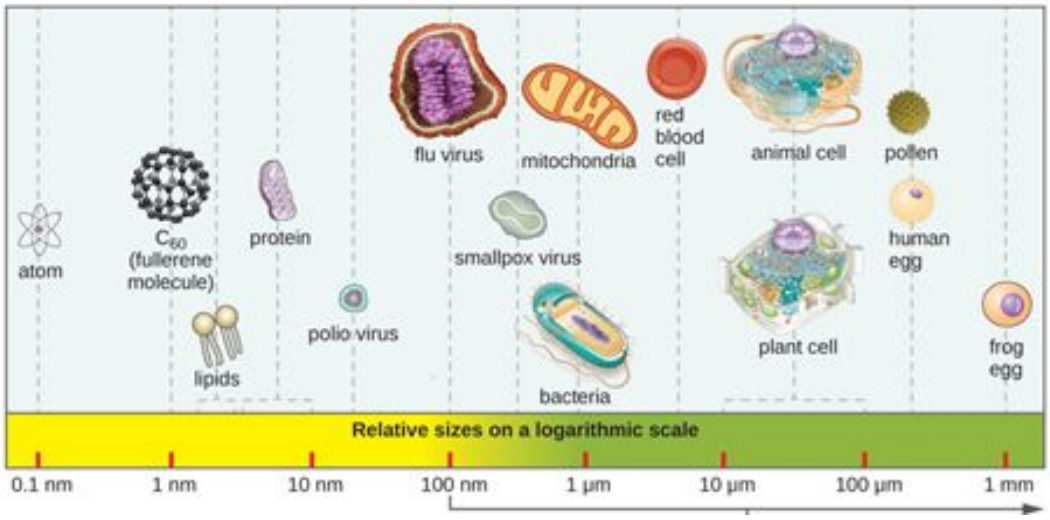
Cells: 10th Grade- Unit 1, Lesson 4

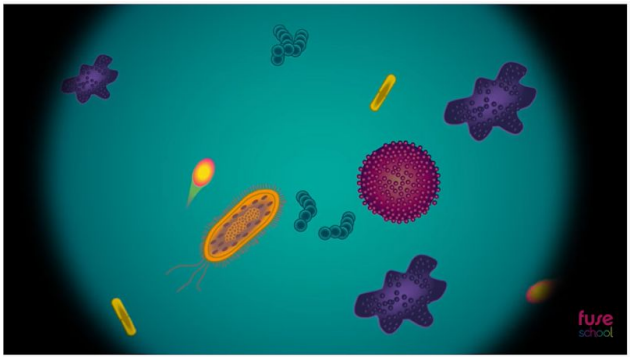
Science concept: Microbes

Microbes or Microorganisms as you may know it, exist everywhere. These tiny, single celled organisms make up almost 60% of the earth's living matter. In our last session we looked at the structure of plant and animal cells. Today we will look at the structure and importance of microbes.



Supplementary teaching video link

Here's a video talking about microorganisms and the ways in which they impact our lives:



https://youtu.be/YSitT0oOoyc

Concept reinforcement questions

1. The 6 groups of microorganisms are:
   _____,_____,_____,_____,
   _____,_____

2. Two positive impacts/applications of fungi are:_____,_____

3. What are 3 reasons why bacteria is important to our well being?

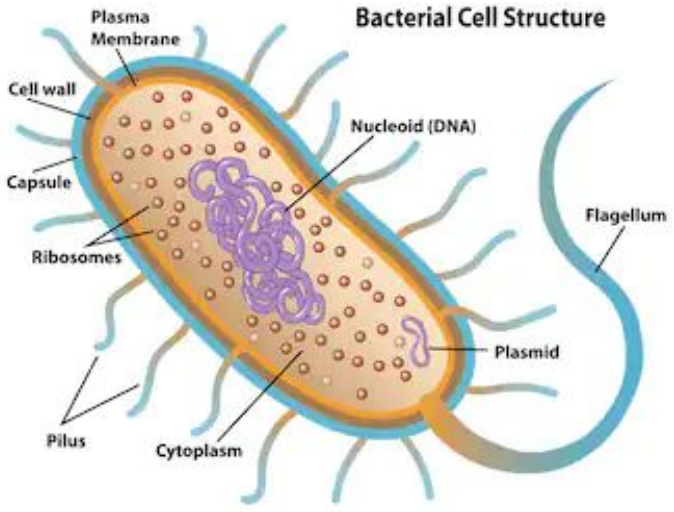
4. Which two microbes are especially important in the process of decomposition?

Answers:

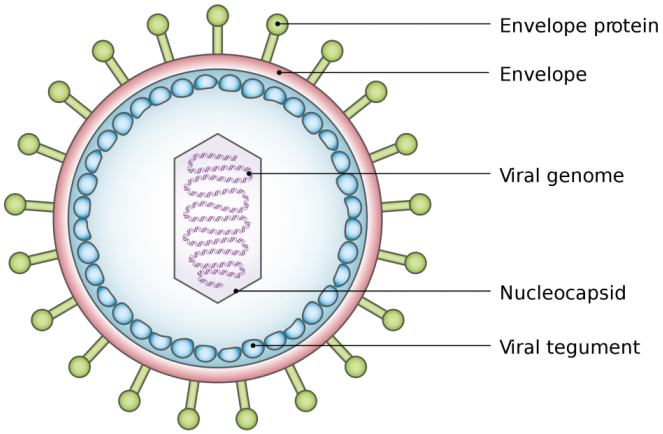
1. *Bacteria, fungi, viruses, protozoa, algae, archaea*
2. *Bread making and fermentation*
3. *They boost our immune system, Aid in digestion, aid in soil fertility, play an integral role in insulin production*
4. *Bacteria and fungi*

Additional reading

We should also look at the structure of a few of these microorganisms since they are quite different in many ways. Below are the structures of a bacterial fungal cell and virus.

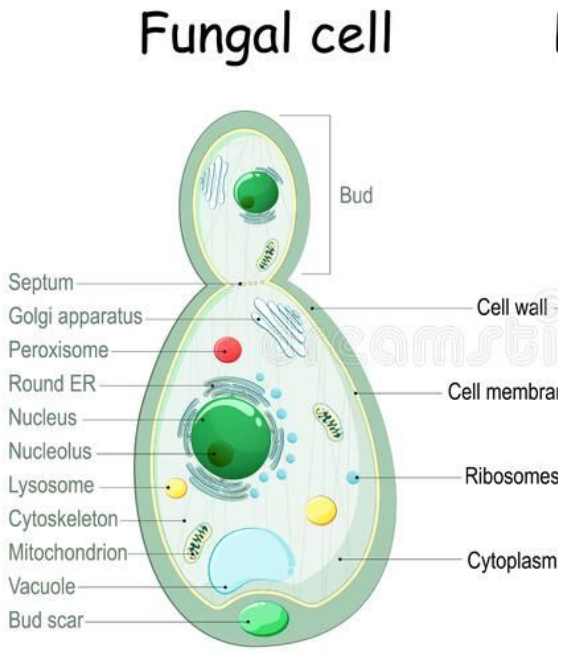


- Their cell wall is made up of peptidoglycan. They have a flagellum that facilitates locomotion.
- Bacteria are of different types depending on their shapes and sizes. For eg., spherical-shaped bacteria are known as cocci; rod-shaped bacteria are known as bacilli; spiral-shaped, spirilla.
- They reproduce through binary fission, transfer of genetic material through transformation, transduction and conjugation, and through sporulation.



Structure of a Virus

- They contain the core of nucleotides surrounded by a protein coat which could invade living cells.
- They are active inside host cells and reproduce inside them by infecting living cells.



- These can be unicellular or multicellular with the cell wall made of chitin.
- These are heterotrophic and cannot synthesise their own food.
- They comprise membrane-bound organelles.

Quick facts about microorganisms

- Bacteria contain no true nucleus

- Viruses are a connecting link between living and non-living.

- Viruses do not have cells.

- All the bacteria in our body collectively weigh more than 4 pounds.
- There are more bacteria in a person's mouth than the entire population of the world.
- New born babies do not have any bacteria on their body.

Supplementary concept reinforcement exercise

1. Follow this link for a worksheet compiled by the Ministry of Education Guyana:

https://education.gov.gy/web2/index.php/students-resources/secondary-school-resources/grade10/grade10-worksheets/grade-10-worksheets-integrated-science/2584-grade-10-integrated-science-week-2-lesson-2/file

2. With the help of the worksheet above and the information you learnt in today's lesson, try answering a few questions posted by the Ministry of Education as part of their secondary engagement program:

https://education.gov.gy/web2/index.php/students-resources/secondary-school-resources/grade10/grade10-worksheets/grade-10-worksheets-integrated-science/2585-grade-10-integrated-science-week-2-lesson-2-worksheet-1-and-answer-sheet/file

Scratch software

I hope you guys enjoyed today's session. Now it's time to have some fun. Create a scratch animation talking about the structure of bacteria, fungi and viruses. Also include the impact that each of these has on our lives, both positive and negative.

Here are some links that may be useful when creating your animation!

https://youtu.be/HBBSmkBwVXY

https://www.ilearn2.co.uk/uploads/8/0/8/9/80891968/scratch_tips_and_tricks.pdf