

Investigating Cells *Checklist*

Investigating Diffusion (* = Credit outcomes)

1. The particles in a gas and a liquid are constantly **moving about** in all directions.
2. Diffusion is the movement of these particles from a region of **high concentration** to a region of **low concentration**.
3. This diffusion continues until the particles are evenly **spread out**
4. The smell of perfume spreading through the air in a room is an example of diffusion in a gas. A purple crystal if placed in water will dissolve then spread through the water by diffusion.
5. Substances will diffuse in or out of a **cell** if there is a **concentration difference** between the inside and the outside.
6. However, a substance will only pass through the membrane if the membrane is **permeable** to that substance.
7. Oxygen diffuses **into** a cell because the concentration **outside** is higher.
8. Carbon dioxide diffuses **out of** a cell because the concentration **inside** is higher.
- 9*. Diffusion is the way that most substances enter or leave a cell.
10. Visking tubing can be used to imitate what happens with diffusion in cells
11. Visking tubing contains microscopic pores which allow small molecules (eg water, glucose) to pass through but not large molecules such as sucrose or starch. It is said to be **selectively-permeable**.
12. If a “bag” of Visking tubing is filled with a mixture of starch and glucose and placed in a test tube of water, after a short time glucose appears in the water but not starch
- 13*. **Osmosis** is the diffusion of **water** across a selectively-permeable membrane from a region of **high water concentration** (HWC) to a region of **low water concentration** (LWC).
- 14*. If a cell is placed in water, the water will **enter** the cell by osmosis because the **water concentration** is higher outside the cell than inside
- 15*. If a cell is placed in a strong sucrose solution water will **leave** the cell by osmosis because the water concentration outside is lower.

- 16*. NB: a **strong** solution has a **low water concentration** while a **dilute** solution has a **high water concentration**.
- 17*. An animal cell (eg a **blood cell**) will **burst** when placed in **water** and **shrink** when placed in a **strong solution**.
- 18*. A **plant cell** when placed in water becomes **turgid**. It takes in water by osmosis but does not burst because of the **cell wall**.
- 19*. A plant cell when placed in a strong solution becomes **plasmolysed**. It loses water by osmosis and the cell membrane shrinks away from the cell wall. These changes are reversible - eg a plasmolysed cell if transferred to water will become turgid.
- 20*. If a piece of potato is placed in water it swells and becomes stiff because water has entered by osmosis. If placed in a strong salt solution it becomes soft because water has passed out of the potato by osmosis.