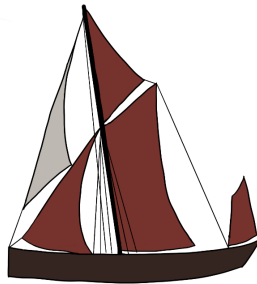

AQA SPECIALISED CELLS NOTES

Science Exams Sorted



2021

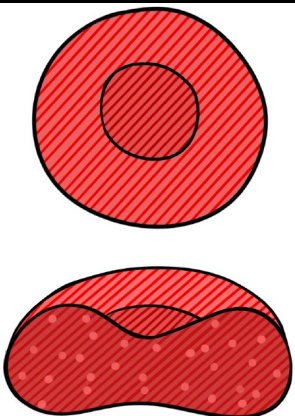
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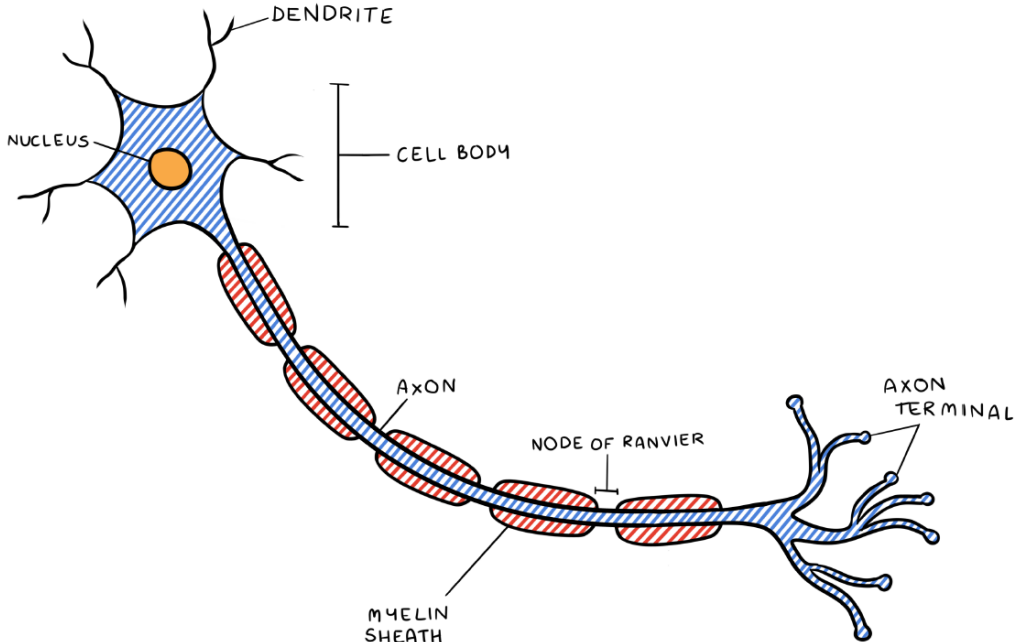
AQA Specialised Cells Notes

An exam question may ask “How is a cell adapted for its role?” in which they are asking you to state the special features that the cell has.

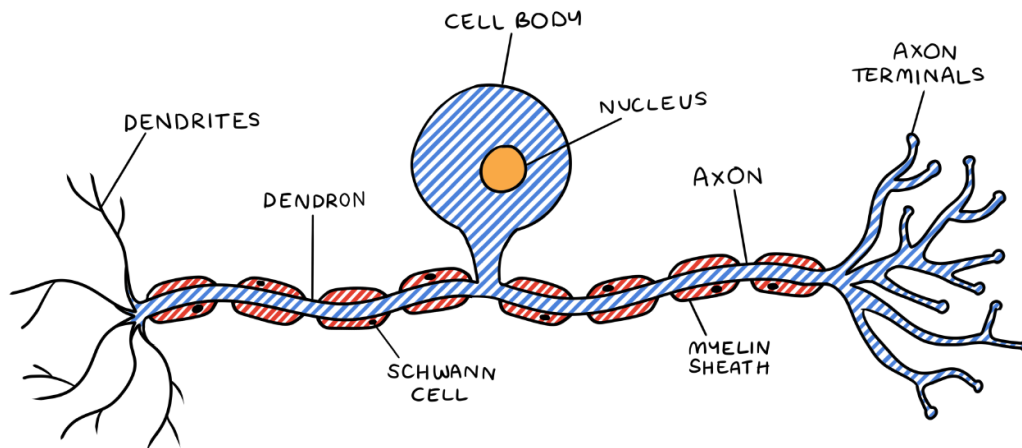
In the table below is each specialised cell that is covered at GCSE along with its function and its adaptations. I know it is quite a bit of information but unfortunately it is popular exam paper question but, once you get going, they aren't that bad really 😊

Section 1: Animal cells

Red Blood Cell	
	Function: To carry oxygen from the lungs to the cells of the body.
	Adaptations: 1. <u>Contains haemoglobin</u> – this allows oxygen to bind the cell. 2. <u>Has no nucleus</u> – this enables more room for haemoglobin. 3. <u>Biconcave shape</u> – this gives the cell a larger surface area.

Motor Neurone	
	
Function: Carry impulses from the central nervous system (brain and spinal cord) to the muscles.	
Adaptations: 1. Have a long <u>axon</u> (nerve fibre) to carry the impulse to the target organ. 2. <u>Myelin sheath</u> – insulates the axon and <u>speeds up the rate of transmission</u> of the impulse. 3. <u>Contain neurotransmitter molecules</u> – these allow impulses to travel from neurone to neurone.	

Sensory Neurone

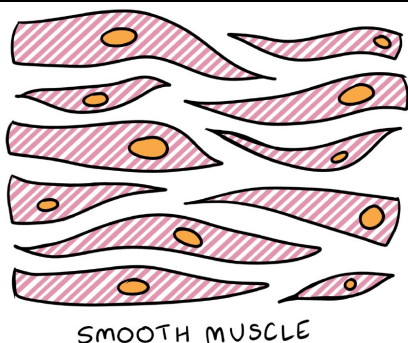


Function: Carry impulses from the sense organs e.g. the eye to the central nervous system.

Adaptations:

1. Have an axon and dendron to carry the impulse.
2. Myelin sheath – insulates the axon and speeds up the rate of transmission of the impulse.
3. Contain neurotransmitter molecules – these allow impulses to travel from neurone to neurone.

Smooth Muscle

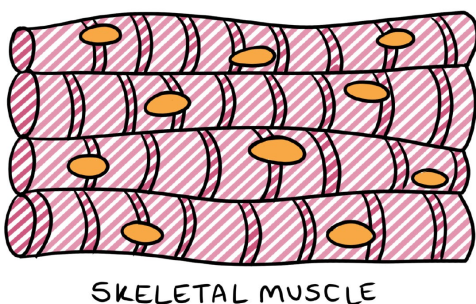


Function: Movement.

Adaptations:

1. Smooth muscle cells make up thin sheets of muscle, such as the stomach lining. They can also be arranged in bundles, or rings, like that in the anus.

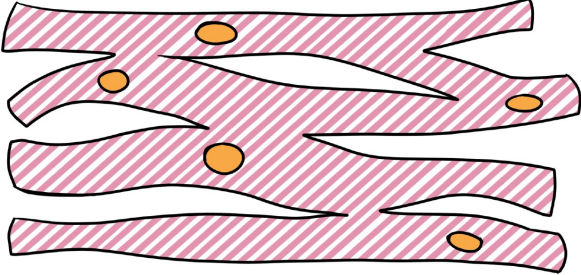
Skeletal Muscle

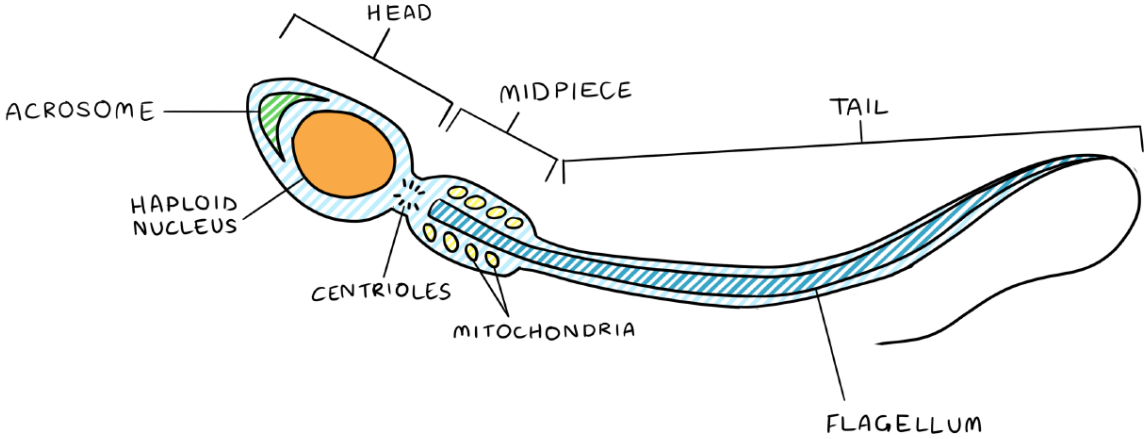


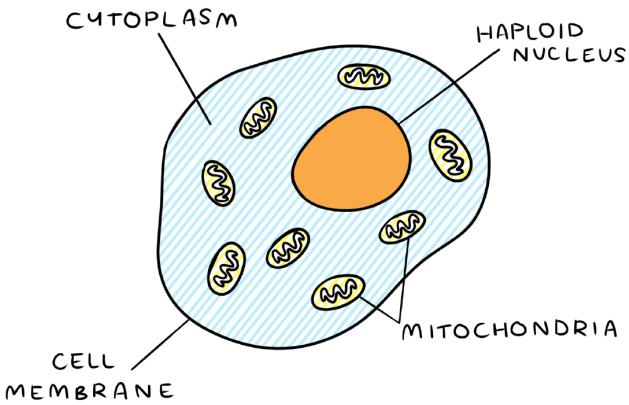
Function: Movement.

Adaptations:

1. Skeletal muscle is joined to bones. Its cells contract to make bones move and joints bend.

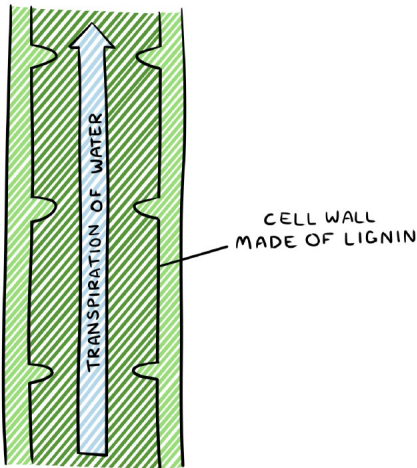
Cardiac Muscle	
 CARDIAC MUSCLE	Function: Movement.
	Adaptations: 1. <u>Cardiac muscle does not fatigue.</u>

Sperm Cell	
	
Function: To fertilise an Ovum cell.	
Adaptations: 1. <u>Contains a haploid nucleus</u> – 23 chromosomes (in humans). 2. <u>Has mitochondria</u> – these provide energy in the form of ATP for movement. 3. <u>Has a flagellum</u> – needed for movement. 4. <u>Acrosome</u> – contains digestive enzymes which can digest their way into the ovum.	

Ovum (egg cell)	
	Function: If fertilised, to develop into an embryo.
	Adaptations: 1. <u>Contains a haploid nucleus</u> – 23 chromosomes (in humans). 2. <u>Has a large amount of cytoplasm</u> – this provides energy for the developing embryo. 3. <u>Cell membrane will only allow one sperm cell to enter.</u>

Section 2: Plant cells

Xylem

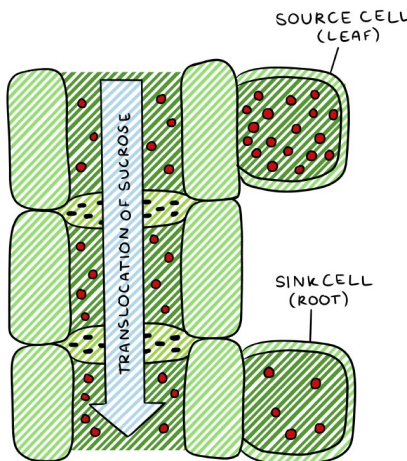


Function: To carry water and minerals from the root to the leaves.

Adaptations:

1. Made of lignin – this non-living protein provides structural support to the xylem.
2. Impermeable – water cannot pass out.
3. Very thin.
4. Very narrow.

Phloem

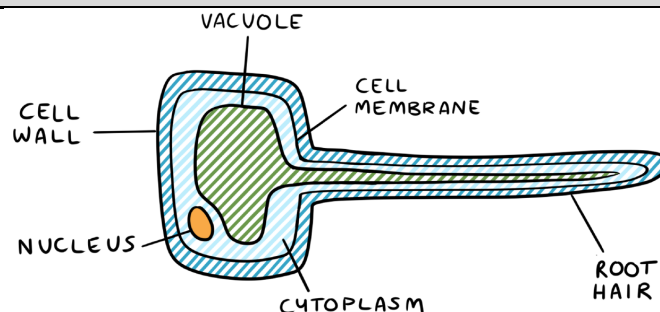


Function: To transport sucrose from source to sink.
The movement of sucrose within phloem is called **translocation**.

Adaptations:

1. **Have companion cells** – which control the direction of flow of sucrose.
2. **Have sieve plates** which are also involved in the flow of sucrose.

Root hair cell



Function: To absorb water and mineral ions from the soil and transport them to the vascular tissue.

Adaptations:

1. Thin walls make up-take of water easier and diffusion faster.
2. It has a 'finger-like' projection with very thin walls into the soil. This projection increases the surface area.