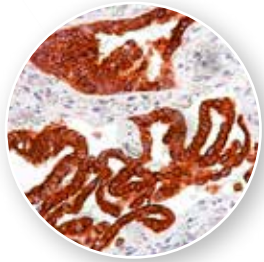
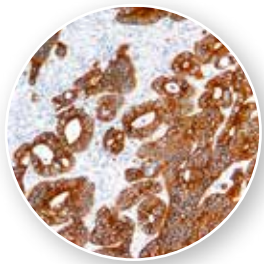


Immunohistology

Colon



Cytokeratin 7 staining on colon



Cytokeratin 20 staining on colon carcinoma

New antibodies for the detection of colon carcinoma

Colorectal cancer (CRC) is the third most common cancer diagnosed globally, making up 10% of all cases.

Immunohistochemistry is a widely used tool for diagnosis of CRC especially in atypical cases or in cases where the primary tumor is not known (CUP, Cancer of Unknown Primary).

The most common antibodies for differential diagnostics of CRC are Cytokeratin 20 in combination with Cytokeratin 7 (CK20 +/CK7- phenotype). However, using these antibodies alone would misdiag-

nose a proportion of cases because of the broad reactivity of these cytokeratins, as well as their expression in ambiguous cases [1]. For example CK20 is also expressed in the gastric epithelium, urothelium and Merkel cells and the majority of medullary CRC found in elderly patients are CK20 negative [2].

Two new very specific antibodies, SATB2 and Cadherin 17, can help to confirm or rule out tumors of colorectal origin and provide a reasonable addition to the colon antibody panel.

► SATB2

Special AT-Rich Sequence-Binding Protein 2 (SATB2) is a DNA binding protein involved in transcription regulation and chromatin remodelling. The protein is selectively expressed in glandular cells from the lower gastrointestinal tract and expression is retained in a large majority of primary and metastatic CRCs.

SATB2, in combination with CK20, can identify more than 95 % of all colorectal carcinomas including poorly differentiated colorectal carcinomas [3]. Lin *et al.* propose a panel of MLH1, Cadherin 17, and SATB2 when working on an unknown primary tumor, especially in an elderly patient with a CK7-/CK20- carcinoma [4].

In addition SATB2 can be helpful in identifying neuroendocrine neoplasms/carcinomas of the left colon and rectum because SATB2 is usually negative in other neuroendocrine neoplasms of the GI tract, pancreas, and lung [5]. Finally, recent publications described SATB2 as a sensitive marker for tumors with osteoblastic differentiation [6].



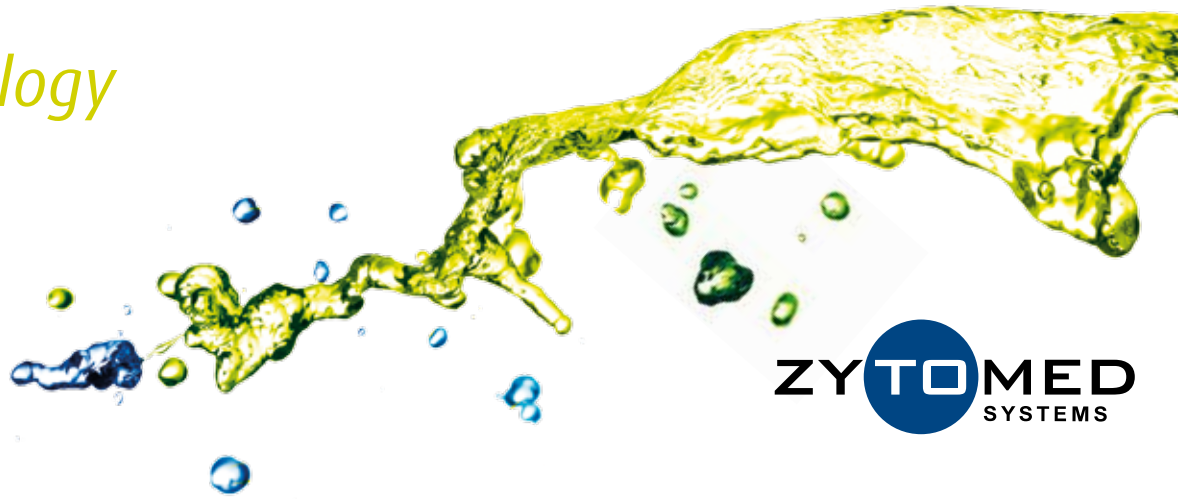
SATB2 staining on colon carcinoma

► Bibliography (SATB2)

- [1] Dragomir A *et al.* The role of SATB2 as a diagnostic marker for tumors of colorectal origin: results of a pathology-based clinical prospective study. *Am J Clin Pathol* 141:630-638, 2014
- [2] Winn B *et al.* Differentiating the undifferentiated: immunohistochemical profile of medullary carcinoma of the colon with an emphasis on intestinal differentiation. *Hum Pathol* 40:398-404, 2009
- [3] Magnusson K *et al.* SATB2 in combination with cytokeratin 20 identifies over 95 % of all colorectal carcinomas. *Am J Surg Pathol* 35:937-948, 2011
- [4] Lin F *et al.* Cadherin-17 and SATB2 are sensitive and specific immunomarkers for medullary carcinoma of the large intestine. *Arch Pathol Lab Med* 138:1015-1026, 2014
- [5] Li Z *et al.* SATB2 is a highly sensitive marker for hindgut well-differentiated neuroendocrine tumors. *Mod Pathol* 26(suppl 2):164A, 2013
- [6] Ordóñez NG. SATB2 is a novel marker of osteoblastic differentiation and colorectal adenocarcinoma. *Adv Anat Pathol* 21:63-67, 2014

► Product information

Description	Reactivity	CE/IVD	Pre-treatment	Dilution	Volume	Cat. No.
SATB2 Clone: SATBA4B10 Host: Mouse	HU, MS, RT	-	HIER in EDTA pH 9.0	1:50 - 1:100	0.5 ml	MSK101-05



► Bibliography (Cadherin 17)

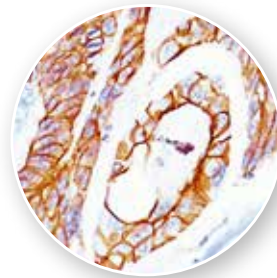
- [1] Angst BD *et al.* The Cadherin superfamily: diversity in form and function. *J Cell Science* 114:629-641, 2001
- [2] Panarelli NC *et al.* Tissue-specific cadherin CDH17 is a useful marker of gastrointestinal adenocarcinomas with higher sensitivity than CDX2. *Am J Clin Pathol* 138:211-222, 2012
- [3] Ordóñez NG. Cadherin 17 is a novel diagnostic marker for adenocarcinomas of the digestive system. *Adv Anat Pathol* 21:131-137, 2014
- [4] Tacha D, Zhou D. CDH17 is a highly specific marker and is a more sensitive marker than CDX2 and CK20 in colon cancers. Poster session presented at: CAP14. The Pathologists' Meeting; 2014 Sep 7-10; Chicago
- [5] Su MC *et al.* Cadherin-17 is a useful diagnostic marker for adenocarcinomas of the digestive system. *Mod Pathol* 21:1379-1386, 2008
- [6] Lin F *et al.* Cadherin-17 and SATB2 are sensitive and specific immunomarkers for medullary carcinoma of the large intestine. *Arch Pathol Lab Med* 138:1015-1026, 2014

► Cadherin 17

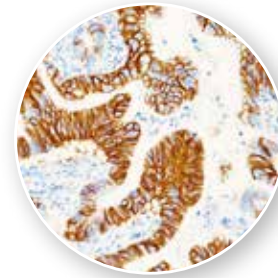
Cadherin 17, also called liver-intestinal Cadherin (LI-Cadherin) or CDH17, is a non classical member of the Cadherin superfamily [1]. Cadherin 17 is involved in tumor invasion and metastasis and is expressed in the cytoplasmic membrane of intestinal epithelium cells. The antibody is a useful marker for the diagnosis of adenocarcinomas with colorectal and pancreatic origin.

It has been shown that Cadherin 17 is a more sensitive marker than CDX2 in identification of adenocarcinomas of the colon, esophagus and pancreas [2-5]. Most CDX2 and CK20 negative medullary colon carcinomas are Cadherin 17 positive [6]. Panarelli *et al.* showed a sensitivity of 100 % (161/161) for colon carcinomas using Cadherin 17, clone 1H3 [2].

The same sensitivity was reported by Tacha and Zhou (99/99). In this study clone 1H3 showed a sensitivity of 73 % for adenocarcinomas of the stomach whereas antibodies against CDX2 and Cytokeratin 20 showed a lower sensitivity of 16 % and 28 % respectively [4]. Cadherin 17 is rarely detected in hepatocellular carcinoma and carcinomas of lung and ovary [2-6].



Cadherin 17 staining on colon carcinoma



Cadherin 17 staining on gastric cancer

► Product information

Description	Reactivity	CE/IVD	Pre-treatment	Dilution	Volume	Cat. No.
Cadherin 17 Clone: 1H3 Host: Mouse	HU	✓	HIER in EDTA pH 9.0	Ready-to-use	6 ml	MSG105
				1:100-1:200	0.5 ml	MSK105-05
CDX-2 Clone: EPR2764Y Host: Rabbit	HU	✓	HIER in Citrate pH 6.0	Ready-to-use	6 ml	RBG019
				1:50-1:100	16 ml	BRB028
					0.5 ml	RBK019-05
1 ml	RBK019					
Cytokeratin 7 Clone: OV-TL 12/30 Host: Mouse	HU	✓	HIER in Citrate pH 6.0	Ready-to-use	6 ml	MSG105
				1:100-1:200	16 ml	BMS030
					0.5 ml	MSK032-05
1 ml	MSK032					
Cytokeratin 20 Clone: Ks20.8 Host: Mouse	HU	✓	Pepsin or Trypsin	Ready-to-use	16 ml	BMS037
Cytokeratin 20 Clone: polyclonal Host: Rabbit	HU	-	HIER in Citrate pH 6.0	Ready-to-use	7 ml	503-16441
				1:200	1 ml	503-16444



CDX-2 staining on colon carcinoma