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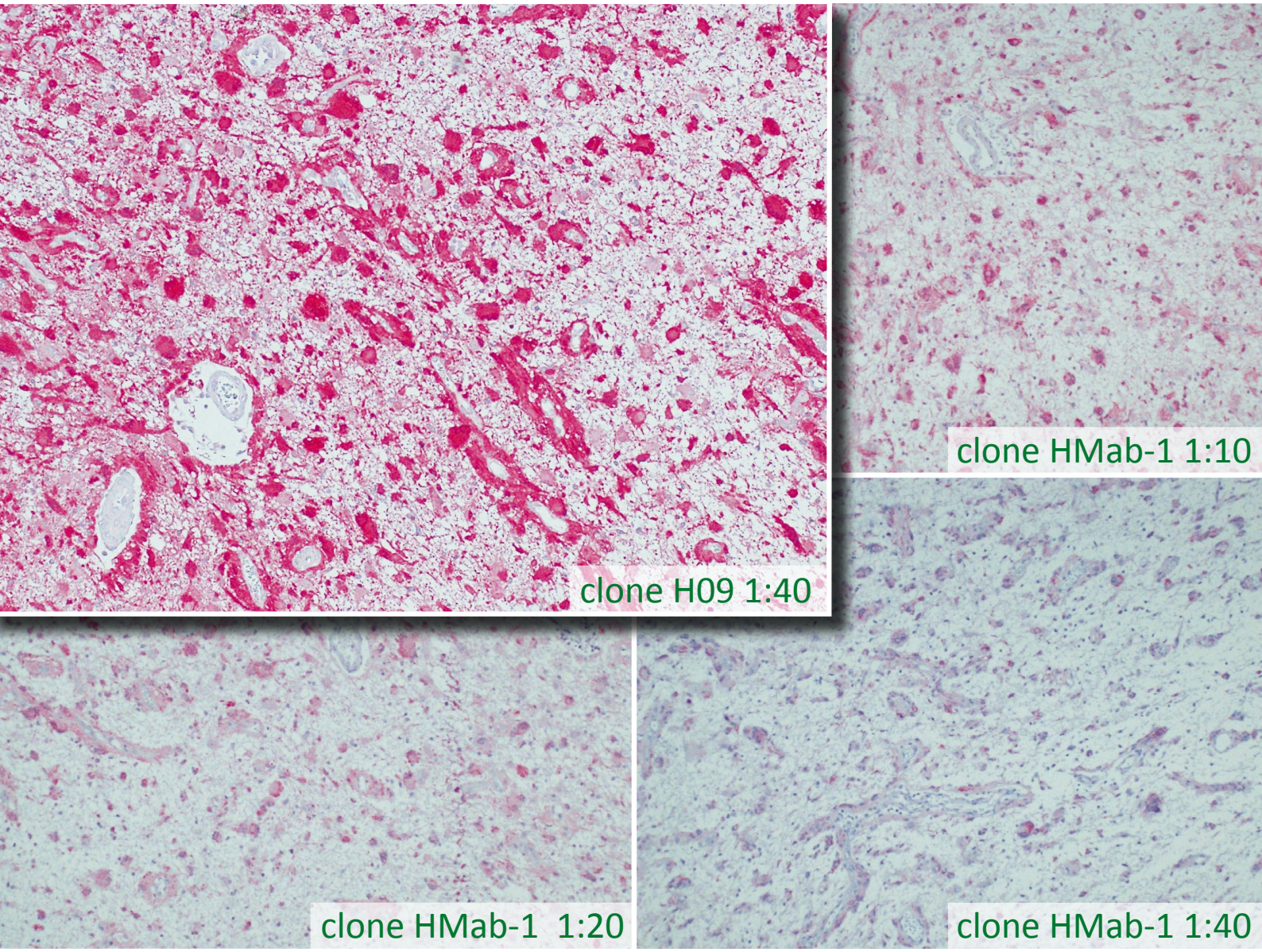
IDH1 R132H

Antibody clone H09 is the gold standard for precision diagnosis in brain tumors



Immunohistochemistry of human IDH1 R132H in formalin-fixed paraffin-embedded brain tissue sections. The IDH1 R132H mutation specific monoclonal antibody clone H09 displays a strong and specific reaction at a 1:40 dilution. In contrast, at a 1:40 dilution antibody clone HMab-1 shows a very faint staining which remains weak even at lower dilutions of 1:20 and 1:10. All sections were stained by the same indirect alkaline phosphatase method according to standard procedures with antigen retrieval by high-temperature heating in citrate buffer (pH 6.0) and counter-staining with Hematoxylin.

Gold Standard for Superior Staining

Specificity	IDHR1 R132H
Clone	H09
Host / Isotype	Mouse / IgG2A
Application	IHC-FFPE, IHC-F, WB
Dilution	1:20-1:40 or ready to use

Product code	Quantity
DIA-H09	0,5 ml

Order your complimentary sample	
DIA-H09-LM	1,5 ml RTU

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Gesellschaft für biochemische, immunologische und mikrobiologische Diagnostik mbH

diaH09-JA 10-2014V1INTL

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Minireview

Clinical Relevance of IDH1 R132H Staining for Brain Tumor Diagnosis

Gliomas constitute approximately 20 percent of brain tumors. Two common types of gliomas are astrocytomas and oligodendrogliomas. Isocitrate dehydrogenase 1 (IDH1) R132H mutations occur in approximately 70% of astrocytomas and oligodendroglial tumors.

Antibody clone H09 is specific for the R132H mutation of IDH1, allowing the pathologists to confirm a diagnosis of astrocytomas or oligodendrogliomas. The antibody aids in the detection of individual cancer cells in the tissue zone surrounding the tumor and in the infiltration zone of diffuse astrocytomas. Moreover, several independent studies have shown that IDH1 R132H mutations in lowgrade and anaplastic gliomas and secondary glioblastomas correlate with favorable patient survival times.

About 95% of all IDH1/2 mutations are in IDH1, and among those over 90% are type R132H. This makes an R132H-specific antibody an excellent screening test. The sensitivity and specificity of the anti-IDH1 R132H antibody clone H09 to detect positive tumor cells have been widely demonstrated in several studies.

The National Comprehensive Cancer Network (NCCN) and the EURO-CNS research committee recommend for optimal testing of the IDH1 mutation status in gliomas to first perform immunohistochemical testing with the anti-IDH1 R132H antibody, then to follow up with DNA-sequencing only when the results from immunohistochemistry are negative.

The strong diagnostic and prognostic implications of IDH1 mutations implicate that routine IDH1 R132H immunostaining needs to be considered as an initial screening method in all gliomas, including suboptimal biopsies suspected of harboring glioma cells. Only in case of a negative staining result (low-grade or anaplastic astrocytoma, oligodendroglioma, oligoastrocytoma or a glioblastoma with oligodendroglial component) direct sequencing for less common IDH1 and IDH2 mutations should be performed.

Main Advantages IDH1 R132H IHC vs. PCR

- Faster turnaround time
- Lower cost
- Single positive cell detection, missed by even the most sensitive PCR tests

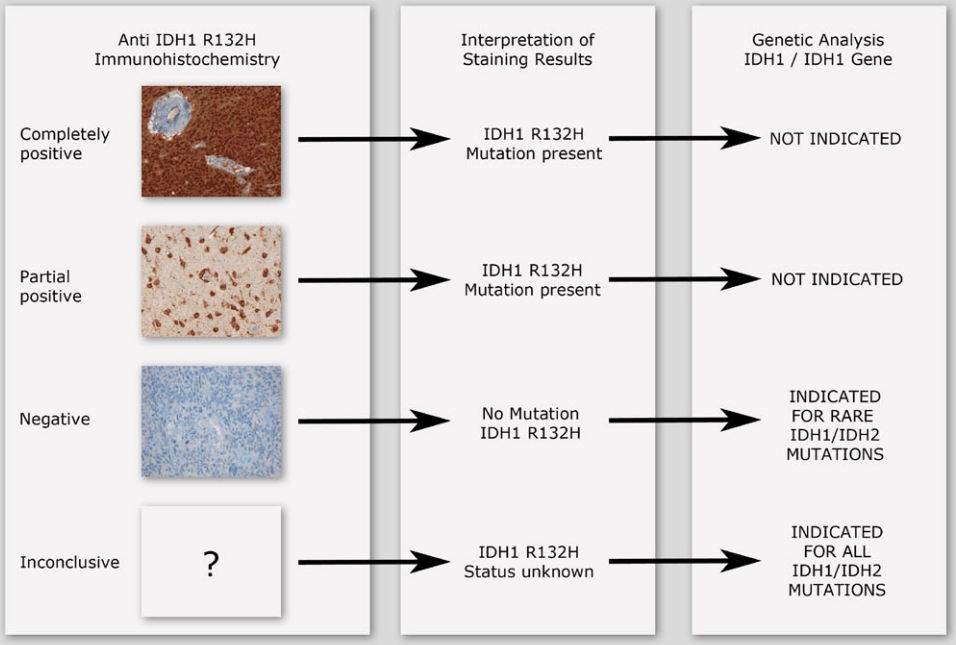

Fig.: Recommended decision tree for testing of IDH1 mutation in diffuse gliomas (Modified from Preusser et al., Clin Neuropathol. 2011; 30(5):217-30.)

Diagnostic Applications

IDH1 R132H immunohistochemistry has changed routine diagnostic neuropathology, because it allows narrowing down the possible diagnosis to the group of diffusely infiltrating gliomas of WHO Grades II and III and secondary glioblastoma and to a certain extent to primary glioblastoma. The determination of the IDH1 mutation status strongly supports the differential diagnosis between an anaplastic glioma and a glioblastoma. Furthermore, the detection of even single IDH1 R132H-positive cells clearly supports the diagnosis of a diffusely infiltrating glioma. Again, the detection of positive cells by IDH1 R132H immunohistochemistry allows a clear and safe distinction between low-grade glioma and reactive gliosis.

Prognostic Implications

The presence of IDH mutations in diffuse gliomas has been shown to be associated with favorable patient survival time in several studies. This effect seems to be independent from other strong prognostic factors and correlated with 1p/19q deletion and MGMT promoter methylation. In studies pooling low-grade astrocytomas and oligodendrogliomas the IDH mutation status was prognostic for overall and progression free survival. In primary glioblastoma IDH1 mutational status has been reported to be the only factor that showed significant association with patient survival times. The consistent finding of a more favorable outcome of diffuse glioma patients with IDH mutations implies that IDH testing might be useful for prognostic considerations in the clinical setting.

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