

Unit 8.1 Study Guide // Attach lined paper to write you answers down. You do not have to write or restate the question as this is just for studying.

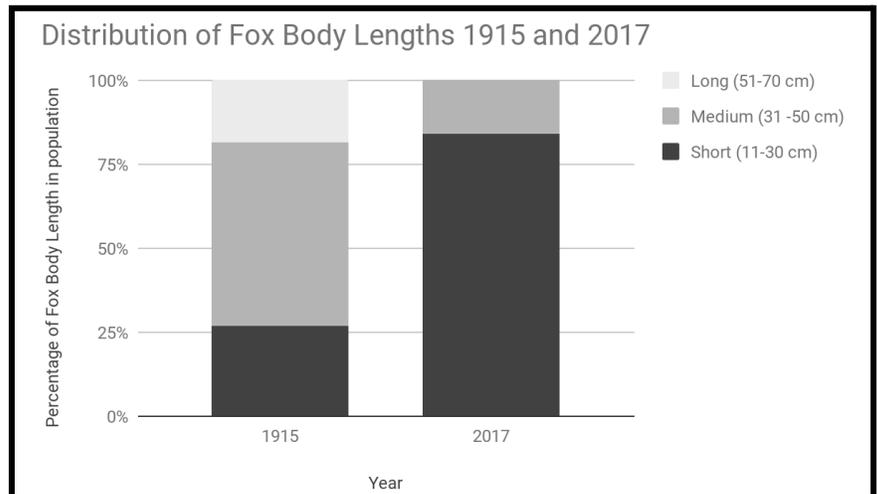
1. Describe how the percentage of individuals with certain traits in a population changes because of changes in the environment. Use the words **resistance** and **adaptation** in your explanation

2. Mark each of the statements **TRUE** or **FALSE**.

- _____ A. Individuals of the same species may have different inherited traits. These different inherited traits may cause differences in each individual's chances of survival and reproduction.
- _____ B. Individuals of the same species have the same inherited traits, therefore each individual has an equal chance of surviving and reproducing as any other individual of the same age and gender.
- _____ C. Individuals of the same species have the same inherited traits but different acquired traits, such as what they have learned and the skills they have developed. Only these different acquired traits can cause differences in each individual's chances of survival and reproduction.
- _____ D. Individuals of the same species may have different inherited traits, but these different traits do not cause differences in each individual's chances of survival and reproduction.

3. Use the stacked bar graph to answer A-C

- A. What year were long body lengths more common?
- B. What trait in this population was better adapted to the environmental conditions during 2017?
- C. Explain how you know

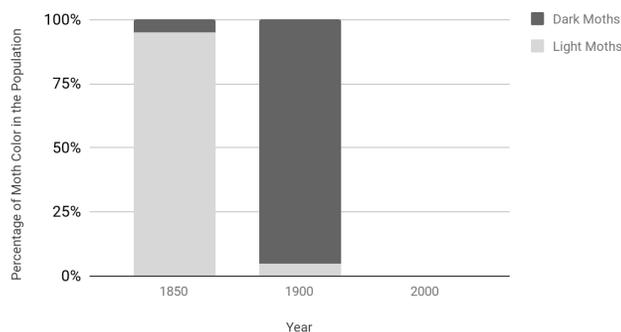


4. Peppered moths have two color varieties, as shown mostly **light** with dark dots, and mostly **dark**.

In the year 1850, **very few dark moths** were found in the population. However, by 1900, nearly all of the moths were dark, and **very few light moths** could be found. Some scientists believed that this was because of increasing air pollution during this time, which made the bark of trees darker. Darker tree bark made light moths easier for predators to find, compared to dark moths. In 1956, laws to reduce air pollution in England were passed. This led to tree bark becoming lighter again. The percentage population for light and dark moths in England in 1850 and 1900 are shown in the stacked bar chart.



Distribution of Light and Dark Moths from 1850 - 2000



A. The bar for the year 2000 is not filled in. Think of what the trees looked like in 2000 according to the details from the text. Draw a stacked bar in the graph for what you predict the population of moths will be made up of. Then describe each section of the bar using either **increase** or **decrease**.

B. Compared to 1900, I think the dark colored moths will _____ in 2000.

C. Compared to 1900, I think the light colored moths will _____ in 2000.

D. Explain WHY the distribution of moths changed after 1900.

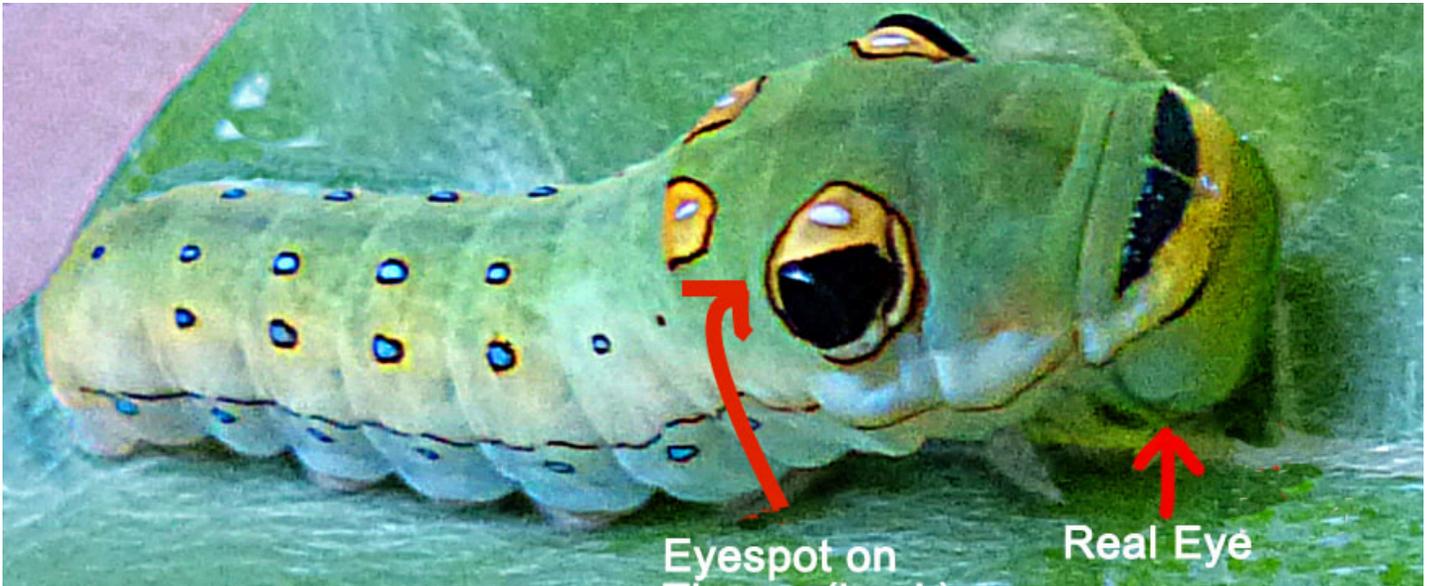
Extension opportunity: Peppered Moths This game works best if you have an actual computer with a mouse. I'm not sure if it works on a laptop or phone. Give it a try! <https://askabiologist.asu.edu/peppered-moths-game/play.html>

6. A disease called cystic fibrosis (CF) is a condition that causes too much mucus production in the lungs and if untreated causes early death. CF is caused by a *deletion* of three letters in the gene sequence.

Original Code: CACTGATCGAT~~GGA~~TTCGATCGTACGCT
CF Code: CACTGATCGATTTCGATCGTACGCT

Explain how the deletion causes the affected person to have too much mucus production. Use the words **structure** and **function** in your answer.

7. "Eyespots" are a common adaptation in some Michigan insects, such as swallowtail butterfly caterpillars, shown here with eyespots. Some scientists believe eyespots may help defend against predators. However, not all caterpillars have this adaptation. Would you expect the caterpillars **with** eyespots to become more or less common in the population over time? Why?



8. A population is a group of individuals of the same species. Could a population living today be different than their ancestors from many generations ago? Why or why not?