

What is the impact of photosynthesis and cellular respiration on the environment?



Do genes help an organism learn about and adapt to its environment?



How does an organism respond to its environment at the molecular level?

With dwindling resources available for the Giant Panda, why would it be advantageous to respond to its changing environment?



What can a model organism teach us about the seasonal color change in the snowshoe hare's coat?



How is an organism's response to its environment influenced by molecular mechanisms and processes.

These lab experiences enable a student's ability to connect concepts of how an organism's response to its environment is impacted at the molecular and macro levels. This includes concepts such as how an environment influences gene expression, how genetics play a role in associative learning, how the Giant Panda population has reacted to the impact of human activities on its habitat and more! Below are some interesting facts that you can use to help pique your students' interest when exploring these concepts.

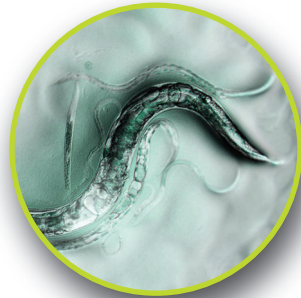
- *C. elegans* was the first multicellular organism to have its complete genome sequenced
- *C. elegans* neurons share many features with human neurons
- Research has shown that the DAF-18 protein is essential for the function of ASE neurons, one of *C. elegans* chemical sensing neural circuits
- Photosynthesis and cellular respiration are interrelated — plants do both!
- The rates of photosynthesis and cellular respiration have a direct impact on the homeostasis of an ecosystem
- Different environmental factors, such as light and temperature, impact both processes
- Giant Pandas' diet is >99% bamboo
- Giant Pandas live solitary lives
- Habitat loss is a major threat
- Giant Pandas have a vulnerable species designation
- Many internal and external factors, such as temperature, chemicals, and light, play a role in gene regulation
- Gene expression is carefully regulated to allow adaptation to differing conditions
- Gene expression is important because it prevents wasteful production of proteins

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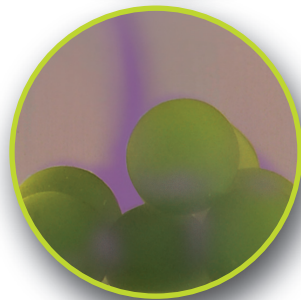
Purchase all four Response to Environment workflow kits and save an additional 10% off the list price.

Order (Catalog #17004741EDU).



***C. elegans* Behavior Kit** (Catalog #1665120EDU)

Explore how genetics impacts an organism's behavior and its ability to adapt in a changing environment.



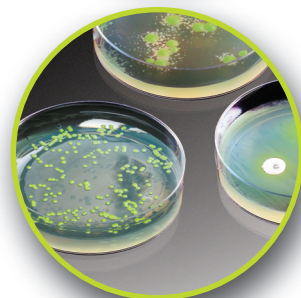
Photosynthesis and Cellular Respiration Kit (Catalog #17001238EDU)

Use algae beads to model an organism's ability to photosynthesize or respire in changing environments.



Giant Panda Problem Kit for AP Biology (Catalog #17002878EDU)

Engage students by becoming conservation biologists and build an understanding of reproductive endocrinology and immunology.



pGLO Bacterial Transformation Inquiry Kit (Catalog #1660335EDU)

Examine how different environmental factors impact gene regulation and ultimately an organism's phenotype.

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