

Is this the greatest collaboration of all time?

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Marie and Pierre Curie. Ennio Morricone and Sergio Leone. Queen and David Bowie. Unarguably, these are some of the greatest collaborations of our times. They have shaped our cultural and scientific landscapes. But what happens when humans and other species collaborate?

The first step in my exploration was to define what constitutes a collaboration. This took me down a wild and meandering path, one which I now invite you to join me on. It goes deep into the world of philosophy, past the springs of existence, the pillars of the self, and the labyrinths of logic. That said, there are many ways to interpret this subject, so read on, and then get in touch with your own interpretations.

WHAT IS A COLLABORATION?

'A collaboration is a piece of work that has been produced as the result of

groups working together', the Collins English dictionary tells us, in more word salad than most of us can consume.

The definition doesn't mention this explicitly, but a collaboration implies that the end result is mutually beneficial. Moreover, it implies that the participating groups are doing so with consent or, at the very least, were not coerced.

We might be hard-pressed to call the domestication of animals or the practice of agriculture a collaboration between humans and other species. However, there are plenty of examples of humans and other species collaborating: we have

a relationship with the bee, which pollinates the flowers and fruit we grow (they get the sweet, sweet nectar and we get the fruit). In some fishing communities, dolphins herd fish toward fishermen (resulting in a better catch for both groups). We have a relationship with the gut microbiome, which can flag up pathogenic organisms for the human immune system to tackle (they get a stable habitat and we have a better chance of survival).

The gut microbiome is something we have been increasingly hearing about in news related to healthcare, medicine, and wellness. It is that



complex ecosystem of bacteria, fungi, viruses, and archaea (single-celled organisms that sit somewhere between bacteria and eukaryotes) found in our gut. You can see more about it in the infographic we have created in the following pages. The gut microbiome is linked to anything and everything, from diabetes to our immune system and mental health. I suspected this could be a particularly fantastic example of human/other species collaborations.

WE ARE A COLLABORATION

Our relationship with the gut goes beyond this. We are not just in a collaboration with the gut microbiome. ‘We *are* the collaboration,’ as Dr Niki Young of the UM’s Department of Philosophy explains. ‘We are an ecosystem of mutualistic relations between human cells and microbial

allies.’ Without the gut microbiome, there would be no us. You can read more about this in the second part of this article by Inês Ventura.

It might sound strange to call ourselves a collaboration. That is because we understand ourselves by setting clear boundaries around us. This shapes how we relate to things and think about them. We think of ourselves as different and distinct from everything around us. As Plato put it, we ‘carve nature at its joints’, meaning that we find clean categories to organise and order the world around us. A lot of modern philosophy examines this critically, arguing that these distinctions are not fixed or inherent.

Take this outdated example, which used to be really popular: humans are the only animals that have complex language. Since then, it

has been shown that chimpanzees, dolphins, whales, and crows all have complex communication patterns. It shows that definitions based on categorical distinctions can collapse under scrutiny.

So the ground for reevaluating what we – humans – are, has been laid. We are the collaboration of a collective of beings. We are a fantastic, intricate, and essential collaboration.

But are we the greatest collaboration of all time? That is for you to decide. 

Further Reading

Young, N. & Lanfranco, S. (2024). Rethinking Organismic Unity: Object-Oriented Ontology and the Human Microbiome. *Open Philosophy*, 7(1), 20240041. <https://doi.org/10.1515/opphil-2024-0041>

Meet your 100 trillion tiny roommates

Known collectively as the gut microbiome, they are the bacteria, viruses, archaea, and fungi found mainly in the gut. They are linked to immune, mental, and digestive health.

Your gut
microbiome
weighs 2kg



What else weighs 2kg?



Your brain

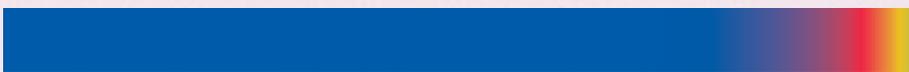


A 2L water bottle



A chihuahua

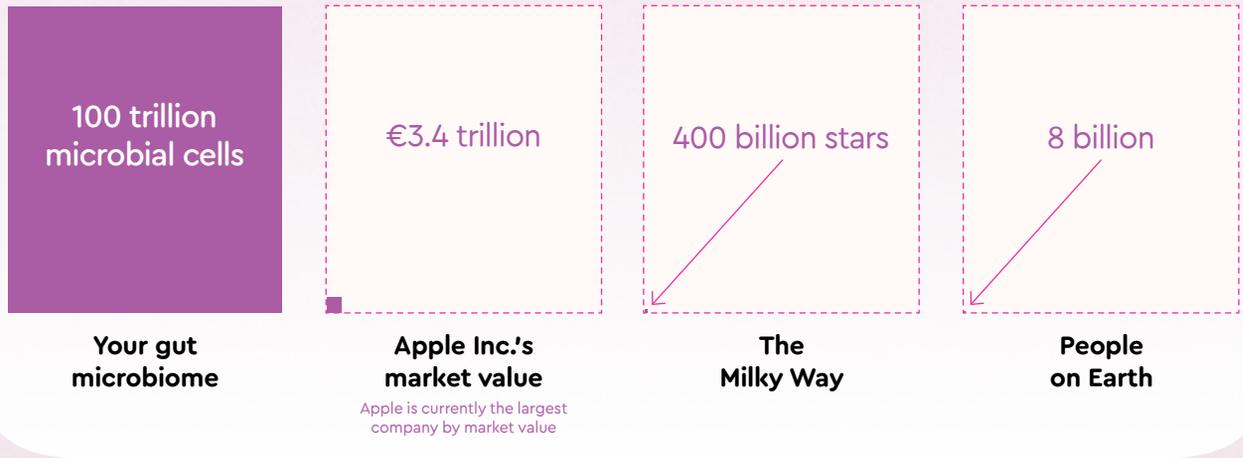
The gut microbiome is made up of:



Exact numbers will vary as gut microbiomes differ massively over one's lifetime and between people

- ~93% **bacteria**
- ~6% **viruses**
- <1% **archaea**
- <1% **fungi**

How large is the gut microbiome? • 1 trillion = 1,000,000,000,000 = 1×10^{12}



An incomplete list of genera and groups in the gut



Bacteria: Bifidobacterium, Clostridium, Escherichia, Eubacterium, Faecalibacterium, Lactobacillus, Peptococcus, Peptostreptococcus, Ruminococcus



Viruses: Adenoviruses, Caudovirales, Microviridae, Herpesviruses, Picobirnaviruses



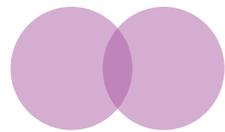
Archaea: Aspergillus, Bullera, Candida, Galactomyces, Pleospora, Rhodotorula



Fungi: Methanobrevibacter and many more which remain unknown



Identical twins only share 30% of their gut microbiome



Did you know there are other microbiomes? Here's how they compare to each other:

Depends on diet, location, cleanliness, and lots more

The human microbiomes pale in comparison to the Earth's microbiome i.e. soil

