In Saccharomyces cerevisiae, GND1 encodes the major isoform of phosphogluconate dehydrogenase, accounting for approximately 80% of activity, and GND2 encodes the minor isoform. Phosphogluconate dehydrogenaseis a key enzyme in the cytosolic oxidative branch of the pentose phosphate pathway, and catalyzes the second oxidative reduction of NADP+ to NADPH. Phosphogluconate dehydrogenase is also important for protecting yeast from oxidative stress, since NADPH is an essential cofactor for the Glr1p glutathione reductase as well as the Trr1p and Trr2p thioredoxin reductases, which defend cells against oxidative damage.GND2 is induced in mot1-14 mutants, during aerobic growth as compared to anaerobic growth, and in response to alpha-factor or stress. gnd2 null mutants are viable, but display reduced growth on D-glucono-delta-lactone and reduced induction of 6-phosphogluconolactonasein response to D-glucono-delta-lactone. Gnd2p displays similarity to Gnd1p, and the 6-phosphogluconate dehydrogenases of Candida parapsilosis, Cryptococcus neoformans, and human.