



Continuing Evolution

EVO-3.A.1

Populations of organisms continue to evolve.

EVO-3.A.2

All species have evolved and continue to evolve—

- a. Genomic changes over time.
- b. Continuous change in the fossil record.
- c. Evolution of resistance to antibiotics, pesticides, herbicides, or chemotherapy drugs.
- d. Pathogens evolve and cause emergent diseases.

AP BIO INSTA-REVIEW

TOPIC

7.8



**Antibiotics make bacteria
resistant.**

- A. True**
- B. False**

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Antibiotics make bacteria resistant.

B. False



As we have mentioned before, the antibiotic selects for the resistance. This phrase “antibiotic makes the bacteria resistant” means that the antibiotic created the mutations that allowed for the bacteria to survive, but it selects for those that are **ALREADY resistant. The resistance allele comes from random mutations.**

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What evolves?

- A. Individuals**
- B. Populations**

What evolves?

B. Populations



Populations undergo evolution. Although natural selection will select certain phenotypes/individuals, the change in allele frequencies will take place in the next generation. Hence, the population evolves not the individual.

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Once a population is “perfect”, evolution will stop occurring.

- A. True**
- B. False**

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Once a population is “perfect”, evolution will stop occurring.

B. False



The environment is always changing, so the organisms are never “perfect”.

As we saw with Hardy-Weinberg, it is rare for evolution to not occur. It might be slow, but is still happening.



What is evolution?

- A. Allele/Genotypic frequencies**
- B. Environmental conditions causing mutations**
- C. Process where unfavorable traits are selected**
- D. Use and disuse leading to traits passed down**

What is evolution?

A. Allele/Genotypic frequencies



Evolution is demonstrated by the change in allele or genotypic frequencies.

As certain individuals are selected (and more likely to survive and pass on their alleles to the next generation), those alleles will increase in frequency.

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Once a population matches their environment, evolution stops

- A. True**
- B. False**

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**Once a population
matches their
environment, evolution
stops**

B. False



**The environment is always
changing which means that the
population is ALWAYS evolving.**

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Antibiotic resistance is...

- A. Artificial selection**
- B. Natural selection**

Antibiotic resistance is...

B. Natural selection



When the antibiotic is present, the bacteria with the gene that provides resistance will be able to survive.

Since they are more likely to survive, they are more likely to pass on their traits to the next generation which leads to an increase in antibiotic resistance in the population of bacteria.

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**Antibiotics made the bacteria
resistant**

A. True

B. False

**Antibiotics made the
bacteria resistant**

B. False



**Antibiotics select for the
bacteria that have the
resistance. Since the resistant
bacteria survived, they passed
on their traits to the next
generation.**



Why get a flu shot every year?

- A. Influenza is an DNA virus which leads to increase mutations**
- B. Influenza is an RNA virus so it mutates often**
- C. Influenza is a DNA virus so it replicates quickly**
- D. Influenza is a RNA virus so it often mutates**

Why get a flu shot every year?

D. Influenza is a RNA virus so it often mutates



RNA is single stranded which leads to an increase in mutations. As the mutations increase in the virus, your immune system will not recognize the new virus as it's immune response was based on the previous year's virus.