**Human Isocitrate Dehydrogenase 1/IDH1 Antibody**

**Monoclonal Mouse IgG, Clone # 843219**

**Catalog Number:** MAB7049

**DESCRIPTION**

**Species Reactivity:** Human

**Specificity:** Detects human Isocitrate Dehydrogenase 1/IDH1 in ELISAs and Western blots.

**Source:** Monoclonal Mouse IgG, Clone # 843219

**Purification:** Protein A or G purified from hybridoma culture supernatant

**Immunogen:** *E. coli*-derived recombinant human Isocitrate Dehydrogenase 1/IDH1

**Isocitrate Dehydrogenase 1/IDH1**

**Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details.**

**Formulation:** Lyophilized from 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
Immunocytochemistry | 8-25 µg/mL
Immunohistochemistry | 8-25 µg/mL

**Knockout Validated**

Isocitrate Dehydrogenase 1/IDH1 is specifically detected in HeLa human cervical epithelial carcinoma parental cell line but is not detectable in Isocitrate Dehydrogenase 1/IDH1 knockout HeLa cell line.

**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 # HA017R). 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 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 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. Tissue was stained using the Anti-Mouse HRP-DAB Cell & Tissue Staining Kit (brown; Catalog # CS009) 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.
**Knockout Validated Western Blot Shows Human Isocitrate Dehydrogenase 1/IDH1 Specificity by Using Knockout Cell Line.**

Western blot shows lysates of HeLa human cervical epithelial carcinoma parental cell line and Isocitrate Dehydrogenase 1/IDH1 knockout HeLa cell line (KO). 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) in the parental HeLa cell line, but is not detectable in knockout HeLa cell line. GAPDH (Catalog # MAB5718) is shown as a loading control. This experiment was conducted under reducing conditions and using Immobilon

**PREPARATION AND STORAGE**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
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<tbody>
<tr>
<td>Reconstitution</td>
<td>Reconstitute at 0.5 mg/mL in sterile PBS.</td>
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<tr>
<td>Shipping</td>
<td>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</td>
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| Stability & Storage| Use a manual defrost freezer and avoid repeated freeze-thaw cycles.  
  - 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:**