

**Ordering Information**  
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**HGNC Name:** GAPDH  
**UniProt:** P00355  
**RRID:** AB\_2107599  
**Immunogen:** Full length protein purified from pig blood cells  
**Format:** Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>  
**Storage:** Store at 4°C for short term, for longer term at -20°C  
**Recommended dilutions:**  
 WB: 1:1,000 IF/IHC: 1:100.

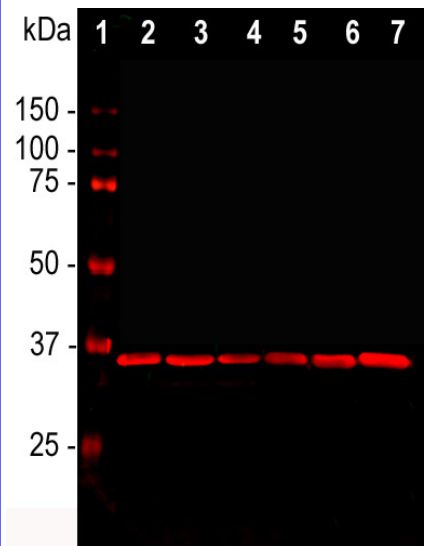
### References:

1. Morgenegg G, et al. Glyceraldehyde-3-phosphate dehydrogenase is a nonhistone protein and a possible activator of transcription in neurons. *J. Neurochem.* 47:54-62 (1986).
2. Schulze H, et al. Rat brain glyceraldehyde-3-phosphate dehydrogenase interacts with the recombinant cytoplasmic domain of Alzheimer's beta-amyloid precursor protein. *J Neurochem.* 60:1915-22 (1993).
3. Burke JR, et al. Huntingtin and DRPLA proteins selectively interact with the enzyme GAPDH. *Nature Med.* 2:347-50 (1996).
4. Dastoor Z, Dreyer J-L. Potential role of nuclear translocation of glyceraldehyde-3-phosphate dehydrogenase in apoptosis and oxidative stress. *J. Cell Sci.* 114:1643-53 (2001).
5. Hara MR, et al. S-nitrosylated GAPDH initiates apoptotic cell death by nuclear translocation following Siah1 binding. *Nat. Cell Biol.* 7:665-74 (2005).
6. Yang J-S, et al. GAPDH inhibits intracellular pathways during starvation for cellular energy homeostasis. *Nature* 561:263-67 (2018).

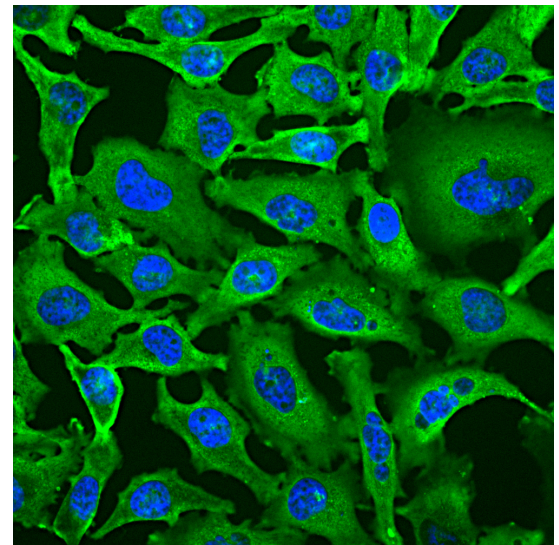
Since we have sold large amounts of this antibody directly to researchers, several publications cite our company as the source of this antibody, see [CiteAb citations for EnCor MCA-1D4](#).

Some idea of how widely used is this antibody when sold through our numerous OEM partners can be obtained from a Google Scholar search for "GAPDH AND 1D4 AND Antibody" or by selecting [here](#).

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC, IHC	Mouse	IgM heavy, κ light	36kDa	Hu, Rt, Ms, Co, Pi, Ho



Western blot analysis of cell line lysates probed with mouse mAb to GAPDH, MCA-1D4, dilution 1:2,000: [1] protein standard, [2] HEK293, [3] HeLa, [4] SH-SY5Y, [5] COS1, [6] NIH-3T3, and [7] C6 cells. The GAPDH antibody reveals a single band at ~37 kDa in all cell lines. GAPDH is a "house keeping" protein, the level of which is relatively unaffected by most experimental manipulations, and, as a result, this antibody has been widely used as a western blot loading control.



Immunofluorescent analysis of HeLa cells stained with mouse mAb to GAPDH, MCA-1D4, dilution 1:100 in green. Blue is Hoechst staining of nuclear DNA. The MCA-1D4 antibody produces strong cytoplasmic staining of healthy cells.

### Background:

Glyceraldehyde 3-phosphate dehydrogenase (GAPDH) is a metabolic enzyme responsible for catalyzing one step in the glycolytic pathway, the reversible oxidative phosphorylation of glyceraldehyde 3-phosphate to produce glyceraldehyde 1-3-bisphosphate. Because GAPDH protein is expressed in large amounts and is required at all times for an important "house keeping" function, levels of GAPDH mRNA are often measured and used as standards in studies of the expression of other mRNAs. Similarly specific antibodies to GAPDH are used to measure GAPDH expression as a protein standard in western blotting experiments, allowing comparison between the level of this protein and others in a cell or tissue. Apart from a role in glycolysis, GAPDH may have other roles, such as in the activation of transcription (1), and binds to a variety of other proteins, including the amyloid precursor protein, the polyglutamine tracts of Huntingtin (2,3). The protein may also have a role in the regulation of apoptosis, and interestingly migrates from the cytoplasm into the nucleus when cells become apoptotic (4). The control of this is mediated by NO mediated S-nitrosylation of GAPDH in the cytoplasm which then binds to and stabilizes the Siah1 E3 ubiquitin ligase which enters the nucleus along with nitrosylated GAPDH and initiates specific protein degradation events leading to the activation of a nuclear cell death pathway (5). Recently GAPDH was shown to be a substrate for the 5'-AMP dependent protein kinase which results in the redistribution of cellular GAPDH to cytosolic membranes and the inhibition of intracellular transport, a component of the cellular response to starvation (6).

The MCA-1D4 antibody was raised against extensively purified pig GAPDH. The antibody has been widely used as a western blotting standard by many labs for many years and is known to detect GAPDH in a variety of mammalian species including human, rat and mouse. Current data suggests that the epitope for the antibody is within the peptide KYDDIKKVVVKQASEGPLKGI, amino acids 254-273 of the human sequence, a peptide which is highly conserved across mammalian species. The antibody produces a single clean band on western blots of typical cell and tissue extracts. We also market a widely used rabbit polyclonal antibody to GAPDH, [RPCA-GAPDH](#) with similar properties to MCA-1D4.

**FOR RESEARCH USE ONLY. NOT INTENDED FOR DIAGNOSTIC OR THERAPEUTIC USE.**

### Abbreviation Key:

**mAb—Monoclonal Antibody pAb—Polyclonal Antibody WB—Western Blot IF—Immunofluorescence ICC—Immunocytochemistry IHC—Immunohistochemistry E—ELISA Hu—Human Mo—Monkey Do—Dog Rt—Rat Ms—Mouse Co—Cow Pi—Pig Ho—Horse Ch—Chicken Dr—D. rerio Dm—D. melanogaster Sm—S. mutans Ce—C. elegans Sc—S. cerevisiae Sa—S. aureus Ec—E. coli.**