



GCSE Biology (Separate AND Trilogy)

Success Criteria: Transport of substances in to and out of cells

I can...	
Name substances that are required to move into and out of living cells	
Describe the cell surface membrane as a partially permeable structure.	
Describe the process of diffusion as the movement of a substance from an area of high concentration to an area of lower concentration (a passive process=no ATP/energy required).	
Describe how temperature and concentration gradient affect the rate of diffusion, and explain why.	
State some examples of diffusion in living organisms (eg. gas exchange in lungs and leaves)	
Use the special term OSMOSIS to describe the diffusion of water through a partially permeable membrane	
Describe a solution as solute dissolved in solvent. Recognise water as a common solvent.	
Understand that adding solute to water lowers the amount of 'free' water molecules in a solution.	
Understand that a high concentration of solute = a low concentration of free water	
Use the terms isotonic, hypotonic and hypertonic when comparing solutions. HYPERtonic = more solute (think: sugar makes you hyper!) HYPOtonic = less solute (think: hypo is low) ISOtonic = the same amount as solute	
Describe the effects of osmosis on animal cells -lysis and crenate.	
Describe the effects of osmosis on plant cells - turgid (due to turgor pressure), flaccid (soft, low pressure) and plasmolysed (membrane pulled away from the cell wall).	
Required practical – OSMOSIS. Investigate the effect of a range of concentrations of salt/or sugar solutions on the mass of plant tissues	
State the difference between a passive and an active process.	
Describe how molecules can move by active transport (against the concentration gradient, using ATP/energy and requiring specific helper proteins in the membrane).	
Explain where the ATP/energy for active transport comes from.	
Describe some examples of active transport in organisms including ion uptake by root hair cells and glucose absorption in the small intestine.	
Describe the term 'surface area:volume'	
State that small objects have a big SA:vol, whilst big objects have a small SA:vol	
Link SA:vol to diffusion, and understand why cells are small	
Recognise that multicellular organisms need highly adapted structures (eg exchange surfaces such as lungs and gills) to make the process of exchange more efficient.	
Describe examples of adaptations in organisms for exchanging substances with the environment (eg. lungs, gills, plant roots and plant leaves.	

AQA exam specification:

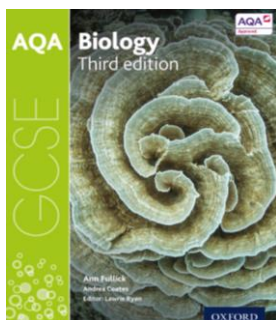
- 4.1.3.1 Diffusion
- 4.1.3.2 Osmosis
- 4.1.3.2 Active Transport

Additional support:

Access the appropriate textbook on kerboodle.com, create your own revision notes of the key points of the topic and attempt the summary questions.

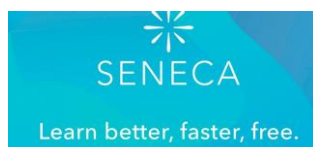


Combined science GCSE textbook
Pages 14-25



Separate Biology GCSE textbook
Pages 14-25

Utilise online revision resources to support your class notes, such as...



Attempt past paper questions using www.physicsandmathstutor.com and self-mark your answers using the official exam mark schemes.

Extension work/extra challenge:

Ask your teacher for extension tasks...

Pack 1 Topic 5- Catching a Breath (4.1.3.1)

Pack 1 Topic 6- The Life Osmotic (4.1.3)

