Cell specialisation

Sheet 4

Student resource

Slideshow — Structure and function of specialised cells

Instructions

Choose at least three animal cells and three plant cells from the slideshow. For each specialised cell describe what is unique about its structure. This may include its form, shape and absence/presence of specific organelles and cellular structures. Draw a basic sketch of each cell to show its form and shape. Explain how the identified features contribute to the overall function of the cell, tissue or organ. The slideshow contains guiding questions to assist you with your explanation. An example has been completed for you.

Specialised animal cell sketch	Description of specialised structural features and explanation of how features relate to the function of the cell, tissue or organ
Smooth muscle cell 	Smooth muscle cells are spindle-shaped (wide in the middle and tapering at both ends), which enables them to be densely packed and function as a single unit, so that the whole muscle either contracts or relaxes. In the walls of hollow organs such as blood vessels, the stomach, intestines and lung bronchi, constriction of muscle cells in one section and relaxation in another will push materials forward through a vessel or organ. Their spindle shape, and the presence of thin protein strands that contract and relax, increase elasticity. This is particularly suited to organs like the stomach, bladder and uterus, which are stretched and deformed extensively and repeatedly, but need to return to their original size and shape. Like other muscle cells, you would expect smooth muscle cells to contain extra endoplasmic reticulum and ribosomes to support the production of the protein strands. You would also expect them to contain numerous mitochondria for energy production, due to the role of muscle cells in movement.

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Specialised plant cell sketch	Description of specialised structural features and explanation of their contribution to the function of the cell, tissue or organ

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