****

**Subject: Biology**

**Name: 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



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** |
| 1. Image result for root hair cells diagram black and white **Root hair cells**
 | * Function: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* The root hairs provide a \_\_\_\_\_\_\_ surface areafor substances to enter the root.
* No chloroplast.
 |
| 1. **Palisade cells (leaf cell)**
 | * Function: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* Lots of \_\_\_\_\_\_\_\_\_\_\_\_\_\_for photosynthesis.
* They have a shape that allows them **to pack closely together** in the \_\_\_\_\_\_\_\_\_ part of a **leaf**.

  |

* **Some specialized animal cells**

|  |  |
| --- | --- |
| **Cell** | **Function and adaptation** |
| 1. **Red blood cells**

Blood cells - Free healthcare and medical icons | * Designed to carry oxygen.
* Found in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* They are disc-shaped with large surface area, for \_\_\_\_\_\_\_\_\_\_\_\_\_ to pass through.
* Contains haemoglobin, which joins with oxygen.
* Has no \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This makes more room for haemoglobin.
 |
| 1. **White blood cells**
 | * Function: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* They are cells of the \_\_\_\_\_\_\_\_\_\_\_system.
* Lymphocytes produces\_\_\_\_\_\_\_\_\_\_, which attack harmful microorganisms in the blood.
* \_\_\_\_\_\_\_\_\_\_\_\_engulfs harmful microorganisms.
 |
| 1. **Muscle cells**

**Image result for cardiac smooth skeletal muscles** | * Function:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* Lots of \_\_\_\_\_\_\_\_\_\_\_ to provide energy.
* Each muscle cell is completely full of **\_\_\_\_\_\_\_\_\_\_**. They allow muscle cells to contract and produce movement.
 |

|  |  |
| --- | --- |
| **Cell** | **Function and adaptation** |
| 1. **Image result for nerve cell adaptationsNerve cells**
 | * They transfer messages from one part of the body to another.
* Can carry electrical impulses.
* Long, thin \_\_\_\_\_\_\_\_\_.
* Branching \_\_\_\_\_\_\_\_\_\_\_\_ at either end.
 |
| 1. **Fat cells**

ÙØªÙØ¬Ø© Ø¨Ø­Ø« Ø§ÙØµÙØ± Ø¹Ù âªfat cells diagramâ¬â | * They act as an \_\_\_\_\_\_\_\_\_\_\_\_\_\_**\_\_.**
* Helps to keep you warm.
* The \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_ are squeezed to the side to make room.
 |
| **6. Ciliated cells**Related image | * Function:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* 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 \_\_\_\_\_\_\_\_\_\_\_.
* Lots of mitochondria to provide \_\_\_\_\_\_\_\_\_\_\_\_\_.
 |
|  **7. Bone cells** | * Bone cells make \_\_\_\_\_\_\_\_\_ and excrete them into their surroundings.
* Fibers attract \_\_\_\_\_\_\_\_\_ to make a rigid solid.
 |