Diffusion and osmosis

Science, Biology

Diffusion is the molecular process by which certain particles move from a place of higher concentration to a location of lower concentration containing those same particles. It moves from the higher to the lower concentration because of the concentration gradient which is the difference in concentration levels between two adjacent regions. Diffusion stops when the concentrations between these two becomes equal or has reached equilibrium. Osmosis is simply a type of diffusion in which water moves from high concentration to that of the lower water concentration. Both processes, diffusion and osmosis, are examples of passive transport (see fig. 1). It means that there is no energy required to facilitate these processes. In biology, diffusion is the simplest and easiest way to move substances (molecules, nutrients, vitamins, minerals, ions, etc.) across the cells' membranes. It saves unnecessary expenditure of energy which is in sharp contrast to active transport, the way by which cells move certain materials against the concentration gradient, thereby requiring the use of energy (forced movement).

Diffusion plays a vital part in biological processes that help keep organisms alive. This is because diffusion is closely related to the concept of selective permeability, a process wherein cell membranes allow some substances in while keeping other substances out. Ability of a cell to do this allows it to increase, decrease or maintain the correct concentration of vital substances necessary for chemical reactions to sustain life processes (Starr et al. 82). It is this control of the cells to allow or not certain molecules that help the metabolism process along. Diffusion and osmosis are two processes which help organisms maintain the right balance of nutrients in their bodies and

reach homeostasis, the equilibrium of life. This is the ability of a living system to self-regulate its internal environment (Rosdahl & Kowalski 160).

Figure 1. A Simple Diffusion between Two Levels of Concentrations

“ Biology: Physical Processes.” TutorVista. com. 2010. Web. 30 Jan. 2012. < http://www. tutorvista. com/content/biology/biology-iii/biomembranes/physical-processes. php>

Works Cited

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Starr, Cecie, Taggart, Ralph, Evers, Christine & Starr, Lisa. Biology: The Unity and Diversity of Life. Florence, KY, USA: Cengage Learning, 2008. Print.