

Stress and the Microbiome



Stress is mental or emotional strain which is caused by negative or demanding circumstances.

95% of our microbiota is located in the gastro-intestinal tract.

A diverse microbiota is important for gut health, brain function and for fine tuning the **stress** response

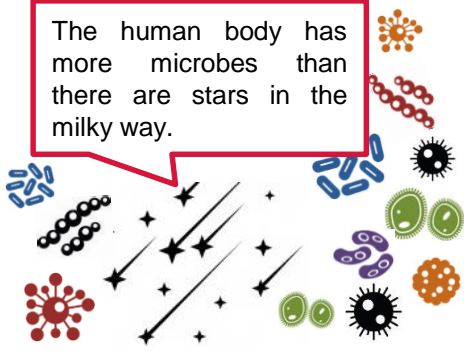
Each individual has a unique gut microbiota, as personal as a fingerprint.

The human body has more microbes than there are stars in the milky way.

Stress hormones can reduce the variety of bacteria in the gut.

The brain-gut axis is a two-way communication system through which our gut microbes can signal to the brain and vice-versa. The feeling of “butterflies in your tummy” is a good example of your brain-gut axis in action!

The **microbiome** is formed by a community of microorganisms living in and on the human body




Brain-Gut-Microbiota Axis Research at APC Microbiome Ireland

The APC Brain-Gut-Microbiota Axis group seeks to examine the communication between the brain and the gut and how it can be influenced by the gastrointestinal microbiota.

 **Diet and Exercise** play an important role in maintaining a healthy microbiota. They can be used to modulate the composition and metabolism of the gut microbiota which can improve long-term health status.

 **Prebiotics** promote the growth of beneficial microorganisms in the intestines, while **probiotics** are live bacteria that have a beneficial effect in the prevention and treatment of diseases.

 **Psychobiotics** include prebiotics, probiotics or any microbiome targeted intervention that supports brain health

 **Faecal Microbiota Transplantation** involves restoration of the colonic microflora by introducing healthy bacterial flora through infusion of stool obtained from a healthy donor under medical supervision.

Prenatal Stress can reduce diversity of the gut microbiome & affect the maternal transfer of microbes at birth

- Mode of birth
 - Breast feeding vs formula feed
 - Antibiotic use
- All shape the developing infant gut microbiome

In the lab, we have shown that symptoms of depression can be transferred to rats via a depression-associated gut microbiome

Exercise promotes microbiome resilience

A diverse diet can promote a diverse microbiota that is more resilient to threats like stress



Assembly and increasing diversity