What is the gut microbiome?

KS2 KS3 Ages 7-14 ⏰ 4 min read

Right now, there are roughly 38 trillion microorganisms living in your gut — bacteria, viruses, fungi, and other tiny creatures. That's more than the number of human cells in your entire body. Together, they form your gut microbiome, and scientists have only recently begun to understand how important they are.

What do they actually do?

Quite a lot. Your gut bacteria help digest food your body can't break down on its own — particularly fibre, which they ferment into short-chain fatty acids that feed your gut lining. They train your immune system, helping it tell the difference between harmful invaders and harmless substances. They produce vitamins, including B12 and K2. And they communicate with your brain via the vagus nerve — a direct line between your gut and your head — which is why gut health is increasingly linked to mood and mental health.

🌱 Think of your gut like a garden. You're the gardener, and what you eat is what you use to tend it. Feed it plenty of diverse plants (fibre, vegetables, fermented foods) and a rich ecosystem of helpful bacteria thrives. Eat mostly processed food and sugar, and the garden becomes a monoculture — less diverse, less resilient, and more prone to being taken over by unhelpful species.

How does it affect your health?

Research has linked a disrupted microbiome (called dysbiosis) to an enormous range of conditions: inflammatory bowel disease, type 2 diabetes, obesity, depression, anxiety, autoimmune conditions, and even some cancers. The connections are complex and the science is still developing — causation is hard to prove — but the associations are too consistent to ignore.

What affects it?

Diet is the biggest factor. A diverse diet rich in plants, fibre, and fermented foods (yoghurt, kefir, kimchi) supports a diverse microbiome. Antibiotics can dramatically disrupt it — they kill harmful bacteria, but also knock out beneficial ones. Other

factors include stress, sleep, exercise, whether you were born vaginally or by caesarean, and whether you were breastfed as a baby. Your microbiome is partly inherited and partly built through life experience.

Can you "fix" it?

You can certainly influence it. Eating more fibre and fermented foods, reducing ultra-processed food, and avoiding unnecessary antibiotics all help. Probiotic supplements have a more mixed evidence base — some help in specific conditions, but the effects are often modest and temporary. The gut microbiome is extraordinarily complex; the idea that you can "reset" it with a supplement is probably too good to be true. Consistent diet and lifestyle changes are what genuinely move the needle.