Structure of prokaryotic cells

What do you remember from GCSE?

Draw the structure of a bacterial cell in the space below:

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Some definitions:

Pathogen....................................................................................................................................

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Prokaryote..................................................................................................................................

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Eukaryote...................................................................................................................................

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Roles of structures found in a bacterial cell – name the following:

1. .......................................................

Prokaryotic cells are surrounded by a \*\*\*\*\* which gives support and protection to the cell. It contains a glycoprotein called murein. It is very strong, and stops bacteria from bursting when they absorb water. Antibiotics such as penicillin work by damaging this and therefore killing the bacteria.

## ..........................................................

The prokaryotic \*\*\*\*\* has a similar structure to the eukaryotic \*\*\*\*\*, but it does not contain cholesterol. It controls movement of substances into and out of the cell.

1. .......................................................

This is a tightly folded region of the cell membrane containing all the membrane bound proteins required for photosynthesis and respiration.

1. ......................................................

Many bacteria have a thick layer of jelly-like material surrounding them called a \*\*\*\*\*, which protects it from attack by viruses and antibodies.

## .....................................................

This is a water based fluid containing ribosomes, nutrients, ions, enzymes, waste products and storage granules.

## ....................................................

These are used for movement. They are long projections which rotate like propellers, pushing the bacteria along. Consist of microtubules arranged in a circle of nine pairs surrounding a central pair. The cholera bacterium has a single polar (at one end) \*\*\*\*\*.

## ..................................................

This is a single, large, circular molecule. It lies free in the cytoplasm as there is no nuclear membrane in prokaryotes.

## .................................................

Bacteria may also have small rings of DNA called \*\*\*\*\*, as well as the bacterial chromosome. They often carry genes for characteristics such as antibiotic resistance, and they can be passed from one bacterium to another. They are often used in genetic engineering, for transferring genes from one cell to another.

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| **Prokaryotic Cells** | **Eukaryotic cells** | |
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| DNA is linear and associated with proteins to form chromatin | | | ribosomes are large (80S) | |
| always unicellular | | | always has a cytoskeleton | |
| cell division is by binary fission | | | cell division is by mitosis or meiosis | |
| DNA is circular, without proteins | | | reproduction is asexual or sexual | |
| no cytoskeleton | | | no nucleus or any membrane-bound organelles | |
| larger cells (> 10 m) | | | reproduction is always asexual | |
| often multicellular | | | ribosomes are small (70S) | |
| always have nucleus and other membrane-bound organelles | | | small cells (< 5 m) | |

Structure of viruses

What do you remember from GCSE?

Draw the structure of a virus in the space below:

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Now find the structure of a virus (e.g. HIV, page 76). Make sure that your labelled diagram includes genetic material, capsid and attachment protein:

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Further reading and questions

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| Chapter 3.6  Complete summary questions  Article on prokaryotic cells <https://bigpictureeducation.com/all-small-things> |