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Roles of ¹⁴the mitochondrial unfolded protein response in mammalian stem cells

Gu LF *et al.* Mitochondrial ²⁵unfolded protein response in stem cells

Li-Fang Gu, Jia-Qi Chen, Qing-Yin Lin, Yan-Zhou Yang

¹Abstract

The mitochondrial unfolded protein response (UPR^{mt}) is an evolutionarily conserved adaptive mechanism for improving cell survival under mitochondrial stress. ²⁵Under physiological and pathological conditions, the UPR^{mt} is the key to maintaining intracellular homeostasis and proteostasis. Important roles of the UPR^{mt} have ⁸been demonstrated in a variety of cell types and include cell development, metabolism, and immune processes. UPR^{mt} dysfunction leads to ¹a variety of pathologies, including

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Mitochondrial unfolded protein response

The mitochondrial unfolded protein response is a cellular stress response related to the mitochondria. The UPR^{mt} results from unfolded or misfolded proteins in mitochondria beyond the capacity of chaperone proteins to handle them. The UPR^{mt} can occur either in the mitochondrial matrix or in the mitochondrial inner membrane. In the UPR^{mt}, the mitochondrion will either upregulate chaperone proteins or invoke proteases to degrade proteins that fail to fold properly. UPR^{mt} causes the sirtuin SIRT3 to activate antioxidant enzymes and mitophagy.

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