abcam

ab178518

Anti-SESN2/Sestrin-2 antibody [EPR18907]

Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518) is a rabbit monoclonal antibody detecting SESN2/Sestrin-2 in **Western Blot, Flow Cytometry (Intra), IP, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- KO validated for confirmed specificity
- Biophysical QC for unrivalled batch-batch consistency
- Over 20 publications

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR18907
Purification technique	Affinity purification Protein A
Concentration	0.71 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Human
Dilution info	1/30
Notes	-

Expected

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

WB

Tested

Species	Mouse
Dilution info	1/1000
Notes	-

Species	Rat
Dilution info	1/1000
Notes	-

Species	Human
Dilution info	1/1000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100
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
Dilution info	1/60
Notes	-

Species	Human
Dilution info	1/60
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	Conditional Ambient
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

What is this antibody validated in?
Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunoprecipitation (IP), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse, Rat samples.

What is the molecular weight of SESN2/Sestrin-2?
Anti-SESN2/Sestrin-2 [EPR18907] (ab178518) specifically detects a band for SESN2/Sestrin-2 (UniProt: P58004) at a molecular weight of 54kDa.

Trusted by the scientific community
Anti-SESN2/Sestrin-2 [EPR18907] (ab178518) was first used in a scientific publication in 2016 and has been cited over 20 times in peer-reviewed journals.

Specificity confirmed
The specificity of Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518) has been confirmed by Western blot testing in SESN2 Knockout HeLa cell line, ab269486.

Other related products
We have a range of other formats of antibody clone [EPR18907] also available for your convenience: ab178518, Alexa Fluor® 647 - ab225258, PE - ab225259, Carrier free - ab236025

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.

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.

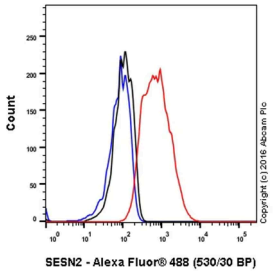
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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.

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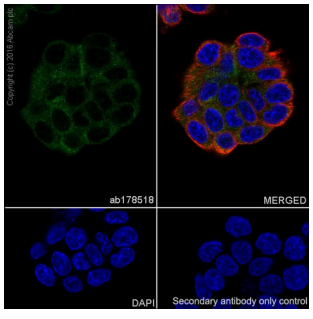
11 product images



Flow Cytometry (Intracellular) - Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518)

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.

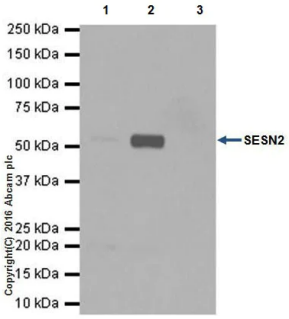


Immunocytochemistry/ Immunofluorescence - Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518)

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.



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

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.

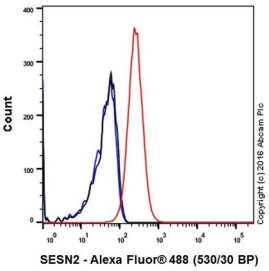
Blocking and dilution buffer and concentration: 5% NFDM/TBST.

Exposure time: 3 minutes.

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

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

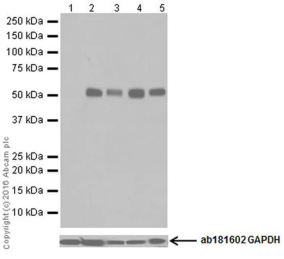
Predicted band size: 54 kDa



Flow Cytometry (Intracellular) - Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518)

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.



Western blot - Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518)

Blocking/Dilution buffer: 5% NFDM/TBST.
Sestrin expression is induced by H_2O_2 treatment, which is consistent with what has been described in the literature (PMID: 25337554).

Exposure time:3 minutes

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

Lane 1:
Untreated HeLa (Human epithelial cell line from cervix adenocarcinoma) whole cell lysate at 20 µg

Lane 2:
HeLa (Human epithelial cell line from cervix adenocarcinoma) whole cell lysate treated with 10 mM H2O2 for 1 hour at 20 µg

Lane 3:
LoVo (Human colorectal adenocarcinoma cell line) whole cell lysate at 20 µg

Lane 4:
293T (Human epithelial cell line from embryonic kidney) whole cell lysate at 20 µg

Lane 5:
NIH/3T3 (Mouse embryonic fibroblast cell line) whole cell lysate at 20 µg

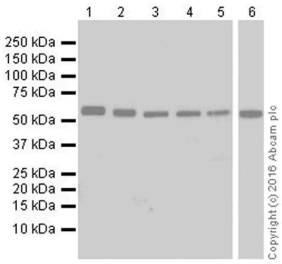
Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Predicted band size: 54 kDa

Observed band size: 54 kDa

Exposure time: 3min



Western blot - Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518)

Blocking/Dilution buffer: 5% NFDM/TBST.
Exposure times: Lane 1, 2, 3, 4 and 5: 3 minutes; Lane 6: 30 seconds.

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

Lane 1:
HCT 116 (Human colorectal carcinoma cell line) whole cell lysate at 20 µg

Lane 2:
Rat1 (Rat fibroblast cell line) whole cell lysate at 20 µg

Lane 3:
C6 (Rat glial tumor cell line) whole cell lysate at 20 µg

Lane 4:
RAW 264.7 (Mouse macrophage cell line transformed with Abelson murine leukemia virus) whole cell lysate at 20 µg

Lane 5:
Mouse spleen lysate at 20 µg

Lane 6:
PC-12 (Rat adrenal gland pheochromocytoma cell line) whole cell lysate at 20 µg

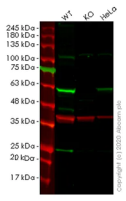
Secondary

All lanes:

Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Predicted band size: 54 kDa

Observed band size: 54 kDa



Western blot - Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518)

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

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 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 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

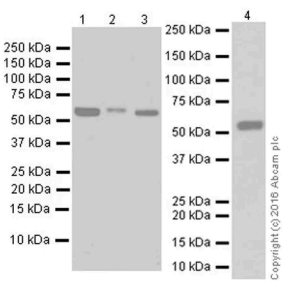
Lane 3:
HeLa cell lysate at 20 µg

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] (ab178518)

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

Blocking/Dilution buffer: 5% NFDM/TBST.
Exposure time:3 minutes

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

Lane 1:
Human colon lysate at 20 µg

Lane 2:
Human fetal liver lysate at 20 µg

Lane 3:
Human testis lysate at 20 µg

Lane 4:
Human fetal kidney lysate at 20 µg

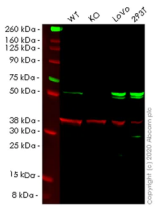
Secondary

All lanes:
Goat Anti-Rabbit IgG Peroxidase Conjugate, specific to the non-reduced form of IgG at 1/10000 dilution

Predicted band size: 54 kDa

Observed band size: 54 kDa

Exposure time: 3min



Western blot - Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518)

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

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 SESN2/Sestrin-2 in wild-type HeLa cells. Loss of signal was observed when knockout cell line ab265669 (knockout lysate 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 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

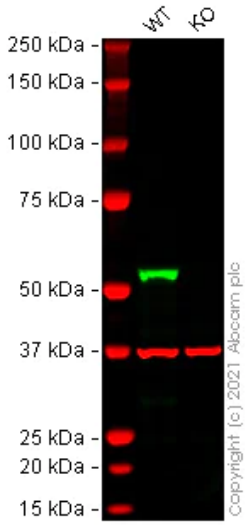
Lane 4:
HEK-293T cell lysate at 20 µg

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



Western blot - Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518)

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°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

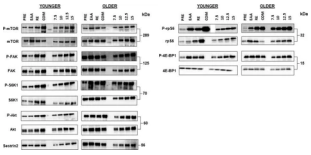


Image collected and cropped by CiteAb under a CC-BY license from the publication

Western blot - Anti-SESN2/Sestrin-2 antibody [EPR18907] (ab178518)

SESN2/Sestrin-2 western blot using anti-SESN2/Sestrin-2 antibody [EPR18907] ab178518. Publication image and figure legend from Lees, M. J., Wilson, O. J., et al., 2020, Nutrients, PubMed 32664648.

ab178518 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab178518 please see the product overview.

Representative blots for each total and phosphoprotein. Blots are in the following order: baseline, EAA, RE, and COM. The fifth lane is occupied by the protein ladder. To the right of the experimental blots, the loading controls (calibration curves) are shown (i.e., 7.5, 10, 12.5, and 15 µL of protein).

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