abcam

ab92313

Anti-RHEB antibody [EPR2971]

Recombinant | RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 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	EPR2971
Purification technique	Affinity purification Protein A
Concentration	0.366 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/500
Notes	Heat mediated antigen retrieval and use of an HRP/AP polymerized secondary antibody recommended. **For unpurified use at 1/100 - 1/250**

Not recommended

Species	Mouse
Dilution info	-
Notes	Heat mediated antigen retrieval and use of an HRP/AP polymerized secondary antibody recommended. **For unpurified use at 1/100 - 1/250**

IP

Not recommended

Species	Human, Mouse
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/2000 - 1/5000
Notes	-

Not recommended

Species	Mouse
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100 - 1/250
Notes	-

Not recommended

Species	Mouse
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/40
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody. For unpurified use at 1/100 - 1/1000

Not recommended

Species	Mouse
Dilution info	-
Notes	-

Target data

See full target information RHEB

Function

Small GTPase that acts as an allosteric activator of the canonical mTORC1 complex, an evolutionarily conserved central nutrient sensor that stimulates anabolic reactions and macromolecule biosynthesis to promote cellular biomass generation and growth (PubMed:12172553, PubMed:12271141, PubMed:12842888, PubMed:12869586, PubMed:12906785, PubMed:15340059, PubMed:15854902, PubMed:16098514, PubMed:20381137, PubMed:22819219, PubMed:24529379, PubMed:29416044, PubMed:32470140, PubMed:33157014, PubMed:25816988). In response to nutrients, growth factors or amino acids, specifically activates the protein kinase activity of MTOR, the catalytic component of the mTORC1 complex: acts by causing a conformational change that allows the alignment of residues in the active site of MTOR, thereby enhancing the phosphorylation of ribosomal protein S6 kinase (RPS6KB1 and RPS6KB2) and EIF4EBP1 (4E-BP1) (PubMed:29236692, PubMed:33157014). RHEB is also required for localization of the TSC-TBC complex to lysosomal membranes (PubMed:24529379). In response to starvation, RHEB is inactivated by the TSC-TBC complex, preventing activation of mTORC1 (PubMed:24529379, PubMed:33157014). Has low intrinsic GTPase activity (PubMed:15340059).

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Storage information	Stable for 12 months at -20°C

Notes

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	RHEB also known as Ras homolog enriched in brain is a small GTPase with a molecular mass of approximately 21 kDa. It is a member of the Ras superfamily and plays a role in the regulation of cell growth and proliferation. RHEB is widely expressed with concentrations found in the brain skeletal muscle and various other tissues. It functions as a molecular switch cycling between active GTP-bound and inactive GDP-bound states influencing signaling pathways linked to growth and metabolism.
Biological function summary	RHEB interacts with several components within the mTORC1 complex a major regulator of cell growth and autophagy. This protein positively regulates the mTORC1 pathway by activating mTOR leading to protein synthesis and cell growth when nutrients such as amino acids and energy are available. RHEB's regulation of mTORC1 is influenced by upstream modulation through the TSC1/2 complex acting as a sensor for cellular energy levels and growth signals. The role of RHEB in these regulatory mechanisms highlights its fundamental importance in cellular metabolic processes.

Pathways	RHEB plays a significant role in the mechanistic target of rapamycin (mTOR) signaling pathway which is important for regulating protein synthesis and cellular growth. RHEB acts downstream of the TSC1/2 complex with TSC2 acting as a GTPase-activating protein for RHEB. This interaction points RHEB as an essential regulator of mTORC1 activation. In connection with other proteins RHEB functions alongside mTOR and TSC1/2 to mediate responses to cellular nutrient status thereby adjusting growth and proliferation accordingly.
Associated diseases and disorders	Mutations or dysregulation of RHEB have been linked to tuberous sclerosis complex (TSC) and cancer. In TSC where aberrant signaling occurs through the mTOR pathway RHEB's activity influences the mTORC1 pathway in cells lacking functional TSC1 or TSC2 leading to benign tumors. Additionally RHEB overexpression has been implicated in certain cancers due to its capacity to enhance cell proliferation via mTORC1. The interaction of RHEB with mTOR highlights its role in disease states where cell growth control is altered suggesting the potential for targeted therapies in treating these conditions.

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

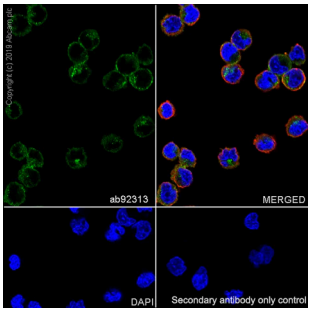
We do not recommend this combination. It is not covered by our product promise.

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.

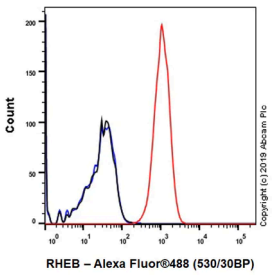
7 product images



Immunocytochemistry/ Immunofluorescence - Anti-RHEB antibody [EPR2971] (ab92313)

RHEB Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-RHEB antibody

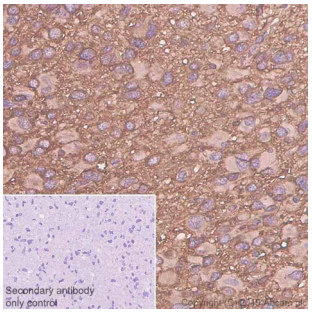
Immunocytochemistry/ Immunofluorescence analysis of Raji (Human Burkitt's lymphoma B lymphocyte) cells labeling RHEB with purified ab92313 at 1:250 dilution (1.46 µg/ml). Cells were fixed in 4% Paraformaldehyde and permeabilized with 0.1% tritonX-100. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1:200 (2.5 µg/ml). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody at 1:1000 (2 µg/ml) dilution. DAPI (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.



Flow Cytometry (Intracellular) - Anti-RHEB antibody [EPR2971] (ab92313)

RHEB Flow Cytometry (Intracellular) staining using rabbit Anti-RHEB antibody

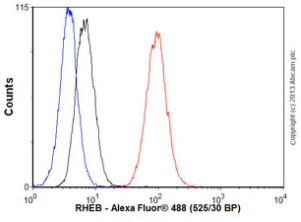
Intracellular Flow Cytometry analysis of Raji (Human Burkitt's lymphoma B lymphocyte) cells labeling RHEB with purified ab92313 at 1/40 dilution (10 µg/ml) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) secondary antibody was used at 1/2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabeled control - Cell without incubation with primary antibody and secondary antibody (Blue).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-RHEB antibody [EPR2971] (ab92313)

RHEB Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-RHEB antibody

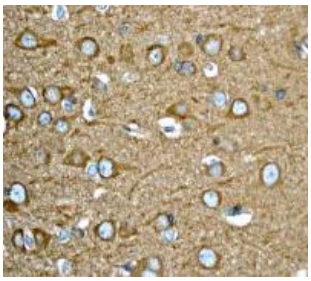
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human glioma tissue sections labeling RHEB with purified ab92313 at 1:500 dilution (0.73 µg/ml). Heat mediated antigen retrieval was performed using Bond ™ Epitope Retrieval Solution 2 (pH 9.0). Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain.



Flow Cytometry (Intracellular) - Anti-RHEB antibody [EPR2971] (ab92313)

RHEB Flow Cytometry (Intracellular) staining using rabbit Anti-RHEB antibody

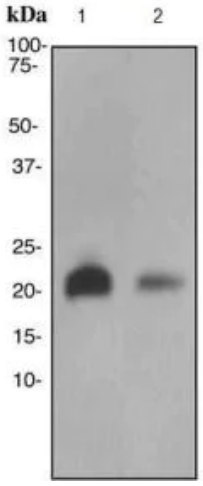
Overlay histogram showing Raji cells stained with unpurifiedab92313 (red line). The cells were fixed with 4% paraformaldehyde (10 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab92313, 1/1000 dilution) for 30 min at 22°C. The secondary antibody used was Alexa Fluor® 488 goat anti-rabbit IgG (H&L) (ab150077) at 1/2000 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit IgG (monoclonal) (0.1µg/1x10^6 cells) used under the same conditions. Unlabelled sample (blue line) was also used as a control. Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 525/30 bandpass filter. This antibody gave a positive signal in Raji cells fixed with 80% methanol (5 min)/permeabilized with 0.1% PBS-Tween for 20 min used under the same conditions.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-RHEB antibody [EPR2971] (ab92313)

RHEB Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-RHEB antibody

Unpurified ab92313, at 1/100 dilution, staining RHEB in paraffin-embedded Human brain tissue, by Immunohistochemistry.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Western blot - Anti-RHEB antibody [EPR2971] (ab92313)

All lanes:
Western blot - Anti-RHEB antibody [EPR2971] (ab92313) at 1/2000 dilution

Lane 1:
Raji cell lsyate at 10 µg

Lane 2:
SH-SY5Y cell lsyate at 10 µg

Secondary

All lanes:
HRP labelled goat anti-rabbit at 1/2000 dilution

Predicted band size: 20 kDa



Western blot - Anti-RHEB antibody [EPR2971] (ab92313)

All lanes:
Western blot - Anti-RHEB antibody [EPR2971] (ab92313) at 1/2000 dilution

All lanes:
Raji (Human Burkitt's lymphoma B lymphocyte) whole cell lysates at 15 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 20 kDa

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