Snf5p is a component of the SWI/SNF complexthat affects chromatin structure and transcription from a variety of promoters. Snf5p is important for the assembly of the SWI/SNF complex and also for its nucleosome-remodeling activities, and may be involved in the negative regulation of chromatin silencing. Snf5p is required for the normal expression of all histone genes, including HTA1 and HTB1. Hir1p and Hir2p bind Snf5p and appear to target it, and presumably the SWI/SNF complex, to the HTA1-HTB1 locus. Snf5p also interacts with Taf14p, another component of the SWI/SNF complex, and interacts with histone H2B at the HTA1 promoter. Residues 269-680, which include the evolutionarily-conserved repeat motifs Rep1 and Rep2, are necessary for Snf5p function. snf5 null mutants are viable, but display reduced growth on glucose and sucrose, are unable to grow on raffinose, galactose, or glycerol, and are hypersensitive to lithium and calcium ions. snf5 null mutations are synthetically lethal in combination with dst1 null mutations, and expression of an active Moloney murine leukemia virusintegraseis lethal in rad52 null mutants, but not in rad52 snf5 double null mutants. Snf5p is similar to Sfh1p, Drosophila SNR1, Schizosaccharomyces pombe Snf5p, and Arabidopsis thaliana BSH, which can partially complement the defects seen in snf5 null mutants. Snf5p also has a region of similarity to zebrafish SMARCB1 and Caenorhabditis elegans R07E5.3. The human homolog of Snf5pis a tumor suppressor, mutation of which is associated with oncogenesis. SMARCB1 binds to Epstein-Barr virusnuclear protein 2, which is expressed in latently-infected B lymphocytes and is essential to the immortalization of B cells by EBV. Human SMARCB1 also binds to human papillomavirusE1 protein in two-hybrid assays and stimulates HPV DNA replication in vitro.By regulating the structure of chromatin, chromatin remodeling complexes, all of which contain an ATPase as a central motor subunit, perform critical functions in the maintenance, transmission, and expression of eukaryotic genomes. The SWI/SNF chromatin remodeling complex is involved in DNA replication, stress response, and transcription, and binds DNA nonspecifically, altering nucleosome structure to facilitate binding of transcription factors. For some genes, transcriptional activators are able to target the SWI/SNF complex to upstream activation sequencesin the promoter. The SWI/SNF chromatin remodeling complex family contains two evolutionary conserved subclasses of chromatin remodeling factors, one subfamily includes yeast SWI/SNF, fly BAP, and mammalian BAF, and the other subfamily includes yeast RSC, fly PBAP, and mammalian PBAF. It appears that some human SWI/SNF subunits act as tumor suppressors and there is also evidence that human SWI/SNF subunits are involved in controlling cell growth via their interaction with other tumor suppressors. Expression of adenovirus E1A oncoproteins, which are regulators of cellular and viral transcription, in Saccharomyces cerevisiae requires the function of the SWI/SNF complex, and expression of E1A in wild-type cells leads to a specific loss of SWI/SNF dependent transcription. These results suggest that the SWI/SNF complex is a target of these oncoproteins in mammalian cells and that the disruption of normal cell cycle control by E1A may be due in part to altered activity of the SWI/SNF complex.