Chapter 3 General Science

The Study of Life

3-1 The Study of Life

**organism**- any living thing or once-living thing

**biology**- the study of all organisms on Earth, including plants and animals

**botany**- the study of plant life

**genetics**- the study of how living things pass along certain features of themselves to their offspring

**zoology**- the study of animal life

**microbiology**- the study of organisms to small to be seen with the eye alone

\* The Earth is the perfect distance from the sun. If the Earth were closer, it would be too hot to support life. Oceans would completely dry up.

\* If the Earth were farther away, it would be too cold for life. In fact, the entire

planet would be covered with ice.

\* The way Earth is now, we have plenty of water. The temperature is just right. We

can breathe the air.

\* Earth is filled with life. Write as many living things as you can in 3 minutes.

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In fact, Liberty’s courtyard is home to millions of plants, animals, and other living things.

\* A living thing is called an **organism**. Something that once was alive is also called an **organism**.

\* There are people that study organisms on Earth. These people are called **biologists**.

\* **Biology** (life science) is the study of all organisms on Earth including plants and animals.

\* There are different sizes for organisms. Name really, really tiny organisms.

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\* Name really, really large organisms.

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We will now read and review a few articles to see if anyone named the correct answers.

1.) Did any of your organisms end up on any of the lists?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Have you heard of any of the organisms on the list? If so, which ones?

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According to the Wikipedia article, it is possible that the smallest organism has not been found yet. Why might this be? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Do you believe there is an organism that has not been seen/found that is larger than the honey mushroom (fungus)? Defend your answer. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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There are five major fields of life science, or biology. They are **botany**, **zoology**, **genetics**, **microbiology**, and **ecology.**

**On the Cutting Edge**

\* SETI stands for the Search for Extraterrestrial Intelligence.

\* Many scientists believe there may be life on other planets. They use powerful telescopes to search the sky for radio waves. We are hoping to pick up messages from other places. That is why we also send messages in hopes that if life exists on other planets, they will pick up the messages.

\* The more we find out about outer space, the more likely it seems that life exists on other planets. We have found several that may have a climate (and sun) similar to that on Earth.

What might scientists think if a telescope picked up a radio signal from outer space?

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Complete the National Geographic *Are We Alone*? book with supplemental Worksheets. This activity will take several class periods.

3-2 What is Life?

**ecology**- the study of interactions between organisms and their environment

**characteristic**- a quality or feature of a person or thing

**waste**- the part of food that an organism does not need after it uses the food for energy

**reproduce**- to make more of one’s own kind of organism

**environment**- everything that surrounds you

**life span**- the amount of time an organism is likely to live

\* **Characteristics** make one thing different from another. These are similar to those discussed in the heredity/traits lessons. These include hair color, height, shape, and personality type.

\* We look different that monkeys or mushrooms, or even weeds! We have more in common with them than you might think. Can you name any of these?

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All living things…

1. Get and use food for energy
2. Move
3. Grow
4. Reproduce
5. Respond to their environment.

\* Apes have hands and feet with opposable digits (fingers). This allows them to eat with one hand, unlike other animals that must grasp food with both hands. What other advantages would opposable digits have? Remember, humans have opposable digits so use us as an example.

\* Plants and animals are not all like us. Did you know that some plants or animals are poisonous? Can you name any? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Getting and Using Food**- Everything needs food and water to survive. Depending on the size of the organism, climate, and other factors, the amount varies. The source of the food also varies. Plants get energy from the sun (mostly). Animals get their energy from plants, although some animals eat other animals.

\* Food must be broken down. After using the energy, the animal must get rid of the **waste**.

**Moving**- Animals must be able to move because they do not create their own food.

1.) They need to find food.

2.) They need to get away from danger.

3.) They need to find a mate.

Animals use different methods to get from place to place.

1. Some swim.
2. Some fly.
3. Some walk.
4. Some run.

Plants also move, however. Plants always move in the direction of the sunlight.

**Growing**- All living things grow. After a certain size is reached, most organisms stop growing. People stop growing when they are between 15 and 20 years old. Some trees grow for hundreds of years before they stop growing.

\* The amount of food available for an animal (or soil quality and sunlight for a plant) can change the size of a creature (in weight, length, and width).

**Reproducing**- All organisms can **reproduce** themselves, otherwise there would not be any of the organism existing. When a cat has kittens, she has reproduced. When a human has a baby, she has reproduced.

1. Most animals and plants come from two parents (*sexual reproduction*).
2. Smaller organisms have only one parent (*asexual reproduction*).

**Responding to the Environment**- Everything surrounding you makes up your **environment**. Describe the environment of this classroom.

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\* To respond means to react to things in the environment. If a ball is thrown at you, how would you react? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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How would you react if someone threw the ball at you when you were not looking?

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**How Long Do Organisms Live?**

\* Living things have a life cycle (or **life span**).

\* Everything that lives will die.

1.) Dogs live for 14 years.

2.) Mayflies live one day.

3.) White pine trees lives for 500 years.

4.) Bristlecone pine trees live for 5,000 years.

5.) Humans live for 76 years.

We only lived 65 years earlier this century. Why do you think this is the case?

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