WHITEPAPER

SATB2 Clones EP281 and CL0323 a Comparative Analysis by Immunohistochemistry

BIOCARE MEDICAL

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A Comparative Analysis by Immunohistochemistry

Biocare Medical's anti-SATB2 antibody [clone CL0323] has been developed with high staining sensitivity and specificity for aiding in the identification of colorectal carcinoma. To demonstrate the performance of this clone, a comparison study between clones EP281 and CL0323 was performed to assess sensitivity to colon cancers and specificity on various normal and neoplastic tissues.

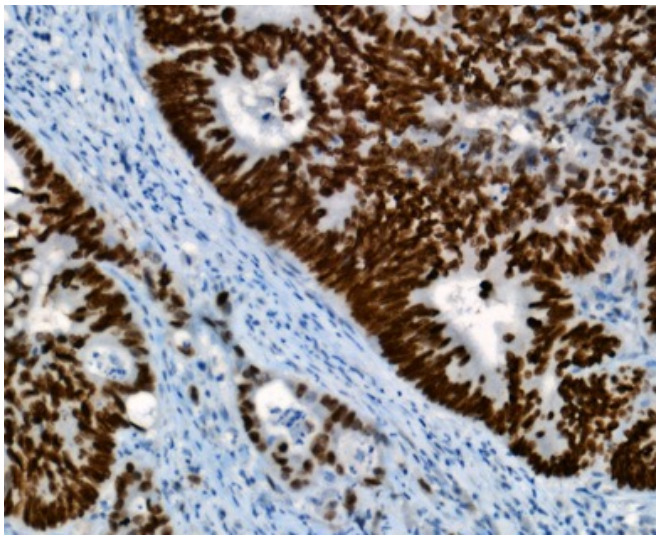
SATB2 (special AT-rich sequence binding 2) is a human DNA-binding protein involved in transcriptional regulation and chromatin remodeling.[1, 2] SATB2 protein expression in normal human tissue was found in the epithelium of the lower gastrointestinal tract including appendix, colon, and rectum. SATB2 protein expression was also found in non–germinal center lymphoid cells, and the ductal epithelium of the testis and epididymis. In cancer tissues, SATB2 was shown to be almost exclusively expressed in colorectal carcinoma[3]. Additionally, SATB2 may be useful in distinguishing adenocarcinomas of colorectal origin from those of gastric and pancreatic origin[4].

In both normal and neoplastic tissues, the clones exhibited concordant staining regarding sensitivity and specificity (Table 1). Notably, clone CL0323 showed nearly identical specificity and sensitivity, along with staining pattern, in adenocarcinoma (23 cases), chronic colitis adenocarcinoma (1 case), and normal colon tissue (11 cases). In colorectal carcinomas, both clones perform nearly equivalently on adenocarcinoma and chronic colitis adenocarcinoma (Table 2).

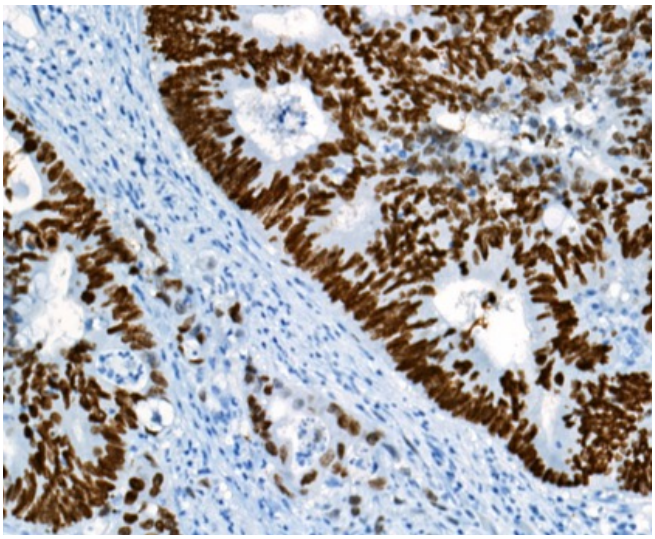
Interested in testing SATB2 clone CL0323 in your lab? SATB2 [CL0323] (Catalog Core Number 3259) is available in multiple formats (concentrate, predilute, Q Series and UltraLine) and protocol recommendations are available for most IHC instruments, including Biocare's ONCORE Pro®, intelliPATH FLX®.

Whether you're switching from a different vendor or interested in bringing in SATB2 as a new marker to your lab, our friendly staff is here to assist you in making sure your run is perfectly optimized to meet laboratory needs. Please contact Biocare anytime by phone at 800-799-9499 or online at: biocare.net/contact/. You can also learn more about SATB2 [CL0323] at the following URL: https://biocare.net/product/satb2-cl0323/.

SATB2 Clones CL0323 and EP281 Staining Colon Adenocarcinoma Compared



Colon adenocarcinoma Stained with CL0323

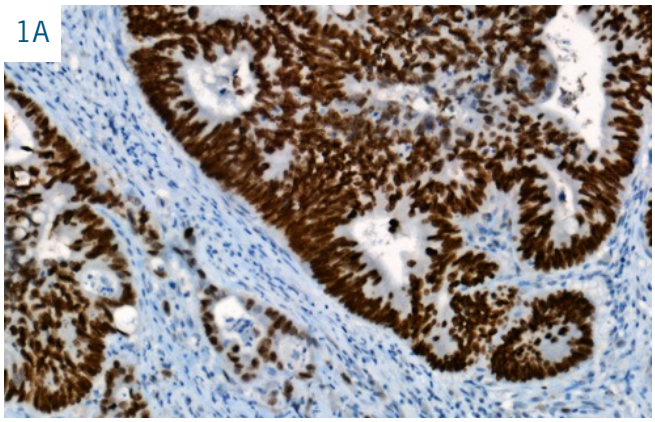


Colon adenocarcinoma Stained with EP281

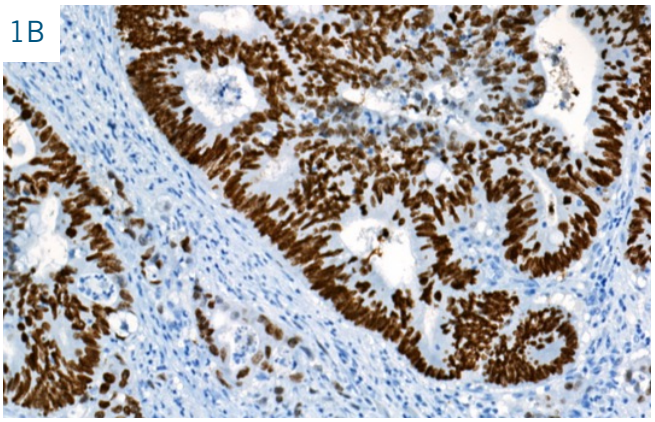
Figures 1-6

Shows several examples of SATB2 antibody staining of colon adenocarcinoma tissue and normal colon tissue by clone CL0323, in comparison to staining with clone EP281, on a serial section of the same specimen.

Figure 1: Colon adenocarcinoma

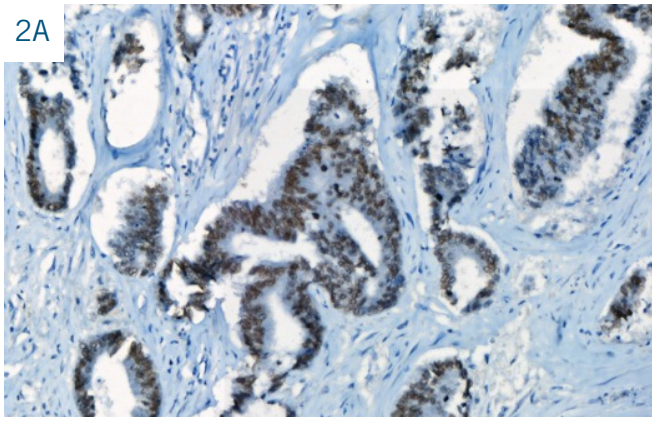


1A: Colon adenocarcinoma stained with SATB2 [CL0323]

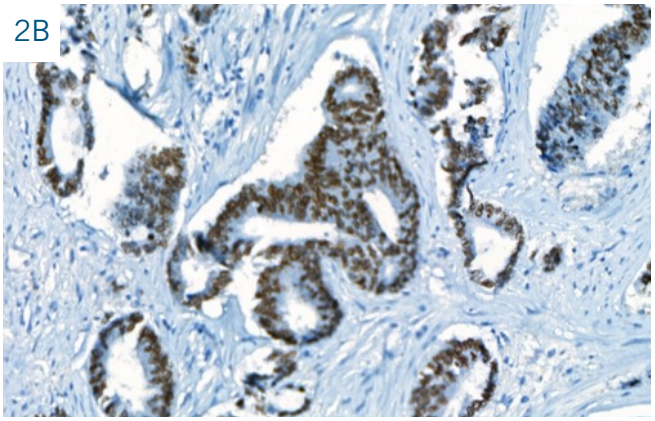


1B: Colon adenocarcinoma stained with SATB2 [EP281]

Figure 2: Colon adenocarcinoma

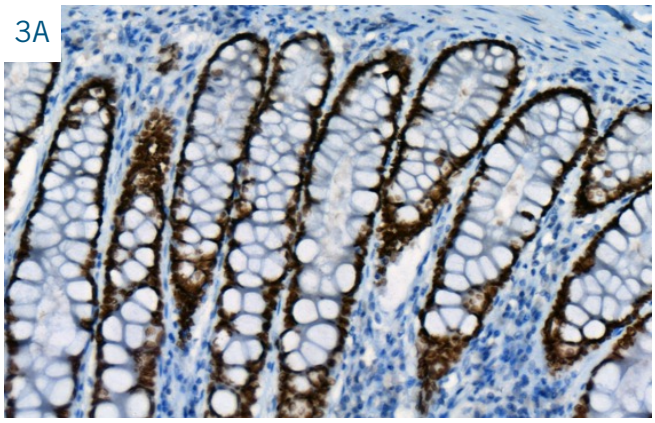


2A: Colon adenocarcinoma stained with SATB2 [CL0323]

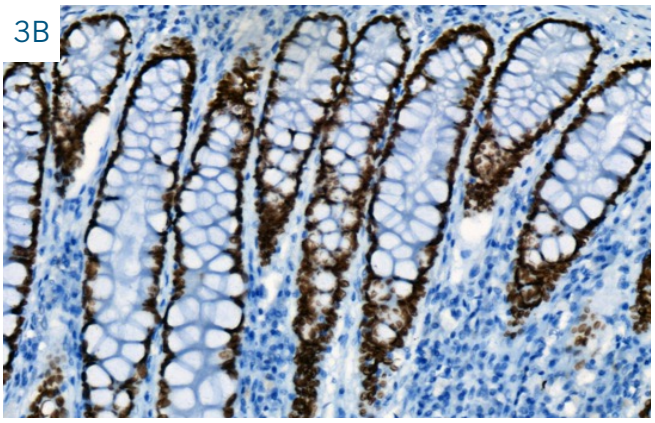


2B: Colon adenocarcinoma stained with SATB2 [EP281]

Figure 3: Normal Colon Tissue



3A: Normal colon tissue stained with SATB2 [CL0323]



3B: Normal colon tissue stained with SATB2 [EP281]

Table 1 – CL0323 and EP281 Comparison Staining of Various Normal Tissues

Tissue	Total Cases	CL0323 Positive	% Positive	EP281 Positive	% Positive
Cerebrum	9	3	33.3%	4	44.4%
Adrenal Gland	3	0*	0%	0*	0%
Ovary	3	0*	0%	0	0%
Pancreas	3	0*	0%	0	0%
Lymph Node	3	0	0%	0	0%
Tracheal	3	0	0%	0	0%
Testis	3	0	0%	0	0%
Thyroid Gland	3	0	0%	0	0%
Breast	3	0	0%	0	0%
Spleen	3	0*	0%	0*	0%
Tonsil	3	0	0%	0	0%
Thymus Gland	3	0	0%	0	0%
Bone Marrow	3	0	0%	1	0%
Lung	3	0	0%	0	0%
Heart	3	0*	0%	0	0%
Esophagus	3	0*	0%	0	0%
Stomach	3	0	0%	0	0%
Small Intestine	3	1	33.3%	0**	0%
Colon	3	3	100%	3	100%
Liver	3	0	0%	0	0%
Salivary gland	3	0	0%	0	0%
Kidney	3	1*	33.3%	1*	33.3%
Prostate	3	0	0%	0***	0%
Uterus	3	0	0%	0*	0%
Cervix	3	0	0%	0	0%
Skeletal muscle	3	0	0%	0	0%
Skin	3	0***	0%	0	0%
Nerve	3	0	0%	0	0%
Mesothelial tissue	3	0*	0%	0	0%
Eye	3	0	0%	0	0%
Laryngopharynx	3	1	33.3%	1	33.3%

*1-2 grade granular cytoplasmic staining noted ** Membranous staining noted *** Lost tissue Acceptance criteria. Nuclear staining > 1-grade staining

Table 2 – CL0323 and EP281 Comparison Staining of Various Neoplastic Tissues

Tissue	Total Cases	CL0323 Positive	% Positive	EP281 Positive	% Positive
Adenocarcinoma	35	23*	67.6%	24	68.6%
Mucinous adenocarcinoma	4	3	75%	4	100%
Adenocarcinoma (chronic colitis)	1	1	100%	1	100%
Normal colon tissue	8	8	100%	8	100%

*One tissue with tumor no longer present Acceptance criteria. Nuclear staining >1 grade staining

1. FitzPatrick DR, *et al.* Identification of SATB2 as the cleft palate gene on 2q32-q33. Hum Mol Genet 2003; 12:2491-2501.
2. Szemes M, *et al.* Isolation and characterization of SATB2, a novel ATrich DNA binding protein expressed in development- and cell-specific manner in the rat brain. Neurochem Res. 2006 Feb;31(2):237-46.
3. Magnusson K, *et al.* SATB2 in combination with cytokeratin 20 identifies over 95% of all colorectal carcinomas. Am J Surg Pathol. 2011; 35:937– 48.
4. Berg KB, Schaeffer DF. SATB2 as an immunohistochemical marker for colorectal adenocarcinoma: A concise review of benefits and pitfalls. Arch Pathol Lab Med. 2017 Oct;141(10):1428-1433.