

Introduction

Microbiology: the science of microorganisms.

Microorganisms: any organism too small to be visible to the naked eye. Microorganisms include bacteria, some fungi, mycoplasma, protozoa, rickettsiae and viruses.

Medical Microbiology is concerned mainly with the isolation and identification of the microorganisms that cause disease.

Pathogenic microorganisms are divided into four major groups:

1. Viruses

- are not cells and are not visible with the light microscope.
- are obligate intracellular parasites that depend entirely upon the host cell's synthetic machinery for reproduction.
- contain only one type of nucleic acid, either DNA or RNA, as genetic material.

2. Bacteria

- are prokaryotic cells (they lack a true cell nucleus).
- unlike viruses, bacteria possess both DNA and RNA.
- reproduce by binary fission.
- may be normal flora or may be pathogenic in humans.

3. Fungi

- are eukaryotic cells (true nucleus). Their genetic material is separated from the cytoplasm by a nuclear membrane.
- may be monomorphic, existing as single-celled yeast or multicellular, filamentous mold.
- may be dimorphic, existing as yeast or molds, depending on temperature and nutrition.
- have both asexual and sexual reproduction capabilities.
- most pathogenic fungi exist in nature as environmental saprophytes.

4. Parasite

- is a general term often used in a narrow sense to refer to a variety of protozoan and multicellular eukaryotic organisms capable of causing disease.

- many parasites undergo complex life cycles that may involve several host species, including humans.

Prokaryotic: having no nuclear membrane

Eukaryotic: characterized by a discrete nucleus with a membrane, and other organelles.