

Learning Intentions

1. To learn the scientific properties that define all “living” things.

Questions

There are 7 basic characteristics of life. Fill in the blanks.

1. Organization: containing one or more specialized cells (the fundamental unit of life)
2. Metabolism: the transformation of energy in chemical reactions
3. Homeostasis: regulating the internal environment to maintain a steady equilibrium
4. Growth: becoming larger in size, either by increasing the size of the cell, or by creating new cells through cell division
5. Reproduction: creating a new organism, either sexually or asexually
6. Response: having a reaction to stimuli from the outside
7. Evolution: a change in the population over time in response to a change in the environment

Fill in the chart below, to classify the following as either living or not living.

	Response	Evolution	Metabolism	Homeostasis	Growth	Reproduction	Organization	Alive?
Frogs	✓	✓	✓	✓	✓	✓	✓	✓
Flowers	✓	✓	✓	✓	✓	✓	✓	✓
Bacteria	✓	✓	✓	✓	✓	✓	✓	✓
Viruses	✓	✓	~	X	~	~	X	X
Brain-dead Humans*	X	✓	✓	~	✓	✓	✓	~
Zombies	✓	✓	~	~	X	✓ ~	?	X

	Response	Evolution	Metabolism	Homeostasis	Growth	Reproduction	Organization	Alive?
Image Memes	X	✓	~	X	✓	~	~X	X
Artificially-Intelligent Robots	✓	✓	✓	✓	✓	✓	X	X

* In 2008, Edmund Pellegrino, the chairperson of the US President's Council on Bioethics, said that attempts to define death "end in some form of circular reasoning—defining death in terms of life and life in terms of death without a true 'definition' of one or the other." <https://www.newyorker.com/magazine/2018/02/05/what-does-it-mean-to-die>

Homework

Write down 5 questions that you have about life, death, bacteria, viruses, vaccines, antibiotics, and epidemics.

- 1.
- 2.
- 3.
- 4.
- 5.