



Subject: Biology

Name: Answer key

Worksheet: Specialized cells

Date:

Grade-Section: 6 CS – all sections

Objective: Relate the structure of cells to their functions.

Name the specialized plant and animal cells from the box below.

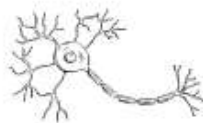
Red blood cell	White blood cell	Bone cell	Ciliated cell	Fat cell
Palisade cell	Root hair cell	Muscle cell	Nerve cell	



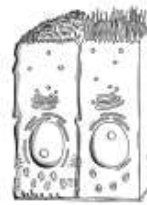
root hair cell



bone cell



nerve cell



ciliated cell



red blood cell



palisade cell



white blood cell



Fat cell

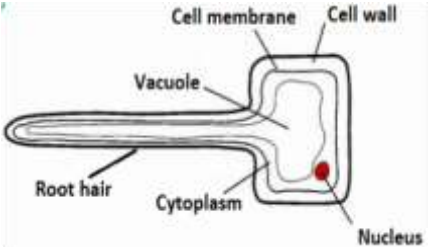
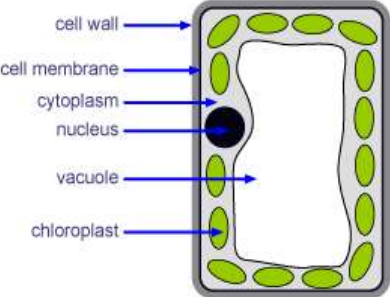


muscle cell


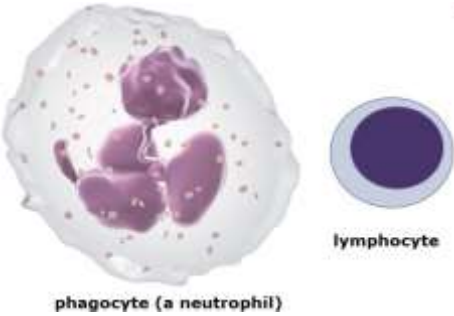
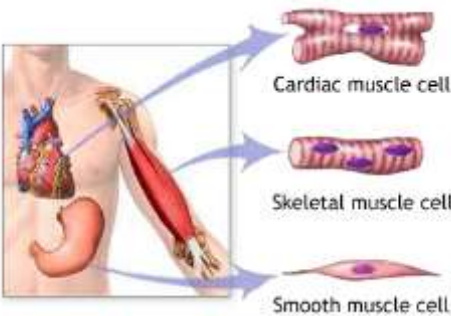


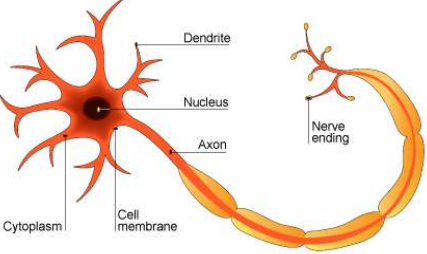

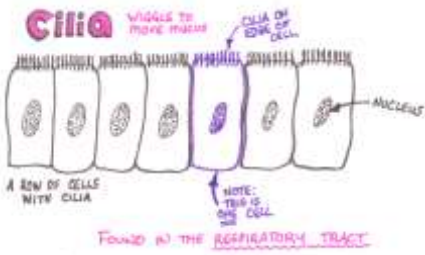
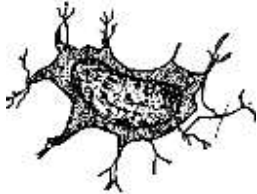
Cells with different functions have different structures. The cell is **adapted** to carry out its function really well.

- **Some specialized plant cells**

Cell	Function and adaptation
<p>1. Root hair cells</p> 	<ul style="list-style-type: none"> • Function: To absorb water and minerals from the soil. • The root hairs provide a large surface area for substances to enter the root. • No chloroplast.
<p>2. Palisade cells (leaf cell)</p> 	<ul style="list-style-type: none"> • Function: To carry out photosynthesis using energy from sunlight. • Lots of chloroplast for photosynthesis. • They have a shape that allows them <u>to pack closely together</u> in the upper part of a leaf.

- Some specialized animal cells

Cell	Function and adaptation
<p>1. Red blood cells</p> 	<ul style="list-style-type: none"> • Designed to carry oxygen. • Found in the blood. • They are disc-shaped with large surface area, for oxygen to pass through. • Contains haemoglobin, which joins with oxygen. • Has no nucleus This makes more room for haemoglobin.
<p>2. White blood cells</p>  <p>phagocyte (a neutrophil)</p> <p>lymphocyte</p>	<ul style="list-style-type: none"> • Function: to fight pathogens which cause diseases. • They are cells of the immune system. • Lymphocyte produces antibody, which attack harmful microorganisms in the blood. • Phagocyte engulfs harmful microorganisms.
<p>3. Muscle cells</p>  <p>Cardiac muscle cell</p> <p>Skeletal muscle cell</p> <p>Smooth muscle cell</p>	<ul style="list-style-type: none"> • Function: To contract to help parts of the body to move. • Lots of mitochondria to provide energy. • Each muscle cell is completely full of fibers. • They allow muscle cells to contract and produce movement.

Cell	Function and adaptation
<p>4. Nerve cells</p> 	<ul style="list-style-type: none"> • They transfer messages from one part of the body to another. • Can carry electrical impulses. • Long, thin axon. • Branching dendrites at either end.
<p>5. Fat cells</p> 	<ul style="list-style-type: none"> • They act as an energy store. • Helps to keep you warm. • The nucleus and cytoplasm are squeezed to the side to make room.
<p>6. Ciliated cells</p> 	<ul style="list-style-type: none"> • Function: To move microorganisms and dust away from the lungs. • They line the air passages in the lungs. • They are found in structures like the nasal cavities, bronchial tubes and trachea. • They have tiny hairs called cilia. • Lots of mitochondria to provide energy.
<p>7. Bone cells</p> 	<ul style="list-style-type: none"> • Bone cells make fibers and excrete them into their surroundings. • Fibers attract minerals to make a rigid solid.