

# Adaptations 3: Fortune Teller Adaptations

## Middle School Biodiversity Curriculum

### **Class Time Required:**

1 class period (50-65 minutes)  
Extension (30-45 minutes)

### **Materials Needed:**

- Engagement: Paper, Scissors
- Investigation and Explanation: Resource Materials (books, textbooks, internet), Head Phones for BBC Website (optional)
- Extension: Worksheet 1, "Adaptation 3: Fortune Teller Adaptations," Resource Materials (books, textbooks, internet)

**Teacher Preparation:** 30-60 minutes to review activity, collect materials, and print copies

**Student Knowledge:** Basic understanding of the term "adaptation" and ability to give examples of adaptations in common animals; research skills

**Vocabulary:** environment, adaptation, structural, behavioral

### **Next Generation Science Standards:**

#### • **MS-LS1-4.**

Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

#### • **MS-LS1-5.**

Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms

### **Overview:**

Through this activity, students will have a chance to learn about animal and plant adaptations that differ from examples typically given in books or on television. By accessing the BBC NATURE Wildlife website <http://www.bbc.co.uk/nature/adaptations>, Encyclopedia or Life <http://eol.org/>, or another good wildlife resource, students will view a wide selection of organisms from which they can make a "Fortune Teller" to illustrate different types of adaptations. Some of the students' adaptation categories may include: Adapted to extremes, Animal Intelligence, Communication and Senses, Lifecycle, Locomotion, Morphology, Social Behavior, and more. The Fortune Teller will be used by students to challenge their classmates with guessing some unusual animal adaptations from around the world. The extension activity exposes students to famous biologists

who have studied plants and animals in the past and present, creating a “Famous Biologist Timeline”.

### **Background Information:**

Organisms develop different adaptations through time that promote the survival of individuals or species. Populations can change in response to changes in the environment. Adaptations can be grouped into two major categories: structural and behavioral (“Adaptation”, 2014). Structural adaptations involve a genetic change in the physical features of the body. For example: birds have evolved different types of beaks to eat different kinds of food; mammals have different sizes/shapes of ears as adaptations to the temperatures in their environment. Structural changes require a longer period of time, usually several generations, in order for animals to evolve new characteristics that allow them to survive.

Behavioral adaptations affect the way an organism interacts with its environment to survive. These adaptations may occur more quickly, depending upon the intelligence of the animal. Behavioral adaptations can be dependent on social interactions and the ability to manipulate the environment. Examples include: changes in behavior made by animals that depend upon whether the animal is nocturnal or diurnal; some animals live in social groups and some live independently.

### **Focus Questions:**

What allows one animal or species to survive better than another?

What are some adaptations that are related to the structure of the organism?

What are some adaptations that are related to the behavior of the organism?



### **Learning Target:**

I can explain an adaptation of an organism and how it contributes to the organism’s survival.

### **Engagement:**

(10-15 minutes)

Students will need to make a “Fortune Teller” first which requires minimal instruction. Many students will probably already know how to make one, but there are instructions on many websites on the internet. Here is one example:

<http://www.enchantedlearning.com/crafts/origami/fortuneteller>

### **Investigation:**

(25-30 minutes)

Instead of colors on the four outer flaps, the instructor will direct students to title their Fortune Teller with “What is my adaptation?” (or another appropriate title). On the inside, (in place of the numbers) the instructor will direct the students to draw and label their organisms. There will be eight organisms total. Under the drawing of each organism, students will write an adaptation that contributes to the organism’s survival.

Using the BBC website, Encyclopedia of Life, or any other good wildlife resource, the instructor should encourage students to pick adaptations that are unique, different or new to them.

<http://www.bbc.co.uk/nature/adaptations>  
<http://eol.org/>

**Explanation:**

(15-20 minutes)

Students will show their fortune teller to others in the class and see if others can guess the adaptations that they included for their organisms.

**Extension:**

(30-45 minutes)

Students will make a "Famous Biologist" timeline. Students will draw a name out of a basket and do basic research to fill in important information about their scientist onto a copy of Worksheet 1, "Adaptation 3: Fortune Teller Adaptations". Students will present information about him/her and place in the correct order on a timeline, based on the scientist's birthdate. To create a list of names for the students to research, the instructor should conduct an internet search for "famous biologists." The instructor may also wish to be more specific with "famous zoologists," famous entomologists, famous ornithologists," etc.

**References:**

"Adaptation." - *National Geographic Education*. Ed. Kara West and Jeannie Evers.

National Geographic, n.d. Web. 02 Sept. 2014.

<[http://education.nationalgeographic.com/education/encyclopedia/adaptation/?ar\\_a=1](http://education.nationalgeographic.com/education/encyclopedia/adaptation/?ar_a=1)>

"Animal and Plant Adaptations and Behaviours." *BBC News*. BBC, 2014. Web. 03 Sept.

2014. <<http://www.bbc.co.uk/nature/adaptations>>

"Origami Fortune Teller Craft - Enchanted Learning Software." *Origami Fortune Teller*

*Craft - Enchanted Learning Software*. Enchanted Learning.com, n.d. Web. 20 Aug.

2014. <<http://www.enchantedlearning.com/crafts/origami/fortuneteller.>>