



Environmental Effects on Phenotype

SYI-3.B.1

Environmental factors influence gene expression and can lead to phenotypic plasticity. Phenotypic plasticity occurs when individuals with the same genotype exhibit different phenotypes in different environments

AP BIO INSTA-REVIEW

TOPIC

5.5



What is phenotypic plasticity?

**What is phenotypic
plasticity?**



**Phenotype changes based on
environment**

**This can be behavioral, physical,
or morphological changes.**

**Example of Phenotype
Plasticity**



Hydrangeas

**No matter what the genotype
states, the flower could develop
as a pink or blue flower
depending on the alkalinity of
the soil planted in.**

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**Why would the snowshoe hare
change to brown earlier?**

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Why would the snowshoe hare change to brown earlier?



As temperatures increase, the snowshoe hares will synthesize different proteins to change their white fur color to brown. This is a direct result of global climate change.



As temperatures increase, the caterpillar population will hatch earlier. Predict how the hatching of its predator is affected?

- A. Hatched earlier**
- B. Hatched at same time**
- C. Hatched later**
- D. Hatching rate decreased**

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As temperatures increase, the caterpillar population will hatch earlier. Predict how the hatching of its predator is affected?



A. Hatched earlier

Due to the increase in temperature, the prey (caterpillar) will hatch earlier. In order for the predator to have food, it needs to start hatching earlier.



**Identify why many animals undergo
plasticity**

- A. Different genotypes**
- B. Different ancestors**
- C. Differential reproductive selection**
- D. Different species**

Identify why many animals undergo plasticity

C. Differential reproductive selection



Plasticity involves a phenotypic change due to an environmental change. This process will allow individuals to have a higher fitness.

Example: The snowshoe hare is able to blend into the snowy environment during the winter then the muddy environment during summer.