

## PARKIN'S ROLE IN MITOCHONDRIAL QUALITY CONTROL

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Parkinson disease is the second most common neurodegenerative disease, and loss of function mutations in Parkin, an E3 ubiquitin ligase, are a common cause of early onset familial parkinsonism. Loss of Parkin function in mice and patient cells leads to complex I dysfunction and other mitochondrial abnormalities. Likewise, knockout of Parkin in *Drosophila* causes mitochondrial swelling in myocytes and muscle degeneration. These findings suggest that Parkin may play a role in mitochondrial maintenance. We previously reported that cytosolic Parkin is specifically targeted to dysfunctional mitochondria upon loss of membrane potential in order to promote their degradation by autophagy. In addition, we find that mutations which disrupt a conserved motif of Parkin severely block recruitment of Parkin to depolarized mitochondria and Parkin-induced mitophagy. These results suggest that Parkin mediates the removal of dysfunctional mitochondria and implicate the elimination of impaired mitochondria in the pathogenesis of Parkinson disease.