## ■ INTRODUCTION

Pituitary gland or **hypophysis** is a small endocrine gland with a diameter of 1 cm and weight of 0.5 to 1 g. It is situated in a depression called '**sella turcica**', present in the sphenoid bone at the base of skull. It is connected with the hypothalamus by the **pituitary stalk** or **hypophyseal stalk.**

## ■ DIVISIONS OF PITUITARY GLAND

Pituitary gland is divided into two divisions:

1. Anterior pituitary or adenohypophysis
2. Posterior pituitary or neurohypophysis.

Both the divisions are situated close to each other. Still both are entirely different in their development, structure and function.

Between the two divisions, there is a small and relatively avascular structure called **pars intermedia.** Actually, it forms a part of anterior pituitary.

## ■ DEVELOPMENT OF PITUITARY GLAND

Both the divisions of pituitary glands develop from different sources.

Anterior pituitary is **ectodermal** in origin and arises from the **pharyngeal epithelium** as an upward growth known as **Rathke pouch.**

Posterior pituitary is **neuroectodermal** in origin and arises from hypothalamus as a downward **diverticulum.** Rathke pouch and the downward diverticulum from hypothalamus grow towards each other and meet in the midway between the roof of the buccal cavity and base of brain. There, the two structures lie close together.

## ■ ANTERIOR PITUITARY OR ADENOHYPOPHYSIS

Anterior pituitary is also known as the **master gland** because it regulates many other endocrine glands through its hormones.

### ■ PARTS

Anterior pituitary consists of three parts (Fig. 66.1):

1. Pars distalis
2. Pars tuberalis
3. Pars intermedia.

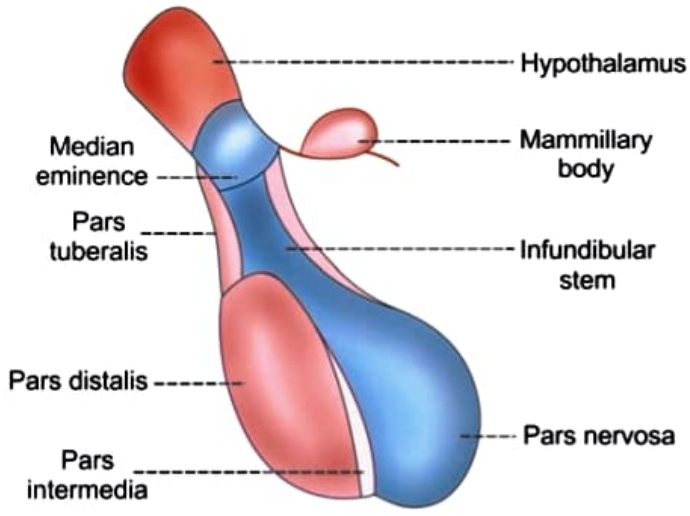


**FIGURE 66.1:** Parts of pituitary gland
Adenohypophysis Neurohypophysis

### ■ HISTOLOGY

Anterior pituitary has two types of cells, which have different staining properties:

1. Chromophobe cells
2. Chromophil cells.

#### *Chromophobe Cells*

Chromophobe cells do not possess granules and stain poorly. These cells form 50% of total cells in anterior pituitary. Chromophobe cells are not secretory in nature, but are the precursors of chromophil cells.

#### *Chromophil Cells*

Chromophil cells contain large number of granules and are darkly stained.

*Types of chromophil cells*

Chromophil cells are classified by two methods.

1. Classification on the basis of staining property: Chromophil cells are divided into two types:
   i. **Acidophilic cells** or **alpha cells,** which form 35%
   ii. **Basophilic cells** or **beta cells,** which form 15%.
2. Classification on the basis of secretory nature: Chromophil cells are classified into five types:
   i. **Somatotropes,** which secrete growth hormone
   ii. **Corticotropes,** which secrete adrenocorticotropic hormone
   iii. **Thyrotropes,** which secrete thyroid-stimulating hormone (TSH)
   iv. **Gonadotropes,** which secrete follicle-stimulating hormone (FSH) and luteinizing hormone (LH)
   v. **Lactotropes,** which secrete prolactin.

Somatotropes and lactotropes are acidophilic cells, whereas others are basophilic cells. Somatotropes form about 30% to 40% of the chromophil cells. So, pituitary tumors that secrete large quantities of human growth hormone are called acidophilic tumors.

# ■ POSTERIOR PITUITARY OR NEUROHYPOPHYSIS

## ■ PARTS

Posterior pituitary consists of three parts:

1. Pars nervosa or infundibular process
2. Neural stalk or infundibular stem
3. Median eminence.

Pars tuberalis of anterior pituitary and the neural stalk of posterior pituitary together form the **hypophyseal stalk.**

## ■ HISTOLOGY

Posterior pituitary is made up of neural type of cells called pituicytes and unmyelinated nerve fibers.

### *Pituicytes*

Pituicytes are the fusiform cells derived from glial cells. These cells have several processes and brown pigment granules. Pituicytes act as supporting cells and do not secrete any hormone.

### *Unmyelinated Nerve Fibers*

Unmyelinated nerve fibers come from supraoptic and paraventricular nuclei of the hypothalamus through the pituitary stalk.

### *Other Structures*

Posterior pituitary also has numerous blood vessels, hyaline bodies, neuroglial cells and mast cells.