

DESCRIPTION

Species Reactivity	Human
Specificity	Detects human Isocitrate Dehydrogenase 1/IDH1 in ELISAs and Western blots.
Source	Monoclonal Mouse IgG ₁ Clone # 843219
Purification	Protein A or G purified from hybridoma culture supernatant
Immunogen	<i>E. coli</i> -derived recombinant human Isocitrate Dehydrogenase 1/IDH1 Ser2-Leu414 Accession # O75874
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details. *Small pack size (-SP) is supplied as a 0.2 µm filtered solution in PBS.

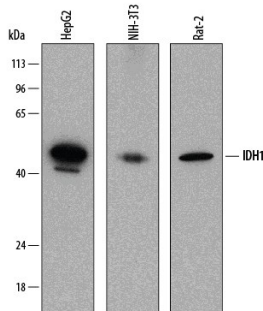
APPLICATIONS

Please Note: Optimal dilutions should be determined by each laboratory for each application. *General Protocols* are available in the *Technical Information* section on our website.

	Recommended Concentration	Sample
Western Blot	0.25 µg/mL	See Below
Immunocytochemistry	8-25 µg/mL	See Below
Immunohistochemistry	8-25 µg/mL	See Below

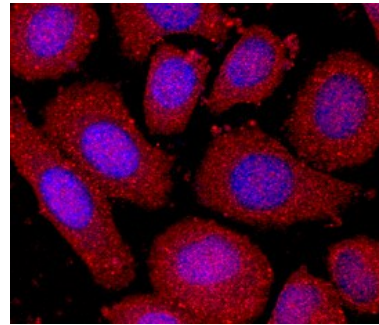
DATA

Western Blot



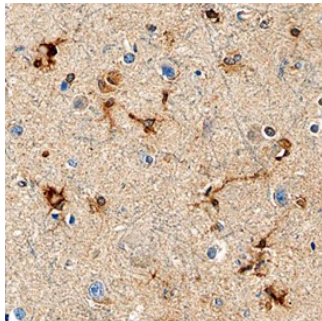
Detection of Human, Mouse, and Rat Isocitrate Dehydrogenase 1/IDH1 by Western Blot. Western blot shows lysates of HepG2 human hepatocellular carcinoma cell line, NIH-3T3 mouse embryonic fibroblast cell line, and Rat-2 rat embryonic fibroblast cell line. PVDF membrane was probed with 0.25 µg/mL of Mouse Anti-Human Isocitrate Dehydrogenase 1/IDH1 Monoclonal Antibody (Catalog # MAB7049) followed by HRP-conjugated Anti-Mouse IgG Secondary Antibody (Catalog # HAF018). A specific band was detected for Isocitrate Dehydrogenase 1/IDH1 at approximately 46 kDa (as indicated). This experiment was conducted under reducing conditions and using Immunoblot Buffer Group 1.

Immunocytochemistry



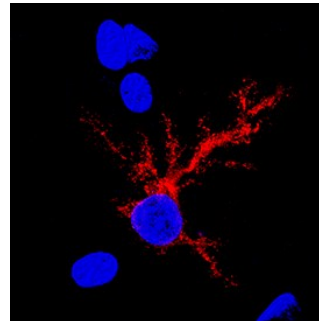
Isocitrate Dehydrogenase 1/IDH1 in SK-BR-3 Human Cell Line. Isocitrate Dehydrogenase 1/IDH1 was detected in immersion fixed SK-BR-3 human breast cancer cell line using Mouse Anti-Human Isocitrate Dehydrogenase 1/IDH1 Monoclonal Antibody (Catalog # MAB7049) at 10 µg/mL for 3 hours at room temperature. Cells were stained using the NorthernLights™ 557-conjugated Anti-Mouse IgG Secondary Antibody (red; Catalog # NL007) and counterstained with DAPI (blue). Specific staining was localized to cytoplasm. View our protocol for [Fluorescent ICC Staining of Cells on Coverslips](#).

Immunohistochemistry



Isocitrate Dehydrogenase 1/IDH1 in Human Brain. Isocitrate Dehydrogenase 1/IDH1 was detected in immersion fixed paraffin-embedded sections of human brain (cortex) using Mouse Anti-Human Isocitrate Dehydrogenase 1/IDH1 Monoclonal Antibody (Catalog # MAB7049) at 15 µg/mL overnight at 4 °C. Before incubation with the primary antibody, tissue was subjected to heat-induced epitope retrieval using Antigen Retrieval Reagent-Basic (Catalog # CTS013). Tissue was stained using the Anti-Mouse HRP-DAB Cell & Tissue Staining Kit (brown; Catalog # CTS002) and counterstained with hematoxylin (blue). Specific staining was localized to astrocytes. View our protocol for [Chromogenic IHC Staining of Paraffin-embedded Tissue Sections](#).

Immunohistochemistry



Isocitrate Dehydrogenase 1/IDH1 in Rat Brain. Isocitrate Dehydrogenase 1/IDH1 was detected in perfusion fixed frozen sections of rat brain using Mouse Anti-Human Isocitrate Dehydrogenase 1/IDH1 Monoclonal Antibody (Catalog # MAB7049) at 15 µg/mL overnight at 4 °C. Tissue was stained using the NorthernLights™ 557-conjugated Anti-Mouse IgG Secondary Antibody (red; Catalog # NL007) and counterstained with DAPI (blue). Specific staining was localized to glial cell cytoplasm. View our protocol for [Fluorescent IHC Staining of Frozen Tissue Sections](#).

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 0.5 mg/mL in sterile PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. *Small pack size (-SP) is shipped with polar packs. Upon receipt, store it immediately at -20 to -70 °C
Stability & Storage	Use a manual defrost freezer and avoid repeated freeze-thaw cycles. <ul style="list-style-type: none"> • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 6 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Isocitrate Dehydrogenase 1 (IDH1) catalyzes the oxidative decarboxylation of isocitrate to α -ketoglutarate. There are two subclasses in the IDH family, one of them utilizing NADP⁺ as the electron acceptor and the other using NAD⁺ (1). The protein encoded by this gene is the NADP⁺-dependent isocitrate dehydrogenase found in the cytoplasm and peroxisomes. In peroxisomes, IDH1 generates the NADPH required for intraperoxisomal reduction reactions. Mutations of Arg132 of human IDH1 result in a reduced ability of the enzyme to convert isocitrate to α -ketoglutarate, but the enzyme acquires the ability to generate 2-hydroxyglutarate (2HG) from α -ketoglutarate (2). Elevated levels of the metabolite 2HG are associated with a high risk of malignant brain tumors. Arg132 mutations of IDH1 are common in high-grade gliomas, but not in other types of tumors (3).

References:

1. Nekrutenko, A. *et al.* (1998) *Mol. Biol. Evol.* **15**:1674.
2. Dang, L. *et al.* (2009) *Nature* **462**:739.
3. Bleeker, F.E. *et al.* (2009) *Hum. Mutat.* **30**:7.