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PII: S0891-5849(18)30747-0

DOI: <https://doi.org/10.1016/j.freeradbiomed.2018.04.569>

Reference: FRB13737

To appear in: *Free Radical Biology and Medicine*

Received date: 14 February 2018

Accepted date: 21 April 2018

Cite this article as: Xiaokang Li, Yiming Wang, Guoqiang Tan, Jianxin Lyu and Huangeng Ding, Electron transfer kinetics of the mitochondrial outer membrane protein mitoNEET, *Free Radical Biology and Medicine*, <https://doi.org/10.1016/j.freeradbiomed.2018.04.569>

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# Electron transfer kinetics of the mitochondrial outer membrane protein mitoNEET

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## Abstract

Increasing evidence suggests that the mitochondrial outer membrane protein mitoNEET is a key regulator of energy metabolism, iron homeostasis, and production of reactive oxygen species in mitochondria. Previously, we reported that mitoNEET is a redox enzyme that catalyzes electron transfer from the reduced flavin mononucleotide (FMNH<sub>2</sub>) to oxygen or ubiquinone via its unique [2Fe-2S] clusters. Here, we explore the reduction and oxidation kinetics of the mitoNEET [2Fe-2S] clusters under anaerobic and aerobic conditions. We find that the mitoNEET [2Fe-2S] clusters are rapidly reduced by a catalytic amount of FMNH<sub>2</sub> which is reduced by flavin reductase and an equivalent amount of NADH under anaerobic conditions. When the reduced mitoNEET [2Fe-2S] clusters are exposed to air, the [2Fe-2S] clusters are

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