Mouse Anti-IDH1-R132H (Isocitrate Dehydrogenase-R132H) [HMab-1]: MC0977-1, MC0977RTU7

Intended Use: For Research Use Only

Description: Eukaryotic cells express three forms of isocitrate dehydrogenase (IDH). These enzymes catalyze the oxidative decarboxylation of isocitrate into a-ketoglutarate (aKG) utilizing either NAD or NADP as cosubstrates. A member of this family, IDH1, is the human cytoplasmic NADP-specific enzyme. Its subcellular localization was shown to be in both peroxisomes and the cytoplasm. Although the function and structure of the protein has been well characterized, mutations in the gene have only recently been implicated in cancer after a genome-wide mutation study of giloblastomas, acute myeloid leukemias (AML) and chondrosarcomas. Mutations in IDH1 are specific to Arg132 (R132) and endow them with the function of generating 2-hydroxyglutarate (2HG) instead of aKG. This product alters gene transcription through effects on DNA and histone methylation. Several IDH1 mutations exist, including R132H, R132C, R132S, R132G and R132L. Each may result in different tumor type with varied malignant progression. The most frequent known mutation (>90%) is the alteration of arginine to histidine (R132H). Hence, antibodies that recognize the IDH1R132H mutation can be useful for the detection of mutation-bearing tumors like gliomas. The high frequency of IDH1 R132H mutation in lowgrade and anaplastic gliomas and secondary glioblastomas correlates with favorable patient survival times. Rational IDH1 R132H testing supports neuropathological differential assay. The high frequency and distribution of the IDH1 R132H mutation among specific brain tumor entities allow the highly sensitive and specific discrimination of various tumors by immunohistochemistry, such as anaplastic astrocytoma from primary glioblastoma or diffuse astrocytoma WHO grade II from pilocytic astrocytoma or ependymoma. Noteworthy is the discrimination of the infiltrating edge of tumors with IDH1 mutation from reactive gliosis. This antibody is highly useful for tumor classification and in detecting single infiltrating tumor cells.

Specifications

Clone: HMab-1
Source: Mouse
Isotype: IgG1k
Reactivity: Human
Localization: Cytoplasm
Formulation: Purified antibody in PBS and Tris-Glycine (pH7.4) containing < 0.09% sodium azide (NaN3)
Storage: Store at 2°- 8°C
Applications: IHC, ICC/IF, WB
Package:

Description	Catalog No.	Size
IDH1-R132H Concentrated	MC0977-1	0.1 ml
IDH1-R132H Prediluted	MC0977RTU7	7 ml

IHC Procedure*

Positive Control Tissue: Oligodendroglioma, diffuse astrocytoma
Concentrated Dilution: 10-30
Pretreatment: Citrate pH6.0 or EDTA pH8.0, 15 minutes using Pressure Cooker, or 30-60 minutes using water bath at 95°-99°C
Incubation Time and Temp: 30-60 minutes @ RT
Detection: Refer to the detection system manual

* Result should be confirmed by an established diagnostic procedure.
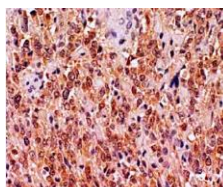
FFPE human gliomas stained with anti-IDH1-R132H using DAB

References

1. Intraoperative mass spectrometry mapping of an onco-metabolite to guide brain tumor surgery. Sandro Santagata et. Al. PNAS, 111(30), 11121-11126, 2014.
2. Establishment of a novel monoclonal antibody SMab-1 specific for IDH1-R132S mutation. Mika Kato Kaneko et. Al Biochemical and Biophysical Research Communications, 406(4), 608-613, 2011.
3. A monoclonal antibody IMab-1 specifically recognizes IDH1R132H, the most common glioma-derived mutation. Yukinari Kato et. Al. Biochemical and Biophysical Research Communications, 390(3), 547-551, 2009.