

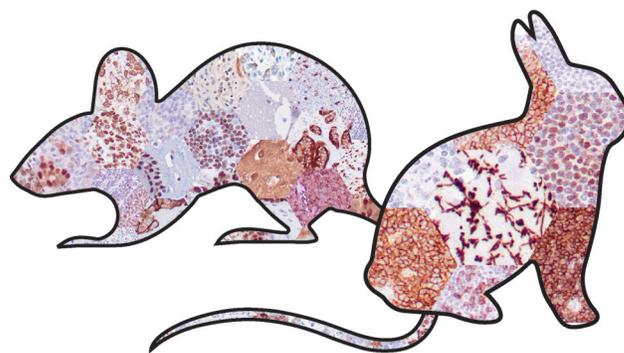
Target-Validated and Characterized IVD Antibodies
for Pathology and Immunotherapy

NEW PRODUCTS - August 2021

RAbMono™ (Rabbit Monoclonal) and MonoMab™ (Mouse Monoclonals) Markers

Zeta designs and develops tumor-specific biomarkers using cutting edge technology to uniquely select the immunogens for our famed RAbMono™ (Rabbit Monoclonal) and MonoMab™ (Monospecific monoclonal antibodies). Zeta's RAbMono™ and MonoMab™ Antibodies are produced through the hybridoma and recombinant technologies.

Zeta offers over 375 individual primary antibodies of high-quality FDA registered, IVD certified for Pathology/IHC. These antibodies are carefully chosen and developed to consistently produce staining on formalin-fixed paraffin-embedded tissue (FFPE) sections. Our antibodies are carefully screened and rigorously tested to provide unparalleled consistency and reliability in immunohistochemical staining. Every

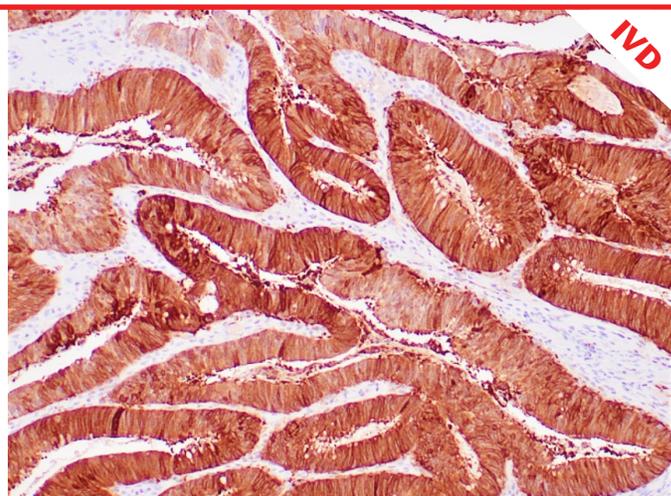


antibody developed in-house goes through Design and Development processes as required by ISO 13485. These antibodies are tested and validated by leading laboratories globally and external quality control institutions like the NordicQC.

ALDH1A1 Mouse Monoclonal Antibody

Anti-mouse: Clone ZM71, Cat # Z2387

ALDH1A1 belongs to the ALDH enzymes, a family of evolutionarily conserved enzymes comprised of 19 isoforms that are localized in the cytoplasm, mitochondria or nucleus. ALDH1A1 is predominantly expressed in the epithelium of testis, brain, eye, liver, kidney, as well as neural and hematopoietic stem cells. Recently, it has been reported that high ALDH1A1 mRNA expression was seen in solitary fibrous tumor (SFT) and hemangiopericytoma (HPC), compared to meningiomas and synovial sarcomas. Anti-ALDH1A1 can be combined with anti-CD34 to aid in the differentiation between SFT, HPC, meningioma, and synovial sarcoma.



Human colon carcinoma stained with anti-ALDH1A1 (Clone ZM71)

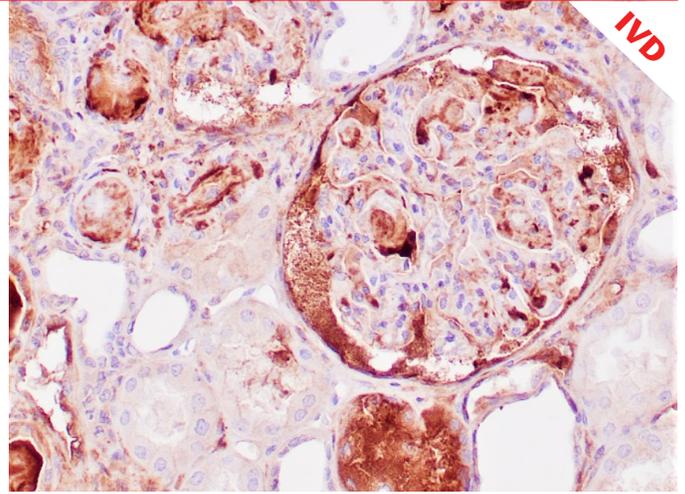
References:

1. Marcato P, *et al.* Cell Cycle. 2011;10:1378-1384.
2. Bouvier C, *et al.* Acta Neuropathologica Commun 2013; 1:1-10.
3. Chute JP, *et al.* Proc Natl Acad Sci USA. 2006; 103:11707-11712.

C3d Mouse Monoclonal Antibody

Anti-mouse: Clone ZM369, Cat # Z2660

Complement component C3 plays a central role in the activation of complement system. Its activation is required for both classical and alternative complement activation pathways. C3d deposition in the renal transplant PTCs (peritubular capillaries) is indicative of AR (acute rejection) with subsequent high probability of graft loss. Anti-C3d, combined with anti-C4d, can be utilized as a tool for diagnosis of AR and warrant prompt and aggressive anti-rejection treatment.



Human rejected kidney tissue stained with anti-C3d (clone ZM369)

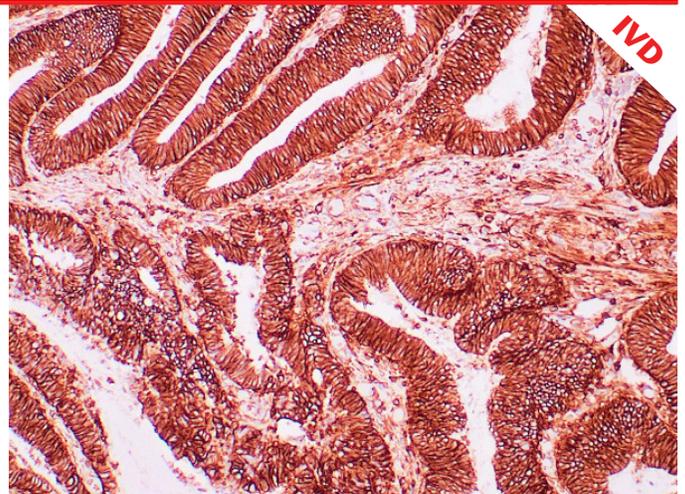
References:

1. Bickerstaff A, *et al.* Am J Pathol. 2008; 173:347-57.
2. Kuypers DR, *et al.* Transplantation. 2003; 76:102-8.
3. Eggertsen G, *et al.* APMS. 2001; 109:825-34.

CD44 Rabbit Monoclonal Antibody

Anti-rabbit: Clone ZR184, Cat # Z2679

CD44 is a cell-surface glycoprotein postulated to play a role in a variety of biological processes, including cell-to-cell and cell-to-matrix adhesion, lymphocyte homing and tumor cell metastasis. CD44 is widely expressed on many types of cells with mesodermal and hematopoietic origin, epithelial cells and a variety of tumors derived from these cells. Loss of CD44 expression has been linked to tumor invasion, metastasis and progression in carcinomas of breast, prostate, lung, ovary and malignant melanoma.



Human colon adenocarcinoma stained with anti-CD44 (clone ZR184)

References:

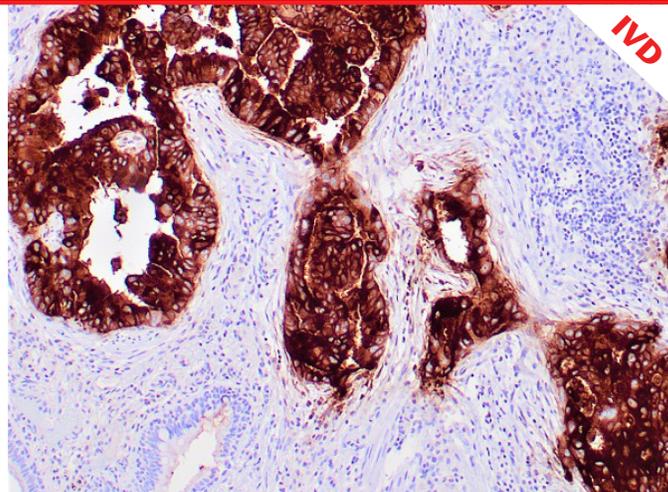
1. East JA, *et al.* Eur J Cancer. 1993; 29A:1921.
2. Gadalla HA, *et al.* BJU Int. 2004; 93:151-5.
3. McKenney JK, *et al.* Am J Surg Pathol. 2001; 25:1074.

All antibodies are offered in different format and size with the Suffix after the Catalog #s; "L", "S" & "T" for Concentrated antibodies in 1.0 ml, 0.5 ml & 0.1 ml sizes and Suffix "P" for Ready To Use (RTU) in 7 ml.

CEA Rabbit Monoclonal Antibody

Anti-rabbit: Clone: ZR370, Cat # Z2661

Clone ZR370 has a high affinity for CEA and shows no detectable reactivity to nonspecific cross-reacting antigen (NCA), biliary glycoprotein (BGP), and human polymorphonuclear leucocytes. Ab-3 shows no reaction with a variety of normal tissues. CEA is not found in benign glands, stroma, or malignant prostatic cells. Antibody to CEA is useful in detecting early foci of gastric carcinoma and in distinguishing pulmonary adenocarcinomas (60-70% are CEA+) from pleural mesotheliomas (rarely or weakly CEA+).



Human colon carcinoma stained with anti-CEA (clone ZR370)

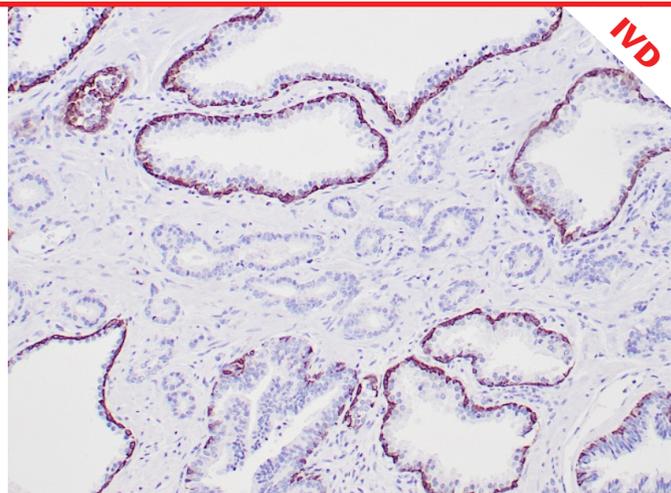
References:

1. Tron, V *et al.* Arch Pathol Lab Med. 1987; 111:291-3.
2. Abutaily, AS *et al.* J Clin Pathol. 2002; 55:662-8.
3. Carella, R *et al.* Am J Surg Pathol. 2001; 25:43-50.

Cytokeratin 5/6 (CK 5/6) Mouse Monoclonal Antibody

Anti-mouse: Clone ZM43, Cat # Z2350

It recognizes polypeptides of 58kDa and 56kDa, identified as cytokeratin 5 and 6 respectively. It shows no reaction with keratin 1, 8, or 19. It stains the basal cells of squamous and glandular epithelia, part of stratum spinosum of squamous epithelium, myoepithelium, and mesothelium. It does not stain adenous epithelium. Therefore, this antibody can be used to distinguish squamous carcinoma from adenocarcinoma, and to differentiate epitheloid mesothelioma from non-epitheloid mesothelioma and adenocarcinoma. It is also a useful antibody to distinguish benign ductal hyperplasias from non-invasive neoplastic proliferations.



Human prostate carcinoma stained with anti-CK 5/6 antibody (Clone ZM43)

References:

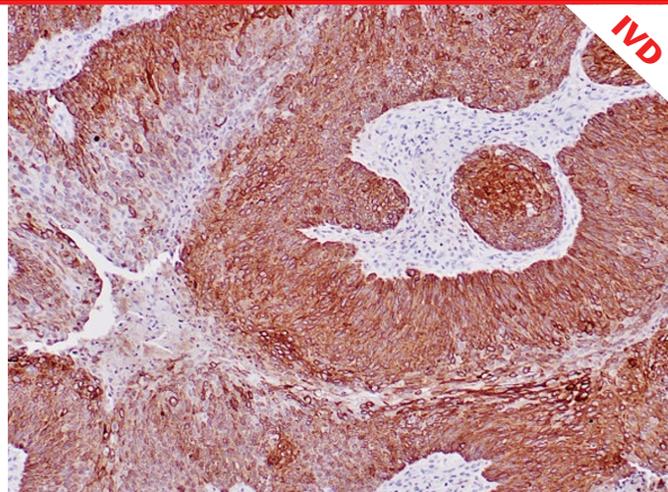
1. Ordonez NG. Human Pathology. 2007; 38:1-16.
2. Kargi A, *et al.* Appl Immunohistochem Mol Morphol. 2007; 15:415-420.
3. Clarke CL, *et al.* J Pathol. 2004; 204:147-52.

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Cytokeratin 14 (CK 14) Mouse Monoclonal Antibody

Anti-mouse: Clone ZM372, Cat # Z2663

Cytokeratin 14 (CK14) belongs to the type I (or A or acidic) subfamily of low molecular weight keratins and exists in combination with keratin 5 (type II or B or basic). CK14 is found in basal cells of squamous epithelia, some glandular epithelia, myoepithelium, and mesothelial cells. Anti-CK14 is useful in differentiating squamous cell carcinomas from poorly differentiated epithelial tumors. Anti-CK14 is one of the specific basal markers for distinguishing between basal and non-basal subtypes of breast carcinomas. Anti-CK14 is also a good marker for differentiation of intraductal from invasive salivary duct carcinoma by the positive staining of basal cells surrounding the in-situ neoplasm as well as for differentiation of benign prostate from prostate carcinoma. Furthermore, this antibody has been useful in separating oncocytic tumors of the kidney from its renal mimics, and in identifying metaplastic carcinomas of the breast.



Human squamous cell carcinoma stained with anti-CK 14 antibody (Clone ZM372)

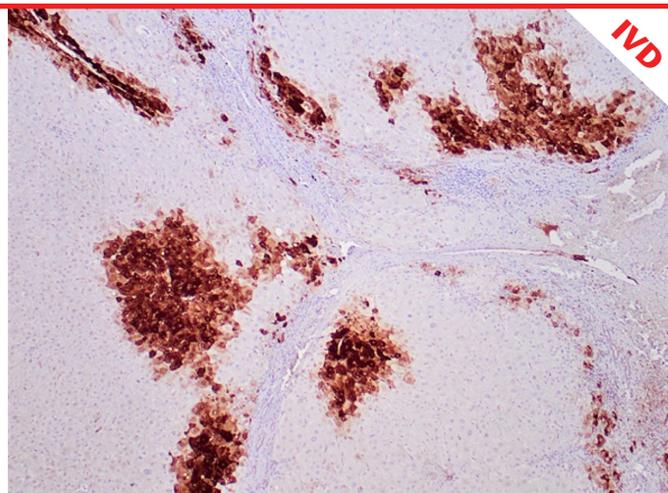
References:

1. Moll R, *et al.* Histochem Cell Biol. 2008; 129:705-33.
2. Chu PG, *et al.* Histopathology. 2001; 39:9-16.

Glutamine Synthetase (GS) Mouse Monoclonal Antibody

Anti-mouse: Clone ZM377, Cat # Z2668

Glutamine synthetase (GS) forms a homo-octamer that serves as a catalyst for the amination of glutamic acid to form glutamine. This enzyme is a marker for astrocytes, which serve as the primary site of conversion of glutamic acid to glutamine in the brain. Induction of glutamine synthetase is seen upon astrocyte cell contact with neurons. Elevated expression of glutamine synthetase in glial cells has been shown to protect neurons from degeneration due to excess glutamate. Glutamine synthetase is also present in the liver and is involved in nitrogen homeostasis. Overexpression of glutamine synthetase has been shown in primary liver cancers, indicating a potential role for glutamine synthetase in hepatocyte transformation.



Human cirrhotic liver stained with Anti-glutamine synthetase (clone ZM377)

References:

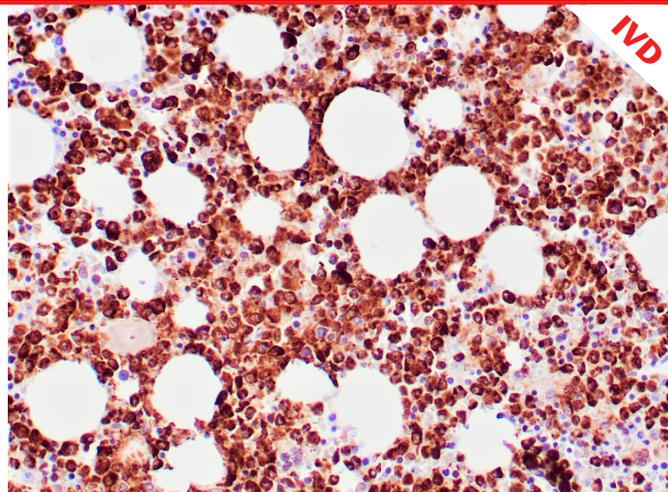
1. Di Tommaso L, *et al.* Hepatology. 2007; 45:725-34.
2. Nakamoto Y. Hepatol Res. 2016; 47:251-65.

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Myeloperoxidase Mouse Monoclonal Antibody

Anti-mouse: Clone: ZM352, Cat # Z2680

The heme protein myeloperoxidase (MPO) is a major component of azurophilic granules of neutrophils and polymorphonuclear leukocytes. Optimal oxygen-dependent microbiocidal activity depends on MPO as the critical enzyme for the generation of hypochlorous acid and other toxic oxygen products. iMPO mRNA is abundant in human promyelocytic HL-60 and mouse myeloid leukemia NFS-60 cells. MPO is expressed at high levels in circulating neutrophils and monocytes but is not detectable in microglia, brain-specific macrophages or normal brain tissue.



Brain tissue stained with ZM352

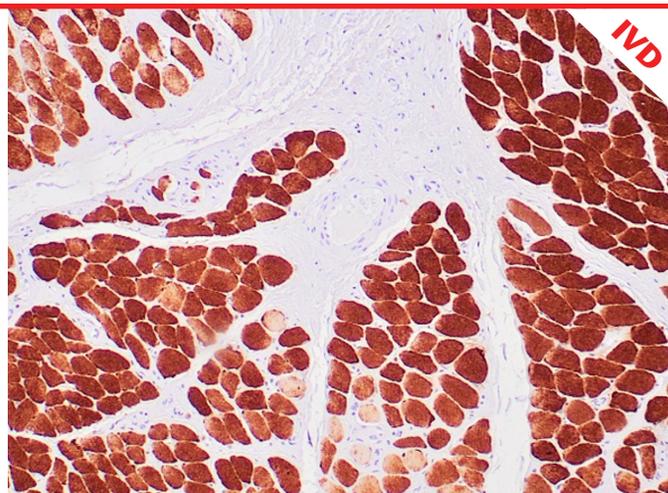
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1. Pinkus GS, et al. Mod Pathol. 1991; 4:733-41.
2. Arber DA, et al. Am J Clin Pathol. 1996; 106:462-8.
3. Chang CC, et al. Am J Clin Pathol. 2000; 114:807-11.

Myoglobin Rabbit Monoclonal Antibody

Anti-rabbit: Clone ZR69, Cat # Z2379

Myoglobin is a cytosolic oxygen-binding protein responsible for the storage and diffusion of oxygen within myocytes. Expression of myoglobin is highest in skeletal and cardiac muscle. Myoglobin is well accepted as an O₂-storage protein in muscle, capable of releasing O₂ during periods of hypoxia or anoxia. In combination with other striated muscle markers such as vimentin and myogenin, myoglobin is helpful in the identification of rhabdomyosarcoma and tumors with skeletal muscle differentiation. Reportedly, myoglobin is expressed on epithelial cancer cells due to changed metabolic and environmental conditions.



Human skeletal muscle stained with anti-myoglobin (clone ZR69).

References:

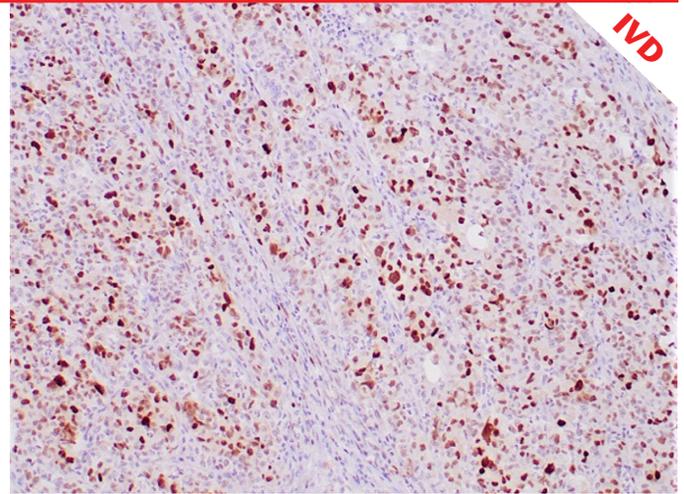
1. Qiu, Y., et al. 1998. J. Biol. Chem. 273: 23426-23432.
2. Furlong MA, et al. Mod Pathol. 2001; 14:595-603.

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p21^{WAF1} Rabbit Monoclonal Antibody

Anti-rabbit: Clone: ZR288, Cat # Z2602

This MAb recognizes a 21kDa protein, identified as the p21^{WAF1} tumor suppressor protein. This MAb is highly specific to p21 and shows no cross-reaction with other closely related mitotic inhibitors. p21^{WAF1} is a specific inhibitor of cdk's and a tumor suppressor involved in the pathogenesis of a variety of malignancies. The expression of this gene acts as an inhibitor of the cell cycle during G1 phase and is tightly controlled by the tumor suppressor protein p53. Its expression is induced by the wild type, but not mutant, p53 suppressor protein. Loss of p21 expression has been reported in many carcinomas (gastric carcinoma, non-small cell lung carcinoma, thyroid carcinoma).



Human adenocarcinoma stained with anti-p21 (clone ZR288)

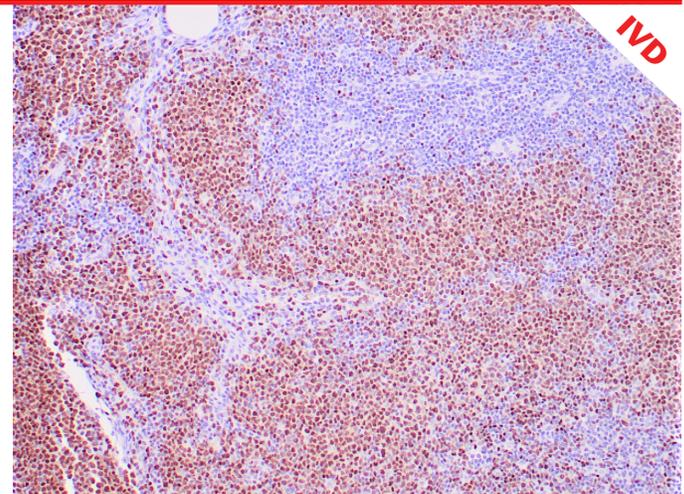
References:

1. DiGiuseppe JA, *et al.* Am J Pathol. 1995; 147:884-8.
2. Xie HL, *et al.* World J Gastroenterol. 2004; 10:1125-31.
3. Stein JP, *et al.* J of Natl Cancer Inst. 1998; 90:1072

SOX11 Mouse Monoclonal Antibody

Anti-mouse: Clone ZM101, Cat # Z2606

Recognizes a protein of ~47kDa, identified as SOX-11. This MAb is highly specific and does not cross-react with other members of the SOX-family. Mantle cell lymphoma (MCL) accounts for 5% to 10% of mature B-cell neoplasms and is an aggressive disease genetically characterized by overexpression of Cyclin D1. Cyclin D1 overexpression is the hallmark of MCL. However, approximately 5%-10% of MCLs lack Cyclin D1 expression and may be misdiagnosed. Almost all Cyclin D1-positive as well as Cyclin D1-negative MCL, show overexpression of SOX-11. The detection of this transcriptionfactor is a useful biomarker for identifying true cyclin D1-negative MCL.



Mantle Cell Lymphoma tissue stained with ZM101

References:

1. Hargrave, M *et al.* Dev Dyn.1997; 210:79-86.
2. Zeng W, *et al.* Am J Surg Pathol. 2012; 36:214-9.
3. Narurkar R, *et al.* Biomark Res. 2016; 4:6.

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Villin Rabbit Monoclonal Antibody

Anti-rabbit: Clone: ZR155, Cat # Z2491

Recognizes a protein of 95kDa, which is identified as villin. It is a major constituent in the microvilli, which compose the brush border of epithelial cells forming absorptive surfaces of the intestinal and renal proximal tubular epithelia. Anti-Villin labels the brush border area in the gastrointestinal mucosal epithelium and urogenital tract. Among neoplasms, villin is predominantly expressed in tumors of colorectal origin. Antibody to villin is useful in identifying malignant cells from primary and metastatic colorectal carcinomas. This antibody also labels Merkel cells of the skin.



Human colon tissue stained with anti-villin (clone ZR155)

References:

1. Suh N, *et al.* Mod Pathol. 2005; 18:1217
2. Tamboli P, *et al.* Arch Pathol Lab Med. 2002; 126:1057- 63.
3. Zhang PJ, *et al.* Arch Pathol Lab Med. 1999; 123:812-6.

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