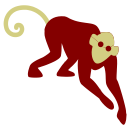
Name: _____ Date: _____ Class: _____

Adaptation in Animals Project



Background

Evolution is . . .

- The change of a species over time due to environmental pressures or mutations
- Evolution happens by the process of natural selection which allows organisms with the best suited adaptations to survive and thrive

Natural Selection is the process where . . .

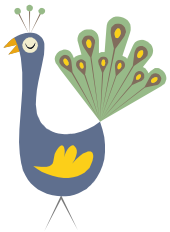
- Only organisms best suited for their environments survive to produce offspring
- So it's the organisms that survive the challenges of an environment that are the ones that reproduce
- The offspring get and pass on characteristics that allowed their parents to survive … This continues through generations making a species better able to survive

Adaptation is . . .

- The idea that certain animals have developed features which help them survive best in their environment
- Animals gain and adapt their physical features over millions of years
- Organisms work with what they have - they can not create new characteristics
- For animals, including people, adaptation is often a matter of life or death! For the animals in the world, adaptation means having certain body parts or behaviors that allow the animals to survive and thrive in their environments

The Adaptation Project Overview

Task: You be assigned to a new planet, each has a specific type of environment and climate. You job as the chief genetic engineering team, is to create an animal, which is going to be strong and resilient enough to survive on the planet's environment. You need to consider your animal's niche … how is it going to stay warm or cool, what it is going to eat, who is going to eat it, how it is going to get its food and water, and how it is going to care for its young to make sure they survive, what adaptation(s) make your animal best suited for the environment to ensure survival success? Your animal must FIT INTO the existing food chain/web - it **cannot** be the ultimate predator (the one which can eat everything else and nothing can eat it).



The Directions

Step 1: Animal Niche Considerations

Type your answers to the following questions:

· What is the size of your animal? Why?
· What does it eat? Why?
· How will it catch/get food and water? Explain.
· How will it keep warm/cool?
· Where will the organism shelter?
· Does it protect/defend itself from attackers? Explain how.
· What eats your animal?

Step 2: Animal Design

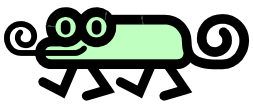
- Create a rough copy on a piece of white paper:
  - Design a head (eyes, nose, mouth, ears, hair), body, appendages, tail, etc. . .
  - Draw out and color the organism or create from existing pictures. Be sure to label the parts.
  - Get rough copy approved by Dr. Browne before you create your organism

Step 3: Animal Engineering

- Once your organisms rough copy is approved by the teacher, it is time to create your organisms. Your options:
  - Draw out and color your animal
  - Cut out parts from other animals and paste together
  - Make a physical model of your animal
  - Other ideas … Just check with Dr. Browne

Step 4: Conclusions and Presentations

- On an index card, your are to type up a description of your animal which includes the following information:
  - the organisms necessary resources;
  - its niche;
  - its specialized adaptations;
  - which existing food chain does the animal fit into?
  - any other important information …
- You will present your created animal to the class by reading the information on the index card. You will be handing in the typed questions from step 1, the rough copy from step 2 (signed by me), your organism, and your typed description on the index card



The Planets

Directions: Circle your assigned planet.

Planet 1: This planet is dark and cold most of the time. It is very mountainous. It rains almost all day. Because of the wet, dark conditions, the only plants that grow well are small mosses and fungi. Animals on this planet include a type of mouse; a nocturnal large hunting cat; fish; and a variety of insects.

Planet 2: This planet is dry and hot. Most of the planet is flat. Water is found in underground streams but there is little water on the surface of the planet. Most of the planet's surface is covered in sand, although there are patches of dry grass. When plants can get their roots down into the water table, they grow into tall trees with leaves at the top but not along the trunk. Plants, which are not connected to the water table, are small and dry, but they are edible. Animals on this planet include insects; various species of birds which roost in the high trees; a sand-colored lizard; and a type of rat.

Planet 3: This planet is tropical: wet and hot. Most of the planet is covered by rainforest. The planet is very flat. Water collects in large pools and lakes, which have water in them all year 'round. A species of poisonous plant grows thickly on the ground. The spines of this plant are poisonous, and any animal, which steps on the plant, is sure to die. The vegetation is plentiful, and includes leaves, fruits, and nuts. Animals include carnivorous snakes; varieties of insects; monkeys; fish; and birds.

Planet 4: This planet has a moderate climate. It never gets very hot or very cold, but stays mild all year 'round. It rains for part of the year and the water forms pools and lakes, which dry up towards the end of the year, and then the planet is very dry. The planet is partly mountainous and partly flat. Vegetation includes tall trees with high leaves and fruit, and a smaller plant, which produces nuts. However, these nuts are inside hard shells, which need to be removed before the nut can be eaten. Animals include rats and mice which live underground; insects; birds that nest in the tall trees; slow moving mammals which also live in the trees; and a species of carnivorous nocturnal wolf.