

Introduction to Microbiology

LO: understand the importance of microbiology to humans

What is Microbiology?

- Study of organisms that are too small to be seen with the naked eye
- You need a microscope to view them

Microbiology is a big subject and covers a wide range of content such as:

- Bacteriology- study of bacteria
- Mycology- study of fungi
- Protozoology- study of protozoans
- Virology- study of viruses
- Phycology- study of algae

3 main types of microbes:

1. Prokaryotes- don't have a nucleus and membrane bound organelles e.g. endoplasmic reticulum, Golgi apparatus, mitochondria, chloroplast, nucleus
2. Eukaryotes- has a nucleus and membrane bound organelles e.g. endoplasmic reticulum, Golgi apparatus, mitochondria, chloroplast, nucleus
3. Non-living entities- Infect a range of other organisms and reproduce in a range of organisms e.g. humans, animals, plants and other microbes e.g. fungi, bacteria, protozoa

Without microorganisms, life would not exist

Earth is about 4.6 billion years old.

Microorganisms are the oldest form of life; 1st life (bacteria) ~ 3.8 billion years ago →

For 2 billion years the atmosphere was anoxic (no oxygen)→

This meant there was anaerobic metabolism (*microbes are methanogens so used methanogenesis - Methanogenesis is a form of anaerobic respiration in microbes that uses carbon as an electron acceptor and results in the production of methane.*) →

The bacteria evolved to light harvesting organisms (purple bacteria) →

Then these purple bacteria evolved to cyanobacteria →

This created an oxygenated atmosphere →

2 billion years ago eukaryotic cells evolved (as oxygen levels rose) →

Thus life was *exclusively* microbial →