**Qty:** 100 µg/400 µl

Rabbit anti-Claudin-1

**Catalog No.** 71-7800

**Lot No**. See product label

# Rabbit anti-Claudin-1

## FORM

This polyclonal antibody is supplied as a 400 µl aliquot at a concentration of 0.25 mg/ml in phosphate buffered saline (PBS), pH 7.4, containing 0.1% sodium azide ($NaN_3$). The antibody is epitope-affinity-purified from rabbit antiserum.

**POLYCLONAL ANTIBODY DESIGNATION (PAD):** MH25

**ISOTYPE:** Rabbit Ig

## IMMUNOGEN

A synthetic peptide derived from the C-terminus of the human/mouse Claudin-1 protein.

## SPECIFICITY

This antibody reacts with the ~ 22 kDa Claudin-1 protein. Reactivity was confirmed by Western blotting and immunofluorescence. Positive controls include MDCK cells (dog), Caco-2cells (human), mouse liver, rat liver, and rat kidney.

***NOTE:* This antibody strongly cross reacts with the Claudin-3 protein.**

It has been observed in Western blotting inhibition studies using Caco-2 cell lysates, that this antibody is inhibited by addition of Claudin-3 peptide. For a Claudin-1 specific antibody that does not cross react with Claudin-3, please order Zymed cat. no. 51-9000 (Rb x Claudin-1) instead.

## REACTIVITY

This antibody is confirmed reactive with human, mouse, rat, and dog Claudin-1. The reactivity of this antibody with other species has not been determined.

| Sample | ELISA | Immuno-fluorscence | Western blotting |
|---|---|---|---|
| Dog | | + | + |
| Human | | + | + |
| Mouse | | nt | + |
| Rat | | nt | + |
| Immunogen | + | | |

nt-not tested

## 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.

**ELISA:** 0.1-1.0 µg/ml
**Western Blotting:** 1-2 µg/ml
**Immunofluorescence:** 15-20 µg/ml

## 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 are presumed to interact with each other to form a sort of "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 so-called "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. Confinement of, for example, the glucose symport to apical surfaces allows glucose to be transported vectorially from the lumen, through the cell, and into the bloodstream.

Several peripheral membrane proteins are associated with tight junctions including ZO-1, ZO-2, ZO-3 (members of membrane-associated guanylate-kinase family), cingulin, the 7H6 antigen, Rab-3b, symplekin (for reviews see refs. 1-6). While their precise functions are not known, roles for these proteins have been suggested in tight junction assembly and maintenance; signal transduction; and the regulation of tight junction permeability. Furthermore, a growing body of evidence suggests that actin filaments play a major role in regulating tight junction permeability.[7]

Until recently, the only transmembrane protein known to be associated with tight junctions was occludin, a ~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.[8] Fortunately, 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.[9,10] 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.[11]

## REFERENCES

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3. Howarth AG and Stevenson BR, *Adv. Struc. Biol.* 4:25-39 (1996).
4. Stevenson BR and Keon BH, *Annu.Rev.Cell Dev. Biol*. 14:89-109 (1998).
5. Tsukita S, et al., *Cell Struct. Funct*. 21:381-385 (1996).
6. Yap AS et al., H, *Membr. Biol*. 163:159-167 (1998).
7. actin regulation (ask Laura).
8. Saitou M, et al., *J. Cell. Biol.* 141:397-408 (1998).
9. Furuse M, et al., *J. Cell Biol*. 143:391-401 (1998).
10. Tsukita S and Furuse M, *Genes Cells* 3:569-573 (1998).
11. Morita K, et al., *Proc Natl Acad Sci USA* 96:511-516 (1999).

## RELATED PRODUCTS

| ***Primary antibodies*** | ***Clone/PAD**** | ***Cat. No.*** |
|---|---|---|
| Claudin-2 | MH44 | 51-6100 |
| Ms x ZO-1 | ZO1-1A12 | 33-9100 |
| Rb x ZO-1 | Z-R1 | 61-7300 |
| Rb x ZO-2 | -- | 71-1400 |
| Ms x Occludin | OC-3F10 | 33-1500 |
| Ms x Occludin-HRP conjugate | OC-3F10 | 33-1520 |
| Rb x Occludin | Z-T22 | 71-1500 |
| Rb x Occludin | -- | 71-1600 |

*PAD- polyclonal antibody designation



**For Research Use Only**

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