

# The Sequence of a Stress Response

## 1 The hippocampus sorts and filters incoming data from the environment

The hippocampus is a (horseshoe-shaped) way-station in the center of the animal and human brain that helps organize and prioritize incoming data via an automatic, non-conscious process.

The hippocampus decides if something is important enough to process further. It then relays this information to other parts of the brain through a complex web of neural pathways.

## 2 The hippocampus then either:

- Signals the frontal lobes to wake up and pay conscious attention, or;
- Places the information in long term-storage in the appropriate sensory areas of the cortex, or;
- Sends it to the amygdala, the area where stressful emotional memory is stored, or;
- In case of a threat, asks other parts of the brain for help.

## 3 The hippocampus signals the hypothalamus: the sympathetic nervous system gets involved

If the hippocampus decides that a stimulus is a possible danger, it sends chemical signals to the hypothalamus.

The hypothalamus can be considered the brain's central thermostat. It is the first line of defense in the sympathetic nervous system's response to stress. It lies close to the pituitary gland deep in the center of the brain. It is part of the limbic system, the seat of emotions that lies underneath the cortex (gray matter).

## 4 The hypothalamus signals the pituitary gland

The hypothalamus uses special **corticotropin-releasing hormones**, to signal the pituitary gland to activate other glands by releasing its own hormones.

The pituitary is a master gland that controls the functions of many other glands throughout the body. Like a control panel, it tells the other glands when to release specific hormones, how much to release and when to slow down.

## 5 The pituitary gland orders other glands to release their hormones

The pituitary responds to the hypothalamus by sending its special **ACTH hormone** through the blood stream to the other glands. ACTH signals them to release glucocorticoids, the "flight-fight" hormones, or "stress hormones," which include cortisol, adrenalin and norepinephrine.

Raised levels of these hormones have powerful effects on the body's cardiovascular system and brain chemistry. These hormone responses are needed during a real attack, but can be depleted by prolonged stress and trauma, thus lowering immunity and resilience and resulting in illness, fatigue, emotional imbalance and learned helplessness.

## 6 The body seeks homeostasis

The parasympathetic nervous system responds with other chemicals to attempt to offset the effects of this inrush of hormones (i.e. insulin is released to lower blood sugar, blood pressure and heart rate are brought down, etc).