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by Report Report

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Cystic Fibrosis

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Cystic Fibrosis

Cystic fibrosis is a disease that affects the digestive system and the lungs and is caused by gene mutation. The disease is caused by the body's thick and sticky abnormal transmembrane protein that produces mucus which clogs the heart and blocks the pancreas. The CFTR protein function helps maintain the balance of water and salt in many surfaces such as the lungs, and therefore when the proteins are not working, chloride, which is contained in salt, is trapped in cells (Férec & Scotet, 2020). Without proper hydration of cellular surfaces, the mucus covering the cells becomes sticky and thick. The genes in the body are responsible for giving instructions to help in the production of proteins. The changes in genes of an individual may have effects on the protein production process. Due to the changes in genes, protein production may stop, or the proteins produced do not work. In cystic fibrosis, the mutation of the CFTR genes, which are responsible for the production of the CFTR proteins, then results in cystic fibrosis. The mutation of the CFTR proteins disrupts proteins' production and, therefore, results in mucus building up, which led to complications such as cystic fibrosis.

Proteins are made through a process known as protein synthesis, which occurs in two stages which are transcription and translation. Transcription is defined as the process of transfer of genes in DNA to mRNA in the nucleus. The steps involved in transcription are initiation, elongation, and termination. With the production of the mRNA then they carry the instructions to the ribosomes of the cytoplasm (Church et al., 2020). During the translation stage, tRNA provides the correct sequence of the amino acids in the ribosomes, where they bond with the amino acids to producing a polypeptide chain. The polypeptide bond then undergoes further processing to produce a finished protein.

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Instructor

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