Asf1p is involved in chromatin assembly throughout the cell cycle as well as disassembly of chromatin during transcription. Specifically, ASF1 is required for chromatin assembly during DNA replication and DNA repair, establishment of silent chromatin, and reassembly of chromatin after transcription. Asf1p stimulates nucleosome assembly by the chromatin assembly factor CAF-1 during DNA replication in vitroand it interacts with Hir1p to promote heterochromatin formation. Overexpression of Asf1p causes derepression of the silent mating type loci.ASF1 has been shown to be involved in many aspects of chromatin metabolism during transcription. Interactions between Asf1p and a bromodomain protein, Bdf1p, that interacts with TFIID demonstrate a functional link between Asf1p and RNA polymerase II. ASF1 is required for chromatin reassembly after activator mediated transcription. In addition, Asf1p is involved in the eviction of histones during transcriptional activation. Cell lacking Asf1p display global changes in transcription similar to those seen in cells lacking Cac2p or histone H4.Chromatin assembly mediated by ASF1 may be subject to checkpoint regulation. Asf1p has been implicated as a target of the DNA damage checkpoint response by its interaction with Rad53p. Additionally, asf1 mutants require functional replication checkpoint proteins for progression through S-phase.Several copies of the MCB motif, a sequence motif commonly found upstream of genes transcribed in S-phase, are present upstream of ASF1. ASF1 expression appears to be downregulated in conditions of oxygen deprivationAsf1p is highly conserved in flies and humans but the functions of S. cerevisiae Asf1p appear to be split between two human genes.