abcam

ab54835

Anti-RhoA antibody [1B12]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	pH: 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Full Length Protein corresponding to Human RHOA. Database link P61586
Clone number	1B12
Purity	Tissue culture supernatant
Light chain type	lambda
Purification notes	Purified from TCS.

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	-
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

WB

Tested

Species	Human
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	-

Target data

See full target information RHOA

Function

Small GTPase which cycles between an active GTP-bound and an inactive GDP-bound state. Mainly associated with cytoskeleton organization, in active state binds to a variety of effector proteins to regulate cellular responses such as cytoskeletal dynamics, cell migration and cell cycle (PubMed:23871831). Regulates a signal transduction pathway linking plasma membrane receptors to the assembly of focal adhesions and actin stress fibers (PubMed:31570889, PubMed:8910519, PubMed:9121475). Involved in a microtubule-dependent signal that is required for the myosin contractile ring formation during cell cycle cytokinesis (PubMed:12900402, PubMed:16236794). Plays an essential role in cleavage furrow formation. Required for the apical junction formation of keratinocyte cell-cell adhesion (PubMed:20974804, PubMed:23940119). Essential for the SPATA13-mediated regulation of cell migration and adhesion assembly and disassembly (PubMed:19934221). The MEMO1-RHOA-DIAPH1 signaling pathway plays an important role in ERBB2-dependent stabilization of microtubules at the

cell cortex. It controls the localization of APC and CLASP2 to the cell membrane, via the regulation of GSK3B activity. In turn, membrane-bound APC allows the localization of the MACF1 to the cell membrane, which is required for microtubule capture and stabilization (PubMed:20937854). Involved in the reorientation of endothelial cells and their actin stress fibers in response to cellular mechantransduction-mediated activation by ARHGEF40 (By similarity). Regulates KCNA2 potassium channel activity by reducing its location at the cell surface in response to CHRM1 activation; promotes KCNA2 endocytosis (PubMed:19403695, PubMed:9635436). Acts as an allosteric activator of guanine nucleotide exchange factor ECT2 by binding in its activated GTP-bound form to the PH domain of ECT2 which stimulates the release of PH inhibition and promotes the binding of substrate RHOA to the ECT2 catalytic center (PubMed:31888991). May be an activator of PLCE1 (PubMed:16103226). In neurons, involved in the inhibition of the initial spine growth. Upon activation by CaMKII, modulates dendritic spine structural plasticity by relaying CaMKII transient activation to synapse-specific, long-term signaling (By similarity). Acts as a regulator of platelet alpha-granule release during activation and aggregation of platelets (By similarity). When activated by DAAM1 may signal centrosome maturation and chromosomal segregation during cell division. May also be involved in contractile ring formation during cytokinesis. (Microbial infection) Serves as a target for the yopT cysteine peptidase from Yersinia pestis, vector of the plague.

Storage

Shipped at conditions	Blue Ice
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

This product was changed from ascites to tissue culture supernatant on 15 May 2019. Please note that the dilutions may need to be adjusted accordingly. If you have any questions, please do not hesitate to contact our scientific support team.

Supplementary info

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

Activity summary	RhoA also known as Ras homolog family member A is a small signaling GTPase. It weighs approximately 21 kDa. This protein is a part of the Rho family which includes other members like RhoB and RhoC. RhoA is widely expressed in various tissues including the brain kidney liver and lungs. Mechanically RhoA functions as a molecular switch cycling between an active GTP-bound state and an inactive GDP-bound state. This activity regulates the organization of the actin cytoskeleton and influences cell shape attachment and motility.
Biological function summary	The role of RhoA extends to cell proliferation and differentiation. It is a component of the Rho-GTPase cycle interacting with numerous effectors to transmit signals from the cell membrane to the actin cytoskeleton. RhoA influences the assembly of stress fibers and focal adhesions. It plays a part in cellular adhesion and migration making it essential for development and wound healing processes. As a central player in these activities RhoA affects several cellular responses to external stimuli.
Pathways	Research places RhoA prominently in the regulation of the Rho-ROCK (Rho-associated protein kinase) pathway and the planar cell polarity pathway. The Rho-ROCK pathway contributes to cytoskeletal dynamics and cell contractility while the planar cell polarity pathway influences tissue architecture during embryonic development. RhoA interacts with G17A in these pathways coordinating activities such as smooth muscle contraction and neuronal growth. These interactions also involve cross-talk with other signals linked to GTPases like Rac1 and Cdc42.
Associated diseases and disorders	RhoA has connections to cancer progression and hypertension. In cancer RhoA regulates actin dynamics influencing tumor cell migration and invasion. It forms interactions with proteins such as p53 affecting apoptotic pathways and tumor suppression. In hypertension RhoA's role in smooth muscle contraction affects blood vessel tension and blood pressure regulation. Abnormal activity in the Rho-ROCK pathway contributes to these disorders highlighting the significance of RhoA in disease mechanisms.

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

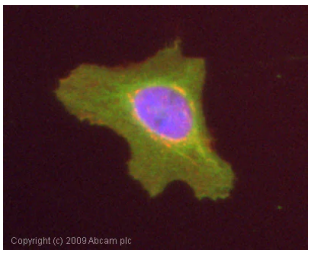
We do not recommend this combination. It is not covered by our product promise.

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.

5 product images

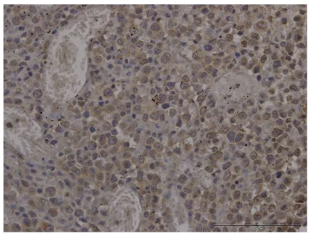


Immunocytochemistry/ Immunofluorescence - Anti-RhoA antibody [1B12] (ab54835)

RhoA Immunocytochemistry/ Immunofluorescence staining using mouse Anti-RhoA antibody

ICC/IF image of ab54835 stained HeLa cells (ab150035). The cells were 4% PFA fixed (10 min) and then incubated in 1%BSA / 10% normal goat serum / 0.3M glycine in 0.1% PBS-Tween for 1h to permeabilise the cells and block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab54835, 1µg/ml) overnight at +4°C. The secondary antibody (green) was Alexa Fluor® 488 goat anti-mouse IgG (H+L) used at a 1/1000 dilution for 1h. Alexa Fluor® 594 WGA was used to label plasma membranes (red) at a 1/200 dilution for 1h. DAPI was used to stain the cell nuclei (blue) at a concentration of 1.43µM.

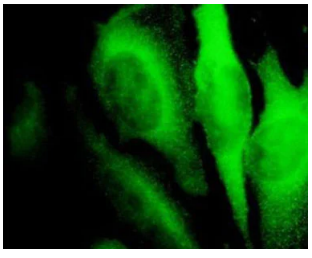
This image was generated using the ascites version of the product.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-RhoA antibody [1B12] (ab54835)

RhoA Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-RhoA antibody

Paraffin embedded human lymphoma tissue stained for RhoA using ab54835 at 5 µg/ml in immunohistochemical analysis.

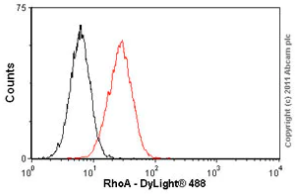


Immunocytochemistry/ Immunofluorescence - Anti-RhoA antibody [1B12] (ab54835)

RhoA Immunocytochemistry/ Immunofluorescence staining using mouse Anti-RhoA antibody

ab54835 at 10 ug/ml staining RhoA in human Hela cells (ab150035) by Immunocytochemistry / Immunofluorescence.

This image was generated using the ascites version of the product.

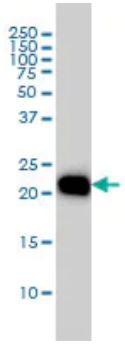


Flow Cytometry - Anti-RhoA antibody [1B12] (ab54835)

RhoA Flow Cytometry staining using mouse Anti-RhoA antibody

Overlay histogram showing HeLa cells (ab150035) stained with ab54835 (red line). The cells were fixed with methanol (5 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 (ab54835, 1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 [ICIGG1] (ab91353, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a decreased signal in HeLa cells fixed with 4% paraformaldehyde (10 min)/permeabilized in 0.1% PBS-Tween used under the same conditions.
This image was generated using the ascites version of the product.



Western blot - Anti-RhoA antibody [1B12] (ab54835)

RhoA Western blot staining using mouse Anti-RhoA antibody

RhoA antibody (ab54835) at 1ug/lane + HL-60 cell lysate (ab7914) at 25ug/lane.
This image was generated using the ascites version of the product.

All lanes:
Western blot - Anti-RhoA antibody [1B12] (ab54835)

Predicted band size: 22 kDa

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