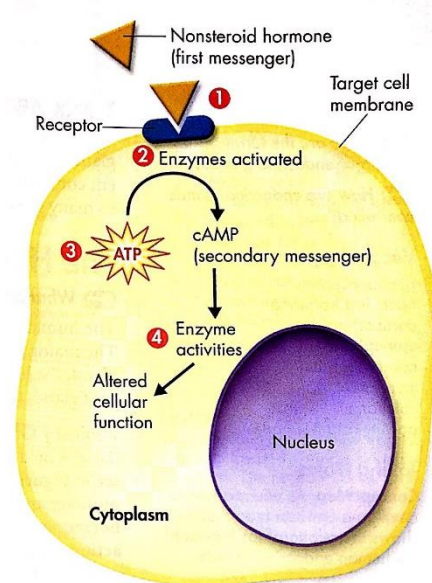
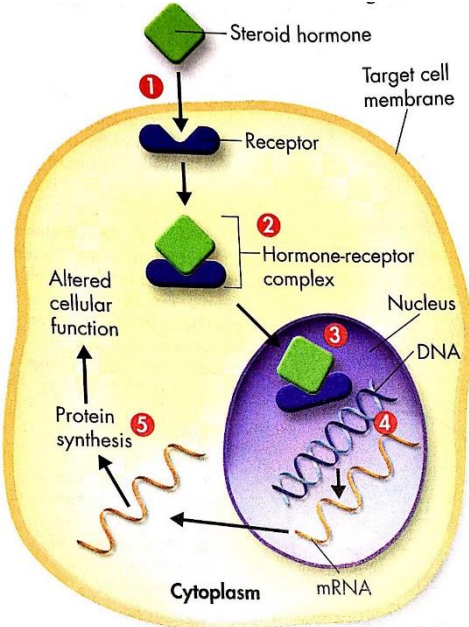




- 1 A steroid hormone enters a cell by passing directly across the cell membrane.
- 2 Once inside, the hormone binds to a receptor (found only in the hormone's target cells) and forms a hormone-receptor complex.
- 3 The hormone-receptor complex enters the nucleus of the cell, where it binds to regions of DNA that control gene expression.
- 4 This binding initiates the transcription of specific genes to messenger RNA (mRNA).
- 5 The mRNA moves into the cytoplasm and directs protein synthesis.

- 1 A nonsteroid hormone binds to receptors on the cell membrane.
- 2 The binding of the hormone activates enzymes on the inner surface of the cell membrane.
- 3 These enzymes release secondary messengers such as calcium ions, nucleotides, and even fatty acids to relay the hormone's message within the cell. One common secondary messenger is cAMP (cyclic AMP), which is produced from ATP.
- 4 These secondary messengers can activate or inhibit a wide range of cell activities.

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Endocrine System

Hypothalamus
The hypothalamus makes hormones that control the pituitary gland and hormones that are stored in the pituitary gland.

Pituitary Gland
The pituitary gland produces hormones that regulate many of the other endocrine glands and some organs.

Parathyroid Glands
These four glands release parathyroid hormone, which regulates the level of calcium in the blood.

Thymus
During childhood, the thymus releases thymosin, which stimulates T cell development and proper immune response.

Adrenal Glands
The adrenal glands release hormones that help the body respond to stress.

FIGURE 34-1 Major Endocrine Glands Endocrine glands produce hormones that affect many parts of the body. **Interpret Graphics** What is the function of the pituitary gland?

Pineal Gland
The pineal gland releases melatonin, which is involved in rhythmic activities, such as daily sleep-wake cycles.

Thyroid
The thyroid produces thyroxine, which regulates metabolism throughout the body.

Pancreas
The pancreas produces insulin and glucagon, which regulate the level of glucose in the blood.

Ovaries
Ovaries produce estrogens and progesterone. Estrogens are required for the development of female secondary sex characteristics and for the development of eggs. Progesterone prepares the uterus for a fertilized egg.

Testes
The testes produce testosterone, which is responsible for sperm production and the development of male secondary sex characteristics.

