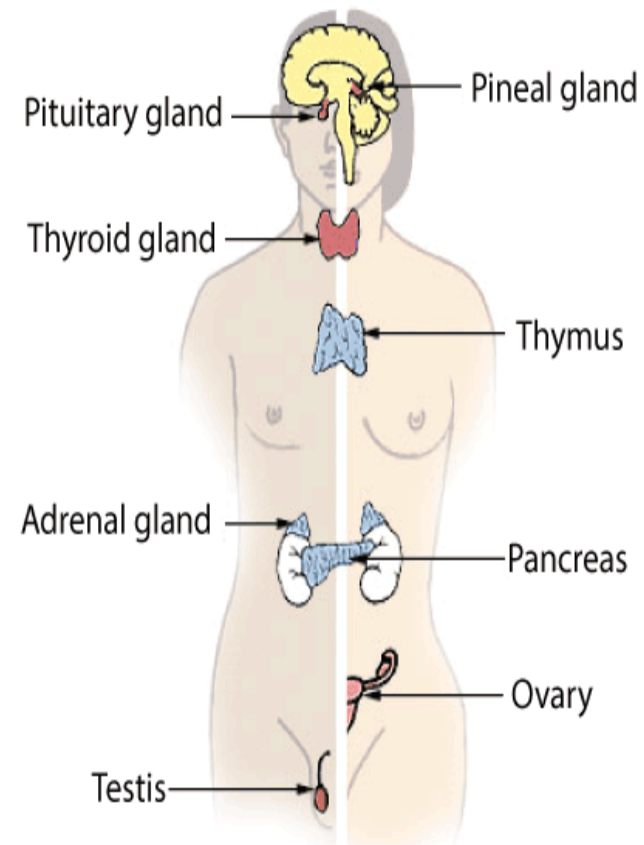




GLANDS

ENDOCRINE GLANDS



GLANDS:

A gland is an organ which produces and releases substances that perform a specific function in the body.

अणुसूत्रिका

Lacrimal (Eye)

TYPES OF GLANDS:

1. EXOCRINE GLANDS (DUCT GLANDS): Exocrine glands are glands that secrete substances onto a surface by a duct. It mainly releases Juices and Enzymes.

Eg: Sweat glands, lacrimal (tear) gland, Mammary glands

Salivary gland, liver, Sebaceous (oil) gland, stomach, Small Intestine

अणुसूत्रिका

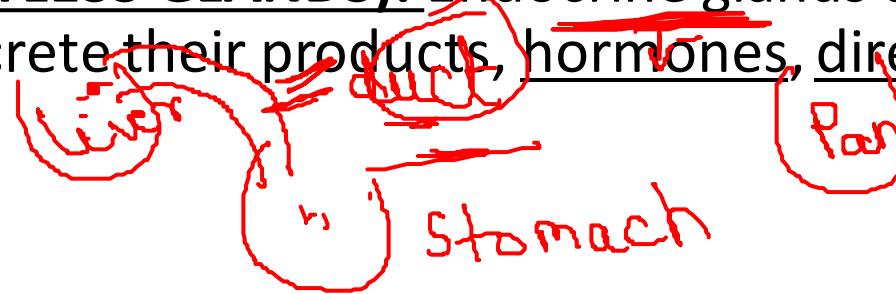
Largest gland - Liver

Largest organ - Skin

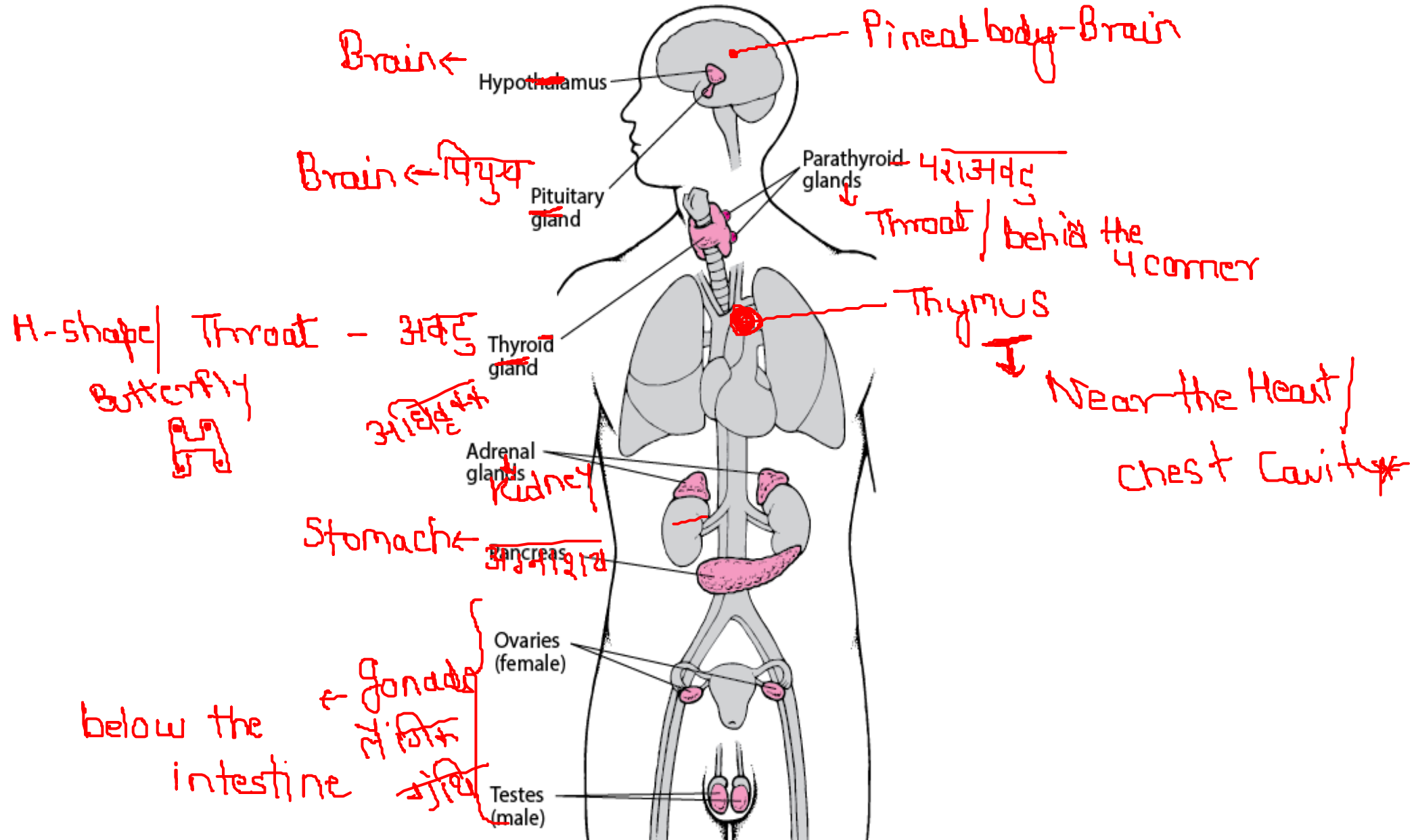
Longest organ - Small intes.

2. ENDOCRINE GLANDS (DUCTLESS GLANDS): Endocrine glands are ductless glands of the endocrine system that secrete their products, hormones, directly into the blood.

Blood



NAME AND LOCATION OF ENDOCRINE GLANDS: 9



PINEAL BODY: ~~पिनियल बॉडी~~

- Smallest Endocrine gland / Smallest gland.
- Also known as "3rd Eye of our body" / "Biological Clock".

Hormones:

1. Melatonin: It controls our body clock (time table).

(97.1)

It controls our sleep. जबकि घुन

Also known as "Hormones of Darkness"

जबकि घुन

21 days

Melatonin

2. Serotonin: Also known as "Feel Good Hormone".

3-1.

Disease:

Deficiency: Insomnia अनिद्रा*

Excess: Irritation, Abnormal Body Clock

Thyroid: Throat

- Largest Endocrine Gland.*
- Also known as "Butterfly Gland".



Salt
Sea weeds

Hormone:

98%

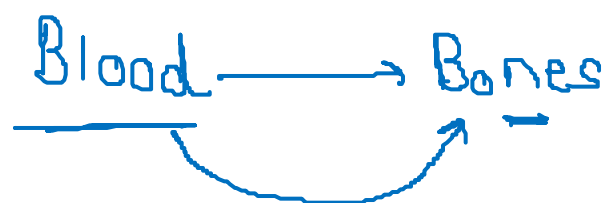
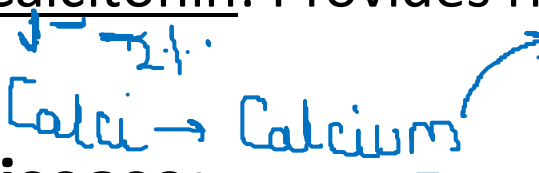
उपायचयी क्रिया*

1. Thyroxin: It controls our Metabolism (all the process needed for our life).

Eg: Heartbeat, digestion, Respiration

***"Iodine is important for the formation of Thyroxin"

2. Calcitonin: Provides rigidity to bones.



Disease:

Deficiency: Myxedema (swelling in body, sudden weight gain)----- in adult

(Hypothyroidism)

Cretinism (in child)

जड़मानवता

↓ Mental retard

Excess: Grave's Disease (sudden weight loss, bulging of eyes like frog)

PARATHYROID GLANDS:



- There are 4 lobes (parts)

Hormone:

Parathormone (PTH):

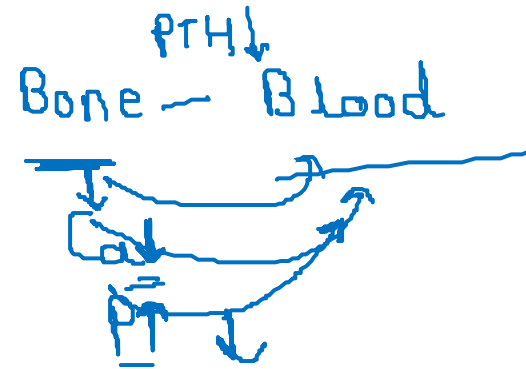
- It is also known as "Collip's Hormone".*
- It counteract "Calcitonin" संतुलित
- It helps in the formation of bones.

Disease:

Deficiency: Tetany (problem in muscle motion).

Excess: Osteoporosis, Stones (Calcium oxalate, CaC_2O_4)

* Vit D → PTH



* regulates Ca level in blood

Ca

Bone

$Ca \times \frac{1}{P}$

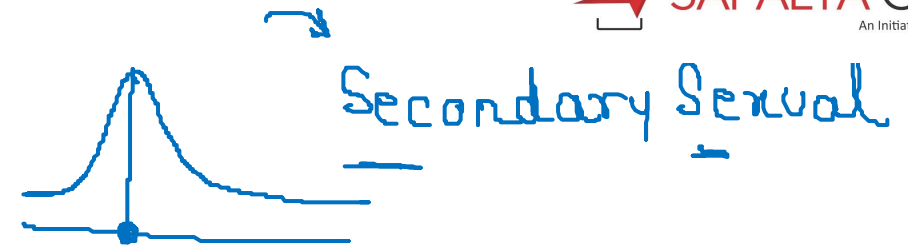
Calcium
↓
rigidity

Phosphorus
↓
Form

→ Sunlight → Vit D

THYMUS: Heart

- Also known as Juvenile Gland.
- It provides immunity.
- The size of Thymus decreases as the age pass.
- Thymus is most active during the age of 10-15 years (pubic age)*

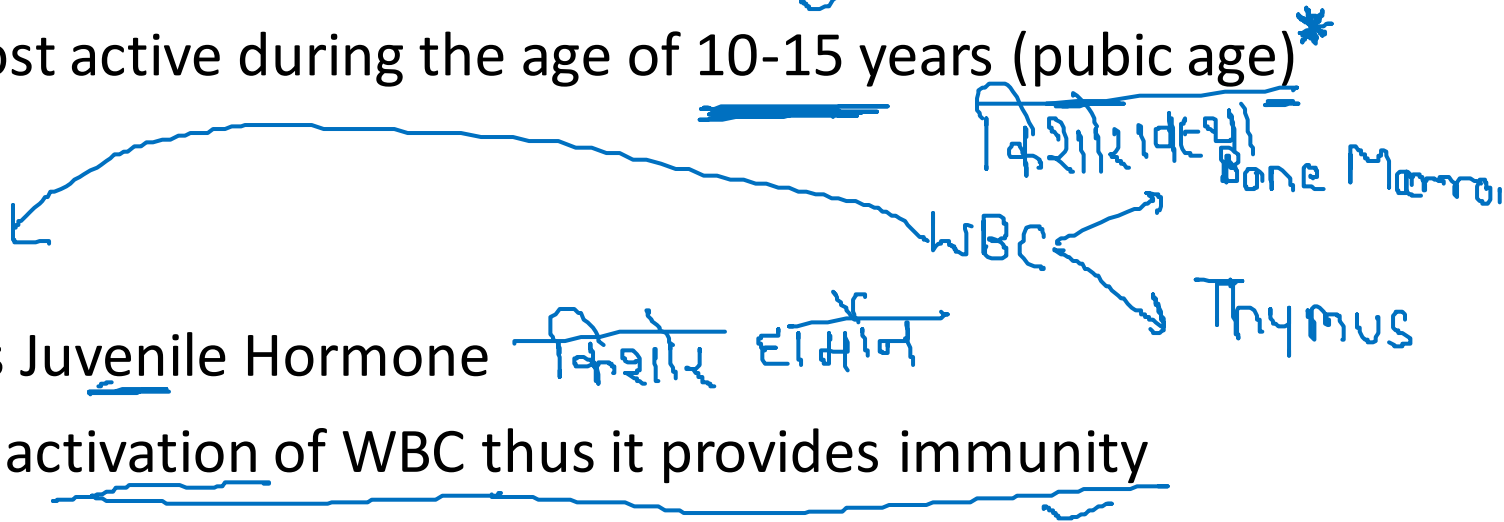


Hormone:

Thymosin:-

Also known as Juvenile Hormone किशोर हार्मोन

It helps in the activation of WBC thus it provides immunity



Disease:

Deficiency: Low immunity (many disease).

Excess: High immunity (Autoimmunity).

Pancreas: अग्नाशय

- Discovered by Langerhans.
- It is a ^{*}mixed Gland (work as both Exocrine and Endocrine).
- Pancreas is composed of Cell namely "Cell of Langerhans/Islets of Langerhans."
- There are 4 types of Cell in Pancreas:
 1. Alpha Cell: It produces a hormone Glucagon (discovered by Kimball and Murlin).
 2. Beta Cell: It produces a hormone Insulin (discovered by Banting and Best).
 3. Gama /Delta Cell:
 4. F cell: It works as an Exocrine Gland :

Endo

"Extra Sugar $\xrightarrow{\text{Insulin}}$ fat"

Function Of Insulin:

It is a protein hormone.^{*}

It regulates sugar level in our blood by converting extra sugar into fat.

*** Normal Glucose Level of a Person: (a) Fasting Condition: (60-80)mg%

Normal: (80-120)mg

(b) After Meal: (120-140)mg%

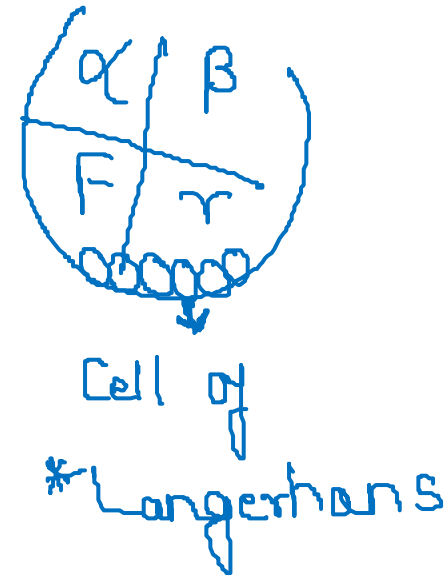
Disease:

Deficiency: Diabetes Mellitus

Excess: Hypoglycemia

Function of Glucagon:

- It counteracts Insulin
- It converts Stored Fat into Sugar/Energy
- It mainly provides Energy in fasting condition



Mixed gland:
Pancreas, Liver, Gonads

Adrenal Gland:

- Location: Above the both Kidney.
- Weight: (4-6)gm each
- Known as Emergency Gland/Life Saving Gland/3F gland/ Do or Die Gland

There are 2 parts of Adrenal:

1. Adrenal Medulla: It produces a Hormone Adrenaline also known as Epinephrine
2. Adrenal Cortex: It produces 2 hormones :
 - a. Cortisol: It also regulates blood sugar in our body by converting Extra Protein into Sugar.
Regulates Stress (also known as Stress Hormone)
 - b. Aldosterone: It regulates Salt level in our body so it helps in the regulation of BP.
It also regulates Water level in our body

*****Aldosterone is proportional to body water.

- **Disease:**
- Deficiency: Low Sugar, Low BP, Dehydration (Addison's Disease)
- Excess: High Sugar
 - Depression
 - Heart Attack/Paralysis/Brain hemorrhage

GONADS (SEXUAL GLAND):

- It is also a mixed gland.
- There are 2 types of Gonads:
 1. **Ovary**: It is a sexual organ in females.

It releases 2 hormones:

- (a) Progesterone
- (b) Estrogen

2. **Testes**: It is a sexual organ in males.

It releases Testosterone.

Function:

- Helps in the development of Secondary Sexual Characters.
- Helps in Reproduction.

Disease: Infertility/Sterility

PITUITARY GLANDS:

- Also known as Master Gland (because it controls other glands).
- Produces maximum number of Hormones (11+2).
- 2nd smallest Endocrine gland.

Hormones:

1. Growth Hormone (GH/ Somatostin):

- It is a Protein Hormone.

Function: (a) Regulates Body Height

(b)Regulates Body Shape

(c) Antiaging Hormone.

Disease:

- Deficiency: Dwarfism
- Excess: Giantism, Acromegaly

2. Oxytocin: It is produced by Hypothalamus but released by Posterior Pituitary.

It is a Peptide Hormone.

Function: (a)Helps in the birth of baby

(b)Love hormone

(c)Milk Hormone: It helps in the release of the milk after pregnancy.

3. Prolactin: It helps in the formation of milk after pregnancy.

4. ADH(Anti Diuretic Hormone/Vasopressin): It is also released by Hypothalamus but released by Posterior Pituitary.

Function: It regulates water level in our body.

HYPOTHALAMUS:

- It is also known as “Super Master Gland”.
- It controls Pituitary Gland.