AP Biology Topic 5.5 Environmental Effects of Phenotypes

The same genotype can result in _____

- Environmental factors can _____
  - If the environmental conditions change, _____
- Phenotypic _____ is the _____
- Phenotypic diversity can be due to _____ and not necessarily due to _____
  - Organisms can have the same genes but show _____

Flower color based on _____

- In hydrangea plants, the color of the flower is determined _____
- The same genes can yield _____ depending on the _____ (_____) during flower development.
  - Acidic soil (a _____) yields _____
  - Basic soil (_____) yields _____

Phenotypic plasticity in stomate density

- In many plant species, the number of _____ can be determined by the amount of _____
- The same genes can yield different numbers of _____
  - Low amounts of CO_2 _____
  - High amounts of CO_2 _____

Let's Practice – Explain biological concepts, processes and/or models in applied contexts

When a mustard plant seedling is transferred to an environment with higher levels of carbon dioxide, the new leaves have a lower stomata-to-surface-area ratio than do the seedling's original leaves.

Which of the following best explains how the leaves from the same plant can have different stomatal densities when exposed to an elevated carbon dioxide level?

A. Increased photosynthesis leads to larger leaves that need more stomata for photosynthesis, leading to an increase in stomatal density.

B. Leaf growth is promoted through increased photosynthesis, but the genetically regulated rate of stomatal production is not altered, leading to a decrease in stomatal density.

C. Leaf growth is inhibited by decreased photosynthesis, and the genetically regulated rate of stomatal production remains the same, leading to an increase in stomatal density.

D. Leaf growth is inhibited by decreased photosynthesis, and the genetically regulated rate of stomatal production remains the same, leading to a decrease in stomatal density.

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