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SESTRIN2 Antibody

Catalog # ASC11869

Product Information

Application	WB, IF, E, IHC-P
Primary Accession	P58004
Other Accession	NP_113647, 13899299
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	54494
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	SESTRIN2 antibody can be used for detection of SESTRIN2 by Western blot at 1 - 2 g/ml. Antibody can also be used for immunohistochemistry starting at 5 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	83667
Other Names	Sestrin-2, Hi95, SESN2, SEST2
Target/Specificity	SESN2; SESTRIN2 antibody is human, mouse and rat reactive. At least two isoforms of SESTRIN2 are known to exist; this antibody will detect both isoforms. SESTRIN2 antibody is predicted to not cross-react with SESTRIN1.
Reconstitution & Storage	SESTRIN2 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year.
Precautions	SESTRIN2 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	SESN2 (HGNC:20746)
Function	Functions as an intracellular leucine sensor that negatively regulates the mTORC1 signaling pathway through the GATOR complex (PubMed:18692468, PubMed:25263562, PubMed:25457612, PubMed:26449471, PubMed:26586190, PubMed:26612684, PubMed:31586034, PubMed:35114100, PubMed:35831510, PubMed:36528027). In absence of leucine, binds the GATOR subcomplex GATOR2 and prevents mTORC1 signaling (PubMed:18692468, PubMed:25263562, PubMed:25457612, PubMed:26449471, PubMed:26586190, PubMed:26612684, PubMed:31586034, PubMed:35114100, PubMed:35831510, PubMed:36528027). Binding of leucine to SESN2 disrupts its interaction with

GATOR2 thereby activating the TORC1 signaling pathway (PubMed:26449471, PubMed:26586190, PubMed:35114100, PubMed:35831510, PubMed:36528027). This stress-inducible metabolic regulator also plays a role in protection against oxidative and genotoxic stresses. May negatively regulate protein translation in response to endoplasmic reticulum stress, via mTORC1 (PubMed:24947615). May positively regulate the transcription by NFE2L2 of genes involved in the response to oxidative stress by facilitating the SQSTM1-mediated autophagic degradation of KEAP1 (PubMed:23274085). May also mediate TP53 inhibition of TORC1 signaling upon genotoxic stress (PubMed:18692468). Moreover, may prevent the accumulation of reactive oxygen species (ROS) through the alkylhydroperoxide reductase activity born by the N- terminal domain of the protein (PubMed:26612684). Was originally reported to contribute to oxidative stress resistance by reducing PRDX1 (PubMed:15105503). However, this could not be confirmed (PubMed:19113821).

Cellular Location Cytoplasm.

Tissue Location Widely expressed..

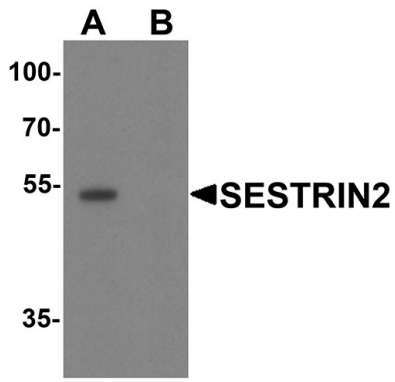
Background

SESTRIN2, also known as Hi95, is a member of the sestrin family of PA26-related proteins and is induced following DNA damage or oxidative stress (1). SESTRIN2 and the related protein SESTRIN1 interact with the NRF2 suppressor KEAP1, the autophagy substrate p62 and the ubiquitin ligase RBX1 to protect cells against oxidative stress by activating NRF2 and promoting the p62-dependent autophagic degradation of KEAP1 (2). SESTRIN2 also negatively regulates TOR signaling by activating AMP-activated protein kinase (AMPK) and TSC2 phosphorylation (3), thereby protecting cells against energetic stress-induced death (4).

References

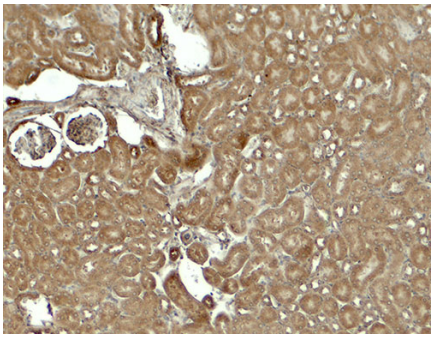
Budanov AV, Shoshani T, Faerman A, et al. Identification of a novel stress-responsive gene Hi95 involved in regulation of cell viability. Oncogene 2002; 21:6017-31.
Bae SH, Sung SH, Oh SY, et al. Sestrins activate Nrf2 by promoting p62-dependent autophagic degradation of Keap1 and prevent oxidative liver damage. Cell Metab. 2013; 17:73-84.
Budanov AV and Karin M. p53 target genes sestrin1 and sestrin2 connect genotoxic stress and mTOR signaling. Mol. Cell 2008; 134:451-60.
Ben-Sahra I, Dirat B, Laurent K, et al. Sestrin2 integrates Akt and mTOR signaling to protect cells against energetic stress-induced death. Cell Death and Diff. 2013; 20:611-9.

Images

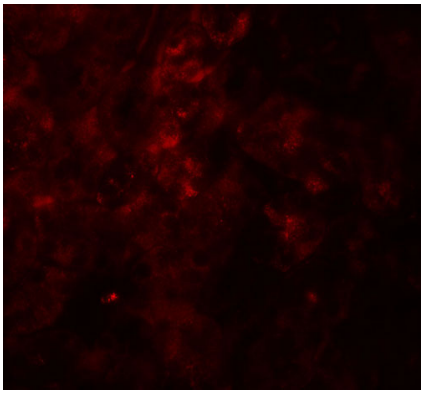


Western blot analysis of SESTRIN2 in mouse kidney tissue lysate with SESTRIN2 antibody at 1 µg/ml in (A) the absence and (B) the presence of blocking peptide.

Immunohistochemistry of SESTRIN2 in mouse kidney



tissue with SESTRIN2 antibody at 5 µg/ml.



Immunofluorescence of SESTRIN2 in mouse kidney tissue with SESTRIN2 antibody at 20 µg/ml.