

Characteristics of life

Organization: There are unicellular organisms and there are multicellular organisms. The cells can be arranged into tissues, the tissues can make up organs, and the organs can be part of an organ system. This is biological levels of organization.

Homeostasis: maintaining a regulated balance is so important for many biological processes to even happen. Maintaining homeostasis can mean maintaining a certain temperature and a certain percentage of water concentration. Human bodies have all kinds of feedback systems to maintain homeostasis.

Metabolism: If there is something living, it has to have a way to capture energy and use energy for processes, including processes that keep homeostasis. Chemical reactions happening in living organisms are part of metabolism. So an example of reactions that are part of metabolism is plants, which are autotroph, which can capture light energy to glucose which is a process called photosynthesis. This process breaks down glucose in cellular respiration to make ATP.

Reproduction: This can be a simple one like unicellular bacteria which can copy DNA and split. Or it can be more complex like, say a pony. The living pony which involves sperm and egg cells, making a fertilized egg. Which will eventually develop into a baby pony.

Growth and Development: Living organisms have genetic material, which is code for development and growth. Say for example a baby pony, it will develop and grow up into a full sized horse because its genetic material contains the instructions for development and growth.

Response to stimuli: There can be internal and external stimuli. If you leave a plant in the sun then it will start to bend. It is because they are responding to light. Plants responding to light is a response to stimulus.

Evolution: The gene frequencies in a population of living organisms can change over time due to mechanisms, such as natural selection.

Cell Theory/Types of cells

1. Every living organism is made up of cells
2. The cell is the basic unit of life
3. cells originally coming from other pre existing cells.
4. Energy flow occurs within the cells
5. The cell's DNA is passed on to other cells
6. All cells have the same basic chemical composition

From what we learnt there are two different types of cells. They are called the plant cell and the animal cell. A plant cell has a chloroplast and a cell wall as the animal cell does not. An animal cell has a pinocytotic vesicle.

Photosynthesis/cellular respiration

-Chlorophyll captures the Sun's energy and uses it to make sugars out of carbon dioxide from the air and water. The sugars fuel a plant's roots, stems, and leaves so the plant can grow.

-The process where green plants and some other organisms use sunlight to combine foods from carbon dioxide and water. Photosynthesis in plants generally involves the green pigment chlorophyll and generates oxygen as a byproduct.

-Step 1: H_2O and CO_2 enter into the leaf

Step 2: light hits the membrane of a thylakoid

Step 3: the electrons move down to enzymes Step 4-Light Dependent

-Green plants use photosynthesis to create energy from carbon dioxide and sunlight.

This energy is the form of glucose. It's used by the plant to grow and fuel the necessary reproductive activities of the plant.

-Photosynthesis happens once a day, starts at first light, ends when darkness sets in.

Photosynthesis is a continuous process.

-Process of breaking down sugar into a form that the cell can use as energy. Takes in food and uses it to create ATP (Adenosine Triphosphate) which is a chemical cells use for energy.

-Cellular respiration is the process of oxidizing food molecules, such as glucose, to carbon dioxide and water. The energy released is trapped (ATP) to use for all the energy-consuming activities in the cell.

-Process of breaking sugar into a form that the cell can use as energy. Cellular Respiration takes in food to create ATP, this process uses oxygen.

-Cellular Respiration reactions start in the cytoplasm, but most of the reactions occur in the mitochondria.

-Cellular respiration takes 14 microseconds per ATP produced by 1 mitochondria

Relationship of Microorganisms with living things

Micro-organisms are like the base of life. It started as a micro-organism and transferred into living things which is really just evolution. Eukaryotes most likely arose from prokaryotes and have remained in a close relationship with them. It is consequently now not shocking that the surfaces of animals and plants comprise a gorgeous abundance and range of microorganisms. In addition, some microorganisms are in a position to develop inner animal or plant cells.

Basic functions of the immune system

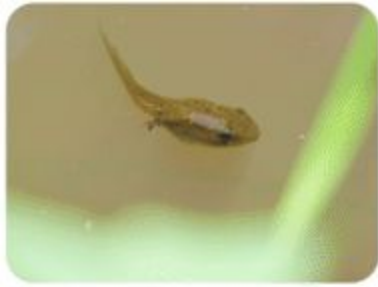
The immune system is used to get rid of harmful substances and germs that enter the body. The immune system is adaptive and makes antibodies to fight specific germs that have entered the body before and even germs that are new to the body that could make you ill. The immune system is made up of various organs, cells, and proteins. You get ill because the immune system cannot fight off a particularly aggressive germ.

Vaccinations and Antibiotics

Antibiotics target one type of pathogen: which is bacteria. Antibiotics help destroy bacteria in many ways. They can damage bacterial cell walls or block the production of critical protein the bacteria needs. Antibiotics can come in a pill form, they can be injected, or delivered in an IV. Vaccines are a way of exposing your body to an inactive form of a pathogen or a weakened form of a pathogen. Since the pathogen is inactive or weakened it prevents you from developing the disease. As the vaccine is fighting the pathogen, the immune system also fights so that if this bacteria or pathogen ever comes back your body has immunity over it.

Impacts of epidemics and pandemics on human populations

If an epidemic or a pandemic is not controlled properly then the consequences can be devastating. Some of the consequences can be: huge amounts of people getting sick which could lead to deaths. The economy can suffer because people would not be able to leave their homes in fear of the disease spreading. Like the Covid-19 pandemic going around right now.



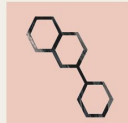
Cell Theory



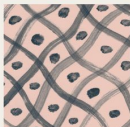
1. All living organisms are made of cells



3. Cells arise from pre-existing cells



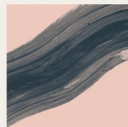
5. All cells have the basic chemical composition



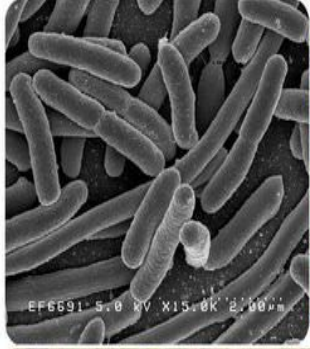
2. Cells are the basic unit of life



4. Hereditary information is passed from cell



6. Energy flow occurs within cells





Cellular Respiration

