



# Mitochondria: Cellular Powerhouse and Beyond

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## **Mitochondria: Cellular Power House and Beyond**

### **Abstract:**

Mitochondria are the cellular organelle known for their role in energy metabolism. Except for few cell types (e.g Cancer and stem cell) all cells derive their major portions of ATP (the energy currency of the cell) through oxidative phosphorylation (OXPHOS) where mitochondria play a major role. Besides playing central role in bioenergetics, mitochondria are central to other cellular functions including  $\text{Ca}^{2+}$  homeostasis, redox homeostasis, mitochondrial DNA inheritance and cell death mechanisms. Due to their central roles in many physiological pathways mitochondria play an important role in development of many diseases including but not limited to cancer, diabetes, cardiovascular diseases and neurodegenerative diseases. In this talk all these aspects along with methods to study them would be discussed. Data related to breast cancer and human male infertility would be presented to emphasize the central role of mitochondria in these diseases.