The eukaryotic cell structure

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The Eukaryotic cell structure The Eukaryotic Cell Structure The two organelles chosen for the purpose of comparisonare Mitochondria and the ribosomes. Amongst these, the mitochondria are usually referred as the cell’s power houses while the ribosomes are referred as the cell’s protein manufacturing plants. The mitochondria are organelles that work similar to that of a digestive system that ingests foods which is then broken down and the cell’s energy is thus produced in the form of energy rich molecules like ATPs while the procedure of energy creation in a cell is referred as cellular respiration. Now majority of the steps involved in the cellular respiration occur within the mitochondrion and its shape helps in maximizing its efforts (Ingle, 1985).

The size of mitochondrion is very small while it is much greater than that of ribosomes that appear like small granules either floating within the cytosol or associated with the endoplasmic reticulum. The number of mitochondria within a cell varies depending upon the cell type and the amount of energy required to perform their work, as there may be numerous mitochondria within muscular cells than that in nerve cells. Mitochondria are very small organelles. Moreover new mitochondria can be developed within the cell in case if the energy requirement of the cell remains unfulfilled with the already functioning mitochondria. Ribosomes are single membrane organelles while mitochondria in contrast to other organelles possess double layers. The external membrane serves as the protective covering of the organelle while the inner one is found in folded form. The folding of the internal membrane enhances the surface area within mitochondria as it serves as the site where various chemical reactions occur. This heightened surface area permits the

mitochondria to perform as many tasks as possible. Such a similar strategy is adopted in the small intestines by microvilli. The folding of the mitochondria's internal membrane is referred as cristae while the fluid within the mitochondria is known as matrix (Simon, Reece and Dickey, 2009). Ribosomes on the other hand are composed of proteins and RNA and basically perform the task of assembling cellular proteins. Similar to the mitochondria, their number also varies within as cell depending upon the cell's production level of proteins. Ribosomes usually consist of two subunits amongst which one is larger while one is smaller in size. These subunits are prepared by the nucleolus and they connect together as a ribosome gets attached to mRNA (messenger Ribonucleic Acid) during the process of protein synthesis. Ribosomes, together with the tRNA (transfer Ribonucleic Acid) assist in the translation of protein-coding genes within the messenger Ribonucleic Acid into proteins.

Ribosomes generally form aggregates known as polyribosomes or polysomes during the process of protein synthesis. Depending upon their location, the proteins prepared by the ribosomes are utilized such as if they are prepared by the free ribosomes, they will be consumed within the cytosol while if they are prepared by the bound ribosomes, they will be transported to the outside of cell. Both organelles perform an intrinsically essential function within the cell and in case these functions are not performed, the cell will not be able to perform its function. Mitochondria being the powerhouse are required by the cell to perform all of its functions while ribosomes are required for manufacturing an important constituent of the body, proteins (Tager and Federation of European Biochemical Societies, 1989).

References

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