Endocrine glands

• The principal endocrine glands in the human body are the hypothalamus, pituitary, thyroid, parathyroids, adrenals, pancreatic islets, gonads, and pineal.

• Some organs have an endocrine function in addition to their main function, e.g. the heart, lungs, kidneys, liver, gastrointestinal tract, and placenta.
Chemical Identity of Hormones

1) hormones synthesized from cholesterol eg adrenal cortex hormones like aldosterone and cortisol

2) Polypeptide / Protein hormones eg anterior and posterior pituitary gland hormones, pancreas, parathyroid

3) Derivatives of amino acid tyrosine eg thyroid hormone (thyroxine and triiodothyronine) and adrenal medullae (epinephrine and norepinephrine)
MECHANISM OF ACTION OF HORMONES

- Hormones of the same class have similar mechanism of actions. They can be divided into different classes of hormones:
  - Lipid soluble hormones (Lipophilic)
    - Steroid + thyroid hormones (Hydrophobic, membrane permeable)
    - Polar/ non lipid soluble Hormones (Hydrophilic, membrane-impermeable)
  - All other hormones (Hydrophilic, membrane-impermeable)
Second messengers

• Some actions of hydrophilic hormones are carried out and completed on binding of the hormone to its receptor without the need to another chemical mediator, activation or inhibition of ion channels.

• Most of hydrophilic hormones, however, exert their actions on target cells by inducing the production of another, chemical mediator inside the cell.