HOS2 encodes a histone deacetylase. Covalent modifications of histones, including acetylation and deacetylation, are implicated in transcriptional regulation in yeast and other eukaryotes, and have been reviewed in 6 and 7. A homozygous null hos2 mutant shows reduced sporulation. Four other histone deactylases, Rpd3p, Hda1p, Hos1p, and Hos3p, have been identified in yeast; all share sequence similarity. Different yeast histone deacetylase complexes affect transcription of distinct, partially overlapping sets of genes.