

Retrograde signaling pathway is the pathway between mitochondria and nucleus. This pathway helps *Saccharomyces cerevisiae* to cope with worsening of conditions of life, such as depletion of rich nutrient sources and necessity of use poor resources, reduction of mitochondrial membrane potential, or loss of mitochondrial DNA causing disturbances in the citric acid cycle. Most of these conditions are associated with aging yeast populations. Key retrograde pathway proteins include RTG transcription factors Rtg1p/Rtg3p and cytoplasmic protein Rtg2p. Retrograde pathway is upregulated by several positive and negative regulators including the TOR pathway, which negatively regulates retrograde pathway. The retrograde pathway target genes include genes coding for tricarboxylic cycle enzymes, peroxisomal enzymes, transporters and other enzymes of anaplerotic pathways. Retrograde response help cells to modify their metabolism so that they are able to overcome unfavorable environmental conditions in which they live.