

# Cell respiration process is identified

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University of Helsinki scientists have identified an internal electron transfer reaction that starts the proton pump mechanism of the respiratory enzyme.

Researchers at the university's Institute of Biotechnology said functions of the lungs, blood circulation and red blood cells in respiration are only an overture to the physicochemical reaction in the cells where oxygen is reduced to water.

Oxygen consumption in cell respiration is a strictly controlled enzymatic reaction in the inner mitochondrial membrane. The researchers determined the respiratory enzyme cytochrome oxidase functions as a proton pump that transduces free energy from oxygen reduction into an electrochemical proton gradient, which is utilized by another enzyme to produce ATP, the cells' general energy currency.

Professor Marten Wikstrom, who led the study, said the finding opens the door toward understanding the mechanism that has been the subject of research for nearly 30 years.

The project is detailed in the current issue of the journal Nature.

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