

## *Cellular Respiration Self-Check Questions*

Source: Animations of Glycolysis, Krebs Cycle and Electron Transport:

<http://www.sumanasinc.com/webcontent/animations/content/cellularrespiration.html>

1. **Where in the cell does glycolysis take place?**
  - in the intermembrane space of the mitochondrion
  - in the mitochondrial matrix
  - in the cell membrane
  - in the cytoplasm
  
2. **What is an outcome of glycolysis?**
  - the breakdown of a pyruvate molecule into two smaller glucose molecules
  - the breakdown of a glucose molecule into two smaller pyruvate molecules
  - the breakdown of NADH into NAD<sup>+</sup> and high energy electrons
  - the breakdown of glucose into molecules of carbon dioxide
  
3. **What is the difference between NAD<sup>+</sup> and NADH?**
  - NAD<sup>+</sup> has lost a proton and has a positive charge.
  - NADH has gained electrons and a proton.
  - NAD<sup>+</sup> has gained a proton and has a positive charge.
  - NADH has lost electrons but gained a proton.
  
4. **What is the function of NADH?**
  - to provide energy for glycolysis
  - to carry electrons from a glucose molecule to ATP
  - to carry electrons from a glucose molecule to the electron transport chain
  - to provide energy for the breakdown of a glucose molecule
  
5. **Why does the Krebs cycle only operate in the presence of oxygen?**
  - Because oxygen must combine with carbon to form carbon dioxide
  - Because oxygen allows the electron transport chain to receive electrons from NADH and FADH<sub>2</sub>, recycling NAD<sup>+</sup> and FAD back to the Krebs cycle
  - Because oxygen accepts the ATP from glycolysis so that it can be recycled
  - Because oxygen is added in the form of water to the Krebs cycle
  
6. **What would occur if NAD<sup>+</sup> were not regenerated for the Krebs cycle?**
  - The further breakdown of pyruvate in the Krebs cycle would stop because there would be no place for the high energy electrons to go
  - The pyruvate would be recycled back to glycolysis to form glucose again
  - Oxygen would accept the high energy electrons and form water
  - The cycle would continue until the NAD<sup>+</sup> was again available
  
7. **What is the function of the electrons carried to the chain by NADH and FADH<sub>2</sub>?**
  - to capture the energy from protons being pumped across the membrane
  - to release the energy stored in ATP molecules from glycolysis and the Krebs cycle
  - to provide the energy that pumps protons across the inner membrane of a mitochondrion
  - to cycle back to the Krebs cycle to make more NAD<sup>+</sup> and FAD
  
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10. **What happens to the electron transport chain if oxygen is lacking?**
  - More NADH would be formed.
  - The electrons would be recycled back to NAD<sup>+</sup>.
  - The protons would be released as hydrogen gas.
  - The proton gradient would disappear.

11. **What is the primary function of the electron transport chain?**
- to create carbon dioxide and water
  - to use available oxygen
  - to harvest the remaining energy available in a glucose molecule
12. **What is the overall purpose of cellular respiration?**
- to breakdown glucose
  - to capture energy contained in the bonds of glucose in molecules of ATP
  - to make water and carbon dioxide
  - to convert the higher energy electrons into lower energy electrons to make ATP
13. **Where was the energy in the original glucose molecule?**
- stored in the protons of a glucose molecule
  - stored in the oxygen atoms of a glucose molecule
  - stored in the bonds between the atoms of a glucose molecule
  - stored in the carbon atoms of a glucose molecule