***Science Notebook***

Unit 1: How do our bodies work?

KC: Change

GC:

RC:

SOI:

**What is an organism:**

The oxford dictionary defines and organism as an organized body with connected interdependent parts sharing common life. This definition tells us that:

1. All the parts of an organism are linked up – the body is a single separated whole
2. Body parts are arranged in a particular way – not randomly
3. Various body parts need each other – they interact and are interdependent
4. The body is therefore an example of a system, made up of multiple subsystems.
5. Individual parts cannot survive by themselves – the whole organism lives or dies.
6. Any individual animal or plant or bacterium or other form of life is an organism

Organisms can be classifies into 2 types, multicellular and unicellular

**Differences between the 2 types of cells**

|  |  |
| --- | --- |
| Unicellular organisms | Multicellular organism |
| Unicellular organisms are composed of a single cell | Multicellular organisms are composes of more than one cell |
| Irregular in shape | Have a definite shape |
| Simple body organization | Complex body organization |
| A single cell carries our all the necessary life processes | Multiple cells perform different functions |
| The total cell body is exposed to the environment | Only the outer cells are exposed to the environment |
| Division of labour is at the organelle level | Division of labour is at cellular, tissue organs and organ system level |
| Includes both eukaryotes and prokaryotes | Includes only eukaryotes |
| A lifespan of a unicellular organism is usually short | Multicellular organisms have a comparatively longer lifespan |
| Injury to a cell leads to death of the organism | Injury to cell does not cause death of the multicellular organism |
| Reproduce by asexual reproduction | Reproduction happens sexually as well as asexually |
| Cell differentiation is absent | Cell differentiation is obvious |
| They can be autrophs or heterotrophs | They include both autotrophs and heterotrophs |
| There are microscopic in nature | They are microscopic in nature |
| Bacteria, amoeba, paramecium, and yeast are examples of unicellular organisms. | Humans, animals, plants, birds, and insects are examples of multicellular organisms |

**Plasma in our blood:**

Red blood cells

White blood cells

Platelets

**Hierarchy of life**

Cell -> Tissue -> Organ -> Organ System -> Organisms

**What are the 5 levels of organization in order:**

There are 5 levels: cells, tissue (group of cells performing the same function, eg – nerve tissues), organs (group of tissues performing the same function, eg-Spinal chord), organ systems (group of organs performing the similar function eg= Nervous system), organisms. All living thigs are made out of cells. This is what distinguishes living things from other objects.

**Difference between a cell and a tissue**

|  |  |
| --- | --- |
| Cells | Tissues |
| They are the smallest structural and functional unit of an organism | They consists of specialized cells and their products |
| Found in both unicellular and multicellular organisms | Found in only multicellular organisms |
| Are microscopic | Are macroscopic |
| Consists of organelles | Comprises of similar cells specialized for a unique function |
| Two types of cells : Eukaryotic and prokaryotic | 4 types of tissues: Epithelial, Connective, Muscular and nervous |

**Which tissue can move?**

Blood tissues can move (Connective Tissues)

**When we represent hierarchy of life diagrammatically, it forms a pyramid? Why?**

The hierarchy of life is arranged in a pyramid form as it is a perfect way to represent the quantity of all the different components. For example the cells will have the largest quantity in the whole hierarchy so it will get a wider area in the pyramid which will be at the bottom, similarly, tissues also have a wide quantity but they are lesser than cells so the tissues will be above the cells in the pyramid.

**Notes of other’s presentation:**

Madhavi group:

1. They were speaking a little fast
2. They explained all the parts of the skeletal system including the hierarchy and uses really nicely.
3. Some pointers were hard to understand

Ansh and Shruti:

1. Very well explained
2. Hierarchy perfectly explained

Yashi and ragini:

1. Wrong information given
2. Wrong hierarchy of life

**Functions of the nervous system:**

1. Receives information from body – sense organs: Receiving information from sense organs – (ears, eyes, mouth etc.)
2. Processing and responding information - Interpretation of the shared information followed by appropriate action, like movement of fingers, rising of hand.
3. Haemostasis: Maintains Balance - basic needs: Circulation, breathing and heartbeat.

**Neuron:**  
Dendrites: They pick up signals and they cause electrical changes and they receive the signals from other neurons.

Soma/cell body: Soma takes all information from the dendrites and processes It nicely to understand what its means

Nucleus: It makes proteins and holds DNA AND RNA. It holds the chemicals to generate the proteins.

Axon: Transfers the electrical signals or neuro transmitters. They transfer the messages

Axon terminals: Transmit messages and electrical signals to other neurons.

**How does it work?**

Dendrites picks up the signals and then the soma processes it and then the axon hillock makes the signals and the electrical impulses stronger so then can travel the axon then the travel the axon and then reach the axon terminal where they get transmitted to the other neuron cell and then then the same process happens in the other neuron cell also. The signal is transmitted through neuro transmitters.