



Study of Life: Notes

In this lesson...

- What is Biology?
- Scientific Method
 - Steps
 - Vocabulary
- Characteristics of Life

What is Biology?

The study of organisms

Scientific Method

- **Steps**
 - Identify a problem
 - State observations about the problem
 - Form a hypothesis about the problem
 - Design an experiment to test the hypothesis
 - Collect data
 - Form a conclusion
- **Vocabulary**
 - Observations
 - 5 senses used to gather evidence
 - Hypothesis
 - An educated prediction
 - Testable and predicts an outcome
 - Experiment
 - Procedure used to test hypothesis
 - Variable
 - A factor in the experiment that is being tested
 - A valid experiment will have one variable
 - Control variables (constants)
 - Factors that are the same for all groups
 - Control group
 - Control is not being tested
 - It is used for comparison



- Other Variables
 - Independent Variable
 - Factor that is changed and tested
 - Dependent Variable
 - The factor that is measured or observed
- Data
 - Quantitative data
 - Results in numbers
 - Qualitative data
 - Results in letters
- Conclusion
 - Inference
 - Idea or conclusion that is drawn from evidence and reasoning
 - Theory
 - Hypothesis or a group of hypotheses that have been supported by repeated testing
 - Law
 - Body of observations

Characteristics of Life

- **Cell organization**
 - Unicellular
 - Entire organism is made up of one single cell
 - Ex: Bacteria or protists
 - Multicellular
 - Made up of many cells
 - Ex: Trees or animals
- **Reproduction**
 - Asexual reproduction
 - A single parent organism reproducing by itself
 - Ex: Bacteria
 - Sexual reproduction
 - Two different parent organisms contribute genetic information
 - Involves the combination of male and female sex cells
 - Humans



- **Growth and development**
 - Ex: Change in height and weight
- **Response to the environment**
- **DNA**
 - Your genetic makeup
- **Obtains and uses energy**
 - Anabolism
 - The process of building up complex substances from simpler substances
 - Ex:
 - Building up cells and cellular components
 - Photosynthesis
 - Catabolism
 - The process of breaking down complex substances into simpler substances to release energy
 - Ex:
 - Digestion
 - Cellular respiration
 - Metabolism
 - The total of all chemical reactions in an organism
 - Basically anabolism + catabolism = metabolism
- **Homeostasis**
 - Stable state of conditions in the body that are necessary for life
 - Ex:
 - Body temperature
 - Blood volume
 - pH balance
 - Water balance

THESE ARE ALL NECESSARY TO LIVING (BIOTIC) ORGANISMS!!!!
IF SOMETHING DOES NOT HAVE ALL OF THESE THEN IT IS NOT
LIVING (ABIOTIC)!!!!!!!