

Microbiology and its Scope

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EDITORIAL NOTE

The study of all living organisms that are too small to be seen with the naked eye is known as microbiology. Microbes are bacteria, archaea, viruses, fungus, prions, protozoa, and algae, which are all classified as bacteria. Nutrient cycling, biodegradation/biodeterioration, climate change, food spoilage, disease aetiology and control, and biotechnology all rely on these bacteria. Microbes' adaptability allows them to be used in a variety of applications, including the development of life-saving medications, the production of biofuels, the clean-up of pollutants, and the production/processing of food and beverages. Microorganisms and their activities are critical to almost every process on Earth. Microorganisms are important because they are present in, on, and around us, and they have an impact on every part of our life. Microbiologists study bacteria, and prominent microbiologists like have contributed to some of the most important discoveries that have shaped modern society such as Jenner, who developed a smallpox vaccine, Fleming, who discovered penicillin, Marshall, who discovered the relationship between *Helicobacter pylori* infection and stomach ulcers, and zur Hausen, who discovered the association between the papilloma virus and cervical cancer. Microbiology research has played an important role in achieving many of the world's contemporary objectives and difficulties, such as ensuring food, water, and energy security for a healthy people on a habitable planet. Microbes in the human body: The inner and outside surfaces of the human body, such as the skin, mouth, and intestines, are coated in millions of individual microorganisms that cause no harm to us. In fact, they aid in the prevention of infection by dangerous bacteria. The typical body flora is what they're called. The number of typical bacterial cells on the

human body is estimated to be in the hundreds of millions. This amount is ten times larger than the human body's 10 million cells. . Food poisoning is frequently in the headlines; therefore bacteria connected with our food have a poor reputation. While some microbes can make us sick and others can be a nuisance by spoiling our food, there would be no bread, cheese, beer, or chocolate if they didn't exist. Food microorganisms are always on the menu, whether they are friends or foes.

Microbes have a role in a variety of processes, including the carbon and nitrogen cycles, as well as the generation and consumption of greenhouse gases like carbon dioxide and methane. Microbes may have a variety of positive and negative temperature feedback responses, although the extent of these is unknown. Microbes live in different communities that interact with other creatures and the environment in complex ways, making predictions about their effects on climate change problematic. However, scientists are working to incorporate microbial activity into climate change models. What is certain is that human actions have contributed to microorganisms producing more greenhouse gases. Microbes are extremely important in our life. We couldn't survive without them, but they could survive without us. That's because decomposers, which include fungus and soil bacteria, break down dead plants and animals, as well as their waste products, into simpler molecules known as nutrients. Carbon dioxide, water, salt, and potassium, among other nutrients, are returned to the environment for use by other living creatures. Recycling is a cyclical process in which key materials are liberated and reused. Biochemical mechanisms cycle all vital elements such as carbon and nitrogen.

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