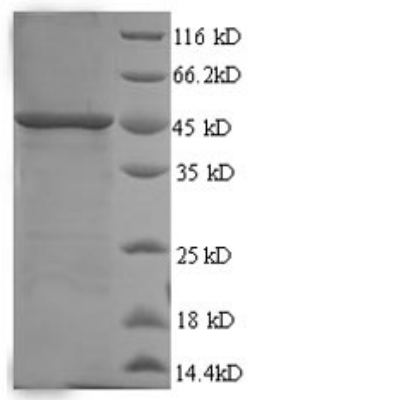
Recombinant Human SWI/SNF-related matrix-associated actin-dependent regulator of chromatin subfamily B member 1 (SMARCB1), partial

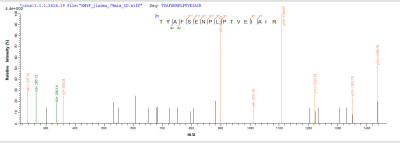
Product Code	CSB-YP623654HU
Relevance	Core component of the BAF (hSWI/SNF) complex. This ATP-dependent chromatin-rodeling complex plays important roles in cell proliferation and differentiation, in cellular antiviral activities and inhibition of tumor formation. The BAF complex is able to create a stable, altered form of chromatin that constrains fewer negative supercoils than normal. This change in supercoiling would be due to the conversion of up to one-half of the nucleosomes on polynucleosomal arrays into asymmetric structures, termed altosomes, each composed of 2 histones octamers. Stimulates in vitro the rodeling activity of SMARCA4/BRG1/BAF190A. Involved in activation of CSF1 promoter. Belongs to the neural progenitors-specific chromatin rodeling complex (npBAF complex) and the neuron-specific chromatin rodeling complex (nBAF complex). During neural development a switch from a st/progenitor to a post-mitotic chromatin rodeling mechanism occurs as neurons exit the cell cycle and become committed to their adult state. The transition from proliferating neural st/progenitor cells to post-mitotic neurons requires a switch in subunit composition of the npBAF and nBAF complexes. As neural progenitors exit mitosis and differentiate into neurons, npBAF complexes which contain ACTL6A/BAF53A and PHF10/BAF45A, are exchanged for homologous alternative ACTL6B/BAF53B and DPF1/BAF45B or DPF3/BAF45C subunits in neuron-specific complexes (nBAF). The npBAF complex is essential for the self-renewal/proliferative capacity of the multipotent neural st cells. The nBAF complex along with CREST plays a role regulating the activity of genes essential for dendrite growth . Plays a key role in cell-cycle control and causes cell cycle arrest in G0/G1.
Abbreviation	Recombinant Human SMARCB1 protein, partial
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	Q12824
Alias	BRG1-associated factor 47 ;BAF47Integrase interactor 1 protein;SNF5 homolog ;hSNF5
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MMMALSKTFGQKPVKFQLEDDGEFYMIGSEVGNYLRMFRGSLYKRYPSLWR RLATVEERKKIVASSHGKKTKPNTKDHGYTTLATSVTLLKASEVEEILDGNDEK

	YKAVSISTEPPTYLREQKAKRNSQWVPTLPNSSHHLDAVPCSTTINRNRMGRD KKRTFPLCFDDHDPAVIHENASQPEVLVPIRLDMEIDGQKLRDAFTWNMNEKL MTPEMFSEILCDDLDLNPLTFVPAIASAIRQQIESYPTDSILEDQSDQRVIIKLNIH VGNISLVDQFEWDMSEKENSPEKFALKLCSELGLGGEFVTTIAYSIRGQLSWH QKTYAFSENPLPTVEIAIRNTGDADQWCPLLETLTDAEMEKKIRDQDRNTRRM R
Research Area	Cell Cycle
Source	Yeast
Target Names	SMARCB1
Protein Names	Recommended name: SWI/SNF-related matrix-associated actin-dependent regulator of chromatin subfamily B member 1 Alternative name(s): BRG1-associated factor 47 Short name= BAF47 Integrase interactor 1 protein SNF5 homolog Short n
Expression Region	2-376aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged
Mol. Weight	45.0kDa
Protein Length	Partial

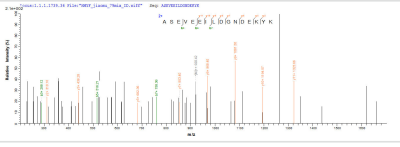
Image



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.



Based on the SEQUEST from database of Yeast host and target protein, the LC-MS/MS Analysis result of CSB-YP623654HU could indicate that this peptide derived from Yeast-expressed Homo sapiens (Human) SMARCB1.



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Description

Recombinant Human SMARCB1 is produced in a yeast expression system and

covers amino acids 2 to 376 of the protein sequence. An N-terminal 6xHis-tag has been added to help with purification and detection. SDS-PAGE analysis confirms the protein shows greater than 90% purity. This product is for research use only and appears to contain no detectable endotoxin levels.

SMARCB1 acts as a core component of the SWI/SNF chromatin remodeling complex and seems to play a crucial role in controlling gene expression by changing chromatin structure. The protein is involved in several cellular processes, including cell cycle control and differentiation. Because of its central position in chromatin remodeling, SMARCB1 has become a major focus for researchers studying gene regulation mechanisms and epigenetic modifications.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. Protein-Protein Interaction Studies

This recombinant SMARCB1 protein can help investigate how it interacts with other SWI/SNF complex components and chromatin remodeling factors through pull-down assays using the N-terminal 6xHis tag. The partial protein covering amino acids 2-376 retains key functional domains that may be involved in protein-protein interactions within the chromatin remodeling machinery. Co-immunoprecipitation experiments and GST pull-down assays could help map binding partners. These approaches might also characterize the molecular mechanisms behind SWI/SNF complex assembly.

2. Antibody Development and Validation

The high purity recombinant SMARCB1 protein works well as an antigen for generating specific antibodies against human SMARCB1. The 6xHis tag makes purification and immobilization easier during immunization protocols and subsequent antibody screening assays. Researchers can also use this protein to validate the specificity of existing SMARCB1 antibodies. Western blot, ELISA, and other immunoassays help ensure proper recognition of the target protein.

3. Structural and Biophysical Characterization

The purified recombinant protein provides material for structural studies. X-ray crystallography, NMR spectroscopy, and cryo-electron microscopy may help reveal SMARCB1's molecular architecture. Various biophysical techniques can characterize the protein's properties - dynamic light scattering, analytical ultracentrifugation, and thermal stability assays appear useful for examining folding state, oligomerization properties, and stability under different conditions. These studies likely contribute to understanding the structural basis of SMARCB1 function in chromatin remodeling complexes.

4. In Vitro Chromatin Remodeling Assays

Researchers can incorporate this recombinant SMARCB1 into reconstituted SWI/SNF complexes for in vitro chromatin remodeling studies using nucleosome substrates. The protein helps investigate its role in nucleosome sliding, histone octamer transfer, and chromatin accessibility changes. Gel mobility shift assays and nuclease accessibility experiments provide ways to measure these effects. Such studies may help clarify the mechanistic contribution of SMARCB1 to the overall chromatin remodeling activity of SWI/SNF complexes.

5. Biochemical Assay Development

The 6xHis-tagged SMARCB1 protein can work as a standard or control in various biochemical assays designed to study chromatin remodeling mechanisms. Researchers might use it to develop and optimize assays measuring protein stability, post-translational modifications, or enzymatic activities of associated factors. The consistent quality and purity of this recombinant protein makes it suitable for quantitative biochemical studies. It also appears useful for high-throughput screening applications focused on chromatin biology research.

Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.