

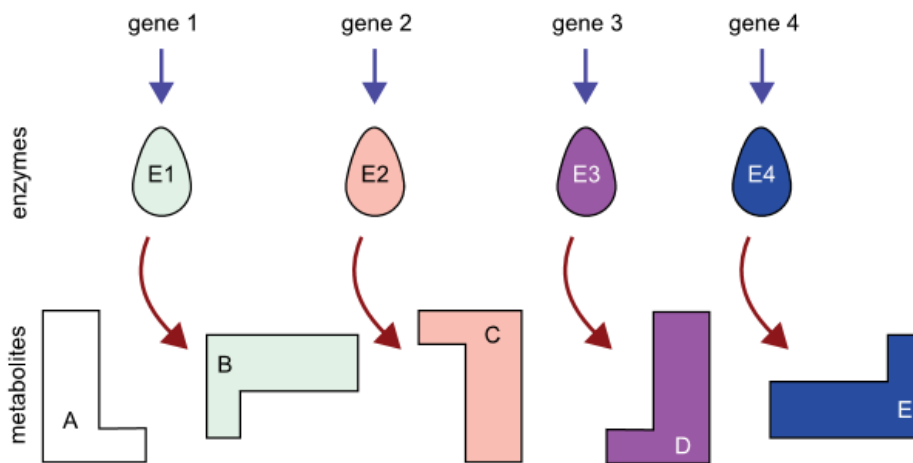
Metabolic Pathways

Complete the glossary words and questions in advance of the online session on 17th January 2018.

Key Area 1: Metabolic pathways and their control	
Anabolic	
Catabolic	
Metabolic pathway	
Metabolism	
Activation energy	
Active site	
Competitive inhibition	
Feedback inhibition	
Induced fit	
Non-competitive inhibition	

Key Area 3: Metabolic rate	
Atrium	
Complete double circulation	
Double circulation	
Incomplete double circulation	
Low-oxygen niche	
Metabolic rate	
Single circulatory system	
Ventricle	
VO ₂ max	

Q1: The following diagram shows a metabolic pathway controlled by enzymes. The genes which code for each enzyme in the pathway are also shown.



A mutation in a gene can result in the disruption of a metabolic pathway. Explain how such a mutation could result in a build-up of metabolite D.

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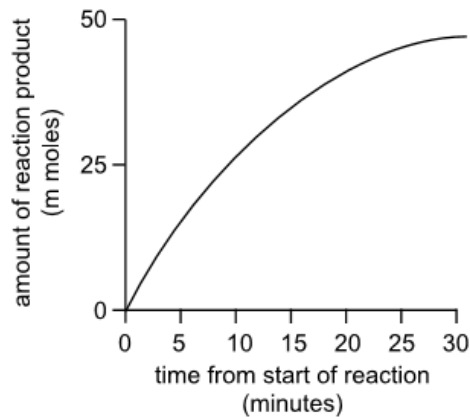
Q2: What is metabolism?

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Q3: Name the substances which control metabolic pathways.

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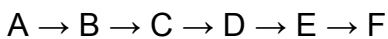
Q4: The figure below shows the progress of an enzyme-catalysed reaction.



When is the rate of the reaction at its highest?

- a) 0 to 5 minutes from the start of the reaction.
- b) 5 to 15 minutes from the start of the reaction.
- c) 15 to 25 minutes from the start of the reaction.
- d) 25 to 30 minutes from the start of the reaction.

Q5: The following illustrates a metabolic pathway.



Assuming that molecule F regulates the first reaction in the pathway (the formation of B from A), which of the following would describe its mode of action?

- a) Coenzyme activation
- b) Feedback inhibition
- c) Competitive inhibition
- d) Non-competitive inhibition

Q6: A fish heart has chambers. An amphibian heart haschambers.

Q7: A mammal has acirculatory system whereas fish have acirculatory system. (choose from 'single' and 'double' for each gap)

Q8: Which of the following descriptions best describes $VO_2\max$?

- a) The maximum volume of oxygen which a body can hold.

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- b) The maximum rate at which the body is able to use oxygen.
- c) The maximum rate at which the body is able to take up and use oxygen.