

**CSE334 Term Project Proposal
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**Title:
“Mitochondria and the Electron Transport Chain”**

Synopsis:

A mitochondrion is an organelle located inside most of the cells of all eukaryotic organisms, which includes plants, animals, and fungi. In these organisms, mitochondria primarily serve as “energy factories” as they are very involved in the most of the steps of converting nutrients into energy.

A process called the Electron Transport Chain contains the last steps of energy formation. This final process works by creating a concentration gradient of hydrogen ions utilizing the dual membrane structure of a mitochondrion. Basically, the Krebs cycle (an earlier step in energy conversion) generates electrons and these electrons go through the Electron Transport Chain, where hydrogen ions are pumped outside the inner membrane, thus creating a concentration gradient. This high concentration of hydrogen ions is used to drive the formation of high energy bonds called ATP, the primary energy store of many organisms.

Objective:

The objective is use graphics, video, and animation to show the physical structure of a mitochondrion, and to show the process of the Electron Transport Chain within this organelle. Since mitochondria and the other components involved are microscopic, I cannot simply use them in this project. Therefore, I will use more tangible physical objects that are similar in shape to mitochondria and other components to represent the cellular structures. For example, a large capsule will work for the outer structure of the mitochondrion and smaller spheres will work for electrons and hydrogen ions. As for the inner membrane, I may have to build that component myself.

Sources:

Mitochondrial Basic Structure and Function:

<http://en.wikipedia.org/wiki/Mitochondria>

<http://www.taylor.edu/academics/acaddepts/biology/energetics/powerpage.shtml>

Electron Transport Chain

http://en.wikipedia.org/wiki/Electron_transport_chain