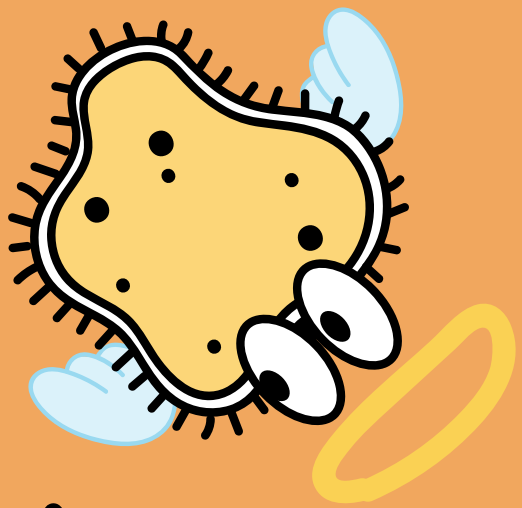
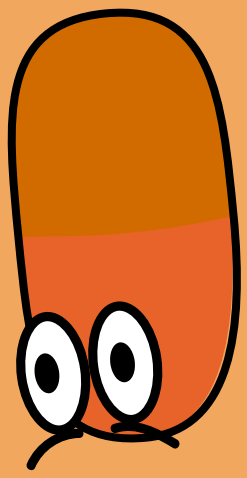
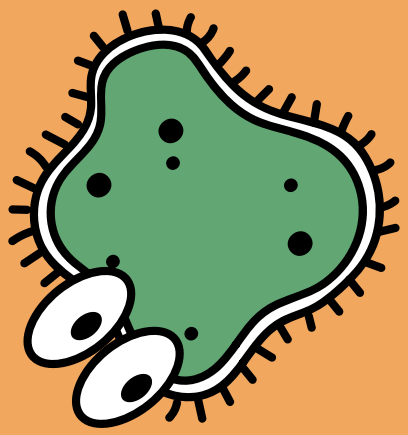
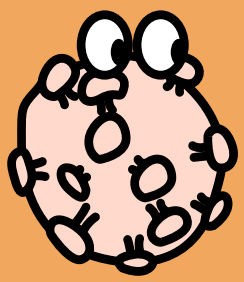
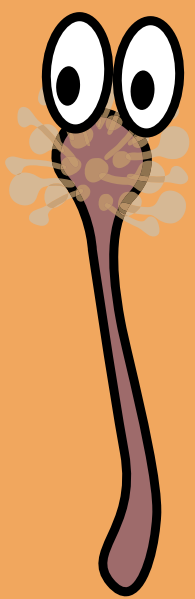
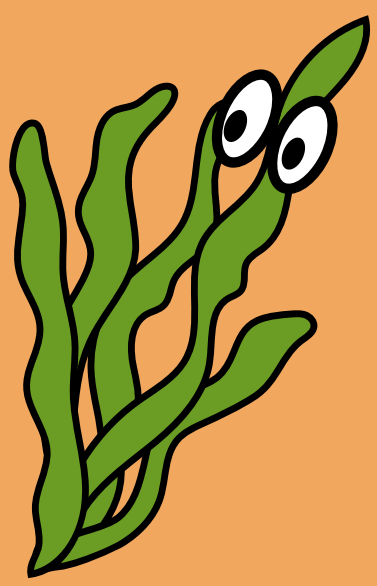




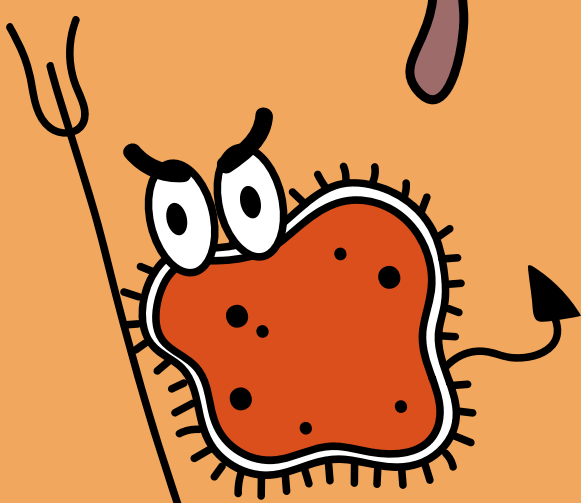

COMMON MYTHS ABOUT MICROBES



AUTHOR: SOMDATTA KARAK

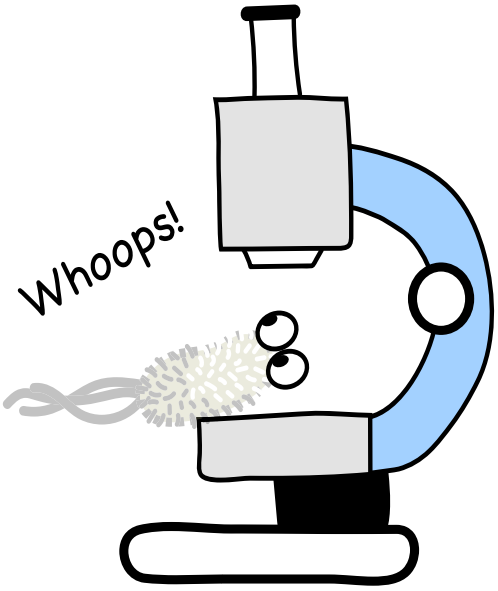
Are bacteria and viruses very different? Are we at war with microbes? Are all microbes evolving ways to infect and kill us? Too tiny to be seen, microbes seem to lead mysterious lives. Let's explore some common myths around them.



MYTH 1

What we can't see doesn't exist.

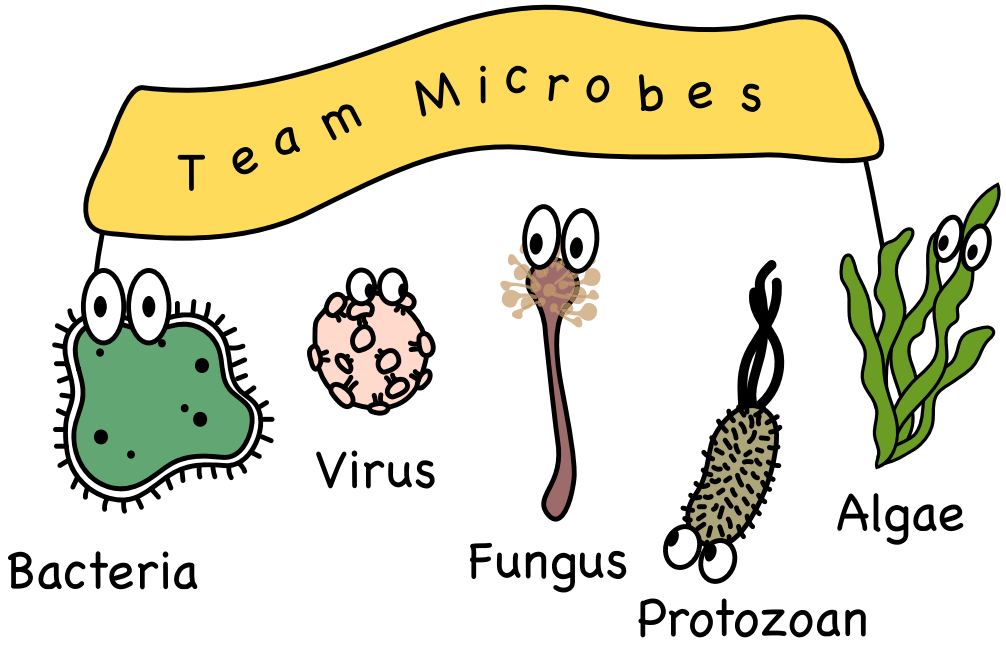


FACT

While microbes can't be seen with the naked eye, they are visible under microscopes. Depending on how small a microbe is, you may need a light/ electron microscope to 'see' it.

MYTH 2

Microbes are microbes. They are all one.

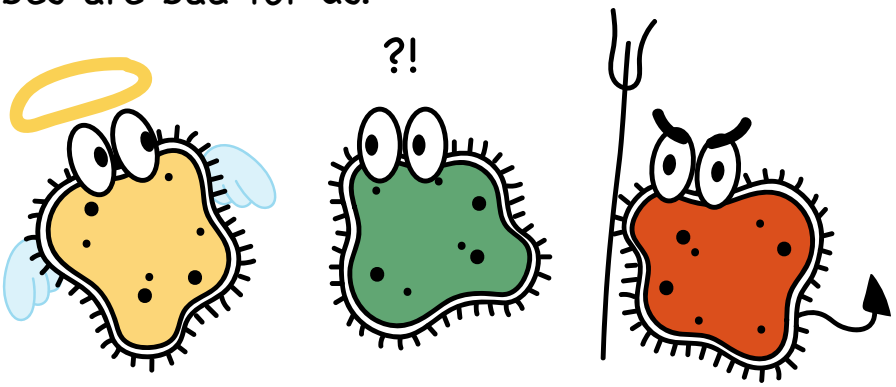


FACT

Microbes come in different shapes and sizes. We group them as bacteria, viruses, protozoa, fungi, and algae (although some fungi and algae are too large to be called microbes).

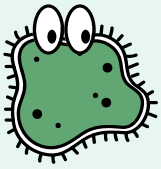
MYTH 3

All microbes are bad for us.



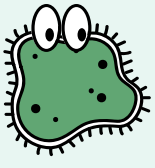
FACT

Calling microbes 'good' or 'bad' does not do justice to the many ways in which they interact with us, some of which we are just beginning to understand. For example, microbes like the *Lactobacillus helveticus* in our gut help regulate our mood and metabolise food. We need some microbes (like rhizobia and mycorrhizae) to keep soil fertile enough to grow food, and others to prepare yoghurt, bread, and idlis.



Do you know the names of the microbes that help us prepare yogurt, bread, and idlis?

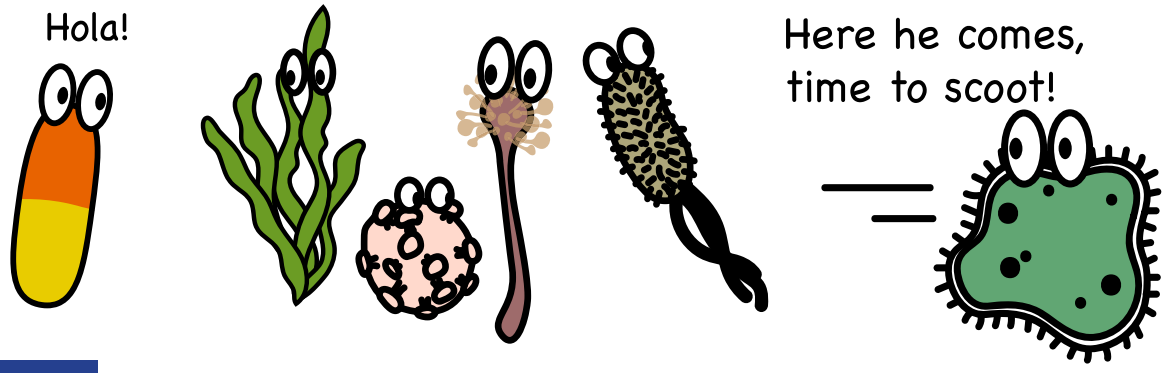
Some, like the cold virus in humans, always cause disease. Others cause disease under specific conditions. For example, *Escherichia coli* is helpful in our gut, but can cause a lot of pain in the urinary tract. Some disease-causing microbes help protect food crops from insects and weeds. For example, the Tussock moth virus infects and kills Tussock moth caterpillars that would otherwise feed on potato, tea, and castor plants. Also, many microbes seem neutral to us — we haven't found them helpful or harmful yet.



Would you call *Escherichia coli* good, bad, or both?

MYTH 4

The same drugs can kill all microbes.

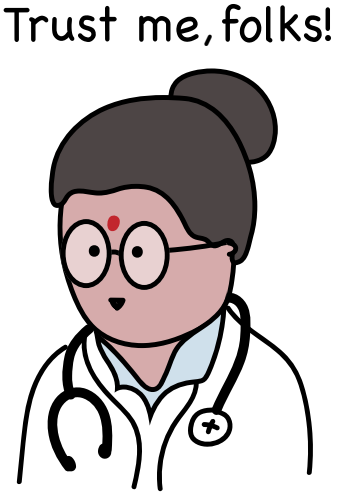


FACT

No, they can't. For example, antibiotics are a class of drugs that kill bacteria, but not viruses. Even with bacteria, different antibiotics act in different ways. Some antibiotics can only kill bacteria from certain families, while others can kill bacteria from a wide range of families.

MYTH 5

I have a fever. I'll just take the pill that the doctor prescribed to my mother a week back.



FACT

A fever can have different causes — mostly infectious, but sometimes non-infectious. Only a doctor can help identify its specific cause. Even if it is the result of an infection, only take the medicine that the doctor prescribes for you now. Any left-over medicine from an earlier prescription for your mother (or you) might be for a different kind of microbe. For example, if your mother's fever a week back (or your own fever a month back) was because of a bacterial infection, the doctor may have prescribed an antibiotic. If the fever you have now is because of a virus, the antibiotic will not help you.

MYTH 6

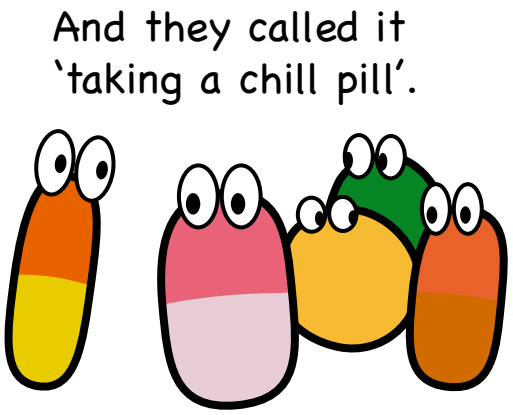
Even if my cold/ fever might be because of a viral infection, I'll take antibiotics just to be on the safe side.

FACT

Remember, antibiotics won't make a dent on the virus. But they can kill the helpful bacteria in your body, like those in your gut. So taking antibiotics may make you even more sick.

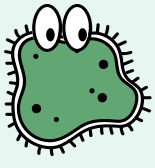
MYTH 6

Taking paracetamol kills the infection.



FACT

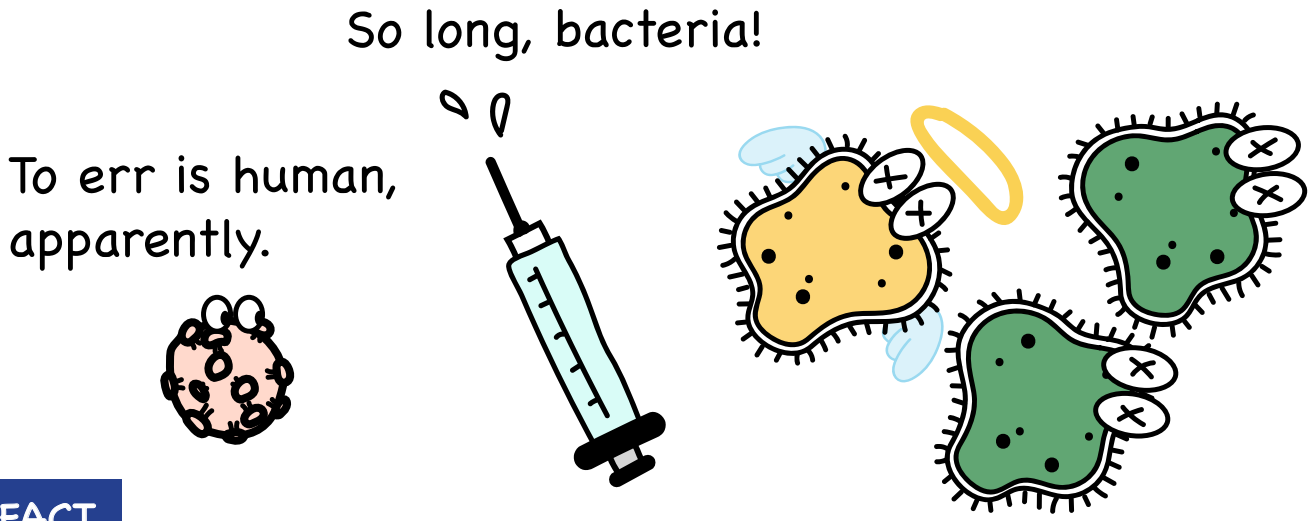
You take paracetamol (like Crocin) when you have a fever only because it helps bring down your body temperature. If the fever is due to an infection, the microbe causing it can be killed either by your immune system, or other drugs that your doctor prescribes.



Do you know how long it takes for a paracetamol tablet to bring down a fever?

MYTH 8

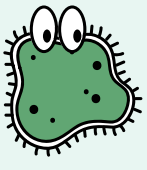
One vaccine can protect us against all kinds of infections.



FACT

A vaccine is made to provide long-term immunity to a specific microbe. It contains something resembling the microbe — a part of it, or a weakened form of it that cannot cause disease. When a vaccine is introduced to our body, our immune system is activated in a way that allows it to recognise, attack, and kill the disease-causing form of the microbe more effectively. So one vaccine cannot protect us from all kinds of infections.

How many vaccines do we need? We are only vaccinated against diseases that pose a serious threat to us. For example, those who were growing up in the 1960s were vaccinated against smallpox. This helped eradicate the disease, and we don't need to get vaccinated against it anymore. Today, we are looking for a vaccine that can prevent COVID-19.



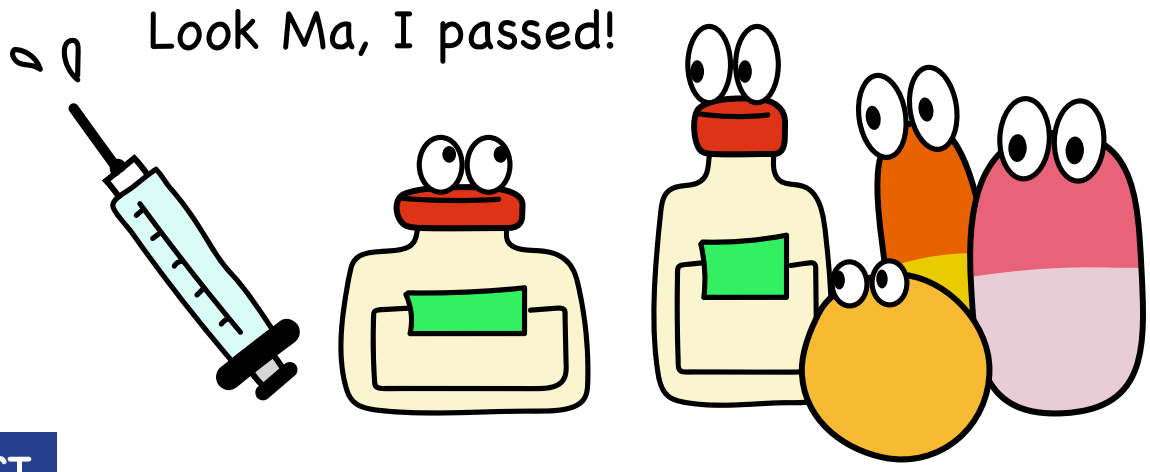
Do you know which microbes you are vaccinated against? What about your parents? And your grandparents?

Interestingly, some vaccines can activate mechanisms that provide relief in diseases other than the ones they were produced for.

For example, tests are being designed to see if Mw, a vaccine against leprosy, and MMR, a vaccine against measles, mumps and Rubella can help prevent or ease some of the worst symptoms of COVID-19. While these vaccines will not provide long-term immunity against the SARS-CoV-2 virus, they might work like drugs that make the disease easier to endure.

MYTH 9

Vaccines are dangerous.



FACT

Vaccines are tested rigorously (first on animals, and then on increasing batch sizes of human beings) for any adverse effects. Only after they are certified safe for use, are they made available to us. Some vaccines can have undesirable effects like fever, soreness, and muscle ache, but these are short-lived. Very rarely do people develop more serious complications.

ABOUT THE AUTHOR:

Somdatta Karak leads science communication and public outreach at CSIR-CCMB, Hyderabad. She is also part of the Superheroes against Superbugs initiative that aims to inform on antibiotic resistance in the country. She can be contacted at somdattakarak@ccmb.res.in.

Illustration & Design: Vidya Kamalesh

COMMON MYTHS ABOUT MICROBES

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