

Cells:- Prokaryote and Eukaryote

Cells have evolved two different architectures:-

- Prokaryote “style”
- Eukaryote “style”

Prokaryote cells are smaller and simpler:-

- Commonly known as bacteria.
- 10-100 microns in size.
- Single-celled(unicellular).
- Filamentous (strings of single cells).

These are prokaryote

E. coli bacteria on the head of a steel pin.

Prokaryote cells are simply built (example: E. coli)

- Capsule: slimy outer coating.
- Cell wall: tougher middle layer.
- Cell membrane: delicate inner skin.
- Cytoplasm: inner liquid filling.
- DNA in one big loop.
- Pilli: for sticking to things.
- Flagella: for swimming.
- Ribosomes: for building proteins.

Prokaryote lifestyle

- Unicellular: all alone.
- Colony: forms a film.

- Filamentous: forms a chain of cells.

Prokaryote Feeding

- Photosynthetic: energy from sunlight.
- Disease-causing: feed on living things.
- Decomposers: feed on dead things

Eukaryotes are bigger and more complicated:-

1-Have organelles.

2-Have chromosomes.

3-Can be multicellular.

4-Include animal and plant cells.

Organelles are membrane-bound cell parts

-Mini “organs” that have unique structures and functions.

-Located in cytoplasm.

-Cell membrane.

-Delicate lipid and protein skin around cytoplasm.

-Found in all cells.

Nucleus

-A membrane-bound sac evolved to store the cell’s chromosomes(DNA).

-Has pores: holes.

Nucleolus

-Inside nucleus.

-Location of ribosome factory made or RNA.

-Mitochondrion.

- Makes the cell’s energy.

-The more energy the cell needs, the more mitochondria it has.

Ribosomes

-Build proteins from amino acids in cytoplasm

-May be free-floating.

-May be attached to ER made of RNA.

Endoplasmic reticulum

-May be smooth: builds lipids and carbohydrates.

-May be rough: stores proteins made by attached ribosomes.

Golgi Complex

-Takes in sacs of raw material from ER.

-Sends out sacs containing finished cell products.

Lysosomes

-Sacs filled with digestive enzymes.

-Digest worn out cell parts.

-Digest food absorbed by cell.

Centrioles

-Pair of bundled tubes.

-Organize cell division.

Cytoskeleton

-Made of microtubules.

-Found throughout cytoplasm.

-Gives shape to cell & moves organelles around inside.

Structures found in plant cells

Cell wall

- Very strong.
- Made of cellulose.
- Protects cell from rupturing.
- Glued to other cells next door.

Vacuole

- Huge water-filled sac.
- keeps cell pressurized
- Stores starch .

Chloroplasts

- Filled with chlorophyll.
- Turn solar energy into food energy.

Eukaryote cells can be multicellular

- The whole cell can be specialized for one job.
- Cells can work together as tissues.
- Tissues can work together as organs.

Advantages of each kind of cell architecture

Examples of specialized Eukaryote cells

- Liver cell: specialized to detoxify blood and store glucose as glycogen.
- Sperm cell: specialized to deliver DNA to egg cell

How do animal cells move?

- Some can crawl with pseudopods.
- Some can swim with a flagellum.
- Some can swim very fast with cilia.