Biological Sciences

STUDENTS SHOULD KNOW	EXAMPLES OF WHAT STUDENTS SHOULD BE ABLE TO DO	Ac
1. Biological classifications are based on how organisms are related. Organisms are classified into a hierarchy of groups and subgroups based on similarities which reflect their evolutionary relationships.	• Investigate the uses of fungi by different human cultures. • Report on how bacteria are used to solve environmental problems, such as cleaning up oil and chemical spills and breaking down plastics in garbage. • Identify angiosperms and gymnosperms by looking at their leaves.	
2. The complexity and organization of organisms accommodates the need for obtaining, transforming, transporting, releasing, and eliminating the matter and energy used to sustain, grow, and reproduce the organism .	• Observe changes in heart rate during different activities. • Draw arrows on a diagram of a salmon showing the movement of water and salt into and out of the body during different parts of its life cycle. • Take apart fruits and compare where the seeds are found and how they are arranged. • Identify a fern frond with sori, a pine cone and a fruit as ways plants reproduce.	
3. The fact that the human body is formed from cells that contain 2 copies of each chromosome explains many features of human heredity.	• Trace a genetic disease by using a family history and a pedigree. • Demonstrate how the sex chromosomes of the parents determine the sex of a baby.	
4. Organisms have behavioral responses to internal changes and to external stimuli.	• Count the contractions of the contractile vacuoles in paramecia when in salt water, distilled water, or culture water. • Visit the zoo to observe the animals. Record a description of each behavior, identifying stimuli and responses.	

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5. Matter and energy flows through different levels of organization of living systems - cells, organs, organisms, communities and between living systems and the physical environment.	• Diagram a food web that includes the sun, producers, primary through tertiary consumers, as well as the role of decomposers. • Create a "Bottle Biology" habitat for plants and animals, identify the biotic and abiotic factors in their habitat, and explain their interactions. • Predict the population growth curve for moose over time assuming no hunting pressure or predation by using a theoretical model.
6. Benefits and drawbacks of alternative choices must be taken into account when making decisions.	• Simulate the spread of a communicable disease and determine the original source of the disease. • Discuss the fairness of adjusted insurance rates for smokers versus non-smokers. • Evaluate the effects of stimulants and depressants using a model of the brain. • Select a local environmental issue and participate in an activity which addresses this issue.