abcam

ab236025

Anti-SESN2/Sestrin-2 antibody [EPR18907] - BSA and Azide free

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR18907
Purification technique	Affinity purification Protein A
Concentration	1.027 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Human
Dilution info	-

Notes	-

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

WB

Tested

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	ICC/IF is recommended for human and rat only.

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Flow Cyt (Intra)

Tested

Species	Mouse, Human
Dilution info	-
Notes	-

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Target data

See full target information SESN2

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).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

ab236025 is the carrier-free version of ab178518.

Patented technology

Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?

This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Conjugation ready

Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility

This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	SESN2 also known as Sestrin-2 or Hi95 is a stress-inducible protein that plays a role in cellular responses to oxidative stress. It has a molecular mass of approximately 60 kDa and is expressed in various tissues including the liver heart and muscle. Sestrin-2 acts as an antioxidant protein that helps reduce reactive oxygen species (ROS) and maintains cellular redox balance. It contains domains that directly interact with target proteins to regulate cellular activity enabling cells to respond efficiently to stress signals.
Biological function summary	Sestrin-2 regulates cell survival and homeostasis during oxidative stress conditions. It modulates the activity of key signaling pathways that control autophagy and cell growth. Sestrin-2 does not function alone but interacts with other proteins to form functional complexes. This allows it to fine-tune cellular processes and contributes to its role in promoting cell repair mechanisms. Its induction during stress conditions demonstrates its engagement in promoting cellular adaptation and resistance to damage.
Pathways	Sestrin-2 engages in signaling networks such as the AMPK and mTOR pathways. Its interaction with AMP-activated protein kinase (AMPK) triggers energy homeostasis

	and metabolic stress responses. It also negatively regulates the mammalian target of rapamycin (mTOR) to support autophagy and inhibit cell growth when necessary. Sestrin-2 therefore plays an important role in coordinating responses between these pathways ensuring optimal cellular function during periods of environmental stress or nutrient deprivation.
Associated diseases and disorders	SESN2 is implicated in conditions related to oxidative stress and metabolic dysregulation such as cancer and type 2 diabetes. Its involvement in cancer is connected to its regulatory role on the mTOR pathway often overactive in tumor growth. The protein's modulation of AMPK-mTOR signaling can impact cancer cell survival and response to treatment. Additionally in diabetes Sestrin-2 plays a part in maintaining insulin sensitivity and glucose metabolism often disrupted in diabetic patients. Its ability to regulate oxidative stress and cellular metabolism draws a link between Sestrin-2 and these complex disorders emphasizing its potential as a therapeutic target.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

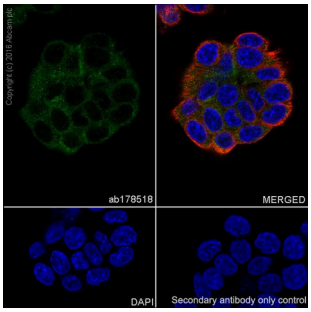
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

7 product images

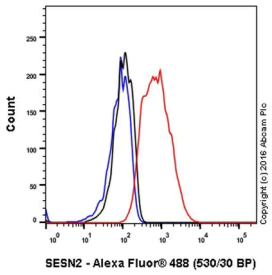


Immunocytochemistry/ Immunofluorescence - Anti-SESN2/Sestrin-2 antibody [EPR18907] - BSA and Azide free (ab236025)

SESN2/Sestrin-2 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-SESN2/Sestrin-2 antibody

Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized HCT 116 (Human colorectal carcinoma cell line) cells labeling SESN2/Sestrin-2 with ab178518 at 1/100 dilution, followed by Goat anti-rabbit IgG (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green). Confocal image showing cytoplasmic staining on HCT116 cells. The nuclear counter stain is DAPI (blue). Tubulin is detected with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) at 1/250 dilution (red).
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat anti-rabbit IgG (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution.

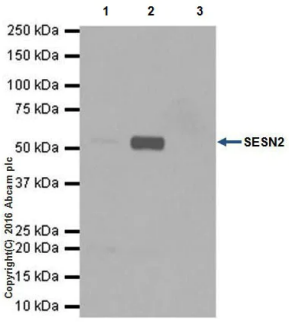
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab178518).



Flow Cytometry (Intracellular) - Anti-SESN2/Sestrin-2 antibody [EPR18907] - BSA and Azide free (ab236025)

SESN2/Sestrin-2 Flow Cytometry (Intracellular) staining using rabbit Anti-SESN2/Sestrin-2 antibody

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed HCT 116 (Human colorectal carcinoma cell line) cells labeling SESN2/Sestrin-2 with ab178518 at 1/60 dilution (red) compared with a rabbit monoclonal IgG isotype control (ab172730; black) and an unlabelled control (cells without incubation with primary antibody and secondary antibody; blue). Goat anti rabbit IgG (Alexa Fluor® 488) at 1/2000 dilution was used as the secondary antibody.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab178518).



Immunoprecipitation - Anti-SESN2/Sestrin-2 antibody [EPR18907] - BSA and Azide free (ab236025)

SESN2/Sestrin-2 was immunoprecipitated from 0.35 mg of HeLa (Human epithelial cell line from cervix adenocarcinoma) whole cell lysate with ab178518 at 1/30 dilution. Western blot was performed from the immunoprecipitate using ab178518 at 1/1000 dilution. VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/10000 dilution.
Lane 1: HeLa whole cell lysate, 10µg (Input).

Lane 2: ab178518 IP in HeLa whole cell lysate.

Lane 3: Rabbit IgG,monoclonal [EPR25A] - Isotype Control (ab172730) instead of ab178518 in HeLa whole cell lysate.

Blocking and dilution buffer and concentration: 5% NFDM/TBST.

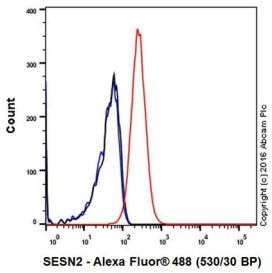
Exposure time: 3 minutes.

SESN2/Sestrin-2 expression is low in HeLa cells and can be enriched through immunoprecipitation.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab178518).

All lanes:
Immunoprecipitation - Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518)

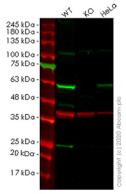
Predicted band size: 54 kDa



Flow Cytometry (Intracellular) - Anti-SESN2/Sestrin-2 antibody [EPR18907] - BSA and Azide free (ab236025)

SESN2/Sestrin-2 Flow Cytometry (Intracellular) staining using rabbit Anti-SESN2/Sestrin-2 antibody

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed NIH/3T3 (Mouse embryonic fibroblast cell line) cells labeling SESN2/Sestrin-2 with ab178518 at 1/60 dilution (red) compared with a Rabbit IgG,monoclonal[EPR25A]-Isotype control (ab172730) (black) and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (blue). Goat anti Rabbit IgG (Alexa Fluor® 488) at 1/2000 dilution was used as the secondary antibody.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab178518).



Western blot - Anti-SESN2/Sestrin-2 antibody [EPR18907] - BSA and Azide free (ab236025)

SESN2/Sestrin-2 Western blot staining using rabbit Anti-SESN2/Sestrin-2 antibody

This data was developed using the same antibody clone in a different buffer formulation (ab178518).
Lanes 1-3: Merged signal (red and green). Green - ab178518 observed at 54 kDa. Red - loading control ab8245 observed at 36 kDa.

ab178518 Anti-SESN2/Sestrin-2 antibody [EPR18907] was shown to specifically react with SESN2/Sestrin-2 in wild-type HeLa cells. Loss of signal was observed when knockout sample ab257665 was used. Wild-type and SESN2/Sestrin-2 knockout samples were subjected to SDS-PAGE. ab178518 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) were incubated overnight at 4°C at 1 in 1000 dilution and 1 in 20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preadsorbed (ab216776) secondary antibodies at 1 in 20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518) at 1/1000 dilution

Lane 1:
Wild-type HeLa cell lysate at 20 µg

Lane 2:
Western blot - Human SESN2 (Sestrin-2) knockout HeLa cell lysate (ab257665) at 20 µg

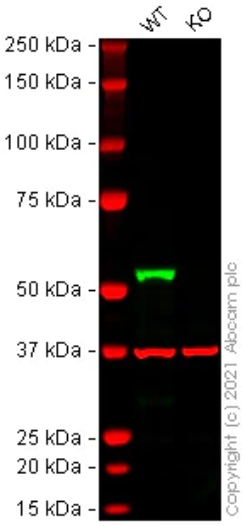
Lane 3:
HeLa cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) at 1/10000 dilution

Predicted band size: 54 kDa

Observed band size: 54 kDa



Western blot - Anti-SESN2/Sestrin-2 antibody [EPR18907] - BSA and Azide free (ab236025)

SESN2/Sestrin-2 Western blot staining using rabbit Anti-SESN2/Sestrin-2 antibody

False colour image of Western blot: Anti-SESN2/Sestrin-2 antibody [EPR18907] staining at 1/1000 dilution, shown in green; Mouse anti-GAPDH antibody [6C5] (ab8245) loading control staining at 1/20000 dilution, shown in red. In Western blot, ab178518 was shown to bind specifically to SESN2/Sestrin-2. A band was observed at 54 kDa in wild-type HEK-293 cell lysates with no signal observed at this size in SESN2 knockout cell line ab269486 (knockout cell lysate ab269650). To generate this image, wild-type and SESN2 knockout HEK-293 cell lysates were analysed. First, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 3 % milk in TBS-0.1 % Tween® 20 (TBS-T) before incubation with primary antibodies overnight at 4 Â°C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged.Secondary antibodies used were Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed (ab216776) at 1/20000 dilution.
All lanes:
Western blot - Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518) at 1/1000 dilution

Lane 1:
Wild-type HEK-293 cell lysate at 20 µg

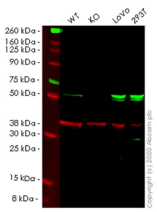
Lane 2:
SESN2 knockout HEK-293 cell lysate at 20 µg

Lane 2:
Western blot - Human SESN2 (Sestrin-2) knockout HEK-293 cell line (ab269486)

Performed under reducing conditions.

Predicted band size: 54 kDa

Observed band size: 54 kDa



Western blot - Anti-SESN2/Sestrin-2 antibody [EPR18907] - BSA and Azide free (ab236025)

SESN2/Sestrin-2 Western blot staining using rabbit Anti-SESN2/Sestrin-2 antibody

This data was developed using the same antibody clone in a different buffer formulation (ab178518).
Lanes 1-4: Merged signal (red and green). Green - ab178518 observed at 54 kDa. Red - loading control ab8245 observed at 36 kDa.

ab178518 Anti-SESN2/Sestrin-2 antibody [EPR18907] was shown to specifically react with 2 in wild-type HeLa cells. Loss of signal was observed when knockout sample ab257665 was used. Wild-type and 2 knockout samples were subjected to SDS-PAGE. ab178518 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) were incubated at room temperature for 2.5 hours at 1 in 1000 dilution and 1 in 20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD)

preadsorbed (ab216776) secondary antibodies at 1 in 20000 dilution for 1 hour at room temperature before imaging.
All lanes:
Western blot - Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518) at 1/1000 dilution

Lane 1:
Wild-type HeLa cell lysate at 20 µg

Lane 2:
SESN2 knockout HeLa cell lysate at 20 µg

Lane 2:
Western blot - Human SESN2 (Sestrin-2) knockout HeLa cell line (ab265669)

Lane 3:
LoVo cell lysate at 20 µg

Lane 4:
HEK-293T cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) at 1/10000 dilution

Predicted band size: 38 kDa, 54 kDa

Observed band size: 48 kDa, 54 kDa

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.