

What is Biology?

Biology
is **Life**



What is life?

- Biology
 - **BIO** means “life”
 - **LOGY** means “study of”
- So in order to study Biology, we first need to ask ...
“What is life?”

- To make things clear to all scientists, there is a list of characteristics that will help us determine if an object is considered living or non-living.
- To help you remember, use this mnemonic:

DOGS REACH

Characteristics of Life

- **D:** DNA
- **O:** Organization
- **G:** Growth
- **S:** Stimulus Response
- **R:** Reproduce
- **E:** Energy
- **A:** Adapt
- **C:** Cells
- **H:** Homeostasis

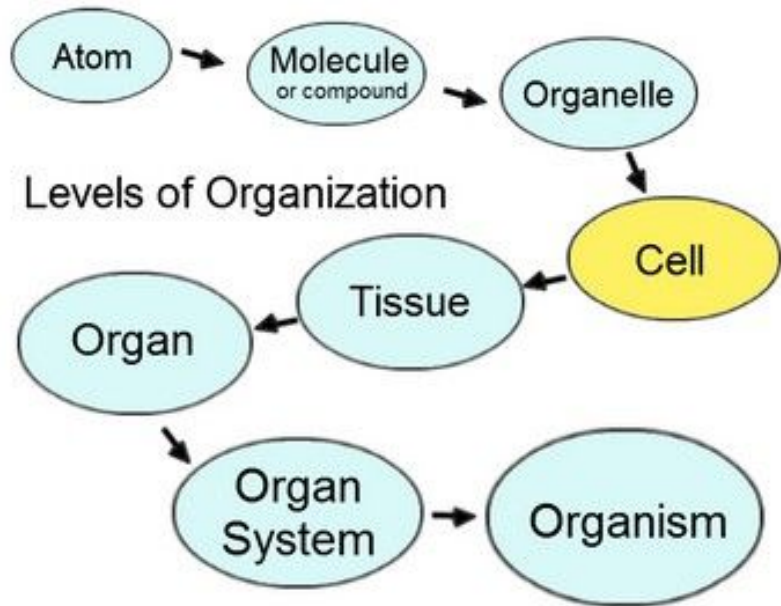


DNA

- All living things have the ability to pass on their **genetic material (DNA)** to their offspring.



Organization



- Living things are organized
- All *structures* have a *function*
 - Molecules
 - Cells
 - Tissues
 - Organs
 - Organ systems

Growth

- ❑ All living organisms grow.
- ❑ There are two kinds of growth
 - ❑ Cell division (increasing the # of cells)
 - ❑ Cell enlargement (increasing the size of a cell)



Stimulus Response

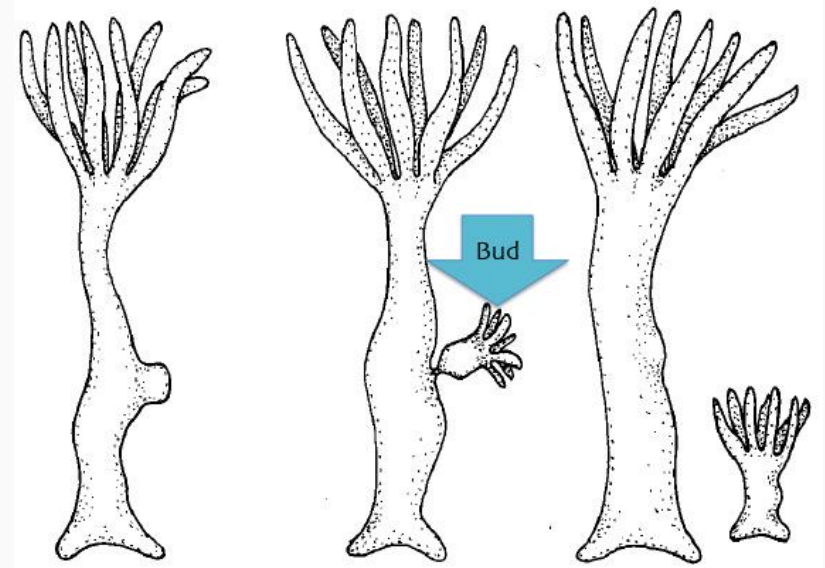
- All living organisms respond to stimuli
- Stimulus: internal or external factor in the environment that causes a response (temp, light, sound, pain)



Reproduction

Living organisms can reproduce **sexually** or **asexually**

1. **Sexual reproduction** involves an egg and sperm
2. **Asexual reproduction** takes the form of cloning, budding, root propagation, or self fertilization.



Energy

All living things use energy in a process called metabolism.

- The sum of all chemical reactions through which an organism builds up or breaks down materials.



Adaptations

- Living things have adaptations (traits) that make them well suited for their environment
- Adaptive traits are passed onto future generations.



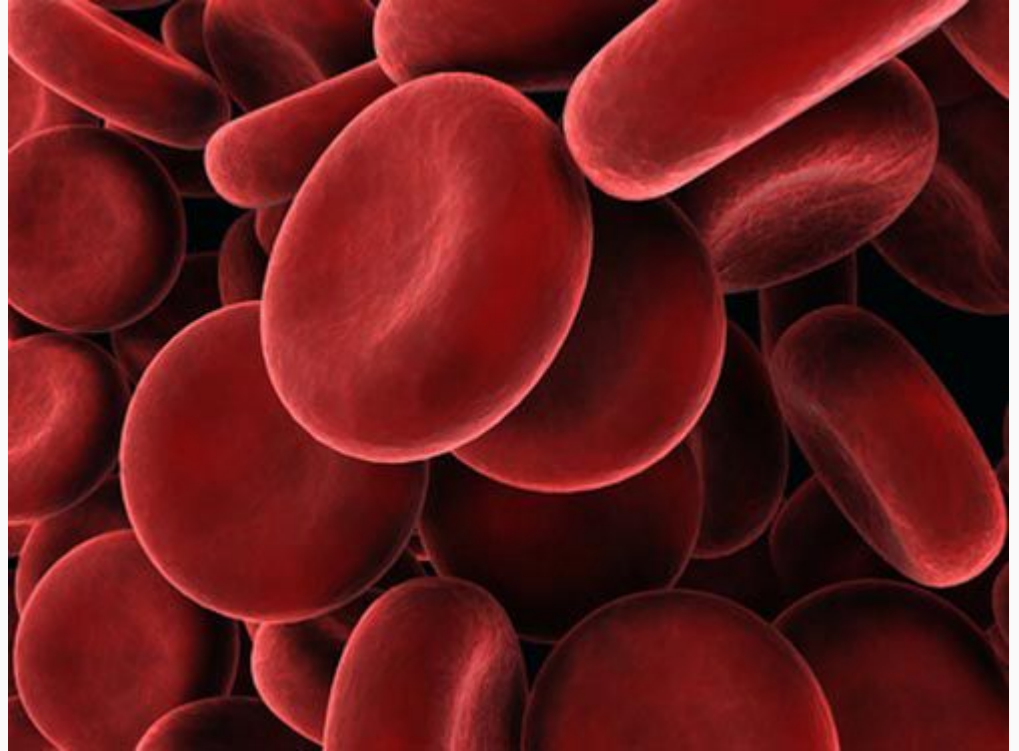
Cells

The smallest unit of life.

All living things made up of cells.

Living organisms are either **unicellular** or **multicellular**.

Cells are specialized and grouped by their function.



Homeostasis

- All living thing maintain a constant internal environment (temperature, water, pH, etc.)
- Homeostasis is the state of biological balance. Many responses are an effort to reach homeostasis.
 - Sweating, shivering, thirst

