# Connexin 43 (CX43) Antibody

Cat. No. CA1026

| | |
|---|---|
| Applications: | WB, IHC |
| Detected MW: | 43 kDa |
| Species & Reactivity: | Human, Rat |
| Isotype: | Rabbit IgG |

## BACKGROUND

Gap channels (also known as gap junctions) are specalized cell-cell contacts between almost all eukaryotic cells that serve a critical role in facilitating physiological function as well as in maintaining tissue homeostasis. Generally, gap channels allow the passive diffusion of molecules up to 1 kDa which includes nutrients, small metabolites (e.g. glucose), ions ($K^+$, $Ca^{2+}$) and second messengers (IP3, cAMP and cGMP). Gap channels allow electrical and biochemical coupling between cells and in excitable tissues, such as neurons and the heart, enables the generation of synchronized and rapid responses.[1]

Gap junctions are formed by the assembly of Connexin (Cx) proteins. The type and degree of Cx expression in each tissue is cell-, age-, and stage-dependent and such regulation is tightly controlled. Each of Cx is commonly named from its molecular weight (Cx26, Cx30 etc.). The genes for 20 different Connexin proteins are present in the human genome. Six Connexins oligomerise intracellularly to form the gap junction channel unit of an individual cell, a Connexon, which is trafficked to the plasma membrane. There, the Connexons of one cell align symmetrically with those of its neighbor to create continuous aqueous pores that functionally couple the adjacent cells. Connexons aggregate in the plane of the plasma membrane to form a gap junction plaque. Different Connexin proteins differ in the size and charge characteristics of the channel and in their regulatory properties. Most cells that form gap junctions express more than one Connexin isotype. There is thus potentially a wide variety of possible gap junction compositions, each with different physiological characteristics. All the Connexins in an individual Connexon maybe of the same type (homomeric) or heteromeric Connexons may be formed by oligomerization between different Connexins. The Connexon composition each side of the junction maybe the same (homotypic junctions) or heterotypic junctions can be formed where the Connexons of one cell are different in composition from those of its neighbor. Within the same junction plaque, there may be separate homomeric, homotypic regions of differing composition, or a cell may ferry different Connexins to separate locations. Gap channels are regulated through post-translational modifications of the C'-terminal cytoplasmic tail and phosphorylation modulates assembly and their physiological properties. They are continuously synthesized and degraded, allowing tissues to rapidly adapt to changing environmental conditions.[2]

Connexin 43 is most often found in the heart. Current data suggest Cx43 is essential for the development of normal cardiac architecture and ventricular conduction. The Cx43 protein itself is able to affect growth control as well as further cellular functions like adhesion and migration. It was shown that the C terminus of Cx43 alone is as effective as the wild type channel in suppressing neuroblastoma cell growth. The C-terminal region, which differs in length and sequence among the various Connexin isoforms, plays an important role in signal transduction processes. The carboxyl terminus of Cx43 contains numerous phosphorylation sites for protein kinases. Up to now, only a few interaction partners are known that bind to the Cx43 tail (*e.g.* ZO-1, α- and β-tubulin, and c-Src ).[3] In addition, it was shown that Connexin-43 facilitates metastatic 'homing' by increasing adhesion of cancer cells to the lung endothelial cells. The marked upregulation of Connexin-43 in tumor cell-endothelial cell contact areas, whether in preexisting 'homing' vessels or in newly formed tumor vessels, suggests that Connexin-43 can serve as a potential marker of micrometastases and tumor vasculature and that it may play a role in the early incorporation of endothelial cells into small tumors as seeds for vasculogenesis.[4]

**References**:
1. Beyer, E.C. et al: J. Membrane Biol. 116:187-94, 1990
2. Willecke K. et al: Biol. Chem. 383:725-37, 2002
3. Gellhaus, A. et al: J. Biol. Chem. 279:37931-42, 2004
4. Elzarrad, M.K. et al: BMC Med. 6:20, 2008

## TECHNICAL INFORMATION

**Source:**
CX43 Antibody is a rabbit antibody raised against a short peptide from human CX43 sequence.

**Specificity and Sensitivity:**
This antibody detects endogenous levels of CX43 proteins without cross-reactivity with other related proteins.

**Storage Buffer**: PBS and 30% glycerol

**Storage**:
Store at -20°C for at least one year. Store at 4°C for frequent use. Avoid repeated freeze-thaw cycles.

## APPLICATIONS

| Application: | *Dilution: |
|---|---|
| WB | 1:1000 |
| IP | n/d |
| IHC | 1:200 |
| ICC | n/d |
| FACS | n/d |

**Optimal dilutions must be determined by end user.*

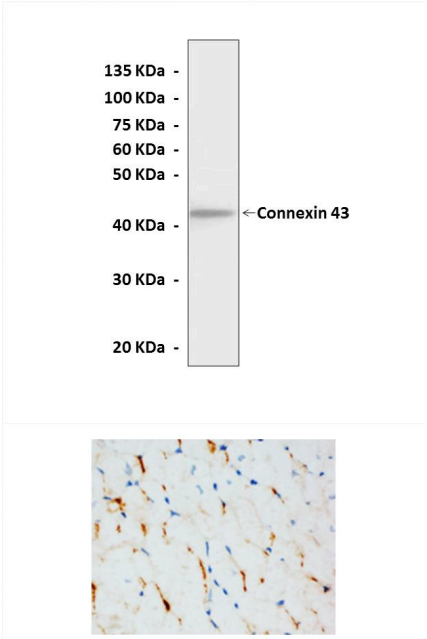
CELL APPLICATIONS, INC.

# Connexin 43 (CX43) Antibody

Cat. No. CA1026

| | |
|---|---|
| **Applications:** | **WB, IHC** |
| **Detected MW:** | **43 kDa** |
| **Species & Reactivity:** | **Human, Rat** |
| **Isotype:** | **Rabbit IgG** |

## QUALITY CONTROL DATA




**Top:** Western Blot detection of CX43 proteins in rat cardiac muscle tissue lysate using CX43 antibody. **Bottom:** This antibody stains paraffin-embedded rat cardiac muscle in Immunohistochemical analysis.