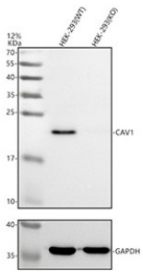
Caveolin-1 Antibody / CAV1 Caveolae Protein Antibody (R31583)

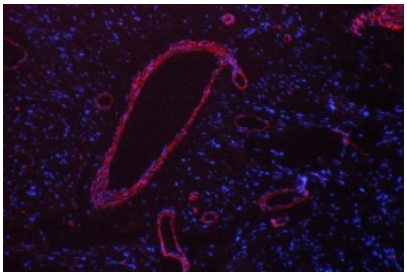
Catalog No.	Formulation	Size
R31583	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

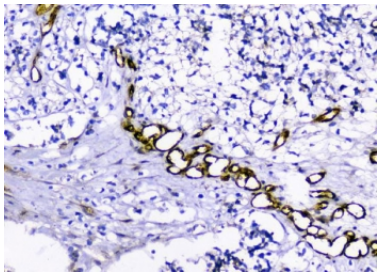
Species Reactivity	Human, Mouse, Rat
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Antigen affinity
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	Q03135
Applications	Western blot: 0.5-1ug/ml Immunohistochemistry (FFPE): 2-5ug/ml Immunohistochemistry (Frozen): 2-5ug/ml Immunofluorescence (FFPE): 5ug/ml Flow cytometry: 1-3ug/million cells
Limitations	This Caveolin-1 Antibody / CAV1 Caveolae Protein Antibody is available for research use only.



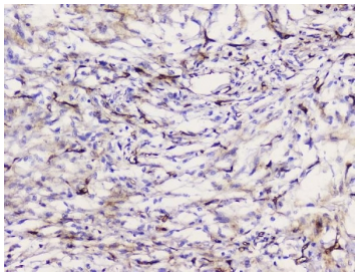
Caveolin-1 Antibody WB Analysis of Human HEK293 WT and CAV1 KO Cells. Western blot analysis of wild-type (WT) HEK293 cell lysate (lane 1) and CAV1 knockout (KO) HEK293 cell lysate (lane 2) using CAV1 Caveolae Protein Antibody. A prominent immunoreactive band is detected at approximately 22 kDa in WT cells and is markedly reduced in CAV1 KO cells, supporting antibody specificity. Samples containing 30 ug of protein per lane were separated by 12% SDS-PAGE, and the primary antibody was used at 0.5 ug/ml. GAPDH served as the loading control.



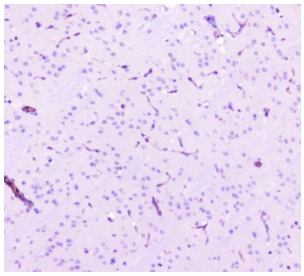
Caveolin-1 Antibody IF Analysis of Human Glioma Tissue. Immunofluorescence analysis of formalin-fixed, paraffin-embedded human glioma tissue using CAV1 Caveolae Protein Antibody. Red fluorescence is prominently associated with vascular structures, consistent with caveolin-1 expression in endothelial cells. Nuclei are counterstained with DAPI (blue). Heat-induced epitope retrieval was performed using EDTA buffer (pH 8.0) for 10-20 minutes.



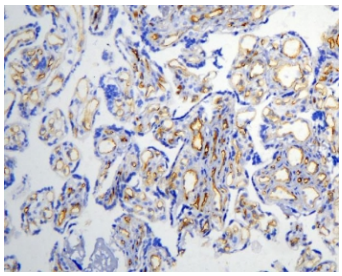
Caveolin-1 Antibody IHC Analysis of Human Glioma Tissue. Immunohistochemical analysis of formalin-fixed, paraffin-embedded human glioma tissue using CAV1 Caveolae Protein Antibody. Prominent brown DAB staining is observed in vascular endothelial cells, highlighting blood vessels within the glioma tissue. Heat-induced epitope retrieval was performed using EDTA buffer (pH 8.0) for 20 minutes.



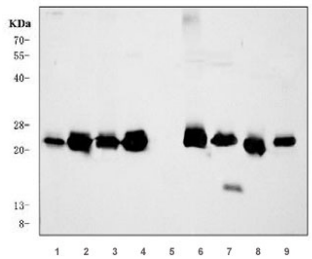
Caveolin-1 Antibody IHC Analysis of Human Meningioma Tissue. Immunohistochemical analysis of formalin-fixed, paraffin-embedded human meningioma tissue using CAV1 Caveolae Protein Antibody. Brown DAB staining is observed in vascular and stromal-associated structures, with heterogeneous immunoreactivity throughout the tissue. Heat-induced epitope retrieval was performed using EDTA buffer (pH 8.0) for 20 minutes.



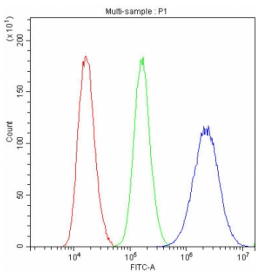
Caveolin-1 Antibody IHC Analysis of Mouse Brain Tissue. Immunohistochemical analysis of formalin-fixed, paraffin-embedded mouse brain tissue using CAV1 Caveolae Protein Antibody. Brown DAB immunoreactivity is visible in scattered vascular-associated structures against a predominantly hematoxylin-counterstained background. Heat-induced epitope retrieval was performed using EDTA buffer (pH 8.0) for 20 minutes.



Caveolin-1 Antibody IHC Analysis of Frozen Human Placenta Tissue. Immunohistochemical analysis of frozen human placental tissue using CAV1 Caveolae Protein Antibody. Brown DAB staining is observed in placental villous structures, including vascular and stromal-associated regions. The staining pattern is consistent with the distribution of caveolin-1 in membrane-associated structures of placental cells.



Caveolin-1 Antibody WB Analysis of Human, Mouse and Rat Cell and Tissue Lysates. Western blot analysis of human HeLa cells (lane 1), human A549 cells (lane 2), human placenta (lane 3), human A431 cells (lane 4), human HL60 cells (lane 5), rat ovary (lane 6), rat heart (lane 7), mouse ovary (lane 8), and mouse heart (lane 9) using CAV1 Caveolae Protein Antibody. Immunoreactive bands are detected at approximately 21-22 kDa in multiple samples, consistent with the predicted molecular weight of caveolin-1. CAV1 produces alpha and beta isoforms through alternative translation initiation, with calculated molecular weights of approximately 21-22 kDa and 17-18 kDa, respectively.



Caveolin-1 Antibody FACS Staining of Fixed and Permeabilized Human U-87 MG Cells. Flow cytometry analysis of fixed and permeabilized human U-87 MG cells using CAV1 Caveolae Protein Antibody at 1 ug per million cells following blocking with goat serum. The histogram compares cells alone (red), isotype control (green), and Caveolin-1 antibody-stained cells (blue). The antibody-stained population exhibits a clear rightward fluorescence shift relative to the isotype control, demonstrating increased antibody-associated fluorescence.

Description

Caveolin-1 Antibody / CAV1 Caveolae Protein Antibody recognizes caveolin-1, an integral membrane protein encoded by the CAV1 gene. Caveolin-1 is a principal structural component of caveolae, specialized flask-shaped invaginations of the plasma membrane involved in membrane organization, mechanotransduction, lipid regulation, and intracellular signaling. The protein is particularly abundant in endothelial cells, adipocytes, fibroblasts, and other cell types containing numerous caveolae.

Caveolin-1 contains a central hydrophobic membrane-associated region, a caveolin scaffolding domain, and cytoplasmic N- and C-terminal regions. Unlike conventional transmembrane proteins, caveolin-1 adopts a hairpin-like membrane topology in which both termini face the cytoplasm. Its ability to oligomerize and interact with cholesterol-rich membrane domains is essential for organizing caveolar structures. Caveolin-1 associates with caveolin-2 and cooperates with cavin proteins to establish the architecture and stability of caveolae.

Two principal caveolin-1 isoforms, alpha and beta, are generated through alternative translation initiation. The alpha isoform contains an additional N-terminal segment and has a molecular weight of approximately 21-22 kDa, whereas the shorter beta isoform is approximately 17-18 kDa. These isoforms differ in their N-terminal sequences and can exhibit distinct patterns of localization and regulation. Caveolin-1 also undergoes post-translational modifications, including phosphorylation at Tyr14, which has been associated with changes in membrane dynamics and cellular signaling.

Beyond its structural functions, caveolin-1 participates in the organization of signaling complexes involving Src-family kinases, integrins, growth factor receptors, and components of the MAPK pathway. Its influence on signaling is context dependent and reflects interactions with membrane lipids, associated proteins, and cellular regulatory mechanisms. Caveolae also respond to mechanical stress by flattening and redistributing membrane components, helping cells accommodate changes in membrane tension.

Caveolin-1 has been extensively investigated in cardiovascular biology, metabolic regulation, fibrosis, and cancer. Altered CAV1 expression can influence cell adhesion, migration, extracellular matrix interactions, and signaling responses. In cancer, its functions vary according to tumor type, disease stage, and cellular context, with both tumor-suppressive and tumor-promoting activities reported. Caveolin-1 Antibody is relevant to studies examining caveolae biogenesis, membrane-associated signaling, cellular mechanotransduction, and the regulation of epithelial and endothelial cell behavior.

Explore our Cell Biology Antibodies for additional targets involved in caveolae formation, plasma membrane organization, endocytosis, mechanotransduction, and cellular signaling.

Application Notes

The stated application concentrations are suggested starting points. Titration of the Caveolin-1 Antibody / CAV1 Caveolae Protein Antibody may be required due to differences in protocols and secondary/substrate sensitivity.

Immunogen

Human partial recombinant protein (AA 4-178) was used as the immunogen for this Caveolin-1 antibody.

Storage

After reconstitution, the Caveolin-1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.

Alternate Names

CAV1 antibody, Caveolin 1 antibody, VIP21 antibody, Vesicular integral membrane protein VIP21 antibody, Caveolae-associated protein antibody

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