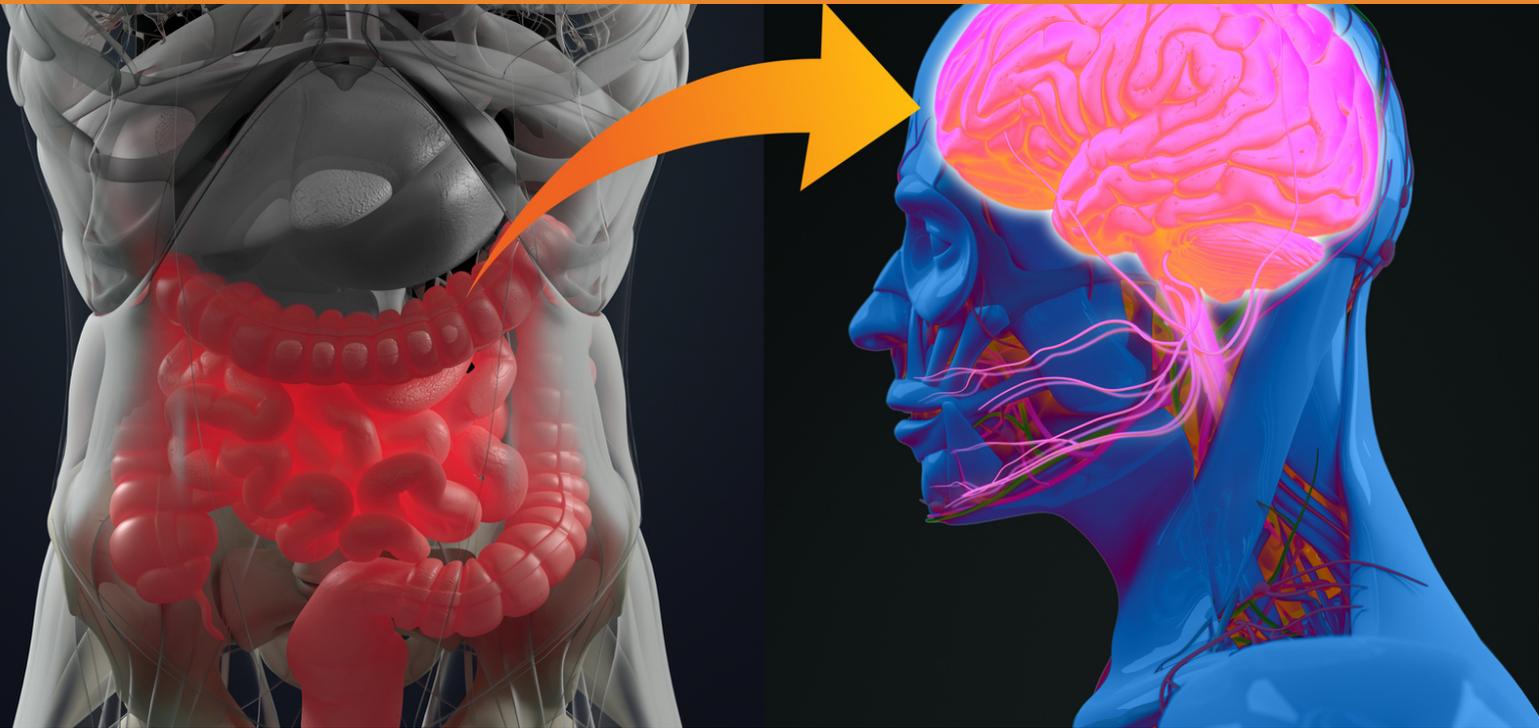


# Gut-Brain Axis

a bidirectional two-way transfer of information between the gut and the brain



## What is the Gut-Brain axis?

The gut and the brain communicate bi-directionally linking emotional and cognitive centres of the brain with peripheral intestinal functions which influence mood, cognition, and mental health. Interestingly, your gut contains 500 million neurons, which are connected to your brain through nerves in your nervous system, the vagus nerve - often linked to stress responses - being the largest. Our gut and brain are also connected through chemicals called neurotransmitters. Neurotransmitters produced in the brain control feelings and emotions. For example, the neurotransmitter serotonin contributes to feelings of happiness and also helps control your body's natural circadian rhythm. Many of these neurotransmitters are produced by your gut cells and the trillions of microbes living there. Many mental health disorders, such as anxiety, depression, and autism spectrum disorders have well-established links to functional gastro-intestinal disruptions, and alterations of the gut microbiome.

## How is the gut microbiome involved?

Research shows that the gut microbiota profoundly influences the gut-brain relationship (ie, mental state, emotional regulation, neuromuscular function, and regulation of the hypothalamic-pituitary-adrenal (HPA) axis known as the stress response). That the gut microbiome can influence processes such as these is a clear indication of how diet and nutrients can modulate the mind. The foods we eat are key to maintaining a healthy and functional gut, as well as providing nutrients to the microbes that populate it. In return, these microbes help guide the emotional and cognitive centres of the brain influencing both mental and physical wellbeing.

## What can disrupt the gut-brain axis?

A nutrient-poor diet can disrupt the composition of gut bacteria and the digestion, absorption and transportation of nutrients to the brain.

