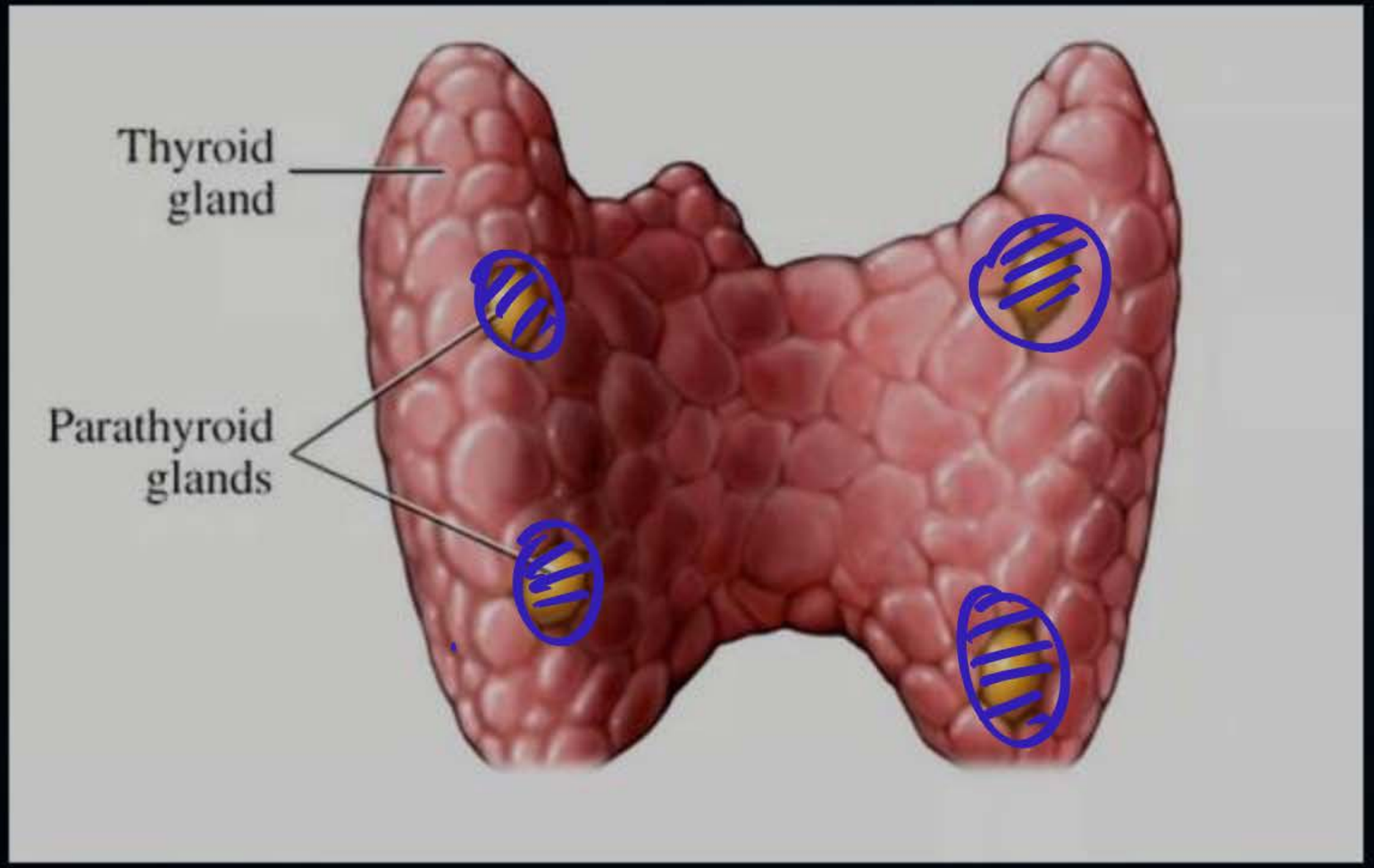
B Less secretion of growth hormone

C Less secretion of adrenaline

D Excess secretion of growth hormone


Thyroid gland
Thymus
Right lung
Left lung

Thyroid and Parathyroid Gland



Thyroid Gland

Thyroxine : Controls metabolism of carbohydrates, Proteins and fats

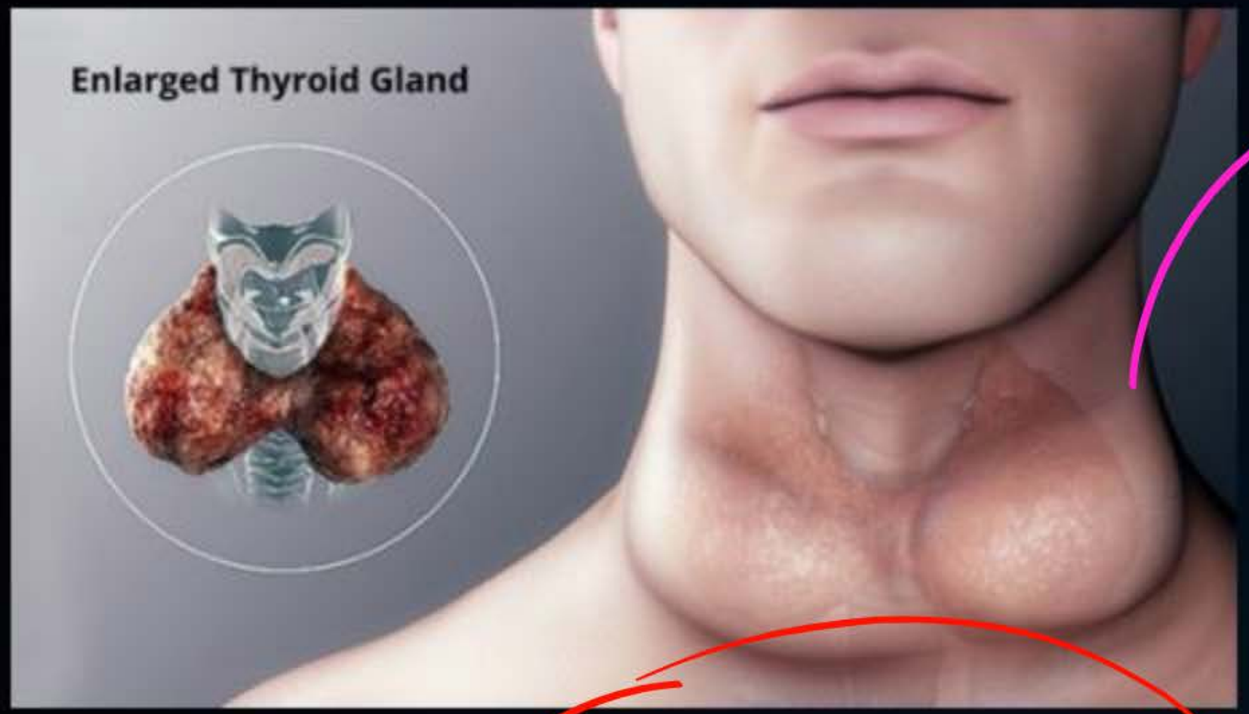
(Tyhormone)

Parathyroid Gland

Parathormone : Control levels of calcium and phosphorous in blood

(PTH)

#Ch1



goitre

Enlargement of Thyroid gland

Deficiency of iodine it leads to a disease called goitre

→ Advised to Consume

"Iodised Salt".

Thymus

- **Thymosin :** Helps in maturation of T lymphocytes

→ A type of White blood cells

↓

Immunity.

Adrenal Gland

→ Kidney - hat glands

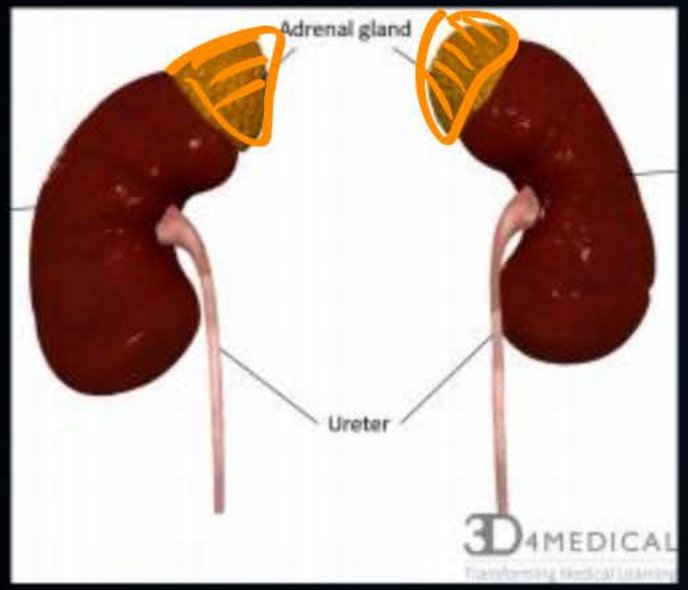
→ **Adrenal gland.**

↓

Adrenaline hormone
or
Epinephrine

↓

Help us to Cope up With the Stressful / Emergency Situations.

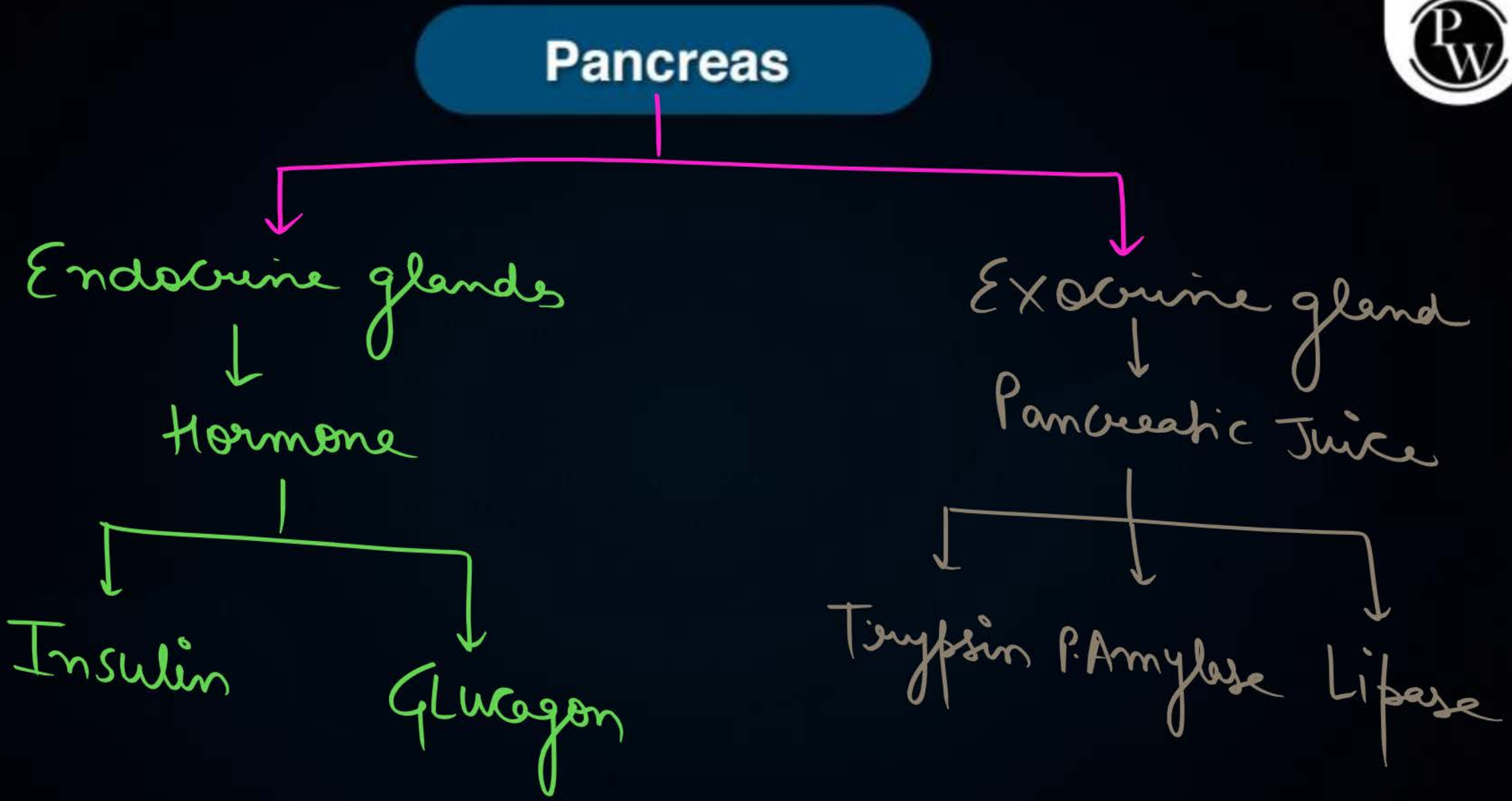


Pancreas

(Dual gland / Mixed gland / Heterocrine gland)

Testis
Ovary

- They act as both Endocrine & exocrine gland.


Pancreas
Endocrine glands
Hormone
Insulin
Glucagon
Exocrine gland
Pancreatic Juice
Trypsin
Amylase
Lipase

Pancreas

Insulin

- Lowler down the blood glucose / sugar level

Glucagon

- Increases blood glucose / Sugar levels.

Pancreases are not able to produce "insulin" / Less insulin is produced

Diabetes mellitus

(Hyper-glycemia)

→ Diseases Caused due to increased higher level of glucose in blood.

Question

Pancreas → insulin → Lower down Blood glucose

A patient is being given an injection of insulin. Which of the organ is likely to be affected ?

A. Ovaries

B. Thyroid gland

C. Hypothalamus

D. Pancreas ✓

Testis (Male)

→ A pair of Testis { Sex organs of male }

① Testosterone

→ Production of Sperm Cells

→ Development of Secondary Sexual Characters.

Ovary

→ A pair of **Ovaries** { Sex organ of females }

1. **Oestrogen**
   - → Control Menstrual Cycle.
   - → Development of Secondary Sexual Characters
2. **Progesterone**
   - → Role in pregnancy.

Gland	Hormone	Function
Hypothalamus	Releasing hormones	Stimulates pituitary gland to release hormones
Pituitary gland	Growth hormone	Body growth, development of bones & muscles (if excess-Gigantism) (if less- Dwarfism)
Thyroid gland	Thyroxine	Regulates carbohydrate, protein \ fat metabolism (if less iodine intake - Goitre)
Pancreas	insulin & Glucagon	Regulates blood sugar levels (if less - diabetes is caused)
Adrenal gland	Adrenaline	Prepare body to cope with emergency situations.
Testes in males	Testosterone	Development of secondary male characters the deep voice, beard, and sex organs
Ovaries in females	Oestrogen and progesterone	Development of secondary female characters like mammary glands, menstrual cycle and sex organs. Maintenance of pregnancy

Question

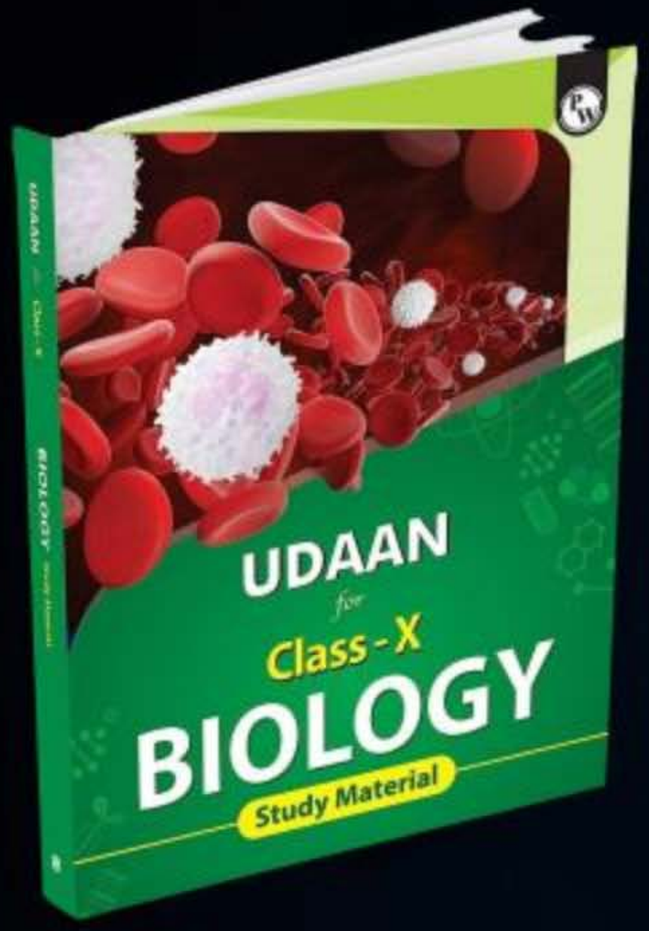
Which gland is not present in pair ?

A Testis

B Ovaries

C Thyroid gland

D Salivary gland



Homework

FROM PW MODULE

(Udaan - CLASS 10)

PAGE : 92 Q-2 , Q-4

Question of the Day

Example of gaseous plant hormone ?

Activity 7.4

- Hormones are secreted by endocrine glands and have specific functions. Complete Table 7.1 based on the hormone, the endocrine gland or the functions provided.

Table 7.1 : Some important hormones and their functions

S.No.	Hormone	Endocrine Gland	Functions
1.	Growth hormone	Pituitary gland	Stimulates growth in all organs
2.		Thyroid gland	Regulates metabolism for body growth
3.	Insulin		Regulates blood sugar level
4.	Testosterone	Testes	
5.		Ovaries	Development of female sex organs, regulates menstrual cycle, etc.
6.	Adrenaline	Adrenal gland	
7.	Releasing hormones		Stimulates pituitary gland to release hormones

DNA –
NCERT –

THANK YOU