ATP2 encodes the beta subunit of mitochondrial F1-ATP synthase complex. 0015986>The F0F1-ATP synthase complex can synthesize and hydrolyze ATP using a transmembrane proton gradient. 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 catalytic core of the enzyme resides in the F1 component and consists of a hexamer of alternating alphaand beta subunits. These three alpha-beta dimers each provide one of ATP synthase's three catalytic sites. Although isolated beta subunits are capable of binding nucleotide, both alpha and beta subunits are thought to contribute to nucleotide binding and catalysis. Although ATP2 is essential for ATP synthase function, it is not essential for life in yeast. Deletion of ATP2, like deletions in many genes necessary for the function or maintenance of mitochondria, lead to a \"petite\" phenotype that is slow-growing and unable to survive on nonfermentable carbon sources. The 3' untranslated region of the ATP2 mRNA contains a sequence element that mediates localization of the mRNA to mitochondria; mutation of this element also results in a growth defect on nonfermentable carbon sources. General ATP synthase structure and function are reviewed in references 7 and 10. For a review that is specific to yeast, see reference 4.