

Impact of light and electron microscope on cell theory essay sample



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With the development of the light microscope many scientists were able to view microscopic objects such as cells. The first to accomplish this was Robert Hooke when he used a light microscope to observe a thin slice of cork. Hooke observed that the cork was made of tiny structures of which he called cells. Hooke was in fact looking at the cell walls of dead plant cells that make up the cork. After Hooke, a Dutch scientist named Anton van Leeuwenhoek used the light microscope to observe living cells inside stagnant rain water. This then developed the cell theory in which all living things were made of cells, cells are the smallest units of life and that all cells come from pre-existing cells. Staining techniques later on enabled scientists to observe the cells organelles such as Robert Brown and his discovery of the cell nucleus.

The introduction of the electron microscope in the 1930s also had a large impact on the study of cells. An electron fires a beam of electrons at the target which is used to illuminate the specimen and enable viewing on a fluorescent screen or photographic plate. The electron microscope enabled scientists to view cells at a much larger magnification at a higher resolution. This enabled them to view many cell organelles such as ribosomes to be visible as they are too small to be viewed with a light microscope. Although the electron microscope could view cells at a higher resolution, it exposed the cells to a vacuum and could therefore only be used to observe dead cells and not living cells.

The introduction of both the light and electron microscope had a dramatic effect on the development of the cell theory and the study of cells altogether. Microscopes enabled cells to be viewed and studied in order to

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explain their functions and structures. The understanding of the human, plant and animal anatomy was then improved and scientists were then able to answer certain questions concerning the structure of plants, animals and humans.

The light and electron microscope enabled scientists to observe and study the smallest units of life. The light microscope enabled the viewing of live cells although its magnification and resolution is limited, while the electron microscope enabled the viewing of cells at a higher magnification and resolution but is restricted to dead cells. Without microscopes to view cells, the cell theory would not exist and many questions concerning plant, animal and human anatomy would be left unanswered.

Bibliography

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