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What is Life?

# Characteristics of Life.

Reproduce  
made of cells

Life creates cell

Life starts

energy

grow

develop

water

Proper environment

exchange of gas

Response to stimulus

Living	Non-Living	?
<p>horse baby Spider Cactus jellyfish frog</p>	<p>icicles teddy bear rocking horse bicycle yogurt</p>	<p>bananas Onion tornado Potato robot Sun Eggs corn rain mushrooms Trees leaves web</p>

## Green Pea

salty

small

gummy  
dirty

dark green spots

the inside is green

round

smooth

gray coat comes off

green-yellow

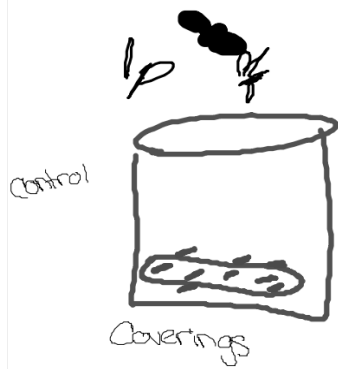
no smell

works

Is the Pea Alive?

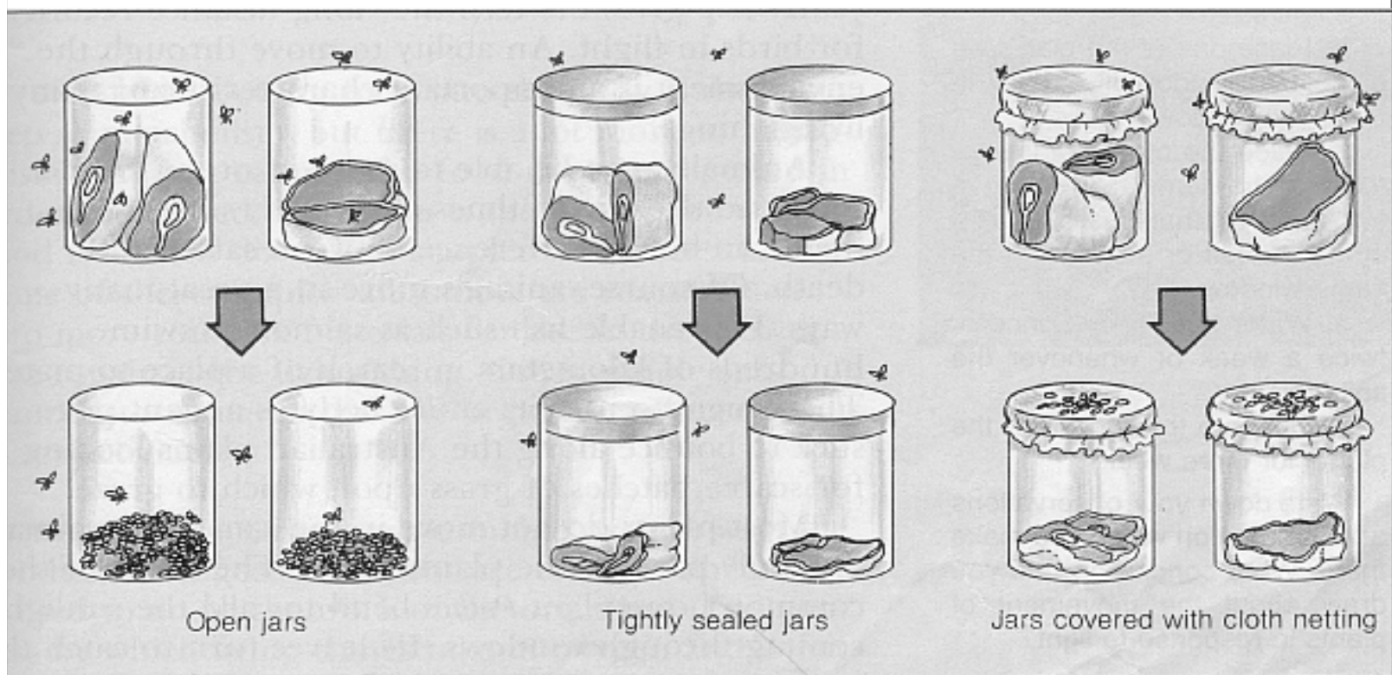
1

# Spontaneous Generation



Dependent - Mages

Independent - Coverings





**The Cell Theory states:**

**All living organisms are composed of cells.**

**They may be <sup>1</sup>unicellular or <sup>>1</sup>multicellular.**

**Cells arise from pre-existing cells.**

**The cell is the basic unit of life.**



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List the 4 parts of the  
Cell Theory.

**The modern version of the Cell Theory includes the ideas that:**

**Energy flow occurs within cells.**

**Heredity information (DNA) is passed on from cell to cell.**

**All cells have the same basic chemical composition.**

# How are Organisms Structured To ensure efficiency and survival?

Organism - a Living Thing

Structured - How you Look  
How built  
How Put together

efficiency - working with Little waste

# Cell Types

## Prokaryotic

**Cells without a membrane around the inner structures**

ex) Bacteria  
all Unicellular

## **Eukaryotic**

**Cells with a membrane around the inner structures**

ex) you (Animals) Plants Fungus, Protists  
Unicellular & Multicellular

**CYTOSKELETON:** supports organelles and cell shape and plays a role in cell motion:

**Microtubule:** tube of protein molecules present in cytoplasm, centrioles, cilia, and flagella

**Intermediate filament:** intertwined protein fibers that provide support and strength

**Actin filament:** twisted protein fibers that are responsible for cell movement

**Centriole:** complex assembly of microtubules that occurs in pairs

**Cytoplasm:** semifluid matrix that contains the nucleus and other organelles

**Mitochondrion:** organelle in which energy is extracted from food during oxidative metabolism

**Secretory vesicle:** vesicle fusing with the plasma membrane, releasing materials to be secreted from the cell

**6 Smooth endoplasmic reticulum:** system of internal membranes that aids in the manufacture of carbohydrates and lipids

**6 Rough endoplasmic reticulum:** internal membranes studded with ribosomes that carry out protein synthesis

**5 NUCLEUS:** command center of cell

**Nucleolus:** site where ribosomes are produced

**Nuclear envelope:** double membrane between the nucleus and the cytoplasm

**Nuclear pore:** opening embedded with proteins that regulates passage into and out of the nucleus

**Ribosomes:** small complexes of RNA and protein that are the sites of protein synthesis

**7 Peroxisome:** vesicle that contains enzymes that carry out particular reactions, such as detoxifying potentially harmful molecules

**7 Lysosome:** vesicle that breaks down macromolecules and digests worn out cell components

**6 Golgi complex:** collects, packages, and distributes molecules manufactured in the cell

**1 Plasma membrane:** lipid bilayer in which proteins are embedded

**Lipid bilayer**

**Membrane protein**

arede celular

cap'sula

(nucleo'ide)

lasmática

ribossomos

mesossomo

citoplasma

## Cell Organization and Structure

### **Cell Membrane**

- **a protective layer around cells**
- **regulates interactions between the cell and its environment**

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## **Cytoplasm**

- **a gelatin like substance that fills the cells and is constantly flowing**
- **most chemical reactions within a cell take place in the cytoplasm**

## **Organelles**

(Little Organs)

- **structures within the eukaryotic cells**
- **these structures aid in the processes that keep the cell alive.**



## **Nucleus**

- **Directs cell activities**
- **Contains DNA, the cells instruction guide**  
(Blue Prints)

## Mitochondria

- release energy from the breakdown of food
- this energy is in the form of ATP

↑  
Chemical

# Cellular Respiration

# Cellular Respiration & Photosynthesis

