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# SMARCA4 Antibody

Catalog # ASC11784

## Product Information

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| **Application** | WB, IF, E, IHC-P |
| **Primary Accession** | P51532 |
| **Other Accession** | NP_001122321, 192807323 |
| **Reactivity** | Human, Mouse, Rat |
| **Host** | Rabbit |
| **Clonality** | Polyclonal |
| **Isotype** | IgG |
| **Calculated MW** | 184646 |
| **Concentration (mg/ml)** | 1 mg/mL |
| **Conjugate** | Unconjugated |
| **Application Notes** | SMARCA4 antibody can be used for detection of SMARCA4 by Western blot at 1 - 2 g/ml. Antibody can also be used for Immunohistochemistry at 5 g/mL. For Immunoflorescence start at 20 g/mL. |

## Additional Information

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| **Gene ID** | 6597 |
| **Other Names** | Transcription activator BRG1, 3.6.4.-, ATP-dependent helicase SMARCA4, BRG1-associated factor 190A, BAF190A, Mitotic growth and transcription activator, Protein BRG-1, Protein brahma homolog 1, SNF2-beta, SWI/SNF-related matrix-associated actin-dependent regulator of chromatin subfamily A member 4, SMARCA4, BAF190A, BRG1, SNF2B, SNF2L4 |
| **Target/Specificity** | SMARCA4; SMARCA4 antibody is human, mouse and rat reactive. Multiple isoforms of SMARCA4 are known to exist. |
| **Reconstitution & Storage** | SMARCA4 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. |
| **Precautions** | SMARCA4 Antibody is for research use only and not for use in diagnostic or therapeutic procedures. |

## Protein Information

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| **Name** | SMARCA4 ( HGNC:11100) |
| **Function** | ATPase involved in transcriptional activation and repression of select genes by chromatin remodeling (alteration of DNA-nucleosome topology). Component of SWI/SNF chromatin remodeling complexes that carry out key enzymatic activities, changing chromatin structure by altering DNA-histone contacts within a nucleosome in an ATP-dependent manner (PubMed:15075294, PubMed:29374058, PubMed:30339381, PubMed:32459350). Component of the CREST-BRG1 complex, a multiprotein |

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| | complex that regulates promoter activation by orchestrating the calcium-dependent release of a repressor complex and the recruitment of an activator complex. In resting neurons, transcription of the c-FOS promoter is inhibited by SMARCA4-dependent recruitment of a phospho- RB1-HDAC repressor complex. Upon calcium influx, RB1 is dephosphorylated by calcineurin, which leads to release of the repressor complex. At the same time, there is increased recruitment of CREBBP to the promoter by a CREST-dependent mechanism, which leads to transcriptional activation. The CREST-BRG1 complex also binds to the NR2B promoter, and activity-dependent induction of NR2B expression involves the release of HDAC1 and recruitment of CREBBP (By similarity). Belongs to the neural progenitors-specific chromatin remodeling complex (npBAF complex) and the neuron-specific chromatin remodeling complex (nBAF complex). During neural development, a switch from a stem/progenitor to a postmitotic chromatin remodeling mechanism occurs as neurons exit the cell cycle and become committed to their adult state. The transition from proliferating neural stem/progenitor cells to postmitotic 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 stem cells. The nBAF complex along with CREST plays a role regulating the activity of genes essential for dendrite growth. SMARCA4/BAF190A may promote neural stem cell self-renewal/proliferation by enhancing Notch-dependent proliferative signals, while concurrently making the neural stem cell insensitive to SHH-dependent differentiating cues (By similarity). Acts as a corepressor of ZEB1 to regulate E-cadherin transcription and is required for induction of epithelial-mesenchymal transition (EMT) by ZEB1 (PubMed:20418909). Binds via DLX1 to enhancers located in the intergenic region between DLX5 and DLX6 and this binding is stabilized by the long non-coding RNA (lncRNA) Evf2 (By similarity). Binds to RNA in a promiscuous manner (By similarity). In brown adipose tissue, involved in the regulation of thermogenic genes expression (By similarity). |
| **Cellular Location** | Nucleus {ECO:0000255\|PROSITE-ProRule:PRU00549, ECO:0000269\|PubMed:20418909, ECO:0000269\|PubMed:25593309} Note=Colocalizes with long non-coding RNA Evf2 in nuclear RNA clouds (By similarity). Localizes to sites of DNA damage (PubMed:25593309) {ECO:0000250\|UniProtKB:Q3TKT4, ECO:0000269\|PubMed:25593309} |
| **Tissue Location** | Colocalizes with ZEB1 in E-cadherin-negative cells from established lines, and stroma of normal colon as well as in de- differentiated epithelial cells at the invasion front of colorectal carcinomas (at protein level). |

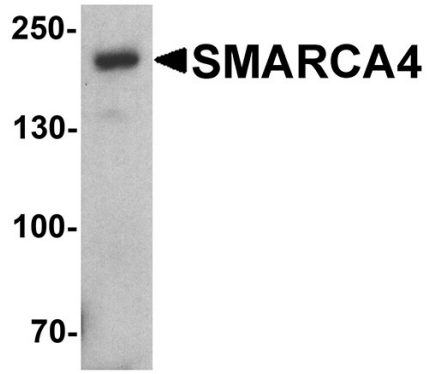
## Background

The SWI/SNF related matrix associated actin dependent regulator of chromatin subfamily a member 4 (SMARCA4) protein, also known as BRG1, is a member of the SWI/SNF family of proteins and is similar to the brahma protein of Drosophila (1). Members of this family have helicase and ATPase activities and are thought to regulate transcription of certain genes by altering the chromatin structure around those genes (2). The encoded protein is part of the large ATP-dependent chromatin remodeling complex SNF/SWI, which is required for transcriptional activation of genes normally repressed by chromatin (3). In addition, this protein can bind BRCA1, as well as regulate the expression of the tumorigenic protein CD44 (4,5).

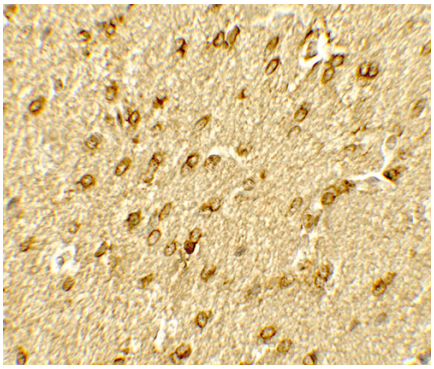
## References

Muchardt C and Yaniv M. A human homologue of Saccharomyces cerevisiae SNF2/SWI2 and Drosophila brm genes potentiates transcriptional activation by the glucocorticoid receptor. EMBO J. 1993; 12:4279-90.
Wilson BG and Roberts CW. SWI/SNF nucleosome remodellers and cancer. Nat. Rev. Cancer 2011; 11:481-92.
Bultman S, Gebuhr T, Yee D, et al. A Brg1 null mutation in the mouse reveals functional differences among mammalian SWI/SNF complexes. Mol. Cell 2000; 6:1287-95.
Bochar DA, Wang L, Beniya H, et al. BRCA1 is associated with a human SWI/SNF-related complex: linking chromatin remodeling to breast cancer. Cell 2000; 102:257-65.

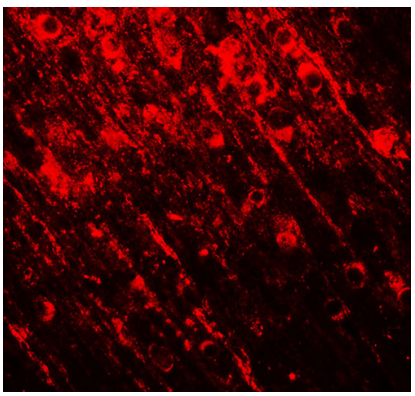
## Images




Western blot analysis of SMARCA4 in SK-N-SH cell lysate with SMARCA4 antibody at 1 µg/ml.



Immunohistochemistry of SMARCA4 in rat brain tissue with SMARCA4 antibody at 5 µg/mL.



Immunohistochemistry of SMARCA4 in rat brain tissue with SMARCA4 antibody at 5 µg/mL.

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