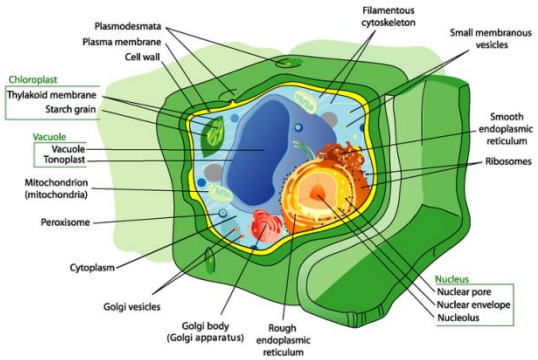
Strand:	Diversity of Matter	**Sub-Strand:**	Living Cells

BASIC 9

WEEKLY LESSON PLAN – WEEK 11

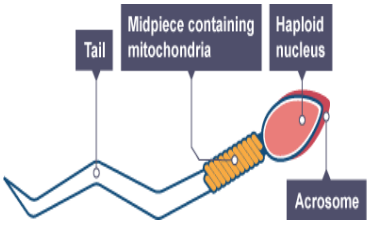
Content Standard:	B9.1.2.1 Demonstrate knowledge of specialist cells of dicotyledonous plants and humans, their formation and functions for the existence of the plants and humans				
Indicator (s)	B9.1.2.1.1 Discuss the concepts of specialized cells and how they are formed in dicotyledonous plants and humans B9.1.2.1.2 Examine the functions of specialized cells in dicotyledonous plants such as epidermal, guard cells, cambium, xylem in relation to the existence of the plants B9.1.2.1.3 Examine the functions of specialized animal cells such as (nerve, blood cells, muscle cells and sperm cells) in relation to the existence of humans		**Performance Indicator:** Learners can identify the functions cells in plants and human system		
Week Ending	22-11-2024				
Class	B.S.9	**Class Size:**		**Duration:**	
Subject	Science				
Reference	Science Curriculum, Teachers Resource Pack, Learners Resource Pack, Textbook.				
Teaching / Learning Resources	Charts, Poster, Pictures, Videos		**Core Competencies:**	• Critical Thinking and Problem Solving Communication and Collaboration.	

DAY/DATE	**PHASE 1 : STARTER**	**PHASE 2: MAIN**	**PHASE 3: REFLECTION**
MONDAY	Discuss with the Learners about the meanings of keywords and terminologies. **Terminologies;** • Photosynthesis • eukaryotic **cells** • minerals • dicotyledonous • environmental • Phloem • Xylem • Vessels • Parenchyma • spongy	1. Present a picture of a specialized cell and ask Learners to identify it. 2. Discuss with the Learners about the meaning of a "Specialized Cell'. 3. Learners brainstorm to identify examples of dicotyledonous plants. 4. Assist Learners to describe how specialized cells are formed in dicotyledonous plants using a chart. **Specialized Plant Cells** ✓ **Root Hair cells** Root hair cells are specialised to allow plants to absorb more water and let a plant absorb the minerals it needs to keep alive. Xylem and Phloem cells are used by the plant to transport minerals, sugar and water to other parts	Show Learners pictures and videos of how specialized cells are formed in humans. **Exercise;** 1. What are specialized cells? 2. State 5 examples of dicotyledonous plants.

		of the plant. ✓ **Xylem cells** The xylem is specialised to transport water up the stem of a plant and into the leaves. Xylem vessels are made up of a series of connected dead xylem cells. The end walls of the dead cells are broken to allow water to move through. A substance called lignin strengthens the cell walls of xylem cells. ✓ **Phloem cells** The phloem is specialised to transport food products to parts of the plant where they are needed. Phloem vessels are made up of columns of living cells. The end walls of phloem cells contain small holes to allow food products to move up and down the phloem vessels.	
THURSDAY	Show Learners pictures and video displaying plant structures.	1. Assist Learners to identify the basic common structures of plants. 2. Engage Learners in watching a YouTube video on specialized dicotyledonous plant cells such as epidermal, guard cells, cambium, xylem to identify them by their names and shapes. **3.** Discuss with the Learners about 5 functions of the specialized cells of dicotyledonous plants. ## Plant Cells Plant cells resemble other eukaryotic cells in many ways. For example, they are enclosed by a plasma membrane and have a nucleus and other membrane-bound organelles.  	Learners in small groups to discuss and report to the class about how specialized cells of dicotyledonous plants relate to the existence the plants. **Exercise;** Draw the cell structure of a dicotyledonous plant.

		Plant Cell Structures Structures found in plant cells but not animal cells include a large central vacuole, cell wall, and plastids such as chloroplasts. • The large **central vacuole** is surrounded by its own membrane and contains water and dissolved substances. Its primary role is to maintain pressure against the inside of the cell wall, giving the cell shape and helping to support the plant. • The **cell wall** is located outside the cell membrane. It consists mainly of **cellulose** and may also contain **lignin** , which makes it more rigid. The cell wall shapes, supports, and protects the cell. It prevents the cell from absorbing too much water and bursting. It also keeps large, damaging molecules out of the cell. • **Plastids** are membrane-bound organelles with their own DNA. Examples are chloroplasts and chromoplasts. **Chloroplasts** contain the green pigment **chlorophyll** and carry out **photosynthesis**. Chromoplasts make and store other pigments. They give flower petals their bright colors.	
FRIDAY	Review Learners knowledge on the previous lesson.	1. Discuss the three (3) main components of plant cells with the Learners. 2. Show Learners a YouTube video explaining nerve cells, blood cells, muscle cells and sperm cells 3. Assist Learners to describe how nerve cells, blood cells, muscle cells and sperm cells are related to the existence of human. **Sperm cells** Sperm are the male sex cell. They are made in the testes after puberty. They join with an egg cell during fertilization to form an embryo which can then develop into a new life. The following features make them well suited to this function: • A tail moves them towards an egg cell. • Many mitochondria release energy for movement. • Part of the tip of the head of the sperm,	Through questions and answers, conclude the lesson. **Exercise;** Explain the following; i. Nerve cells ii. Blood cells iii. Muscle cells iv. Sperm cells

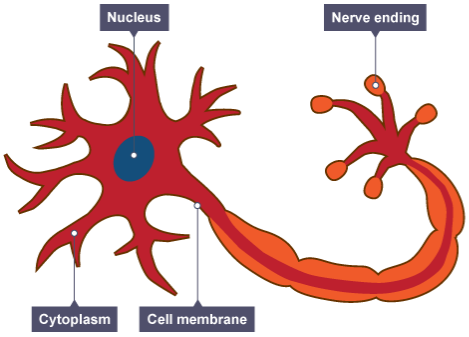
called the acrosome, releases enzymes to digest the egg membrane to allow fertilization to take place.
- The haploid nucleus contains the genetic material for fertilization.
- Sperm are produced in large numbers to increase the chance of fertilization.



Nerve cells

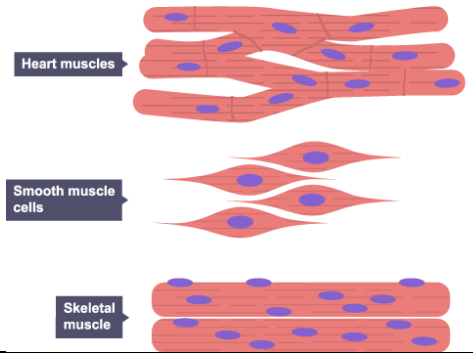
Nerve cells transmit electrical signals in the nervous system. They are well suited to their function because:

- They are thin, and can be more than one metre long in your spinal cord. This means they can carry messages up and down the body over large distances very quickly.
- Nerve cells have branched connections at each end. These join to other nerve cells, allowing them to pass messages around the body.
- They have a fatty (myelin) sheath that surrounds them. The fatty sheath increases the speed at which the message can travel.



Muscle cells

Muscles cells are found in bundles which make up our muscles. These cells are able to contract (get shorter) and relax (return to original length). There are different types of muscle cell, each perfectly

		adapted to its function: • Cardiac (heart) muscle cells contract and relax to pump blood around our bodies for our entire lives. They never get tired. • 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 is joined to bones. Its cells contract to make bones move and joints bend.  	

Name of Teacher: **School:** **District:**