The Hypothalamus is approximately the size of a pea located on the undersurface of the brain and accounts for less than 1% of the weight of the brain. The hypothalamus is involved in many functions of the autonomic nervous system, as it receives information from nearly all parts of the nervous system. As such, it is considered the link between the nervous system and the endocrine system.

The hypothalamus plays a significant role in the endocrine system including behavioural and autonomic functions. It is responsible for maintaining your body's internal balance, which is known as homeostasis. To do this, the hypothalamus helps stimulate or inhibit many of your body's key processes. The hypothalamus produces releasing and inhibiting hormones, which stop and start the production of other hormones throughout the body. The hormones produced by this area of the brain govern body temperature, fluid and electrolyte balance including thirst, appetite and body weight, sleep cycle, circadian rhythm (heart rate and blood pressure), moods, sex drive, glandular secretions of the stomach and intestines and the production of substances that influence the pituitary gland to release hormones in the body. The hypothalamus, also, controls the pituitary gland and other glands of the body. When it receives a signal from the nervous system, the hypothalamus secretes substances known as neurohormones that start and stop the secretion of pituitary hormones.

Primary hormones secreted by the hypothalamus include:

Anti-diuretic hormone (ADH): This hormone increases water absorption into the blood by the kidneys.

Corticotropin-releasing hormone (CRH): CRH sends a message to the anterior pituitary gland to stimulate the adrenal glands to release corticosteroids, which help regulate metabolism and immune response.

Gonadotropin-releasing hormone (GnRH): GnRH stimulates the anterior pituitary to release follicle stimulating hormone (FSH) and luteinizing hormone (LH), which work together to ensure normal functioning of the ovaries and testes.

Growth hormone-releasing hormone (GHRH) or growth hormone-inhibiting hormone (GHIH) (also known as somatostain): GHRH prompts the anterior pituitary to release growth hormone (GH); GHIH has the opposite effect. In children, GH is essential to maintaining a healthy body composition. In adults, it aids healthy bone and muscle mass and affects fat distribution.

Oxytocin: Oxytocin is involved in a variety of processes, such as orgasm, the ability to trust, body temperature, sleep cycles, and the release of breast milk.

Prolactin-releasing hormone (PRH) or prolactin-inhibiting hormone (PIH) (also known as dopamine): PRH prompts the anterior pituitary to stimulate breast milk production through the production of prolactin. Conversely, PIH inhibits prolactin, and thereby, milk production. Thyrotropin releasing hormone (TRH): TRH triggers the release of thyroid stimulating hormone (TSH), which stimulates release of thyroid hormones, which regulate metabolism, energy, and growth and development.

The hypothalamus uses a set point to regulate the body's systems and it receives inputs from the body. Compensatory mechanism is initiated if anything differentiates from this set-point. The set-point can migrate, but remains remarkably fixed from day-to-day.

As the hypothalamus controls the pituitary gland and other glands of the body, it is arguably a very significant part in maintaining the body's endocrine system. By initiating release of certain pituitary hormones to the rest of the endocrine system it ensures the body's internal processes are balanced and working as they should.

Diagram of the hypothalamus and pituitary gland