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Product Information

Monoclonal Anti-Plakoglobin (Catenin γ)
clone 15F11
produced in mouse, ascites fluid

Catalog Number **P8087**

Product Description

Monoclonal Anti-Plakoglobin (Catenin γ) (mouse IgG1 isotype) is derived from the 15F11 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from BALB/c mice. Recombinant chicken plakoglobin 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*, 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. Plakoglobin shares considerable homology with *Drosophila armadillo*, a segment polarity gene and with β-catenin.

It was first identified in purified desmosomal preparations; desmosomes serve as membrane-attachment sites for intermediate filaments, and plakoglobin associates with the cytoplasmic region of desmoglein I, one of the transmembrane desmosomal proteins.[7] Plakoglobin has a developmental signaling role in vertebrates. For instance, plakoglobin and β-catenin are substrates for tyrosine phosphorylation following EGF stimulation of cells. In addition, the human plakoglobin gene maps to the vicinity of the *BRCA1* gene. This has stimulated a more detailed analysis on the relationship between plakoglobin and the *BRCA1* region for breast cancer predisposition.[7] Monoclonal antibody reacting specifically with plakoglobin is an essential tool in defining the interactions and distributions of plakoglobin and its relationships with other catenins and cadherins in various cells and tissues. It might also be helpful in analyzing a possible involvement of plakoglobin in the development of breast and ovarian cancers.[7]

Reagent

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 and Stability
For continuous use, store at 2-8 °C for up to one month. For extended storage freeze 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.

Product Profile
Indirect immunofluorescence: a minimum working dilution of 1:1,000 was determined using cultured MDBK cells.

Indirect immunoblotting: a minimum working dilution of 1:2,000 was determined using cultured MDBK cells extract.

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

Specificity
Monoclonal Anti-Plakoglobin (Catenin γ) recognizes the plakoglobin (γ-catenin) molecule (85 kDa and possibly a slightly lower band) in immunoblotting.[2] The product also reacts in immunocytochemical staining of cultured cells (e.g., Madin-Darby canine kidney (MDCK) cells),[2] immunoprecipitation [2] and immunohistochemistry of frozen sections. It does not cross-react with β-catenin. Cross-reactivity has been observed with plakoglobin of human, dog[2] and bovine.

Uses
Monoclonal Anti-Plakoglobin (γ-Catenin) may be used for the localization of plakoglobin using various immunochemical assays such as immunoblotting, immunoprecipitation, immunocytology and immunohistology.

References

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