***Key Concept 1-1:*** Biology is the study of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Earth is home to an incredible \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |
| --- |
| Biosphere: |
|  |  |
| Biodiversity: |
|  |  |
| Species: |
|  |  |
| Organism: |
|  |

* “Bio” means \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; “-ology” means \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Humans have studied \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ throughout \_\_\_\_\_\_\_\_\_\_

**Key Concept 1-2:** Unifying themes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ concepts from many fields of biology.

* \_\_\_\_\_ organisms \_\_\_\_\_\_\_\_\_\_\_\_\_ certain characteristics. \_\_\_\_\_\_\_\_\_\_ is the scientific study of \_\_\_\_\_\_\_\_\_\_\_ forms of life.

|  |  |
| --- | --- |
| Characteristics Shared by Organisms ( | Details |
| **1.** |  |
| **2.** |  |
| **3.** |  |
| **4.** |  |

* An ***organism*** is any \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* All levels of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of related parts.

***Key Concept 1-3:*** Science is a way of thinking, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and gathering evidence.

* Like all science, biology is a process of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



* Biologists use experiments to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_hypotheses.
* Experiments allow scientists to determine what \_\_\_\_\_\_\_\_\_\_ a phenomenon.

Inference

Control Group

Experimental Group

* Does \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ exist?

-Always a chance that some \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ factor contributed to result/conclusion of experiment

-Making sure experiment is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is as close as we can get to providing “proof”

* ***Reliability***: experiment must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_’
	+ Others must be able to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ experiment with the \_\_\_\_\_\_\_\_\_\_\_\_\_ results
	+ Replicating results is cornerstone of scientific \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Experiments that are \_\_\_\_\_\_\_\_\_\_\_\_\_ to repeat or replicate are \_\_\_\_\_\_\_\_\_ reliable
	+ Methods/steps should be explicit and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to make it more reliable.
* ***Validity:*** are your findings credible? Does your experiment \_\_\_\_\_\_\_\_\_\_\_\_ what you say it does?
	+ Established if experiment meets \_\_\_\_\_\_\_\_\_\_\_ requirements of scientific method and experimental design.
	+ Did you include a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ group?
	+ Did you \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ your sample?
	+ Did you keep other factors \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?

***Key Concept 1-4:*** Technology continually \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the way biologists work.

|  |  |
| --- | --- |
| Tool or Technology | Details |
| Light microscope (LM)  | **1.** |
| Scanning electron microscope (SEM) | **2.** |
| Transmission electron microscope (TEM)  | **3.** |
| X-ray imaging | **4.** |
| Magnetic resonance imaging (MRI) | **5.** |
| Functional magnetic resonance imaging (fMRI) | **6.** |
| * Complex systems are modeled on computers
 | **7.** |
| Molecular genetics | **8.** |

* Imaging technologies provide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of life

***Key Concept 1-5:*** Understanding biology can help you make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ decisions!

* ******Your health and the health of the environment \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on your knowledge of biology.
* Biology presents many \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ questions.
	+ There are still many questions to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in biology.
* ***Science vs. Pseudoscience***
	+ Science
	+ Pseudoscience
	+ Protoscience
	+ Nonscience