

Cell specialisation

Most cells are **specialised** in order to carry out a particular function. The cell's structure and composition are modified so that it can carry out a particular role.


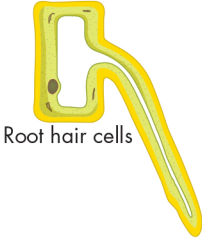
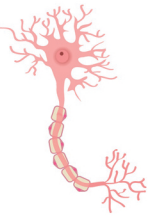
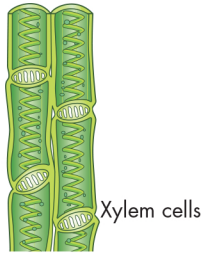

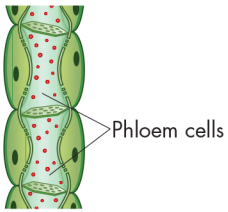
SNAP IT!

Create your own version of this table, or take a photo and learn the features of each specialised cell on the go.

Cell organisation

Cells are the basic building blocks of all organisms. Groups of similar cells come together to form a **tissue**, such as muscle tissue. In tissue, all the cells work together to carry out a particular function. Different tissues can come together to form **organs**, such as the heart. Organs are organised into **organ systems**, such as the circulatory system. All of the organ systems make up the whole organism.

Specialised cells

Specialised cell	Function	Specialised cell	Function
 <p>Sperm cells</p>	Swim to the ovum (egg) for fertilisation. Have a tail for swimming. Packed full of mitochondria to provide energy. Sperm head (acrosome) contains enzymes to help break into the ovum.	 <p>Root hair cells</p>	Take up water and mineral ions for the plant. Long thin hair to increase the surface area over which water can be taken up.
 <p>Nerve cells</p>	Carry nerve impulses to and from the brain. Long thin axon allows nerve impulses to travel along the cell. Has many dendrites to pass nerve impulses to nearby nerve cells.	 <p>Xylem cells</p>	Transport water from the roots to the leaves, as part of a tissue. Cells have no ends and are hollow to make a tube for water to move through. Lignin in the cell wall to waterproof the cells.
 <p>Muscle cells</p>	Contract and relax as part of a muscle tissue, for movement. Packed full of mitochondria to provide energy.	 <p>Phloem cells</p>	Transport sugars around the plant, as part of a tissue. Small holes in the end plates allow sugars to move through the cells.

CHECK IT!

- 1 What is a specialised cell?
- 2 Describe how a nerve cell is specialised for carrying nerve impulses.
- 3 Using your knowledge of cell organisation, explain whether sperm cells can be regarded as a tissue.
- 4 Xylem is a specialised cell that transports water up the plant. Explain how the structure of the cell helps it to carry out this function.

NAIL IT!

Q3 and 4 are asking you to **explain**, so give a reason for each feature, in as much detail as you can.