CTT1 encodes cytosolic catalase T, which is involved in hydrogen peroxide detoxification. Catalases break down hydrogen peroxide into dioxygenand water molecules. Ctt1p activity is important during the oxidative stress response and in protecting proteins against oxidative inactivation. Catalase activity is also increased during caloric restriction and during oxidative stress caused by the processes of aging, acid stress adaptation, and thermotolerance. CTT1 expression is induced under various stresses, such as carbon starvation and oxidative, osmotic, or freeze-thaw stress. This transcriptional response is mediated by transcription factors such as Msn2p/Msn4p, Hog1p, Hap1p, Yap1p, and Zap1p acting upon upstream activating elementsin the CTT1 promoter, including the stress response elementand a heme control region. The localization of Ctt1p is regulated during cytokinesis, with a higher proportion of active Ctt1p found in daughter cells. The S. cerevisiae genome encodes a second catalase, peroxisomal catalase A, and although these two enzymes are functionally similar, Cta1p is more similar in sequence to the peroxiosomal catalases from the cow Bos taurus and the pathogenic yeast Candida tropicalis than it is to Ctt1p. All yeast species appear to have a Cta1p ortholog however not all yeasts have an ortholog of Ctt1p.