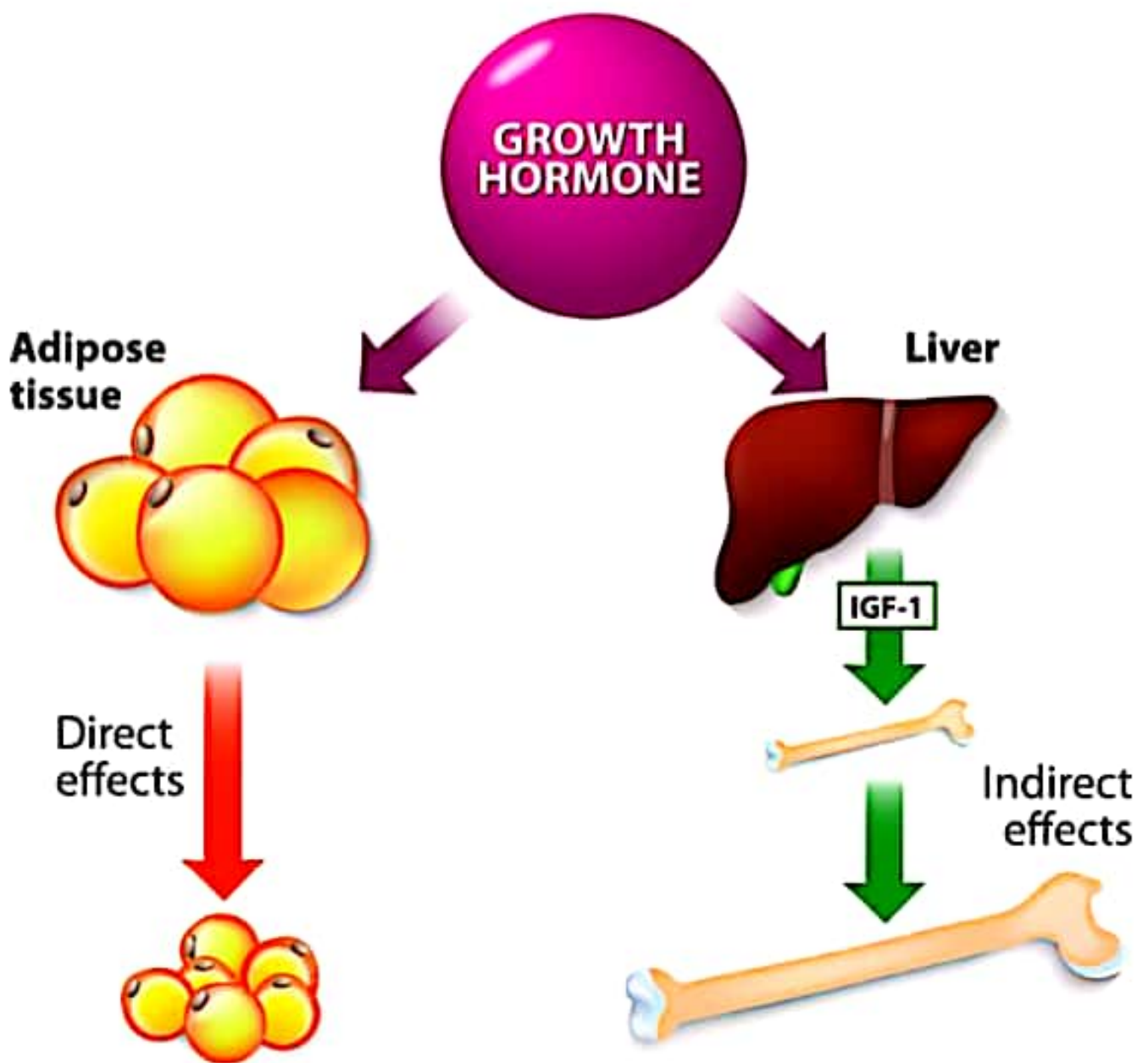


# Animal Growth Hormones

## Physiologic effects of **GROWTH HORMONE**



Direct and indirect physiologic effects of growth hormone

*hormones* are produced in the *endocrine glands* of animals. The *pituitary gland* and *hypothalamus* are the most important in regard to control and *development*.

# Somatotrophin – Growth Hormone

The pituitary gland is responsible for the production of a hormone called [somatotrophin](#). Somatotrophin is essential in the fact that it promotes mass production of proteins on a body-wide scale, by accelerating the rate of transport of amino acids; the constituents of a protein.

# Thyroid Stimulating Hormone

The same part of the pituitary gland is responsible for thyroid-stimulating hormone, or TSH for short. This targets the thyroid gland, also a member of the endocrine system, which in turn promotes the production of thyroxine

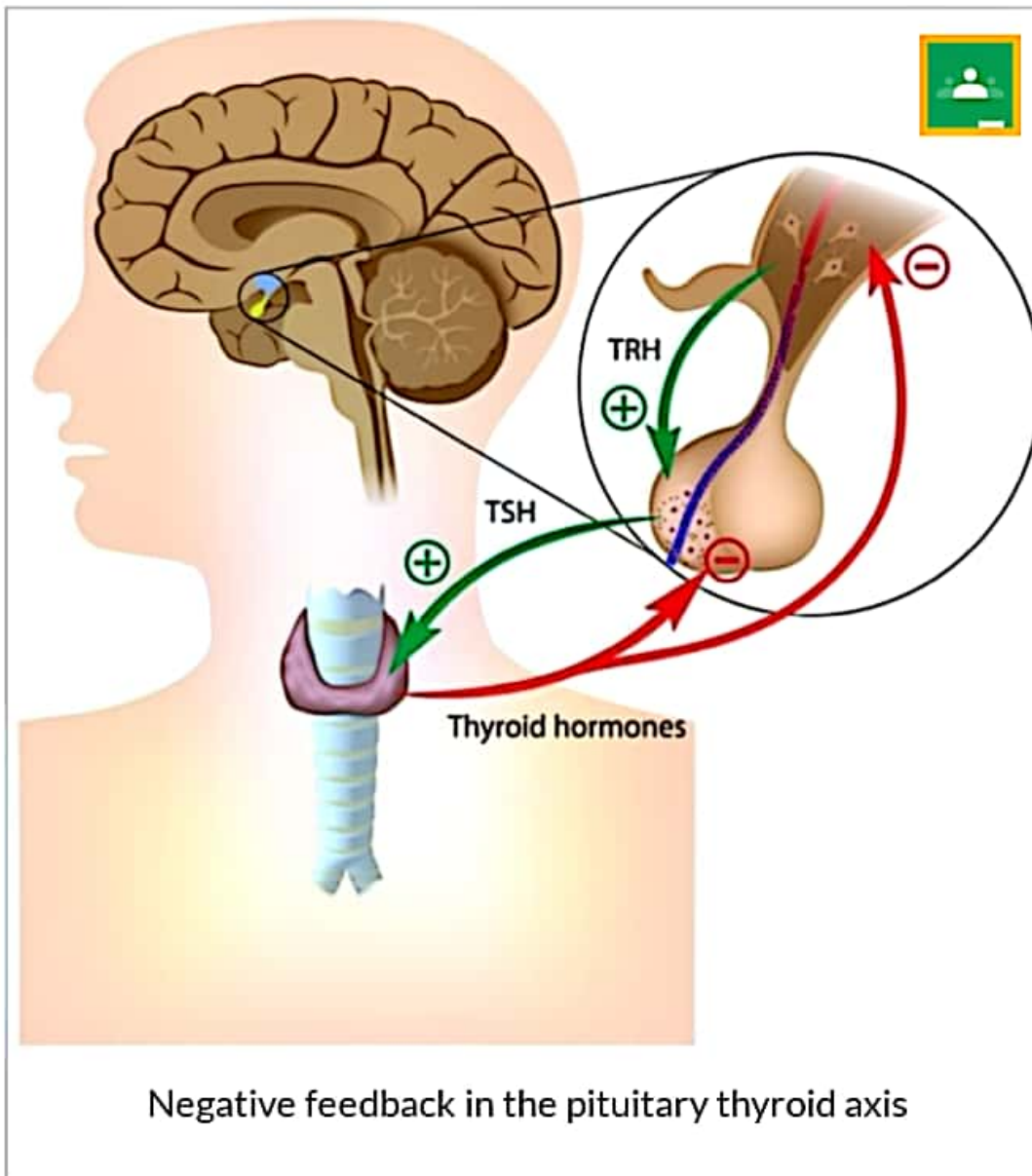
## Thyroxine

Thyroxine is responsible for controlling the body's metabolic rate, and therefore responsible for the amount of energy consumed and the volume of proteins produced.

# Growth Extremes

The overproduction of somatotropin can cause gigantism while underproduction can result in dwarfism. If the substance is overproduced during adulthood, the person grows overly big jaws, hands, and feet, a condition known as [acromegaly](#).

# Hormone Production

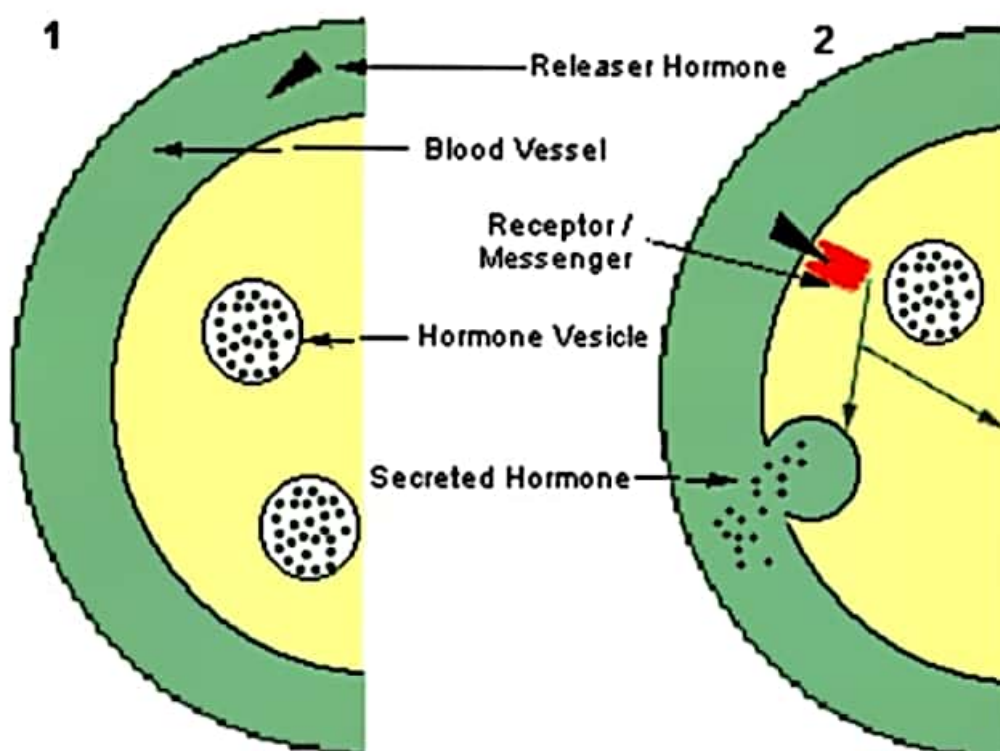


Hormones are chemical messengers produced by glands in the **endocrine system**. Endocrine tissues are specialized to produce such hormones, which have genes switched on according to the hormones they were designed to produce. The **Protein Synthesis tutorial** in the **Cell Biology tutorial** goes into depth about protein production, which is relevant here as hormones consist of *proteins*.

The pituitary gland situated at the back of the brain is responsible for the creation of many hormones that are related to growth in animals. The amount of each hormone production is regulated by the [hypothalamus](#), a part of the brain situated next to the [pituitary gland](#).

## Hypothalamus and the Pituitary Gland

As stated, the hypothalamus is responsible for regulating the release of hormones from the pituitary gland. It is responsible for secreting *releaser factors* which instruct the pituitary gland to secrete certain hormones. This is illustrated below.



- In **Figure 1** above, the releaser hormone from the hypothalamus finds its target tissue, a pituitary cell. It binds to the receptor where a chemical messenger instructs the cell to release the desired hormone.
- In **Figure 2**, the messenger may instruct the release of the hormone, or bind to the receptor and enter the nucleus to instruct the production of a particular hormone
- Finally, the secreted hormone will target a specific tissue (for instance the thyroid gland) and instruct the tissue to produce a particular substance