

Essay on staining



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Staining is used in different streams of biology to study cells and tissues. It is a process in which dye is added to better visualize the cells under the microscope. Staining is needed because it is difficult to view cells under a microscope or to differentiate one type of cell from another. The dyes used help in outlining the cells or its organelles or in highlighting the cytoplasm and make them stand out as compared to the background. This helps in identifying as well as counting them. Different stains can also be used to differentiate between two types of cells or even the different cell organelles. They can also be used to differentiate between living and dead cells or to highlight metabolic processes (Bruckner).

A stain is essentially a chemical dye like crystal violet, Congo red etc. It works because different biological molecules have affinity to different dyes and hence absorb them. These parts are therefore colored enabling them to be viewed easily under the microscope. Peptidoglycans, for example, absorb crystal violet and appear purple in color. This is the underlying principle behind Gram staining which helps to differentiate between gram positive and gram negative bacteria based on the difference in thickness of their peptidoglycan cell walls (Bruckner).

Certain steps have to be followed before staining. These steps include fixation, permeabilization and mounting. Fixation is the process in which the cells are protected from decay. It helps in retaining the cell morphology while viewing cells. Fixation makes the cells under observation rigid and terminates any metabolic processes to preserve them. Permeabilization is used to increase the permeability of cells by dissolving the cell walls and allowing greater absorption of dye. Finally, mounting is the process in which

the cells are attached the slide to facilitate viewing. Some cells can be mounted directly while in some cases special preparation may be needed.

References

Bruckner, M. (n. d.). Basic Cellular Staining. Retrieved October 23, 2014, from http://serc.carleton.edu/microbelife/research_methods/microscopy/cellstain.html

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