Characteristics of Living Things

TEKS and S.E.s

- B.7 Science concepts. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. The student is expected to:
- B.7A analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental

Vocabulary

Characteristics of Life

- Homeostasis
- Genetic code
- Stimulus
- Response
- Metabolism

Prerequisite Questions

- What are the 8 characteristics of all living things?

Essential Question

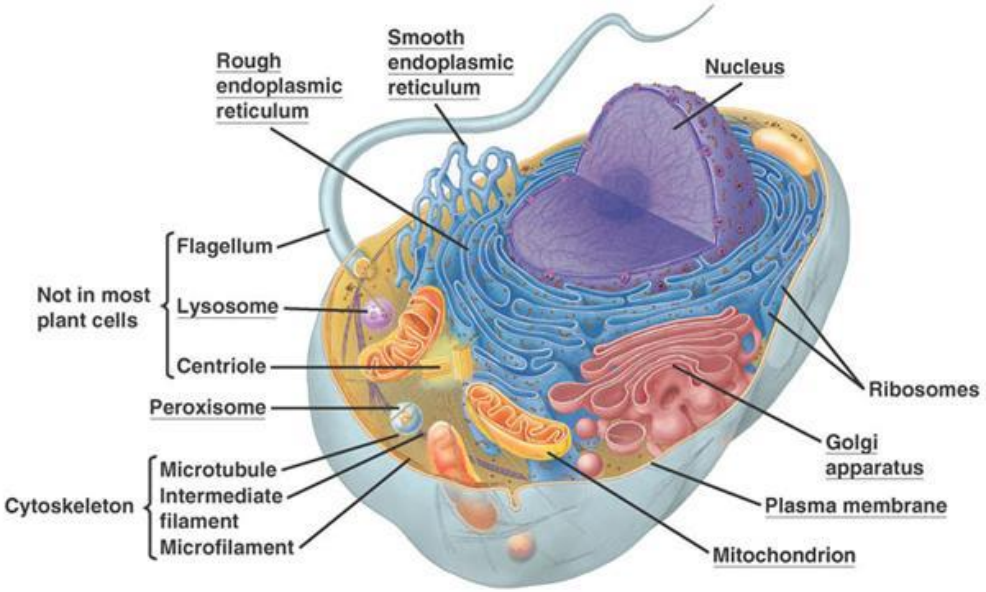
- How is it possible for scientists to classify something as living?

8 Characteristics of Living Things

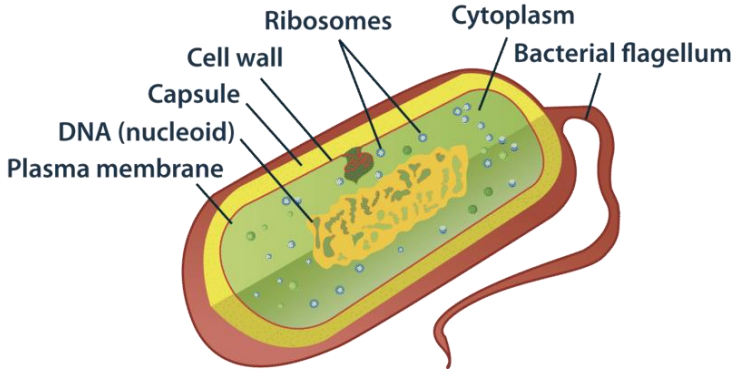
1. Made up of one or more **cells**
2. Based on a **universal genetic code** (They contain DNA)
3. **Grow** (cell division) and **Develop** (cell specialization)
4. **Reproduce** (Asexual or Sexual)
5. **Respond** to their environment (Stimulus/Response)
6. **Maintain stable internal environments** (Homeostasis)
7. **Obtain** and **use materials & energy** (Metabolism)
8. **Evolve** (the population group changes over time)

1-Living things are made of at least 1 cell

- To be a cell it **must** contain:
  1. A cell membrane
  2. Cytosol/cytoplasm
  3. Ribosomes
  4. Genetic material (DNA and RNA)

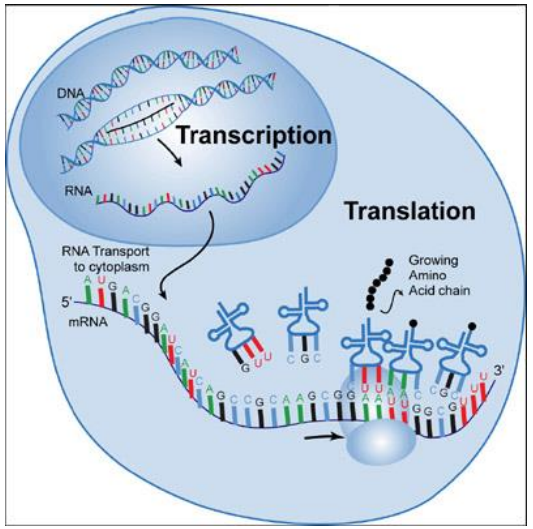


- Cells can contain more organelles than those 4, but no less than those.



2-DNA and RNA

- DNA is the code for the making of proteins used for structure and function (enzymes)

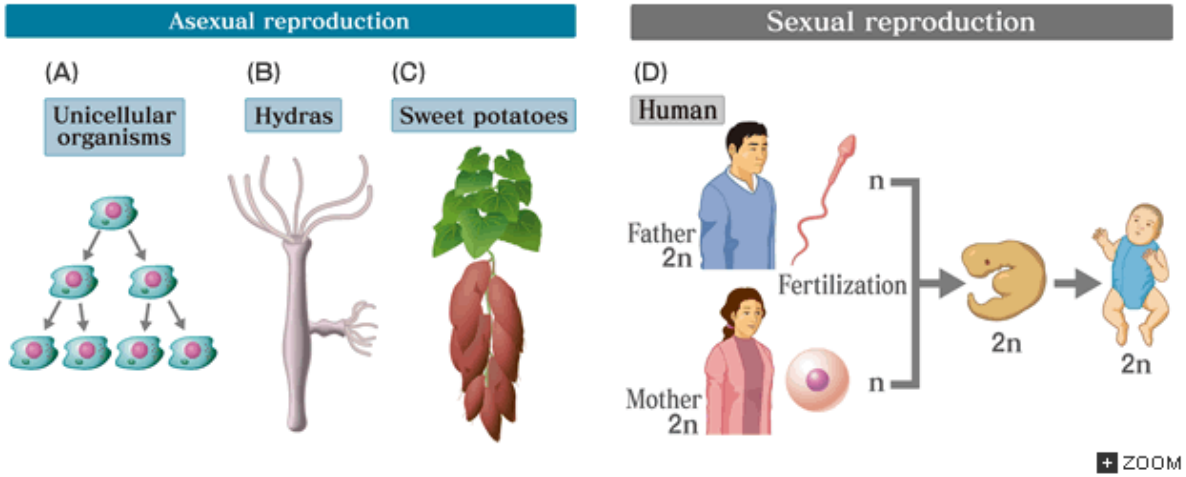


3-Grow and Develop(Specialize)

- Cell division allows for organism growth and repair
- Cell specialization is caused by accessing different DNA genes for specific proteins

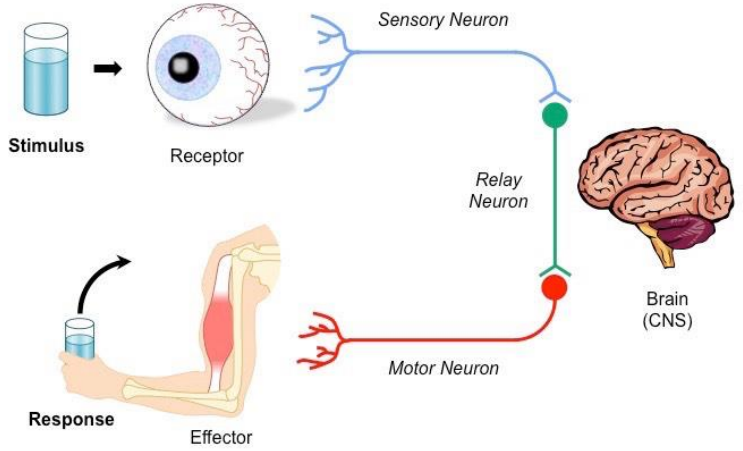
4-Reproduce

- Asexual (Binary fission, Budding)
- Sexual (Conjugation, Fertilization)



5-Respond to their Environment

- Stimulus
- Response



6-Maintain Stable Environment (Homeostasis)

- Moving resources (food, water, energetic chemicals) and waste through cells to keep a constant internal cellular environment

7-Obtain and Use Materials & Energy (Metabolism)

- All the chemical reactions that store and release energy from resources
- Enzyme reactions

8-As a group/species, all living things Evolve

- Individuals do not evolve, they mutate

- Populations/Species evolve as a group
  - Generally evolution happens over a very long time period

Concept Mastery Questions

- How can you, as a scientist, tell if something is alive?

- Are you, as an individual person, evolving right now? Explain.