3050 Spruce Street, St. Louis, MO 63103 USA
Tel: (800) 521-8956 (314) 771-5765 Fax: (800) 325-5052 (314) 771-5757
email: techservice@sial.com sigma-aldrich.com

Product Information

Monoclonal Anti-β-Catenin, clone 6F9
produced in mouse, ascites fluid

Catalog Number **C7082**

Product Description

Monoclonal Anti-β-Catenin (mouse IgG1 isotype) is derived from the 6F9 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from BALB/c mice. Recombinant chicken β-catenin was used as the immunogen.[1] The isotype is determined by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents, Catalog Number ISO2.

Cell adhesion is vitally important during development and in the adult organism for sorting cells, induction of cellular morphogenesis, and maintenance of tissue integrity.[2,3] Many cancer cells show aberrant adhesion properties that contribute to tumorigenesis, invasion, and metastasis. Ca^{2+}-dependent cell adhesion is mediated by a multifunctional family of transmembrane glycoproteins termed cadherins.[3] Cadherins are concentrated in cell-cell adherens junctions, where cells come into close contact with one another. Cadherins, self-associate specifically via their extracellular domains. Studies supporting a role for cadherins in morphogenesis have led to the hypothesis that cadherins are crucial for segregation and sorting of different cells expressing different cadherin types. During recognition and adhesion between cells, cadherins regulate homophilic, Ca^{2+}-dependent interactions in cells. This initiates a cascade of events that leads to the structural and functional reorganization of cells, including formation of junctional complexes (tight junction, *zonula adherens*, and desmosomes), organization of the actin cytoskeleton at the apical junctional complex, assembly of the membrane cytoskeleton, and development of membrane domains. The mechanism of cadherin function involves both specific binding of extracellular domains at the cell surface and interactions with components of the cytoplasm. Studies have identified three cytoplasmic proteins, known as catenins, that bind noncovalently to the cytoplasmic domain of cadherins.[4] Formation of the cadherin/catenin complex is required for cadherin functions in cell-cell adhesion, signal transduction, as well as the initiation and maintenance of structural and functional organization of cells and tissues. Catenins mediate the connection of cadherins to actin filaments and are part of a higher order submembranous network by which cadherins are linked to other transmembrane and peripheral cytoplasmic proteins. Other cytoplasmic proteins, including fodrin, as well as *src* and *yes* kinases, also interact with the cadherin/catenin complex.[5] These interactions may link the cadherin/catenin complex with the cytoskeleton and intracellular signaling pathways. Three catenins with molecular weights of approximately 102-105kDa (α-catenin), 92-97 kDa (β-catenin), and 82-86 kDa (γ-catenin) have been identified. α-Catenin (also known as CAP-102) is a vinculin-like protein, whereas β-catenin shares 70% sequence identity to a protein encoded by *Drosophila armadillo*, a segment polarity gene. Both *armadillo* and β-catenin share considerable homology with plakoglobin, which has been proposed to be γ-catenin. The homology between β-catenin and *armadillo* raised the possibility that β-catenin has a developmental signaling role in vertebrates. For instance, β-catenin mediates the interaction of the cadherin-catenin complex with the epidermal growth factor (EGF) receptor, and β-catenin and plakoglobin are substrates for tyrosine phosphorylation following EGF stimulation of cells. β-catenin also associates directly with the tumor suppressor protein adenomatous polyposis coli (APC). Mutation of APC appears to be the first step in colon carcinogenesis, after which progression to carcinoma involves additional mutations in specific oncogenes and tumor suppressors.[6] Monoclonal antibody reacting specifically with β-catenin is an essential tool in defining the interactions and distributions of β-catenin and its relationships with other catenins and cadherins in various cells and tissues.

Reagents

Supplied as ascites fluid with 15 mM sodium azide as a preservative.

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 extended storage freeze in working aliquots. For continuous use, store at 2-8 °C. 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.

Product Profile
Immunoblotting: a working dilution of 1:1000 was determined using cultured MDBK-cells extract

Immunocytochemistry (IFT): a working dilution of 1:1000 was determined using cultured MDBK-cells

The product also reacts in immunohistochemistry of frozen sections. It does not cross-react with plakoglobin. Cross-reactivity has been observed with β-catenin of human, dog and bovine.

Note: In order to obtain best results, it is recommended that each user determine the optimal working dilution for individual applications by titration assay.

References

1. Johnson, K., et al., *Exp. Cell Res.*, **207**, 252 (1993).
2. Edelman, G., and Crossin, K., *Ann. Rev. Biochem.*, **60**, 155 (1991).
3. Takeichi, M., *Science*, **251**, 1451 (1991).
4. Nagafuchi, A., and Takeichi, M., *EMBO J.*, **7**, 3679 (1988).
5. Tsukita, S., et al., *J. Cell Biol.*, **123**, 1049 (1993).
6. Reynolds, A., et al., *Mol. Cell Biol.*, **14**, 8333 (1994).

DS,KAA,PHC 09/12-1