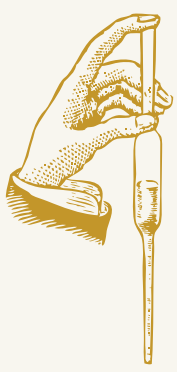
Cells as Components of a Community

When it comes to studying microbial ecology, it is important to take a step back and remember the role that each individual cell type plays in a broader community. We will begin by reviewing the three domains of life...

Bacteria

Bacterial cells are all single-celled organisms that do not have a nucleus or membrane-bound organelles. There are approximately 10 times as many bacterial cells as human cells in the human body.

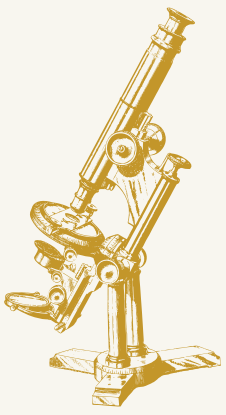


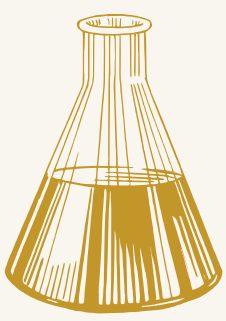
Archaea

Archaea are also single-celled, prokaryotic organisms without a nucleus, similar to bacteria. However, archaea are different because their cell walls do not contain peptidoglycan.

Eukarya

Eukaryotes are organisms whose cells have a nucleus enclosed within a nuclear envelope. Eukaryotes also have other membrane-bound organelles and sometimes a cell wall. These cells make up all plants, animals, fungus, and protozoa.





Community Structure

When it comes to the domains of life working together in a community, bacterial cells typically have the most influence on a community. This is due to their high taxonomic diversity and their ability to change environmental conditions.

Co-culture

It's important to understand how cells work as individual components in a larger co-cultured community in order to see what influences they have on their ecosystem. For example, in order to make advancements in medicine, it is important to understand how microbes work in the human gut microbial ecosystem.

Sources:
https://www.ncbi.nlm.nih.gov/books/NBK21593/
https://pubmed.ncbi.nlm.nih.gov/15253349/
https://microbiologysociety.org/why-microbiology-matters/what-is-microbiology/bacteria.html