abcam

ab150299

Anti-Glucose Transporter GLUT1 antibody [SP168]

Recombinant | RabMAb | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.6 Preservative: 0.1% Sodium azide Constituents: PBS, 1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	SP168
Purification technique	Affinity purification Protein A/G
Purification notes	Purified from TCS by protein A/G.

Reactivity data

IHC-P

Tested

Species	Mouse
Dilution info	1/200
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Human

Dilution info	1/200
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Predicted

Species	Rat, Rabbit, Chicken, Cow, Pig
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/200
Notes	-

Expected

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

Predicted

Species	Rat, Rabbit, Chicken, Cow, Pig
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/200

Notes	-

Expected

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

Predicted

Species	Rat, Rabbit, Chicken, Cow, Pig
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100
Notes	-

Expected

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

Predicted

Species	Rat, Rabbit, Chicken, Cow, Pig
Dilution info	-
Notes	-

Target data

See full target information SLC2A1

Function	Facilitative glucose transporter, which is responsible for constitutive or basal glucose uptake (PubMed:10227690, PubMed:10954735, PubMed:18245775, PubMed:19449892, PubMed:25982116, PubMed:27078104, PubMed:32860739). Has a very broad substrate specificity; can transport a wide range of aldoses including both pentoses and hexoses (PubMed:18245775, PubMed:19449892). Most important energy carrier of the brain: present at the blood-brain barrier and assures the energy-independent, facilitative transport of glucose into the brain (PubMed:10227690). In association with BSG and NXNL1, promotes retinal cone survival by increasing glucose uptake into photoreceptors (By similarity). Required for mesendoderm differentiation (By similarity).

Storage

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

Notes

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	The Glucose Transporter GLUT1 also known as SLC2A1 is an important protein responsible for the transport of glucose across cell membranes. The GLUT1 transporter has a molecular weight of approximately 55 kDa. This protein is highly expressed in erythrocytes endothelial cells lining blood vessels and in the blood-brain barrier. Its primary role is to facilitate the basal glucose uptake necessary for cellular metabolism particularly in tissues where glucose is a critical energy source.

Biological function summary	This glucose transporter plays a significant role in maintaining glucose homeostasis in the human body. GLUT1 functions independently and not as part of a complex. It ensures that glucose is available to cells with high metabolic demands including the brain and red blood cells where it remains important for survival and function. Its expression level can be influenced by various factors including hypoxia and insulin.
Pathways	GLUT1 is involved in the glycolysis and hypoxia-related pathways. It supports the glycolytic pathway by ensuring a sufficient supply of glucose to the cells which is then metabolized to produce ATP. Additionally during hypoxic conditions GLUT1 expression can increase aligning with proteins like HIF-1α which helps cells adapt by modifying their metabolism. This coordinated regulation permits cells to adjust their energy systems according to the oxygen availability.
Associated diseases and disorders	GLUT1 is implicated in glucose transporter type 1 deficiency syndrome (GLUT1 DS) and various forms of cancer. GLUT1 DS results from inadequate glucose transport into the brain presenting neurological symptoms due to energy deficiency. In cancer overexpression of GLUT1 links to increased glucose uptake and tumor growth a condition known to involve proteins like hexokinase. These associations underline GLUT1's contribution to both genetic defects and metabolic shifts in cancerous tissues.

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

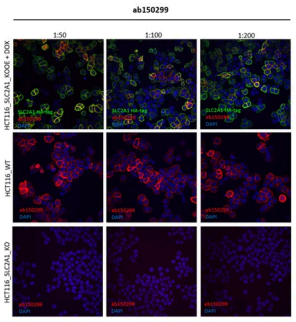
We do not recommend this combination. It is not covered by our product promise.

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.

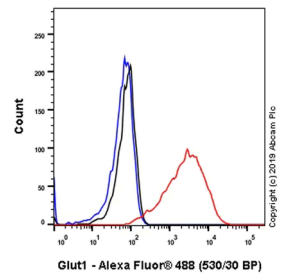
Full details and terms and conditions can be found here:
Terms & Conditions.

11 product images



Immunocytochemistry/ Immunofluorescence - Anti-Glucose Transporter GLUT1 antibody [SP168] (ab150299)

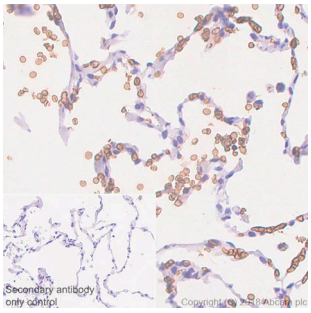
HCT116 WT, SLC2A1 KO were labelled with a green dye. SLC2A1 KOOE cells were labelled with a green and a red dye. SLC2A1 expression was induced with doxycycline in KOOE cells. WT and KO cells were stained with ab150299 and with Alexa-fluor 594 coupled secondary antibody. KOOE cells were stained with: i) ab150299 and with Alexa-fluor 594 coupled secondary antibody; ii) anti-HA-Tag antibody and with Alexa-fluor 488 antibody. Acquisition of the green (HA-Tag in KOOE) and red (antibody staining in WT, KO and KOOE) channels was performed. Representative images of the green and red channel are shown. The antibody used and tested dilution are as follows: ab150299 at 1/50, 1/100 and 1/200.
This image was provided, with thanks, by RESOLUTE (re-solute.eu).



Flow Cytometry (Intracellular) - Anti-Glucose Transporter GLUT1 antibody [SP168] (ab150299)

Glucose Transporter GLUT1 Flow Cytometry (Intracellular) staining using rabbit Anti-Glucose Transporter GLUT1 antibody

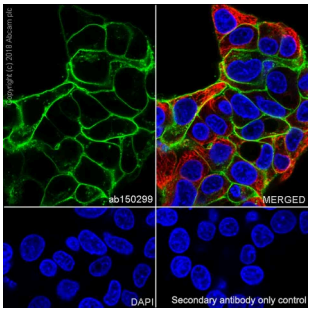
Flow Cytometry analysis of HepG2 (Human hepatocellular carcinoma epithelial cell) cells labeling Glucose Transporter GLUT1 with purified ab150299 at 1/200 dilution (1.24 µg/ml) (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) secondary antibody was used at 1/2000 dilution. Isotype control - Rabbit monoclonal IgG (ab172730) / Black. Unlabeled control - Unlabelled cells / blue.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Glucose Transporter GLUT1 antibody [SP168] (ab150299)

Glucose Transporter GLUT1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Glucose Transporter GLUT1 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human lung tissue sections labeling Glucose Transporter GLUT1 with ab150299 at 1/200 dilution (1.24 µg/ml). Heat mediated antigen retrieval was performed Heat mediated antigen retrieval with sodium citrate buffer (pH 6.0, epitope retrieval solution 1) for 10 mins. 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.

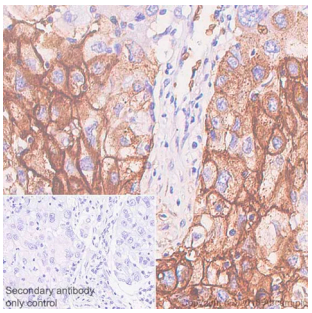


Immunocytochemistry/ Immunofluorescence - Anti-Glucose Transporter GLUT1 antibody [SP168] (ab150299)

Glucose Transporter GLUT1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Glucose Transporter GLUT1 antibody

Immunocytochemistry/ Immunofluorescence analysis of HepG2 (human hepatocellular carcinoma epithelial cell) cells labeling Glucose Transporter GLUT1 with purified ab150299 at 1/100 (2.5 µg/ml). Cells were fixed in 4% paraformaldehyde and permeabilized with 0.1% Triton X-100. Cells

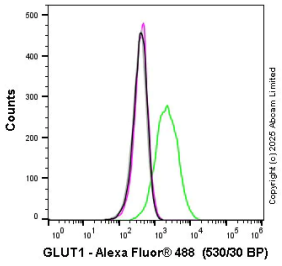
were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1/200 (2.5 µg/ml). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody at 1/1000 (2 µg/ml) dilution. DAPI (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Glucose Transporter GLUT1 antibody [SP168] (ab150299)

Glucose Transporter GLUT1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Glucose Transporter GLUT1 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human lung carcinoma tissue sections labeling Glucose Transporter GLUT1 with ab150299 at 1/200 dilution (1.24 µg/ml). Heat mediated antigen retrieval was performed Heat mediated antigen retrieval with sodium citrate buffer (pH 6.0, epitope retrieval solution 1) for 10 mins. 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-Glucose Transporter GLUT1 antibody [SP168] (ab150299)

Glucose Transporter GLUT1 Flow Cytometry (Intracellular) staining of A-549 using rabbit Anti-Glucose Transporter GLUT1 antibody

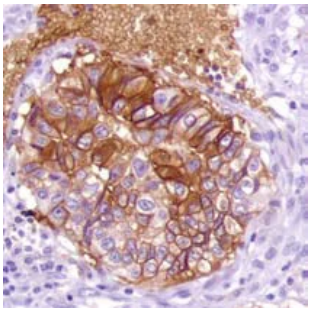
Flow cytometry overlay histogram showing wild-type A-549 (green line) and SLC2A1 knockout A-549 stained with ab150299 (magenta line). The cells were fixed with 4% formaldehyde (10 min) and then permeabilised with 0.1% PBS-Triton X-100 for 15 min. The cells were then incubated in 1x PBS containing 10% normal goat serum to block non-specific protein-protein interaction followed by the antibody (ab150299) (1x 10^6 in 100µl at 1/12500) for 30min at 22°C.

The secondary antibody Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed was incubated at 1/4000 for 30min at 22°C.

Unlabelled control in A-549 WT cells (black line) and A-549-SLC2A1 KO cells (grey line), at the same conditions as the primary antibody.

Acquisition of >5000 events were collected using a 50 mW Blue laser (488nm) and 530/30 bandpass filter.

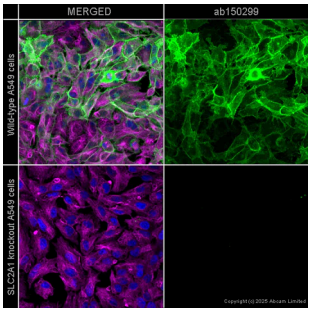
This antibody gave a positive signal in wild-type A-549 fixed with 80% methanol (5 min) and then permeabilised with 0.1% PBS-Triton X-100 for 15 min under the same conditions.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Glucose Transporter GLUT1 antibody [SP168] (ab150299)

Glucose Transporter GLUT1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Glucose Transporter GLUT1 antibody

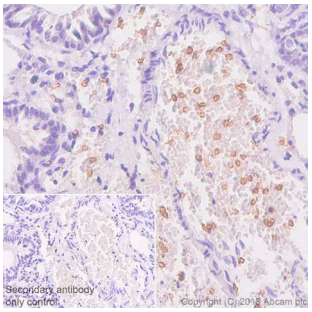
Immunohistochemical analysis of formalin fixed, paraffin embedded Human lung carcinoma tissue labelling Glucose Transporter GLUT1 with ab150299 at 1/200 dilution.



Immunocytochemistry/ Immunofluorescence - Anti-Glucose Transporter GLUT1 antibody [SP168] (ab150299)

Glucose Transporter GLUT1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Glucose Transporter GLUT1 antibody

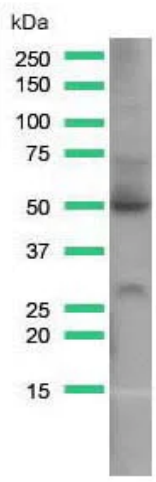
Immunofluorescent analysis of 4% PFA-fixed 0.1% Triton X-100 permeabilized A549 WT and A549-SLC2A1 KO cells labelling Glucose Transporter GLUT1 with ab150299 at 1 µg/ml concentration, followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 dilution (Green). ab7291 Anti-alpha Tubulin antibody [DM1A] was used to counterstain tubulin at 1/1000 dilution (Magenta). The nuclear counterstain was DAPI (Blue).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Glucose Transporter GLUT1 antibody [SP168] (ab150299)

Glucose Transporter GLUT1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Glucose Transporter GLUT1 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Mouse lung tissue sections labeling Glucose Transporter GLUT1 with ab150299 at 1/200 dilution (1.24 µg/ml). Heat mediated antigen retrieval was performed Heat mediated antigen retrieval with sodium citrate buffer (pH 6.0, epitope retrieval solution 1) for 10 mins. 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.

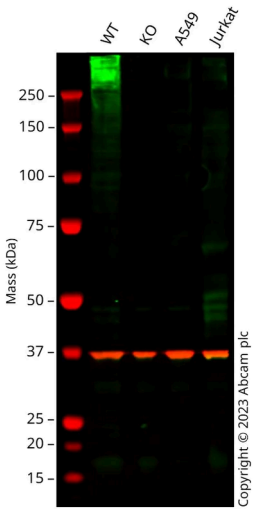


Western blot - Anti-Glucose Transporter GLUT1 antibody [SP168] (ab150299)

All lanes:
Western blot - Anti-Glucose Transporter GLUT1 antibody [SP168] (ab150299) at 1/200 dilution

All lanes:
HepG2 cell lysate

Predicted band size: 54 kDa



Western blot - Anti-Glucose Transporter GLUT1 antibody [SP168] (ab150299)

Glucose Transporter GLUT1 Western blot staining using rabbit Anti-Glucose Transporter GLUT1 antibody

Western blot: Anti-Glucose Transporter GLUT1 antibody [SP168] staining at 1/200 dilution, shown in green; Mouse anti-GAPDH antibody [6C5] (ab8245) loading control staining at 1/20000 dilution, shown in red. In Western blot, ab150299 was shown to bind specifically to Glucose Transporter GLUT1. A band was observed at 50-300 kDa in wild-type HepG2 cell lysates with no signal observed at this size in SLC2A1 knockout cell line ab280797 (knockout cell lysate ab284224). To generate this image, wild-type and SLC2A1 knockout HepG2 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 800CW and Goat anti-Mouse IgG H&L 680RD at 1/20000 dilution.
All lanes:
Western blot - Anti-Glucose Transporter GLUT1 antibody [SP168] (ab150299) at 1/200 dilution

Lane 1:
Wild-type HepG2 cell lysate at 20 µg

Lane 2:
SLC2A1 knockout HepG2 cell lysate at 20 µg

Lane 3:
A549 cell lysate at 20 µg

Lane 4:
Jurkat cell lysate at 20 µg

Performed under reducing conditions.

Observed band size: 50-300 kDa

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