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WORKSHEET 8

School: **Ba Sangam College** Subject: **Biology**
Year: **13** Name:

Strand	**13.3 Biodiversity Change and Sustainability**
Sub strand	13.3.2 **Diversity Of Life**
Content Learning Outcome	Describe the characteristics of the two types of cells and explore the types of organisms comprising these cells

Diversity Of Life

- **Biological Diversity**(Biodiversity)-the huge variety of different kind or organisms n earth.
- **Cellular Organisation**-refers to the component of a cell and how these individual parts are arranged within the cell.

Characteristics of Prokaryotes and Eukaryotes Cell

Prokaryotes	Eukaryotes
Found in cytoplasm	Found in nucleus
Circular in loop	linear
DNA replication-bidirectional	DNA replication-unidirectional
Not in chromosome-loosely spread	Coiled in chromosomes
Not associated with proteins-histone	Histone proteins hold the DNA
Does not contain introns	
Does not contain junk DNA	
Shorter comparatively less DNA per cell e.g. bacteria	Much longer-more DNA per cell e.g. plants, animals

Comparing Single Celled (unicellular) and Multicellular Organisms

Unicellular Organisms	Multicellular Organisms
Body of the organism is made up of a single cell.	The body of multicellular organism is made up of numerous cells.
Body organization is simple.	Organization is complex.
The function of the whole organism is carried out by a single cell.	Specialized functions are performed by different cells, tissues, organs or organ systems.
Division of labor in the organism is at organelle level.	Division of labor in the organism may be at cellular level, tissue level, organs and organ system level.
Usually prokaryotic in nature.	They are mostly eukaryotic in nature.
The body of the cell is exposed to the environment on all sides.	Outer cells face the environment.
Any injury to cell can cause death of the organism.	Injury or death of some cells does not affect the organisms, the affected cells are replaced.
A limit is imposed to the size of the cell by the surface area to volume ratio and hence it cannot attain large size.	Due to multicellular nature, organism can attain large size.
Lifespan of the organism is usually short.	Organisms have a longer lifespan.
Reproduction is by vegetative or asexual methods.	Reproduction is sexual type.
There is no cell differentiation process.	Cell differentiation is evident.
Nutrition is by engulfing food.	Nutrition is by specific organs or by food production. They can be autotrophs or heterotrophs.
They are microscopic in nature.	They are macroscopic in nature.

Cellular Differentiation

- **Differentiation-**is a process that gives rise to new cell types in multicellular organisms
- **Differentiation takes place during:**
  1.Embryonic development
  2.Regeneration-repairing tissues after injury
- **Cleavage-**divides the same cell into many cells without increasing its size-no cell growth.
- **Gastrulation**-cell movements such as depression and invagination of the blastula to form gastrula.
- **Germ or Cellular Layer**-develop into embryonic life through the process of gastrulation.

Changes brought by the process of Gastrulation

- Formation of ectoderm and endoderm
- Formation of archenteron
- Formation of blastopore
- Disappearance of blastocoels
- Formation of invagination/depression of vegetal hemisphere
- mass movement of the morphogenetic cells

Activity

1.Describe 2 differences between prokaryotes and eukaryotes.

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_____(2 marks)

2.Explain the 2 differences between unicellar organism and multicellular with examples.

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(3 marks)

3.Name the process that gives rise to new cells.

_____(1 mark)

4. What are the four initial stages of embryonic development.

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_____ (2 marks)

5. What is cell division during the first stage of embryonic development called? How can this stage be described.

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_____ (2 marks)