Overview

Product name: Anti-Caveolin-1 antibody - Caveolae Marker

Description: Rabbit polyclonal to Caveolin-1 - Caveolae Marker

Host species: Rabbit

Tested applications: Suitable for: WB, ICC/IF, IP

Species reactivity: Reacts with: Mouse, Rat, Human
Predicted to work with: Sheep, Rabbit, Horse, Cow, Cat, Pig, Chimpanzee, Gorilla, African green monkey, African bush elephant

Immunogen: Synthetic peptide corresponding to Human Caveolin-1 aa 1-100.
Database link: Q03135

Positive control: WB: Human lung, heart and spleen tissue lysates; Mouse heart and lung tissue lysates; Rat heart protein extract; PANC-1, U-87 MG, A549, HeLa, PC-3, U-2 OS, C2C12 and A431 cell lysates.
ICC/IF: A-375, HeLa and NIH/3T3 cells; Rat astrocytes.

General notes: This antibody can be used as a marker for lipid raft fractions.

The Life Science industry has been in the grips of a reproducibility crisis for a number of years. Abcam is leading the way in addressing this with our range of recombinant monoclonal antibodies and knockout edited cell lines for gold-standard validation. Please check that this product meets your needs before purchasing.

If you have any questions, special requirements or concerns, please send us an inquiry and/or contact our Support team ahead of purchase. Recommended alternatives for this product can be found below, along with publications, customer reviews and Q&As

Properties

Form: Liquid


Storage buffer: Preservative: 0.05% Sodium azide
 Constituents: 0.1% BSA, PBS

Purity: Immunogen affinity purified

Clonality: Polyclonal

Database link: Q03135

Run BLAST with

Run BLAST with
Isotype  
IgG

Applications

The Abpromise guarantee  
Our Abpromise guarantee covers the use of ab2910 in the following tested applications. The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

<table>
<thead>
<tr>
<th>Application</th>
<th>Abreviews</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>WB</td>
<td>⭐⭐⭐⭐⭐ (22)</td>
<td>Use a concentration of 1 - 2 µg/ml. Detects a band of approximately 22 kDa (predicted molecular weight: 20 kDa).</td>
</tr>
<tr>
<td>ICC/IF</td>
<td>⭐⭐⭐⭐⭐ (15)</td>
<td>Use at an assay dependent concentration.</td>
</tr>
<tr>
<td>IP</td>
<td>⭐⭐⭐⭐⭐ (9)</td>
<td>Use at an assay dependent concentration. Recommended dilution: 5 µg</td>
</tr>
</tbody>
</table>

Target

Function  
May act as a scaffolding protein within caveolar membranes. Interacts directly with G-protein alpha subunits and can functionally regulate their activity (By similarity). Involved in the costimulatory signal essential for T-cell receptor (TCR)-mediated T-cell activation. Its binding to DPP4 induces T-cell proliferation and NF-kappa-B activation in a T-cell receptor/CD3-dependent manner. Recruits CTNNB1 to caveolar membranes and may regulate CTNNB1-mediated signaling through the Wnt pathway.

Tissue specificity  
Expressed in muscle and lung, less so in liver, brain and kidney.

Involvement in disease  
Defects in CAV1 are the cause of congenital generalized lipodystrophy type 3 (CGL3) [MIM:612526]; also called Berardinelli-Seip congenital lipodystrophy type 3 (BSCL3). Congenital generalized lipodystrophies are autosomal recessive disorders characterized by a near absence of adipose tissue, extreme insulin resistance, hypertriglyceridemia, hepatic steatosis and early onset of diabetes.

Sequence similarities  
Belongs to the caveolin family.

Post-translational modifications  
The initiator methionine for isoform Beta is removed during or just after translation. The new N-terminal amino acid is then N-acetylated.

Cellular localization  
**Western blot - Anti-Caveolin-1 antibody - Caveolae Marker (ab2910)**

**All lanes**: Anti-Caveolin-1 antibody - Caveolae Marker (ab2910) at 1.5 µg/ml

**Lane 1**: Human lung  
**Lane 2**: Human heart  
**Lane 3**: Human spleen

Lysates/proteins at 20 µg per lane.

**Secondary**

**All lanes**: Alexa Fluor anti-rabbit at 1/5000 dilution

**Predicted band size**: 20 kDa  
**Observed band size**: 20 kDa

ab2910 staining Caveolin-1 in wild-type HeLa cells (top panel) and CAV1 knockout HeLa cells (ab255371) (bottom panel). The cells were fixed with 100% methanol (5 min) then 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 with ab2910 at 1/500 dilution and ab7291 (Mouse monoclonal to alpha Tubulin) at 1/1000 dilution overnight at 4°C followed by a further incubation at room temperature for 1h with a goat secondary antibody to rabbit IgG (Alexa Fluor® 488) (ab150081) at 2 µg/ml (shown in green) and a goat secondary antibody to mouse IgG (Alexa Fluor® 594) (ab150120) at 2 µg/ml (shown in red). Nuclear DNA was labelled in blue with DAPI.

Image was taken with a confocal microscope (Leica-Microsystems TCS SP8).
Caveolin 1 was immunoprecipitated using 5 µg of ab2910 from lysate of Mouse Heart (Lane 3) using the Dynabeads® Protein A Immunoprecipitation Kit. Normal Rabbit IgG was used as a Isotype control (Lane 2). 10 % input represents the cell extract used for immunoprecipitation (Lane 1). Western blot analysis was performed using Caveolin 1 Rabbit Polyclonal Antibody and Goat anti-Rabbit IgG (H+L) Superclonal™ Secondary Antibody, HRP conjugate. Chemiluminescent detection was performed using Pierce™ ECL Western Blotting Substrate.

All lanes:

Lane 1: Input control
Lane 2: Isotype control
Lane 3: IP elute

All lanes: Anti-Caveolin-1 antibody - Caveolae Marker (ab2910) at 1 µg/ml

Lane 1: CAV1 knockout HeLa cell lysate
Lane 2: Wild-type HeLa cell lysate

Predicted band size: 20 kDa

The specificity of ab2910 was demonstrated by CRISPR targeted CAV1 knockout in HeLa cells. Western blot analysis of whole cell lysates using this antibody showed no detection of caveolin 1 protein expression in knockout cells compared to the protein detected at ~22kDa in wild-type HeLa cells.

Knockout validation info.
Western blot analysis was performed on whole cell extracts (20 µg lysate). The blots were probed with Anti-ab2910 (1-2 µg/mL) and detected by chemiluminescence using Goat anti-Rabbit IgG (H+L) Superclonal™ Secondary Antibody, HRP conjugate. A 17 kDa band corresponding to Caveolin-1 was observed across cell lines and tissues tested. Known quantity of protein samples were electrophoresed using Novex® NuPAGE® 12 % Bis-Tris gel, XCell SureLock™ Electrophoresis System and Novex® Sharp Pre-Stained Protein Standard. Resolved proteins were then transferred onto a nitrocellulose membrane with iBlot® 2 Dry Blotting System. The membrane was probed with the relevant primary and secondary Antibody following blocking with 5 % skimmed milk. Chemiluminescent detection was performed using Pierce™ ECL Western Blotting Substrate.

**All lanes**: Anti-Caveolin-1 antibody - Caveolae Marker (ab2910) at 1 µg/ml

**Lane 1**: PANC-1 (Human pancreatic epithelial carcinoma cell line) whole cell lysate
**Lane 2**: U-87 MG (Human glioblastoma-astrocytoma epithelial cell line) whole cell lysate
**Lane 3**: A549 (Human lung carcinoma cell line) whole cell lysate
**Lane 4**: HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate
**Lane 5**: PC-3 (Human prostate adenocarcinoma cell line) whole cell lysate
**Lane 6**: U-2 OS (Human bone osteosarcoma epithelial cell line) whole cell lysate
**Lane 7**: Mouse heart tissue lysate
**Lane 8**: Rat heart tissue lysate
**Lane 9**: C2C12 (Mouse myoblast cell line) whole cell lysate
**Lane 10**: Mouse lung tissue lysate
**Lane 11**: A-431 (Human epidermoid carcinoma cell line) whole cell lysate

Lysates/proteins at 20 µg per lane.

**Predicted band size**: 20 kDa
Anti-Caveolin-1 antibody - Caveolae Marker (ab2910) at 2 µg/ml + Rat heart protein extract

**Predicted band size:** 20 kDa

Immunofluorescence analysis of Caveolin 1 was done on 70% confluent log phase A-375 cells. The cells were fixed with 4% paraformaldehyde for 15 minutes, permeabilized with 0.25% Triton™ X-100 for 10 minutes, and blocked with 5% BSA for 1 hour at room temperature. The cells were labeled with ab2910 at 1 µg/mL in 1% BSA and incubated for 3 hours at room temperature and then labeled with Goat anti-Rabbit IgG (H+L) Superclonal™ Secondary Antibody, Alexa Fluor® 488 conjugate at a dilution of 1:2000 for 45 minutes at room temperature (Panel a: green). Nuclei (Panel b: blue) were stained with SlowFade® Gold Antifade Mountant with DAPI. F-actin (Panel c: red) was stained with Alexa Fluor® 555 Rhodamine Phalloidin. Panel d is a merged image showing cytoplasmic localization. Panel e is a no primary antibody control. The images were captured at 60X magnification.

Rat astrocytes stained with fluorescently labeled Caveolin-1 antibody.

Primary antibody is ab2910 at a dilution of 1/500 and the secondary antibody is Texas red labeled anti-rabbit IgG at a dilution of 1/1000.

This image was kindly supplied as part of the review submitted by Donghui Zhu.
ab2910 staining Caveolin-1 - Caveolae Marker in HeLa (Human epithelial cell line from cervix adenocarcinoma) cells by ICC/IF (Immunocytochemistry/immunofluorescence).

Cells were fixed with paraformaldehyde. Samples were incubated with primary antibody (1/200 in PBS + 0.05% Saponin) for 1 hour at 37°C. A Cy3®-conjugated Donkey anti-rabbit polyclonal (1/500) was used as the secondary antibody.

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