ASH1 encodes a GATA-like transcription factor that acts to specify daughter-cell fate in mating-type switching in haploid cells and in pseudohyphal growth in diploid cells deprived of nitrogen. In the context of mating-type switching, Ash1p acts to repress the transcription of HO, which encodes an endonuclease that initiates mating-type switching. Ash1p is required during pseudohyphal growth to activate the transcription of MUC1/FLO11, which encodes a flocculin that helps cells stick together as they grow into the substratum.Mating-type switching occurs only in mother cells because Ash1p prevents HO transcription in daughter cells. Ash1 protein is specifically localized to daughter nuclei late in the cell cycle, where it is poised to inhibit HO transcription in the following G1. This asymmetric localization is achieved by the delivery of ASH1 mRNA to daughter cells by the products of the SHE genes. She2p and Loc1p bind to ASH1 mRNA in mother and daughter nuclei and mediate export to the cytoplasm. She3p then associates with the ribonucleoprotein particleand acts as an adapter for association with the type V myosin Myo4p. Myo4p transports the mRNP complex along actin cables to the bud tip. During telophase, ASH1 mRNA is anchored to the bud tip by Bni1pand/or Hek2p and/or Bud6p. Translation of ASH1 mRNA is coordinated with its transport to the bud tip such that while ASH1 is in transit, translation is delayed.Once in the daughter nucleus, Ash1p binds to its recognition sequencesin the Upstream Repression Sequence 1of the HO promoter. The carboxy-terminus of Ash1p contains the DNA-binding domain and the amino-terminus mediates repression of HO transcription. The Rpd3p histone deacetylase complexhas been shown to contain Ash1p and bind to the HO promoter. Mutants of Rpd3p HDAC components disrupt HO repression, suggesting that chromatin architecture plays a role in regulating HO expression. Because Ash1p can function as part of an HDAC, it is likely to regulate many more genes in the genome.Genes similar to ASH1 are found in ascomycetes and the Candida albicans homolog can substitute for S. cerevisiae ASH1.