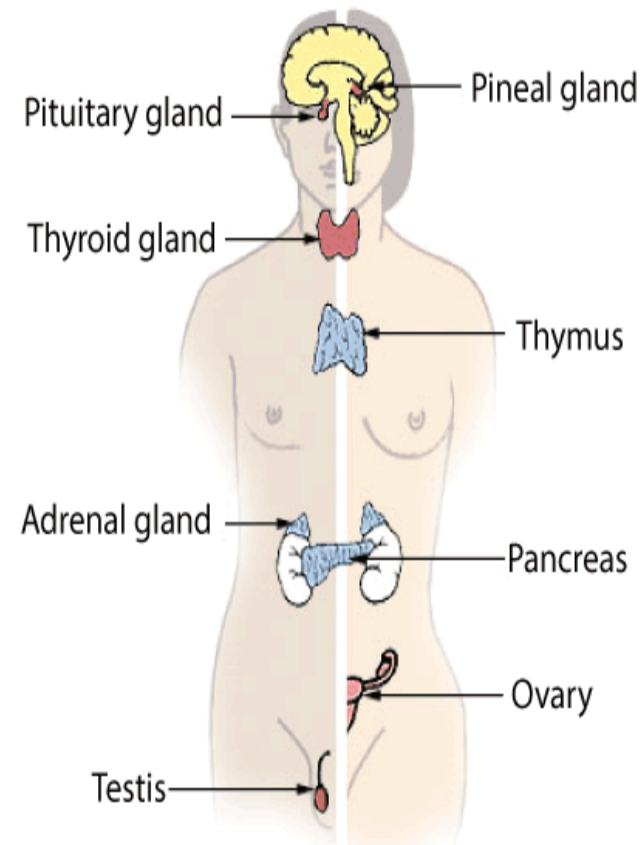




# GLANDS

## 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

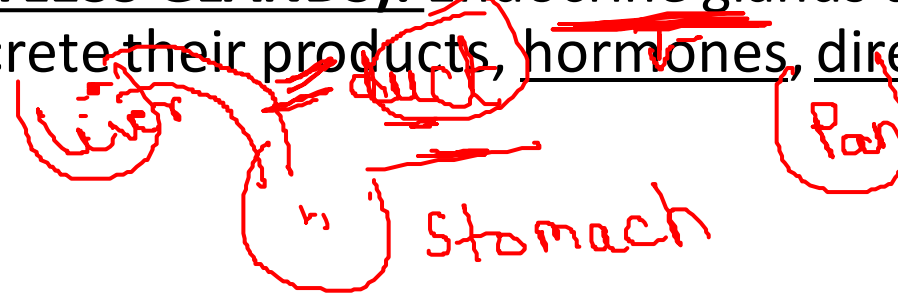
Salivary gland, liver, Sebaceous (oil) gland, stomach, Small Intestine

अणुसूत्रिका

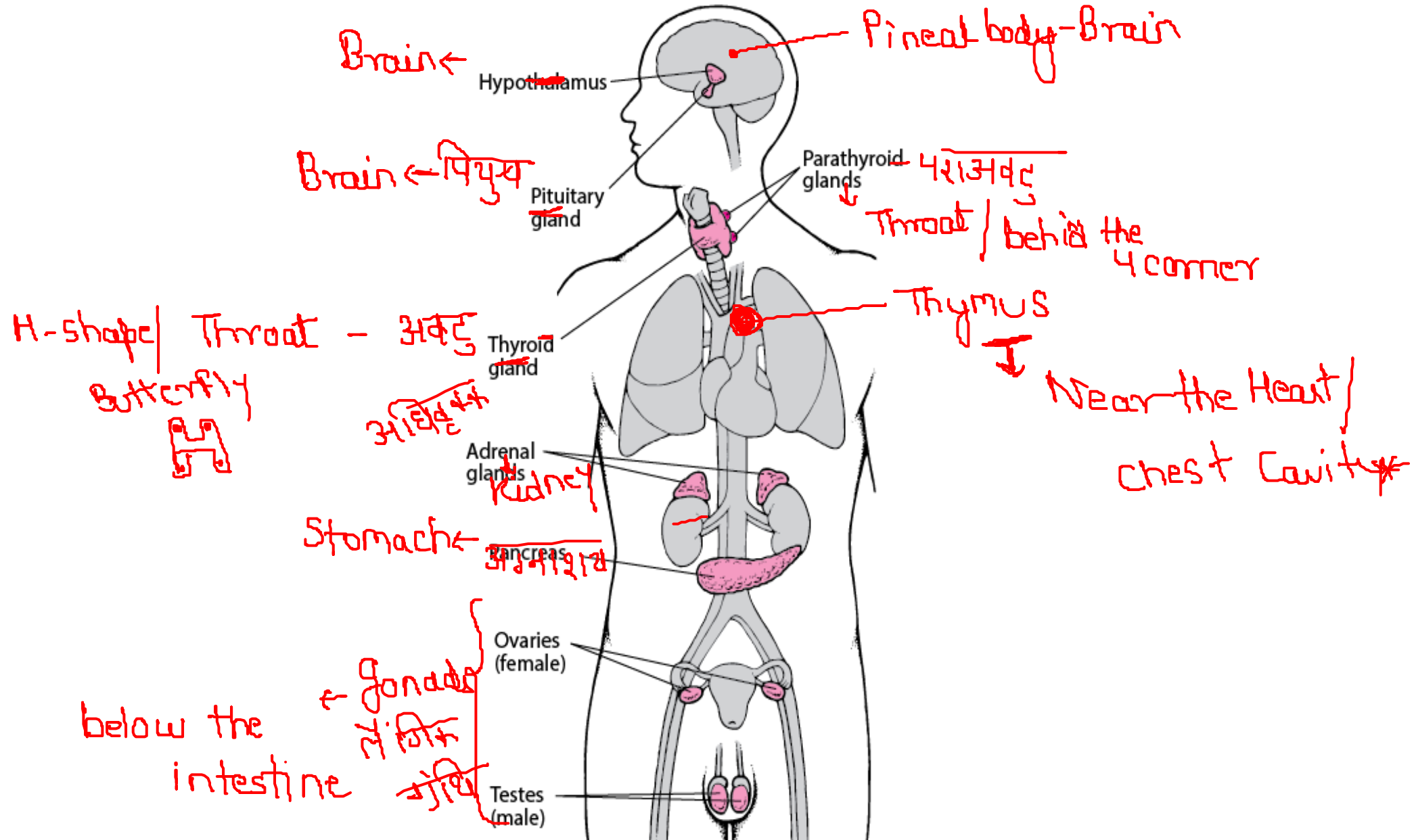
Largest gland - Liver  
Largest organ - Skin  
Longest organ - Small intes.

**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 "3<sup>rd</sup> 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%

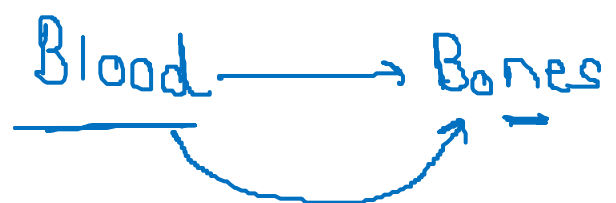
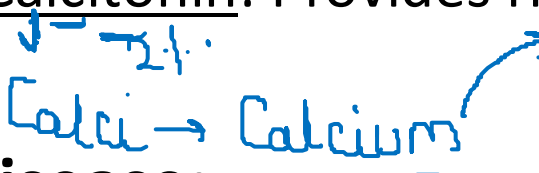
उपायचयी क्रिया\*

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):

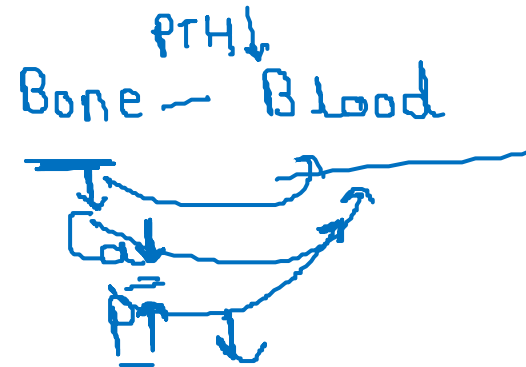
- It is also known as "Collip's Hormone".\*
- It counteract "Calcitonin" संतुलित
- It helps in the formation of bones.

## 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

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

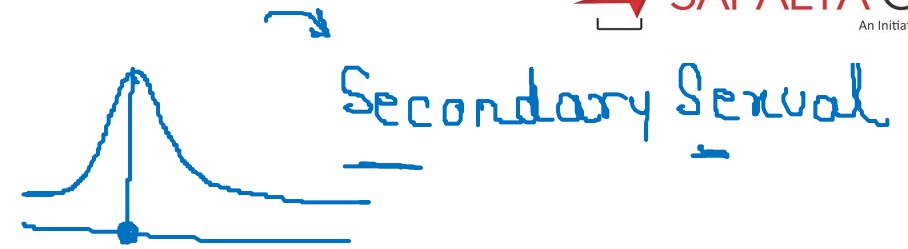
Calcium  
↓  
rigidity

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)\*

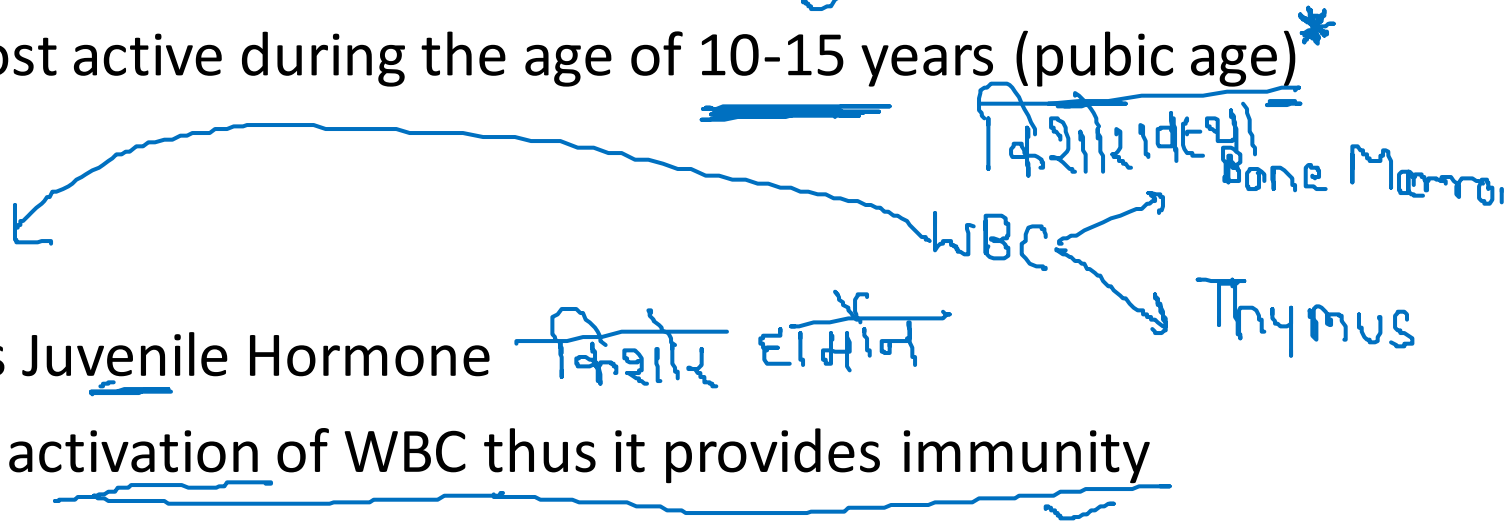


## Hormone:

### 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 <sup>\*</sup>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

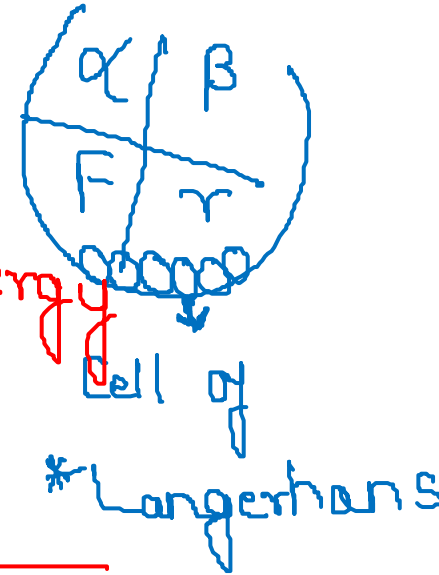
Excess: Hypoglycemia

**Function of Glucagon:**

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

(Sugar)  
Energy

Stored Fat → Sugar/Energy



14 days

Insulin  $\propto$  Blood Sugar

Que: Mineral

Zinc

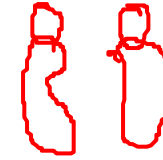
Insulin Wound healing

Extra Sugar → Fat

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.  
*(20-25) %*
2. Adrenal Cortex: It produces 2 hormones :  
*(75-80) %*
  - a. Cortisol: It also regulates blood sugar in our body by converting Extra Protein into Sugar.  
*अधिकतम 1408*  
↓  
*Regulates Stress (also known as Stress Hormone)*  
*Sugar regulation*
  - b. Aldosterone: It regulates Salt level in our body so it helps in the regulation of BP.  
*BP*  
↓  
*It also regulates Water level in our body*  
*यहीना ↑ नमक*

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

*Ald ∝ body water*

- **Disease:**
- Deficiency: Low Sugar, Low BP, Dehydration (Addison's Disease)
- Excess: High Sugar

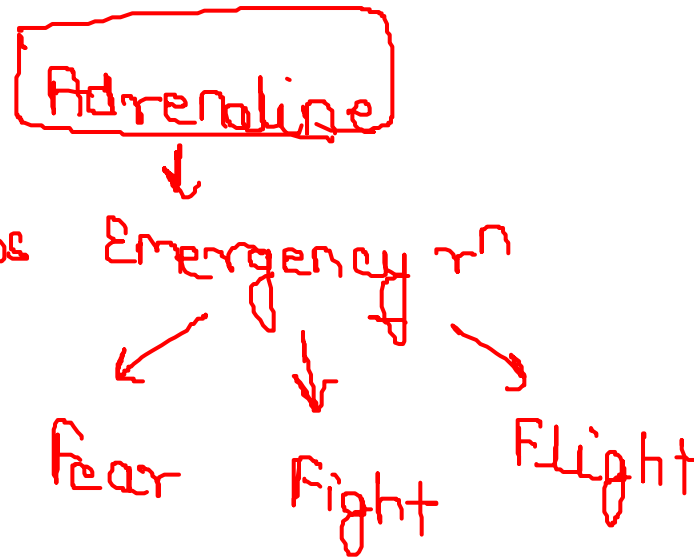
Depression अवसाद

Heart Attack/Paralysis/Brain hemorrhage

लक्षणा



Eg: HBT  
Goose Bumps  
Sweating



## GONADS (SEXUAL GLAND):

- It is also a mixed gland.
- There are 2 types of Gonads:

1. Ovary: It is a sexual organ in females.

अण्डाशय

It releases 2 hormones:

(a) Progesterone ✓

(b) Estrogen ✓

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

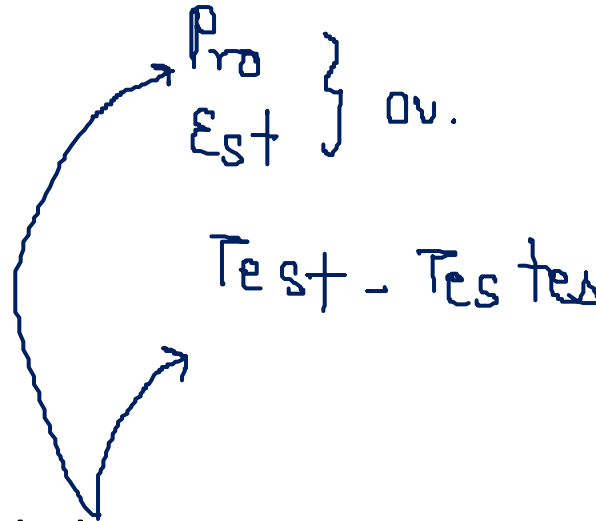
वृषण

It releases Testosterone.

### Function:

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

Disease: Infertility/Sterility बांझपन



## PITUITARY GLANDS:

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

## Hormones:

### 1. Growth Hormone (GH/ Somatostin):

- It is a Protein Hormone.

Function: (a) Regulates Body Height } (0-21) yrs  
(b) Regulates Body Shape }  
(c) Antiaging Hormone.

## Disease:

- Deficiency: Dwarfism
- Excess: Giantism, Acromegaly\*

आयुरोधी

**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.

Oxytocin → Early  
+2 Matu

Oxytocin → Labour pain कम होती है

→ Milk

**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.

↓  
Urea → Urine → Water

