Hsp40/DnaJ is a family of proteins, established by bacterial DnaJ, that regulates Hsp70 chaperone activity. Hsp40s stimulate the intrinsically weak ATPase activity of Hsp70 proteins and facilitate Hsp70 interaction with polypeptide substrates. Hsp70 family members often have multiple Hsp40 partners, and these specific pairings govern Hsp70 chaperone involvement in particular processes. All Hsp40s contain a highly conserved 75-amino acid J domain, which interacts with the ATPase domain of Hsp70 to stimulate ATP hydrolysis. However, there are also other conserved structural domains, and based on the presence or absence of these regions, the Hsp40 family can be divided into three subtypes: type I, type II and type III. Sequence analysis of the S. cerevisiae genome has revealed 22 proteins in the Hsp40/DnaJ family: YDJ1, XDJ1, APJ1, SIS1, DJP1, ZUO1, SWA2, JJJ1, JJJ2, JJJ3, CAJ1, CWC23, MDJ1, MDJ2, PAM18, JAC1, JID1, SCJ1, HLJ1, JEM1, SEC63, and ERJ5.ZUO1 encodes zuotin, a ribosome-associated DnaJ-like protein that may act in conjunction with the Hsp70 proteins Ssb1p and Ssb2p to chaperone the folding of nascent polypeptide chains. Zuo1p was first identified as a Z-DNA binding protein, and was also found to bind tRNAs. Given its nucleic acid binding characteristics, Zuo1p likely associates with ribosomes via an interaction with the rRNA. Cells lacking Zuo1p show slow growth and sensitivity to low temperatures, high osmolarity, and certain protein synthesis inhibitors.