SF3B4
Mouse Monoclonal Antibody

MCA-3A1

Ordering Information
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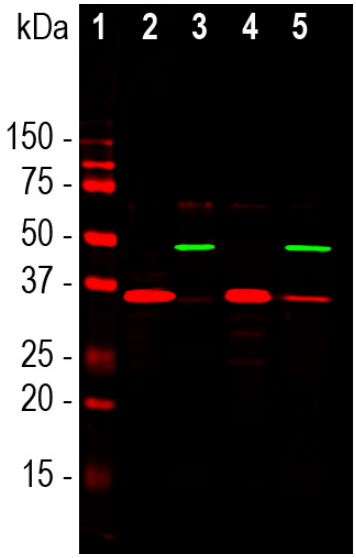
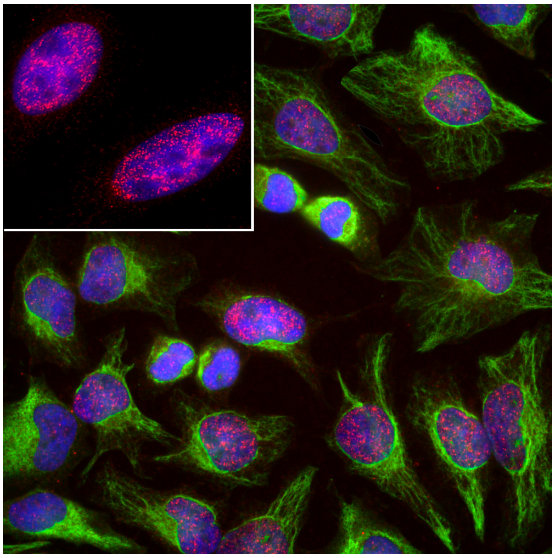
HGNC Name: *SF3B4*
UniProt: *Q15427*
RRID: *AB_2572386*
Immunogen: *Full length recombinant human SF3B4 expressed in and purified from E. coli.*
Format: *Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM NaN_3*
Storage: *Store at 4°C for short term, for longer term at -20°C*
Recommended dilutions:
WB: 1:1,000. IF/ICC and IHC: 1:1,000

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC, IHC	Mouse	IgG2b	49kDa	Hu, Rt, Ms



Western blot analysis of different cell lysates, cytosol or nuclear enriched fractions, using mouse mAb to splicing factor SF3B4, MCA-3A1, dilution 1:1,000 in green: [1] protein standard (red), [2] NIH-3T3 cytosolic fraction [3] NIH-3T3 nuclear fraction [4] HeLa cytosolic and [5] HeLa nuclear fractions. Strong single band at 49kDa represents the SF3B4 protein, which is expressed exclusively in the nuclei. The same blot was simultaneously probed with rabbit pAb to GAPDH, RPCA-GAPDH, dilution 1:20,000, in red. The 37kDa band corresponds to the GAPDH protein, detected mainly in the cytosolic fractions of these cells.



Immunofluorescent analysis of HeLa cells stained with mouse mAb to splicing factor SF3B4, MCA-3A1, dilution 1:1,000 in red, and costained with chicken pAb to vimentin, CPCA-Vim, dilution 1:10,000, in green. The blue is DAPI staining of nuclear DNA. The MCA-3A1 antibody reveals strong granular staining of the nuclei, while the CPCA-Vim antibody specifically labels cytoplasmic intermediate filaments.

Background:

Splicing factor SF3B4, also known as SAP49, is a ubiquitously expressed protein found in the nuclei of eukaryotic cells (1). The protein is also known as splicing factor 3b, subunit 4, 49kDa SAP49, spliceosome-associated protein U2, Hsh49 and MGC108282. SF3B4 is one of four protein components of the U2 small nuclear ribonucleoprotein (snRNP) dependent splicing factor protein complex, the others three being SAP130, SAP145 and SAP155 (2). SF3B4 is one of the numerous proteins to contain one or more RNA recognition motifs. These are ~70 amino acids domains which bind single stranded RNA, and the SF3B4 protein has two of these. The function of the U2 snRNP dependent spliceosome complex is to regulate mRNA splicing. A rare human genetic disorder, Nager syndrome, is caused by haploinsufficiency of SF3B4 (3,4). The syndrome is variable in effect in different individuals but is classified as one of the acrofacial dysostoses which affect the face and limbs. Another study shows that Rodriguez acrofacial dysostosis may also be caused by point mutations in the SF3B4 gene (5). Recent studies suggest that upregulation of SF3B4 expression is an early stage biomarker of hepatocellular carcinoma (HCC), the most common form of cancer of the liver (6). Interestingly, knock down of SF3B4 expression may be beneficial therapeutically to HCC and other cancer patients as reduced levels of this protein inhibit alternate splicing of mRNA as activation of mRNA splicing is a feature of many cancer cells (6).

The MCA-3A1 antibody was made against full length recombinant human SF3B4 made in and purified from *E. coli*. Antibodies to this protein such as MCA-3A1 are excellent markers of nuclei and can be used to monitor the nuclear fraction in biochemical experiments. Since the protein is expressed in quite large amounts and ubiquitously in cells and tissues this antibody may also be used as western blotting standard.

References:

1. Champion-Arnaud P, Reed R. The prespliceosome components SAP 49 and SAP 145 interact in a complex implicated in tethering U2 snRNP to the branch site. Genes Dev. 8:1974-83 (1994).
2. Das BK, et al. Characterization of a Protein Complex Containing Spliceosomal Proteins SAPs 49, 130, 145, and 155. Mol. Cell Biol. 19:6796–802 (1999).
3. Bernier FP, et al. Haploinsufficiency of SF3B4, a Component of the Pre-mRNA Spliceosomal Complex, Causes Nager Syndrome. Am. J. Hum. Genet. 90:925-33 (2012).
4. Petit F, et al. Nager syndrome: confirmation of SF3B4 haploinsufficiency as the major cause. Clin. Genet. 86:246-51 (2014).
5. Marques F, et al. Altered mRNA Splicing, Chondrocyte Gene Expression and Abnormal Skeletal Development due to SF3B4 Mutations in Rodriguez Acrofacial Dysostosis. PLoS Genet. 12:e1006307 (2016).
6. Shen Q, Nam SW. SF3B4 as an early-stage diagnostic marker and driver of hepatocellular carcinoma BMB Rep. 51:57-58 (2018).

Abbreviation Key:

mAb—Monoclonal Antibody pAb—Polyclonal Antibody WB—Western Blot IF—Immunofluorescence ICC—Immunocytochemistry IHC—Immunohistochemistry E—ELISA Hu—Human Mo—Monkey Do—Dog Rt—Rat Ms—Mouse Co—Cow Pi—Pig Ho—Horse Ch—Chicken Dr—D. rerio Dm—D. melanogaster Sm—S. mutans Ce—C. elegans Sc—S. cerevisiae Sa—S. aureus Ec—E. coli.