

MARK2

Cat.No. 331 003; 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 ₂ O 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: not tested yet ICC: not tested yet IHC: not tested yet IHC-P: not tested yet
Immunogen	Synthetic peptide corresponding to AA 1 to 15 from mouse MARK2 (UniProt Id: Q05512)
Reactivity	Reacts with: rat (O08679), mouse (Q05512). Other species not tested yet.
Specificity	Specific for MARK 2, epitope is present in all four isoforms.

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

Background

The **microtubule-affinity regulating kinase 2 (MARK 2)**, also referred to as Par-1b and EMK 1, was originally discovered by its ability to phosphorylate tau and related microtubule-associated proteins. It is involved in the regulation of many cellular processes like determination of polarity, intracellular signal transduction, transport, and cytoskeletal stability. Four isoforms are known so far. MARK 2 has also been identified as an upstream regulator of PTEN-induced kinase 1 (PINK 1), a mitochondria-targeted serine/threonine kinase. Disbalanced functions of these proteins are connected to neurodegenerative disorders like Alzheimer's and Parkinson's disease.

Selected General References

Emerging modes of PINK1 signaling: another task for MARK2.

Matenia D, Mandelkow EM
Frontiers in molecular neuroscience (2014) 7: 37. .

Elevated MARK2-dependent phosphorylation of Tau in Alzheimer's disease.

Gu G-J, Wu D, Lund H, Sunnemark D, Kvist AJ, Milner R, Eckersley S, Nilsson LN, Agerman K, Landegren U, Kamali-Moghaddam M, et al.
Journal of Alzheimer's disease : JAD (2013) 333: 699-713. .

Automated screening of microtubule growth dynamics identifies MARK2 as a regulator of leading edge microtubules downstream of Rac1 in migrating cells.

Nishimura Y, Applegate K, Davidson MW, Danuser G, Waterman CM
PloS one (2012) 77: e41413. .

Microtubule affinity-regulating kinase 2 (MARK2) turns on phosphatase and tensin homolog (PTEN)-induced kinase 1 (PINK1) at Thr-313, a mutation site in Parkinson disease: effects on mitochondrial transport.

Matenia D, Hempp C, Timm T, Eikhof A, Mandelkow EM
The Journal of biological chemistry (2012) 28711: 8174-86. .

Antagonistic effects of doublecortin and MARK2/Par-1 in the developing cerebral cortex.

Sapir T, Shmueli A, Levy T, Timm T, Elbaum M, Mandelkow EM, Reiner O
The Journal of neuroscience : the official journal of the Society for Neuroscience (2008) 2848: 13008-13. .

Accurate balance of the polarity kinase MARK2/Par-1 is required for proper cortical neuronal migration.

Sapir T, Sapoznik S, Levy T, Finkelshtein D, Shmueli A, Timm T, Mandelkow EM, Reiner O
The Journal of neuroscience : the official journal of the Society for Neuroscience (2008) 2822: 5710-20. .

MARK, a novel family of protein kinases that phosphorylate microtubule-associated proteins and trigger microtubule disruption.

Drewes G, Ebneth A, Preuss U, Mandelkow EM, Mandelkow E
Cell (1997) 892: 297-308. .

Access the online factsheet including applicable protocols at <https://sysy.com/product/331003> 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.