COX14 encodes a protein of unknown function that is an integral component of mitochondrial membranes. The phenotype of the cox14 null mutant suggests that Cox14p is required for assembly of cytochrome c oxidase: the null mutant displays a respiratory growth deficiency, lacks cytochrome c oxidase activity, and displays reduced accumulation of cytochrome c oxidase subunits, a phenotype commonly observed for mutations that block assembly of the enzyme. Cox14p is not a subunit of cytochrome c oxidase, but sediments as part of a 150,000 dalton complex whose other constituents are unidentified. An apparently orthologous gene has been identified in Kluyveromyces lactis.