YVH1 was originally identified as an atypical dual-specificity protein phosphatasebased on sequence similarity. However, assays with the purified protein have to date only provided evidence for phosphotyrosine-specific protein phosphatase activity. YVH1 is induced by nitrogen starvationand reduced temperaturewhere it clusters with genes involved in rRNA synthesis and ribosomal protein genes. Yvh1p associates with pre-60S ribosomes and is required for a late-step in the maturation of the 60S ribosomal subunit. Yvh1p is involved in the assembly of the ribosome stalk, a structure of the large subunit required for translation factor recruitment and ribosome activity. Specifically, Yvh1p is recruited to the pre-60S particle by Rpl12p where it facilitates the release of the Mrt4p assembly factor from the stalk of the maturing pre-60S particle. Release of Mrt4p allows Rpp0pto gain access and load onto the pre-60S subunit, resulting in the maturation of the ribosome stalk, and subsequent release of Yvh1p.While YVH1 is not essential for viability, deletion results in defects in growth, glycogen accumulation, meiosis and sporulation. Several of these null phenotypes are similar to those associated with constitutively active protein kinase A, and altering cAMP levels partially suppresses the glycogen accumulation and spore maturation defects, implicating Yvh1p in cAMP-mediated signaling. Lack of YVH1 results in several ribosome assembly related defects including: altered polysome profiles, defective nuclear export of pre-60S ribosomal particles, and defects in rRNA processing. These defects are independent of the catalytic activity of the phosphatase, but instead dependent on an intact C-terminal cysteine-rich RING variant domain. In the human ortholog, this RING variant domain is capable of coordinating zinc.Dual-specificity phosphatasesexist in many different species. An ortholog from C. albicanscontrols growth, filamentation and virulence. A human ortholog, DUSP12, is able to functionally complement a yvh1 null mutant. Another related human dual specificity phosphatase, DUSP7, regulates MAPK signaling pathways, is involved in cell crowding, and is overexpressed in leukocytes derived from AMLand ALLpatients.