SYSY Antibodies

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N-Cadherin (CD325)

Cat.No. 363 003; Polyclonal rabbit antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen. Albumin was added for stabilization. For **reconstitution** add 50 µl H_2O to get a 1mg/ml solution in PBS. Then aliquot and store at -20°C to -80°C until use. Antibodies should be stored at +4°C when still lyophilized. Do not freeze! For detailed information, see back of the data sheet.
Applications	**WB**: 1 : 1000 (AP staining) **IP**: yes **ICC**: 1 : 500 up to 1 : 1000 **IHC**: 1 : 500 (see remarks) **IHC-P**: 1 : 500 up to 1 : 1000
Immunogen	Recombinant protein corresponding to AA 746 to 906 from mouse N-Cadherin (UniProt Id: P15116)
Reactivity	Reacts with: rat (Q9Z1Y3), mouse (P15116), human (P19022). Other species not tested yet.
Specificity	Recognizes N-cadherin. The antibody may crossreact to other cadherins due to sequence homology.
Remarks	**IHC**: Fix for 15 min with 4% PFA and 15% picric acid in PBS.

TO BE USED IN VITRO / FOR RESEARCH ONLY
NOT TOXIC, NOT HAZARDOUS, NOT INFECTIOUS, NOT CONTAGIOUS

Background

N-Cadherin or **neural cadherin** also known as **Cadherin 2 (CDH 2)** or NCAD is a type-I classical cadherin, along with E-Cadherin, P-Cadherin, R-Cadherin, and M-Cadherin. This transmembrane protein plays a crucial role in calcium-dependent cell-cell adhesion. In an anti-parallel conformation, its extracellular region interacts with another N-Cadherin molecule on an adjacent cell, forming a linear adhesive "zipper" through repeated dimer interfaces. Its C-terminal, cytoplasmic tail binds to catenins, which in turn link to the actin cytoskeleton (1). N-Cadherin is prevalent in non-epithelial tissues and is expressed in different types of cells such as neural cells, endothelial cells, stromal cells and osteoblasts. It plays an important role in renal epithelial integrity and polarity and is expressed in proximal renal tubules (2). Additionally, N-Cadherin plays a key role in reproductive biology (3) and in myocardium (4). In neural tissue, N-Cadherin replaces E-Cadherin during neurulation, forming strong adherens junctions to maintain tissue architecture and regulates proliferation and differentiation of neural progenitor cells. Cleavage of N-Cadherin modulates adult neural stem cell functional quiescence (5).
N-Cadherin serves as an indicator of ongoing epithelial-to-mesenchymal transition (EMT) and its expression has been correlated with the development of various types of carcinomas. It also promotes angiogenesis and the integrity of blood vessels by ensheathing endothelial and mural cells, stabilizing microvessels (6).

Selected References for 363 003

Plk2 promotes synaptic destabilization through disruption of N-cadherin adhesion complexes during homeostatic adaptation to hyperexcitation.
Abdel-Ghani M, Lee Y, Akli LA, Moran M, Schneeweis A, Djemil S, El Choueiry R, Murtadha R, Pak DTS
Journal of neurochemistry (2023) : . . **WB, IP, ICC; tested species: rat**

A High-Resolution Method for Quantitative Molecular Analysis of Functionally Characterized Individual Synapses.
Holderith N, Heredi J, Kis V, Nusser Z
Cell reports (2020) 324: 107968. . **IHC; tested species: rat**

Choroid plexus epithelial cells express the adhesion protein P-cadherin at cell-cell contacts and syntaxin-4 in the luminal membrane domain.
Christensen IB, Mogensen EN, Damkier HH, Praetorius J
American journal of physiology. Cell physiology (2018) 3145: C519-C533. . **IHC-P; tested species: mouse**

Altered Glutaminase 1 Activity During Neurulation and Its Potential Implications in Neural Tube Defects.
Benavides-Rivas C, Tovar LM, Zúñiga N, Pinto-Borguero I, Retamal C, Yévenes GE, Moraga-Cid G, Fuentealba J, Guzmán L, Coddou C, Bascuñán-Godoy L, et al.
Frontiers in pharmacology (2020) 11: 900. . **WB; tested species: frog**

Selected General References

Sequential binding of calcium leads to dimerization in neural cadherin.
Vunnam N et al. Biochemistry (2011) PubMed:21366346

The E-Cadherin and N-Cadherin Switch in Epithelial-to-Mesenchymal Transition: Signaling, Therapeutic Implications, and Challenges.
Loh CY et al. Cells (2019) PubMed:31547193

Immunolocalization of β-catenin, E-cadherin and N-cadherin in neonate and adult rat kidney.
Terada N et al. J Vet Med Sci (2017) PubMed:28993569

Access the online factsheet including applicable protocols at https://sysy.com/product/363003 or scan the QR-code.

FAQ - How should I store my antibody?

Shipping Conditions

- All our antibodies and control proteins / peptides are shipped lyophilized (vacuum freeze-dried) and are stable in this form without loss of quality at ambient temperatures for several weeks.

Storage of Sealed Vials after Delivery

- **Unlabeled** and **biotin-labeled antibodies** and **control proteins** should be stored at 4°C before reconstitution. **They must not be stored in the freezer when still lyophilized!** Temperatures below zero may cause loss of performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long term storage (several months) may lead to aggregation.
- **Control peptides** should be kept at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- The storage freezer must not be of the frost-free variety ("no-frost freezer"). This cycle between freezing and thawing (to reduce frost-build-up), which is exactly what should be avoided. For the same reason, antibody vials should be placed in an area of the freezer that has minimal temperature fluctuations, for instance towards the back rather than on a door shelf.
- Aliquot the antibody and store frozen (-20°C to -80°C). Avoid very small aliquots (below 20 µl) and use the smallest storage vial or tube possible. The smaller the aliquot, the more the stock concentration is affected by evaporation and adsorption of the antibody to the surface of the storage vial or tube. Adsorption of the antibody to the surface leads to a substantial loss of activity.
- The addition of glycerol to a final concentration of 50% lowers the freezing point of your stock and keeps your antibody at -20°C in liquid state. This efficiently avoids freeze and thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C.

Monoclonal Antibodies

- **Ascites** and **hybridoma supernatant** should be stored at -20°C up to -80°C. **Prolonged storage at 4°C is not recommended!** Unlike serum, ascites may contain proteases that will degrade the antibodies.
- **Purified IgG** should be stored at -20°C up to -80°C. Adding a carrier protein like BSA will increase long term stability. Many of our antibodies already contain carrier proteins. Please refer to the data-sheet for detailed information.

Polyclonal Antibodies

- **Crude antisera**: With anti-microbials added, they may be stored at 4°C. However, frozen storage (-20°C up to -80°C) is preferable.
- **Affinity purified antibodies**: Less robust than antisera. Storage at -20°C up to -80°C is recommended. Adding a carrier protein like BSA will increase long term stability. Most of our antibodies already contain carrier proteins. Please refer to the data-sheet for detailed information.

Fluorescence-labeled Antibodies

- Store as a liquid with 1 : 1 (v/v) glycerol at -20°C. Protect these antibodies from light exposure.

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All our purified antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the amount of deionized water given in the respective datasheet. If higher volumes are preferred, add water as mentioned above and then the desired amount of PBS and a stabilizing carrier protein (e.g. BSA) to a final concentration of 2%. Some of our antibodies already contain albumin. Take this into account when adding more carrier protein.
  For complete reconstitution, carefully remove the lid. After adding water, briefly vortex the solution. You can spin down the liquid by placing the vial into a 50 ml centrifugation tube filled with paper.
- If desired, add small amounts of azide or thimerosal to prevent microbial growth. This is especially recommended if you want to keep an aliquot a 4°C.
- After reconstitution of fluorescence-labeled antibodies, add 1 : 1 (v/v) glycerol to a final concentration of 50%. This lowers the freezing point of your stock and keeps your antibody in liquid state at -20°C.
- Glycerol may also be added to unlabeled primary antibodies. It is a suitable way to avoid freeze-thaw cycles.
- Please refer to our **tips and hints for subsequent storage** of reconstituted antibodies and control peptides and proteins.