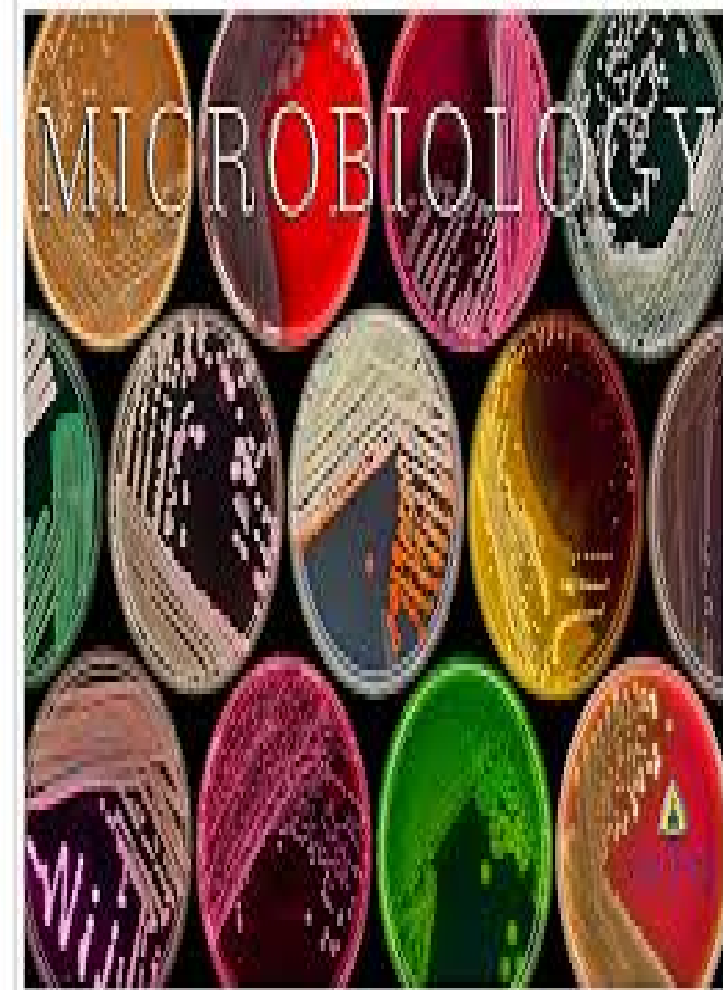


الاحياء المجهرية Microbiology



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Microbiology : the science of microbiology is the study of microorganisms and their activities . it is concerned with their form , structure , reproduction , physiology , metabolism , and identification , the distribution in nature their relationship each other and with other living organisms .



Living Cell Characteristics :

All biological system have the following :

- 1- The ability to reproduce
- 2- The ability to ingest food substances and metabolize the for energy and growth .
- 3- The ability to excrete waste product .
- 4- The ability to react to in their environment .
- 5- Susceptibility to mutation .

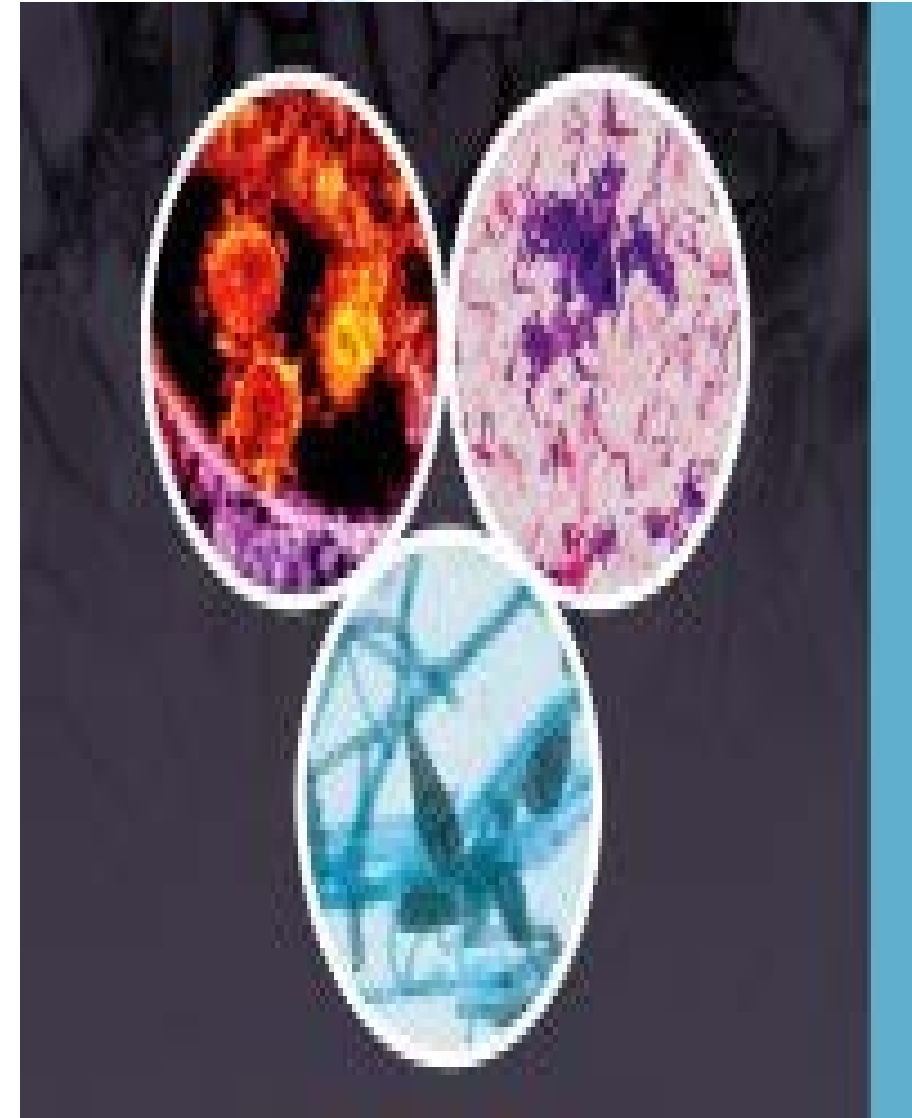


Microbial ecology: is the study of microbial relationship with other organisms and also with nonliving environments. These relationships, based on interactive uses of resources, have effects extending to the global scale. The term microbial ecology is now used in a general way to describe the presence and distributions of microorganisms. Microbial ecology is the the study of the behavior and activities of microorganisms in their natural environments



Medical microbiology

A medical microbiologist studies the characteristics of pathogens, their modes of transmission, mechanisms of infection and growth in the human body and causing disease. There are four kinds of microorganisms that cause infectious disease: bacteria, fungi, parasites and viruses.

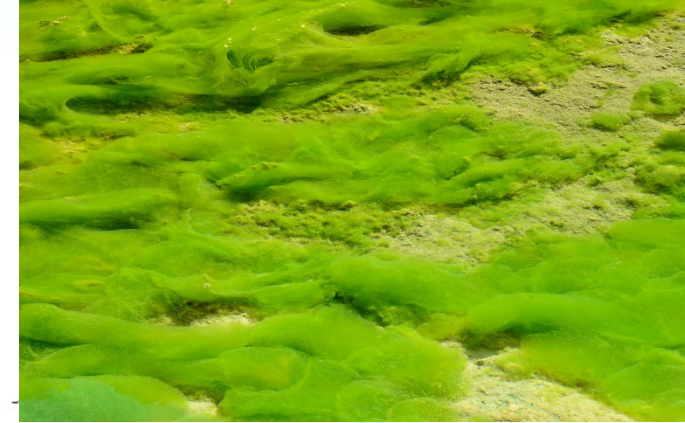


Classification of microorganism :

- 1- Eukaryotic Organisms : ex (algae , fungi , protozoa)
- 2- Prokaryotic Organisms : ex (bacteria , blue – green algae , viruses)

Group of microorganisms :

- 1- **Bacteria** : Bacteria are prokaryotic microorganisms, and their DNA is not contained within a separate nucleus as in eukaryotic cells. They are approximately 0.1–10.0 μm in size , exist in various shapes, including spheres (cocci), curves, spirals and rods (bacilli) . These characteristic shapes are used to classify and identify.



2- **Viruses** : is a small infectious agent that replicates only inside the living cells of other organisms. Viruses can infect all types of life forms, from animals and plants to bacteria and archaea. Most viruses are too small to be seen directly with an optical microscope. Virus particles (known as virions) consist of two or three parts: i) the genetic material made from either DNA or RNA, long molecules that carry genetic information; ii) a protein coat that protects these genes; and in some cases iii) an envelope of lipids that surrounds the protein coat when they are outside a cell. The shapes of viruses range from simple helical and icosahedral forms to more complex structures.

3- **Alage** :simple plants , most unicellular , contain chlorophyll found in aquatic environment or damp soil .

4- **Fungi** : Chemoheterotrophic; unicellular or multicellular; cell walls of chitin, develop from spores or hyphal fragments, fungi divided in to molds and yeasts, mushrooms . Parasites or decomposers. Fungi contain no chlorophyll and cannot synthesize food. Instead they secrete enzymes that digest food material outside the organisms.

5- **Protozoa**: asingle cell animal , classify on the base of morphological , nutritional and physiological characteristics , cause disease for human and animal .

- 6- **Mycoplasma:** refers to a genus of bacteria that lack a cell wall.
- 7- **Rickettsia** is a genus of non-motile, Gram-negative, non sporeforming, Being obligate intracellular parasites.

Thank You

Questions?

Comments and opinions would be appreciated.