



What is Life?

The Characteristics of Life (on planet Earth)



How do you know if something is alive?

- Opening discussion: You know, from prior experience, if you see something that is alive, you know it is ALIVE right?
- So, HOW do you know?
- Get out your journals and title the next clean page "Worm vs. Rock" 😊

Have you ever met a worm?



- Observe your worm – yes, you may touch it – be gentle!
- Compare the worm with the rock and come up with a list of characteristics of living creatures.
- In your journal make a T-chart, one side for worm characteristics, the other side for rock characteristics.
- After you and your partner have completed this chart, decide on 3 main things that defines life.
- Write “I know the worm is alive because... (add the 3 things here)”



Video:

- <https://www.youtube.com/watch?v=juxLuo-sH6M>

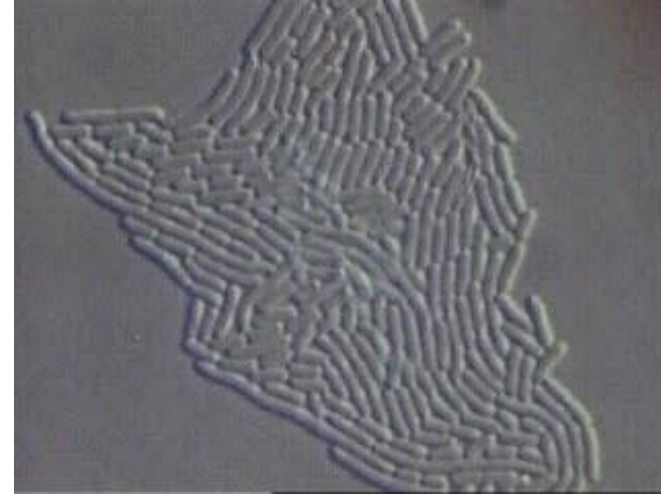


ALL living things are...

1. Made up of one or more **cells**

- ***Unicellular*** (one-celled)

- ex. bacteria



- ***multicellular*** (many-celled)

- ex. animals, plants



2. Use **energy** to survive

- **autotroph** – makes its own food using energy from sun
- **heterotroph** – gets energy by consuming other organisms



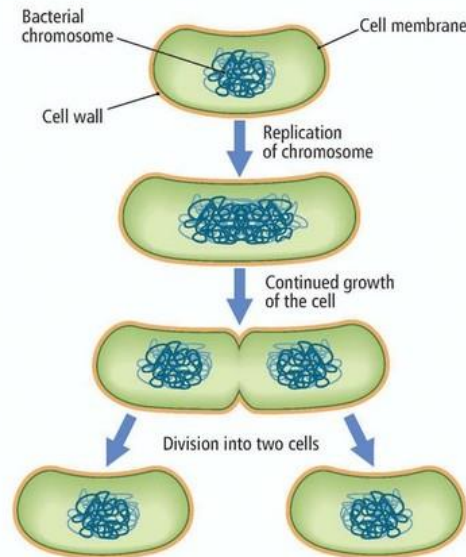
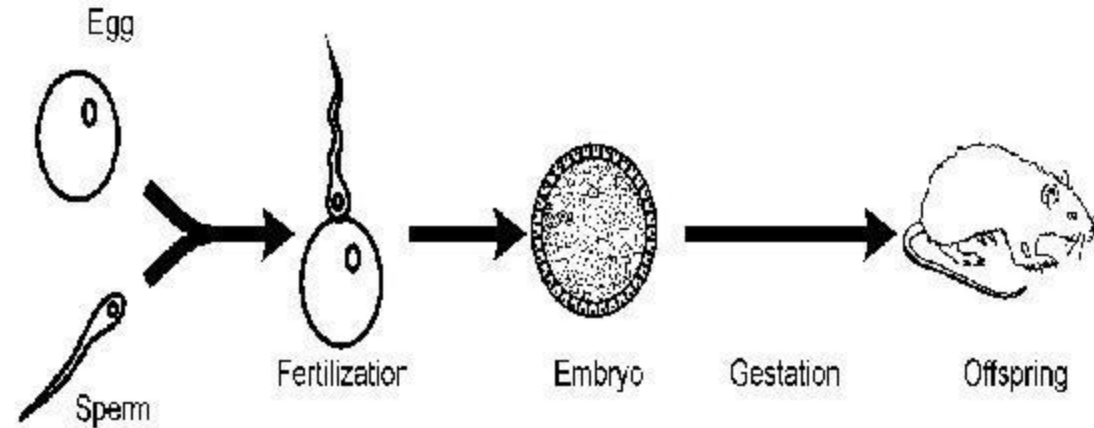
3. Respond to stimuli in their environment

- **Stimuli** - factors in the environment that living things react to
- Response – the reaction to something
- For example: If the plant sense the dragonfly, it will snap close, if the man touches a hot pan, he lets go.
- More ex:
light, hunger, temperature,
sound, fear



4. All living things reproduce

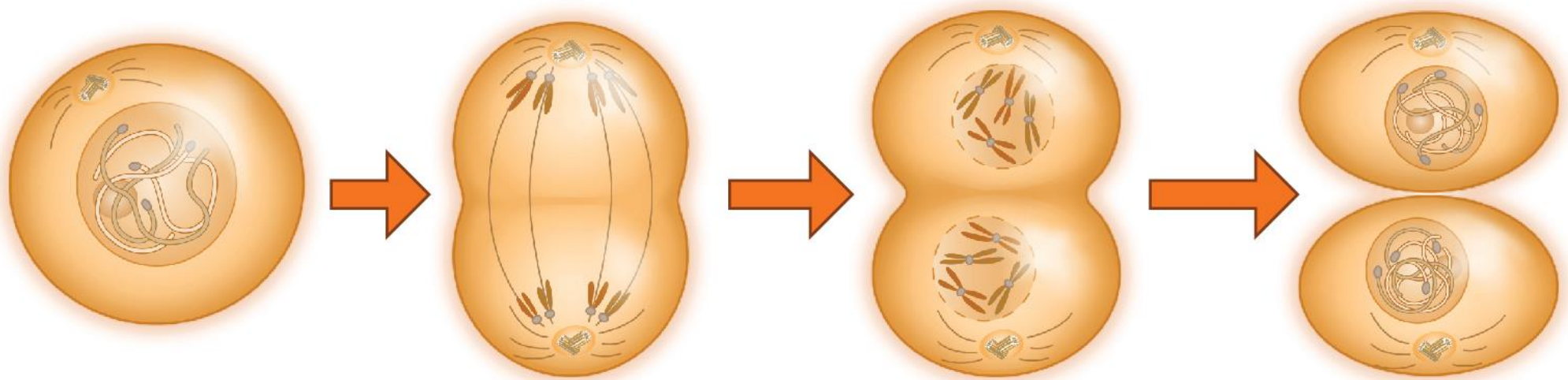
- **sexual** - two parents required (sperm and egg)
- [Video](#) (sexual reproduction)
- **asexual** - only one parent cell is needed
- [Video](#) (asexual)



5. **Grow** and Develop

- Each cell divides to make new cells (cell division) – results in growth
- Some cells become specialized and perform different jobs than others (differentiation)

Cell division



6. Maintain homeostasis

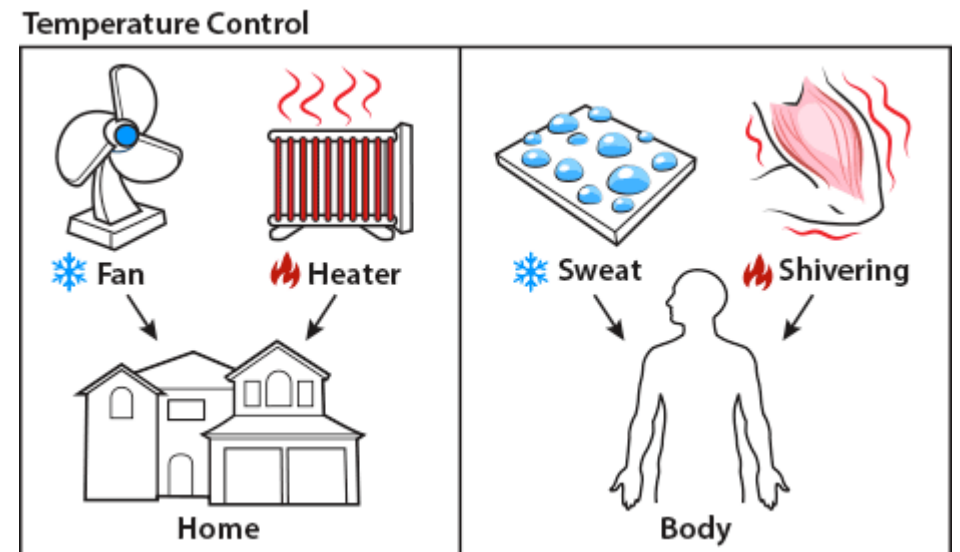
- **Homeostasis** –a term that is used to both describe the survival of organisms in an ecosystem and to describe the successful survival of cells inside of an organism.
- a relatively **stable** internal environment (within a certain range)
 - (ex. Human body temperature is

about 98.6 °F)

If you get too cold – what happens?

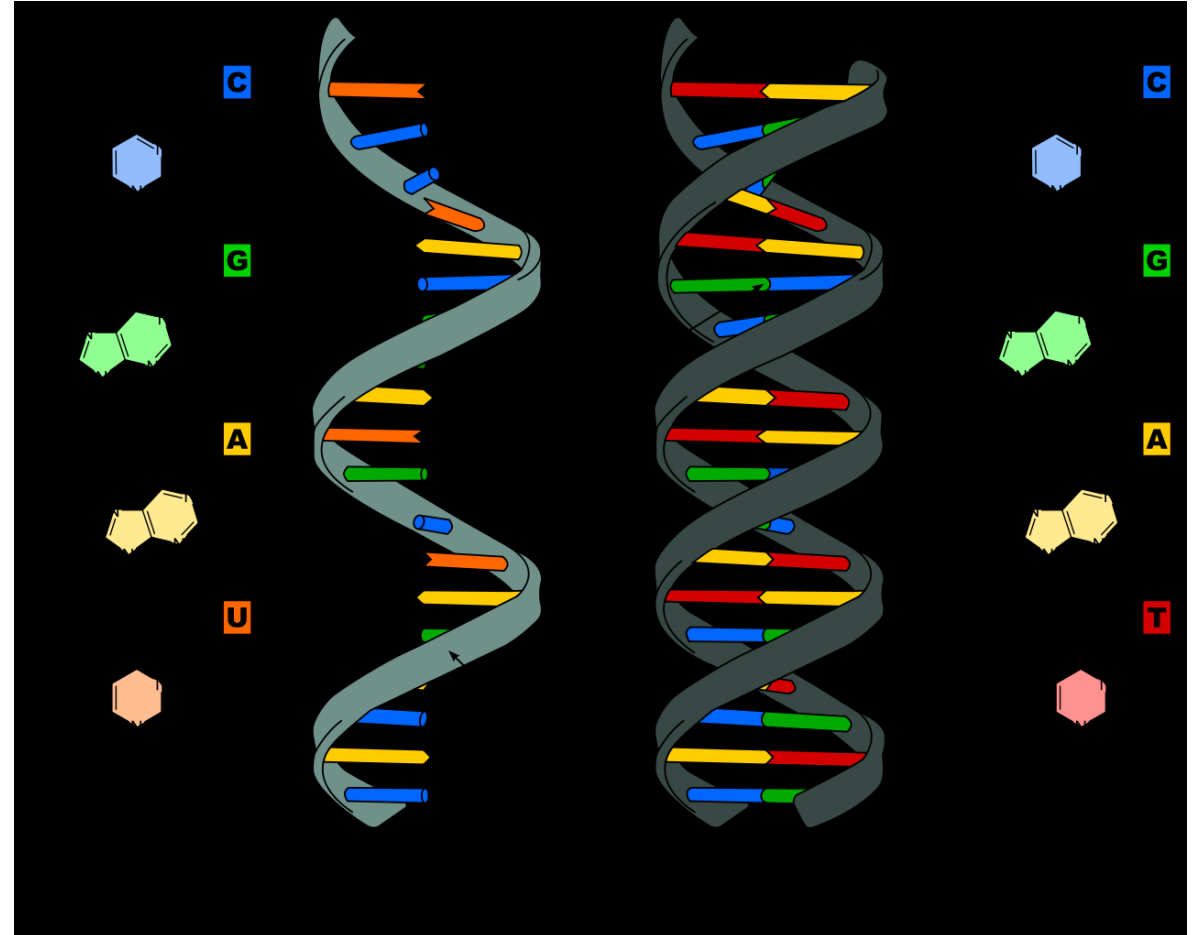
What if you are too warm?

[Homeostasis video](#)



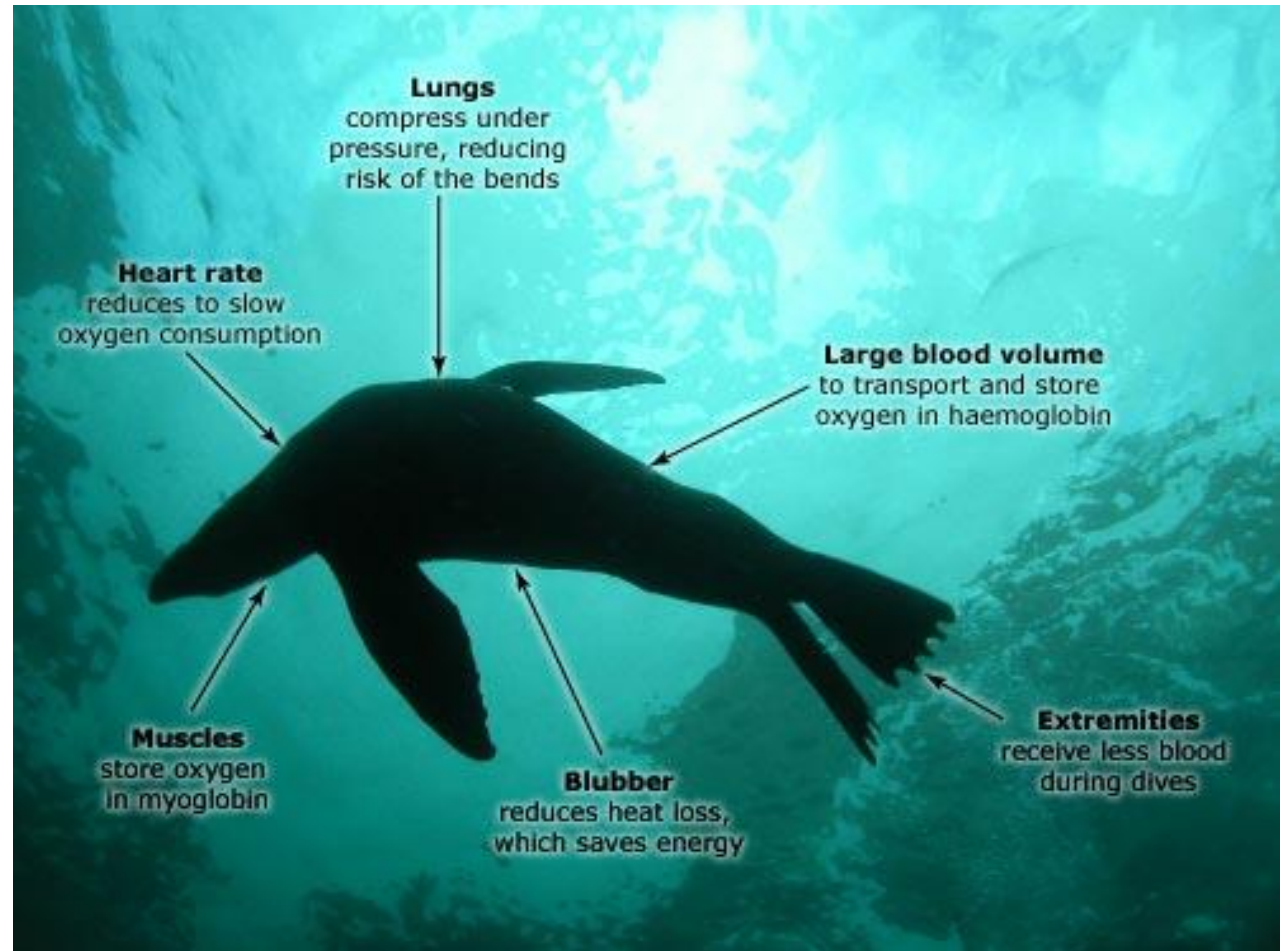
7. Have a universal genetic code

- All living things have **DNA** (or RNA)
- DNA – Deoxyribonucleic acid
- RNA – Ribonucleic Acid (left)
- Both of these are ways to carry genetic information
- DNA passes on genetic information from one generation to the next



8. **Adapt** and change over time to better **survive**

- **Evolution** - gradual change in a population of organisms over time
- Individuals DO NOT evolve



Video Summary – 6 min.

- <https://www.youtube.com/watch?v=iuUzQW2gAw8>



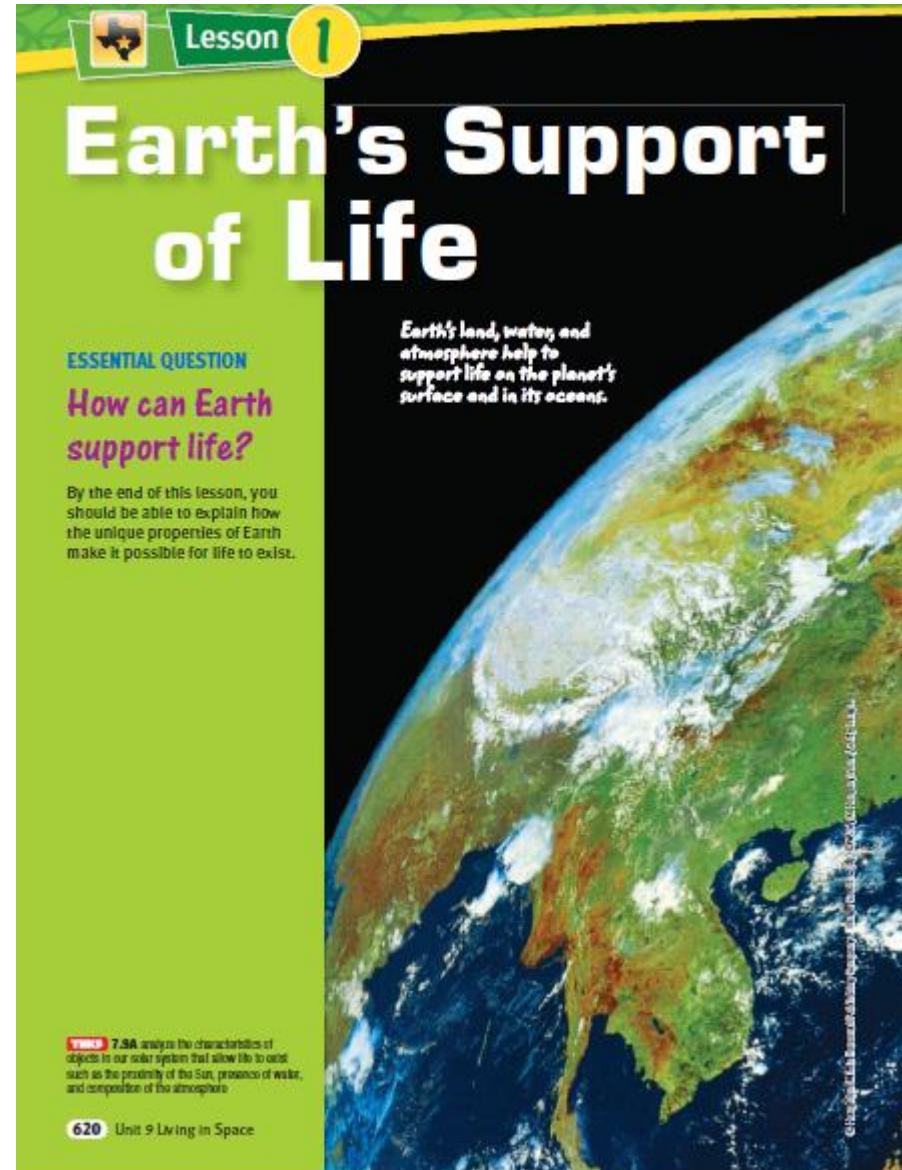
Characteristics of Life

Back to the worm!

- In your journal –
- Remember the criteria you used to classify your worm as a living thing at the beginning of class?
- I bet your ideas have changed now!
- Using what you have learned in class today, write your worm a short letter (you can name him/her too)
- In the letter, start it with: “You are alive and here is why!”
- Tell your worm all about the characteristics of life.

HW: in textbook

- Read pages 620-628



Lesson 1

Earth's Support of Life

Earth's land, water, and atmosphere help to support life on the planet's surface and in its oceans.

ESSENTIAL QUESTION
How can Earth support life?

By the end of this lesson, you should be able to explain how the unique properties of Earth make it possible for life to exist.

7.9A 7.9A analyzes the characteristics of objects in our solar system that allow life to exist such as the proximity of the Sun, presence of water, and composition of the atmosphere.

620 Unit 9 Living in Space