



Erasmus+

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Influence of microorganisms on human life and the environment

Microbiology

MICROORGANISMS



- ❑ very small organisms visible only under a microscope
- ❑ they are found everywhere in our surroundings
- ❑ they can also be found in the human body
- ❑ they can be harmful, but also useful for humans

BACTERIA

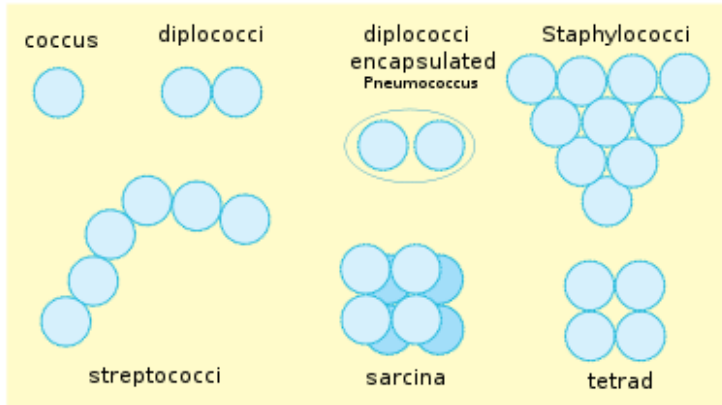


- ☐ The smallest unicellular organisms.
- ☐ They have simple structure - cell wall, cytoplasmic membrane, cytoplasm, hereditary information.
- ☐ They are different in shape.
- ☐ They live in different environments: soil, air, water, bodies of other organisms.
- ☐ They obtain nutrients the bodies of living organisms or by decomposing of death organisms.

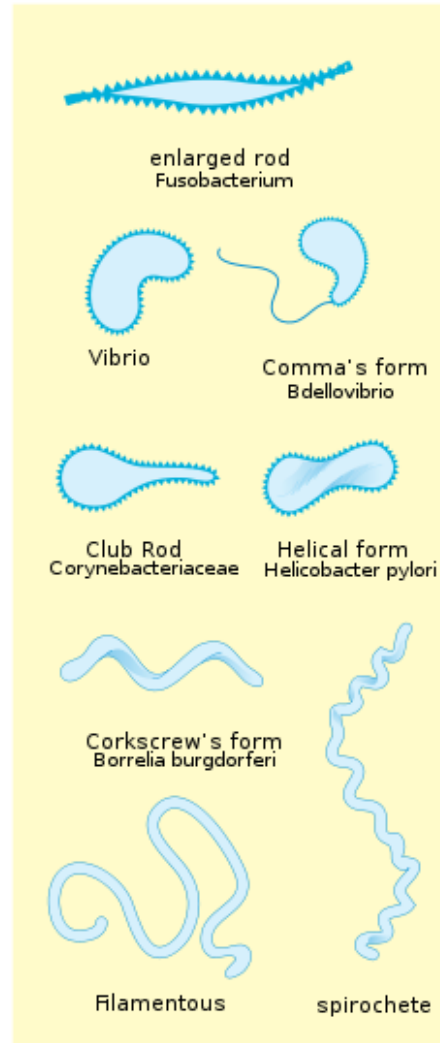
DIFFERENT SHAPES OF BACTERIA



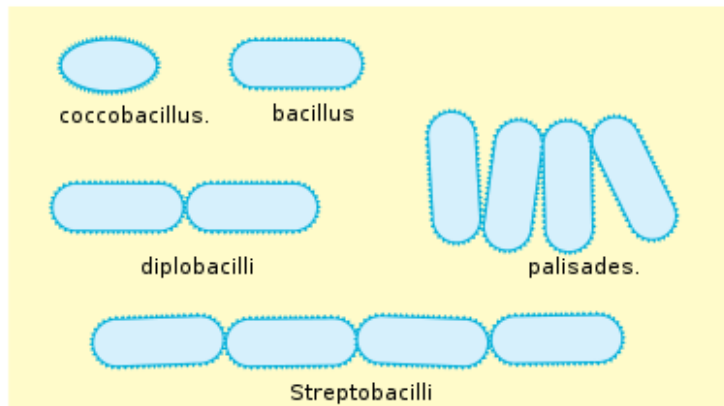
Cocci



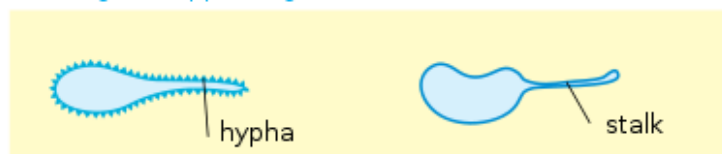
Others



Bacilli



Budding and appendaged bacteria



BACTERIA



Bacteria can be divided:

- ❑ **autotrophic** - they can produce organic compounds from inorganic substances by photosynthesis. The carbon source for these bacteria is carbon dioxide.
- ❑ **heterotrophic** - they do not know how to produce organic substances themselves, they get them from the bodies of living or dead plants and animals. Most bacteria are heterotrophic.



BACTERIA

Heterotrophic bacteria include:

- ☐ parasitic - they obtain nutrients from the bodies of living organisms. They cause various diseases.
- ☐ saprophytic - obtain organic matter from dying bodies.
- ☐ decomposable
- ☐ fermentation bacteria

DECOMPOSING BACTERIA



- ❑ they obtain nutrients by decomposing organic substances into inorganic substances.
- ❑ they are also found in the human body - for example, in the human intestine
- ❑ soil bacteria - decomposing the dead bodies of animals and plants and thus contribute to the formation of humus. They increase soil fertility.

FERMENTATION BACTERIA



- ❑ they obtain nutrients by decomposing organic substances
- ❑ they are used in the food industry, for example in the production of dairy products, vinegar, alcohol, sauerkraut, cucumbers, etc.
- ❑ fermentation bacteria also include lactic acid bacteria used in the production of dairy products - yogurt, kefir, cheese, cream, cottage cheese, etc.



NITROGEN FIXING BACTERIA

- ❑ are microorganisms that obtain nutrients from plants
- ❑ they live on the roots of legumes such as peas, beans, soybeans.
- ❑ they form small bumps on the plant roots - tubers.
- ❑ these bacteria bind nitrogen from the air and enrich the soil with nitrogenous substances.

PARASITIC BACTERIA

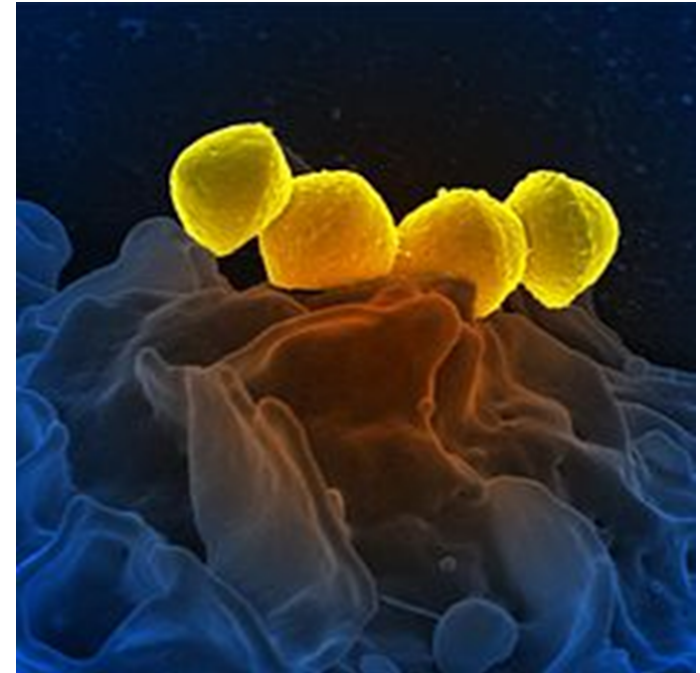


- ❑ microorganisms that obtain nutrients from living organisms
- ❑ parasitic bacteria often excrete toxic chemical waste (toxins) into the body of animals, which can cause very serious disease.
- ❑ parasitic bacteria have in the past caused epidemics of dangerous diseases such as plague, cholera, typhus, etc.

PARASITIC BACTERIA



- parasitic bacteria can enter the body of humans and other animals by inhalation, through injured skin, contaminated drinking water or spoiled food.
- diseases such as angina, otitis media, pneumonia, tetanus - they are treated with antibiotics



FUNGI



- ❑ they obtain nutrients from the environment they do not undergo photosynthesis because they do not contain green dye - therefore they do not know how to create organic substances

Fungi are divided into:

- ❑ **Saprophytic fungi** obtain organic matter from dead organisms. These include: molds (Head mold, Brush parrot)
- ❑ **Yeast** - beer, wine, bakery yeast
- ❑ **Some fungi with fruiting bodies** - pastries, toadstools
- ❑ **Parasitic fungi** obtain organic matter by parasitizing on the surface or inside plants, animals and humans.

FUNGI - MOLDS



- ❑ Molds generally thrive in humid and poorly ventilated areas (damp walls, food in plastic bags, etc.)
- ❑ The body of the mold is made up of fungi, they reproduce by spores that form in spores.
- ❑ They feed on the decomposition of organic matter.
- ❑ They produce toxins (toxic substances) that can cause disease if swallowed.
- ❑ Inhalation of spores causes diseases of the respiratory system, allergies and weakened immunity.
- ❑ At home we should fight against molds and eliminate them (properly ventilate, properly store food etc.)

USE OF MOLDS



□ some molds are used in the production of medicines (antibiotics), food (mold cheeses) and



YEASTS



- ❑ yeasts are single-celled fungal microorganisms
- ❑ they feed on the decomposition of organic compounds, especially sugars, releasing carbon dioxide
- ❑ they are used for sourdough dough, wine and beer production
- ❑ some species can also cause yeast disease

VIRUSES



- ❑ non-cellular organisms (their body has no cell)
- ❑ body structure: protein shell + hereditary information
- ❑ unable to live alone
- ❑ cause diseases - flu, jaundice, AIDS, smallpox, measles, polio, meningitis
- ❑ the most serious and widespread disease today is the COVID19

DISEASES AND IMUNITY



- ☐ the immune system is a complex defense mechanism that seeks out and then eliminates foreign substances that enter the body

Prevention of viral and bacterial diseases:

- ☐ vaccination
- ☐ good lifestyle
- ☐ enough sleep
- ☐ a diet rich in vitamins
- ☐ movement in the fresh air
- ☐ drinking fluids

PICTURES - USED SOURCES:



<https://oskole.detiamy.sk/clanok/mikroorganizmy-zijuce-s-clovekom-bakterie>

https://oskole.detiamy.sk/media/userfiles/image/Zofia/apr%C3%ADI%20-%202012/Pr%C3%ADrodoveda/Pr%C3%ADrodoveda%206%20-%20Mikroorganizmy%20%C5%BEij%C3%BAce%20s%20%C4%8Dlovekom_html_m7b87d69c.png

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