15.5: Metabolic Cycles (Exercises)

These are homework exercises to accompany Chapter 15 of the University of Kentucky's LibreText for CHE 103 - Chemistry for Allied Health.

15.1: Glycolysis

Q15.1.1

What are the three stages of cellular respiration?

Q15.1.2

What is the purpose of glycolysis?

Q15.1.3

What is the output of glycolysis from a single glucose molecule?

Q15.1.4

How many molecules of ATP are "invested" in glycolysis? How many are produced?

Q15.1.5

Define aerobic and anaerobic.

15.2: The Citric Acid Cycle

Q15.2.1

Where does the Krebs cycle occur in the cell?

Q15.2.2

What happens to the pyruvate produced during glycolysis?

Q15.2.3

How many reactions does it take to complete the cycle?

Q15.2.4

How many "turns" of the citric acid cycle must occur for each molecule of glucose entering glycolysis?

Q15.2.5

What is he output of the citric acid cycle?

Q15.2.6

Trace the six carbon atoms originally from acetyl-CoA through the Krebs Cycle. Trace the flow of energy from the pyruvates produced in glycolysis through the Krebs Cycle.

Q15.2.7

How many energy carriers are produced during the Krebs cycle per acetyl-CoA?

15.3: Lactic Acid Fermentation

Q15.3.1

What is fermentation?

Q15.3.2

Define lactic acid fermentation.

Q15.3.3

Identify yourself as a “sprinter” or an “endurance runner” and predict the type of muscle fiber (red or white) which predominates in your body. Explain your reasoning.

Q15.3.4

What is the chemical equation of lactic acid fermentation?

15.4: The Electron Transport Chain

Q15.4.1

What molecules "feed" the electron transport chain?

Q15.4.2

What is the primary product of the electron transport chain?

Q15.4.3

Where do the reactions of the electron transport chain occur?
