

NAME: \_\_\_\_\_ Partner Name: \_\_\_\_\_ PERIOD: \_\_\_\_\_ DATE: \_\_\_\_\_

## EVOLUTION PROJECT

**Objective:** Students will show mastery of the concepts learned in 1<sup>st</sup> semester of Biology.

**Due Date:** The final project is due on **Tuesday Dec 10th**. The final project includes final versions of each step compiled together with images of your organism, written descriptions, sources used, etc. You may present your finished project as a poster, as a power point presentation, or as a web site. You may be asked to present a summary of your project in class.

**Assessment:** This project is going to serve as **summative assessment (major grade)** so you need to put a lot of time, energy, and thought into it. We will assess you on your ideas of how natural selection and evolution work, use of appropriate language, and how you apply those ideas to your organism. The evolution of your species has to make sense in terms of what you have been taught about Evolution in class.

Choose one of the following populations and think of a physical or behavioral trait to focus your project. Circle it below:

1. African Elephant
2. Giraffe
3. Cheetah
4. American Bullfrog
5. Great White Shark
6. Your own! (must be approved by your teacher): \_\_\_\_\_

### **Part 1: Animal Profile**

1. Find at least 2 pictures of your animal that include detailed diagrams or photographs of adaptations like claws, bone structure, teeth, skull etc. Remember that adaptations can be physical (internal & external) and behavioral, so consider a range of ideas.
2. Using your pictures from #1, identify its physical & behavioral adaptations and explain their functions (i.e. how does each adaptation you found promote the organism's success in its environment?).
3. Based on your explanation in #2, in which biome/s will your animal be found? Why can they be found there?
4. Describe how your organism interacts in its food web. Describe at least one of each type of organisms that interact with yours: one competitor, one predator, and one prey/food source. Find a picture of each organism you described.

When you think you have successfully completed Part 1, please check-in with your teacher: \_\_\_\_\_

### **Part 2: Changes to Environment**

5. Create and describe a selective pressure that will affect your animal and the effectiveness of ONE of the traits from Part 1 (e.g. the sun's UV rays at the equator will affect skin color effectiveness). \*NOTE: Do not talk about how the change affects your animal yet\*
6. Determine what impact the changes will have on organisms with which your animal interacts (the competitor, the predator, and the prey/food source). For each organism, create a hypothesis about if the changes will cause the population of these other organisms to increase or decrease. Explain your reasoning behind each hypothesis. \*NOTE: Do not talk about how the change affects your animal yet\*

When you think you have successfully completed Part 2, please check-in with your teacher: \_\_\_\_\_

**Part 3: Natural Selection and Evolution of Animal**

7. Now imagine how the environmental changes you described in Part 2 provide new selection pressures that affect your organism. Explain in depth how the change affected the ONE trait you identified in Part 2. How will the change affect natural selection for your species? How will the change affect evolution for your species?

8. Show the evolution of your animal and its trait over time. Show how the trait changes over at least 3 different generations. You may draw or use Google to find an image for each generation.

9. Describe the evolution of your population over time paragraph form. Include: the characteristics of your animal (in part 1), the environmental disaster that happened (in part 2) and how your species evolved and changed to meet the new environmental conditions.

Include the following vocabulary words in your explanation: environment, adapt, evolve and trait.

**Rubric:**

Excellent (50-40)	Satisfactory (39-30)	Unsatisfactory (29-0)	
<p>Student has included all the required information and has gone in depth with detail and description.</p> <p>Claims are clear. Evidence and warrant are thorough and clear.</p>	<p>Student has included all the required information, but could have gone in more depth with detail and description.</p> <p>Claims are clear. Evidence and warrant are present, but could be more clear.</p>	<p>Student has not included all the required information, AND/OR could have gone in more depth with detail and description.</p> <p>Claims are unclear clear. Evidence and warrant is not present or is present, but could be more clear.</p>	<p>Part 1</p> <p style="text-align: right;">_____/50</p>
<p>Student has included all the required information and has gone in depth with detail and description.</p> <p>Claims are clear. Evidence and warrant are thorough and clear.</p>	<p>Student has included all the required information, but could have gone in more depth with detail and description.</p> <p>Claims are clear. Evidence and warrant are present, but could be more clear.</p>	<p>Student has not included all the required information, AND/OR could have gone in more depth with detail and description.</p> <p>Claims are unclear clear. Evidence and warrant is not present or is present, but could be more clear.</p>	<p>Part 2</p> <p style="text-align: right;">_____/50</p>
<p>Student has included all the required information and has gone in depth with detail and description.</p> <p>Claims are clear. Evidence and warrant are thorough and clear.</p>	<p>Student has included all the required information, but could have gone in more depth with detail and description.</p> <p>Claims are clear. Evidence and warrant are present, but could be more clear.</p>	<p>Student has not included all the required information, AND/OR could have gone in more depth with detail and description.</p> <p>Claims are unclear clear. Evidence and warrant is not present or is present, but could be more clear.</p>	<p>Part 3</p> <p style="text-align: right;">_____/50</p>