

How ATP is Produced in the Mitochondria and the Benefit of Molecular Hydrogen

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David Guez – PhD Neurobiology - Ecotoxicology
Jim Wilson – Director – Founder

Adenosine triphosphate (ATP) is often described as the energy currency of life, and every cell needs to produce it to sustain its normal function. ATP is mainly formed into two cell compartments the cytoplasm periphery adjacent to the cell membrane and the mitochondria generally situated closer to the nucleus and the reticulum endoplasmic. While peripheral ATP production uses aerobic glycolysis and provides a fast response to rapid change in ATP

demand, the mitochondria provide a large amount of ATP and is less sensitive to quick changes of demand. They can be described as satisfying the base-load demand¹. Interestingly manipulation of peripheral ATP demand, for example, by inhibition of Na⁺/K⁺ membrane pump, translates into a decrease in glycolysis, while manipulation macromolecule synthesis translates into changes in respiration rate and thus changes in ATP by the mitochondria¹.