

Product Information

Monoclonal Anti-Caveolin-1, clone CAV1
produced in mouse, tissue culture supernatant

Catalog Number **SAB4200216**

Product Description

Monoclonal Anti-Caveolin-1 (mouse IgM isotype) is derived from the hybridoma CAV1 produced by the fusion of mouse myeloma cells and splenocytes from BALB/c mice immunized with a synthetic peptide corresponding to a sequence at the N-terminal of human caveolin-1 (GeneID: 857), conjugated to KLH. This sequence is highly conserved in many species and identical, as an example, in rat, mouse, bovine and dog caveolin-1. This sequence is not found in caveolin-2 or caveolin-3. The isotype is determined using a Mouse Monoclonal Antibody Isotyping Kit. The antibody is provided as culture supernatant of hybridoma cells grown in a bioreactor.

Monoclonal Anti-Caveolin-1 recognizes human, mouse, and rat caveolin-1 (not tested in other species). The antibody may be used in several immunochemical techniques including immunoblotting (22 kDa), immunofluorescence and immunohistochemistry. Detection of the caveolin-1 band by immunoblotting is specifically inhibited by the immunizing peptide.

Caveolae are cholesterol/ sphingolipid-rich, flask-shaped microdomains of the inner side of the plasma membrane with a diameter of 50 to 100 nm.¹ Caveolae may play an important role in numerous essential cellular functions, including signaling, transport, lipid metabolism, cellular growth control and tumor suppression. Caveolae are present in many cell types, and are most abundant in endothelial cells, fibroblasts, smooth muscle cells and adipocytes. Caveolin, a 20-24 kDa integral transmembrane protein, has been identified as a principal component of caveolae membranes.²

Caveolin was first identified as a major v-Src substrate in Rous sarcoma virus-transformed cells.³ Caveolin (also termed VIP21) exists in several isoforms termed caveolin-1, caveolin-2 and caveolin-3. Caveolin-1 (20-22 kDa) can exist as two isoforms, caveolin-1 α and -1 β , due to alternative splicing of the

mRNA. Caveolin-1 and -2 have similar tissue distribution. Caveolin-2 colocalizes with caveolin-1 and forms a hetero-oligomeric complex with caveolin-1 *in vivo*. In contrast, caveolin-3 is a distinct isoform that is restricted to smooth, skeletal and cardiac muscle.^{2,4} It has been proposed that caveolin family members function as scaffolding proteins to organize and concentrate specific lipids such as cholesterol and glycosylphosphatidylinositol (GPI) and lipid modified signaling molecules within caveolae membranes.⁵ Caveolin can simultaneously recognize GPI-linked proteins and interact directly with a number of caveolae-associated downstream signaling molecules, such as H-Ras, hetero-trimeric G-proteins, annexin-II, EGF receptor, protein kinase C, src-family tyrosine kinases, and nitric oxide synthase (NOS) isoforms. Caveolae and caveolin-1 are both down-regulated in response to activated oncogenes such as H-Ras and v-Abl.^{2,4} In PC12 cells, caveolin-1 is up-regulated during NGF-induced differentiation.⁶ Knockout mice lacking the caveolin-1 gene, also lack caveolae. The absence of this organelle impairs nitric oxide and calcium signaling in the cardiovascular system, causing aberrations in endothelium-dependent relaxation, contractility and maintenance of myogenic tone. In addition, the lungs of knockout animals display thickening of alveolar septa due to uncontrolled endothelial cell proliferation and fibrosis, resulting in severe physical limitations in the caveolin-1 knockout mice.⁷⁻⁹

Reagent

Supplied as a culture supernatant solution containing 15 mM sodium azide as a preservative. The product contains fetal calf serum.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For extended storage, freeze at -20 °C in working aliquots. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

Immunofluorescence: a working antibody dilution of 1:1,000-1:2,000 is recommended using human HUVEC or mouse 3T3 cells.

Note: In order to obtain the best results using various techniques and preparations, we recommend determining optimal working dilutions by titration.

References

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