

The Electron Transport System (ETS)

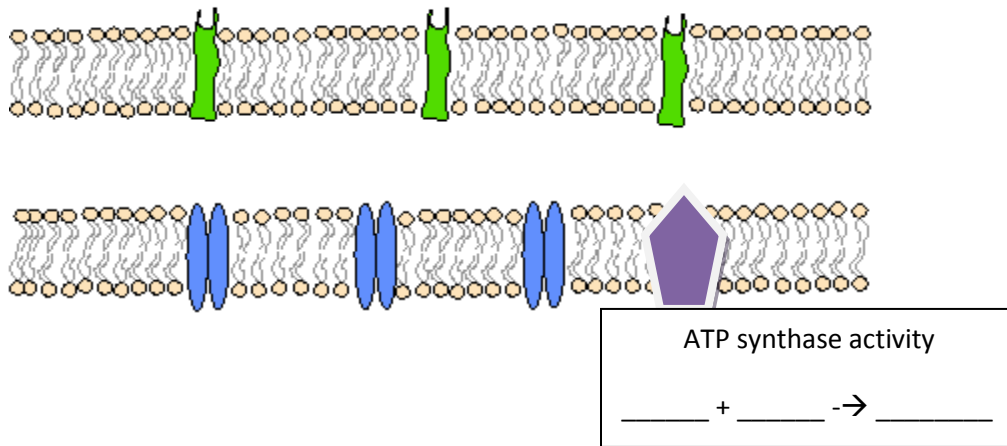
The ETS must generate a hydrogen gradient (proton motive force) in order to power the enzyme ATP synthase to produce ATP. This is the process of chemiosmosis/oxidative phosphorylation.

1. Below is a representation of the inner and outer membrane of a mitochondrion. You will complete the drawing as instructed.

A. Draw several protons (H⁺) where they would accumulate in the mitochondrion to form a gradient.

B. Draw an arrow showing the direction the H⁺ would flow to power ATP synthase.

C. Fill in the equation blanks in the text box. This describes the activity of ATP synthase.



2. What is the terms used to describe what is happening to the members of the electron transport system?

When they accept an electron they are said to be _____

When they pass the electron to the next carrier they are said to be _____

3. What molecules serve to donate electrons (and protons) to the electron transport system in the mitochondrion?

a. _____ b. _____

4. Approximately how many ATP are generated when each of the above-listed molecules donate their electrons and protons to the ETS?

a. _____ b. _____

5. What is the final electron acceptor in the mitochondrial electron transport system? _____

After this molecule accepts an electron, what molecule will it form? _____