

Return to Eich Island

Evolution: “A change over time”

As a way to assess your understanding of evolution, heredity, and natural selection, you will choose an animal and two of the environments listed below. Then you will decide how your animal will evolve in order to survive in that new environment.

Environments:

High Mountain Area: It snows heavily in winter. The high altitude, rocky cliffs, and ice makes it difficult to move. Food is hard to find, but there are many small rodents (mice, rats, and rabbits). The snow and ice make everything look white.

Desert Area: Very hot, dry, and flat. The sand is a light brown color and you must be able to go without water for days at a time. There are not many plants and animals, but they come out at night.

Swamp Area: Very wet with marshy ground covered in tall green stalks and shrubbery. A few large trees stretch across the sky. Movement is difficult in the watery mud. There are many small fish and swarms of insects. Watch out for the poisonous snakes!

Grassland Area: Wide, flat land with a short rainy season. Watering holes become the center of attention, so animals have to be alert for predators. Most trees and bushes are thorny and difficult to eat. The high grass provides some protection for prey animals.

Sandy Coast Area: The tide constantly moves in and out across the sandy beach. At low tide, tide pools and small lagoons form. At high tide, animals from the open ocean can reach closer to shore. Sea birds circle overhead and sharks prowl the waters looking for an easy meal!

Rainforest Area: Tall trees stretch as far as the eye can see, so tall they block out much of the sun! Animals have to be able to move through the canopy or thick brush at the ground. There is abundant food in the form of fruit, leaves, insects, and small animals, but also many predators. Venomous amphibians and parasites are everywhere!

What to Do:

1. Decide how your creature will evolve to fit the new environment. (You cannot have a fish turn into a mammal.)
2. Sketch (Draw) out the design of your original animal's adaptations to the first environment with a labelled diagram. Make sure to explain how its major features adapt it to its environment (changes that help your animal survive). List and describe at least 3 adaptations.
3. Identify what caused the migration of your organism.
4. Sketch (Draw) out the design of your final animal labelling and describing a minimum of 3 adaptations to fit its final environment.
5. Create an evolutionary chain of how your original creature evolved into your final creature. You should have 4 total creatures: original, 2 intermediate steps, then the final. Explain the mutations/changes that occurred along the way.
6. Write about the following. Make sure your responses include appropriate science vocabulary.
 - a. How did your animal change over time? (What are the intermediate steps?)
 - b. How are the theory of adaptation and natural selection demonstrated by your animal's evolution?
 - c. What evidence could scientists use to identify the change in your creature?
7. A 3-D model or providing real-life examples of evolutionary adaptations (eg: Pocket mouse) is required for a 7-8 on the IB rubric

Return to Eich Island Rubric		
Criterion C: Processing and Evaluating	i. present collected and transformed data ii. interpret data and outline results using scientific reasoning .	i. Diagram “before” and after” detailing at least three anatomical features ii. Explain the evolution of the creature with supporting details
0	Doesn't meet any of the criteria below	Doesn't do the project
1-2 50-60	i. collect and present data in a numerical and/or visual forms ii. accurately interpret data	i. Diagram presents an incomplete picture, lacking detail, labels, or missing many parts ii. Explanation demonstrates lack of effort, understanding, or incompleteness
3-4 70-75	i. correctly collect and present data in numerical and/or visual forms ii. accurately interpret data and outline results	i. Diagram presents adaptations and their explanations, but lacks depth and detail ii. Explanation demonstrates a basic understanding of the material without supporting details
5-6 83-88	i. correctly collect, organize and present data in numerical and/or visual forms ii. accurately interpret data and outline results using scientific reasoning	i. Diagram presents adaptations and explanations with detail and creativity ii. Explanation demonstrates a thorough understanding of the material with sufficient supporting detail
7-8 95-100	i. correctly collect, organize, transform and present data in numerical and/or visual forms ii. accurately interpret data and outline results using scientific reasoning	i. Diagram presents adaptations with extra depth and detail, including three-dimensional models or real-life adaptations ii. Explanation demonstrates a thorough understanding of the material with extra depth and the inclusion of additional subjects of study
OVERALL SCORE	Criterion C:	