Qty: 100 µg/200 µL

Mouse anti-Claudin-4

Catalog No. 32-9400

Lot No.

Mouse anti-Claudin-4

FORM
This monoclonal antibody is supplied as a 200 µl aliquot at a concentration of 0.5 mg/mL in PBS, pH 7.4, containing 0.1% sodium azide. This antibody is highly purified from mouse ascites by protein A chromatography.

CLONE: 3E2C1 **ISOTYPE:** Mouse IgG_1

IMMUNOGEN
Synthetic peptide corresponding to a 22 amino acid sequence derived from the C-terminal region of human Claudin-4

SPECIFICITY
This antibody reacts specifically with the ~ 22 kDa Claudin-4 protein and does not cross-react with the protein at 55 kDa.

REACTIVITY
Reactivity has been confirmed with human, rat ileum homogenates, and canine MDCK cell lysates by Western blotting and immunofluorescence. Reactivity has also been confirmed with formalin-fixed, paraffin-embedded (FFPE) human normal colon and colon cancer tissues by immunohistochemistry.

Sample	Western blotting	Immuno-fluorescence	Immuno-histochemistry (FFPE)*
Human	+++	++	+++
Rat	+++	++	ND
Dog	+++	++	ND
Immunogen	+++	NA	N/A

(Excellent +++, Good++, Poor +, No reactivity 0, Not applicable NA, Not determined ND)

USAGE
Working concentrations for specific applications should be determined by the investigator. Appropriate concentrations will be affected by several factors, including secondary antibody affinity, antigen concentration, sensitivity of detection method, temperature and length of incubations, etc. The suitability of this antibody for applications other than those listed below has not been determined. The following concentration ranges are recommended starting points for this product.

Immunofluorescence: 1-3 µg/mL
Western Blotting: 1-3 µg/mL
Immunohistochemistry*: 2-3 µg/mL

* For best results in immunohistochemistry with formalin-fixed, paraffin-embedded (FFPE) tissues, heat induced epitope retrieval (HIER) with citrate buffer, pH 6.0, is required prior to staining.

STORAGE
Store at 2-8°C for up to one month. Store at –20°C for long-term storage. Avoid repeated freezing and thawing.

(cont'd)

BACKGROUND

Tight junctions are specialized regions of cell-cell contact that are particularly abundant in luminal epithelial cell sheets. In freeze-fracture electron micrographs, tight junctions are visualized as belt-like bands of anastomosing sealing strands (TJ strands) that completely encircle the lateral surfaces of each cell. TJ strands on adjacent cells interact with each other to form a "molecular gasket" that prevents ions, water and other molecules from leaking between cells and thus, from one side of the sheet to the other. In addition to this "barrier" function, the "fence" function of tight junctions plays an important role in maintaining epithelial cell-polarity by blocking the diffusion of membrane proteins between apical (luminal) and basolateral cell surfaces.

Several peripheral membrane proteins are associated with tight junctions including ZO-1, ZO-2, ZO-3, cingulin, the 7H6 antigen, Rab-3b, and symplekin.[1-6] Suggested roles for these proteins include involvement in tight junction assembly and maintenance, signal transduction, and the regulation of tight junction permeability. A growing body of evidence suggests that actin filaments play a major role in regulating tight junction permeability.

Until recently, the only transmembrane protein known to be associated with tight junctions was occludin, an ~65 kDa protein with four transmembrane domains. Despite widespread expectation, a critical structural role for occludin in TJ strands was ruled out by the observation of apparently normal tight junctions formed between cells disrupted at both occludin alleles.[7] A closer examination of isolated tight junctions uncovered two related ~22 kDa, four-transmembrane domain proteins, claudin-1 and claudin-2, with no similarity to occludin. In contrast to occludin, which induces only a small number of short strands at cell-cell contact sites when introduced into fibroblasts lacking tight junctions, claudin-1 and -2 induce networks of strands characteristic of true tight junctions.[8,9] Though inconclusive, these findings suggest that claudin-1 and -2 are major structural components of TJ strands and that occludin plays some other accessory role. Excitement in the tight junction field continues to rise following the recent discovery of claudins -3, -4, -5, -6, -7, and -8 and experiments suggesting that tight junctions in different tissues are comprised of different sets of claudin family proteins.[10]

The overexpression of Claudin-4 was found to decrease paracellular electrical conductance due to a selective decrease in Na+ permeability, with no significant change for Cl-. Claudin-4 is the first to confer ionic selectivity to paracellular transport, leading to the prediction that the combination of different claudins defines the overall selectivity of different junctions. Thus, Claudin-4 forms channels through the tight junctions that discriminate against Na+ ions and are indifferent to Cl- ions.[11]

REFERENCES

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RELATED PRODUCTS

Product	*Clone or PAD**	*Cat. No.*
Rb anti-Claudin-1	JAY.8	51-9000
Ms anti-Claudin-5	4C3C2	35-2500
Rb anti-Claudin-2	MH44	51-6100
Rb anti-Claudin-3	Z23.JM	34-1700
Rb anti-Claudin-5	Z43.JK	34-1600
Ms anti-ZO-1	ZO1-1A12	33-9100
Rb anti-ZO-1	Z-R1	61-7300
Rb anti-ZO-2	--	71-1400
Ms anti-Occludin	OC-3F10	33-1500
Rb anti-Occludin	Z-T22	71-1500

PAD: Polyclonal Antibody Designation

Conjugate	ZyMAX™ Goat anti-Rabbit IgG (H+L)	ZyMAX™ Goat anti-Mouse IgG (H+L)
Purified	81-6100	81-6500
FITC	81-6111	81-6511
TRITC	81-6114	81-6514
Cy™3	81-6115	81-6515
Cy™5	81-6116	81-6516
HRP	81-6120	81-6520
AP	81-6122	81-6522
Biotin	81-6140	81-6540

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