AP BIO INSTA-REVIEW

TOPIC 3.2

Enzyme Catalysis

ENE-1.E.1

The structure and function of enzymes contribute to the regulation of biological processes–

a. Enzymes are biological catalysts that facilitate chemical reactions in cells by lowering the activation energy.

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What is activation energy?

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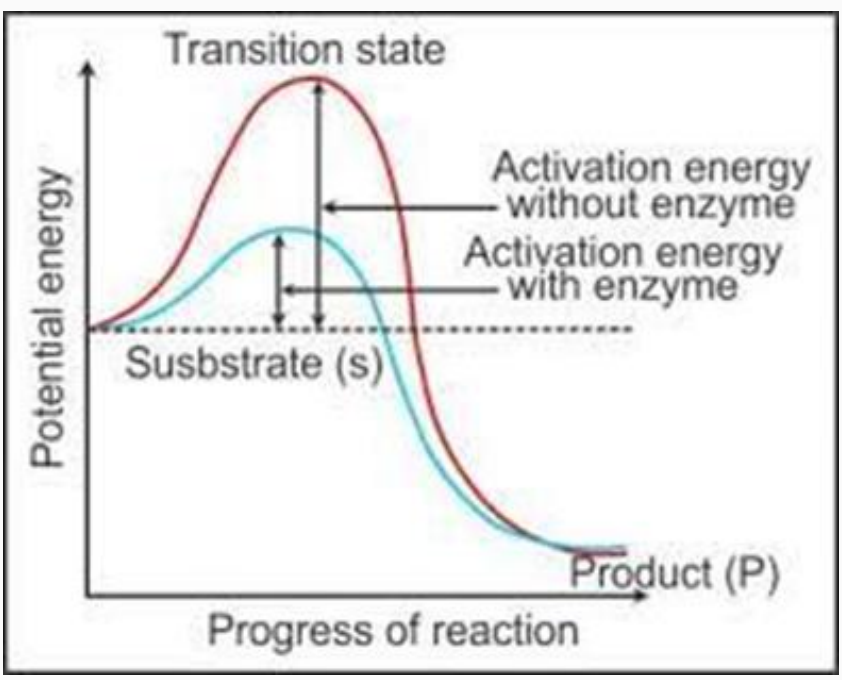
TOPIC 3.2

What is activation energy?

The energy required to start the reaction. It is the energy that must be added to get the reactants into their transition state.



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TOPIC 3.2

How does an enzyme affect activation energy?

A. Decrease

B. Increase

C. Stays the Same

AP BIO INSTA-REVIEW

TOPIC 3.2

How does an enzyme affect activation energy?

A. Decrease

Enzymes will decrease the activation energy of a reaction by orienting the reactants or straining the bonds.

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TOPIC 3.2

Due to lower activation energy, how is the reaction rate affected?

A. Decrease

B. Increase

C. Stays the Same

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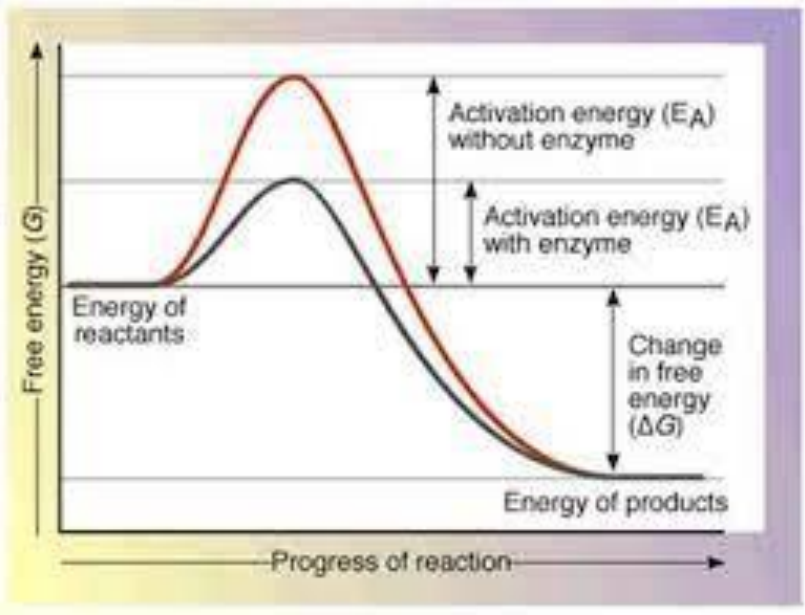
TOPIC 3.2

Due to lower activation energy, how is the reaction rate affected?

B. Increase

Since less activation energy is required, it allows the reaction to occur more frequently. This means that there is an increase in the reaction rate.



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What does an enzyme do to reaction rate?

A. Decrease

B. Increase

C. Stays the Same

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TOPIC 3.2

What does an enzyme do to reaction rate?

B. Increase

Due to the decrease activation energy, the reaction can proceed more frequently as it reaches the intermediate state sooner. If it can react more frequently, this is the definition of an increase in reaction rates.

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How is the activation energy different with an enzyme?

A. Decrease

B. Increase

C. Stays the Same

AP BIO INSTA-REVIEW

TOPIC 3.2

How is the activation energy different with an enzyme?

A. Decrease

An enzyme will decrease the activation energy. It does this by orienting the reactions to faciliate forming bonds or by straining the bonds in a structure to facilitate breaking bonds.

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Gibbs Free Energy (Explanation)

Gibbs Free Energy is the energy available to do work. There's an advanced definition if you want to someone in AP Chemistry but that's all you need for AP Biology.

Everything has a certain amount of potential energy. Notice on the reactants. This means there is a higher amount of energy in the molecules. After the reaction, the ΔG is the change in free energy. This diagram shows that free energy is released (exergonic).

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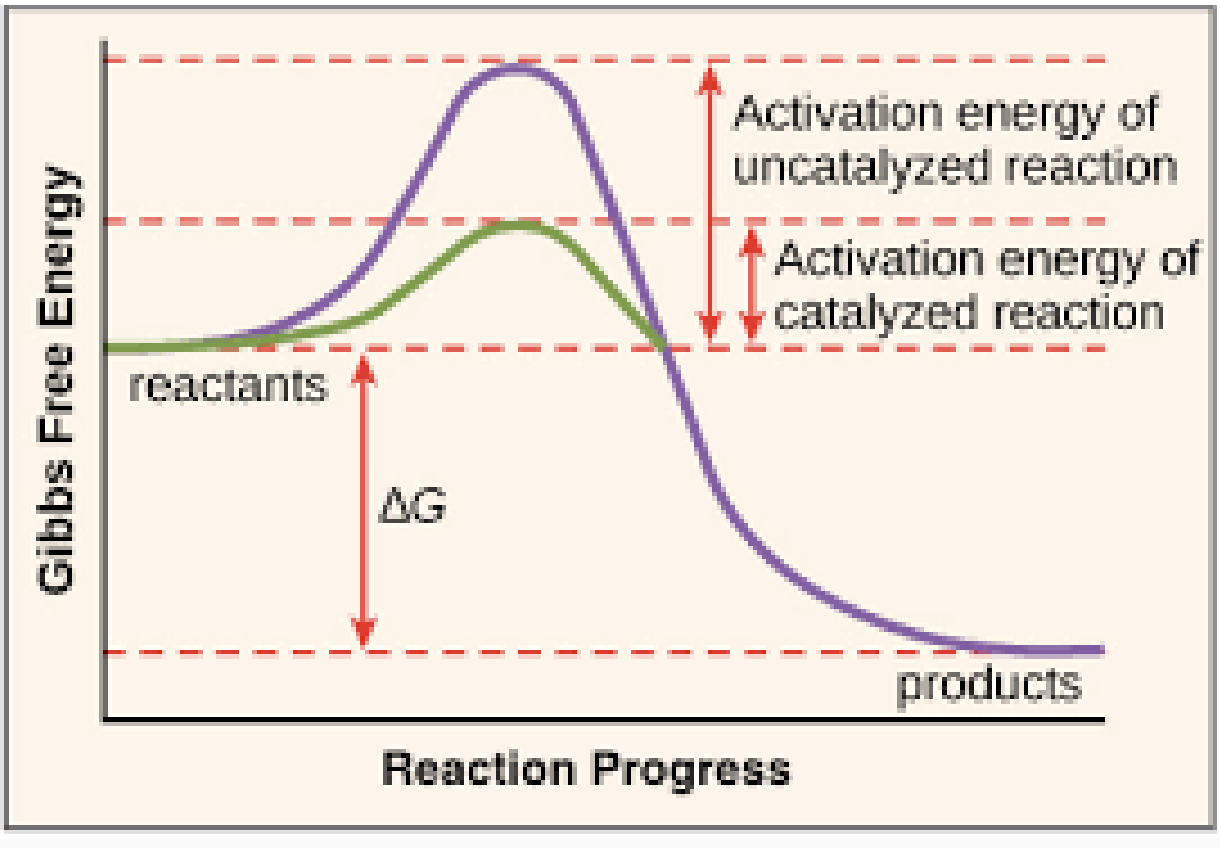
Gibbs Free Energy (Explanation)



AP BIO INSTA-REVIEW

TOPIC 3.2

How does the enzyme affect the change in Gibbs?

A. Decrease

B. Increase

C. Stays the Same

AP BIO INSTA-REVIEW

TOPIC 3.2

How does the enzyme affect the change in Gibbs?

C. Stays the Same

See the ΔG is the same with and without the enzyme.

See the activation energy is less with an enzyme.