dianova™
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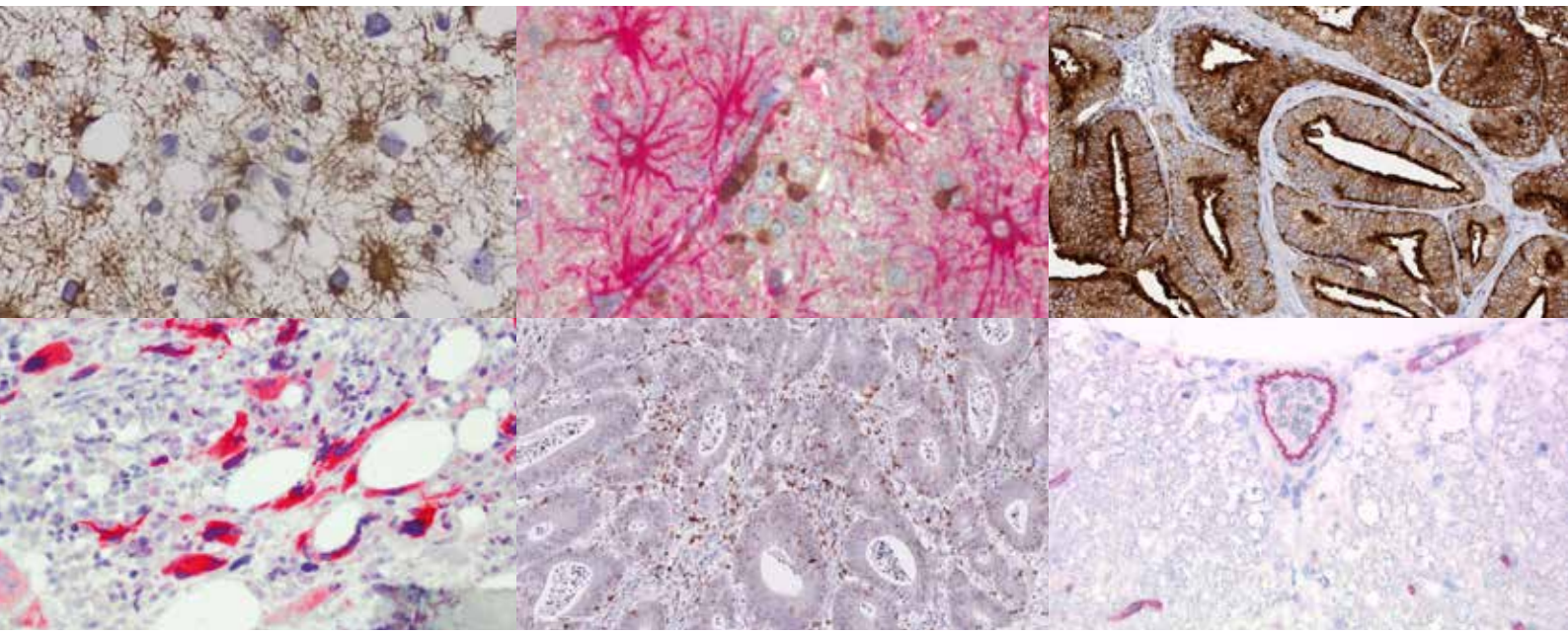
Antibodies



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The BIOZOL brand dianova™ presents a growing selection of premium antibodies available world wide. Highlights are outstanding antibodies for human pathology, that are suitable for standard formalin-fixed paraffin-embedded tissue sections and allow excellent staining results. dianova™ antibodies are developed and validated in close cooperation with leading German pathological institutes.

Content

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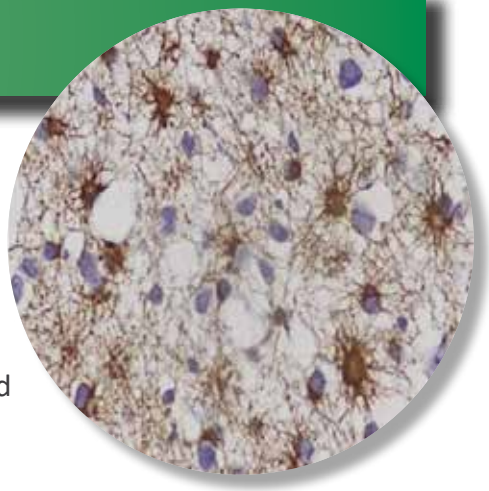
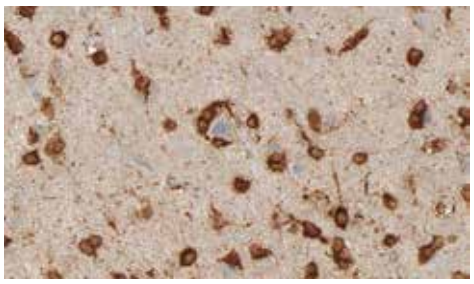
Neuropathology Antibodies

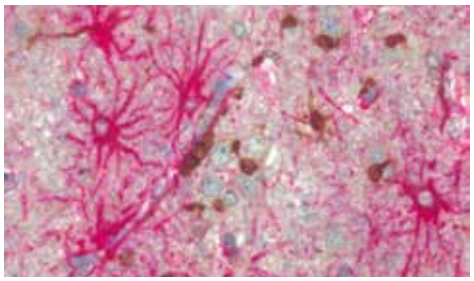


Clinical Relevance of IDH1 R132H Staining for Brain Tumor Diagnosis

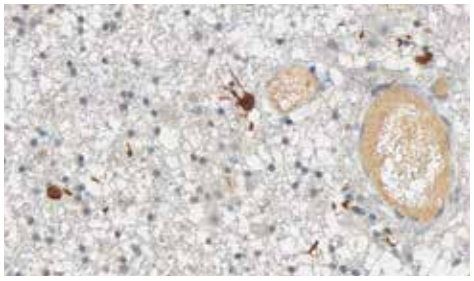
Gliomas are by far the most common brain tumors. Two common types of gliomas are astrocytomas and oligodendrogliomas. Isocitrate dehydrogenase 1 (IDH1) R132H mutations occur in approximately 70% of astrocytomas and oligodendroglial tumors.



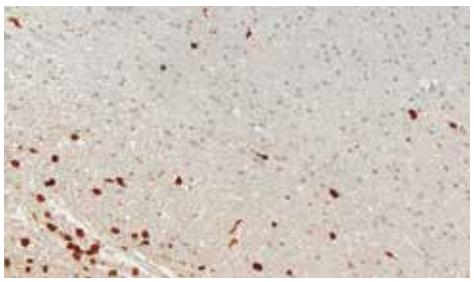
Cortex infiltrated by oligodendroglioma



Double staining of GFP and clone H09



Identification of single tumor cells



Infiltrating glioma cells

Anti-IDH1 R132H antibody clone H09 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 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.

Anti-IDH1 R132H clone H09 (Ms)		
	Reactivity	Human
	Clone	H09
	Application	IHC-P, WB
SKU	**Quantity**	**Format**
DIA-H09	500 µl	conc. (IVD)
DIA-H09-L	7 ml	RTU (RUO)
DIA-H09-SB-01	100 µg	w/o BSA (RUO)

Clone H09 is the benchmark for classification of diffuse Gliomas. Visit our website to find additional information and a link to a list of references.

180+ References

www.dianova.com/IDH1R132H/

Pictures courtesy of Prof. Dr. med. Andreas von Deimling, Department of Neuropathology, University of Heidelberg / Clinical Cooperation Unit Neuropathology, German Cancer Research Center (DKFZ).

Why Should I Use Anti-IDH1 R132H and ATRX IHC Before Molecular Testing?

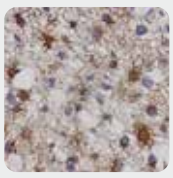
The routine practical approach for diagnosing astrocytomas and oligodendrogliomas begins with performing IHC for ATRX and IDH1 R132H expression. Stepwise analysis of molecular parameters with initial IHC for ATRX and IDH1 R132H followed by 1p/19q analysis and then by IDH sequencing significantly reduces the number of molecular tests required for unequivocal diagnosis (Reuss et al., 2015).

ATRX

ATRX mutations in gliomas result in the loss of nuclear ATRX expression, which can be diagnosed by IHC. Loss of ATRX expression is close to being mutually exclusive to 1p/19q co-deletion.

Biomarker	Diffuse glioma with IDH mutation & 1p/19q-deletion (oligodendroglioma)	Diffuse glioma with IDH mutation	Diffuse glioma without IDH mutation
IDH1/2	mutated	mutated	wildtype
1p/19q	co-deleted	intact	intact
ATRX	nuclear expression	loss of nuclear expression	nuclear expression
hTERT-Promotor mutations	common	rare	common
Typical histological findings and prognosis			
Histology	oligodendroglial	astrocytic	astrocytic
WHO grading	II or III	II or III (rare IV)	IV (rare II or III)
Median Survival	>15 years	8-12 years	<2-3 years

Anti-ATRX clone AX1 (Ms)		
	Reactivity	Human
	Clone	AX1
	Application	IHC-P
SKU	Quantity	Format
DIA-AX1	500 µl	conc. (IVD)

Anti-GFAP clone IF3 (Ms)		
	Reactivity	Human
	Clone	IF3
	Application	IHC-P, WB
SKU	Quantity	Format
DIA-700-P05	500 µl	conc. (RUO)

Anti-IDH1 wildtype clone W09 (Ms)		
	Reactivity	Human
	Clone	W09
	Application	IHC-P, IHC-F, WB
SKU	Quantity	Format
DIA-W09	500 µl	conc. (RUO)

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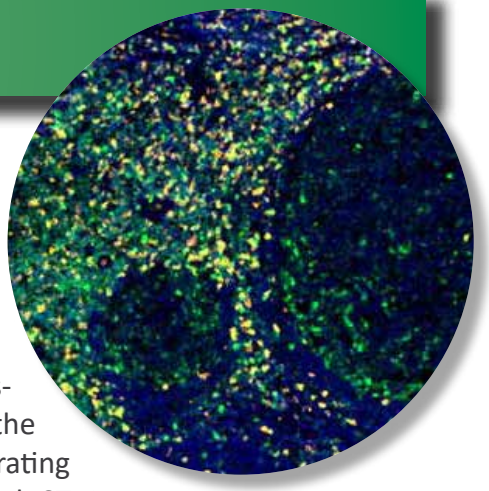
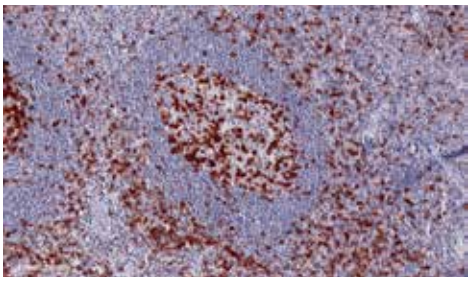
Immuno-Oncology Antibodies

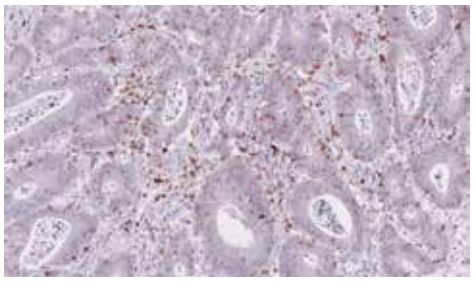


Immune Checkpoint Marker Detection in Formalin-fixed Paraffin-embedded Tumors

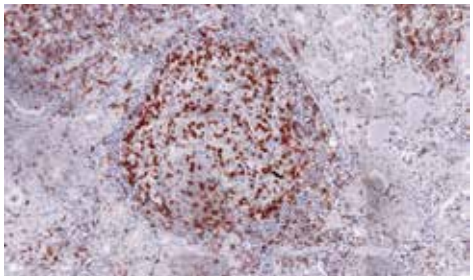
A growing number of immune checkpoints emerge as targets for anticancer therapy. Cancer cells and the cells of the surrounding microenvironment have been shown to upregulate the expression of components to suppress the antitumor immune response by generating coinhibitory signals. So far, PD-1 and CTLA-4 emerged as the most successful immune targets for anticancer therapies and PD-L1 (PL-1 ligand) detection has become a standard in routine pathology. The recently discovered TIGIT (T cell immunoreceptor with Ig and ITIM domains) pathway provides significant therapeutic promise and components of the „TIGIT-axis“, like CD112/CD112R have become attractive targets. The dianova brand antibody development program concentrates on monoclonal antibodies against immune checkpoint targets for immunohistochemical application in standard FFPE human tumor tissues for diagnostic purposes.



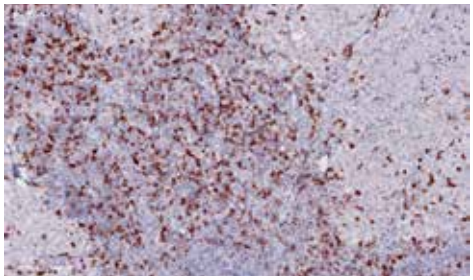
Normal human tonsil with numerous TIGIT-positive lymphocytes



Tumor infiltrating TIGIT-positive lymphocytes in colorectal carcinoma



TIGIT-positive inflammatory lymphoid infiltrate in Hashimoto thyreoiditis



Sarcoid granuloma interspersed with TIGIT-positive lymphocytes

IHC of Human TIGIT in Formalin-fixed Paraffin-embedded Tissue Sections

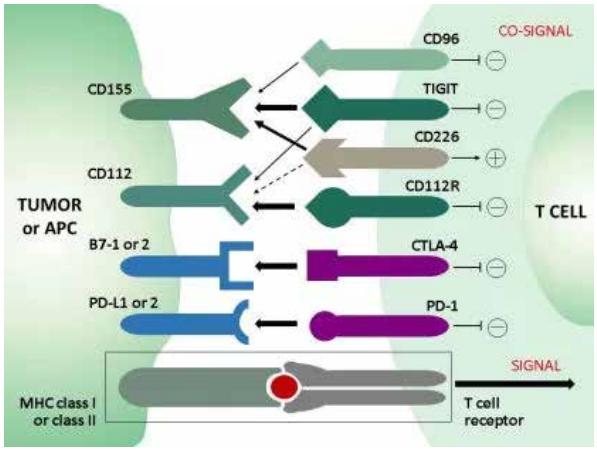
Clone TG1 is the first monoclonal antibody detecting TIGIT in standard FFPE tissue. It has been validated for the identification of TIGIT positive T cells infiltrating human tumors in the tumor microenvironment under pathological conditions. Immunohistochemical application of monoclonal antibody TG1 may provide valuable information for clinical research and potential therapeutic interventions specifically targeting the TIGIT-related tumor immunology checkpoint. Clone TG2 shows an even stronger staining intensity, when compared on tonsil sections

Anti-TIGIT clone TG1 / TG2 (Ms)		
	Reactivity	Human
	Clone	TG1 or TG2
	Application	IHC-P
SKU	**Quantity**	**Format**
DIA-TG1-M	100 µl	conc. (RUO)
DIA-TG2-M	100 µl	conc. (RUO)
DIA-TG1-SB-05	500 µg	w/o BSA (RUO)

www.dianova.com/TIGIT/

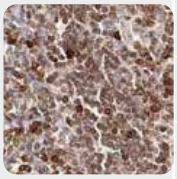
Pictures courtesy of Andrea Hinsch and Niclas Blessin, Institute of Pathology, University Hospital Eppendorf (UKE), Hamburg, Germany.

T Cell Co-Signaling Receptors Regulate TCR Stimulation and are Effective Targets for Checkpoint Blockade to Restore T Cell Function of Exhausted T Cells in Human Cancer.



In normal immune homeostasis co-inhibitory and co-stimulatory receptors on T cells negatively and positively regulate the TCR stimulation in concerted action thereby fine tuning the T cell activation to limit unwanted self-tissue damage. In acute infection CD8 effector T cells give rise to memory cells after clearance of the pathogen. A persistent antigenic stimulation and inflammation either with nonself antigens in chronic infection or with self-antigens in the tumor microenvironment in cancer, however, leads to a progressive loss of function in CD8 T cells, referred to as "T cell exhaustion". A phenotypic hallmark of exhausted CD8 T cells is the upregulation and sustained expression of multiple and different combinations of inhibitory receptors (immune checkpoints), including PD-1, CTLA-4, TIM-3, LAG-3, and others, such as TIGIT or the recently discovered novel immune checkpoint CD112R. This implies that inhibitory receptors co-regulate T cell exhaustion. The involvement of inhibitory receptors in T cell dysfunction led to the development of new therapeutic strategies aiming at blocking the inhibitory receptors with monoclonal antibodies (checkpoint blockade) to restore the T cell function. The outstanding clinical success of therapies with checkpoint inhibitors against PD-1, PD-L1 or CTLA-4 in terms of overall survival of cancer patients proves the therapeutic potential of immune checkpoints and gives rise to new promising targets and combinatorial approaches for immune checkpoint blockade strategies. Monoclonal antibodies against TIGIT did not only block its inhibitory effect but also shifted the balance in favor to the co-activating receptor CD226 which shares the TIGIT ligands. TIGIT and CD226 form a pathway that is analogous to that of the co-inhibitory receptor CTLA-4 and the co-activating receptor CD28.

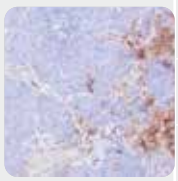
Anti-CD112R/PVRIG clone R12 (Ms)



Reactivity	Human
Clone	R12
Application	IHC-P, WB

SKU	Quantity	Format
DIA-R12	100 µl	conc. (RUO)
DIA-R12-SB-01	100 µg	w/o BSA (RUO)

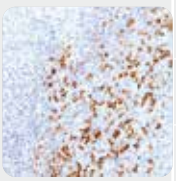
Anti-PD-L1 clone HL1041 (Rb)



Reactivity	Human
Clone	HL1041
Application	IHC-P, IHC-F

SKU	Quantity	Format
IHC-184010	100 µl	conc. (RUO)

Anti-PD-1 clone JAD1 (Ms)



Reactivity	Human
Clone	JAD1
Application	IHC-P

SKU	Quantity	Format
DIA-PD1-OD	100 µl	conc. (IVD)

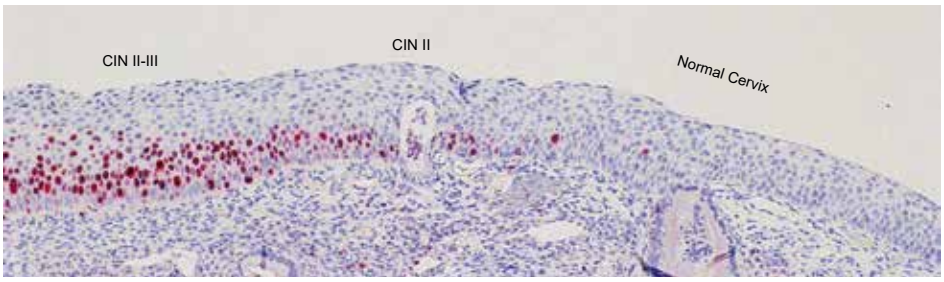
Additional Immuno-Oncology Antibodies:

Specificity	Reactivity	Clone	Application	SKU	Quantity	Format
PD-L1	Human	HL1041 (Rb)	IHC-P, IHC-F	DIA-PDL1-OD	100 µl	concentrate (IVD)
FOXP3	Human	FX3 (Ms)	IHC-P, IHC-F, WB	DIA-FX3	100 µl	concentrate (RUO)
CD8	Human	TC8 (Ms)	IHC-P, IHC-F, WB	DIA-TC8	500 µl	concentrate (RUO)
CD73	Human	CD73 (Ms)	IHC-P, IHC-F	DIA-KK3	500 µl	concentrate (RUO)

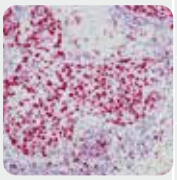
General Pathology Antibodies

Anti-Ki-67 - Reference Marker for Cellular Tumor Proliferation

Antibodies directed against the Ki-67 antigen identify actively dividing cells at all stages of the cell cycle (late G1, S, M and G2 phases), but do not recognize cells in G0 phase. In diagnostic histopathology, Ki-67 has been used as a marker for cell proliferation of solid tumors and hematological malignancies. A correlation between the histopathological grade and the Ki-67 index has been demonstrated for many neoplasms.

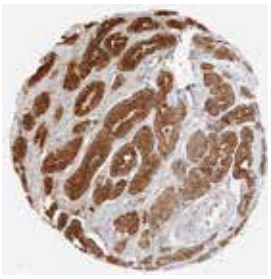
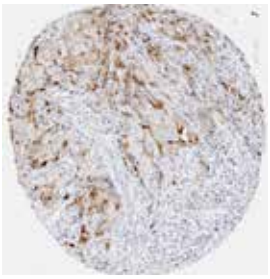


Ki-67 immunostaining with clone Ki-67P. Uterine cervix. The normal cervix epithelium is Ki-67 negative in contrast to the areas with a CIN II and CIN II-III (Pictures courtesy of Prof. H Stein, Berlin).

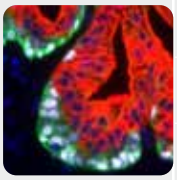
Anti-Ki-67 clone Ki-67P (Ms)		
	Reactivity	Human
	Clone	Ki-67P
	Application	IHC-P, IHC.F, WB
SKU	**Quantity**	**Format**
DIA-670-P05	500 µl	conc. (CE-IVD)
DIA-670-P1	1 ml	conc. (CE-IVD)

Anti-PSA Antibody - Validated on More Than 20,000 Cancer Tissue Samples

Anti-PSA (prostate specific antigen) clone HAM18 stands out among more than 2,000 commercially available PSA antibodies because of its documented high specificity and sensitivity for recognition of prostatic cancer and is also suitable for multiplex assays.

PSA staining in a prostate cancer (0.6 mm tissue microarray spot, IHC with clone HAM18). Left: Strong apical predominance of PSA staining in a prostate cancer. Middle: Loss of apical PSA staining and intense cytoplasmic PSA staining in a prostate cancer. Right: Decreased PSA expression of prostate cancer cells resulting in strongly reduced PSA staining.

Anti-PSA clone HAM18 (Ms)		
	Reactivity	Human
	Clone	HAM18
	Application	IHC-P, IHC-F, ELISA
SKU	**Quantity**	**Format**
DIA-PSA	500 µl	conc. (RUO)

Pictures courtesy of R. Simon, Institute of Pathology, University Hospital Eppendorf (UKE), Hamburg, Germany.

Specificity	Reactivity	Clone	Application	SKU	Quantity	Format
BRAF (V600E Mutant)	Human	IHC600 (Ms)	IHC-P, IHC-F, ELISA	**IHC-184011**	100 µl	concentrate (IVD)
CA19-9	Human	GT933 (Ms)	IHC-P, IHC-F	**IHC-184011**	100 µl	concentrate (RUO)
CD138 (Syndecan-1)	Human	JASY1 (Ms)	IHC-P	**DIA-SY1-OD**	100 µl	concentrate (IVD)
MUC5AC	Human	JAC5 (Ms)	IHC-P	**DIA-MUC-OD**	100 µl	concentrate (IVD)
p16 (CDKN2A)	Human	JAP16 (Ms)	IHC-P	**DIA-P16-OD**	100 µl	concentrate (IVD)
p53	Human	CC53 (Ms)	IHC-P, IHC-F, WB	DIA-530-P05	500 µl	concentrate (IVD)
PAX-8	Human	JAX8 (Ms)	IHC-P, WB, ELISA	**DIA-PX8-OD**	100 µl	concentrate (IVD)
RAS (G12D Mutant)	Human	HL10 (Ms)	IHC-P, IHC-F	**IHC-184009**	100 µl	concentrate (RUO)
RAS (G12V Mutant)	Human	HL169 (Ms)	IHC-P, IHC-F	**IHC-184012**	100 µl	concentrate (RUO)

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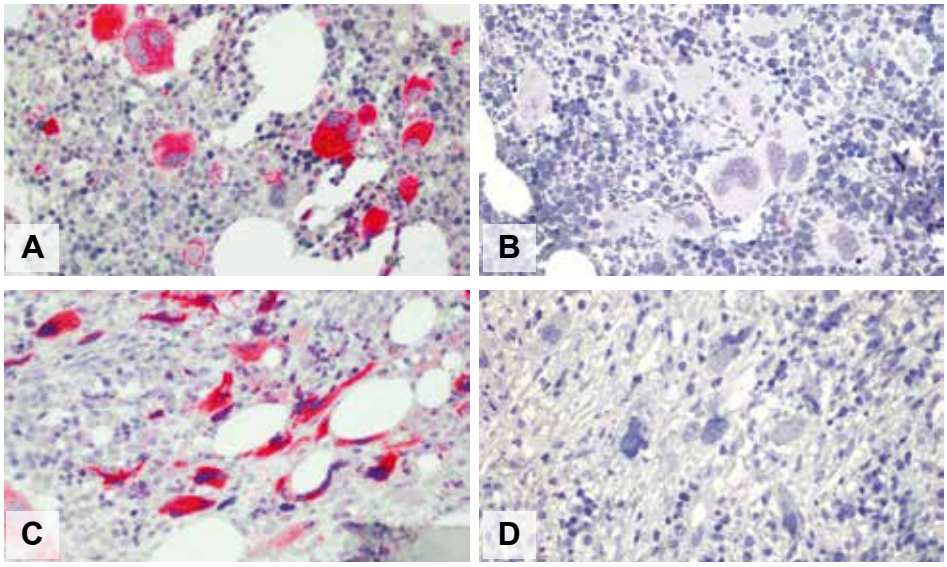
Anti-Mutated Calreticulin Antibody

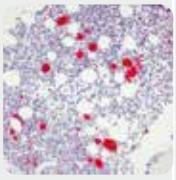
Why is CAL2 Able to Detect All Known Types of CALR Mutations?

CAL2 enables reliable distinction of CALR mutated Essential Thrombocythaemia (ET) and Primary Myelofibrosis (PMF) from Polycythaemia Vera (PV) and reactive bone marrow alterations.

All types of CALR mutations result in a novel C-terminus. This harbors a common epitope expressed in all kinds of CALR mutations. The CAL2 antibody is directed against this common epitope and CAL2 immunostaining correlates 100% with Sanger sequencing.



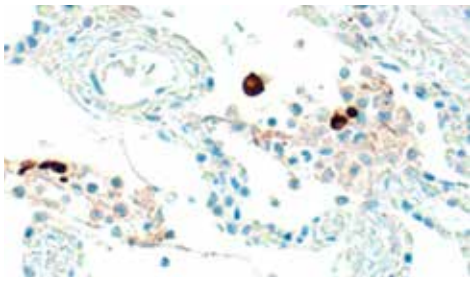
CAL2 IHC of four PMF cases. A and C: Selective staining of mutated CALR protein in megakaryocytes of two PMF cases, respectively in prefibrotic phase and in fibrotic phase, in which Sanger sequencing detected a CALR mutation. B and D: Absent CAL2 staining in two PMF cases, respectively in prefibrotic and in fibrotic phase, both without molecularly detected mutated CALR. The fibrotic stroma remains unstained (C and D). (Pictures courtesy of Prof. H Stein, Berlin).

Anti-CALRmut clone CAL2 (Ms)		
	Reactivity	Human
	Clone	CAL2
	Application	IHC-P
SKU	Quantity	Format
DIA-CAL-100	100 µl	conc. (RUO)
DIA-CAL-250	250 µl	conc. (RUO)

www.dianova.com/CALR/

Anti-SARS-CoV-2 Spike for Immunohistochemistry

Our anti-human SARS-CoV-2 Spike protein antibodies have been validated to differentiate spike protein subtypes in infected tissue specimen including lung tissue by immunohistochemistry and do not cross-react with SARS-CoV or MERS-CoV spike proteins.



SARS-CoV-2 infected lung tissue stained with antibody clone HL134

Specificity	Clone	Applications	SKU	Quantity	Format
SARS-CoV-2 (COVID-19) Spike S1	polyclonal (Rb)	IHC-P, IHC-F	IHC-184008	100 µl	concentrate (RUO)
SARS-CoV-2 (COVID-19) Spike S1	HL134 (Rb)	IHC-P, IHC-F	IHC-184005	100 µl	concentrate (RUO)
SARS-CoV-2 (COVID-19) Spike RBD	HL257 (Rb)	IHC-P, IHC-F	IHC-184006	100 µl	concentrate (RUO)
SARS-CoV-2 (COVID-19) Spike S2	HL1038 (Rb)	IHC-P, IHC-F	IHC-184007	100 µl	concentrate (RUO)

Pictures courtesy of F. Heinrich, S. Krasemann, Center for Diagnostics, University Hospital Hamburg, Eppendorf, UKE, Germany

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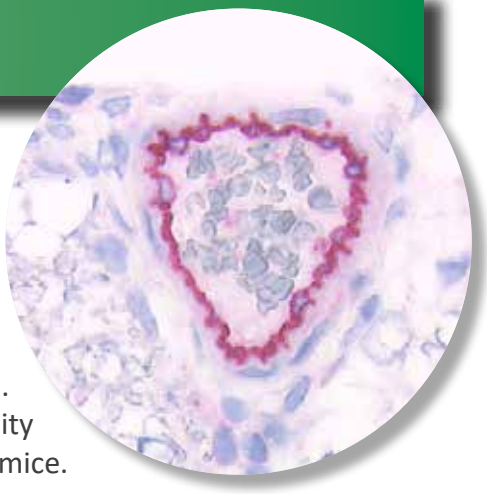
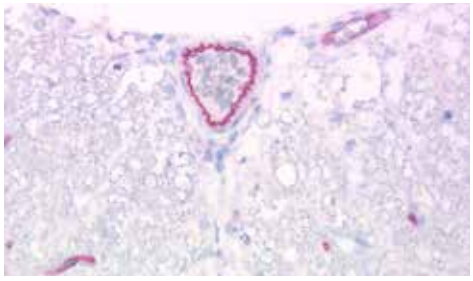
Anti-msCD31 Clone SZ31

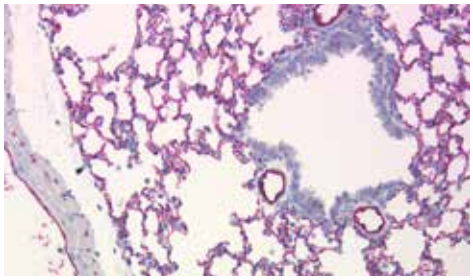


A Unique Gold Standard for Angiogenesis Studies in Mouse Model Systems

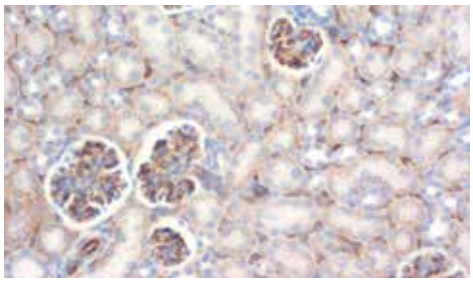
CD31 is a superior marker in human angiogenesis, which predicts tumor recurrence. But pathophysiological studies of CD31 in murine model systems previously had limitations because standard FFPE sections were excluded. Antibody clone SZ31 eliminates these restrictions by allowing high quality immunohistochemical analysis of standard formalin-fixed paraffin sections in mice.



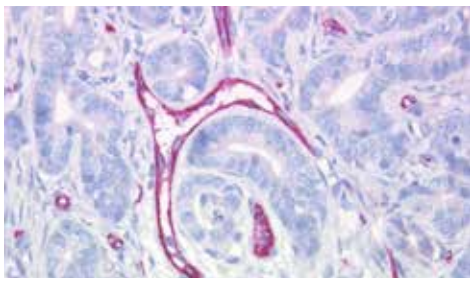
Spinal cord



Lung



Kidney



Adenocarcinoma

Why is CD31 Important in Pre-clinical Studies?

Changes in endothelial cells play a central role in the pathogenesis of many human diseases, such as Cancer, Coronary Artery disease, Atherosclerosis, Stroke, Kidney disease and others.

In cancer research angiogenesis inhibitors are particularly noteworthy, as tumor growth and the process of metastasis are crucially dependent on the formation of new blood vessels in the tumor. In many tumors, CD31 expression correlates with the microvessel density and is directly related to the tumor mass. In regenerative medicine the development of treatments for therapeutic angiogenesis play an important role in cardiovascular disease.

Studies in mice are particularly suitable to investigate new drug candidates. Stainings of pathophysiological endothelial cell changes in mouse paraffin tissues can contribute significantly to our knowledge and the mode of action of potential drugs and therapies on endothelial cell involvement in many diseases.

Anti-mouse CD31 clone SZ31 (Rt)		
	Reactivity	Mouse, Swine
	Clone	SZ31
	Application	IHC-P, IHC-F, IF, ICC, WB
No cross-reactivity with human CD31		
SKU	Quantity	Format
DIA-310	500 µl	concentrated
DIA-310-BA-2	200 µg	w/o BSA

330+ References

www.dianova.com/CD31/

Anti-CD3e Antibody clone HH3E (Rt)			Species Reactivity
Application	IHC-P, IHC-F, WB, IF		Bird, Bovine, Cat, Chicken, Dog, Frog, Horse, Human, Mammals, Monkey, Mouse, Rabbit, Swine
Format	SKU	Quantity	
concentrate ((RUO)	DIA-303	500 µl	

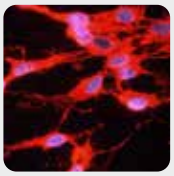
Pictures courtesy of Prof. Dr. H. Stein, Institute of Pathology, Charité Campus Benjamin Franklin, Berlin, Germany.

More Research Highlights

BIOZOL offers some highly referenced antibodies, leading in their field of research:

Fibroblast Marker > 50 References

Anti-Fibroblasts (CD90) clone AS02 (Ms)



Reactivity	Human
Clone	AS02
Application	Flow, IHC-F, IF, IP, WB

SKU	Quantity	Format
DIA-100	1 ml	concentrated
DIA-120	200 µg	FITC-conjugate

Anti-Fibroblasts (CD90, Thy-1) Antibody

The monoclonal antibody clone AS02 reacts specifically with human CD90 (Thy -1), a GPI-anchored glycoprotein of the immunoglobulin superfamily with a molecular weight of 25 - 35 kDa . CD90 (Thy-1) in human is primarily exp ressed by nerve cells, additionally in a sub-population (20%) of CD34+ blood stem cells and in various fibroblasts. AS02 recognizes fibroblasts of different origin but does not react with human blood cells, keratinocytes, resting micro -/macrovascular endothelial cells and components of the extracellular matrix.

His-Tag Detection > 100 References

Anti-His-Tag clone 13/45/31 (Ms)

Reactivity	Human
Clone	13/45/31
Application	Flow, ICC, IHC-F, IHC, IF, WB

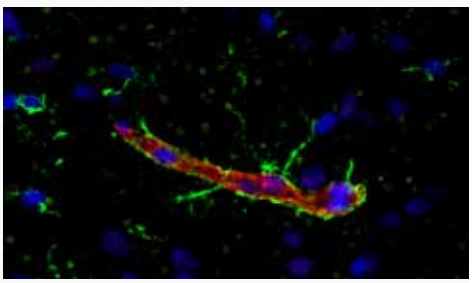
SKU	Quantity	Format
DIA-900-200	200 µg	concentrated
DIA-900-BIOT	100 µg	biotinylated

Anti-His-Tag Antibody (Tag N-, C- & intern)

The mouse monoclonal antibody clone 13/45/31-2 (Isotype IgG1) detects N- and C-terminally His-tagged proteins as well as internal His-tags in cells and complex cellular lysates. With a high affinity of 3x 10-10^{M} (Biacore™) it is optimally suited for a large variety of applications. Besides an epitope of at least 6 histidine residues, additional flanking amino acids are not required for antibody binding, enabling the choice of many different expression vectors as long as the Tag-epitope is sterically available.

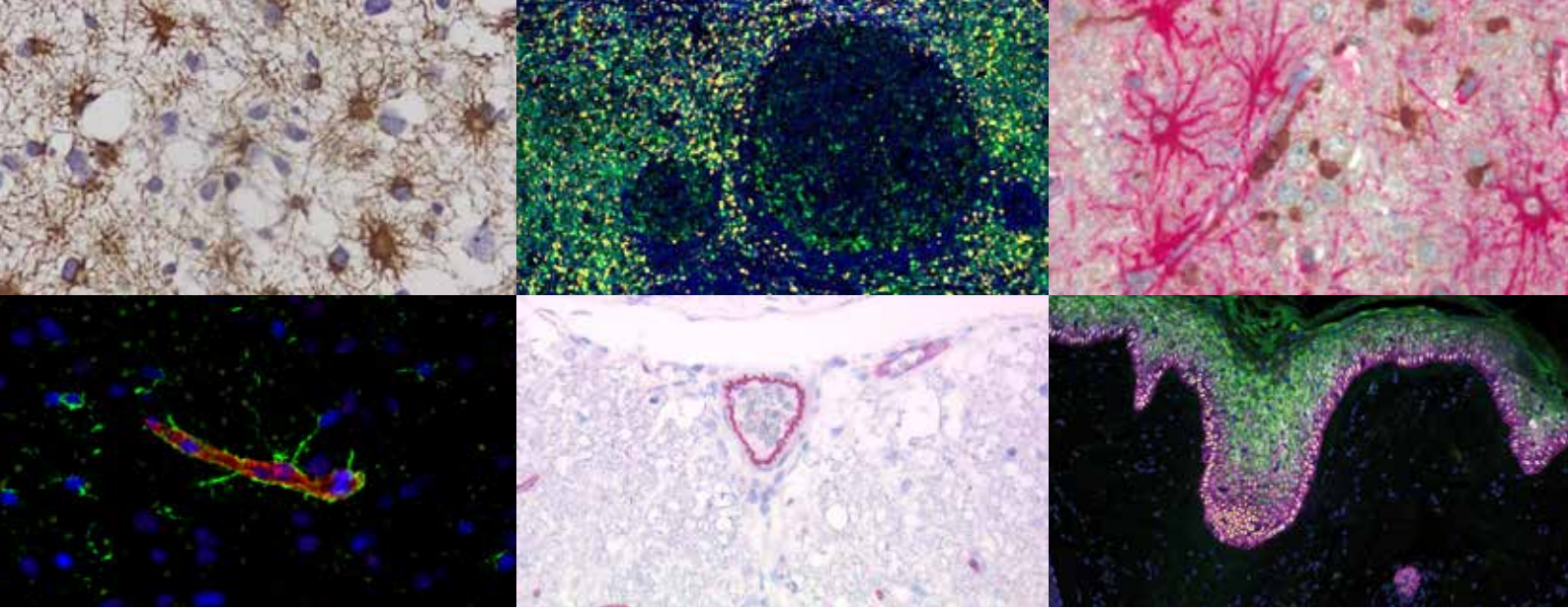
ImmunoSelect® Antifading Mounting Medium and Adhesive Slides

ImmunoSelect® Antifading Mounting Medium is developed for strong initial fluorescence with drastical reduction of photobleaching and it does not exhibit autofluorescence at any common wavelength. After a cover slip is applied, the medium disperses over the entire section. Stored at 4°C in the dark, fluorescence will remain for many weeks. The hardening medium does not solidify directly, but remains a viscous liquid for several days. **ImmunoSelect adhesive slides** are developed for microscopical use, where precious and only poorly available cellular material should be efficiently immobilized. In contrast to commonly coated slides the ImmunoSelect adhesive slides stop cell loss even at harsh incubation procedures.



Product	Counterstain	Quantity	Water-based, hardening	Water-based, non-hardening
ImmunoSelect® Antifading Mounting Medium	none	15 ml	SCR-038447	SCR-072967
ImmunoSelect® Antifading Mounting Medium	DAPI	15 ml	SCR-038448	SCR-093035
ImmunoSelect® Antifading Mounting Medium	PI	15 ml	SCR-038449	SCR-093036

Product	Quantity	Ordering Code
ImmunoSelect® Adhesive Slides	50	SCR-028841
ImmunoSelect® Adhesive Slides	100	SCR-028842



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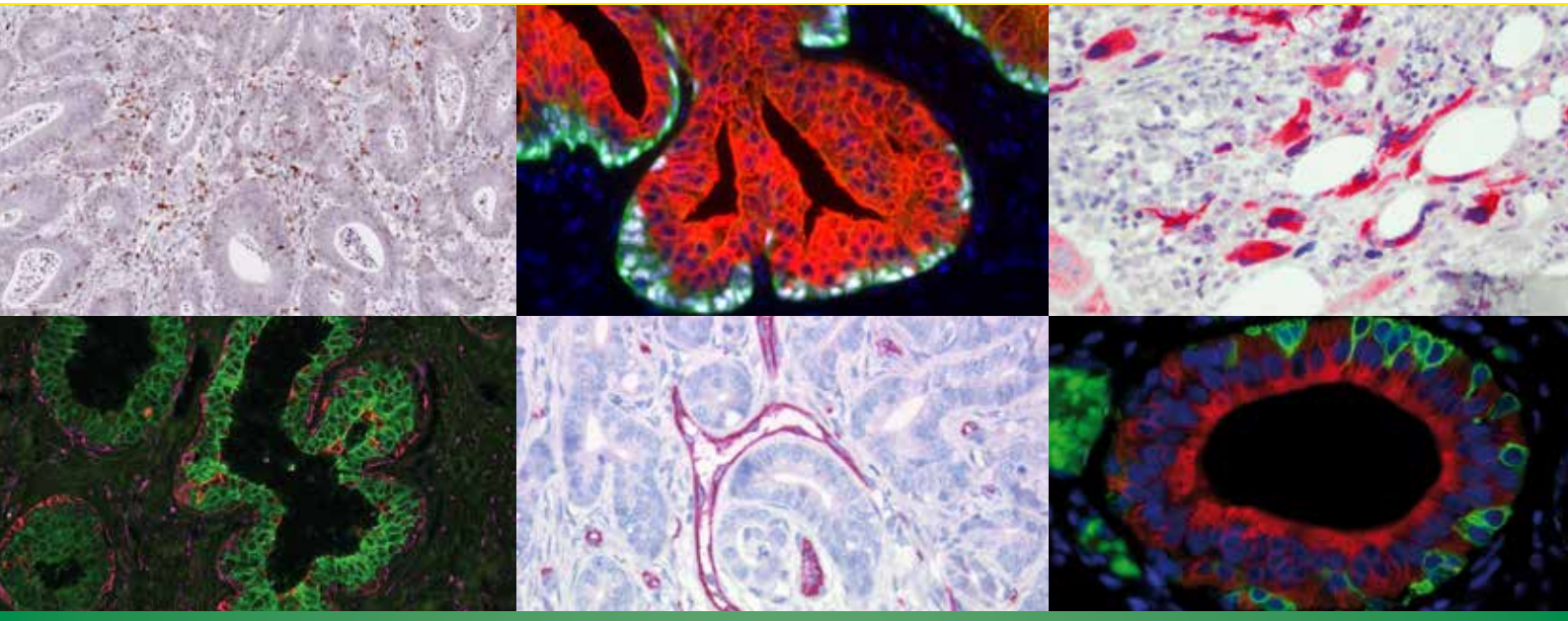
Secondary Antibody Portal

powered by BIOZOL

- 8,500 whole IgG and F(ab')2 secondary antibodies and conjugates for immunohistochemical and fluorescent detection
- easy search functionality with advanced filtering options
- renowned international manufacturers such as Jackson ImmunoResearch and Southern Biotech
- more than 1,500 qualitatively outstanding products from BIOZOLs own dianova brand



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