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Perspective

Major groups of microorganisms and its functions

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DESCRIPTION

A microorganism, often known as a microbe, is a microscopic organism. Microbiology is the study of microbes. Bacteria, fungus, archaea and protists are examples of microorganisms. Viruses and prions are not included in the definition of microorganisms because they are non-living.

Types of microorganisms

Bacteria, archaea, fungus (yeasts and moulds), algae, protozoa, and viruses are the major groups of microorganisms.

Bacteria: Bacterial studies were crucial in the development of microbiology. Techniques for microscopic analysis of materials, laboratory culturing (growth) of microbes, separating pure cultures from mixed-culture populations, and many other laboratory manipulations were developed in their laboratories. These techniques, which were originally developed to examine bacteria, have since been refined to research all microorganisms, resulting in the shift from bacteriology to microbiology.

Prokaryotes and eukaryotes are the two types of creatures that make up the microbial world; all bacteria are prokaryotes, meaning they are single-celled organisms without a membrane-bound nucleus. Instead of being contained in the nucleus, their DNA (cell genetic material) exists as a long, folded thread with no defined location within the cell.

Bacteria come in many different shapes, such as spheres, rods, and spirals. Individual cells are usually between 0.5 and 5 micrometres across.

Algae: Eukaryotic microorganisms have nuclei that are comparable to plant and animal cells in that their DNA is encased by a nuclear membrane. Algae, protozoa, and fungi are examples of eukaryotic microorganisms. Algae, unlike bacteria, are eukaryotes, meaning they have stiff cell walls, contain

the green pigment chlorophyll, and carry out photosynthesis. They are most commonly seen in wet soil and aquatic habitats. Colonies of algae exist, some of which are simple aggregations of single cells, while others have a variety of cell types with specific roles.

Fungi: Fungi are eukaryotic creatures with hard cell walls, similar to algae, and can be unicellular or multicellular. Some are minuscule, while others, such as mushrooms and bracket fungus that grow in soil or on moist wood, produce considerably larger structures. Fungi, unlike algae, lack chlorophyll and hence are unable to perform photosynthesis. Fungi do not consume food and instead rely on the environment to provide them with dissolved nutrients. Molds are multicellular fungi that produce filamentous, microscopic structures, whereas yeasts are unicellular fungi that produce filamentous, microscopic structures.

Molds have cylindrical cells that are connected end to end to produce threadlike filaments (hyphae) that can carry spores. Hyphae are microscopic. From spherical to egg-shaped to filamentous, unicellular yeasts exist in a variety of shapes and sizes. In products like wine and bread, yeasts are recognised for fermenting carbohydrates and producing alcohol and carbon dioxide.

Protozoa: Protozoa, often known as protozoans, are eukaryotic single-celled creatures. Some protozoa are elongated, whereas others are oval or spherical. Others take on different forms at different phases of their lives. Protozoa, like animal cells, lack cell walls, may migrate at some stages of their life cycle, and consume food particles; nevertheless, some phytoflagellate protozoa are plant like, getting energy through photosynthesis. When observed through a microscope, their quick, darting movement in a drop of pond water is visible.

Although amoebas (also known as amoebae) cannot swim, they can creep along surfaces by extending a piece of their

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body as a pseudopod and then enabling the rest of the cell to flow into it. Protozoa are found all over the world, especially in aquatic habitats.

Viruses: Microbiology includes viruses, which are assumed to reside on the margins of life. They occur in a variety of shapes and are extensively spread in nature, infecting animal cells, plant cells, and microbes. Virology is the field of research in which they are investigated. Once inside a cell, viruses have genes that allow them to take over the cell's energy and protein-synthesis processes. Viruses have an external form that transports viral nucleic acid from one host cell to another, in addition to their internal form. Viruses are just a central nucleic acid core surrounded by a protein shell called a capsid in this

infectious form.

Because it binds to receptors on cell surfaces, the capsid shields the genes outside the host cell and also functions as a vehicle for entry into another host cell. A virion is a structurally mature, infectious viral particle. Virions are typically 20 to 300 nanometres in size.

Lichens: Lichens are a type of symbiosis, or a relationship between two separate species that benefits both. A lichen is made up of a photosynthetic microbe (alga or cyanobacterium) that grows in close proximity to a fungus. Lichens have a vital ecological role, as they are capable of converting rock to soil, among other things.