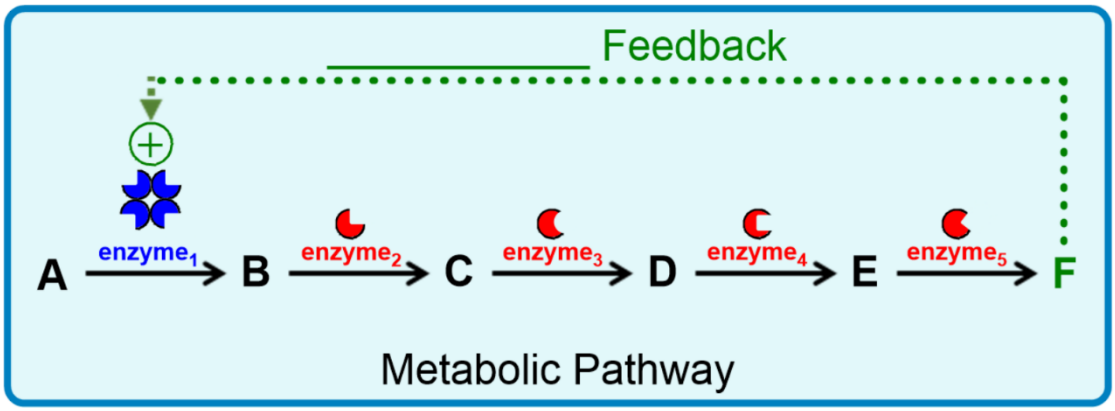
CONCEPT: POSITIVE FEEDBACK

●_____ *Feedback*: final product of a metabolic pathway _____ an *earlier* step in the *same* pathway.

□ Final product (**P**) acts as an *activator* to further stimulate the production & _____-_____ of the final product.

EXAMPLE: Positive Feedback acts like the "green light" to activate/stimulate metabolic pathways.



PRACTICE: The reaction Fructose-6-P + ATP <===> ADP + Fructose-1,6-bisP is catalyzed by the glycolytic enzyme phosphofructokinase-1 (PFK-1). In muscle tissue, PFK-1 is a homotetramer (contains 4 identical subunits). Adenosine monophosphate (AMP) binds at a site distant from the site of catalysis on any of the four subunits & induce a conformational change that favors a relaxed & more active state of the whole tetramer. How is the role of AMP classified in this reaction?

a) Positive homotropic effector.
b) Negative homotropic effector.
c) Positive heterotropic effector.
d) Negative heterotropic effector.

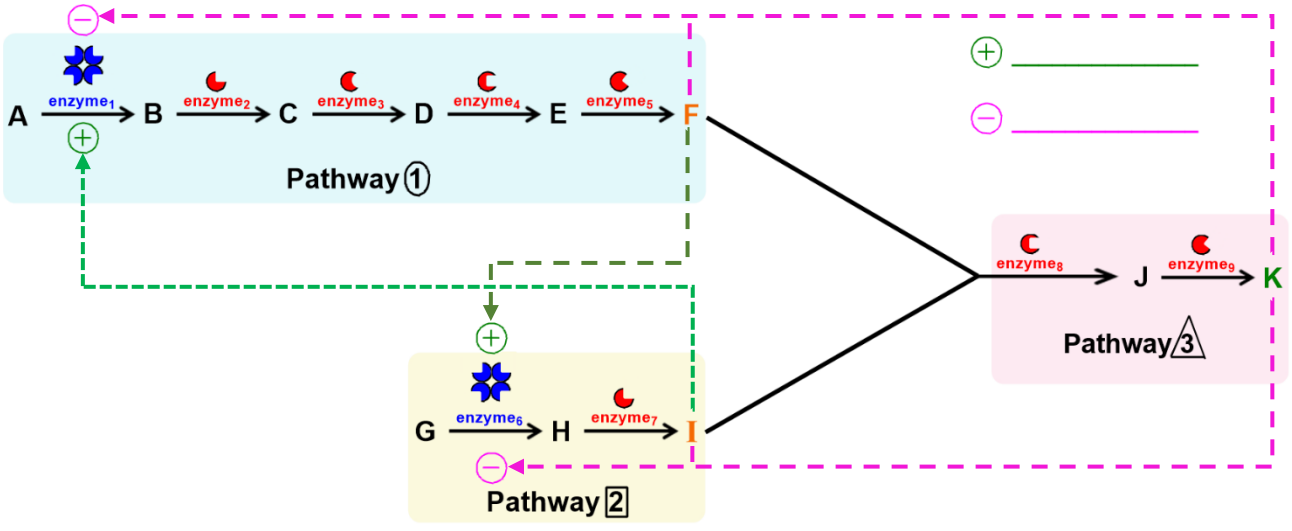
Metabolic Pathway Communication

●It is common for metabolic pathways to "_____" or *interact* with one another through feedback regulation.

□ Purpose of this interaction *can be* to ensure efficient production of a single, final _____.

□ Some allosteric enzymes can bind both *activators* & _____ for *positive* & _____ feedback.

□ The _____ molecule could act as an *activator* for one allosteric enzyme & an *inhibitor* for a different enzyme.



CONCEPT: POSITIVE FEEDBACK

PRACTICE: Use the image below showing interactions between 3 metabolic pathways to answer the following questions.

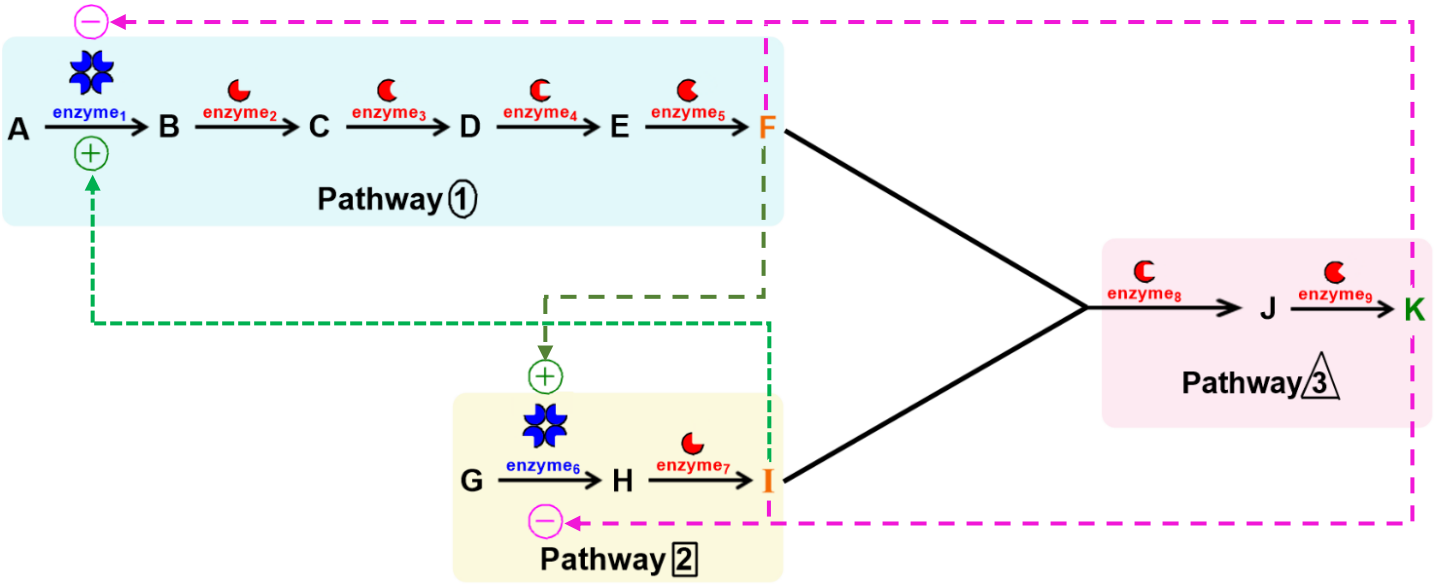
A) Which of the following best describes the role of molecule "F"?

a) At low concentrations, molecule F acts as an inhibitor on enzyme-1 & an activator on enzyme-6.

b) At high concentrations, molecule F acts as an activator on enzyme-1 & an inhibitor on enzyme-6.

c) At low concentrations, molecule F acts as an activator on enzyme-1 & an inhibitor on enzyme-6.

d) At high concentrations, molecule F acts as an inhibitor on enzyme-1 & an activator on enzyme-6.



B) Which of the following best describes the role of molecule "I"?

a) At high concentrations, molecule I acts as an inhibitor on enzyme-6 & an activator on enzyme-1.

b) At low concentrations, molecule I acts as an activator on enzyme-6 & an inhibitor on enzyme-1.

c) At high concentrations, molecule I acts as an activator on enzyme-6 & an inhibitor on enzyme-1.

d) At low concentrations, molecule I acts as an inhibitor on enzyme-6 & an activator on enzyme-1.

C) Which of the following best describes the role of molecule "K"?

a) At low concentrations, molecule K acts as an inhibitor on enzyme-1 & an activator on enzyme-6.

b) At high concentrations, molecule K acts as an inhibitor on enzyme-1 & an inhibitor on enzyme-6.

c) At low concentrations, molecule K acts as an activator on enzyme-1 & an inhibitor on enzyme-6.

d) At high concentrations, molecule K acts as an inhibitor on enzyme-1 & an activator on enzyme-6.