DID YOU KNOW?

Some people were given credit for the discovery or naming of the parts and organelles of a eukaryotic cell. Look at the following timeline:

1833 – Robert Brown described the nucleus in detail using orchid as specimen

1857 – Albert von Kölliker described a structure in muscle cells that was later named bioblast by Richard Altmann in 1890 and mitochondria by Carl Benda in 1898

1883 – Andreas Franz Wilhelm Schimper identified chloroplasts

1883 – Edouard Van Beneden described a cellular structure which was named centrosome and centrioles by Theodor Boveri in 1888

1884 – Edward Strasbourg coined the term cytoplasm to describe the cell's central fluid

1897 – Camillo Golgi identified a stack of membranes with surrounding vesicles; in 1898, it was named after him as Golgi apparatus

1902 – Emilio Veratti carefully observed a network of membranes inside the cell which would later be named endoplasmic reticulum by Keith Porter in 1953

1903 – Nikolai Koltsov suggested that a tubular network determined the shape of cells; this would later be called cytoskeleton by Paul Wintrebert in 1931

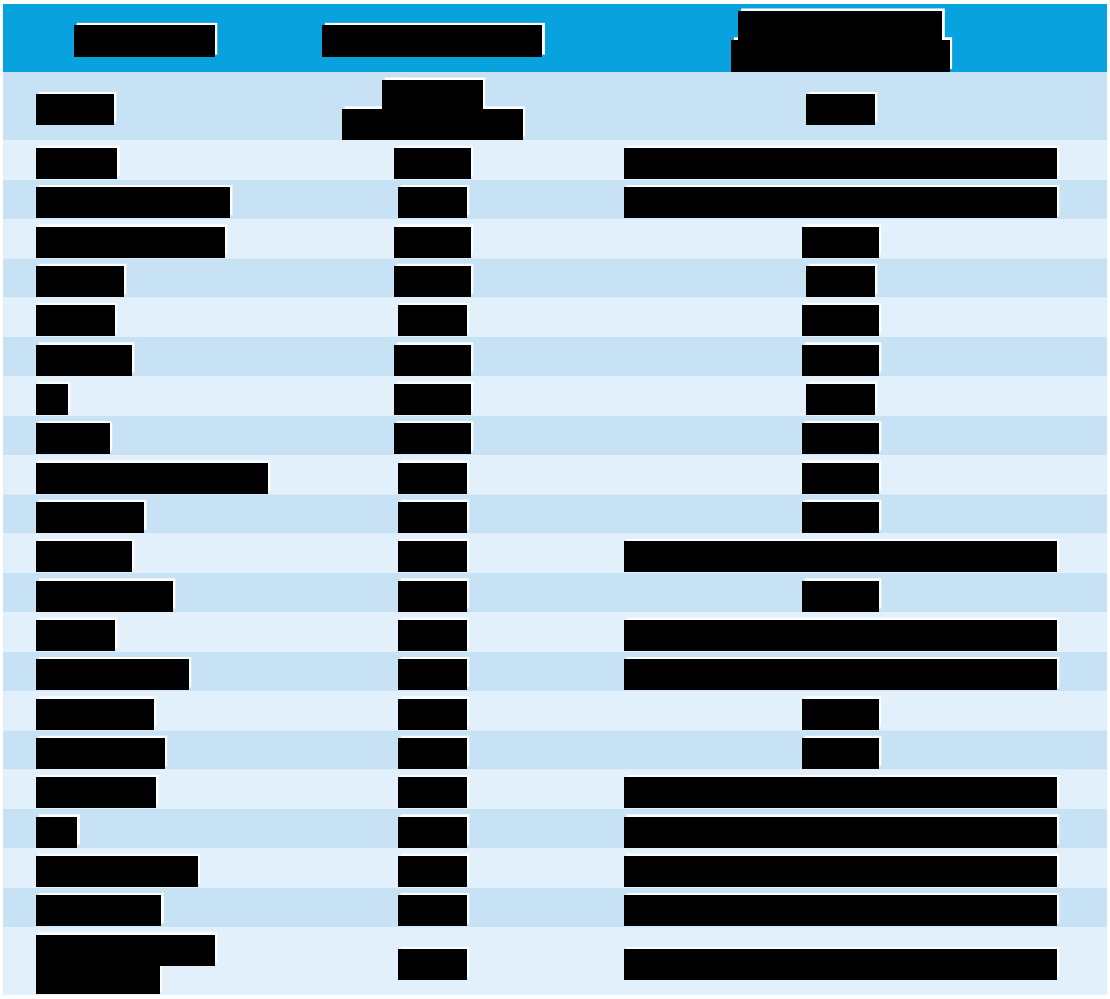
1949 – Christian de Duve described vesicles in cells with substances that can lyse or breakdown biomolecules, hence the name lysosomes

1952 – De Robertis and Franchi discovered microtubules in nerve cells

1968 – Edward David Korn discovered microfilament, while the group of Howard Holtzer discovered intermediate filaments

The following table summarizes the differences between prokaryotic and eukaryotic cells in terms of the parts/organelles present in them.

Table 1.1 Parts/Organelles in prokaryotic and eukaryotic cells



DID YOU KNOW?

Because of the difference in the component rRNAs and proteins of prokaryotic and eukaryotic cells, the drugs that you take when you are sick can target the ribosomes of the disease-causing bacteria but not your own ribosomes.

The antibiotic Chloramphenicol binds to a receptor site on the 50S subunit of the bacterial ribosome, inhibiting peptidyl transferase, the enzyme for peptide bond formation. Consequently, no protein synthesis occurs; therefore, the bacteria die and prevent further development of the infection.

Source: www.amrls.umn.edu

CHECK YOUR UNDERSTANDING

Follow the instructions.

1. Describe the structures and give the respective functions of the different parts of a prokaryotic cell. Discuss the significance of these parts considering their structures and respective functions.
2. Explain two ways by which medicinal drugs kill the bacteria that cause a particular disease.
3. Draw a Venn diagram on a piece of clean short bond paper showing the common as well as the unique parts and organelles of a prokaryotic cell, an animal cell, and a plant cell. Explain the diagram.

[redacted]

ENRICH YOUR LEARNING

Perform the following activities

1. Play a game called “Name that Organelle.” Form a group consisting of five members. You and your groupmates must draw the floor plan of a simple house and indicate the parts with functions that are analogous to those of at least five eukaryotic cell organelles.

   Your teacher will be the game master. In each round, he/she will ask a representative from each group to stand up and identify a part of the house that his/her group drew. Your teacher will ask the members of the other groups to guess the organelle analogous to that house part and discuss why so.

   The game ends after all groups have participated. The group that has the most number of correct answer wins.

[redacted]