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Facilitation of Electron Transfer in the Presence of Mitochondria-Targeting Molecule SS31 TETIANA NOSACH, The Graduate Center of The City University of New York, MARK EBRAHIM, YUHANG REN, Hunter College of The City University of New York, SHAUN DARRAH, HAZEL SZETO, Department of Pharmacology, Weill Cornell Medical College, THE GRADUATE CENTER, THE CITY UNIVERSITY OF NEW YORK TEAM, HUNTER COLLEGE, THE CITY UNIVERSITY OF NEW YORK TEAM, DEPARTMENT OF PHARMACOLOGY, WEILL CORNELL MEDICAL COLLEGE TEAM — Electron transfer (ET) processes in mitochondria are very important for the production of adenosine triphosphate (ATP), the common source of the chemical energy. The inability to transfer electrons efficiently in mitochondrial ET chain plays a major role in age associated diseases, including diabetes and cancer. In this work, we used the time dependent absorption and photoluminescence spectroscopy to study the electron transfer kinetics along the ET chain of mitochondria. Our spectroscopic results suggest that SS31, a small peptide molecule targeting to the mitochondrial inner membrane, can facilitate electron transfer and increase ATP production. We show that SS31 targets cytochrome c to both increase the availability of state and also potentially reduce the energy barrier required to reduce cytochrome c.

Tetiana Nosach
The Graduate Center of The City University Of New York

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