Hypothesis

A possible explanation for a problem

Independent Variables

Factors in an experiment that are manipulated by the experimenter

Dependent Variables

Occur as a result of the independent variable

Experiment

To perform a scientific inquiry to answer a question

Francesco Redi

Experiment with the jars of rotting meat

Spontaneous Generation

Abiogenesis

States that living things can arise from non-living matter

Louis Pasteur

Experiment with the swan-neck flask

Magnification

To make an object appear larger

Resolution

A measure of clear an object appears

Hooke

Discovered cell walls in cork cells

Leewenhoek

First to observe blood cells and one celled living organisms

Brown

Discovered the nucleus

Schwann

Stated that all animals are made of cells

Schleiden

Stated that all plants are made of cells

Virchow

Stated that all cells arise from pre-existing cells

Cell Theory States:

- All living things are made of cells

- The cell is the smallest organization unit with the properties of life

- Cell arise from division of other cells

Ekaryotes

Cells with membrane bound organelles including the nucleus

Prokaryotes

Cells without membrane bound organelles including the nucleus

Cytosol

The aqueous component of the cell that holds organelles in place

Cytoplasm

Includes cell organelles and cytosol

Nucleus

Control center of the cells, the “boss”

Nucleolus

Involved in the making of proteins

Mitochondrion

Powerhouse of the cell, responsible for production of cellular energy

Ribosomes

Involved in protein synthesis

Rough Endoplasmic Reticulum

Where protein molecules are synthesized and shipped off from

Smooth Endoplasmic Reticulum

Tubular membranes involved in the transport of materials

Golgi Apparatus

Storage and shipping of materials out of a cell

Lysosomes

Release digestive enzymes to destroy harmful cells or microorganisms

Microtubules

 Protein structures that help eukaryotic cells maintain their shape and assist in forming the cell spindle during cell division.

Cytoskeleton

Network of protein filaments and tubules in the cytoplasm of many living cells, giving them shape and coherence

Microfilaments

Tubelike cell structure composed of a protein similar to actin, involved in cytoplasmic movement and changes in cell shape

Centrioles

Provide attachement sites for spindle fibers, used in cell division

Vacuoles

Storage of water, minerals and other substances

Plastids

Small organelle containing pigment or food

Chloroplasts

Stores chlorophyll

Chromoplasts

 Stores orange and yellow pigments

Amyloplast

Stores starch

Cell Wall

Supports and protects the cell

Turgor Pressure

Pressure exerted on the cell wall, keeps cells rigid

Cell Membrane

Semi or selectively permeable

Semi-permeable

only certain molecules may pass in or out of the cell

Passive Transport

 Movement of a molecule from an area of high concentration to an area of low concentration without using cell energy

Osmosis

Movement of water from an area of high concentration to low concentration without using cell energy

Diffusion

Movement of a molecule from an area of high concentration to low concentration without using cell energy

Brownian Motion

Molecules are in constant motion and collide together to evenly distribute themselves

Hypotonic
Solution

Solution in which the concentration of solute is higher inside a cell than outside-water moves in

Hypertonic Solution

Solution in which the concentration of solute is higher outside the cell than inside-water moves out

Isotonic Solution

Solution in which the concentration of solute is equal inside and outside of the cell-water moves in and out at the same rate

Active Transport

Movement of molecules from an area of low concentration to high concentration while using cell energy

Endocytosis

Process by which molecules are engulfed by cells

Pinocytosis

Process by which liquid is engulfed by cells

Phagocytosis

Process by which solid particles are engulfed by cells

Exocytosis

 Process by which particles are shipped out of a cell in small packets called vesicles