

2.1.5 Biological membranes

- (a) the roles of membranes within cells and at the surface of cells
- To include the roles of membranes as,
- partially permeable barriers between the cell and its environment, between organelles and the cytoplasm and within organelles
 - sites of chemical reactions
 - sites of cell communication (cell signalling).
- (b) the fluid mosaic model of membrane structure and the roles of its components
- To include phospholipids, cholesterol, glycolipids, proteins and glycoproteins **AND** the role of membrane-bound receptors as sites where hormones and drugs can bind.
- M0.2 HSW1*
- (c) (i) factors affecting membrane structure and permeability
- To include the effects of temperature and solvents.
- (ii) practical investigations into factors affecting membrane structure and permeability
- M0.1, M0.2, M1.1, M1.2, M1.3, M1.6, M1.11, M3.1, M3.2, M3.3, M3.5, M3.6*
PAG8 HSW1, HSW2, HSW3, HSW4, HSW5, HSW6
- (d) (i) the movement of molecules across membranes
- To include diffusion and facilitated diffusion as passive methods **AND** active transport, endocytosis and exocytosis as processes requiring adenosine triphosphate (ATP) as an immediate source of energy.
- (ii) practical investigations into the factors affecting diffusion rates in model cells
- M0.1, M0.2, M0.3, M1.1, M1.2, M1.3, M1.6, M1.11, M2.1, M3.1, M3.2, M3.3, M3.5, M3.6, M4.1* **PAG8** HSW1, HSW2, HSW3, HSW4, HSW5, HSW6
- (e) (i) the movement of water across membranes by osmosis and the effects that solutions of different water potential can have on plant and animal cells
- Osmosis to be explained in terms of a water potential gradient across a partially-permeable membrane.
- (ii) practical investigations into the effects of solutions of different water potential on plant and animal cells.
- M0.1, M0.2, M0.3, M1.1, M1.2, M1.3, M1.6, M1.10, M1.11, M2.1, M3.1, M3.2, M4.1* **PAG8** HSW1, HSW2, HSW3, HSW4, HSW5, HSW6