

The anatomy of emotions

Different areas of your brain and body are stimulated by different emotions

Anterior cingulate cortex

This area is involved in assigning emotions to internal and external stimuli and is responsible for the vocalisations associated with our emotional states.

Posterior cingulate cortex

This region is responsible for the recall of emotional memories, and it is stimulated when we daydream or recall past experiences.

Parahippocampal gyrus

This area is responsible for storing emotional memories, and visual and auditory processing. It helps us interpret what we are feeling based on the context.

Hippocampus

The hippocampus is responsible for making memories. It can help us regulate our emotions by allowing us to compare events to similar past experiences.

Hypothalamus

This region regulates hormones and controls the autonomic nervous system in response to stimuli. It can trigger the release of insulin, increase heart rate or redirect blood flow, for example.

Amygdala

This small structure is responsible for detecting fear and preparing our bodies for an emergency. Stimulation of this area causes anxiety and defensive behaviour.

Septal nuclei

(not visible)

These structures (located near the hypothalamus) are linked with feelings of social connection. They are particularly active when we have positive feelings towards others, such as unconditional trust or empathy.

Centre of emotion

Your brain recognises external stimuli and generates a physical and emotional response. It can do this even when we are not consciously aware of the stimulus itself.

Physical responses

Our emotions can lead to changes in our bodies, such as the feeling of 'butterflies' in your stomach, your heart racing, and so on.

Mind the gap

The neurotransmitters diffuse across a gap known as the synaptic cleft to reach the next neuron via receptors (beige).

Chemical messengers

When a nerve impulse reaches a synapse, it cannot jump directly to the next neuron. Instead, it triggers the vesicles (larger pink spheres) to release neurotransmitters (small pink spheres).

Transmission

When the neurotransmitters bind to the receptors, they cause the neuron's ion channels to open, letting ions (small yellow spheres) flow in, triggering the next nerve impulse.

