abcam

ab270094

Alexa Fluor® 488 Anti-Rab5 antibody [EPR21801] - Early Endosome Marker

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Conjugation	Alexa Fluor® 488
Excitation/Emission	Ex: 495nm, Em: 519nm
Storage buffer	pH: 7.4 Preservative: 0.02% Sodium azide Constituents: PBS, 30% Glycerol (glycerin, glycerine), 1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR21801
Purification technique	Affinity purification Protein A
Concentration	0.5 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

ICC/IF

Tested

Species	Human
Dilution info	1/500
Notes	This product gave a positive signal in Hap1 fixed with 100% methanol (5 min).

Expected

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

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/2500
Notes	-

Expected

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

IHC-P

Expected

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

Target data

See full target information RAB5A

Function	The small GTPases Rab are key regulators of intracellular membrane trafficking, from the formation of transport vesicles to their fusion with membranes. Rabs cycle between an inactive GDP-bound form and an active GTP-bound form that is able to recruit to membranes different sets of downstream effectors directly responsible for vesicle formation, movement, tethering and fusion. RAB5A is required for the fusion of plasma membranes and early endosomes and involved in early endocytic trafficking (PubMed:10818110, PubMed:14617813, PubMed:15378032, PubMed:16086013, PubMed:16410077, PubMed:17562788). Required for EEA1 recruitment to early endosomes (PubMed:16086013, PubMed:17562788). Recruits FERRY complex to early endosomes, where FERRY links early endosomes with a subgroup of mRNAs to enable mRNA intracellular distribution (PubMed:37267906). Recruits RABEP1/Rabaptin-5 effector to early endosomes, thereby promoting endocytic membrane fusion (By similarity). Required for EGF and transferrin endocytosis and trafficking through early endosomes (PubMed:16086013, PubMed:17562788). Contributes to the regulation of filopodia extension (PubMed:14978216). Required for the exosomal release of SDCBP, CD63, PDCD6IP and syndecan (PubMed:22660413). Regulates maturation of apoptotic cell-containing phagosomes, probably downstream of DYN2 and PIK3C3 (By similarity).

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, Store in the dark

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.

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Supplementary info

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

Activity summary	Rab5 also known as Ras-related protein Rab-5A is a small GTPase of approximately 24 kDa. It is part of the Rab family of proteins and functions as an endosomal marker in cells. Rab5 is ubiquitously expressed but shows enriched expression in tissues with a high rate of endocytosis like the brain and liver. This protein plays a significant role in early endosome fusion and trafficking acting as an essential regulator of vesicular transport processes within the cell.
Biological function summary	Rab5 regulates the early endocytic pathway by mediating vesicle docking and fusion processes. It is not a part of a large complex but interacts with a range of effector proteins that facilitate endosome maturation. Rab5's role as an endosomal marker makes it important for membrane trafficking receptor recycling and signal transduction. Researchers often identify Rab5 in cellular studies using endosome staining techniques or specific antibodies like Drosophila antibodies to visualize its function and distribution.
Pathways	The endocytic network heavily involves Rab5 particularly influencing the endocytosis and endosomal signaling pathways. It frequently interacts with proteins such as EEA1 (Early Endosome Antigen 1) and Rabaptin-5 which are critical for endosomal membrane fusion. This mechanistic involvement ensures the correct transfer and processing of endocytic vesicles facilitating the continual cycle of membrane and receptor turnover in cells.
Associated diseases and disorders	Rab5 dysfunction associates with neurological conditions such as Alzheimer's disease and cancer. Alterations in Rab5 levels or function can disrupt normal endosomal trafficking leading to amyloid beta peptide accumulation in Alzheimer's. Additionally Rab5's role in cancer relates to its regulation of growth factor receptors where its interaction with proteins like the PE marker influences tumor progression. Understanding Rab5 pathways and interactions paves the way for developing targeted therapeutics in these disorders.

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

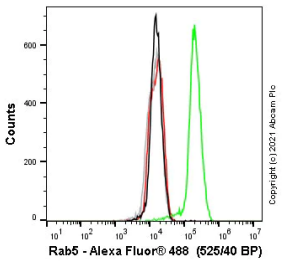
We do not recommend this combination. It is not covered by our product promise.

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.

2 product images



Flow Cytometry (Intracellular) - Alexa Fluor® 488 Anti-Rab5 antibody [EPR21801] - Early Endosome Marker (ab270094)

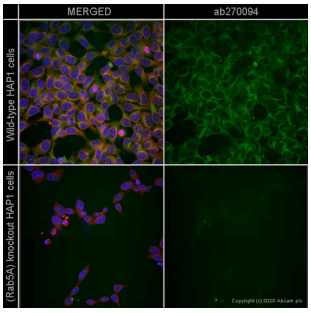
Rab5 Flow Cytometry (Intracellular) staining using rabbit Anti-Rab5 antibody

Flow cytometry overlay histogram showing wild-type Hap1 (green line) and RAB5A knockout Hap1 cells (ab) stained with ab270094 (red line). The cells were fixed with 4% formaldehyde (10 min) and then permeabilized with 0.1% PBS-Triton X-100 for 15 min. The cells were then incubated in 1x PBS containing 10% normal goat serum to block non-specific protein-protein interaction followed by the antibody (ab270094) (1x 10^6 in 100µL at 0.2µg/mL (1/2500) for 30 min at 22°C.

Isotype control antibody (black line) was Rabbit IgG (monoclonal) Alexa Fluor 488 ® (ab199091) used at the same concentration and conditions as the primary antibody (wild-type Hap1 - black line RAB5A knockout Hap1- grey line). Unlabelled sample was also used as a control (this line is not shown for the purpose of simplicity).

Acquisition of >5000 events were collected using a 50 mW Blue laser (488nm) and 525/40 bandpass filter.

This antibody can also be used in Hap1 cells fixed with 80% methanol (5 min) / permeabilized with 0.1% PBS-Triton X-100 for 15 min under the same conditions.



Immunocytochemistry/ Immunofluorescence - Alexa Fluor® 488 Anti-Rab5 antibody [EPR21801] - Early Endosome Marker (ab270094)

Rab5 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Rab5 antibody

ab270094 staining Rab5 in Hap1 (Human cell line) cells, with negative expression in Hap1-Rab5A cells.
The cells were fixed with 100% methanol (5 min), permeabilized with 0.1% Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated overnight at +4°C with ab270094 at 1/500 dilution (shown in green) and ab190573, Rabbit monoclonal to alpha Tubulin (Alexa Fluor® 647), at 1/250 dilution (shown in red). Nuclear DNA was labeled with DAPI (shown in blue).

Image was acquired with a high-content analyser (Operetta CLS, Perkin Elmer) and a maximum intensity projection of confocal sections is shown.

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