NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **10**

DATE \_\_\_\_\_\_\_\_\_\_\_\_\_\_ PER \_\_\_\_\_\_\_

Do you see like me?

|  |  |
| --- | --- |
| Picture | Write what you see in each picture. |
| A |  |
| B |  |
| C |  |
| D |  |
| E |  |
| F |  |
| G |  |
| H |  |
| I |  |
| J |  |
| K |  |
| L |  |
| M |  |

|  |
| --- |
| “Why are some people color blind?”    The two genes that produce red and green light-sensitive proteins are located on the X chromosome. Mutations in these genes can cause color blindness. Color blindness is a common inherited sex-linked disorder that affects a person's ability to see or recognize certain colors. 9% of men are colorblind while only about 0.5% of women are colorblind. |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a change in the structure or amount of an organisms genetic material.

|  |  |
| --- | --- |
| **Mutation Description** | **Prediction: How does this affect the organism? Is the trait helpful, harmful, or neutral (does not affect the organism).** |
| **A** |  |
| **B** |  |
| **C** |  |
| **D** |  |
| **E** |  |
| **F** |  |
| **G** |  |
| **H** |  |
| **I** |  |
| **J** |  |
| **K** |  |
| **L** |  |
| **M** |  |

* Bad mutations:
  + Albino animal
    - <https://commons.wikimedia.org/wiki/File:Albino.penguin.bristol.zoo.arp.jpg>
  + Hemophilia
    - Use select sections from <http://kidshealth.org/en/parents/hemophilia.html> for this passage. *(Teacher note: leave out any parts that explain the cause of this as genetic/mutation.)*
* Good mutations:
  + Lactose Tolerance (sources:<http://www.npr.org/sections/thesalt/2012/12/27/168144785/an-evolutionary-whodunit-how-did-humans-develop-lactose-tolerance>)
    - In most school lunchrooms, a common drink to go with lunch is milk, but it wasn’t until a few thousand years ago that humans could even digest milk past childhood. Now, Thirty-five percent of people can digest milk. This means that people have historically been “lactose-intolerant” past childhood. Lactose is the part of milk that makes it difficult for people to digest milk.
  + Almond bitterness or non-bitterness (sources: <http://discovermagazine.com/1994/sep/biologyandmedici422>; <https://www.sciencedaily.com/releases/2010/01/100128091750.htm>)
    - Almond trees naturally make a compound that contains cyanide, a poison. To other organisms that would eat the almond, the compound makes the almonds taste bitter. This helped the almond trees make sure that their seeds were left alone to produce other almond trees. However, sometimes almond trees lose the ability to make this bitter compound. Not only are the almonds more delicious to different animals this way, the flower’s nectar doesn’t attract many pollinators. Humans have profited on this non-bitter almond tree, by farming almonds.
* Neutral mutations:
  + [Attached](https://commons.wikimedia.org/wiki/File:Zro%C5%9Bni%C4%99ty_p%C5%82atek_ma%C5%82%C5%BCowiny_usznej.JPG) or [Unattached](https://en.wikipedia.org/wiki/Otoplasty) Earlobes
  + [Blue-brown eye color](https://www.flickr.com/photos/weirdcolor/3346060703)

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Per\_\_\_\_\_\_\_\_\_\_\_

**Genetic Mutations Assessment**

Standards-7.4.3

*I can create a model to show how mutations can be harmful, helpful, or neither.*

**Task 1**

*Staphylococcus aureus* is a type of bacteria, which causes infections in humans. This type of bacteria is almost always antibiotic resistant, which is a genetic trait.  Antibiotics are medicine given to humans to help them fight off an infection caused by bacteria. Having antibiotic resistance means the bacteria can survive even if a patient takes antibiotics. Many years ago, this bacteria was not resistant and most were killed by the medicine, but currently they are very resistant. Given that these bacteria reproduce asexually, how did they develop the trait of antibiotic resistance? Explain if this trait is harmful, helpful, or neither for the bacteria. Explain if this trait if harmful, helpful, or neither for humans.

**Task 2**

Explain a possible structural (something that can be seen on the outside) mutation a rabbit could inherit that would be HARMFUL to the rabbit. Make sure to include other information that might be important (e.g. environmental conditions, predators, etc.) and be sure to fully explain why the mutation you chose would not be helpful for the rabbit.  Draw a model (picture) to help illustrate your answer.

**Task 3**

Explain a possible mutation a rabbit could inherit that would be HELPFUL to the rabbit. Make sure to include other information that might be important (e.g. environmental conditions, predators, etc.) and be sure to fully explain why the mutation you chose would be helpful to the rabbit. Draw a model (picture) to help illustrate your answer.

**Task 4**

Explain a possible mutation a rabbit could inherit that would be NEITHER helpful nor harmful to the rabbit. Make sure to include other information that might be important (e.g. environmental conditions, predators, etc.) and be sure to fully explain why that mutation you chose would not be helpful nor harmful. Draw a model (picture) to help illustrate your answer.