OLI1 is one of three mitochondrial genes, along with ATP8 and ATP6, that encode ATP synthase subunits. Also known as subunit 9 or Y9, Oli1p is homologous to subunit c of bacterial ATP synthase. The ATP synthase complex utilizes proton motive force to generate ATP from ADP and Pi. The structure of this enzyme complex is highly conserved among diverse organisms and consists of two major components, soluble F1 and membrane-bound F0, each of which contains many subunits. The F0 proton pore is formed by a ring of twelve Y9 subunits. It is hypothesized that ATP synthase activity is driven by the rotation of the Y9 ring and subsequent transfer of that rotational force to the F1 catalytic core. Although OLI1 is essential for ATP synthase function, it is not essential for life in yeast. Deletion of OLI1, like deletions in many genes necessary for the function or maintenance of mitochondria, leads to a \"petite\" phenotype that is slow-growing and unable to survive on nonfermentable carbon sources. General ATP synthase structure and function are reviewed in references 7 and 8. For a review that is specific to yeast, see reference 6.