

Student's Name

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Course

Date

How Diseases Affect the Structure and Function of Cells

How Diseases Affect the Structure of Cells

Diseases are caused by microbes, which act as disease agents. For example, viruses and bacteria are the most common disease agents affecting humans and animals. Disease agents may kill cells or impair their normal functioning. Disease agents may regenerate to overpower the body cells. Some may also release harmful chemicals that interrupt the normal functioning of the body cells, weakening the body's immunity.

Diseases interfere with the physical structure of body cells affected. Disease agents cause the body cells to have abnormal genome structures, making it difficult for them to perform their roles. According to a study that scholars from Penn's Center conducted, diseases cause cells to have abnormal chromatin arrangements ("Disease Causes Cells to Reorder Their DNA Incorrectly"). Disease agents disrupt the organization of cells' genome and create a new arrangement that does not support cell functions. After diseases reorganize the cell genome, the affected cells cannot repair their genome again. Through the study, it is clear that diseases can impair the physical structure of cells. Consequently, cells cannot respond appropriately to their environmental needs.

Disease agents may also cause cells to change shape, likely exposing a person to diseases such as tendinitis and cataracts (Douwes). The change in cell shape makes it easier for disease agents to regenerate and overpower the body. For example, disease agents such as viruses may

cause a body cell to stick to the neighboring cells, impairing the cell. Viruses and other disease agents give cells abnormal shapes to facilitate their operations without defense from responsible cells. Diseases may also complicate the movement of valuable substances, such as ions, across cells. Diseases interfere with the movement of information across cells, making it difficult for the cells to carry out their activities.

How Diseases Affect the Function of Cells

Diseases affect cell functions in different ways. For example, in sickle cell anemia, the red blood cells take the shape of a crescent moon, which hinders the circulation of enough oxygen in the body ("Sickle Cell Anemia"). The crescent-shaped red blood cell also sticks to the adjacent cells in blood vessels, making it hard for the cell to carry oxygen around the body. Normal red blood cells should have a round, flexible shape and can quickly move within the blood pathways. People with sickle cell anemia have red blood cells that resemble a crescent moon. The abnormal shape hinders the ability of the red blood cells to carry oxygen and move through the blood pathways.

Viruses regenerate after entering the host's body, where they take over and reorganize the cell. Once they reorganize cells, it becomes difficult for the cells to perform their roles because they cannot repair their selves. Healthy red blood cells stay for over 100 days before they are replaced. Some diseases kill red blood cells before they reach 120 days of their life span, creating a scarcity of the cells in the body. When a person lacks enough red blood cells in the body, there will be less circulation of oxygen, making a person feel tired most of the time. The short life span of the red blood cells creates a shortage of cells in the body, hindering them from performing their roles as expected.

Disease agents such as viruses make it difficult for cells to reproduce, reducing their number in the body. Instead of the cells reproducing, disease agents reproduce to overpower the body and limit the cells from performing their roles. When disease agents enter the body, they create an environment that favors their survival. For example, bacteria multiply so fast that they interfere with the routine roles of cells. Some diseases also release harmful chemicals that impair and destroy cells.

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