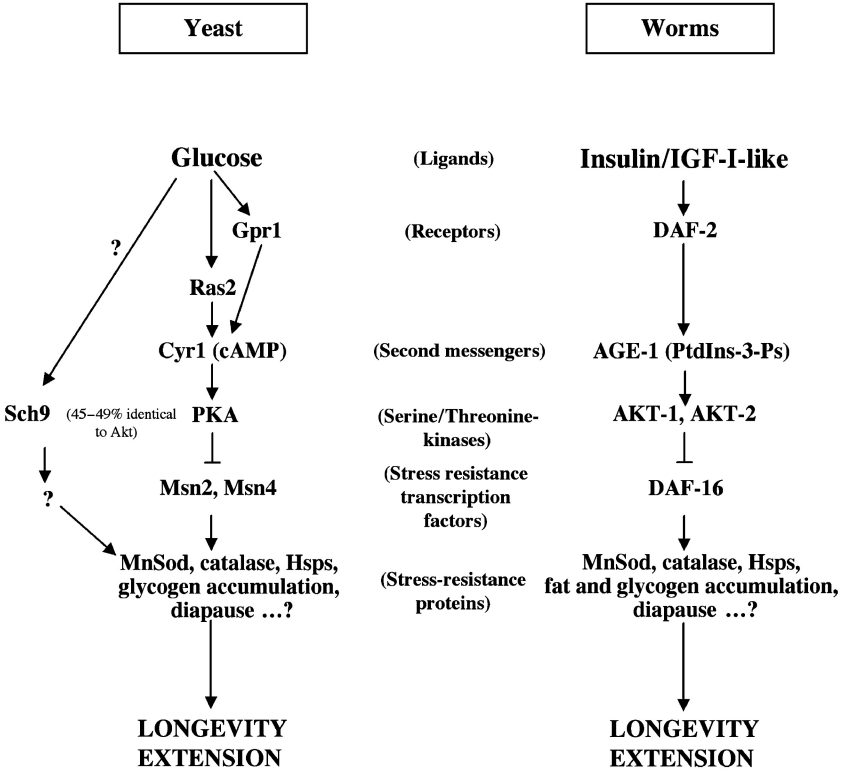

Fig. 5 Regulation of stress resistance and longevity extension in yeast and worms. In yeast, glucose and other nutrients activate the Ras2/Cyr1/cAMP/PKA and the Sch9 pathways. PKA down-regulates transcription factors Msn2/Msn4, which induces the expression of heat shock proteins, catalase, MnSOD and other maintenance proteins. Activation of Sch9 results in a major decrease in stress resistance via unidentified mediators. Mutations in *RAS2*, *SCH9* and *CYR1* increase multiple stress resistance systems, decrease mitochondrial superoxide levels, delay aconitase inactivation and extend longevity. Analogously, in worms, insulin/IGF-I-like signalling activates the daf-2/age-1/AKT-1/AKT-2 pathway, which down-regulate transcription factor DAF-16. The latter activates several stress resistance proteins including MnSOD and catalase. Mutations in daf-2 and age-1 increase thermotolerance and oxidative stress resistance and extend survival.