

Accepted Manuscript

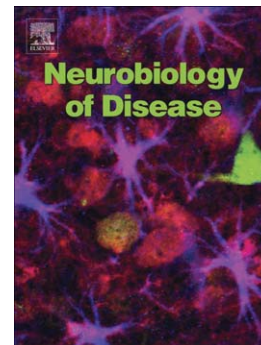
Mitochondrial dynamics and mitophagy in Parkinson's disease: A fly point of view

Sophia Von Stockum, Alice Nardin, Emilie Schrepfer, Elena Ziviani

PII: S0969-9961(15)30081-4
DOI: doi: [10.1016/j.nbd.2015.11.002](https://doi.org/10.1016/j.nbd.2015.11.002)
Reference: YNBDI 3627

To appear in: *Neurobiology of Disease*

Received date: 19 May 2015
Revised date: 2 November 2015
Accepted date: 5 November 2015



Please cite this article as: Von Stockum, Sophia, Nardin, Alice, Schrepfer, Emilie, Ziviani, Elena, Mitochondrial dynamics and mitophagy in Parkinson's disease: A fly point of view, *Neurobiology of Disease* (2015), doi: [10.1016/j.nbd.2015.11.002](https://doi.org/10.1016/j.nbd.2015.11.002)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Mitochondrial dynamics and Mitophagy in Parkinson's Disease: a fly point of view

Sophia Von Stockum¹, Alice Nardin², Emilie Schrepfer^{2,3}, and Elena Ziviani^{1,2*}

¹Fondazione Ospedale San Camillo, IRCCS, Lido di Venezia, Venezia, Italy

²Department of Biochemistry, University of Padova, via Ugo Bassi 56, Padova, Italy.

³VIMM, Venetian Institute of Molecular Medicine, Via Giuseppe Orus 2, Padova, Italy.

*Correspondence should be addressed to E.Z. (e-mail elena.ziviani@unipd.it).

Key words: PINK1, Parkin, Autophagy, Mitophagy, Parkinson's Disease, Drosophila, DUB

Abstract

Mitochondria are double membrane-bounded organelles residing in the cytoplasm of almost all eukaryotic cells, which convert energy from the disposal of organic substrates into an electrochemical gradient that is in turn converted into ATP. However, the ion gradient that is generated through the oxidation of nutrients, may lead to the production of reactive oxygen species (ROS), which can generate free radicals, damaging cells and contributing to disease. Originally described as static structures, to date they are considered extremely plastic and dynamic organelles. In this respect, mitochondrial dynamics is crucial to prevent potential damage that is generated by ROS. For instance, mitochondria elongate to dilute oxidized proteins into the mitochondrial network, and they fragment to allow selective elimination of dysfunctional mitochondria via mitophagy. Accordingly, mitochondrial dynamics perturbation may compromise the selective elimination of damaged proteins and dysfunctional organelles and lead to the development of different diseases including neurodegenerative diseases.

In recent years the fruit fly *D. melanogaster* has proved to be a valuable model system to evaluate the consequences of mitochondria quality control dysfunction *in vivo*, particularly with respect to PINK1/Parkin dependent dysregulation of mitophagy in the onset of Parkinson's Disease (PD). The current challenge is to be able to use fly based genetic strategies to gain further insights into molecular mechanisms underlying disease in order to develop new therapeutic strategies.

This article is part of a Special Issue entitled: Role of mitochondria in physiological and pathophysiological functions in the central nervous system.

Download English Version:

<https://daneshyari.com/en/article/6021361>

Download Persian Version:

<https://daneshyari.com/article/6021361>

[Daneshyari.com](https://daneshyari.com)