

Name _____

Class _____

Date _____

DNA and Mutations Webquest

http://evolution.berkeley.edu/evolibrary/article/mutations_01

DNA and Mutations

1. What is a mutation?
2. What does DNA affect?
3. Without mutations, what would not occur?

DNA: The molecular basis of mutations

1. What is DNA?
2. What are the four basic units of DNA?
3. The sequence of these bases encodes _____.
4. Some parts of DNA are _____ that carry instructions for making _____ - which are long chains of _____.
5. What are codons?
6. The cellular machinery uses these instructions to _____ a string of corresponding amino acids.
7. What do "stop" codons signify?

Types of mutations

1. What is a substitution?
2. What causes sickle cell anemia?
3. What are 3 things that a "substitution" mutation cause?
 - 1.
 - 2.
 - 3.

4. Copy the example of a substitution mutation. (left side of page)

5. What is an insertion mutation?

6. Copy the example of a insertion

7. What is a deletion?

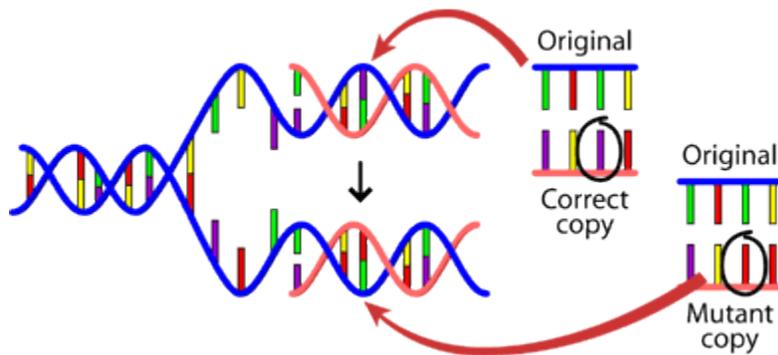
8. Copy the deletion example:

9. What is a frameshift mutation?

10. Copy the example of the frameshift mutation.

Causes of mutations

1. DNA fails to _____.



2. External _____ can create _____.

3. What are two examples of external influences?

The effects of mutations

1. Where may mutations occur?

2. What are somatic mutations?

3. What are the only types of mutations that matter to large-scale evolution?

4. What are the effects of germ line mutations?

- 1.
- 2.
- 3.

5. While many mutations do indeed have negative effects, mutations can have major (and _____) effects.

6. What are Hox genes?

7. What is the effect of a mutation in the Hox gene?

8. **Weird Fact:** What happened to the fly with a Hox mutation?

A case of the effects of mutation: Sickle cell mutation

1. What is sickle-cell anemia?

2. People with _____ copies of the gene have the disease.

3. What are the effects of the sickle cell gene?

- 1.
- 2.
- 3.
- 4.
- 5.

4. What are some of the positive effects of sickle cell?

Mutations are Random

1. Mutations can be _____, neutral, or _____ to the organism.

2. What are two possible explanations for “resistant” lice?

3. What is directed mutation?

4. In 1952, Esther and Joshua Lederberg performed an experiment that helped show . . .

5. What was their hypothesis?

6. What is the experimental set-up for the experiment?

1.

2.

3.

4.

5.

7. So, the penicillin-resistant bacteria were there in the _____ before they encountered _____. They did not _____ resistance in response to the exposure to the _____.