

Product Catalog

BIOCARE
M E D I C A L





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BIOCARE
M E D I C A L

4040 Pike Lane, Concord, CA 94520

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International Ordering
 For a list of current international
 distributors visit us online at
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Ordering Information

How to Place an Order

Orders may be submitted online, by phone, fax, email or standard mail. Please provide the following information on your purchase order or correspondence: purchase order number; name, telephone number, shipping address (no P.O. boxes) and billing address (if applicable); name of product, catalog number, and quantity; credit card number, expiration date and name exactly as it appears on the credit card.

Placing an Order Internationally

To order outside of the USA, please contact the Biocare Medical international distributor closest to you. For a list of current international distributors visit us online at www.biocare.net.

Payment Methods

Payments must be made in U.S. dollars. Methods of payment are as follows: MasterCard, VISA, American Express, or by check drawn on a U.S. bank made payable to "Biocare Medical, LLC".

Image Identification Key



Size Key

Letter	Volume
A, AK	0.1 ml
T	0.4 ml
B, BK	0.5 ml
C, CK	1.0 ml
G3	3.0 ml

Letter	Volume
G5	5.0 ml
AA, G, KG, AAK	6.0 ml
G10	10 ml
G20	20 ml
H, G25, KH	25 ml

Letter	Volume
JJ, R	50 ml
G80	80 ml
L, LX, S	100 ml
L10	110 ml
LH	125 ml

Letter	Volume
LL	200 ml
L2J, L2JX	250 ml
M, M-RVS, MX	500 ml
MM, MMRTU	1000 ml
G1, GL	1 gallon

Conditions of Sale

All prices are quoted in U.S. dollars, exclusive of state and county tax, where applicable. Prices are subject to change without notice. Net 30 upon approval. Overdue accounts subject to finance charges.

Shipping & Priority Delivery

Shipments are F.O.B. Concord, CA. Freight and handling charges must be prepaid and are added to the invoice. Priority and Saturday delivery are available upon request.

Returns

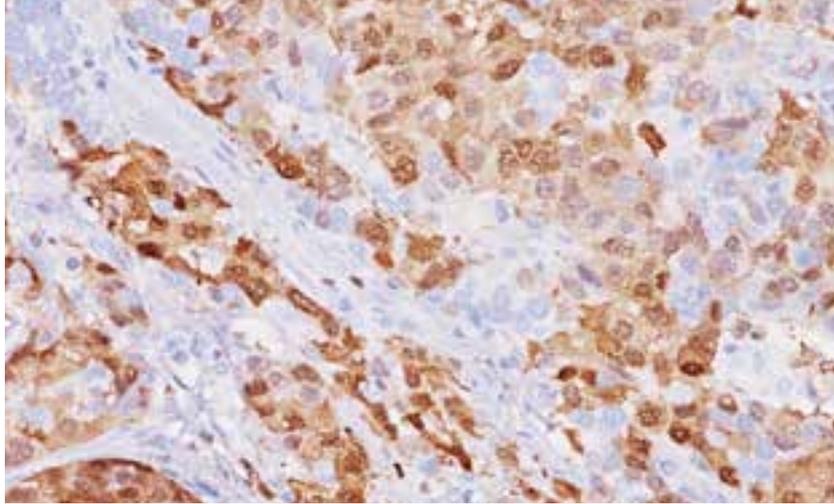
If you are not completely satisfied with the performance of a product, you may return it to Biocare Medical for a refund or replacement, at our discretion. Returns can only be accepted with a return identification number and authorization. Contact Customer Service for assistance in returning products. Returns not caused by unsatisfactory product performance must be approved by Biocare in advance and made within 30 days of delivery and will be subject to a 30% restocking fee.

New Products



Arginase-1	2
Cytokeratin 20, 2X.	2
Desmoglein 3 + p40 (M)	3
Herpes Simplex Virus 1 (2X)	3
Herpes Simplex Virus 2 (2X)	4
p40 (M), 3X (Prostate)	4
p53 (RM), 2X	5
RISH™ Control Probes.	5
SOX10 (M)	6
TRIM29 (P).	6
TTF-1 + Napsin A (RM)	7
Uroplakin II + Uroplakin III	7

Biocare Medical is proud to be the leader of innovation, continually improving immunohistochemistry (IHC) for cancer diagnostics. Novel antibodies developed in-house, including p40 (M), Arginase-1 and SOX10 (M), offer improved specificity compared to established antibodies. Biocare continues to develop new Multiplex™ IHC antibodies to complement our first-in-class simultaneous double stain detection systems such as our patented PIN-4™ technology of P504S + p63 + HMW CK with simultaneous one-step detection. The Decloaking Chamber NxGen is the latest in our line of patented antigen retrieval devices. The IntelliPATH™ and ONCORE™ Automated Slide Staining Systems bring high-quality IHC automation to the clinical or research laboratory. Join Biocare Medical in the fight against cancer, one slide at a time.



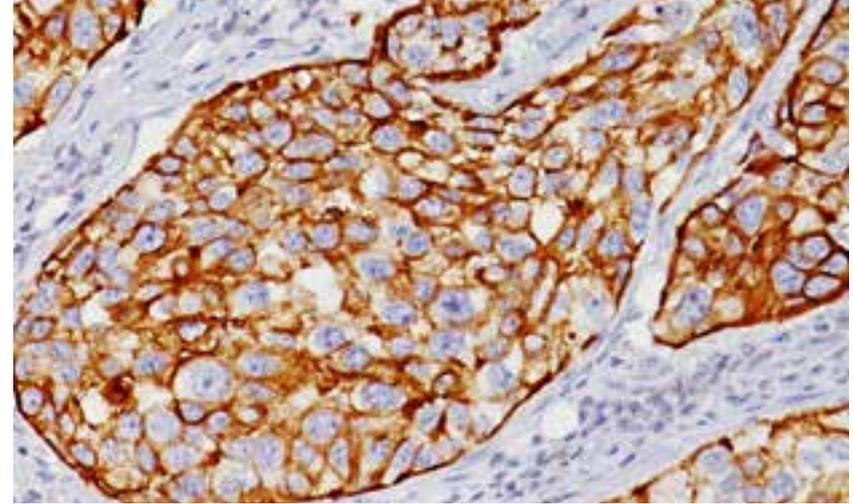
Hepatocellular carcinoma stained with Arginase-1

Arginase-1

Clone	EPR6672(B)
Isotype	IgG
Reactivity	 
Control	Normal human liver
Cat. No.	ACI 3058 A, B; API 3058 AA; AVI 3058 G

Arginase-1 (ARG-1) is a key enzyme of the urea cycle found in liver that catalyzes the conversion of L-arginine into L-ornithine and urea. ARG-1 is a highly specific and sensitive marker of benign and hepatocellular carcinoma (HCC) which is now a key target for the differential diagnosis of HCC from metastatic tumors to the liver. ARG-1 has been shown to be very specific and more sensitive than HepPar-1 and Glypican-3 in hepatocellular carcinomas.

1. Fujiwara M, *et al.* Cancer (Cancer Cytopathol). 2012 Aug;120 (4):230-7. 2. Timek DT, *et al.* AM J Clin Pathol. 2012 Aug;138(2):203-10. 3. Yan BC, *et al.* Am J Surg Pathol. 2010 Aug;34(8):1147-52.



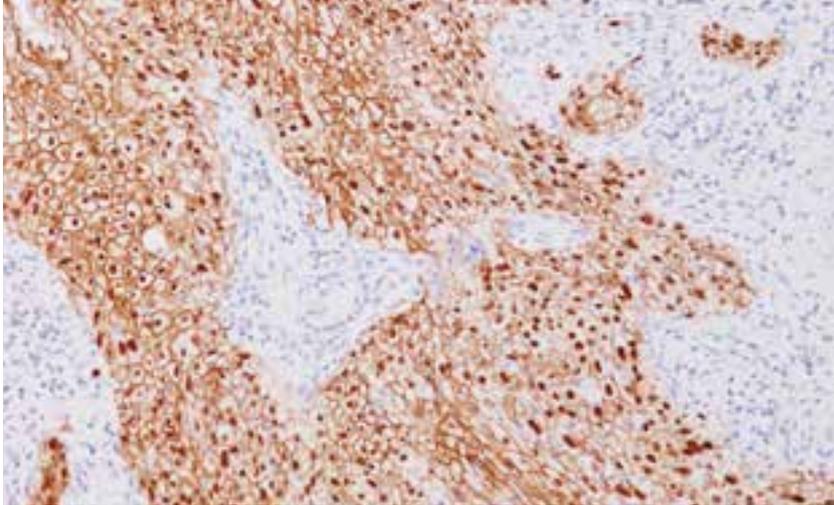
Bladder cancer stained with Cytokeratin 20, 2X

Cytokeratin 20, 2X

Clone	Ks20.8
Isotype	IgG2a
Reactivity	
Control	CK20 positive bladder carcinoma or normal bladder
Cat. No.	API 3089 AA 

Cytokeratin 20 (CK20) is an intermediate filament protein that has been identified with expression primarily restricted to gastric and intestinal epithelium, urothelium and Merkel cells. CK20 is essentially non-reactive in squamous cell carcinomas and adenocarcinomas of the breast, lung and epithelium. CK20, in combination with p53 and CD44, may be a valuable tool in the differentiation of urothelial reactive atypia from carcinoma *in situ* (CIS) of the bladder. In normal urothelium, the umbrella cell layer shows reactivity for CK20. In urothelial reactive atypia, CK20 expression remains as observed in normal urothelium. In CIS, diffuse staining for CK20 is seen throughout the urothelium.

1. Moll R, *et al.* AM J Pathol. 1992 Feb; 140(2):427-47. 2. Perry A, Parisi JE, Kurtin PJ. Hum Pathol. 1997 Aug; 28(8):938-43. 3. Sack MJ, Roberts SA. Diagn Cytopathol. 1997 Feb; 16(2):132-6. 4. McKenney JK, *et al.* AM J Surg Pathol. 2001 Aug; 25(8):1074-8.



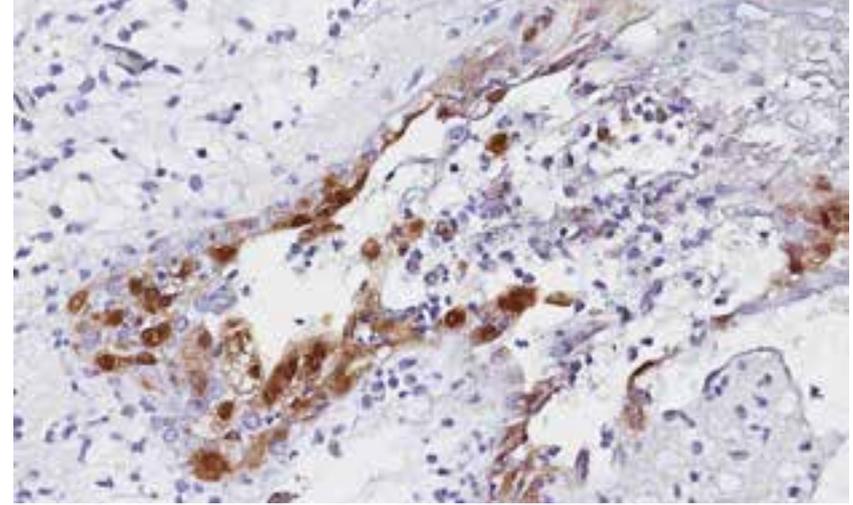
Lung squamous cell carcinoma stained with Desmoglein 3 + p40 (M)

Desmoglein 3 + p40 (M) +

Clone	BC11 + BC28
Isotype	IgG1 + IgG1
Reactivity	
Control	Lung squamous cell carcinoma
Cat. No.	API 3067 AA

In lung squamous cell carcinoma (SqCC), Desmoglein 3 (DSG3) has demonstrated a sensitivity of 85-100% and an ability to discriminate lung adenocarcinoma (ADC) with a specificity of 98-100%. p40 (M) is selectively expressed in lung SqCC, offering an opportunity for improved specificity over p63, as fewer ADC cases are stained positive. The combination of both nuclear and cytoplasmic staining of DSG3 and p40, respectively, may increase overall sensitivity for lung SqCC, and in some cases, may aid the pathologist with difficult cytology and surgical specimens.

1. Bishop JA, *et al.* Mod Pathol. 2012 Mar; 25(3):405-15. 2. North AJ, *et al.* J Cell Sci. 1999 Dec; 112 (Pt 23):4325-36. 3. Savci-Heijink CD, *et al.* Am J Pathol. 2009 May; 174(5):1629-37. 4. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May; 20(3):201-7. 5. Brown AF, *et al.* Arch Pathol Lab Med. 2013 Sep; 137(9):1274-81. 6. Agackiran Y, *et al.* Appl Immunohistochem Mol Morphol. 2012 Jul; 20(4):350-5. 7. Pelosi G, *et al.* J Thorac Oncol. 2012 Feb; 7(2):281-90.



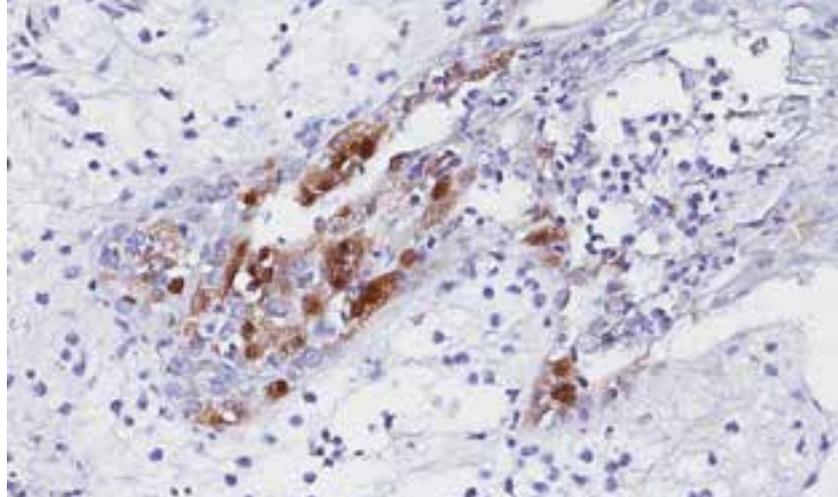
HSV 1 infected skin stained with Herpes Simplex Virus 1 (2X)

Herpes Simplex Virus 1 (2X)

Clone	N/A
Isotype	N/A
Reactivity	N/A
Control	N/A
Cat. No.	APA 3027 AAK 

This antibody reacts with Herpes Simplex Virus (HSV) 1. It reacts with major viral envelope glycoproteins and with core proteins. Infected biopsy tissues include esophagus, lung, liver, cervix and perianal region, as well as cytology specimens. HSV can also infect both the peripheral and central nervous system. Viral antigens may be detected in the cytoplasm and nucleus. Typically, HSV Type 1 infects tissues such as lung and esophagus. This antibody does not cross-react with cytomegalovirus, Epstein-Barr virus, or *varicella zoster* virus.

1. Mehraein Y, *et al.* J Clin Virol. 2004 Sep; 31(1):25-31. 2. Athmanathan S, *et al.* Indian J Med Microbiol. 2001 Jul-Sep; 19(3):127-31. 3. Kaye SB, *et al.* Br J Ophthalmol. 2000 Jun; 84(6):563-71. 4. Subhan S, *et al.* Curr Eye Res. 2004 Aug-Sep; 29(2-3):209-13. 5. Farhatullah S, *et al.* Br J Ophthalmol. 2004 Jan; 88(1):142-4.



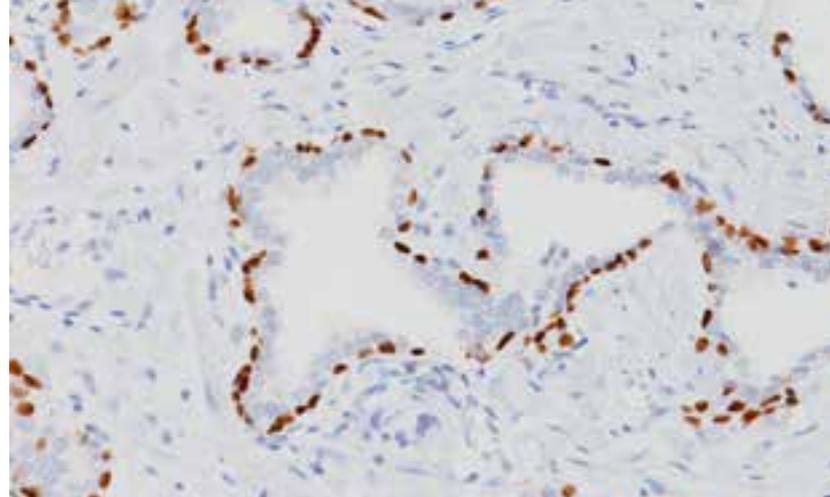
HSV 2 infected skin stained with Herpes Simplex Virus 2 (2X)

Herpes Simplex Virus 2 (2X) ASR FFPE

Clone	N/A
Isotype	N/A
Reactivity	N/A
Control	N/A
Cat. No.	APA 3028 AA supernova

This antibody reacts with Herpes Simplex Virus (HSV) 2. It identifies major viral envelope glycoproteins and core proteins that can be found in the cytoplasm and/or nucleus. HSV can infect both the peripheral and central nervous system. Studies have shown that HSV Type 2 infects the genitals and anus. Studies have shown this antibody does not cross-react with cytomegalovirus, Epstein-Barr virus, or *varicella zoster* virus and is compatible with formalin fixation; however, prolonged fixation can be detrimental to HSV staining.

1. Yoshida K, *et al.* *Diagn Cytopathol.* 2013 Apr; 41(4):354-9. 2. Martin JR, *et al.* *Hum Pathol.* 1991 Jan; 22(1):75-80. 3. Tomita T, *et al.* *Virchows Arch A Pathol Anat Histopathol.* 1991; 419(2):99-105. 4. Eyzaguirre E, Haque K. *Arch Pathol Lab Med.* 2008 Mar; 132(3):424-31.



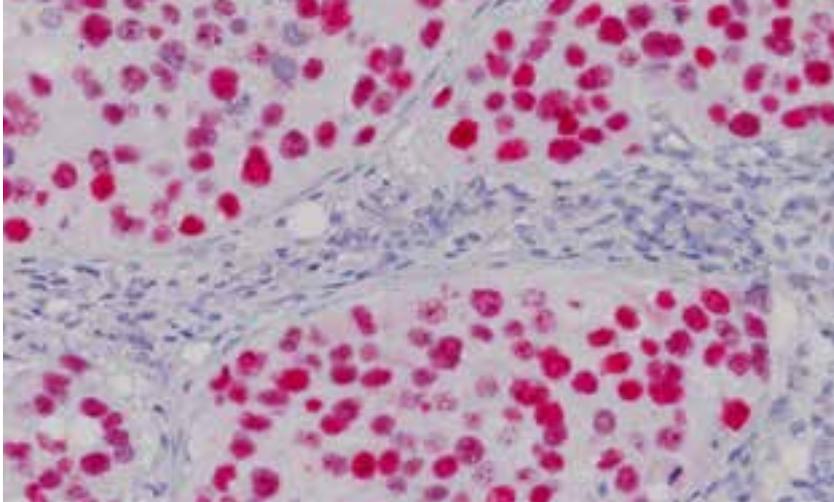
Prostate tissue stained with p40 (M), 3X

p40 (M), 3X (Prostate) IVD FFPE PREFERRED

Clone	BC28
Isotype	IgG1
Reactivity	
Control	Normal prostate or prostate cancer containing normal glands
Cat. No.	API 3079 G3 supernova

The mouse monoclonal antibody p40 [BC28] recognizes an epitope unique to the p40 protein and may have applications in cases where p63 has traditionally been used. To date, p63 [4A4] has been a frequently used marker of basal epithelium in normal prostate, with expression not typically observed in prostatic adenocarcinoma. A study has shown p40 staining of normal prostate glands and prostatic intraepithelial neoplasia (PIN) equivalent to p63, with no p40 staining observed in prostate cancer. p63 [4A4] recognizes both the p63 and p40 proteins. In contrast to the rabbit polyclonal p40 antibody, p40 [BC28] does not stain macrophages.

1. Sailer V, *et al.* *Histopathology.* 2013 Jul; 63(1):50-6. 2. Bishop JA, *et al.* *Mod Pathol.* 2012 Mar; 25(3):405-15. 3. Signoretti S, *et al.* *Am J Pathol.* 2000 Dec; 157(6):1769-75. 4. Pelosi G, *et al.* *J morac oncol.* 2012 Feb; 7(2):281-90. 5. Brown AF, *et al.* *Arch Pathol Lab Med.* 2013 Sep; 137(9):1274-81.



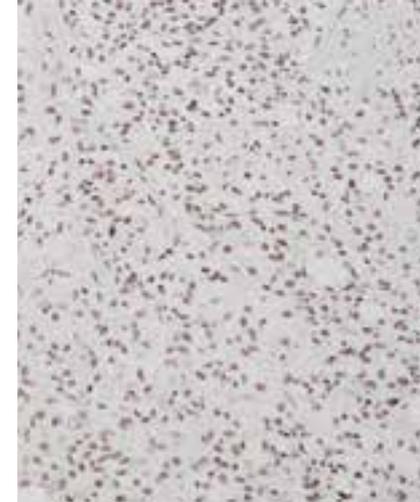
Bladder cancer stained with p53 (RM), 2X

p53 (RM), 2X IVD FFPE

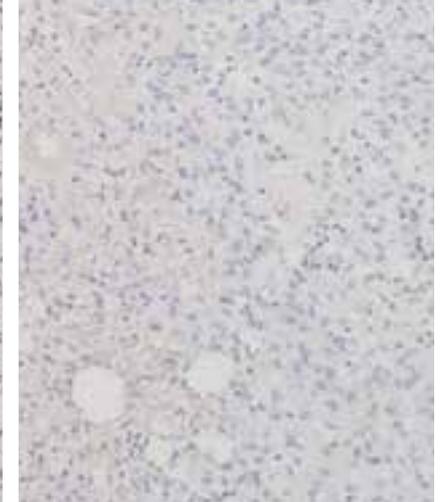
Clone	Y5
Isotype	IgG
Reactivity	
Control	p53 positive bladder cancer
Cat. No.	API 3090 AA supernova

The tumor suppressor p53 plays a key role in regulating urothelial growth and genomic stability. Increased expression of p53 has been observed in high-grade urothelial dysplasia compared to low-grade dysplasia. Studies have also shown that p53 and CK5 together may be useful when evaluating the depth of urothelial carcinoma invasion in the prostate. p53, in combination with CK20 and CD44, may be a valuable tool in the differentiation of urothelial reactive atypia from carcinoma *in situ* (CIS) of the bladder. In normal urothelium, p53 staining is absent to focal. In urothelial reactive atypia, p53 expression remains as observed in normal urothelium. In CIS, diffuse staining for p53 is seen throughout the urothelium.

1. Aron M, *et al.* Am J Surg Pathol. 2013 Dec; 37(12):1815-23. 2. Gilbert CM, Parwani A. J Pathol Inform. 2010 Oct; 1:23. 3. Yildiz IZ, *et al.* Diagn Pathol. 2009 Oct; 4:35. 4. Nese N, *et al.* J Natl Compr Canc Netw. 2009 Jan; 7(1):48-57.



RISH DNA Positive Control Probe



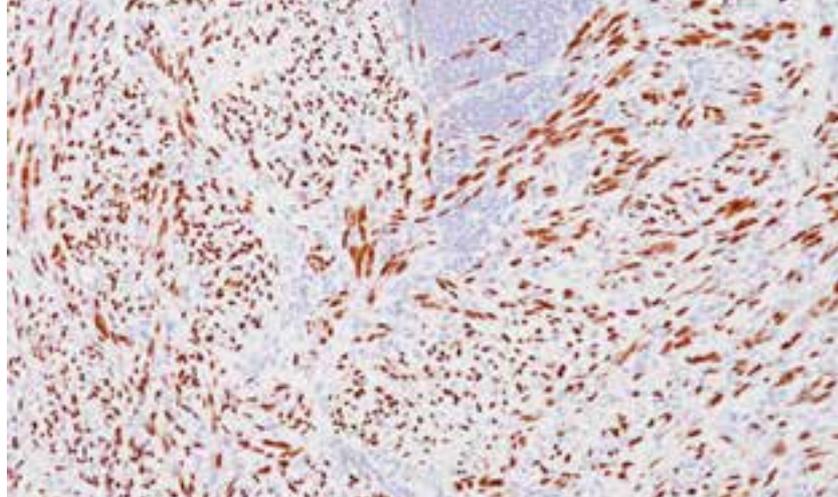
RISH DNA Negative Control Probe

RISH™ Control Probes ASR FFPE

DNA Positive Control	BRA 4026 T	DNA Negative Control	BRA 4027 T
RNA Positive Control	BRA 4028 T	RNA Negative Control	BRA 4029 T

The RISH™ DNA and RNA Positive and Negative Control Probes are available for quality assessment of your mRNA and DNA RISH tests, eliminating false positives and negatives. The RISH DNA Positive Control Probe is an Alu specific sequence of oligonucleotides. It is labeled with Digoxigenin in the same manner as our RISH probes. It is used to assess the integrity of the DNA in a sample and should be used when running our CMV Probe. The RISH RNA Positive Control Probe is a short sequence of digoxigenin-labeled poly(dT) oligonucleotides that will hybridize to mature poly(A) mRNA in the tissue sample. All mature mRNA in the cytoplasm have poly(A) tails at the 3' end. The RISH RNA Positive Control Probe should be used when running our Kappa, Lambda and EBER probes. The RISH DNA and RNA Negative Control Probes are randomized oligos labeled with Digoxigenin. They are used to assess any non-specific staining in tissue sections.

1. Weber AD, *et al.* Pediatr Surg Int. 2011 Mar; 27(3):255-61. 2. Warncke B, *et al.* Virchows Arch. 2004 Jan; 444(1):74-81. 3. Wilkinson DG. Oxford University Press. 1992. ISBN 0 19 963327 4.



Spindle cell carcinoma stained with SOX10 (M)

SOX10 (M) IVD FFPE PREFERRED

Clone	BC34
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Isotype	IgG1
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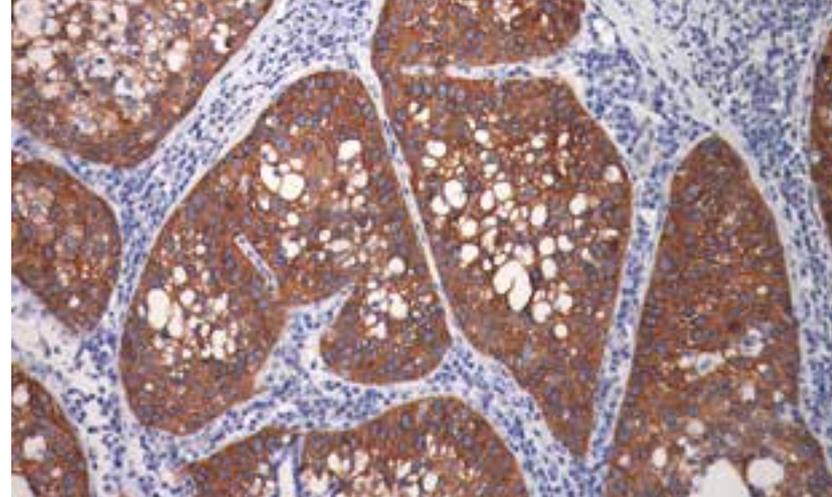
Reactivity	
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Control	Melanoma
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Cat. No.	ACI 3099 A, C; API 3099 AA; AVI 3099 G
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The SOX10 protein is widely expressed in normal human tissues including melanocytes and breast tissue. It is also an important marker in malignant tumors such as melanoma, breast carcinoma, gliomas and benign tumors such as schwannomas. SOX10 has been shown to be expressed in 97-100% of desmoplastic and spindle cell melanomas and was also shown to be expressed in 100% of nevi. The majority of oligodendrogliomas but also a large percentage of astrocytomas and poorly differentiated glioblastomas have also been shown to express SOX10. PATENT PENDING.

1. Mohamed A, *et al.* Appl Immunohistochem Mol Morphol. 2013 Dec; 21(6):506-10. 2. Pusch C, *et al.* Hum Genet. 1998 Aug; 103(2):115-23. 3. Mollaaghababa R, Pavan WJ. Oncogene. 2003 May; 22(20):3024-34. 4. Bondurand N, *et al.* FEBS Lett. 1998 Aug; 432(3):168-72. 5. Bannykh SI, *et al.* J Neurooncol. 2006 Jan; 76(2):115-27. 6. Britsch S, *et al.* Genes Dev. 2001 Jan; 15(1):66-78. 7. Feng Z, *et al.* J Cutan Pathol. 2011 Aug; 38(8):616-24.



Lung squamous carcinoma stained with TRIM29 (P)

TRIM29 (P) IVD FFPE

Clone	N/A
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Isotype	IgG
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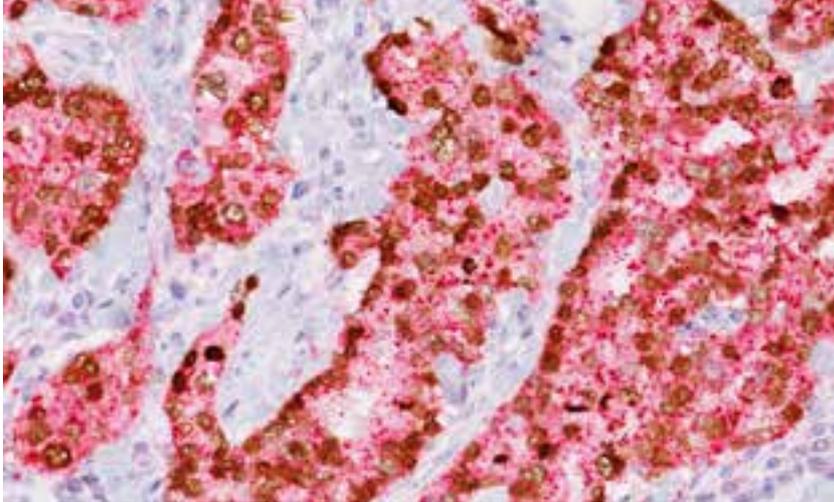
Reactivity	
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Control	Lung squamous cell carcinoma
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Cat. No.	PP 416 AA
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Tripartite motif-containing 29 (TRIM29) is also known as ataxia-telangiectasia group D complementing gene (ATDC). A high expression of TRIM29 has been reported in gastric and pancreatic cancers, and correlates with enhanced tumor growth and lymph node metastasis. In-house studies showed that TRIM29 was able to aid in distinguishing lung squamous cell carcinoma from lung adenocarcinoma with a 92% positive accuracy if used in a panel with antibodies such as TTF-1, p63, CK5/6 and Napsin A. Studies have also shown that TRIM29 expression is strongly associated with histological grade, tumor size, extent of invasion and poorer survival rates.

1. Ring BZ, *et al.* Mod Pathol. 2009 Aug; 22(8): 1032-43. 2. Kosaka Y, *et al.* Ann Surg Oncol. 2007 Sep; 14(9): 2543-9. 3. Tacha D, Yu C, Haas T. Mod Pathol. 2011 Feb; 24(Supplement 1s):425A. 4. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May; 20(3):201-7.



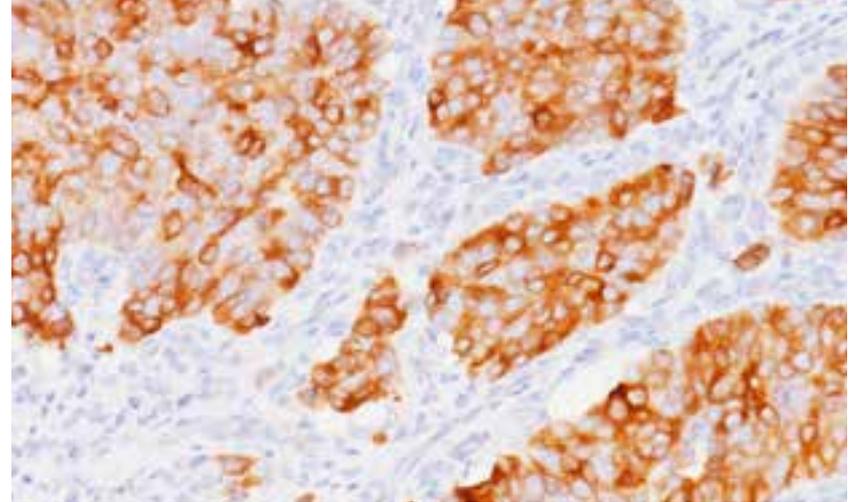
Lung adenocarcinoma stained with TTF-1 + Napsin A (RM)

TTF-1 + Napsin A (RM) IVD FFPE PREFERRED

Clone	8G7G3/1 + BC15
Isotype	IgG1 + IgG
Reactivity	
Control	Lung adenocarcinoma
Cat. No.	API 3078DS AA

Thyroid transcription factor-1 (TTF-1) is detected in primary lung adenocarcinomas and small cell carcinomas. Napsin A is expressed in type II pneumocytes and in adenocarcinomas of the lung. Studies have shown Napsin A to be more sensitive and specific than TTF-1 in lung adenocarcinomas and virtually negative in all squamous carcinomas. When TTF-1 and Napsin A are used in combination, studies show a higher sensitivity and specificity is achieved for lung adenocarcinomas. The use of a rabbit monoclonal reduces lot-to-lot variation often seen when using a polyclonal. TTF-1 + Napsin A (RM) may aid in the analysis of poorly differentiated lung adenocarcinomas vs. squamous cell carcinomas.

1. Hirano T, *et al.* Lung Cancer. 2003 Aug; 41(2):155-62. 2. Ueno T, Linder S, Steterger G. Br J Cancer. 2003 Apr; 88(8):1229-33. 3. Suzuki A, *et al.* Pathol Res Pract. 2005; 201(8-9):579-86. 4. Dejmeek A, *et al.* Diagn Cytopathol. 2007 Aug; 35(8):493-7.



Urothelial carcinoma stained with Uroplakin II + Uroplakin III

Uroplakin II + Uroplakin III IVD FFPE +

Clone	BC21 + BC17
Isotype	IgG1 + IgG1
Reactivity	
Control	Normal bladder or urothelial carcinoma
Cat. No.	API 3094 AA

Uroplakin II [BC21] and Uroplakin III [BC17] are highly specific antibodies that may be useful in identifying tumors of urothelial origin. With the exception of bladder and ureter, staining was highly specific in various normal and neoplastic tissues in an in-house study. Both antibodies exhibited increased staining sensitivity when compared to Uroplakin III [AU1] in cases of urothelial carcinoma of the bladder. Uroplakin II + Uroplakin III may be a specific and sensitive antibody cocktail for urothelial carcinoma and in discriminating bladder cancer from renal and prostate carcinomas. PATENT PENDING.

1. Wu XR, *et al.* Kidney Int. 2009 Jun; 75(11):1153-65. 2. Moll R, *et al.* AM J Pathol. 1995 Nov; 147(5):1383-97. 3. Kaufmann O, Volmerig J, Dietel M. Am J Clin Pathol. 2000 May; 113(5):683-7. 4. Olsburgh J, *et al.* J Pathol. 2003 Jan; 199(1):41-9. 5. Huang Hy, *et al.* Hum Pathol. 2007 Nov; 38(11):1703-13.



Primary Antibodies

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Antibodies By Letter

A 14 - 18	M 86 - 94
B 18 - 22	N 95 - 97
C 22 - 61	O 98
D 61 - 64	P 99 - 117
E 64 - 69	R 117 - 118
F 70 - 71	S 118 - 124
G 72 - 75	T 124 - 129
H 75 - 81	U 129 - 130
I 82	V 131 - 132
K 83 - 84	W 133
L 84 - 85	Z 133

Biocare Medical's dedicated Research & Development team pride themselves on developing the most sensitive and highly specific antibodies which are suitable for use in the Anatomical Pathology Laboratory. We are routinely expanding our antibody offerings to include key antibodies that are critical tools to aid in cancer and infectious disease detection. We provide exclusive, licensed antibodies such as ERG, p63 and PAX8 (M), which may aid in pathologist interpretation and decision making. All Biocare antibodies are optimized for immunohistochemical procedures for use on FFPE tissues and are formulated to provide maximum sensitivity while concurrently minimizing the amount of background staining. Available in both prediluted and concentrated formats, we also offer a concise list of antibodies that are optimized for our automated slide stainer, the IntelliPATH™ and for the Ventana Medical Systems instrumentation.

Primary Antibodies

Biocare antibodies are optimized for immunohistochemical (IHC) procedures for use on formalin-fixed, paraffin-embedded (FFPE) tissues. They are formulated to provide maximum sensitivity while concurrently minimizing the amount of background staining. The majority of antibodies are available in *in vitro* diagnostic (IVD) format with a data sheet indicating the preferred testing protocol.

Concentrated Antibodies

Concentrated antibodies are antibodies that require a dilution prior to use. The suggested antibody dilution and diluent found on the data sheet maximizes stability and helps to achieve the best signal-to-noise ratio. For more information about Biocare's series of diluents, see the Ancillaries section of this catalog. Dilutions are approximate and may vary according to the procedure being conducted.

Prediluted Antibodies

Prediluted antibodies are ready-to-use antibodies in diluent at optimal concentrations. These antibodies do not require any further dilution or diluent.

Antibody Cocktails

Antibody cocktails are designed to provide increased sensitivity. This is accomplished by combining two or more antibodies or clones which are targeted to different epitopes.

intelliPATH™ Antibodies

intelliPATH™ (IP) antibodies are ready-to-use antibodies in pre-labeled IP vials. These are immediately ready to be used on the intelliPATH™ Staining System.

Multiplex IHC™

Multiplex IHC antibodies are designed to aid the pathologist in the interpretation of critical clinical problems. These cocktails of mouse and rabbit antibodies allow for identification of two or more antibodies on a single slide. When combined with Biocare's simultaneous Multiplex detection kits, a Multiplex assay can be completed in approximately the same time as a single antibody assay. For more information on Multiplex IHC, see the Multiplex IHC section of the catalog.

Supernova

Supernova antibodies have higher antibody concentrations than standard ready-to-use antibodies. The higher antibody concentration allows them to be combined to create laboratory validated test cocktails or the rapid incubation times can be used to decrease protocol length. These antibodies can also be sequentially incubated and simultaneously detected for Multiplex IHC staining. Incorporating Supernova into an antibody library adds versatility to current test menus.

VP Echelon™ Antibodies

Biocare's VP Echelon Series of ready-to-use antibodies have been developed for use with Ventana® Medical Systems BenchMark® XT Immunohistochemistry Staining System in combination with Ventana® Detection Kits and Ventana® Prep Kit Dispensers. VP Echelon Series antibodies are developed solely by Biocare Medical LLC and do not imply approval or endorsement of Biocare's antibodies by Ventana Medical Systems, Inc. Biocare and Ventana are not affiliated, associated or related in any way. Ventana®, BenchMark®, iVIEW™ and ultraView™ are trademarks of Ventana Medical Systems, Inc.

Master List for Immunohistochemistry

Cancer Type	Markers
Adrenal	Synaptophysin, NSE, Chromogranin, Neurofilament
Bladder	GATA-3, Uroplakin II, Uroplakin III, p40, Smoothelin, p63, CK20, CK5, URO-3 Triple Stain™
Brain	GFAP, Microglia, S100, Neurofilament, Myelin basic protein, Ubiquitin, SOX10
Breast	ER, PR, CK5/14 + p63 + CK7/18, CK5+p63, CK8/18, CK7, Calponin, E-cadherin, p120 + E-cadherin, CK7, GATA-3, GCDFP-15, Mammaglobin, c-erbB-2
Colon	CDX2, CK20, DOG1, CD117, CEA, Villin, MLH1, MSH2, MSH6, PMS2
Esophagus	p40, p63, CK5 + CK14, HMW CK (34BE12)
Germ Cell	SALL4, OCT3/4, PLAP, AFP, CD117, hCG
Infectious	<i>Helicobacter pylori</i> , Spirochete, Cat Scratch, CMV, Herpes Simplex 1 & 2, TB
Kidney	PAX8, WT-1, RCCm, CD10, Amyloid A, Amyloid P
Liver	Arginase-1, Glypican-3, Hepatic Specific Antigen, CK19, MOC-31, AFP, LMW CK (CK8/18)
Lung	Napsin A, TTF-1, Desmoglein 3, p40, CK5, p63, TRIM29, CK7, CD56, Surfactant apoprotein-A, Calretinin, EGFR
Lymphoma	LCA, PAX5, L26, UCHL-1, CD3, CD43, CD10, CD15, ALK, TIA-1, TdT, Bcl-2, Kappa, Lambda, Cyclin D1, CD5, CD7, CD22, CD23, CD57, PU.1, MUM1, D2-40
Macrophage	CD68, CD163
Melanoma	S100, SOX10, Pan Melanoma (HMB45 + Melan A/MART-1 + Tyrosinase), MiTF
Neuroendocrine	Chromogranin A, Synaptophysin, CD56, NSE, Neurofilament, CD57, CD56, CK20
Ovary	PAX8, WT-1, CA125, CK7, CDX2
Pancreas	Synaptophysin, Chromogranin, NSE
Pituitary	TSH, FSH
Prostate	PIN-4, P504S, ERG, HMW CK, p40, p63, NKX3.1, Androgen Receptor
Sarcoma	MSA, Smooth Muscle Actin, Desmin, Myogenin, ERG, CD31, CD34, Vimentin, CD99
Skin	Factor XIIIa, HMW CK, Neurofilament, Cytokeratins, CD4 + CD8, Ber-EP4
Thyroid	Thyroglobulin, TTF-1, Napsin A, Calcitonin
Vascular	ERG, CD31, CD34 (Qbend/10), Factor VIII

Antibody Panels

Mainline Screeners for Tumors of Unknown Origin (Undifferentiated Neoplasm)			
Lymphoma	Carcinoma	Melanoma	Sarcoma
LCA	Pan CK	S100	MSA (Muscle Specific Actin)

Secondary Screening Panels for Tumors of Unknown Origin (Undifferentiated Neoplasm)			
Lymphoma	Carcinoma	Melanoma	Sarcoma
L26	LMW CK	HMB45	Smooth Muscle Actin
PAX5	HMW CK / p63 / p40	Tyrosinase	Desmin
CD3	CK7 / CK19	MART-1	Myogenin
CD15 / CD30	CDX2 / CK20	Pan Melanoma	CD31
ALKc	TTF-1	Vimentin	CD34
Kappa / Lambda	ER/PR	SOX10	CD99
CD68 / CD163	c-erbB-2		ERG
CD10	PSA / NKX3.1 / ERG		
Cyclin D1	Synaptophysin		
CD4 / CD8	PAX8		
Bcl-2 / Bcl-6	SALL4		
CD7	CD56		
TdT	HSA / Arginase-1		
MUM1	Glypican-3		
CD4	GATA-3 / Uroplakin II		

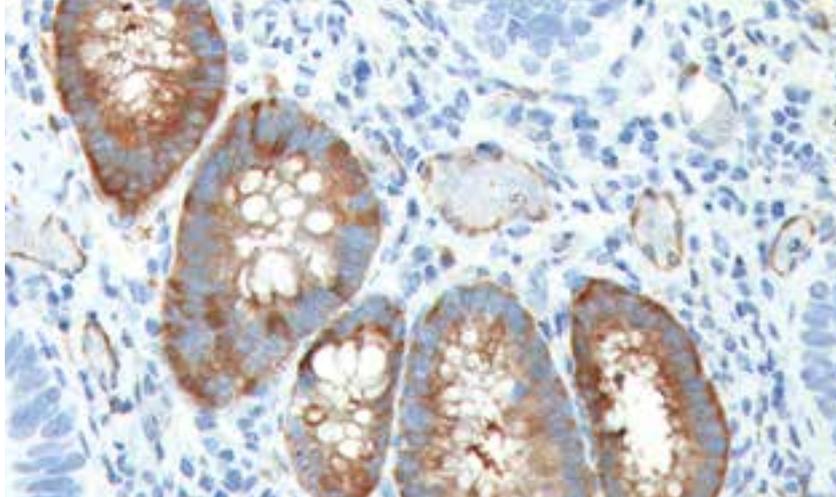
Antibody Panels

Carcinoma Panel	+ Markers
Squamous Cell Carcinoma	Desmoglein-3 / CK5 / p40 / p63
Adenocarcinoma	LMW CK (CK8/18) / CK7 / CK19
Lung, Pancreas, Breast & Ovarian	CK7
Gastrointestinal, Stomach & Colon	CK20 / CDX2
Lung	TTF-1 / Napsin A / p40 / Desmoglein-3
Prostate	PSA / NKX3.1 / ERG
Breast	ER/PR / GATA-3 / Mammaglobin / GCDFP-15
Kidney, Ovarian & Endometrial	PAX8 / WT1
Bladder	Uroplakin II / GATA-3 / p40 / S100P
Neuroendocrine	Synaptophysin / Chromogranin A / CD56

Lymphoma Panel	+ Markers	- Markers
B-Cell	L26	UCHL-1
	PAX5	CD3
	CD79a	CD15
	Kappa/Lambda	CD43 (-/+)
T-Cell	UCHL-1	L26/PAX5
	CD3	CD79a
	CD43	CD15
Hodgkin's	CD15	LCA
	CD30	L26 (-/+)
	EBV	UCHL-1
	PU.1	ALKc
	PAX-5	TIA-1
Anaplastic Large Cell Lymphoma	CD30	L26
	ALKc	CD15
	TIA-1 (Pan)	
	CD43	
	EMA	
True Histiocytic	CD68	L26
	CD163	UCHL-1
	AAT	CD3

Melanoma Panel	Tertiary Melanoma Panel (phenotype)
HMB45	MiTF (Melanocytic)
Pan Melanoma-2	NGFR (Neurotropic)
MART-1 (Melan A)	SOX10 (Spindle cell)
Tyrosinase	

Sarcoma Panel	+ Markers	- Markers
Leiomyosarcoma	Muscle Specific Actin	Myogenin
	Desmin	Myosin
	Smooth Muscle Actin	Myoglobin
Rhabdomyosarcoma	Myogenin	
	Desmin	Smooth Muscle Actin
	Myoglobin	
	Myosin	
Angiosarcoma	ERG	L26
	CD31	CD15
	CD34	
Ewing's Sarcoma	CD99	Desmin
	ERG	Factor VIII
	Fli-1	



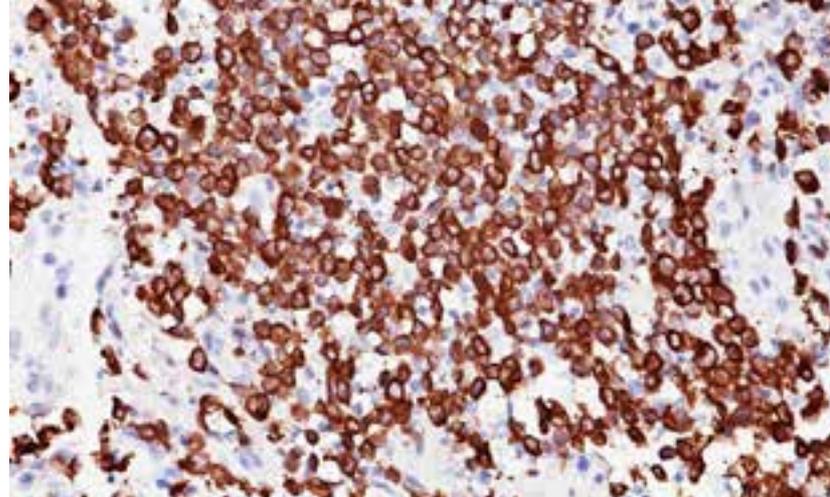
Colon cancer stem cells stained with ALDH1a1

ALDH1a1 RUO FFPE

Clone	EP1933Y
Isotype	IgG
Reactivity	 
Control	Breast or colon cancer
Cat. No.	CME 351 AK, BK

The ALDH1a1 (Aldehyde dehydrogenase 1) gene encodes the major cytosolic ALDH1a1 protein existing in the liver and other tissues. The genetic deficiency of this isozyme has been found at a low frequency (< 10%) in both Caucasians and Asians. Studies have shown that normal and cancerous human mammary epithelial cells with an increased aldehyde dehydrogenase activity have stem/progenitor-like properties. In a series of 577 breast carcinomas, expression of ALDH1a1 detected by immunostaining correlated with poor prognosis. These findings offer an important tool for the study of normal and malignant breast stem cells and facilitate the clinical application of stem cell concepts.

1. Ginestier C, *et al.* Cell Stem Cell. 2007 Nov; 1(5):555-67. 2. Liu S, *et al.* Proc Natl Acad Sci USA. 2008 Feb 5; 105(5):1680-5. 3. Perlmann T. Nature Genetics. 2002 May; 31(1):7-8. 4. Bremer R, *et al.* Mod Pathol. 2011 Feb; 24(Suppl 1s):181A.



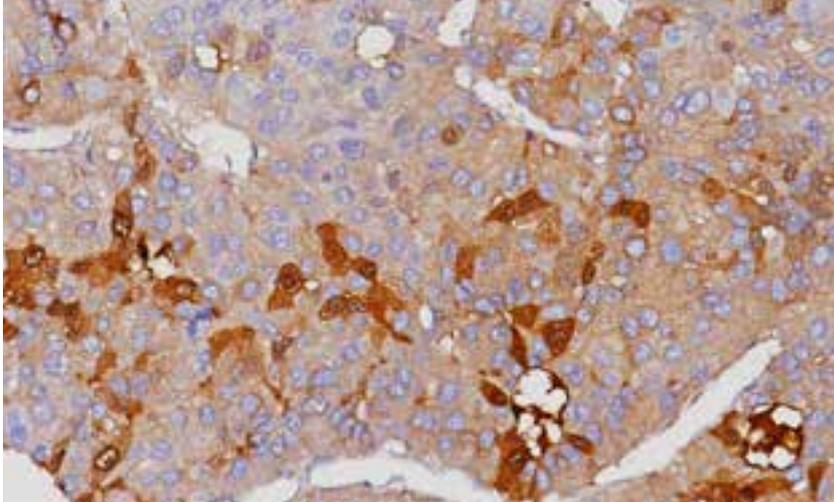
Anaplastic large cell lymphoma stained with ALK [5A4]

ALK [5A4] IVD FFPE

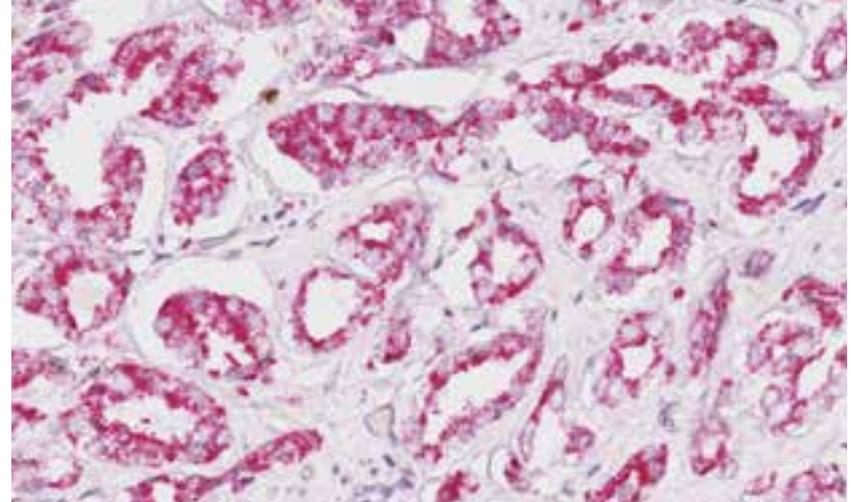
Clone	5A4
Isotype	IgG1
Reactivity	
Control	Anaplastic large cell lymphoma
Cat. No.	ACI 3041 A, B; API 3041 AA

ALK (p80) recognizes the formalin-resistant epitope of native anaplastic lymphoma kinase (ALK) protein. ALK specifically labels t(2;5)-positive cells giving strong cytoplasmic staining that is also associated with nuclear staining. Anaplastic large cell lymphoma (ALCL) is a heterogeneous group of diseases by morphology, immunophenotyping and clinical presentation that can be difficult to diagnose because of its similarity to Hodgkin's lymphoma. Research has shown that ALK stains the majority of CD30+ ALCL. It has been shown to not stain Hodgkin's disease (Reed-Sternberg cells). ALK may be used in a panel with CD15, CD30, TIA-1 and EMA.

1. Falini B, *et al.* Am J Pathol. 1998 Sep; 153(3):875-86. 2. Mino-Kenudson M, *et al.* Clin Cancer Res. 2010 Mar; 16(5):1561-71. 3. Paik JH, *et al.* J Thorac Oncol. 2011 Mar; 6(3):466-72. 4. Kim H, *et al.* J Thorac Oncol. 2011 Aug; 6(8):1359-66. 5. McLeer-Florin A, *et al.* J Thorac Oncol. 2012 Feb; 7(2):348-54.



Liver cancer stained with Alpha-1-Fetoprotein (AFP)



Prostate cancer stained with AMACR (RM)

Alpha-1-Fetoprotein (AFP) IVD FFPE

Clone	N/A
Isotype	N/A
Reactivity	
Control	Hepatocytes of fetal liver or hepatoma
Cat. No.	CP 028 A; PP 028 AA

This antibody reacts with human alpha-1-fetoprotein (AFP). AFP reacts with germ-cell tumors, gonadal tumors and liver carcinoma. Neoplasms commonly associated with AFP production are hepatocellular carcinomas and some germ cell tumors, typically yolk sac tumor. Rare tumors of visceral origin may also be associated with AFP production. Studies show that in hepatocellular carcinoma, AFP expression usually indicates malignancy in a hepatocellular nodule and hepatocytic histogenesis of a malignancy.

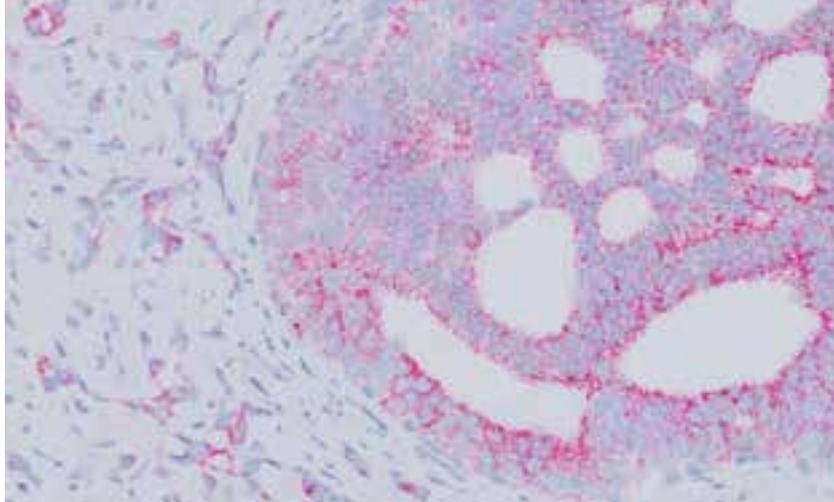
1. Samaratunga H, *et al.* Anticancer Res. 2012 Nov; 32(11):4987-91. 2. Caruso RA. Eur J Basic Appl Histochem. 1991; 35(2):203-9. 3. Scheithauer W, *et al.* Int J Pancreatol. 1989 Feb; 4(1):99-103. 4. Wee A. Appl Immunohistochem Mol Morphol. 2006 Sep; 14(3):266-72.

AMACR (RM) ASR FFPE

Clone	13H4
Isotype	IgG
Reactivity	N/A
Control	N/A
Cat. No.	APA 3024 AA

α -Methylacyl coenzyme A racemase (AMACR), also known as P504S, is a peroxisomal and mitochondrial enzyme that plays a role in bile acid synthesis and β -oxidation of branched chain fatty acids. In immunohistochemistry, AMACR has been shown to be a specific marker of prostatic adenocarcinoma. Additionally, prostate glands involved in PIN have been found to express AMACR, whereas AMACR was nearly undetectable in benign glands. AMACR stains the majority of prostate cancer; however, AMACR has been shown to stain many other types of carcinomas such as hepatomas, breast carcinomas, pancreatic and islet tumors.

1. Tacha DE, Miller RT. App; Immunohistochem Mol Morphol. 2004 Mar, 12(1):75-8. 2. Hameed O, Humphrey PA. Semin Diagn Pathol. 2005 Feb; 22 (1):88-104. 3. Trpkob K, Bartzak McKay J, Yilmaz A. AM J Clin Pathol. 2009 Aug; 132 (2): 211-20. 4. Wu CL, *et al.* Hum Pathol. 2004 Aug; 35(8): 1008-13.



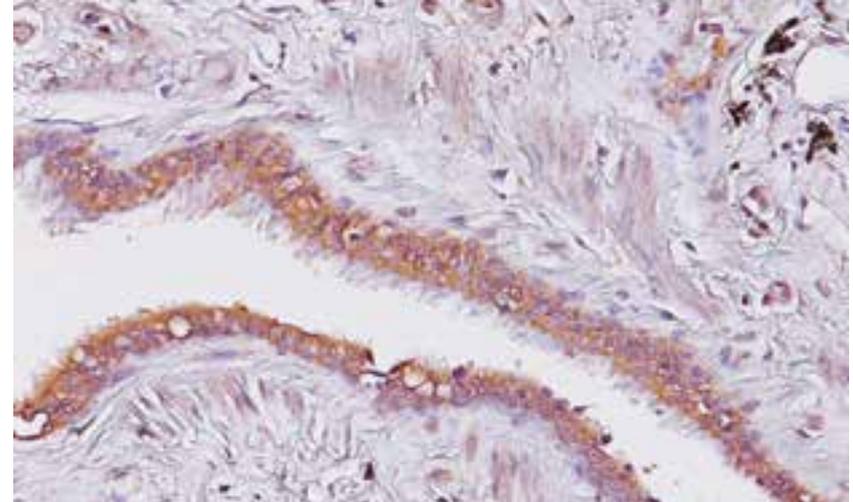
Prostate cancer stained with AMACR (RM) 3X

AMACR (RM), 2X & 3X

Clone	13H4
Isotype	IgG
Reactivity	N/A
Control	N/A
Cat. No.	2X APA 3016 AA  ; 3X APA 3055 G3, H 

α -Methylacyl coenzyme A racemase (AMACR), also known as P504S, is a peroxisomal and mitochondrial enzyme that plays a role in bile acid synthesis and β -oxidation of branched chain fatty acids. In immunohistochemistry, AMACR has been shown to be a specific marker of prostatic adenocarcinoma. Additionally, prostate glands involved in PIN have been found to express AMACR, whereas AMACR was nearly undetectable in benign glands. AMACR + CK5/14 may be used to assess neoplasia in prostate biopsies. AMACR stains the majority of prostate cancer; however, AMACR has been shown to stain many other types of carcinomas such as hepatomas, breast carcinomas, pancreatic and islet tumors.

1. Tacha DE, Miller RT. *App; Immunohistochem Mol Morphol.* 2004 Mar; 12(1):75-8. 2. Hameed O, Humphrey PA. *Semin Diagn Pathol.* 2005 Feb; 22 (1):88-104. 3. Trpkob K, Bartezak McKay J, Yilmaz A. *AM J Clin Pathol.* 2009 Aug; 132 (2): 211-20. 4. Wu CL, *et al.* *Hum Pathol.* 2004 Aug; 35(8): 1008-13.



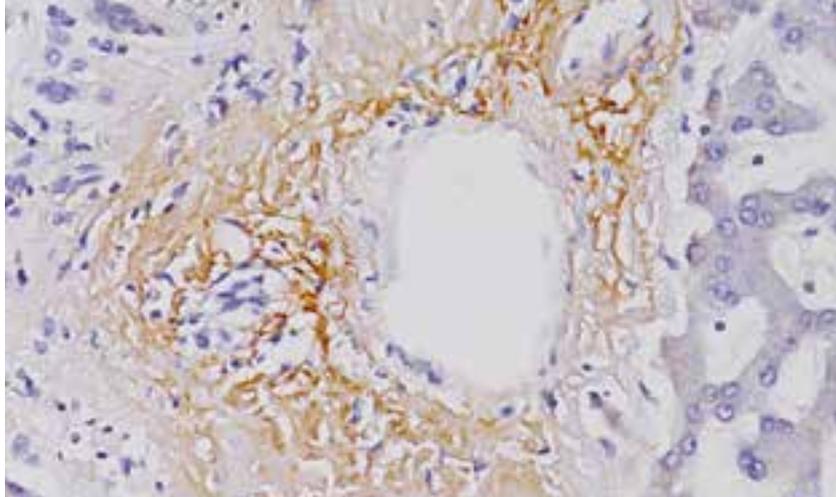
Lung tissue stained with Amyloid A

Amyloid A

Clone	mc1
Isotype	IgG2a
Reactivity	
Control	Amyloid deposits in kidney or other amyloid-infiltrated tissue
Cat. No.	CM 125 A; PM 125 AA

Amyloidosis is a heterogeneous group of disorders characterized by extracellular deposition of abnormal protein fibrils, which are derived from different proteins. The Amyloid A antibody reacts with native and fixed amyloid fibrils. The antibody also reacts with amyloid deposits in many tissues including kidney and rectum. Cross-reactivity with serum precursor of protein AA has been observed. The application of Congo Red, Amyloid A and Amyloid P in tissues with amyloid deposits has been shown to be superior to Congo Red alone.

1. Linke RP. *Prog Histochem Cytochem.* 2012 Aug; 47(2):61-132. 2. Linke RP, Gärtner HV, Michels H. *J Histochem Cytochem.* 1995 Sep; 43(9):863-9. 3. Linke RP. *J Histochem Cytochem.* 1984 Mar; 32(3):322-8.



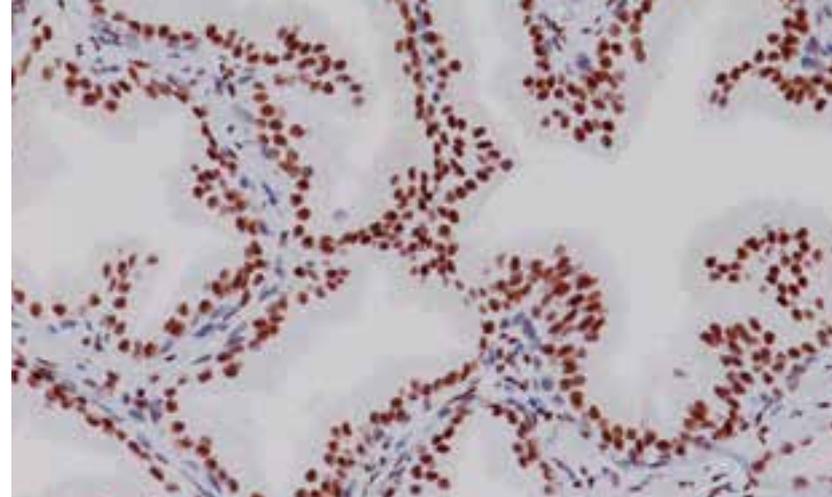
Stomach tissue stained with Amyloid P

Amyloid P

Clone	N/A
Isotype	N/A
Reactivity	
Control	Amyloid deposits in kidney or other amyloid-infiltrated tissue
Cat. No.	PP 132 AA

Amyloidosis is a heterogeneous group of disorders characterized by extracellular deposition of abnormal protein fibrils, which are derived from different proteins. Amyloid P reacts with amyloid deposits in all tissues including kidney, rectum and brain. The application of Congo Red, Amyloid P and Amyloid A in tissues with amyloid deposits has been shown to be superior to Congo Red and other histochemical stains. Small and minute amounts of amyloid can be detected with both Amyloid P and Amyloid A antibodies and thus could aid in allowing earlier treatment before organ damage has occurred.

1. Suwabe H, *et al.* *Pathol Int.* 1999 May; 49(5):391-402.
2. Cui D, *et al.* *Pathol Int.* 1998 May; 48(5):362-7.
3. Wagrowska-Danilewicz M, Danilewicz M. *Acta Histochem.* 1996 Jul; 98(3):301-8.
4. Linke RP, Gärtner HV, Michels H. *J Histochem Cytochem.* 1995 Sep; 43(9):863-9.
5. Ko LW, Sheu KF, Blass JP. *Am J Pathol.* 1991 Sep; 139(3):523-33.
6. Hind CR, *et al.* *J Pathol.* 1983 Feb; 139(2):159-66.



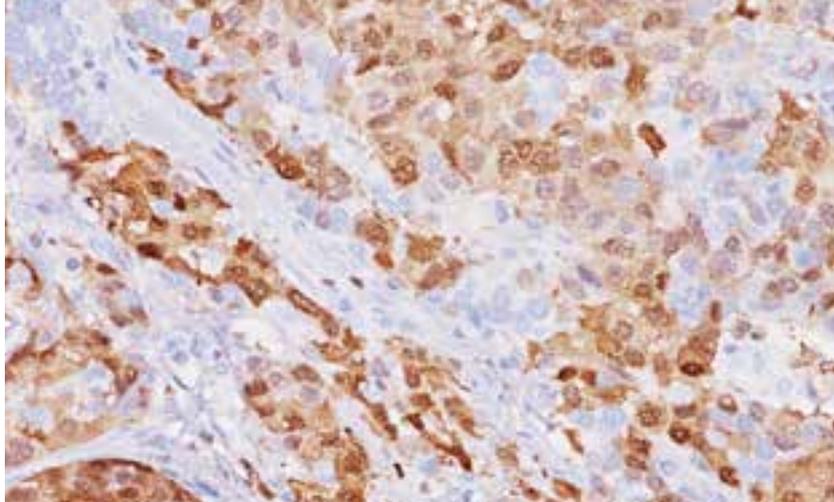
Normal prostate gland stained with Androgen Receptor

Androgen Receptor

Clone	AR441
Isotype	IgG1
Reactivity	
Control	Prostate cancer or normal prostate
Cat. No.	CM 109 A; PM 109 AA

The androgen receptor (AR) antibody reacts with full length and the A-form of the receptor. It is known to be highly specific and does not cross-react with estrogen, progesterone or glucocorticoid receptors. It has been reported that well-differentiated tumors show high expression of AR and poorly differentiated tumors show low to no expression. In prostate cancer, androgen has been proposed as a marker of hormone-responsiveness, as high expression of AR in biopsies may help identify patients that would respond to androgen ablation therapy. Other applications for AR include breast cancer, Paget's disease and dermatopathology.

1. Sullivan HC, *et al.* *Appl Immunohistochem Mol Morphol.* 2014 Jan;22(1):17-23.
2. Hu R, *et al.* *Clin Cancer Res.* 2011 Apr;17(7):1867-74.
3. Lai JJ, *et al.* *Arch Dermatol Res.* 2012 Sep;304(7):499-510.
4. Agoulnik IU, Weigel NL. *J Cell Biochem.* 2006 Oct;99(2):362-72.
5. Horie K, *et al.* *Hum Reprod.* 1992 Nov;7(10):1461-6.
6. Magi-Galluzzi C, *et al.* *Anticancer Res.* 1996 Sept-Oct;16(5A):2931-6.



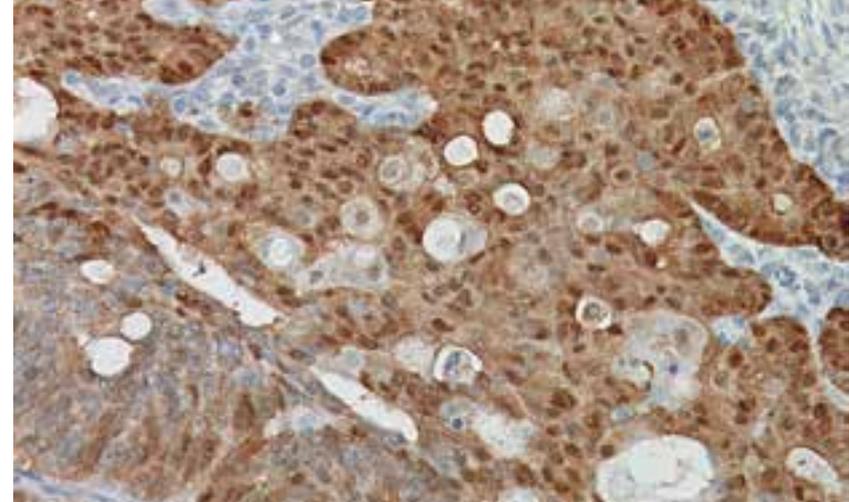
Hepatocellular carcinoma stained with Arginase-1

Arginase-1

Clone	EPR6672(B)
Isotype	IgG
Reactivity	 
Control	Normal human liver
Cat. No.	ACI 3058 A, B; API 3058 AA; AVI 3058 G

Arginase-1 (ARG-1) is a key enzyme of the urea cycle found in liver that catalyzes the conversion of L-arginine into L-ornithine and urea. ARG-1 is a highly specific and sensitive marker of benign and hepatocellular carcinoma (HCC) which is now a key target for the differential diagnosis of HCC from metastatic tumors of the liver. ARG-1 has been shown to be very specific and more sensitive than HepPar-1 and Glypican-3 in hepatocellular carcinomas.

1. Fujiwara M, *et al.* Cancer (Cancer Cytopathol). 2012 Aug;120 (4):230-7. 2. Timek DT, *et al.* AM J Clin Pathol. 2012 Aug;138(2):203-10. 3. Yan BC, *et al.* Am J Surg Pathol. 2010 Aug;34(8):1147-52.

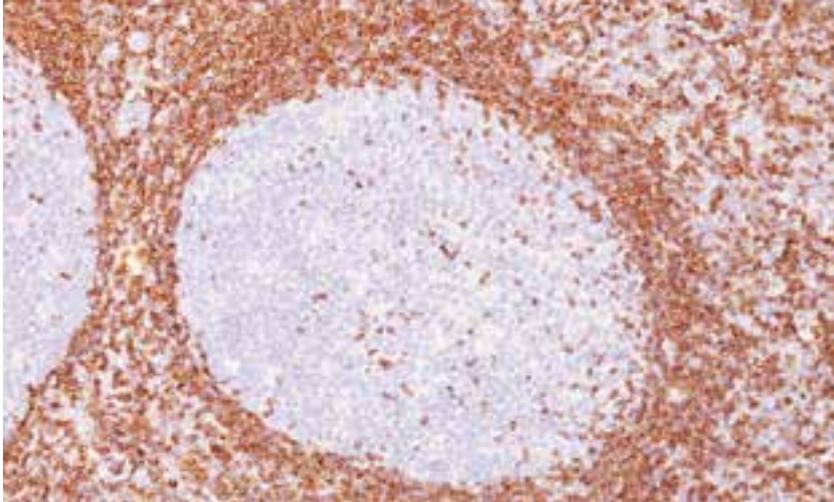
Colon cancer stained with β -Catenin

β -Catenin

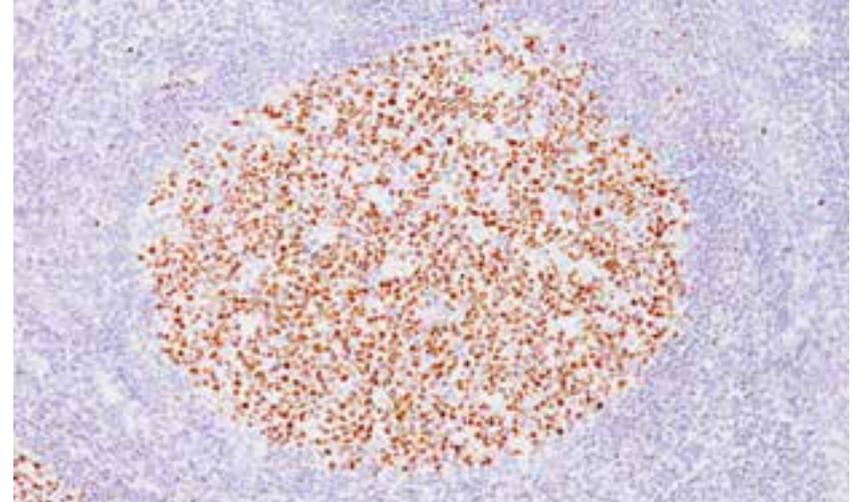
Clone	14/Beta-Catenin
Isotype	IgG1
Reactivity	
Control	Colon or breast carcinoma
Cat. No.	CM 406 A, C; PM 406 AA

β -Catenin is involved in cell adhesion through catenin-cadherin complexes and in the Wnt signaling pathway. Deregulation allows β -Catenin to accumulate in the nucleus, which may be useful in aiding the differential diagnosis of selected neoplasms. β -Catenin adhesion complex impairment is also associated with a poorly differentiated phenotype and increased invasiveness of carcinomas. Cytoplasmic localization of β -Catenin has been demonstrated as a marker of poor outcome in breast cancer patients. Studies suggest it may be useful in the differential diagnosis of selected soft tissue tumors and tumors of the GI tract, pancreas, lung and female genital tract.

1. Bukholm IK, Nesland JM, Børresen-Dale AL. J Pathol. 2000 Jan; 190(1):15-9. 2. Montgomery E, Folpe AL. Adv Anat Pathol. 2005 Nov; 12(6):350-6. 3. Kikuchi, A. Biochem Biophys Res Commun. 2000 Feb; 268(2):243-8. 4. Bläker H, *et al.* Genes Chromosomes Cancer. 1999 Aug; 25(4):399-402. 5. Burford H, *et al.* Am J Clin Pathol. 2009 Dec; 132(6):831-9.



Tonsil stained with Bcl-2



Tonsil stained with Bcl-6

Bcl-2

Clone	100/D5
Isotype	IgG1/kappa
Reactivity	
Control	Follicular lymphomas or tonsil
Cat. No.	CM 003 A, C; PM 003 AA; IP 003 G10

The 100/D5 antibody is highly specific to Bcl-2 (alpha) and shows no cross-reactivity with Bcl-x or Bax protein. Bcl-2 (b-cell lymphoma #2) is a proto-oncogene located at 18q21.3. Expression of Bcl-2 alpha oncoprotein has been shown to inhibit apoptosis. In most follicular lymphomas, neoplastic germinal centers express high levels of Bcl-2 protein, whereas the normal or hyperplastic germinal centers are negative. Various B- and T-cell lymphoproliferative diseases and some diffuse large B-cell lymphomas are Bcl-2 positive while Burkitt's lymphoma/leukemia is generally negative.

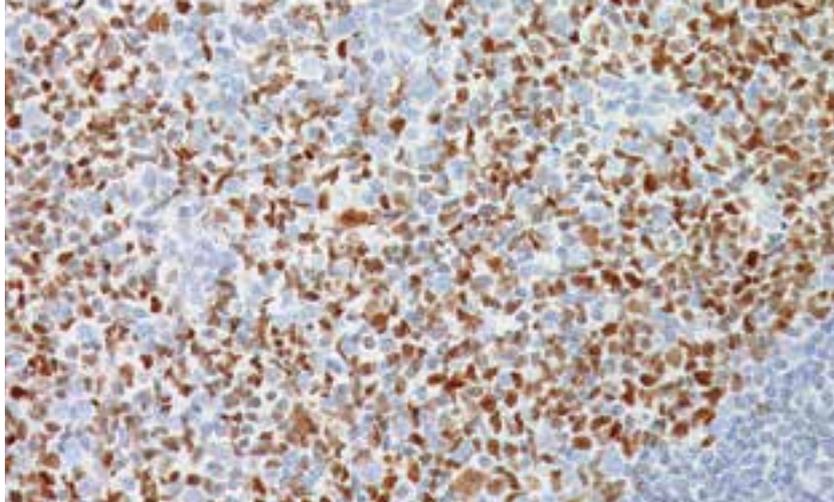
1. Korsmeyer SJ. *Cancer Res.* 1999 Apr; 59(7 Suppl):1693s-1700s. 2. Snuderl M, *et al.* *Am J Surg Pathol.* 2010 Mar; 34(3):327-40. 3. Alderson LM, *et al.* *Cancer Res.* 1995 Mar; 55(5):999-1001. 4. Symmans WF, *et al.* *Acta Cytol.* 1995 Jul-Aug; 39(4):673-82. 5. Triscott JA, *et al.* *J Cutan Pathol.* 1995 Feb; 22(1):2-10.

Bcl-6

Clone	P1F6
Isotype	IgG1
Reactivity	
Control	Tonsil or follicular lymphoma
Cat. No.	CM 223 A, B, C; PM 223 AA

The Bcl-6 gene, originally cloned from a tumor with 3q27 translocation, is commonly expressed in diffuse large cell lymphomas, follicular lymphomas and Burkitt's lymphoma/leukemia. In humans, Bcl-6 encodes for a Kruppel-type zinc finger protein that is believed to be important in germinal center formation. Bcl-6 protein is expressed mainly by follicle center cells and in a few interfollicular T lymphocytes. Bcl-6 has also been detected in nodular lymphocyte predominant Hodgkin's disease, however, is not expressed in hairy cell leukemia, mantle cell or marginal-zone derived lymphomas. This antibody demonstrates strong nuclear reactivity.

1. Pillai RK, *et al.* *Am J Surg Pathol.* 2013 Mar; 37(3):323-32. 2. Hoefnagel JJ, *et al.* *Br J Dermatol.* 2003 Dec; 149(6):1183-91. 3. Dunphy CH, *et al.* *Leuk Lymphoma.* 2001 May; 41(5-6):585-92. 4. Dogan A, *et al.* *Am J Surg Pathol.* 2000 Jun; 24(6):846-52. 5. Yang B, *et al.* *Am J Surg Pathol.* 2000 May; 24(5):694-702.



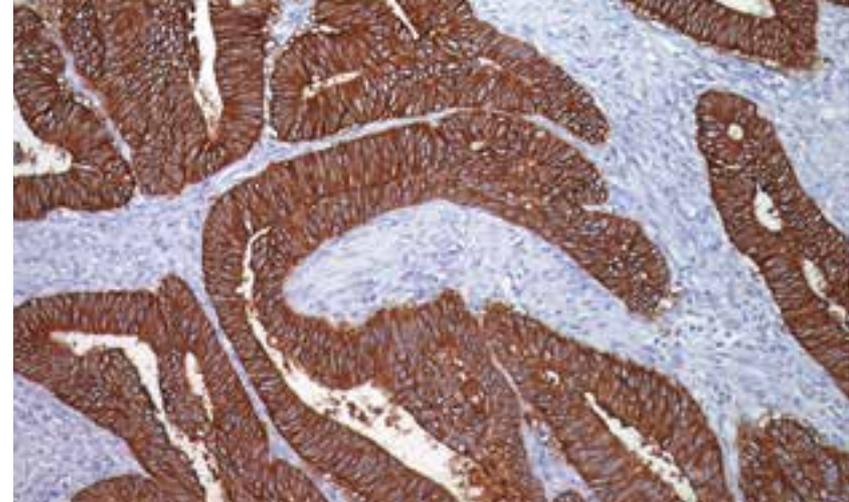
Tonsil stained with Bcl-6 [LN22]

Bcl-6 [LN22] IVD FFPE 🐼 PREFERRED

Clone	LN22
Isotype	IgG2b
Reactivity	🐼
Control	Tonsil or follicular lymphoma
Cat. No.	CM 410 A, C; PM 410 AA

Bcl-6 is commonly expressed in diffuse large cell lymphomas, follicular lymphomas and Burkitt's lymphoma/leukemia. Bcl-6 protein is expressed mainly by follicle center cells, a few interfollicular T lymphocytes and in nodular lymphocyte predominant Hodgkin's disease. However Bcl-6 is not expressed in hairy cell leukemia, mantle cell or marginal-zone derived lymphomas. In humans, Bcl-6 encodes for a Kruppel-type zinc finger protein that is believed to be important in germinal center formation. The LN22 clone of Bcl-6 provides superior sensitivity compared to [PIF6].

1. Pillai RK, *et al.* Am J Surg Pathol. 2013 Mar; 37(3):323-32. 2. Hoefnagel JJ, *et al.* Br J Dermatol. 2003 Dec; 149(6):1183-91. 3. Dunphy CH, *et al.* Leuk Lymphoma. 2001 May; 41(5-6):585-92. 4. Dogan A, *et al.* Am J Surg Pathol. 2000 Jun; 24(6):846-52. 5. Yang B, *et al.* Am J Surg Pathol. 2000 May; 24(5):694-702.



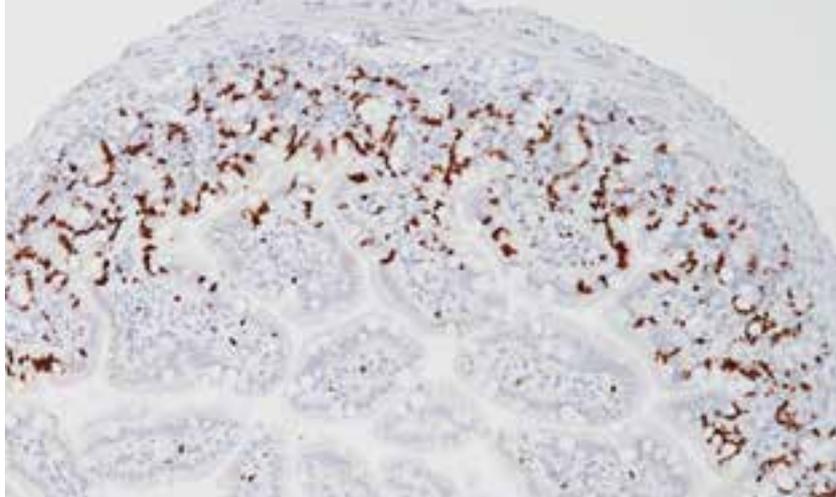
Breast cancer stained with Ber-EP4

Ber-EP4 IVD FFPE 🐼 PREFERRED

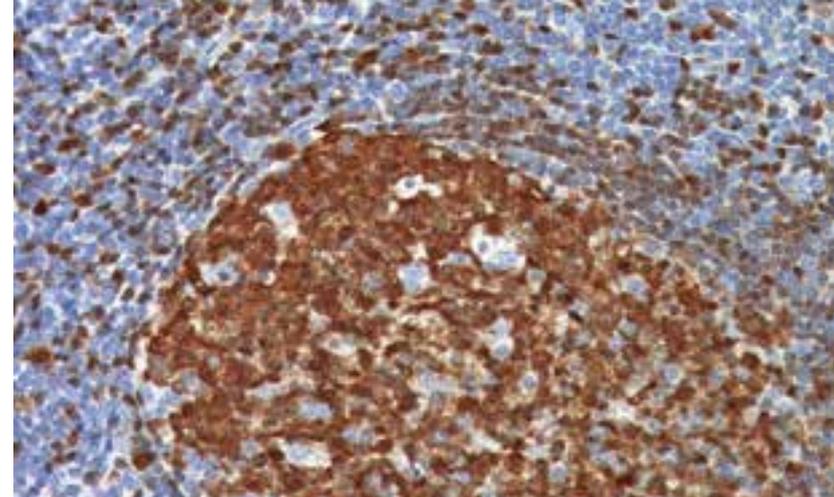
Clone	Ber-EP4
Isotype	IgG1
Reactivity	🐼
Control	Colon or breast cancer
Cat. No.	PM 107 AA; IP 107 G10

Ber-EP4 is present on the surface and in the cytoplasm of all epithelial cells except for the superficial layers of squamous epithelial, hepatocytes and parietal cells. It shows a broad spectrum of reactivity with human epithelial cells including simple epithelia and basal layers of stratified non-keratinized squamous epithelium and epidermis. It does not label mesothelial cells and rarely marks mesotheliomas and has been reported to distinguish adenocarcinomas from pleural mesotheliomas. Studies also suggest it may be useful for differentiating basal cell carcinoma from other dermatological conditions.

1. Ansai S, *et al.* J Dermatol. 2012 Aug; 39(8):688-92. 2. Saladi RN, *et al.* Int J Dermatol. 2004 Aug; 43(8):600-3. 3. Koss MN, *et al.* Ann Diagn Pathol. 1998 Apr; 2(2):93-102. 4. Ordóñez NG. Am J Clin Pathol. 1998 Jan; 109(1):85-9. 5. Jensen ML, Johansen P. Diagn Cytopathol. 1996 Jul; 15(1):33-6. 6. Sheibani K, *et al.* Am J Surg Pathol. 1991 Aug; 15(8):779-84. 7. Gaffey MJ, *et al.* Am J Surg Pathol. 1992 Jun; 16(6):593-9.



Bromodeoxyuridine positive mouse intestine stained with BrdU



Tonsil stained with BOB-1

Biotinylated Bromodeoxyuridine (BrdU) RUO FFPE

Clone	BU20a
Isotype	IgG1
Reactivity	 
Control	BrdU localized in tissues
Cat. No.	ACR 3042 AK, CK

This biotinylated monoclonal antibody recognizes bromodeoxyuridine (BrdU), an analog to thymidine and can be incorporated into replicating DNA during the S-phase of the cell cycle. The BrdU antibody can be used for DNA labeling index, evaluation of DNA synthesis and cell proliferation studies. This antibody is biotinylated and thus eliminates the need for a biotinylated secondary antibody. This antibody can be used in all species, including mouse and rat tissues.

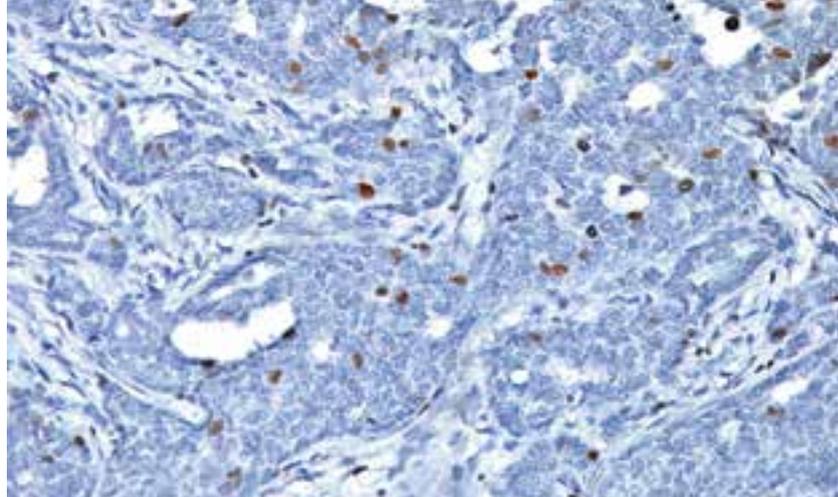
1. McGinley JN, Knot KK, Thompson HJ. *J Histochem Cytochem.* 2000 Mar;48(3):355-62. 2. Cher ML, *et al.* *Prostate.* 1995 Feb;26 (2):87-93. 3. Hogarth CA, Griswold MO. *Methods Mol Bio.* 2013;927:309-20. 4. Tacha DE, Bowman PD, McKinney L. *J of Histochemistry.* 1993 March;16(1):13-7.

BOB-1 IVD FFPE

Clone	TG14
Isotype	IgG2b
Reactivity	
Control	Tonsil
Cat. No.	CM 418 A, B; PM 418 AA

BOB-1 is a B-lymphocyte-specific transcriptional co-activator for Oct-1 and Oct-2 transcription factors. BOB-1 and Oct-2 are useful for the B-lineage determination of CD20-plasmablastic or primary effusion subtypes of diffuse large B-cell lymphoma (DLBCL). Other studies have shown BOB-1, CD79a and Cyclin E are useful markers for discriminating classical Hodgkin's lymphoma from primary mediastinal large B-cell lymphoma. The strong nuclear expression of BOB-1 and Oct-2 by germinal center derived lymphomas makes these antibodies a novel class of broad spectrum B-lineage IHC markers to aid in the differential diagnosis of lymphomas.

1. Hoeller S, *et al.* *Histopathology.* 2010 Jan; 56(2):217-28. 2. Advani AS, *et al.* *Leuk Lymphoma.* 2010 Apr; 51(4):606-12. 3. McCune RC, Syrbu SI, Vasef MA. *Mod Pathol.* 2006 Jul; 19(7):1010-8. 4. Chu PG, *et al.* *Am J Clin Pathol.* 2006 Oct; 126(4):534-44. 5. Browne P, *et al.* *Am J Clin Pathol.* 2003 Nov; 120(5):767-77.



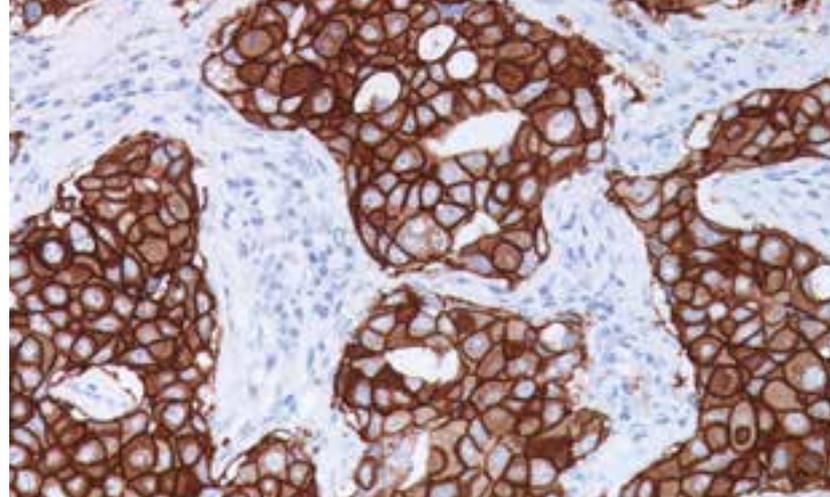
Breast cancer stained with BRCA-1

BRCA-1

Clone	MS110
Isotype	IgG1
Reactivity	
Control	Breast cancer
Cat. No.	CM 345 A, B

The BRCA-1 gene codes for a nuclear phosphoprotein that plays a role in maintaining genomic stability and acts as a tumor suppressor. Findings suggest that BRCA-1 plays a protective role in epithelial cells undergoing high levels of proliferation in association with differentiation. Additional studies have shown that the complete loss of BRCA-1 nuclear expression and the correlation with poor prognostic markers in breast cancer imply that the altered BRCA-1 phenotype may provide an added prognostic parameter for breast cancer and could be applied as a potential rapid screening technique for BRCA-1 mutations.

1. Ribeiro-Silva A, *et al.* Histopathology. 2005 Nov; 47(5):458-66. 2. Ansquer Y, *et al.* Anticancer Res. 2005 Nov-Dec; 25(6C):4535-41. 3. Kurebayashi J, *et al.* Anticancer Res. 2006 Jan-Feb; 26(1B):695-701. 4. Jarvis EM, Kirk JA, Clarke CL. Cancer Genet Cytogenet. 1998 Mar; 101(2):109-15.



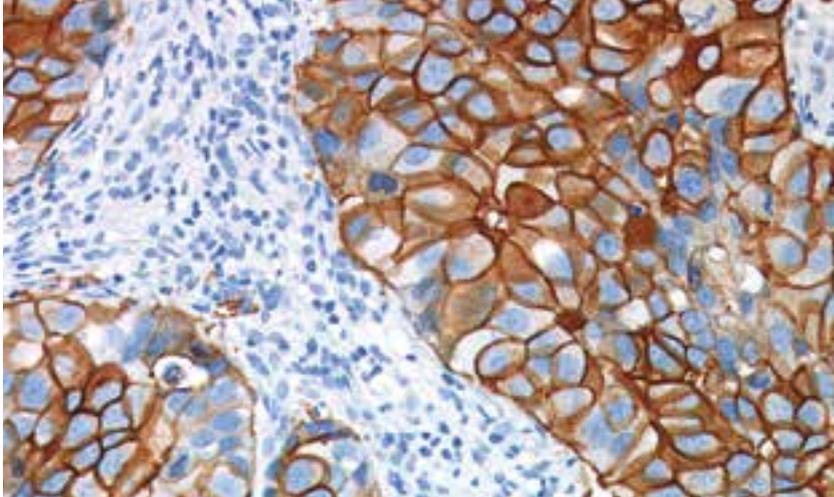
Breast cancer stained with c-erbB-2 [CB11]

c-erbB-2 [CB11]

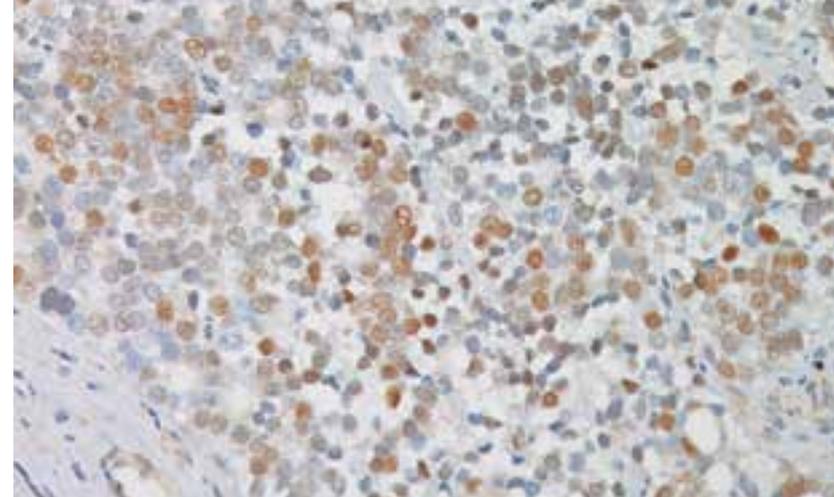
Clone	CB11
Isotype	IgG1
Reactivity	N/A
Control	N/A
Cat. No.	ACA 076 A, C; APA 076 AA

This antibody recognizes a protein of 185 kDa, identified as the second member (c-erbB-2/HER-2) of the c-erbB family. This mouse monoclonal antibody is directed against the cytoplasmic domain of the human c-erbB-2 protein. The c-erbB-2 protein is closely related in structure to the epidermal growth factor receptor and is over-expressed in a variety of carcinomas, especially those of breast and ovary. Studies have shown that c-erbB-2 positive breast cancer usually correlates with negative staining for estrogen and progesterone receptors; thus a poorer predictive outcome is correlated with positive c-erbB-2 staining.

1. Suthipintawong C, *et al.* Diagn Cytopathol. 1997 Aug; 17(2):127-33. 2. Alexiev BA, *et al.* Gen Diagn Pathol. 1997 Jun; 142(5-6):271-9. 3. Fernández Aceñero MJ, Farina González J, Arangoncillo Ballerteros P. Gen Diagn Pathol. 1997 Jun; 142(5-6):289-96.



Breast cancer stained with c-erbB-2/HER2



Prostate cancer stained with c-Myc

c-erbB-2/HER2

Clone	EP1045Y
Isotype	IgG
Reactivity	N/A
Control	N/A
Cat. No.	ACA 342 A, B; APA 342 AA

This rabbit monoclonal antibody recognizes a protein of 185 kDa, identified as the second member (cerbB-2/HER-2) of the c-erbB family. This antibody is directed against the cytoplasmic domain of the human c-erbB-2 protein and may provide increased sensitivity compared to the mouse monoclonal. The c-erbB-2 protein is over-expressed in a variety of carcinomas, especially those of breast and ovary. Studies have shown that c-erbB-2 positive breast cancer usually correlates with negative staining for estrogen and progesterone receptors; thus a poorer predictive outcome is correlated with positive c-erbB-2 staining.

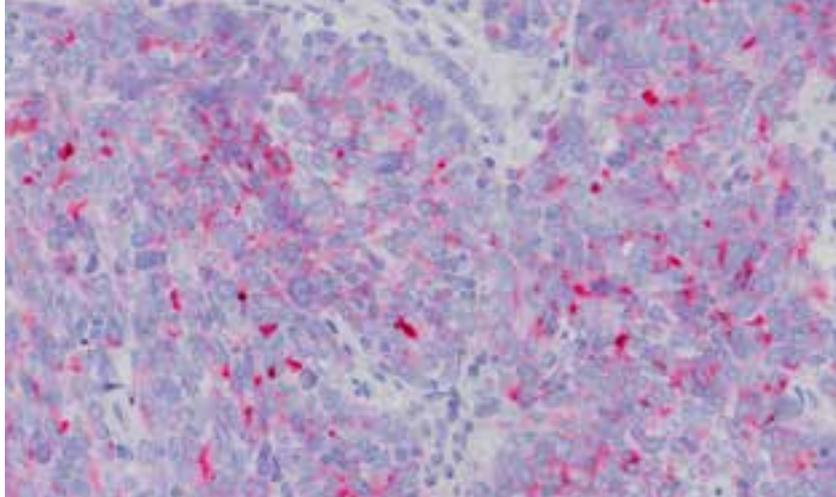
1. Suthipintawong C, *et al.* *Diagn Cytopathol.* 1997 Aug; 17(2):127-33. 2. Nakapoulou LL, *et al.* *J Pathol.* 1996 May; 179(1):31-8. 3. English DP, Rogue DM, Santin AD. *Mol Diagn Ther.* 2013 Apr;17(2):85-99.

c-Myc

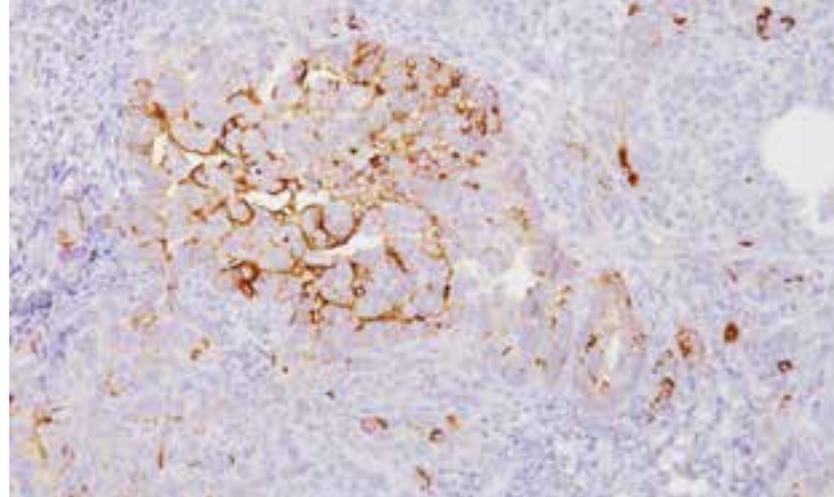
Clone	Y69
Isotype	IgG
Reactivity	
Control	Breast cancer or prostate
Cat. No.	CME 415 AK, CK; PME 415 AA

The oncogene-encoded protein c-Myc is postulated to play a role in activating the transcription of growth related genes. Amplification of the c-Myc gene has been found in several types of human tumors. Studies have shown that c-Myc is essential for vasculogenesis and angiogenesis in neoplastic disease. c-Myc oncogene activity may also be necessary for the translocation(s) seen in human breast tumors identified to have a poor prognosis signature. Over-expression of the c-Myc oncogene has been implicated in the development and progression of human prostate carcinoma.

1. Wolfer A, *et al.* *Proc Natl Acad Sci U S A.* 2010 Feb; 107(8):3698-703. 2. Gurel B, *et al.* *Mod Pathol.* 2008 Sep; 21(9):1156-67. 3. Park K, *et al.* *Hum Pathol.* 2005 Jun; 36(6):634-9. 4. Yang G, *et al.* *Cancer.* 2005 Mar; 103(6):1186-94



Ovarian cancer stained with CA 125



Breast cancer stained with CA 19-9

CA 125

Clone	OC125
Isotype	IgG1
Reactivity	
Control	Ovarian cancer or endocervix
Cat. No.	CM 101 AK, CK; PM 101 AA

CA 125 recognizes an epitope on a molecule called Cancer Antigen 125 (CA 125). Studies have shown that CA 125 reacts with approximately 80% of epithelial ovarian neoplasms of serous, endometrioid, clear cell and undifferentiated types. No reactivity has been shown for mucinous ovarian tumors or in germ cell or hematopoietic tumors. CA 125 reacts with both normal tissues and neoplasms of fallopian tube, endometrium, endocervix and mesothelioma. It does not react with colon cancer. Normal tissues such as breast, liver, skin, kidney and spleen are also negative.

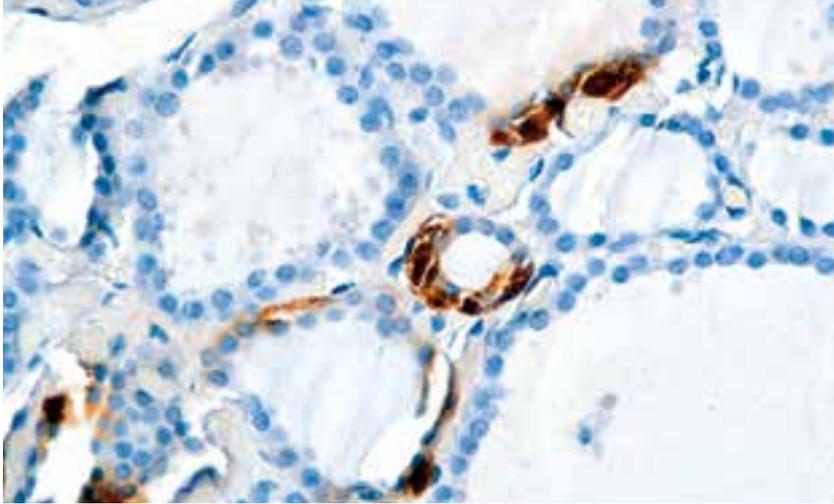
1. Athanassiadou P, *et al.* Gynecol Obstet Invest. 1997; 43(2):125-30. 2. Rabinerson D, *et al.* Isr J Med Sci. 1996 Nov; 32(11):1128-33. 3. Brown RW, *et al.* Am J Clin Pathol. 1997 Jan; 107(1):12-9. 4. Podczaski E, *et al.* Gynecol Oncol. 1993 Apr; 49(1):56-60. 5. Bischof P. Eur J Obstet Gynecol Reprod Biol. 1993 Apr; 49(1-2):93-8. 6. Kabawat SE, *et al.* Int J Gynecol Pathol. 1983; 2(3):275-85.

CA 19-9

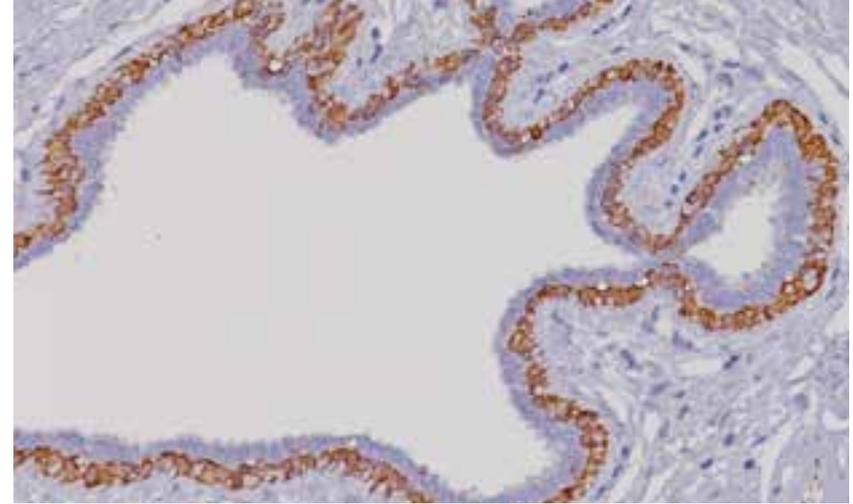
Clone	BC/121SLE
Isotype	IgM
Reactivity	
Control	Ovarian or colon carcinomas
Cat. No.	CM 123 A; PM 123 AA

CA 19-9, a carbohydrate antigenic determinant identified as a sialylated lacto-N-fucopentose II, is related to the Lewis blood group. CA 19-9 might play a role in the process of tumor progression as an adhesion molecule. The CA 19-9 antibody has been shown to label adenocarcinomas of the pancreas, stomach, breast, colon and gall bladder. CA 19-9 is also expressed in primary and metastatic ovarian carcinomas. Studies show that CA 19-9 positive expression may be a predictor of increased cancer mortality.

1. Kelly PJ, *et al.* J Clin Pathol. 2010 Feb; 63(2):169-73. 2. Nakao A, *et al.* Semin Surg Oncol. 1998 Jul-Aug; 15(1):15-22. 3. Nakayama T, *et al.* J Surg Oncol. 1997 Dec; 66(4):238-43.



Thyroid stained with Calcitonin



Normal breast gland stained with Calponin

Calcitonin

Clone	N/A
Isotype	N/A
Reactivity	
Control	Medullary carcinoma thyroid C-cells
Cat. No.	CP 072 B; PP 072 AA

Studies have shown that calcitonin reacts with the human protein calcitonin and labels C-cells in normal thyroid. Calcitonin has been reported to be particularly useful in differentiating medullary carcinoma from papillary and follicular thyroid cancer. Most medullary carcinomas are positive for calcitonin; conversely, most papillary and follicular types of thyroid cancer are usually negative for calcitonin. When used in conjunction with TTF-1 thyroid medullary carcinoma may be distinguishable from laryngeal moderately differentiated carcinoma.

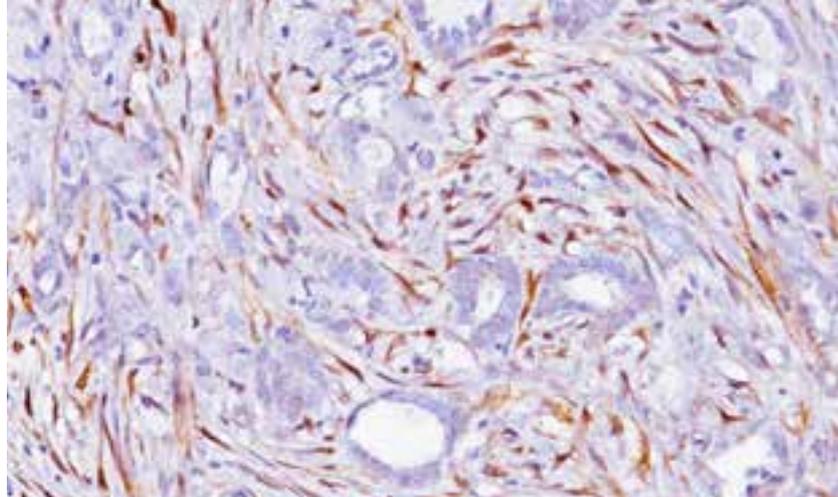
1. Us-Krasovec M, *et al.* Pathologica. 1998 Feb; 90(1):5-13. 2. Kos M, Separović V, Sarčević B. Acta Med Croatica. 1995; 49(4-5):195-9. 3. Hirsch MS, Faquin WC, Krane JF. Mod Pathol. 2004 Jun; 17(6):631-6.

Calponin

Clone	CALP
Isotype	IgG1/kappa
Reactivity	
Control	Normal breast glands
Cat. No.	CM 172 A, C; PM 172 AA

Calponin a 34 kDa polypeptide, is a cytoskeleton-associated actin-binding protein that also interacts tropomyosin and calmodulin. Calponin has been found to be useful as a marker for myoepithelial and basal lamina in differentiating microinvasive from *in situ* ductal carcinomas of the breast. Calponin may also have applications in malignant myoepithelium and pleomorphic adenoma of salivary gland as well as a useful marker for fine needle aspirates of papillary breast lesions.

1. Mosunjac MB, *et al.* Diagn Cytopathol. 2000 Sep; 23(3):151-5. 2. Prasad AR, *et al.* Arch Pathol Lab Med. 1999 Sep; 123(9):801-6. 3. Damiani S, *et al.* Virchows Arch. 1999 Mar;434(3):227-34.



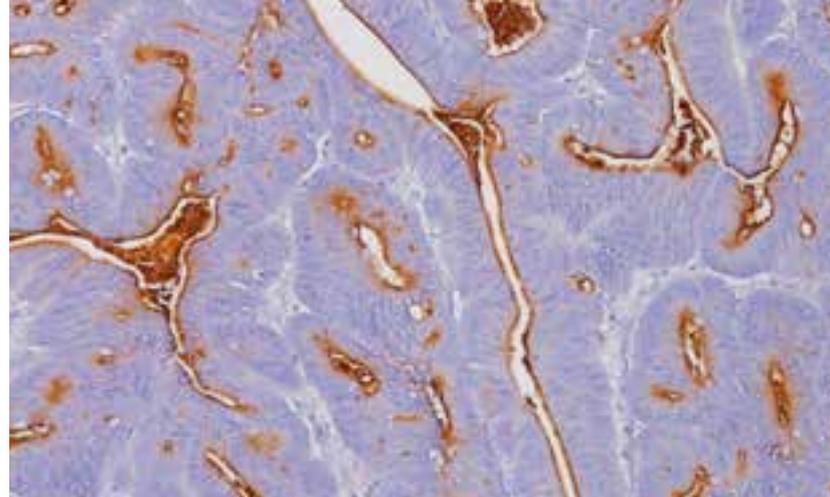
Mesothelioma stained with Calretinin

Calretinin

Clone	N/A
Isotype	N/A
Reactivity	
Control	Mesothelioma
Cat. No.	CP 092 A, C; PP 092 AA; IP 092 G10

Calretinin, a calcium binding protein related to calmodulin and calbindin-D28k, is present in subsets of neurons throughout the brain and spinal cord, including sensory ganglia. Studies have shown that calretinin, like calbindin, may be neuroprotective. Immunohistochemical studies have shown calretinin may be useful in distinguishing mesotheliomas from lung adenocarcinomas, marking approximately 80-90% of all mesotheliomas. When used in combination with E-cadherin, calretinin may be a suitable panel for distinguishing metastatic carcinomas and mesotheliomas in pleural lesions.

1. Nagel H, *et al.* *Pathol Res Pract.* 1998; 194(11):759-64. 2. Ordóñez NG. *Mod Pathol.* 1998 Oct; 11(10):929-33. 3. Leers MP, Aarts MM, Theunissen PH. *Histopathology.* 1998 Mar; 32(3):209-16. 4. Riera JR, *et al.* *Am J Surg Pathol.* 1997 Dec; 21(12):1409-19. 5. Gotzos V, Vogt P, Celio MR. *Pathol Res Pract.* 1996 Feb; 192(2):137-47.



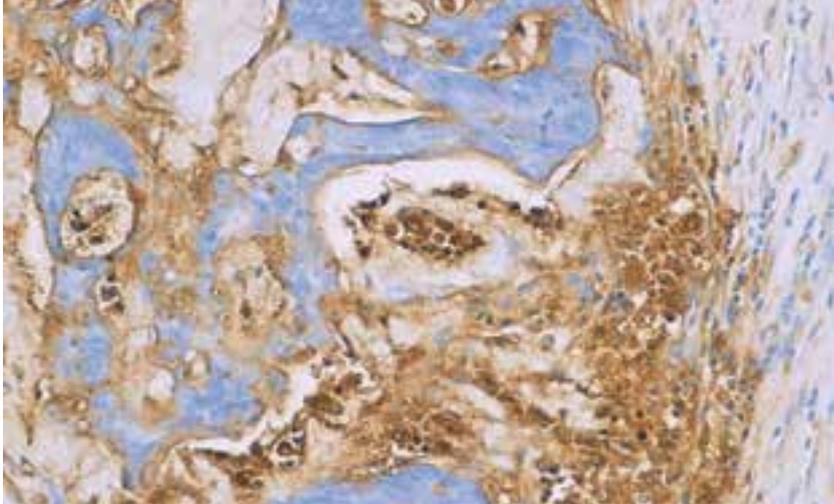
Colon cancer stained with CEA (M)

Carcinoembryonic Antigen (CEA (M)) **PREFERRED**

Clone	COL-1
Isotype	IgG2a/kappa
Reactivity	
Control	Colon carcinoma
Cat. No.	CM 058 A, B, C; PM 058 AA

The human carcinoembryonic antigen (CEA) family consists of glycoposphatidyl inositol (GPI) linkage and transmembrane linkage members. Studies suggest the GPI-linked members tend to be up regulated in human tumors, whereas the transmembrane-linked members tend to be down regulated. CEA (CD66e) [COL-1], a GPI-linked member, shows no detectable reactivity for other CEA members. [COL-1] may be useful in aiding the detection of early foci of gastric carcinoma and distinguishing pulmonary adenocarcinomas from mesothelioma. Studies have shown it stains many types of adenocarcinoma, but does not stain benign glands, stroma, or malignant prostatic cells.

1. Luo W, *et al.* *Oncogene.* 1998 Mar; 16(9):1141-7. 2. Obrink B. *Curr Opin Cell Biol.* 1997 Oct; 9(5):616-26. 3. Screation RA, Penn LZ, Stanners CP. *J Cell Biol.* 1997 May; 137(4):939-52. 4. Nollau P, *et al.* *Cancer Res.* 1997 Jun; 57(12):2354-57. 5. Rojas M, *et al.* *Cell Growth Differ.* 1996 May; 7(5):655-62. 6. Shi ZR, Tacha D, Itzkowitz SH. *J Histochem Cytochem.* 1994 Sep; 42(9):1215-9.



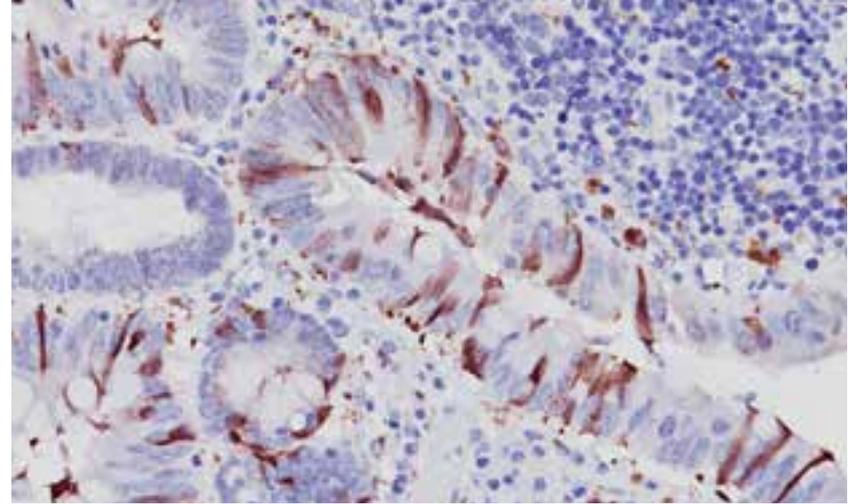
Colon cancer stained with CEA (P)

Carcinoembryonic Antigen (CEA (P))

Clone	N/A
Isotype	N/A
Reactivity	
Control	Colon carcinoma
Cat. No.	CP 009 A, B, C; PP 009 AA; IP 009 G10

Carcinoembryonic antigen (CEA) reacts with CEA and CEA-like proteins such as NCA (nonspecific cross-reacting antigen), NCA2 and biliary glycoprotein (BGP1). In all tissues, the NCA of neutrophil granulocytes are stained positive. CEA has been reported to mark adenocarcinoma of the stomach, colon, lung and pancreas; CEA is weakly or occasionally positive (less than 10%) for prostate cancer, bladder cancer and hepatoma. CEA is negative for squamous cell carcinoma of the skin and esophagus, mesothelioma, lymphoma, melanoma and sarcoma.

1. Sheahan K, *et al.* Am J Clin Pathol. 1990 Aug; 94(2):157-64. 2. Nap M, ten Hoor KA, Fleuren GJ. Am J Clin Pathol. 1983 Jan; 79(1):25-31. 3. Nap M, *et al.* Am J Clin Pathol. 1984 Nov; 82(5):526-34. 4. Selby WL, Nance KV, Park HK. Mod Pathol. 1992 Jul; 5(4):415-9.



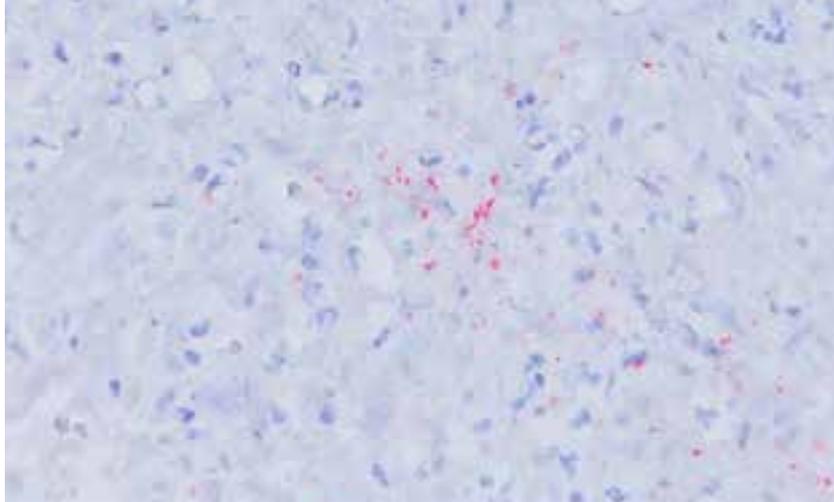
Colon cancer stained with Caspase-3 (Cleaved)

Caspase-3 (Cleaved)

Clone	N/A
Isotype	N/A
Reactivity	 
Control	Tonsil or colon cancer
Cat. No.	CP 229 A, B, C; PP 229 AA

Apoptosis has gained central importance in the study of many biological processes, including neoplasia, neurodegenerative diseases and development. The proteases that mediate apoptosis are called caspases (cysteiny-aspartic acid proteases). Cleaved caspase-3 detects endogenous levels of the large fragment of activated caspase-3, a protease that mediates apoptosis. Activation of caspase-3 requires proteolytic processing of its inactive zymogen into activated p17 and p12 subunits. Cleavage of caspase-3 requires aspartic acid at the P1 position. This antibody does not cross-react with other cleaved caspases.

1. Gown A, Willingham MC. J Histochem Cytochem. 2002 Apr; 50(4):449-54. 2. Wang L, *et al.* Zhong Nan Da Xue Xue Bao Yi Xue Ban. 2008 Mar; 33(3):222-6. 3. Chrysalis E, *et al.* Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2003 Nov; 96(5):566-72.



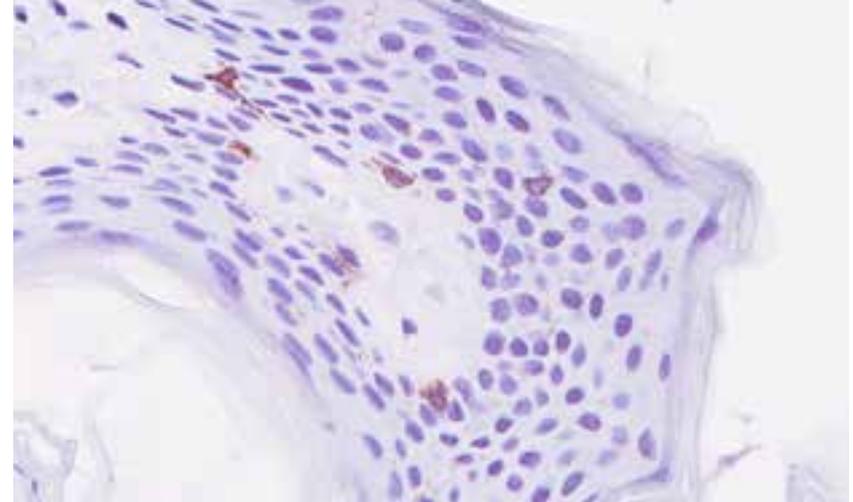
Infected lymph node stained with Cat Scratch Fever

Cat Scratch Fever (*Bartonella henselae*) RUO FFPE

Clone	H2A10
Isotype	IgG2b
Reactivity	
Control	<i>Bartonella henselae</i> infected lymph node
Cat. No.	CM 144 A, C; PM 144 AA

The causative bacterial agent of cat scratch disease has been identified as *Bartonella henselae*. In the past, complicated silver stains and/or PCR were used to identify and confirm this agent. This monoclonal antibody aids to identify *Bartonella henselae* in formalin-fixed, paraffin-embedded (FFPE) tissues. Cross-reactivity tests were performed on 12 *Bartonella henselae* strains, 11 *Bartonella quintana* strains, 2 *Bartonella bacilliformis* strains and 1 *B. elizabethae*, 1 *B. grahamii*, 1 *B. taylorii*, 1 *B. doshiae* and 1 *B. vinsonii* strains. Reactivity was only obtained with *Bartonella henselae*.

1. Caponetti GC, *et al.* Am J Clin Pathol. 2009 Feb; 131(2):250-6. 2. Lin YY, *et al.* J Formos Med Assoc. 2006 Nov; 105(11):911-7. 3. Qian X, *et al.* Diagn Mol Pathol. 2005 Sep; 14(3):146-51.



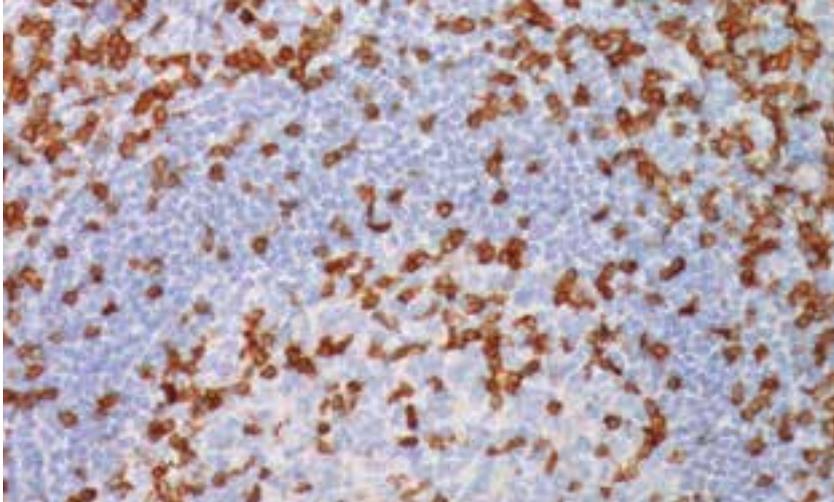
Dendritic cells in skin stained with CD1a

CD1a IVD FFPE

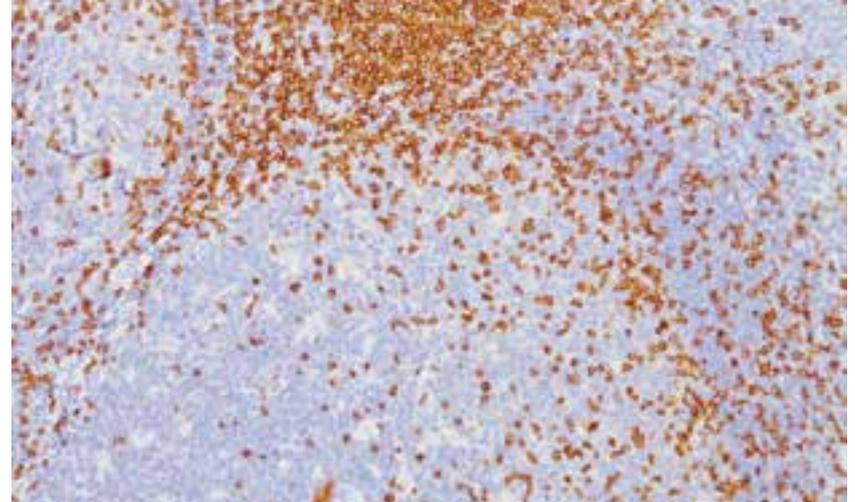
Clone	CD1a007
Isotype	IgG1
Reactivity	
Control	Skin
Cat. No.	CM 034 A, C; PM 034 AA; IP 034 G10

CD1a is a protein of 43 to 49 kDa expressed on dendritic cells and cortical thymocytes. CD1a staining has been shown to be useful in aiding the differentiation of Langerhans cells from inter-digitating cells. A study observed that a decline in Langerhans cells is linked to progressing grades of oral epithelial dysplasia and oral squamous cell carcinoma. CD1a, in combination with CD68, may also be useful for phenotyping Langerhans cell histiocytosis.

1. Chandekar SA, Shah VB, Kavishwar V. J Cytol. 2013 Jan; 30(1):81-3. 2. Upadhyay J, Rao NN, Upadhyay RB. J Cancer Res Ther. 2012 Oct-Dec; 8(4):591-7. 3. Fernandez-Flores A, Manjon JA, Manzarbeitia F. Cesk Patol. 2008 Apr; 44(2):37-9.



Tonsil stained with CD3



Tonsil stained with CD3 (P)

CD3

Clone	E272
Isotype	IgG
Reactivity	
Control	Tonsil or T-cell lymphoma
Cat. No.	CME 324 A, B, C; PME 324 AA

This rabbit monoclonal antibody reacts with the intracytoplasmic portion of the CD3 antigen expressed by T cells. Studies have shown that CD3 stains human T-cells in both the cortex and medulla of the thymus and in peripheral lymphoid tissues. It does not react with B-cells, monocytes, granulocytes and platelets. CD3 is regarded as a reliable pan T-cell antibody used in the immunophenotyping of T-cell lymphomas in paraffin sections with the majority of T-cell lymphomas expressing positivity for CD3. When used in conjunction, CD3 and UCHL-1 together identified the vast majority of T-cell lymphomas in paraffin sections.

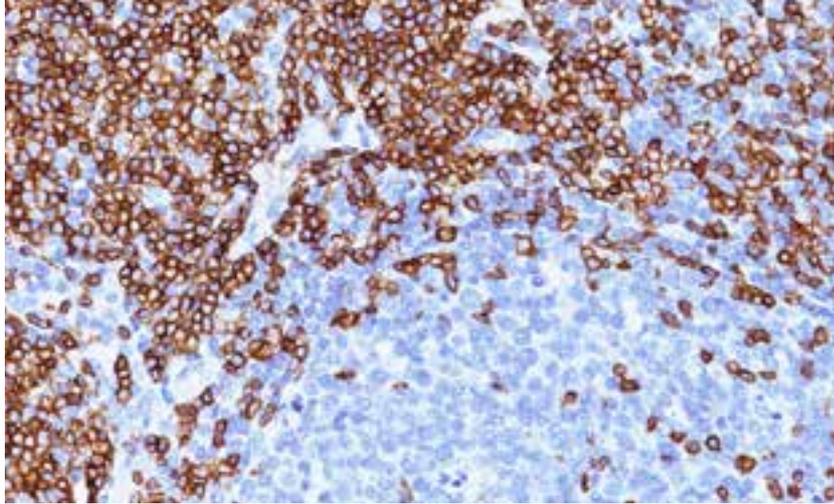
1. Rossi S, *et al.* Am J Clin Pathol. 2005 Aug; 124(2):295-302. 2. Cabecadas JM, Isaacson PG. Histopathology. 1991 Nov; 19(5):419-24. 3. Steward M, *et al.* Histopathology. 1997 Jan; 30(1):16-22.

CD3 (P)

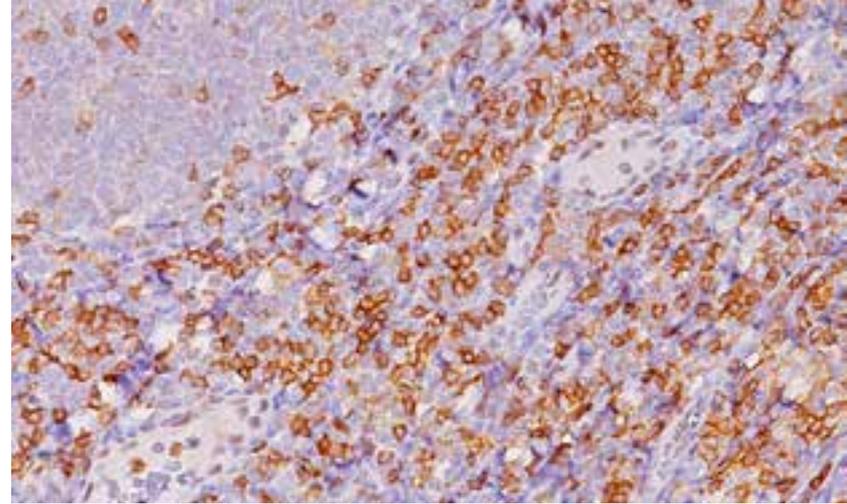
Clone	N/A
Isotype	N/A
Reactivity	
Control	Tonsil or T-cell lymphoma
Cat. No.	CP 215 A, B, C; PP 215 AA

CD3 (P) reacts with the intracytoplasmic portion of the CD3 antigen expressed by T cells. Studies have shown that CD3 stains human T-cells in both the cortex and medulla of the thymus and in peripheral lymphoid tissues. CD3 is regarded as a reliable pan T-cell antibody used in the immunophenotyping of T-cell lymphomas in paraffin sections with the majority of T-cell lymphomas expressing positivity for CD3. Studies have shown that when used in conjunction with LCA and CD20 [L26], CD3 (P) can determine cell lineage in the majority of non-Hodgkin's lymphoma.

1. Mason DY, *et al.* J Clin Pathol. 1989 Nov; 42(11):1194-200. 2. Anderson C, *et al.* Mod Pathol. 1991 May; 4(3):358-62. 3. Cabecadas JM, Isaacson PG. Histopathology. 1991 Nov; 19(5):419-24.



Tonsil stained with CD3 T-Cell (M)



Tonsil stained with CD4 (Helper/Inducer)

CD3 T-Cell (M)  

Clone	PS1
Isotype	IgG2a
Reactivity	
Control	Tonsil or T-cell lymphoma
Cat. No.	CM 110 AK, BK, CK; PM 110 AA, H; VP 110 G

Monoclonal antibody to human CD3, when used in conjunction with other antibodies, is regarded as a reliable pan T-cell antibody for the immunophenotyping of lymphomas in paraffin sections. Most T-cell lymphomas show positivity for CD3 with exception of the more aggressive large T-cell lymphomas and anaplastic large cell (CD30) lymphomas. CD3 immunoreactivity has also been reported in a minority of Reed-Sternberg cells of Hodgkin's disease and in some histiocytic tumors. Studies suggest that CD3 with UCHL-1 identified the majority of T-cell lymphomas in paraffin sections.

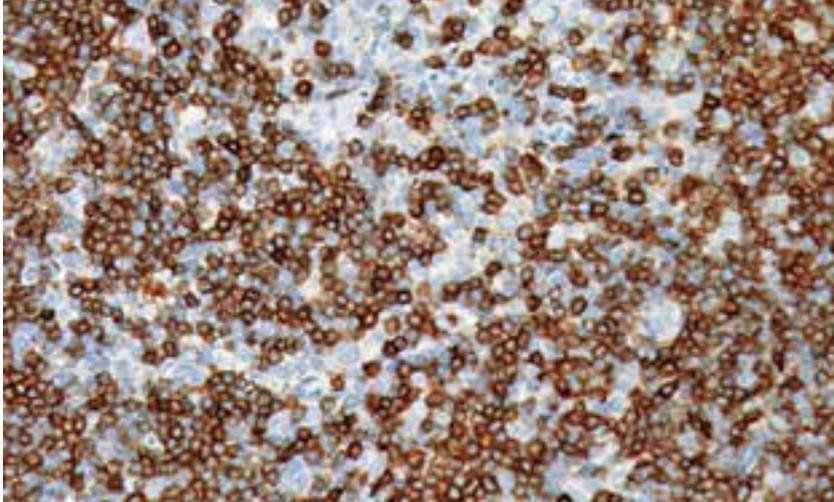
1. Cabecadas JM, Isaacson PG. *Histopathology*. 1991 Nov; 19(5):419-24. 2. Steward M, *et al*. *Histopathology*. 1997 Jan; 30(1):16-22. 3. Menke DM, *et al*. *J Clin Pathol*. 1998 Jun; 51(6):432-7.

CD4 (Helper/Inducer)  

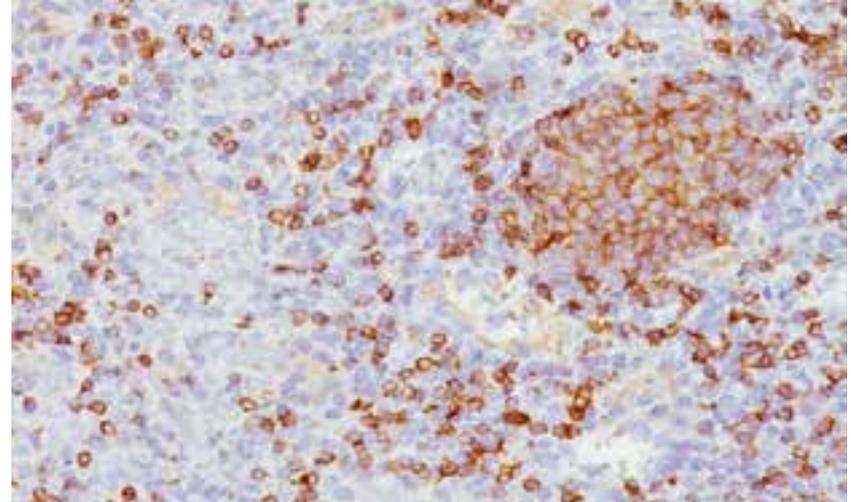
Clone	BC/1F6
Isotype	IgG1
Reactivity	
Control	Tonsil or T-cell lymphoma
Cat. No.	CM 153 AK, BK, CK; PM 153 AA

CD4 is expressed in a subset of T-cells and has been reported to be found in approximately 80% of thymocytes and in 45% of peripheral blood lymphocytes. CD4 is expressed in the majority of T-cell lymphomas, including *mycosis fungoides*. Multiple studies have concluded that CD4+/CD25+ regulatory T cells possess immunosuppressive activity and are commonly observed in elevated proportions in several types of cancers, including non-small cell lung, breast, prostate and ovarian cancer. Recent studies have concluded that CD4 positivity in regulatory T cells may be associated with a poor prognostic outcome in prostate cancer patients.

1. Davidsson S, *et al*. *Mod Pathol*. 2013 Mar; 26(3):448-55. 2. Woo EY, *et al*. *Cancer Res*. 2001 Jun; 61(12):4766-72. 3. Nakamura K, Kitani A, Strober W. *J Exp Med*. 2001 Sep; 194(5):629-44. 4. Rüdiger T, *et al*. *Am J Surg Pathol*. 2000 Jan; 24(1):117-22.



Mantle cell lymphoma stained with CD5



Mantle cell lymphoma stained with CD5 (M)

CD5 IVD FFPE 

Clone	SP19
Isotype	IgG
Reactivity	
Control	Tonsil or mantle cell lymphoma
Cat. No.	CRM 328 AK, BK; PRM 328 AA; IP 328 G10

CD5 is a T-cell associated marker that is also expressed by two B-cell neoplasms: lymphocytic leukemia and mantle cell lymphoma. CD5 antigen is expressed in 95% of thymocytes and 72% of peripheral blood lymphocytes. It has been shown to react with thymic carcinomas but rarely in thymomas. It has also been observed in a subset of intravascular large B-cell lymphomas and marks some anaplastic large cell lymphomas. CD5 has been reported to be very useful in marking mantle cell lymphoma when used in tandem with Cyclin D1, CD10 and CD23.

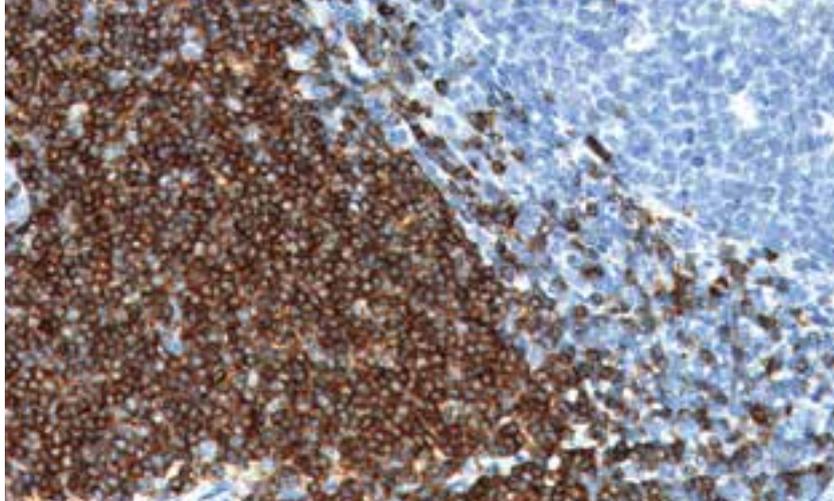
1. Pruneri G, *et al.* Appl Immunohistochem Mol Morphol. 2005 Dec; 13(4):318-22. 2. Torlakovic E, Nielsen S, Vyberg M. Am J Clin Pathol. 2005 Nov; 124(5):782-9. 3. Dong HY, *et al.* Am J Clin Pathol. 2003 Feb; 119(2):218-30. 4. Yatabe Y, *et al.* Pathol Int. 2001 Oct; 51(10):747-61. 5. Schlette E, Fu K, Medeiros LJ. Am J Clin Pathol. 2003 Nov; 120(5):760-6.

CD5 (M) IVD FFPE  PREFERRED

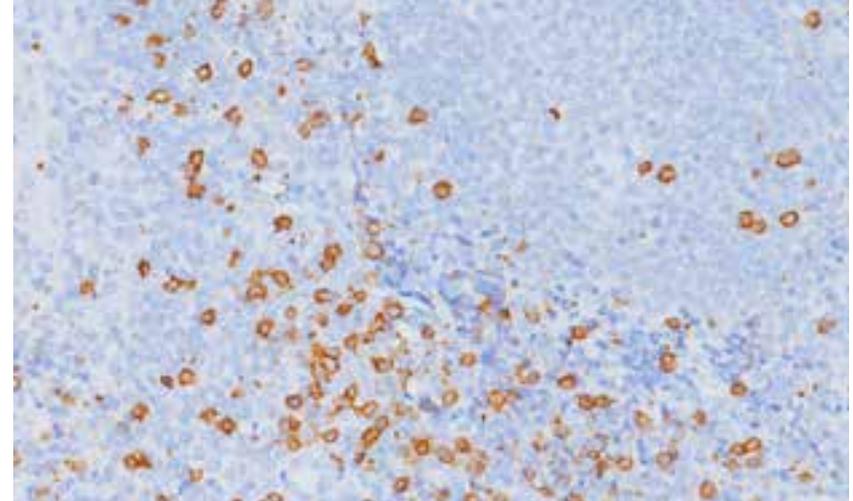
Clone	4C7
Isotype	IgG1/kappa
Reactivity	
Control	Mantle cell lymphoma
Cat. No.	CM 099 A, C; PM 099 AA

CD5 is a T-cell associated marker that is also expressed by two B-cell neoplasms: lymphocytic leukemia and mantle cell lymphoma. CD5 antigen is expressed in 95% of thymocytes and 72% of peripheral blood lymphocytes. It has been shown to react with thymic carcinomas, but rarely in thymomas. It has also been observed in a subset of intravascular large B-cell lymphomas and marks some anaplastic large cell lymphomas. CD5 has been reported to be very useful in marking mantle cell lymphoma when used in tandem with CD23, Cyclin D1 and CD10.

1. Baseggio L, *et al.* Haematologica. 2010 Apr; 95(4):604-12. 2. Belaud-Rotureau MA, *et al.* Mod Pathol. 2002 May; 15(5):517-25. 3. Tateyama H, *et al.* Am J Clin Pathol 1999 Feb; 111(2):235-40. 4. de Leon ED, *et al.* Mod Pathol. 1998 Nov; 11(11):1046-51. 5. Khalidi HS, *et al.* Mod Pathol 1998 Oct; 11(10):983-8. 6. Kaufmann O, *et al.* Am J Clin Pathol 1997 Dec; 108(6):669-73.



Tonsil stained with CD7



Tonsil stained with CD8

CD7 IVD FFPE

Clone	LP15
Isotype	IgG1
Reactivity	
Control	Tonsil
Cat. No.	CM 158 AK, BK, CK; PM 158 AA

The CD7 molecule is a membrane-bound glycoprotein of 40 kDa and is the earliest T-cell specific antigen to be expressed in lymphocytes. CD7 is expressed in the majority of thymocytes, peripheral blood T-cells and natural killer cells. Reports state that CD7 staining is significantly lower in *mycosis fungoides* than in benign dermatoses. Studies have shown that when used in combination with CD4, CD7 has been useful for differentiating *mycosis fungoides* or Sezary syndrome, both cutaneous T-cell lymphomas, from benign dermatoses.

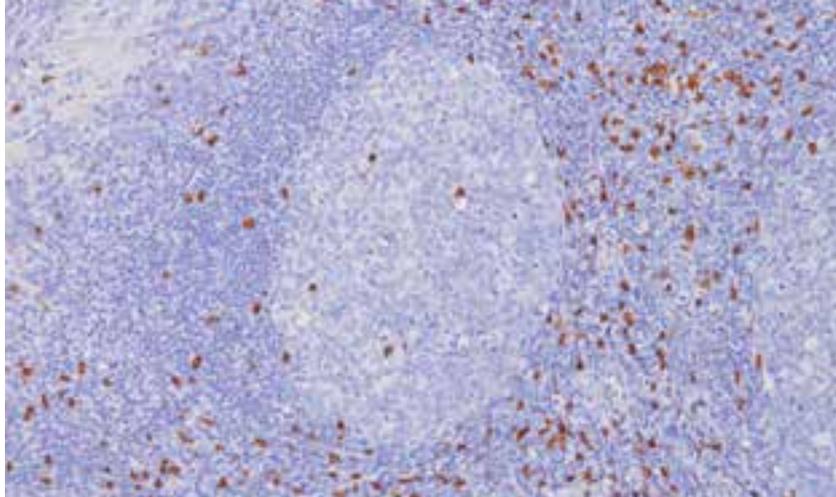
1. Scala E, *et al.* J Invest Dermatol. 1999 Oct; 113(4):622-7. 2. Kim YH, Hoppe RT. Semin Oncol. 1999 Jun; 26(3):276-89. 3. Cotta AC, *et al.* Appl Immunohistochem Mol Morphol. 2006 Sep; 14(3):291-5.

CD8 IVD FFPE PREFERRED

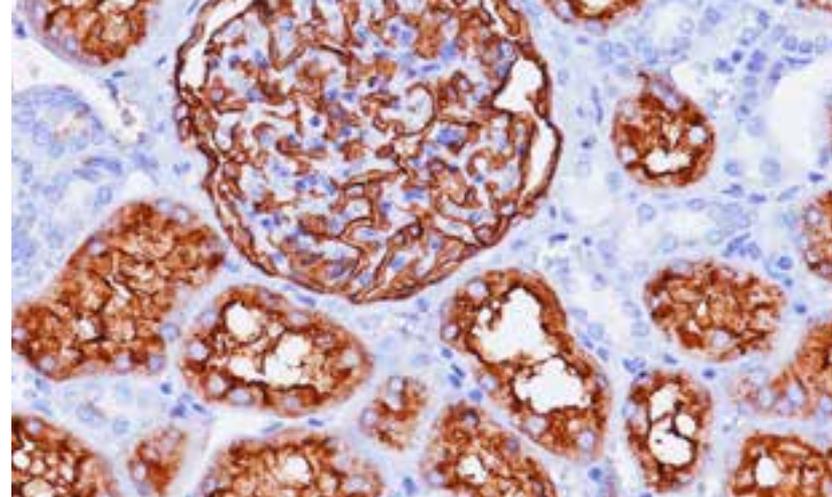
Clone	BC/1A5
Isotype	IgG1
Reactivity	
Control	Tonsil or T-cell lymphoma
Cat. No.	CM 154 A, C; PM 154 AA

CD8 is a T-cell subset found in cortical thymocytes, T-cells and natural killer (NK) cells. CD8 antibody stains cortical thymocytes (70-80%), T-cells (25-35% of mature peripheral T-cells) and NK cells (30%). Studies have shown that CD8 is expressed more frequently in non-common type anaplastic lymphoma kinase positive anaplastic large cell lymphomas compared to the common form. The CD4:CD8 ratio may be helpful in distinguishing *mycosis fungoides* from its inflammatory mimics or as an aid in determining clinical outcome in cervical carcinoma. CD8 may be used in panels with CD3, CD4, CD57 and TIA-1.

1. Barth TF, *et al.* Virchows Arch. 2000 Apr; 436(4):357-64. 2. Williamson SL, *et al.* Am J Pathol. 1998 Jun; 152(6):1421-6. 3. Abramov D, *et al.* Haematologica. 2013 Oct; 98(10):1547-57. 4. Hodak E, *et al.* Am Acad Dermatol. 2006 Aug; 55(2):276-84. 5. Tirumalae R, Panjwani PK. Indian J Dermatol. 2012 Nov; 57(6):424-7. 6. Izban KF, *et al.* Mod Pathol. 1998; 11(10):978-82.



Tonsil stained with CD8



Renal cell carcinoma stained with CD10

CD8

Clone	SP16
Isotype	IgG1
Reactivity	
Control	Tonsil
Cat. No.	CRM 311 A, C; PRM 311 AA

CD8 is a T-cell subset found in cortical thymocytes, T-cells and natural killer (NK) cells. CD8 antibody stains cortical thymocytes (70-80%), T-cells (25-35% of mature peripheral T-cells) and NK cells (30%). Studies have shown that CD8 is expressed more frequently in non-common type anaplastic lymphoma kinase positive anaplastic large cell lymphomas compared to the common form. The CD4:CD8 ratio may be helpful in distinguishing *mycosis fungoides* from its inflammatory mimics or as an aid in determining clinical outcome in cervical carcinoma. CD8 may be used in panels with CD3, CD4, CD57 and TIA-1.

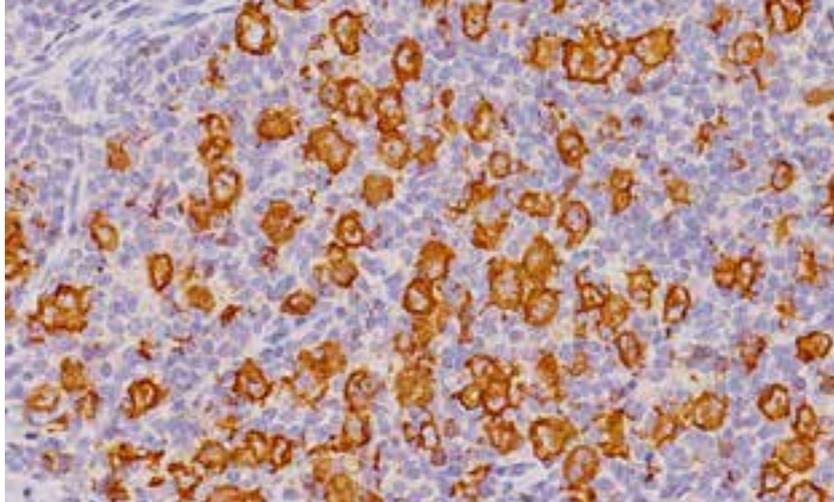
1. Barth TF, *et al.* Virchows Arch. 2000 Apr; 436(4):357-64. 2. Williamson SL, *et al.* Am J Pathol. 1998 Jun; 152(6):1421-6. 3. Abramov D, *et al.* Haematologica. 2013 Oct; 98(10):1547-57. 4. Hodak E, *et al.* Am Acad Dermatol. 2006 Aug; 55(2):276-84. 5. Tirumalae R, Panjwani PK. Indian J Dermatol. 2012 Nov; 57(6):424-7. 6. Izban KF, *et al.* Mod Pathol. 1998; 11(10):978-82.

CD10

Clone	56C6
Isotype	IgG1
Reactivity	
Control	Tonsil or kidney
Cat. No.	CM 129 AK, BK, CK; PM 129 AA; IP 129 G10

Human CD10, also known as common acute lymphoblastic leukemia (CALLA), has been shown to react with TdT+ lymphoblastic leukemia, follicular germinal cell lymphoma, Burkitt's lymphoma and chronic myelocytic leukemia. CD10 also marks normal early lymphoid progenitor cells, immature B-cells in adult bone marrow and germinal cells in normal tonsil and normal lymphoid tissue. It is also expressed in some non-lymphoid tissues such as fibroblasts, breast myoepithelium and brush border of kidney. CD10 may be used in a panel for mantle cell lymphoma with Cyclin D1 (+), CD43 (+), CD5 (+), IgM (+), CD23 (-) and CD10 (-).

1. Kaufmann O, *et al.* Am J Clin Pathol. 1999 Jan; 111(1):117-22. 2. Kurtin PJ, *et al.* Am J Clin Pathol. 1999 Sep; 112(3):319-29. 3. de Leon ED, *et al.* Mod Pathol. 1998 Nov; 11(11):1046-51. 4. de Boer CJ, *et al.* Ann Oncol. 1997; 8 Suppl 2:109-17.



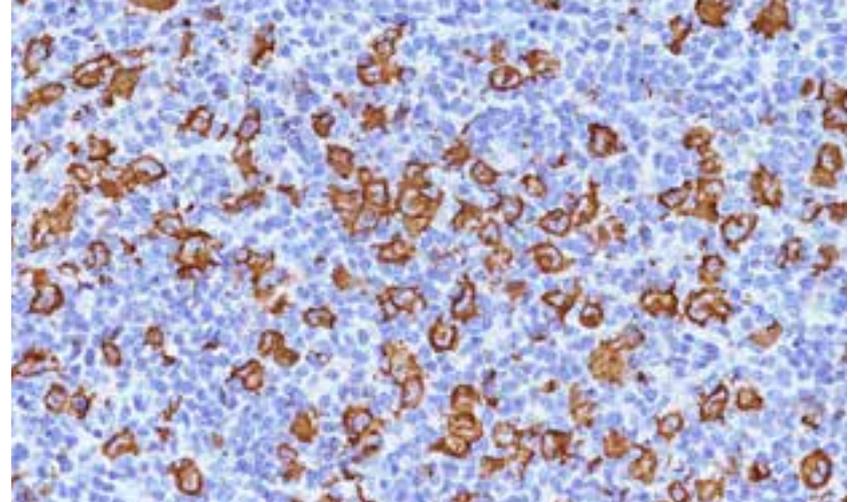
Hodgkin's lymphoma stained with CD15 [MMA]

CD15 [MMA]

Clone	MMA
Isotype	IgM/kappa
Reactivity	
Control	Reed-Sternberg cells
Cat. No.	CM 029 A, C; PM 029 AA

CD15 is reported to be present on greater than 90% of granulocytes including neutrophils and eosinophils and to a lesser degree, on monocytes. CD15 has been reported to be expressed in Reed-Sternberg cells of Hodgkin's disease (of the nodular sclerosis, mixed cellularity and lymphocyte-depleted subtypes) and certain types of epithelial cells. It is generally agreed that the Reed-Sternberg cell variants in lymphocyte-predominant Hodgkin's disease are not reactive with CD15.

1. Song JY, *et al.* Am J Surg Pathol. 2011 May; 35(5):767-72. 2. Pellegrini W, *et al.* Haematologica. 2007 May; 92(5):708-9. 3. Arici DS, Aker H, Güngör M. Indian J Med Res. 1999 Jan; 109:33-7.



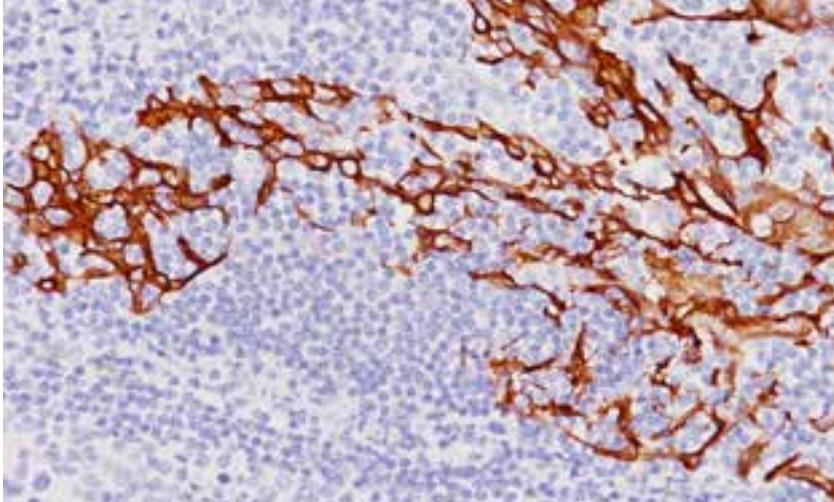
Hodgkin's lymphoma stained with CD15 Cocktail

CD15 Cocktail

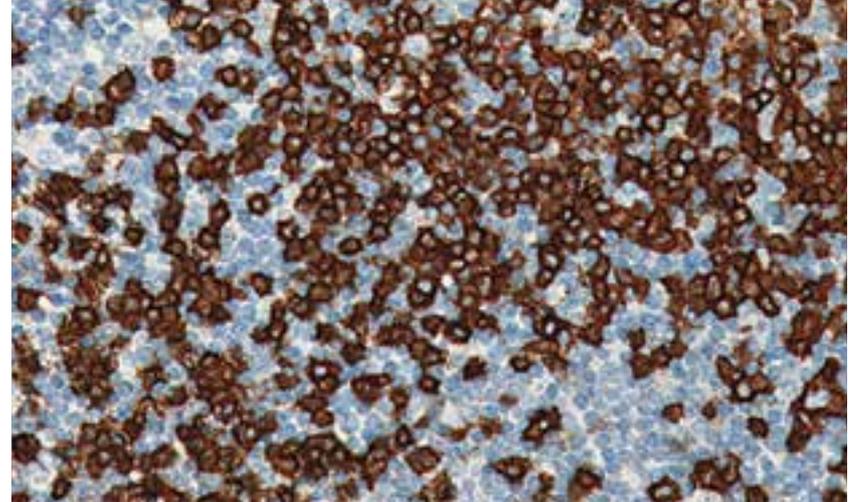
Clone	MMA + BY87
Isotype	IgM/kappa
Reactivity	
Control	Hodgkin's lymphoma
Cat. No.	CM 073 A, B, C; PM 073 AA; IP 073 G10

CD15 is reported to be present on greater than 90% of granulocytes including neutrophils and eosinophils and to a lesser degree, on monocytes. CD15 has been reported to be expressed in Reed-Sternberg cells of Hodgkin's disease (of the nodular sclerosis, mixed cellularity and lymphocyte-depleted subtypes) and certain types of epithelial cells. It is generally agreed that the Reed-Sternberg cell variants in lymphocyte-predominant Hodgkin's disease are not reactive with CD15. The use of two clones in this cocktail may increase the range of epitopes recognized, there by increasing the sensitivity of the CD15 antibody.

1. Song JY, *et al.* Am J Surg Pathol. 2011 May; 35(5):767-72. 2. Pellegrini W, *et al.* Haematologica. 2007 May; 92(5):708-9. 3. Arici DS, Aker H, Güngör M. Indian J Med Res. 1999 Jan; 109:33-7.



Tonsil stained with CD19



Tonsil stained with CD20

CD19 **IVD** **FFPE** 

Clone	CD19
Isotype	IgG1
Reactivity	
Control	Tonsil
Cat. No.	CM 310 A, B; PM 310 AA

CD19 recognizes a 95 kDa cell surface glycoprotein, which is expressed by cells of B-cell lineage and follicular dendritic cells. CD19 is an important signal transduction molecule in the regulation of B-lymphocyte development, activation and differentiation. Studies have shown that CD19 is absent in plasma cells, most T-cell lymphomas and in lymphocyte predominant Hodgkin's. It has been observed in lymphomas and leukemias but is often weak/negative in follicular lymphoma or diffuse large B-cell lymphoma. CD19 may provide useful diagnostic information for the study of B-lymphoproliferative disorders.

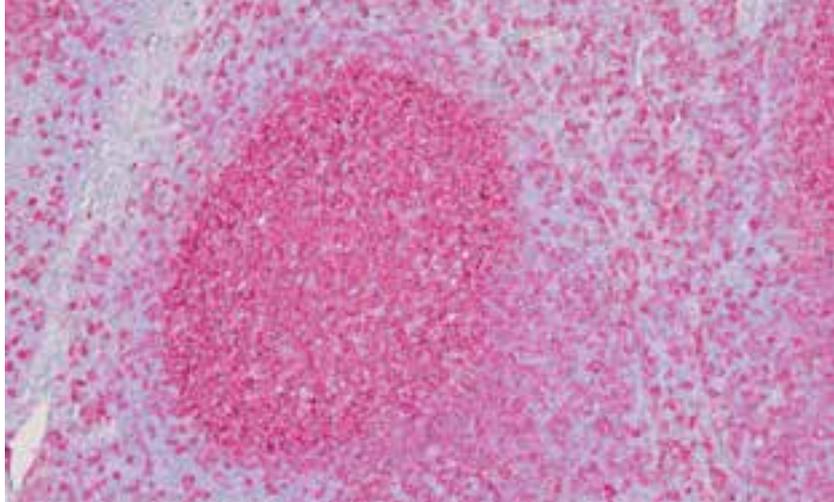
1. Masir N, *et al.* Histopathology. 2006 Feb; 48(3):239-46. 2. Ferkolj I, Ihan A, Markovic S. Hepatogastroenterology. 2005 Jul-Aug; 52(64):1128-33. 3. Ginaldi L, *et al.* J Clin Pathol. 1998 May; 51(5):364-9.

CD20 **IVD** **FFPE**  **PREFERRED**

Clone	L26
Isotype	IgG2a/kappa
Reactivity	
Control	Tonsil or B-cell lymphoma
Cat. No.	CM 004 A, B, C; PM 004 AA, H; IP 004 G10, G20

CD20 [L26] reacts with a protein of a 30-33 kDa polypeptide present in B-cells. [L26] has been shown to react with the majority of B-cells present in peripheral blood and lymphoid tissues. In normal lymphoid tissue, CD20 [L26] marks B-cells in germinal centers, particularly immunoblasts. This antibody has been shown to be a reliable pan B-cell marker. Studies also show CD20 [L26] marking diffuse large B-cell lymphomas. CD20 [L26] rarely marks T-cells.

1. Kitamura A, *et al.* Histopathology. 2005 Nov; 47(5):523-32. 2. Tao K, *et al.* Zhonghua Bing Li Xue Za Zhi. 2002 Apr; 31(2):112-5. 3. Chen CC, *et al.* Appl Immunohistochem Mol Morphol. 2000 Mar; 8(1):1-11.



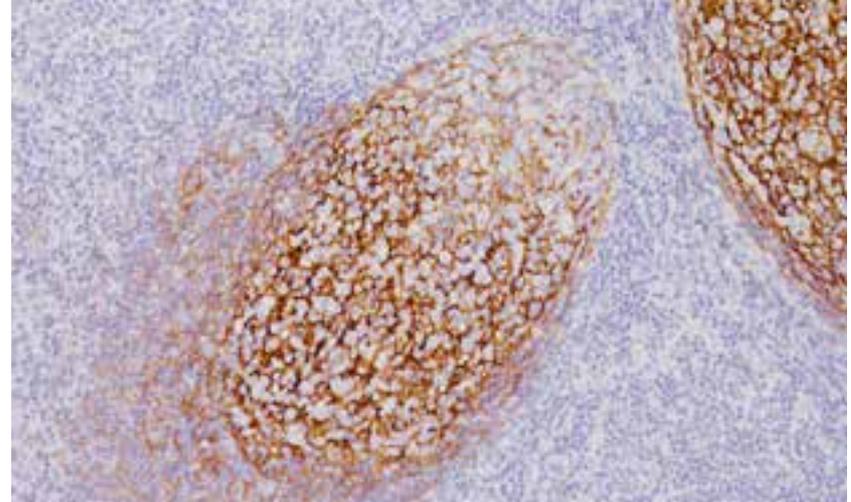
Dog tonsil stained with CD20 (P)

CD20 (P)   

Clone	N/A
Isotype	N/A
Reactivity	
Control	Tonsil or B-cell lymphoma
Cat. No.	ACR 3004 A, B

This antibody is optimized to work with Biocare Medical's PromARK™ detection products for animal tissues. CD20 is a 33 kDa leukocyte surface antigen consisting of four transmembrane regions and cytoplasmic N- and C-termini. CD20 is expressed primarily on B-cells but has also been detected on both normal and neoplastic T-cells. This gene encodes a B-lymphocyte surface molecule which plays a role in the development and differentiation of B-cells into plasma cells. CD20 has been tested and confirmed on multiple mammalian tissues including cat, dog, cow, pig, horse, sheep and human, but does not cross-react in mouse or rat tissues.

1. Jubala C. M., *et al.* Vet Pathol. 2005 Jul; 42(4):468-76. 2. Shan D, Ledbetter JA, Press Ow. Blood. 1998 Mar;91(5):1644-52. 3. Tedder TF, Engel P. Immunol Today. 1994 Sep; 15(9):450-4.



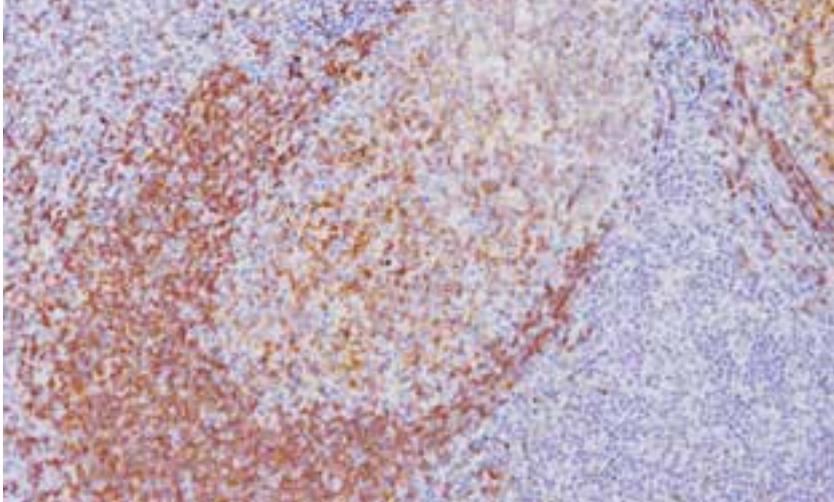
Tonsil stained with CD21

CD21   

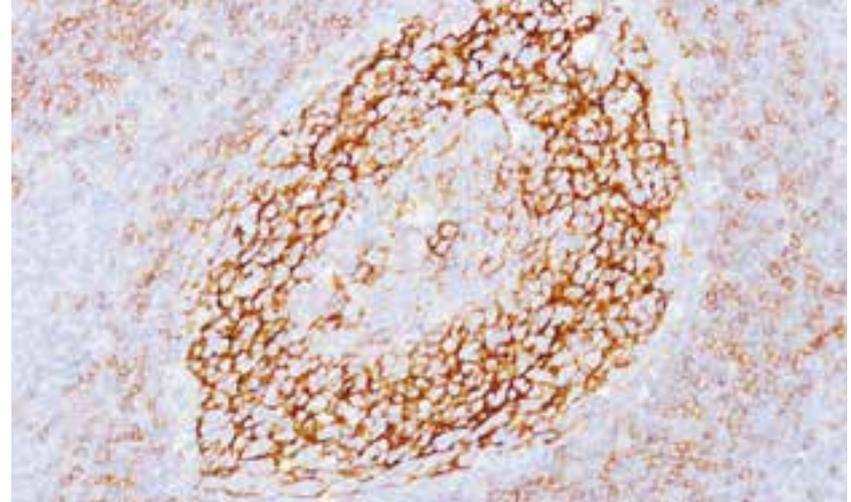
Clone	2G9
Isotype	IgG2a
Reactivity	
Control	Tonsil or spleen
Cat. No.	CM 142 A, C; PM 142 AA

CD21 has been shown to label follicular dendritic cells, as a means of illustrating the phenomenon of follicular colonization in marginal zone lymphoma. Follicular dendritic cell markers such as SR-100, CD21 or CD35 may be used for the differential diagnosis in tonsillar masses. CD21 has also been used in proving cell lineage in some rare follicular dendritic cell tumors. CD21 has been shown to be a reliable marker of follicular dendritic cells in angioimmunoblastic T-cell lymphomas.

1. Martins PN, *et al.* Hepatobiliary Pancreat Dis Int. 2011 Aug; 10(4):443-5. 2. Suhail Z, *et al.* J Coll Physicians Surg Pak. 2010 Jan; 20(1):55-6. 3. Guisado Vasco P, *et al.* Int J Clin Exp Pathol. 2009 Dec;3(2):189-202. 4. Troxell ML, *et al.* Appl Immunohistochem Mol Morphol. 2005 Dec; 13(4):297-303.



Tonsil stained with CD22



Tonsil stained with CD23

CD22

Clone	FPC1
Isotype	IgG1
Reactivity	
Control	Hairy cell leukemia or tonsil
Cat. No.	CM 169 B, C; PM 169 AA

CD22 (BL-CAM) is a type 1 integral membrane glycoprotein with molecular weight of 130 to 140 kDa. Studies have shown that CD22 is expressed in both the cytoplasm and cell membrane of B-lymphocytes and strongly expressed in hairy cell leukemia. Unlike other B-cell markers, CD22 membrane expression is limited to the late differentiation stages comprised between mature B cells (CD22+) and plasma cells (CD22-) and thus may aid in phenotyping mature leukemia. Recent studies suggest CD22 may also play a role in tumorigenesis and metastasis of lung cancer cells.

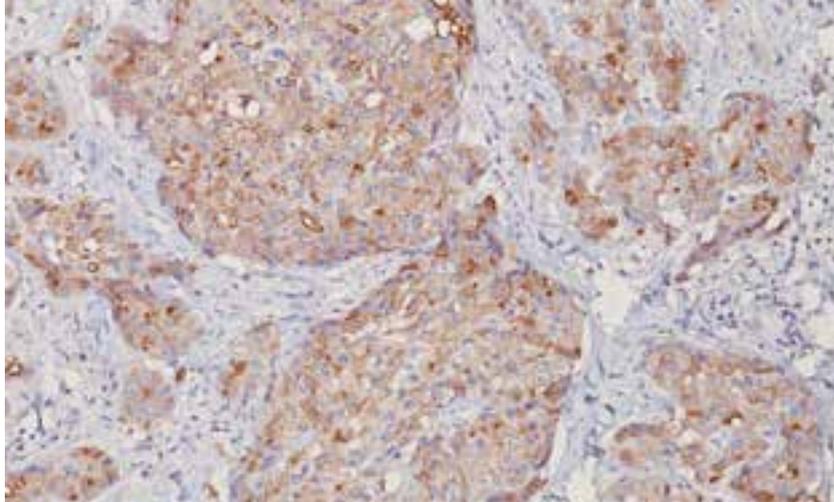
1. Shao H, *et al.* Leuk Res. 2013 Apr; 37(4):401-9. 2. Tuscano JM, *et al.* Cancer Res. 2012 Nov; 72(21):5556-65. 3. Abdel-Ghafar AA, *et al.* Hematol Rep. 2012 Jan 2; 4(1):e3.

CD23

Clone	1B12
Isotype	IgG1
Reactivity	
Control	Follicular lymphomas or tonsil
Cat. No.	CM 100 A, C; PM 100 AA

CD23 is a 45 kDa glycoprotein that acts as a receptor for IgE. It is expressed by interleukin-4 activated B-lymphocytes, by activated macrophages and by a proportion of follicular dendritic cells. CD23 overexpression has been observed on well-developed follicular dendritic cells in the germinal centers of lymph nodes from patients with Kimura's disease. CD23, along with CD21, CD35 and vimentin, may be used to identify follicular dendritic cells. CD23 has been shown to aid in the differentiation of small lymphocytic lymphomas and mantle cell lymphoma.

1. Jin MK, *et al.* Histopathology. 2011 Mar; 58(4):586-92. 2. Akatsuka N, *et al.* Auris Nasus Larynx. 2011 Jun; 38(3):362-6. 3. Malik A, *et al.* J Cancer Res Ther. 2012 Apr-Jun; 8(2):306-7.



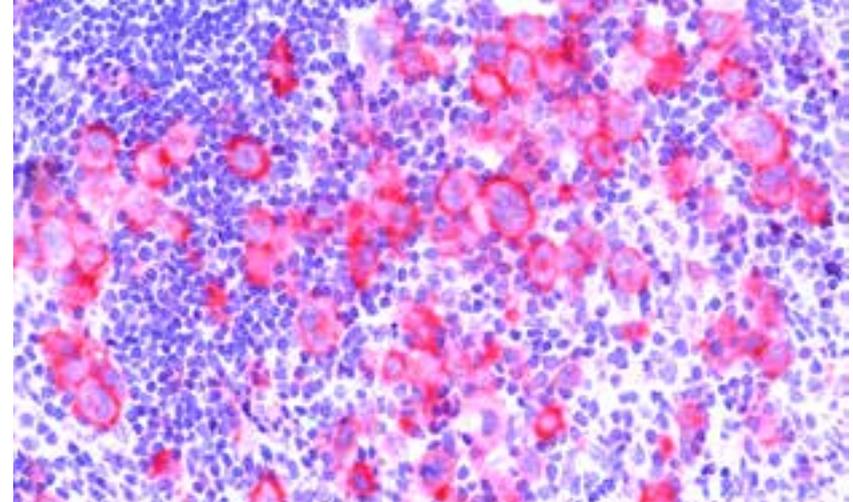
Breast cancer stained with CD24

CD24

Clone	SN3b
Isotype	IgM/kappa
Reactivity	
Control	Breast cancer
Cat. No.	CM 323 A

CD24, a GPI-anchored glycoprotein, functionally enhances the metastatic potential of malignant cells and is an adhesion receptor on activated endothelial cells and platelets. Research has shown CD24 expression is a prognostic indicator for poor outcomes in many human cancers; particularly in breast, ovary and urinary bladder cancers. Recent studies have shown CD24 as a prognostic marker for breast cancer and, more specifically, for tamoxifen-resistant breast cancer cases. Further studies show that CD24 may aid to discriminate malignant mesothelioma from metastatic lung adenocarcinoma in the lung.

1. Pinato DJ, *et al.* J Clin Pathol. 2013 Mar; 66(3):256-9. 2. Huang LW, Lee CC. Int J Gynecol Cancer. 2013 Feb; 23(2):325-30. 3. Lee JH, *et al.* Oncol Rep. 2009 Nov; 22(5):1149-56. 4. Surowiak P, *et al.* Anticancer Res. 2006 Jan-Feb; 26(1B):629-34. 5. Baumann P, *et al.* Cancer Res. 2005 Dec; 65(23):10783-93.



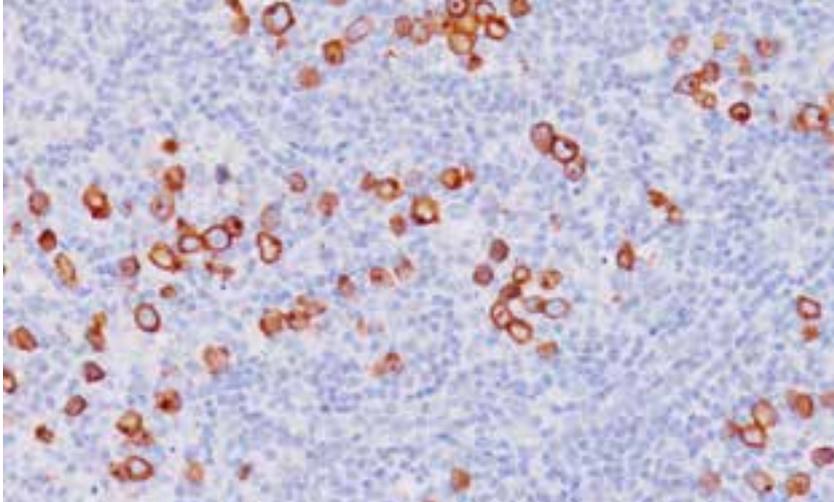
Hodgkin's Lymphoma stained with CD30 (Ki-1)

CD30 (Ki-1)

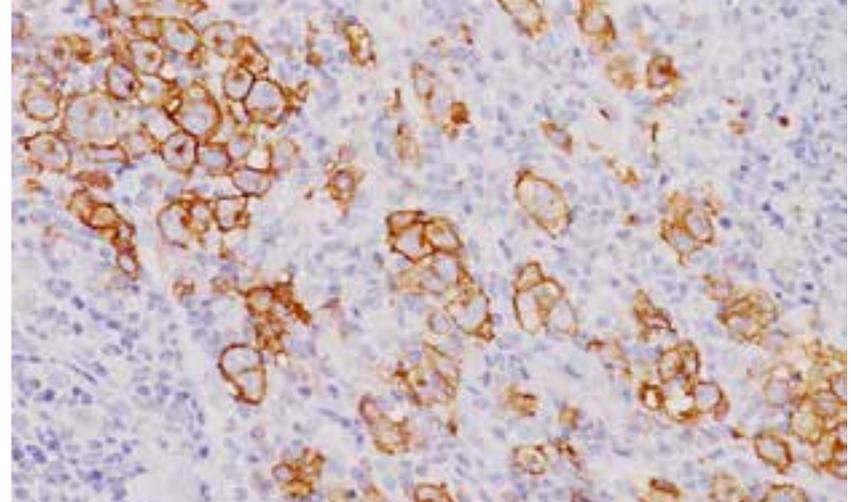
Clone	Ber-H2
Isotype	IgG1/kappa
Reactivity	
Control	Hodgkin's or anaplastic large cell lymphoma
Cat. No.	PM 031 AA; IP 031 G10

CD30 [Ki-1] is expressed in mononuclear Hodgkin's and multinucleated Reed-Sternberg cells in Hodgkin's disease, in tumor cells of a majority of anaplastic large cell lymphomas, in a varying proportion of activated T and B cells and by embryonal carcinomas. It aids in distinguishing large cell lymphomas derived from activated lymphoid cells from histiocytic malignancies and lymphomas derived from resting and precursor lymphoid cells, or from anaplastic carcinomas. Compared to other CD30 mouse antibodies, [Ber-H2] has shown stronger labeling intensity and higher percentage of positively labeled cells.

1. Tilly H, *et al.* Blood. 1997 Nov; 90(9):3727-34. 2. Filippa DA, *et al.* Blood. 1996 Apr; 87(7):2905-17. 3. Clavio M, *et al.* Leuk Lymphoma. 1996 Jul; 22(3-4):319-27. 4. Pallesen G, Hamilton-Dutoit SJ. Am J Pathol. 1988 Dec; 133(3):446-50. 5. Swarting R, *et al.* Blood. 1989 Oct; 74(5):1678-89.



Hodgkin's disease stained with CD30 (Ki-1)



Hodgkin's lymphoma stained with CD30 Cocktail

CD30 (Ki-1) IVD FFPE PREFERRED

Clone	CON6D/B5
Isotype	IgG2a
Reactivity	
Control	Hodgkin's or anaplastic large cell lymphoma
Cat. No.	CM 346 A, B, C; PM 346 AA

CD30 (Ki-1) is expressed in mononuclear Hodgkin's and multinucleated Reed-Sternberg cells in Hodgkin's disease, in tumor cells of a majority of anaplastic large cell lymphomas, in a varying proportion of activated T and B cells and by embryonal carcinomas. It aids in distinguishing large cell lymphomas derived from activated lymphoid cells from histiocytic malignancies and lymphomas derived from resting and precursor lymphoid cells, or from anaplastic carcinomas. It has been shown that CD30 with CD15 may be used to differentiate between anaplastic large cell lymphoma and Hodgkin's disease (Reed-Sternberg cells).

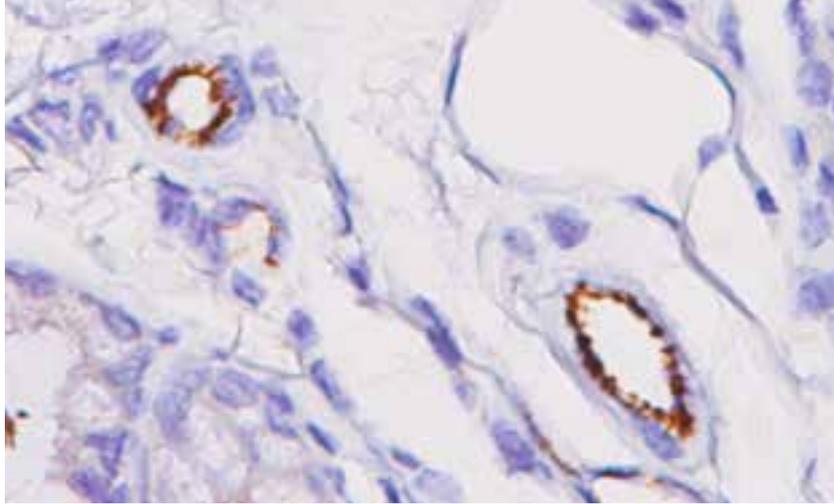
1. Tilly H, *et al.* Blood. 1997 Nov; 90(9):3727-34. 2. Filippa DA, *et al.* Blood. 1996 Apr; 87(7):2905-17. 3. Clavio M, *et al.* Leuk Lymphoma. 1996 Jul; 22(3-4):319-27. 4. Pallesen G, Hamilton-Dutoit SJ. Am J Pathol. 1988 Dec; 133(3):446-50.

CD30 Cocktail IVD FFPE

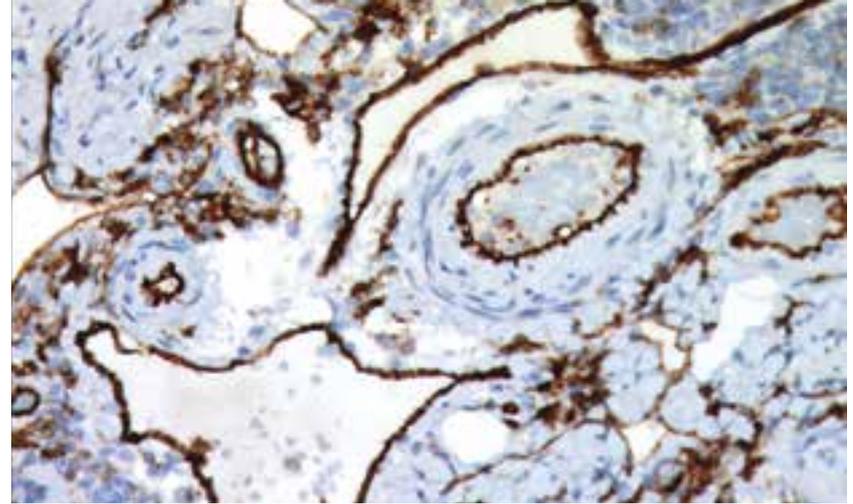
Clone	Ber-H2 + CON6D/B5
Isotype	IgG1/kappa
Reactivity	
Control	Hodgkin's or anaplastic large cell lymphoma
Cat. No.	PM 074 AA

CD30 is expressed in mononuclear Hodgkin's and multinucleated Reed-Sternberg cells in Hodgkin's disease, in tumor cells of a majority of anaplastic large cell lymphomas, in a varying proportion of activated T and B cells and by embryonal carcinomas. It aids in distinguishing large cell lymphomas derived from activated lymphoid cells, from histiocytic malignancies and lymphomas derived from resting and precursor lymphoid cells, or from anaplastic carcinomas. The CD30 Cocktail is a combination of two monoclonal antibodies, which may be more effective than other single clone CD30 antibodies.

1. Tilly H, *et al.* Blood. 1997 Nov; 90(9):3727-34. 2. Filippa DA, *et al.* Blood. 1996 Apr; 87(7):2905-17. 3. Clavio M, *et al.* Leuk Lymphoma. 1996 Jul; 22(3-4):319-27. 4. Pallesen G, Hamilton-Dutoit SJ. Am J Pathol. 1988 Dec; 133(3):446-50.



Mouse artery stained with CD31



Blood vessels stained with CD31 (PECAM-1)

CD31 RUO FFPE 

Clone	Mec13.3
Isotype	IgG2ak
Reactivity	
Control	Kidney, lung or colon
Cat. No.	CM 303 A, B

CD31 (PECAM-1) mediates cell-cell adhesion and supports the idea that it may be involved in some of the interactive events taking place during thrombosis, wound healing and angiogenesis. Studies have shown CD31 is of value in the study of benign and malignant vascular tumors. Reliable identification of endothelial cells is a prerequisite for understanding vascularity changes in many cardiovascular diseases and therapeutic interventions. This rat anti-mouse CD31 antibody is expressed in endothelial cells from a variety of mouse tissues and is weakly expressed in peripheral lymphoid cells and platelets.

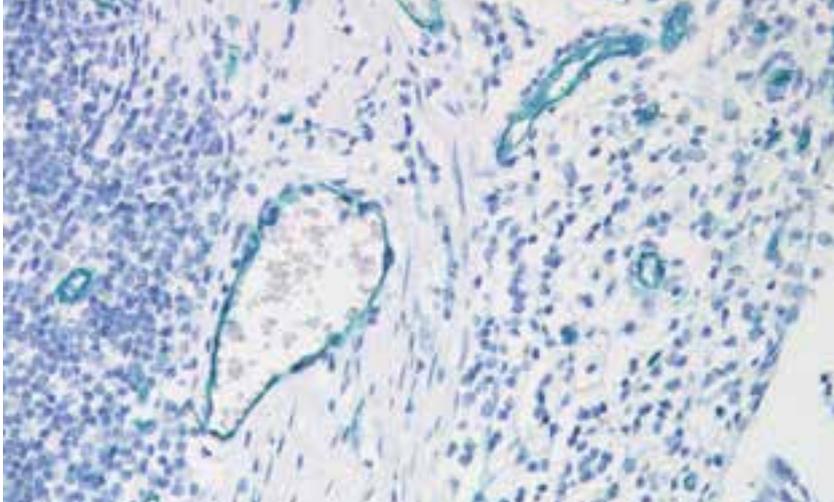
1. Albelda SM, *et al.* J Cell Biol. 1991 Sep; 114(5):1059-68. 2. Ismail JA, *et al.* Cardiovasc Pathol. 2003 Mar-Apr; 12(2):82-90.

CD31 (PECAM-1) IVD FFPE  PREFERRED

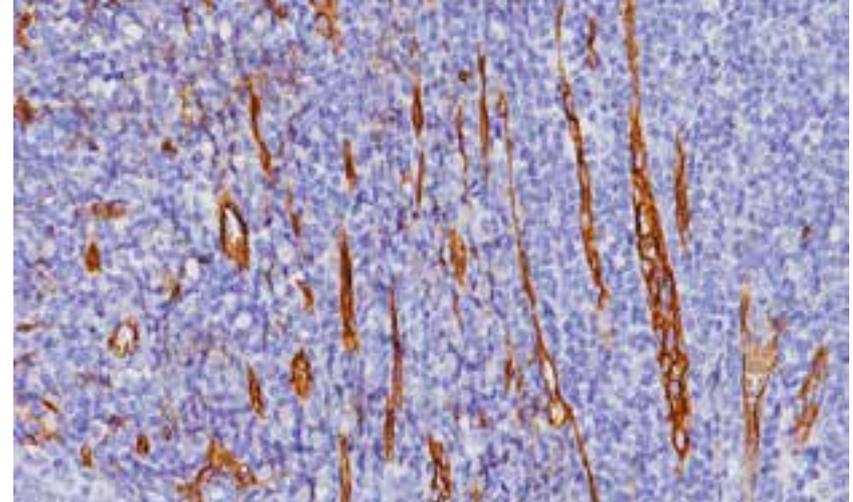
Clone	BC2
Isotype	IgG1/kappa
Reactivity	
Control	Angiosarcoma, colon cancer, tonsil
Cat. No.	CM 347 A, C; PM 347 AA

CD31 has been shown to detect vascular endothelium associated antigen and has been used as a marker for benign and malignant human vascular disorders, myeloid leukemia infiltrates and megakaryocytes in normal bone marrow. When compared to Factor VIII and CD34 antibodies, studies have shown CD31 to be a superior marker for angiogenesis; which reportedly predicts tumor recurrence. Other studies have indicated that CD31 and CD34 can be used as markers for myeloid progenitor cells that recognize different myeloid leukemia infiltrates (granular sarcomas).

1. Rongioletti F, *et al.* Am J Dermatopathol. 1996 Oct; 18(5):474-7. 2. Engel CJ, *et al.* Am J Surg Pathol. 1996 Oct; 20(10):1260-5. 3. Russell Jones R *et al.* Virchows Arch. 1996 Jul; 428(4-5):217-21. 4. Poblet E, *et al.* J Clin Pathol. 1995 Nov; 48(11):1011-6. 5. Hudock J, *et al.* Am J Clin Pathol. 1994 Jul; 102(1):55-60. 6. Govender D, *et al.* J Clin Pathol. 1997 Jun; 50(6):490-3.



Blood vessels stained with CD31 (PECAM-1)



Blood vessels stained with CD34

CD31 (PECAM-1)

Clone	JC/70A
Isotype	IgG1/kappa
Reactivity	
Control	Tonsil, colon or hemangioma
Cat. No.	CM 131 A, C; PM 131 AA

It has been shown that CD31 can detect vascular endothelium associated antigen and has been used as a marker for benign and malignant human vascular disorders, myeloid leukemia infiltrates and megakaryocytes in normal bone marrow. When compared to Factor VIII and CD34 antibodies, studies have shown CD31 to be a superior marker for angiogenesis; which reportedly predicts tumor recurrence. CD31 with CD34 and Factor VIII has been used to mark Kaposi's sarcoma and angiosarcomas. Other studies indicate that CD31 and CD34 can be used as markers for myeloid progenitor cells that recognize different myeloid leukemia infiltrates.

1. Dango S, *et al.* Lung Cancer. 2008 Jun; 60(3):426-33. 2. Rongioletti F, *et al.* Am J Dermatopathol. 1996 Oct; 18(5):474-7. 3. Poblet E, Gonzalez-Palacios F, Jimenez FJ. Virchows Arch. 1996 Jul; 428(4-5):217-21. 4. Russell Jones R, *et al.* J Clin Pathol. 1995 Nov; 48(11):1011-6. 5. Hudock J, Chatten J, Miettinen M. Am J Clin Pathol. 1994 Jul; 102(1):55-60.

CD34

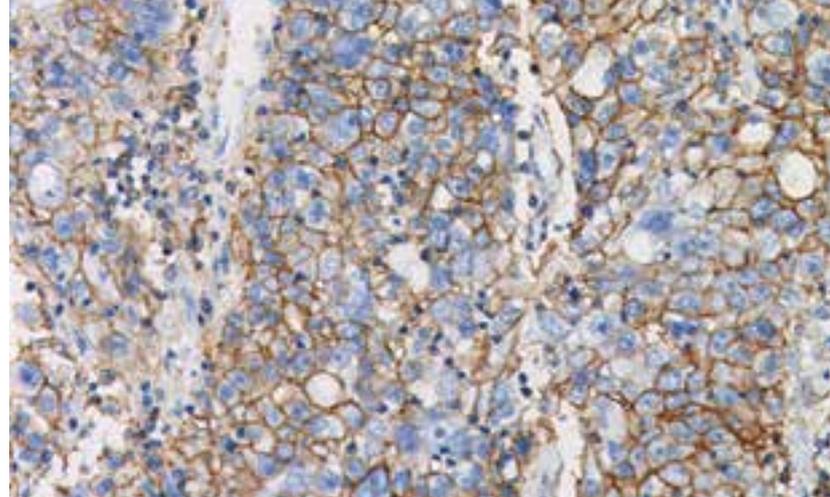
Clone	QBEnd/10
Isotype	IgG1
Reactivity	
Control	Tonsil, skin or angiosarcoma
Cat. No.	CM 084 A, B, C; PM 084 AA, H; IP 084 G10

CD34 antigen is selectively expressed in human lymphoid and myeloid hematopoietic progenitor cells. Studies have shown the CD34 antibody also reacts with vascular endothelial cells in normal tissues and in benign and malignant proliferations. The utility of CD34 is in the study of benign and malignant vascular tumors as well as characterization of acute leukemia in bone marrow. CD34 has been used to measure angiogenesis in many types of tumors, which reportedly predicts tumor recurrence. It is also useful to aid the differentiation of dermatofibrosarcoma protuberans from fibrous histiocytoma.

1. Mikalsen LT, *et al.* Anticancer Res. 2011 Dec; 31(12):4053-60. 2. Kong Y, *et al.* Leukemia. 2008 Jun; 22(6):1207-13. 3. Li N, *et al.* Am J Dermatopathol. 2004 Aug; 26(4):267-72.



Tonsil stained with CD43



Breast cancer stained with CD44

CD43

Clone DF-T1

Isotype IgG1

Reactivity 

Control Tonsil or T-cell lymphoma

Cat. No. CM 005 A, C; PM 005 AA; IP 005 G10

CD43 recognizes a 95/115/135 kDa (depending upon the extent of glycosylation) cell surface glycoprotein, identified as CD43 (leukosialin, sialophorin, or leukocyte sialoglycoprotein) CD43 is shown to be expressed in thymocytes, T-cells and endothelial cells. CD43 may also aid in distinguishing extranodal marginal zone B-cell lymphoma from other reactive processes in the skin. The CD43 antibody has also been shown to be useful in aiding in the identification and classification of T-cell malignancies and low-grade B-cell lymphomas.

1. Tomaszewski MM, Abbondanzo SL, Lupton GP. *Am J Dermatopathol.* 2000 Jun; 22(3):205-11. 2. Muretto P. *European J Histochem.* 1995; 39(4):301-8. 3. de Smet W, Walter H, van Hove L. *Immunology.* 1993 May; 79(1):46-54.

CD44

Clone 156-3C11

Isotype IgG2a

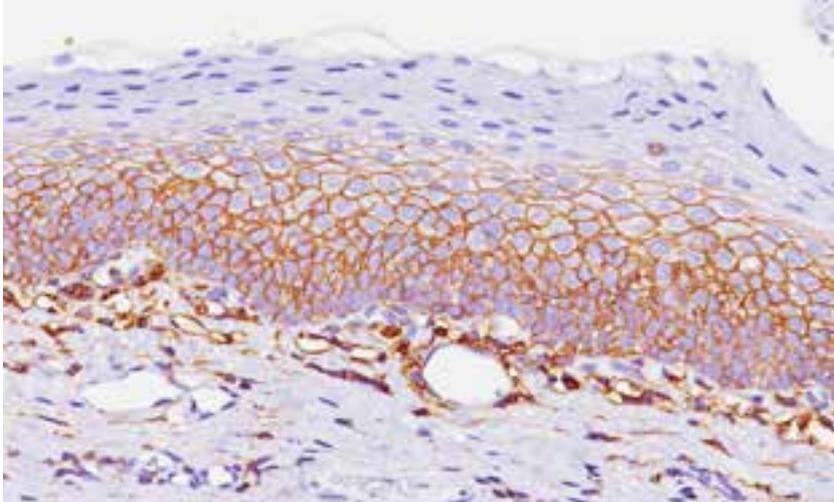
Reactivity 

Control Breast cancer or tonsil

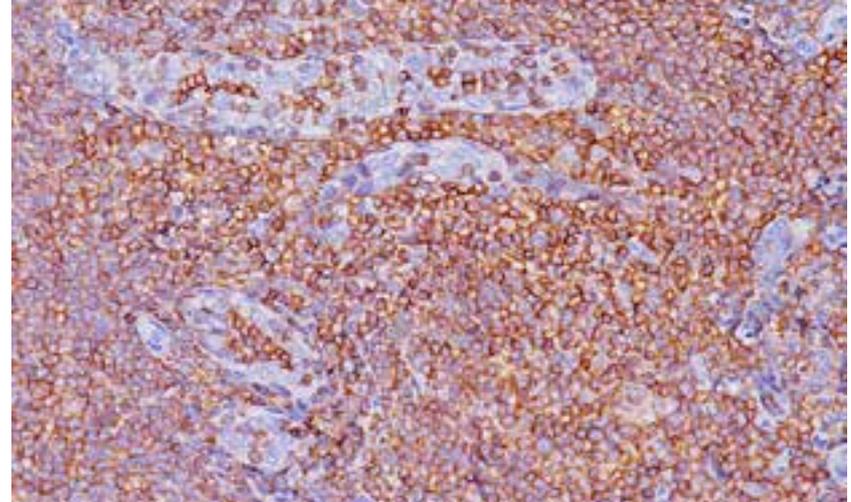
Cat. No. CM 318 A, B; PM 318 AA

CD44 (HCAM) is a transmembranous glycoprotein (80 kDa) present on T lymphocytes, granulocytes, red blood cells, brain and epithelial cells. Studies have shown that the standard isoform, CD44s, is also expressed in a wide range of normal tissues such as tonsil, skin, bladder and cervical squamous epithelium. In breast cancer studies, CD44 expression, as assessed by IHC, demonstrated a favorable prognostic factor in patients with node-negative invasive breast carcinoma. Further studies have shown a subpopulation of CD44+/CD24- cells in breast cancer have stem/progenitor cell properties.

1. Balic M, *et al.* *Clin Cancer Res.* 2006 Oct; 12(19):5615-21. 2. Diaz LK, *et al.* *Clin Cancer Res.* 2005 May; 11(9):3309-14. 3. Tse GM, *et al.* *J Clin Path.* 2005 Nov; 58(11):1185-8. 4. Gudadze M, *et al.* *Georgian Med News.* 2013 Sep; (222):50-7.



Stratified squamous epithelium stained with CD44



Tonsil stained with CD45RO

CD44 **IVD** **FFPE** **PREFERRED**

Clone	BC8
Isotype	IgG2a
Reactivity	
Control	Breast cancer or tonsil
Cat. No.	PM 380 AA

CD44 is a transmembranous glycoprotein (80 kDa) present on T lymphocytes, granulocytes, red blood cells, brain and epithelial cells. Studies have shown that the standard isoform, CD44s, is expressed in a wide range of normal tissues such as tonsil, skin, bladder and cervical squamous epithelium. In breast cancer studies, CD44 expression, as assessed by IHC, demonstrated a favorable prognostic factor in patients with node-negative invasive breast carcinoma. Further studies have shown a subpopulation of CD44+/CD24- cells in breast cancer have stem/progenitor cell properties.

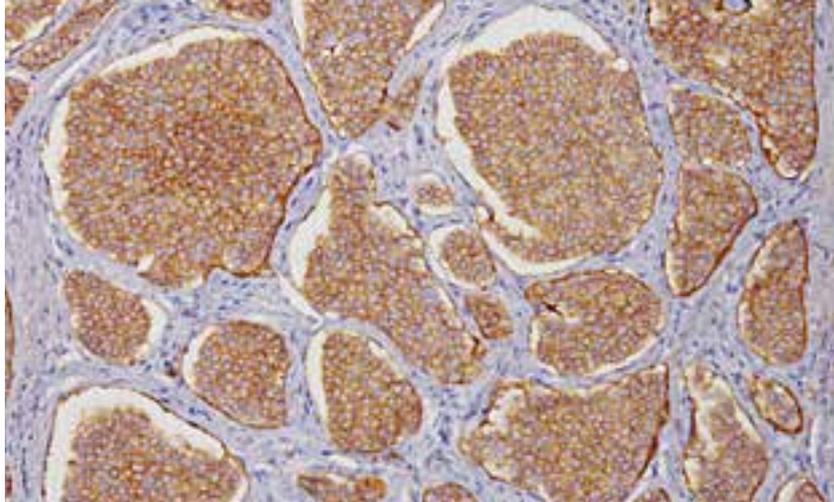
1. Balic M, *et al.* Clin Cancer Res. 2006 Oct; 12(19):5615-21. 2. Diaz LK, *et al.* Clin Cancer Res. 2005 May;11(9):3309-14. 3. Tse GM, *et al.* J Clin Path. 2005 Nov; 58(11):1185-8.

CD45RO [UCHL-1] **IVD** **FFPE**

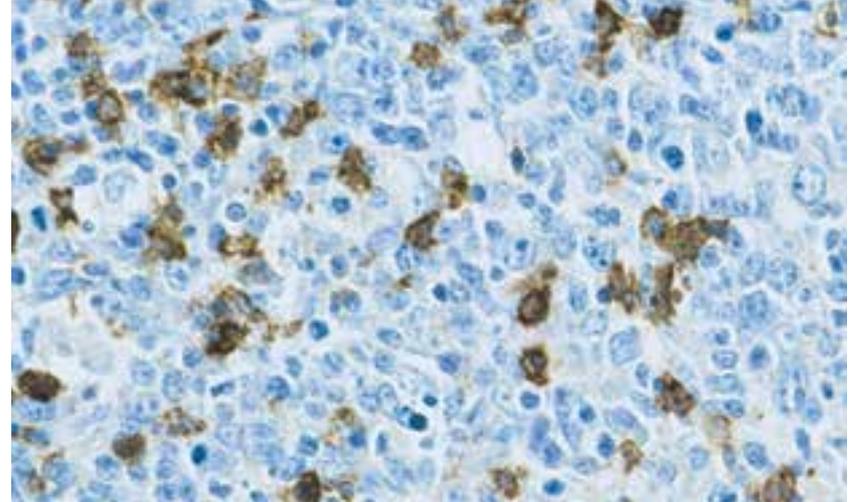
Clone	UCHL-1
Isotype	IgG2a/kappa
Reactivity	
Control	Tonsil or T-cell lymphoma
Cat. No.	CM 006 B, C; PM 006 AA

CD45RO recognizes an 180 kDa protein, identified as isoform of leukocyte common antigen (CD45RO). Studies have shown the CD45RO antibody reacts with mature activated T-cells, most thymocytes and a sub-population of resting T-cells within both CD4 and CD8 subsets. Reportedly, the UCHL-1 clone of the CD45RO antibody is useful for the identification of normal T-cells and T-cell lymphomas. Other studies have demonstrated that UCHL-1 shows no reactivity with normal B-cells or natural killer cells, but reacts with granulocytes and monocytes.

1. Zlobec I, *et al.* J Transl Med. 2013 Apr; 11(1):104. 2. Fraga M, *et al.* Histopathology. 2002 Sep; 41(3):216-29. 3. Kurtin PJ, Roche PC. Am J Surg Pathol, 1993 Sep; 17(9):898-904. 4. Clark JR, Williams ME, Swerdlow SH. AM J Clin Pathl. 1990 Jan; 93(1):58-69.



Pancreatic cancer stained with CD56



Tonsil stained with CD57 (Natural Killer Cell)

CD56

Clone	BC56C04
Isotype	IgG1/kappa
Reactivity	
Control	Neuroblastoma, pancreas or rhabdomyosarcoma
Cat. No.	CM 164 A, B, C; PM 164 AA

CD56 (neural cell adhesion molecule, a natural killer cell marker) is part of a family of cell surface glycoproteins that plays a role in embryogenesis and contact-mediated interactions between neural cells. Studies have shown CD56 to be expressed in a variety of normal and abnormal tissues including skin, small cell carcinoma, neuroblastoma, neurons, astrocytes, Schwann cells, natural killer (NK) cells and a subset of activated T-cell lymphomas.

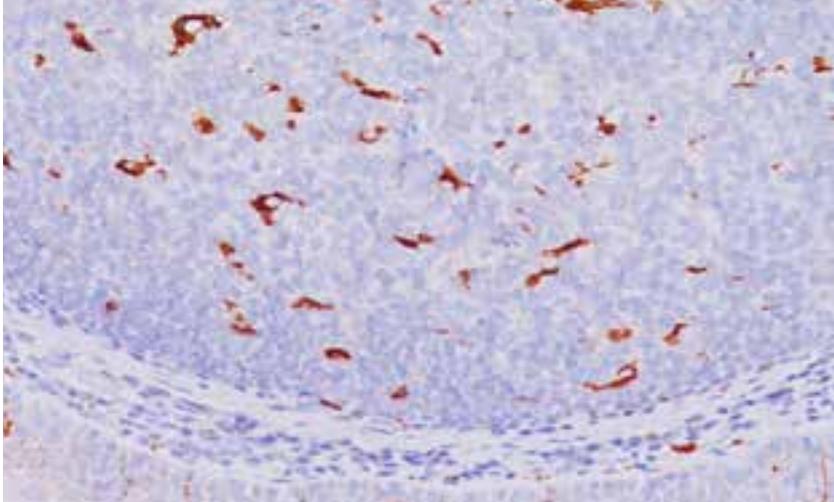
1. Gattenlöhner S, *et al.* Am J Pathol. 2009 Apr; 174(4):1160-71. 2. Marafioti T, *et al.* Blood. 2008 Apr; 111(7):3778-92. 3. Chang CC, *et al.* Am J Clin Pathol. 2000 Nov; 114(5):807-11. 4. Savoia P, *et al.* Br J Dermatol. 1997 Dec; 137(6):966-71. 5. Natkunam Y, *et al.* J Cutan Pathol. 2000 Sep; 27(8):392-9.

CD57 (Natural Killer Cell)

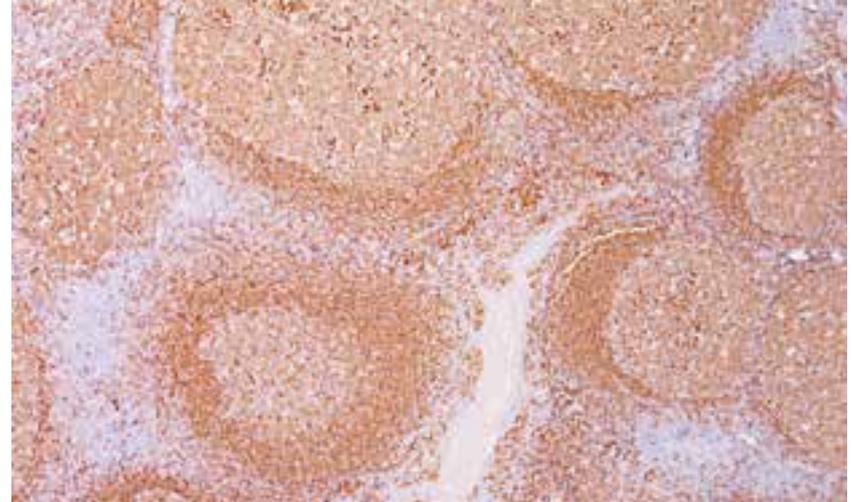
Clone	NK-1
Isotype	IgM/kappa
Reactivity	
Control	Tonsil
Cat. No.	CM 007 B, C; PM 007 AA

CD57 [NK-1] marks a subset of lymphocytes known as natural killer (NK) cells. Follicular center cell lymphomas often contain many NK cells within the neoplastic follicles. Studies have shown that CD57 expression is present in normal and neoplastic pituitaries. It has been reported that CD57 reactivity may be used as an additional immunophenotypic criterion in distinguishing nodular lymphocyte predominance Hodgkin's disease from nodular sclerosing Hodgkin's disease, T-cell-rich B-cell lymphoma and follicular lymphoma. CD57 [NK-1] also reportedly stains neuroendocrine cells and their respective tumors.

1. Sanno N, *et al.* J Neurooncol. 1997 Oct; 35(1):29-38. 2. Papadimitriou CS, *et al.* Leuk Lymphoma. 1995 Dec; 20(1-2):125-30. 3. Atochina OV, *et al.* Tsitologiya. 1994; 36(9-10):1006-11. 4. Liu XH, *et al.* Hinyokika Kyo. 1993 May; 39(5):439-44. 5. Kamel OW, *et al.* Am J Pathol. 1993 Feb; 142(2):541-6. 6. Ghali VS, Jimenez EJ, Garcia RL. Hum Pathol. 1992 Jan; 23(1):21-5.



Tonsil stained with CD68 [KP1]



Tonsil stained with CD79a

CD68 [KP1]

Clone	KP1
Isotype	IgG1/kappa
Reactivity	
Control	Tonsil
Cat. No.	CM 033 A, B, C; PM 033 AA; IP 033 G10

The CD68 antigen is a 110 kDa highly glycosylated transmembrane protein which is mainly located in lysosomes. CD68 is commonly regarded as a marker for monocytes and macrophages in many human tissues as well as fibroblasts, endothelial cells and tumor cells. Studies have shown that the CD68 antibody stains blast cells in a large percentage of acute myelogenous leukemia but none in acute lymphoblastic leukemia. Another study showed that [KP1] stained normal/reactive and neoplastic mast cells in lymph node and mastocytosis. The intensity of CD68 staining in individual cell types was found to depend on the fixation technique.

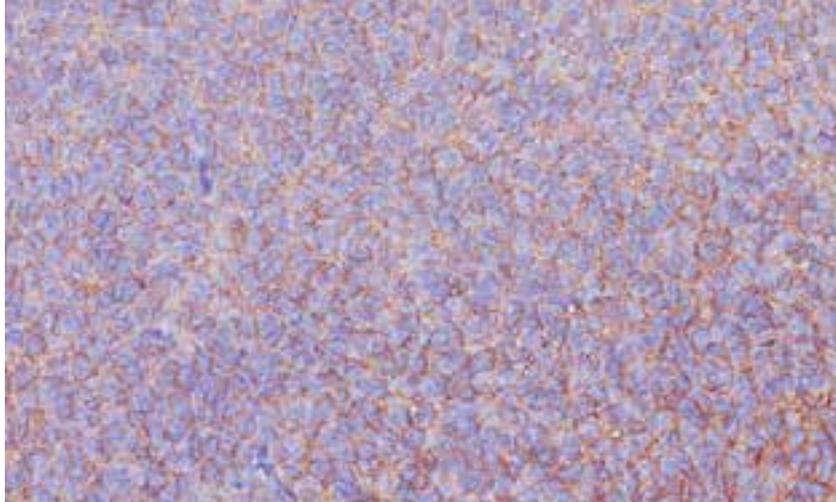
1. Horny HP, *et al.* Hum Pathol. 1993 Apr; 24(4):355-8. 2. Carbone A, *et al.* Hum Pathol. 1993 Aug; 24(8):886-96. 3. Gottfried E, *et al.* Scand J Immunol. 2008 May; 67(5):453-63. 4. Kunz-Schughart LA, *et al.* Verh Dtsch Ges Pathol. 2003; 87:215-23. 5. Horny HP, *et al.* Hum Pathol. 1994 Aug; 25(8):810-4.

CD79a

Clone	HM47/A9
Isotype	IgG1/kappa
Reactivity	
Control	Germinal center B-cells in lymph node or tonsil
Cat. No.	CM 067 A, C; PM 067 AA

CD79a is an intracellular component of the signal transduction pathway of the B-cell receptor, appearing at pre-B-cell stage and persisting until the plasma cell stage. Studies have shown that CD79a is found in a majority of acute leukemia of precursor-B-cell-type as well as B-cell neoplasms, B-cell lymphomas and some myelomas. It is not present in myeloid or T-cell lines. This antibody labels precursor B-cell acute lymphoblastic leukemia and has been suggested as the most reliable B-cell marker for this disorder. CD79a is conserved across species, which may make it useful in the identification of B-cell lymphomas in species other than human.

1. Milner RJ, *et al.* Onderstepoort J Vet Res. 1996 Dec; 63(4):309-113. 2. Astsaturov IA, *et al.* Leukemia. 1996 May; 10(5):769-73. 3. Chetty R, *et al.* J Clin Pathol. 1995 Nov; 48(11):1035-8. 4. Hemsley SW, *et al.* Immunol Cell Biol. 1995 Aug; 73(4):321-5. 5. Mason DY, *et al.* Blood. 1995 Aug; 86(4):1453-9.



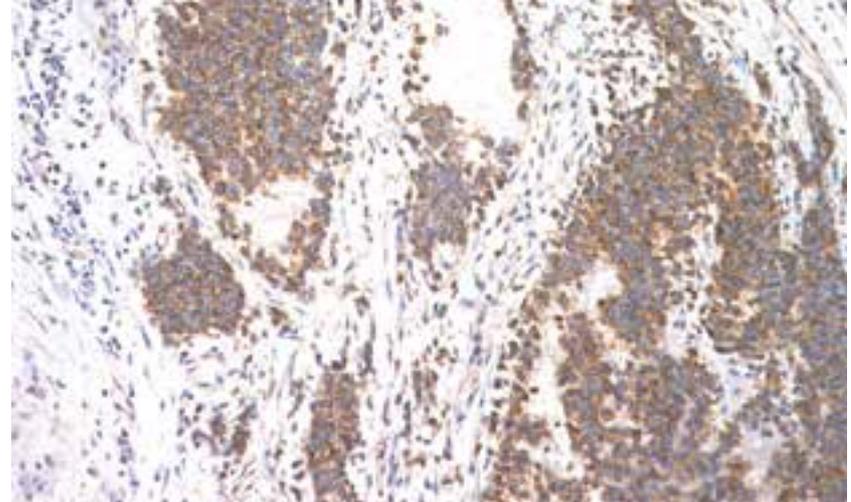
Ewing's sarcoma stained with CD99

CD99

Clone	H036-1.1
Isotype	IgM
Reactivity	
Control	Pancreas or Ewing's sarcoma
Cat. No.	CM 008 A, C; PM 008 AA

This mouse monoclonal CD99, a 32 kDa T-Cell surface glycoprotein, is also known as MIC2, E2, 12E7, HuLy-m6 or FMC29. This antigen is expressed on the cell membrane of some lymphocytes, cortical thymocytes and granulosa cells of the ovary. CD99 is also expressed by most pancreatic islet cells, Sertoli cells of the testis and some endothelial cells. Mature granulocytes express limited or no CD99. Studies have shown that CD99 may be a sensitive marker for Ewing's sarcoma and peripheral neuroectodermal tumors and may aid in the differential diagnosis of small blue cell tumors.

1. Chan JK, *et al.* Am J Surg Pathol. 1995 Oct; 19(10):1115-23. 2. Robertson PB, *et al.* Mod Pathol. 1997 Apr; 10(4):277-82. 3. Soslow RA, Bhargava V, Warnke RA. Hum Pathol. 1997 Oct; 28(10):1158-65.



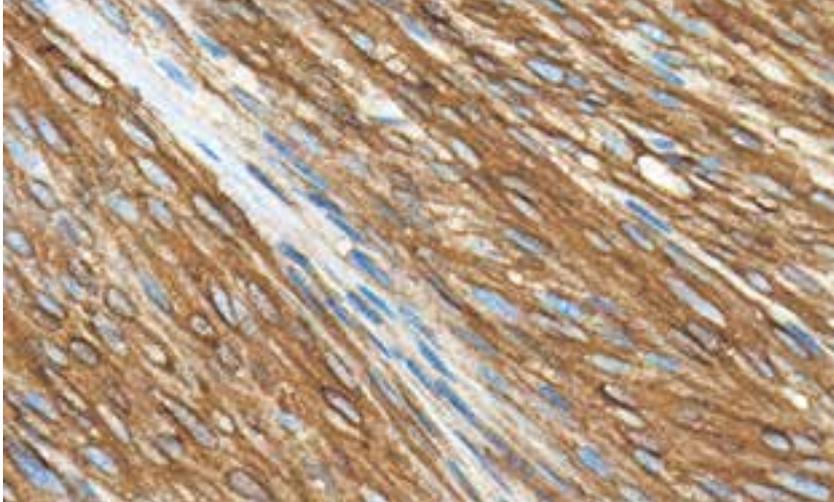
Ewing's sarcoma stained with CD99

CD99 **PREFERRED**

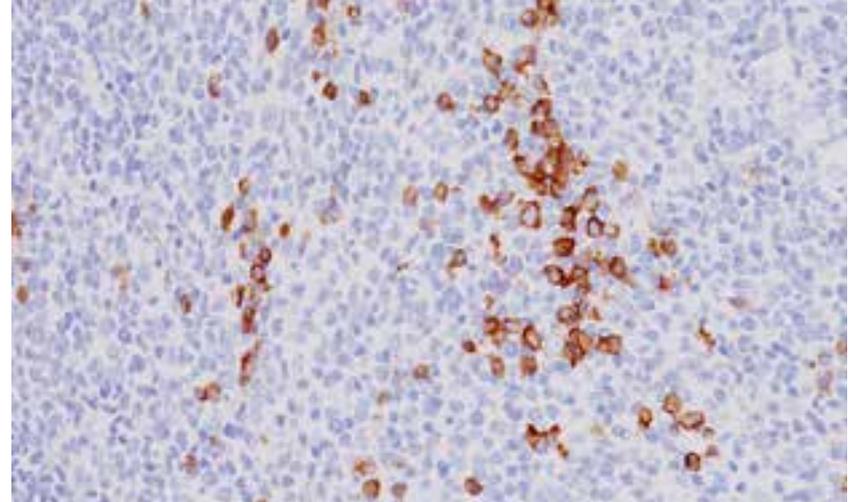
Clone	EPR3097Y
Isotype	IgG
Reactivity	
Control	Pancreas or Ewing's sarcoma
Cat. No.	CME 392 A; PME 392 AA

This rabbit monoclonal CD99, a 32 kDa T-Cell surface glycoprotein, is also known as MIC2, E2 and 12E7, HuLy-m6 or FMC29. This antigen is expressed on the cell membrane of some lymphocytes, cortical thymocytes, and granulosa cells of the ovary. CD99 is also expressed by most pancreatic islet cells, Sertoli cells of the testis and some endothelial cells. Mature granulocytes express limited or no CD99. Studies have shown that CD99 may be a sensitive marker for Ewing's sarcoma and peripheral neuroectodermal tumors and may aid in the differential diagnosis of small blue cell tumors.

1. Chan JK, *et al.* Am J Surg Pathol. 1995 Oct; 19(10):1115-23. 2. Robertson PB, *et al.* Mod Pathol. 1997 Apr; 10(4):277-82. 3. Soslow RA, Bhargava V, Warnke RA. Hum Pathol. 1997 Oct; 28(10):1158-65.



GIST stained with CD117/c-kit



Plasma cells in tonsil stained with CD138

CD117/c-kit

Clone	Y145
Isotype	IgG
Reactivity	
Control	Skin (mast cells), gastrointestinal stromal tumor or seminoma
Cat. No.	CME 296 AK, BK, CK; PME 296 AA; IP 296 G10

CD117/c-kit is a member of Tyrosine Kinase kDa (-3) Receptor (TKR) family and is highly homologous to receptor PDGF and CSF-1. This antibody recognizes the extracellular domain and is expressed by a variety of normal and abnormal cell types. In abnormal cells, CD117 has been shown to label testicular germ cells, endometrial carcinomas, papillary and follicular thyroid carcinomas, small cell carcinomas, melanomas and ovarian epithelial carcinomas. It has also been shown to be an effective marker for mast cell disorders, gastrointestinal stromal tumors and immunotyping of blasts in human bone marrow.

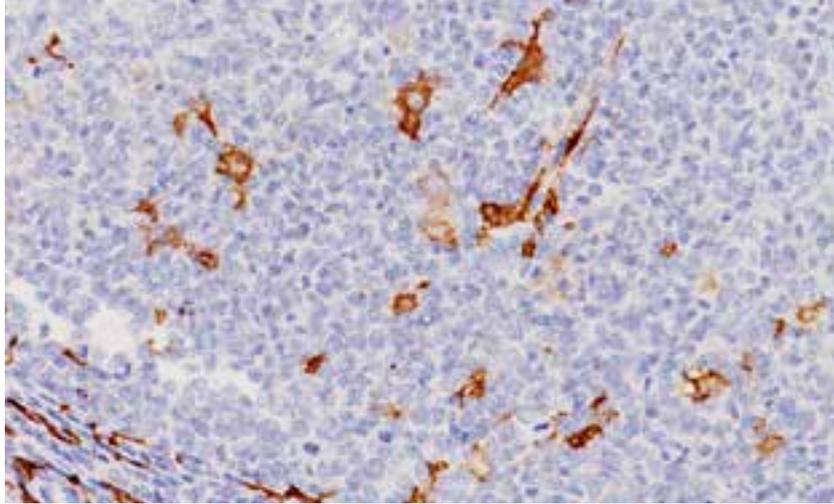
1. Miettinen M, Sarlomo-Rikala M, Lasota J. Hum Pathol. 1999 Oct; 30(10):1213-20. 2. Arber DA, Tamayo R, Weiss LM. Hum Pathol. 1998 May; 29(5):498-504. 3. Escribano L, et al. Cytometry. 1997 Apr; 30(2):98-102.

CD138

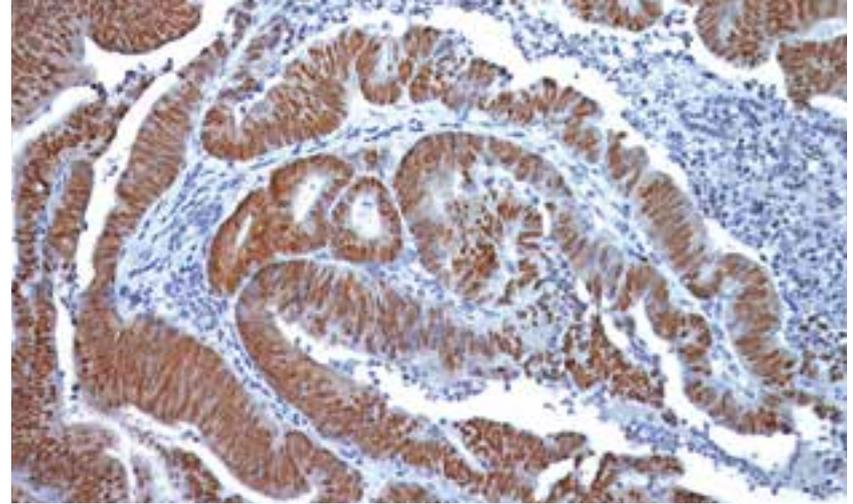
Clone	B-A38
Isotype	IgG1
Reactivity	
Control	Tonsil
Cat. No.	CM 167 AK, BK, CK; PM 167 AA; IP 167 G10

CD138 / syndecan-1 protein backbone is a single chain molecule of 30.5 kDa. Five putative GAG attachment sites exist in the extracellular domain. GAG fine structure appears to reflect the cellular source of the syndecan. Expression of CD138 in human hematopoietic cells is restricted to plasma cells in normal bone marrow. Early B-cell precursors in human bone marrow are CD138 negative. CD138 may aid in distinguishing between viable myeloma cells vs. apoptotic cells. CD138 is also expressed in endothelial cells, fibroblasts, keratinocytes and normal hepatocytes.

1. Sun RX, et al. J Immunol Methods. 1997 Jun; 205(1):73-9. 2. Carbone A, et al. Blood. 1997 May; 89(10):3787-94. 3. Jourdan M, et al. Br J Haematol. 1998 Mar; 100(4):637-46. 4. Sebestyén A, et al. Br J Haematol. 1996 Feb; 104(2):412-9. 5. Inki F, Jalkanen M. Ann Med. 1996 Feb; 28(1):63-7.



Tonsil stained with CD163



Colon cancer stained with CDX2

CD163

Clone	10D6
Isotype	IgG1
Reactivity	
Control	Tonsil or placenta
Cat. No.	CM 353 AK, CK; PM 353 AA

CD163 aids in identifying cells of monocyte/macrophage lineage in normal and neoplastic conditions. This antibody reacts with human scavenger receptor cysteine-rich protein CD163 (p155, M130) found on mononuclear phagocytes including human monocytes and macrophages. Compared with the CD68 antibodies, studies have shown that CD163 demonstrated greater specificity as a marker of disorders of monocyte/macrophage origin. However, immunohistochemical evaluation of CD163 expression does not seem to be a sensitive means of determining monocytic differentiation of AMLs or myeloid sarcoma.

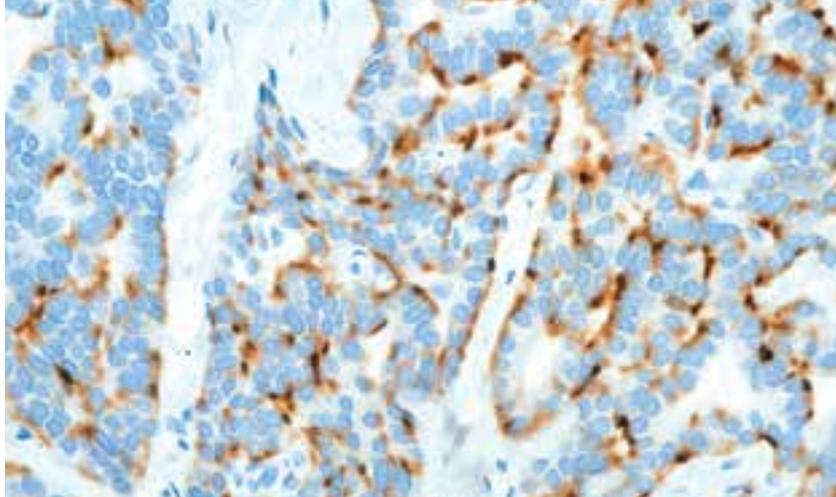
1. Lee CH, *et al.* Clin Cancer Res. 2008 Mar; 14(5):1423-30. 2. Lau SK, Chu PG, Weiss LM. Am J Clin Pathol. 2004 Nov; 122(5):794-801. 3. Nguyen TT, *et al.* Am J Surg Pathol. 2005 May; 29(5):617-24.

CDX2

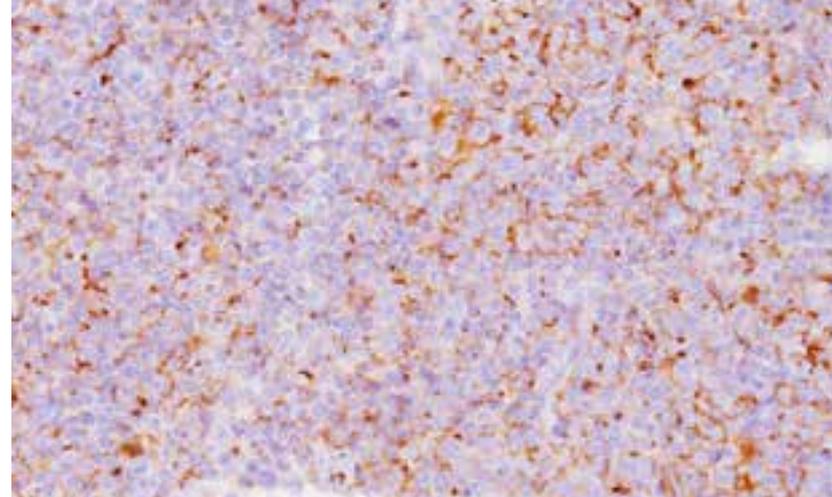
Clone	CDX2-88
Isotype	IgG1
Reactivity	
Control	Colon cancer
Cat. No.	CM 226 A, B, C; PM 226 AA, H; IP 226 G10; VP 226 G

CDX2 is a homeobox gene that encodes an intestine-specific transcription factor. It is expressed in the nuclei of epithelial cells of the intestine, from duodenum to rectum. Studies have shown that CDX2 is a sensitive marker for colonic carcinoma metastatic to the ovary and is more specific than CK20 as it is not expressed by serous and endometrioid carcinomas. CDX2 is also expressed in mucinous ovarian carcinomas but not expressed in normal gastric mucosa. CDX2 was reported to be advantageous over CK20 for distinguishing primary ovarian tumors from metastases of upper gastrointestinal tract origin.

1. Werling RW, *et al.* Am J Surg Pathol. 2003 Mar; 27(3):303-10. 2. Barbareschi M, *et al.* Am J Surg Pathol. 2003 Feb; 27(2):141-9. 3. Kim MJ. Korean Med Sci. 2005 Aug; 20(4):643-8. 4. Vang R, *et al.* Mod Pathol. 2006 Nov; 19(11):1421-8. 5. Raspollini ME, *et al.* Appl Immunohistochem Mol Morphol. 2004 Jun; 12(2):127-31. 6. Groisman GM, Meir A, Sabo E. Int J Gynecol Pathol. 2004 Jan; 23(1):52-7.



Neuroendocrine tumor stained with Chromogranin A



Lymphoma stained with Clusterin

Chromogranin A IVD FFPE

Clone LK2H10 + PHE5

Isotype IgG1 + IgG1

Reactivity   

Control Pancreas or adrenal gland

Cat. No. CM 010 A, B, C; PM 010 AA; IP 010 G10

This antibody cocktail recognizes a protein of 68-75 kDa, identified as Chromogranin A. The combination of LK2H10 and PHE5 is specifically designed for sensitive detection of Chromogranin A in formalin-fixed, paraffin-embedded (FFPE) tissues. Chromogranin A is present in neuroendocrine cells throughout the body. It has been shown that Chromogranin A is an excellent marker for carcinoid tumors, pheochromocytomas, paragangliomas and other neuroendocrine tumors. Chromogranin A may be a useful tumor marker to aid in predicting the extent of neuroendocrine differentiation and the time to recurrence in prostate cancer.

1. Kamiya N, *et al.* Int J Urol. 2008 May; 15(5):423-8. 2. Kokubo H, *et al.* Urology. 2005 Jul; 66(1):135-40. 3. Park SJ, *et al.* Appl Immunohistochem Mol Morphol. 2010 Jul; 18(4):348-52. 4. Conlon JM. Regul Pept. 2010 Nov; 165(1):5-11.

Clusterin RUO FFPE

Clone 41D

Isotype IgG1/kappa

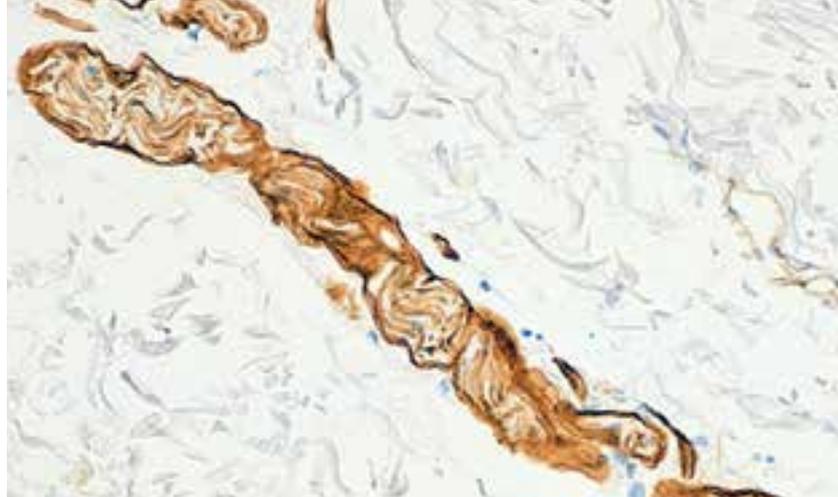
Reactivity 

Control Brain or anaplastic large cell lymphoma

Cat. No. CM 218 A

Clusterin, also known as Apo lipoprotein J, has been implicated in numerous processes including active cell death. Clusterin is expressed in normal brain and has been reported to be overexpressed in anaplastic large cell lymphoma (ALCL) and in pancreatic, breast, prostate and ovarian cancers. Clusterin has been shown to stain 95% of systemic ALCL, including 100% of ALK-1(+) and 91% of ALK-1(-) ALCL. Studies have shown that clusterin may be a useful diagnostic marker for ALCL, especially in ALK-1(-) cases. Overexpression of clusterin appears to be a useful prognostic factor for patients with ovarian carcinomas.

1. Fu Y, *et al.* Mol Med Rep. 2013 Jun; 7(6):1726-32. 2. Partheen K, *et al.* Int J Cancer. 2008 Nov; 123(9):2130-7. 3. Lae ME, Ahmed I, Macon WR. Am J Clin Pathol. 2002 Nov; 118(5):773-9. 4. Shannan B, *et al.* Cell Death Differ. 2006 Jan; 13(1):12-9.



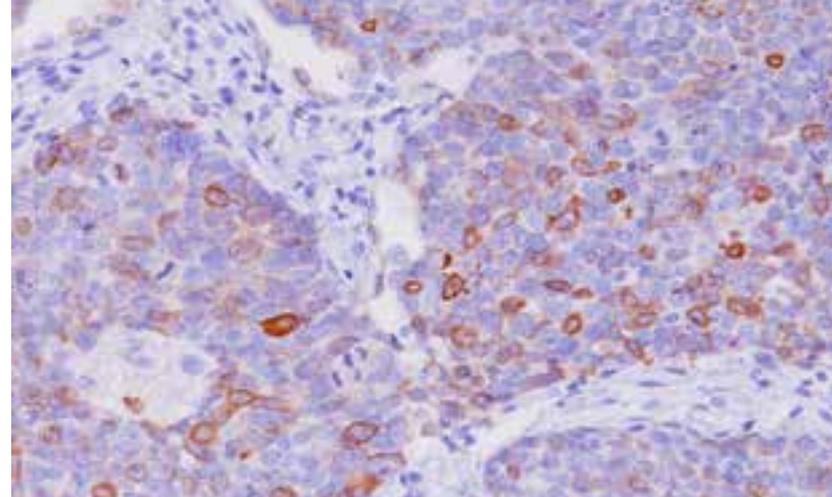
Skin stained with Collagen IV

Collagen IV

Clone	Col 94
Isotype	IgG1
Reactivity	
Control	Skin or kidney
Cat. No.	CM 112 B; PM 112 AA

This antibody reacts with type IV collagen, which is the major constituent of the basement membranes. Collagen IV antibody stains the basement membranes in a variety of tissues including kidney, muscle, lymph nodes, lung, tendon and spleen. Collagen IV has been shown to be useful in differentiating microinvasive from *in situ* ductal carcinomas of the breast. Other collagen IV studies include use in pancreatic adenocarcinoma and chronic pancreatitis, nephrosclerosis and other kidney diseases, oral squamous cell carcinoma, laryngeal cancers, ovarian cancers and cervical cancers.

1. Smrkolj S, Erzen M, Rakar S. Eur J Gynaecol Oncol. 2010; 31(4):380-5. 2. Cocker R, et al. Med Hypotheses. 2007; 69(1):57-63. 3. Kadono G, et al. Pancreas. 2004 Jul; 29(1):61-6. 4. Nakano S, et al. Lab Invest. 1999 Mar; 79(3):281-92. 5. Lee CS, Redshaw A, Boag G. Pathology. 1996 May; 28(2):135-8.



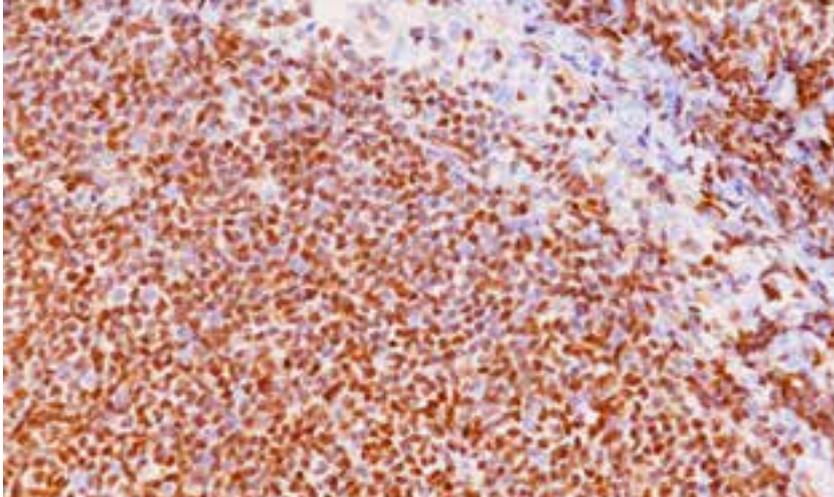
Breast cancer stained with COX-2

COX-2

Clone	SP21
Isotype	IgG
Reactivity	
Control	Breast, colon or lung carcinoma
Cat. No.	CRM 306 A; PRM 306 AA

Cyclooxygenase-2 (COX-2) is an inducible enzyme involved in production of prostaglandins in inflammatory processes. Given its role in synthesizing prostaglandins, COX-2 is of interest when studying immune response regulation. COX-2 is induced by a wide variety of stimuli and was initially identified as an immediate-early growth response gene. There is now increasing evidence that a constitutive expression of COX-2 plays a role in development and progression of malignant epithelial tumors. In studies, COX-2 positive patients had a lower overall survival rate than COX-2 negative patients.

1. Peng L, et al. PLoS One. 2013; 8(3):e58891. 2. Pan J, et al. Head Neck. 2013 Sep; 35(9):1238-47. 3. Laga AC, Zander DS, Cagle PT. Arch Pathol Lab Med. 2005 Sep; 129(9):1113-7. 4. Soumaoro LT, et al. Clin Cancer Res. 2004 Dec; 10(24):8465-71. 5. Wang W, Bergh A, Damber JE. Prostate. 2004 Sep; 61(1):60-72. 6. Boland GP, et al. Br J Cancer. 2004 Jan; 90(2):423-9.



Mantle cell lymphoma stained with Cyclin D1



Mantle cell lymphoma stained with Cyclin D1

Cyclin D1 **PREFERRED**

Clone	EP12
Isotype	IgG
Reactivity	
Control	Mantle cell lymphoma or breast cancer
Cat. No.	CME 432 A, C; PME 432 AA

This rabbit monoclonal antibody recognizes a protein of 36 kDa, identified as Cyclin D1 (also known as Bcl-1 or PRAD-1). Cyclin D1 is a regulatory subunit of certain protein kinases thought to advance the G1 phase of the cell cycle. Cyclin D1, when used in tandem with CD5, CD10 and CD23 may aid in the diagnosis for mantle cell lymphoma. Studies show that Cyclin D1 is also expressed in invasive breast cancer. Due to the superior technology in the development of this antibody, its binding capacity is superior to mouse monoclonal antibodies and is virtually background free. [EP12] shows some positive staining reaction in B-cell chronic lymphocytic leukemia proliferation not seen with other Cyclin D1 clones.

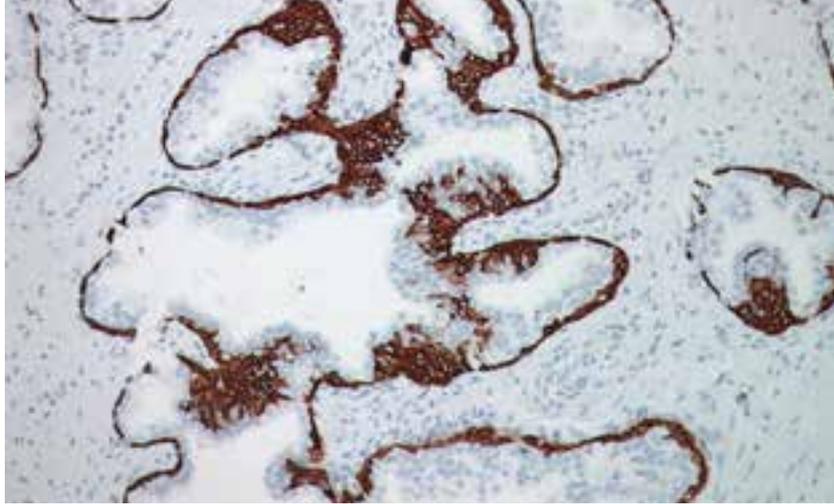
1. de Leon ED, *et al.* *Mod Pathol.* 1998 Nov; 11(11):1046-51. 2. Samaha H, *et al.* *Leukemia.* 1998 Aug; 12(8):1281-7. 3. Quintanilla-Martinez L, *et al.* *Am J Pathol.* 1998 Jul; 153(1):175-82. 4. Nakamura S, *et al.* *Pathol Int.* 1997 Jul; 47(7):421-9. 5. van Diest PJ, *et al.* *Am J Pathol.* 1997 Feb; 150(2):705-11. 6. de Boer CJ, *et al.* *Blood.* 1995 Oct 1; 86(7):2715-23. 7. Bartkova J, *et al.* *J Pathol.* 1994 Mar; 172(3):237-45.

Cyclin D1

Clone	SP4
Isotype	IgG
Reactivity	  
Control	Mantle cell lymphoma or breast cancer
Cat. No.	CRM 307 AK, BK, CK; PRM 307 AA

This rabbit monoclonal antibody recognizes a protein of 36 kDa, identified as Cyclin D1 (also known as Bcl-1 or PRAD-1). Cyclin D1 is a regulatory subunit of certain protein kinases thought to advance the G1 phase of the cell cycle. Cyclin D1, when used in tandem with CD5, CD10 and CD23, is a reliable immunohistochemical marker for the mantle cell lymphoma. Studies have shown that Cyclin D1 is a clinical informative marker for invasive breast cancer. Due to the superior technology in the development of this antibody, its binding capacity exceeds mouse monoclonal antibodies and is virtually background free.

1. Pruneri G, *et al.* *Appl Immunohistochem Mol Morphol.* 2005 Dec; 13(4):318-22. 2. Shakir R, Ngo N, Naresh KN. *J Clin Pathol.* 2008 Aug; 61(8):920-7. 3. Lee A, *et al.* *Jpn J Clin Oncol.* 2007 Sep; 37(9):708-14. 4. Mylona E, *et al.* *Histopathology.* 2013 Feb; 62(3):472-80.



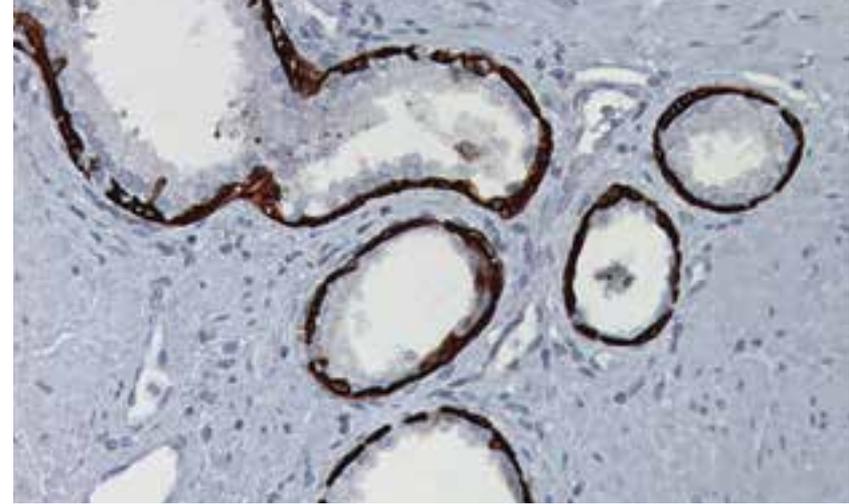
Prostate stained with Cytokeratin 5 (CK5)

Cytokeratin 5 (CK5)

Clone	EP1601Y
Isotype	N/A
Reactivity	
Control	Lung SqCC, breast cancer, normal prostate or skin
Cat. No.	CME 430 A, B; PME 430 AA

CK5 is a type II intermediate filament protein that is expressed in active basal layers of most stratified squamous epithelia. CK5 is expressed in many non-keratinizing stratified squamous epithelia as well as basal cells in prostate glands and myoepithelial cells in mammary glands. In a published study, rabbit monoclonal CK5 antibody was compared to mouse monoclonal CK5/6. CK5 was 84% sensitive and 100% specific for lung SqCC when compared to CK5/6 (80% sensitivity and 97% specificity). The CK5 predilute has been optimized for lung squamous cell carcinoma; other tumors have not been tested.

1. Mukhopadhyay S, *et al.* Am J Surg Pathol. 2011 Jan; 35(1):15-25. 2. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012; 20:29-7. 3. Terry J, *et al.* Am J Surg Pathol. 2010 Dec; 34(12):1805-11. 4. Kargi A, *et al.* Appl Immunohistochem Mol Morphol. 2007 Dec; 15(4):415-20. 5. Miettinen M, *et al.* Am J Surg Pathol. 2003 Feb; 27(2):150-8. 6. Bocker W, *et al.* Lab Invest. 2002 Jun; 82(6):737-46.



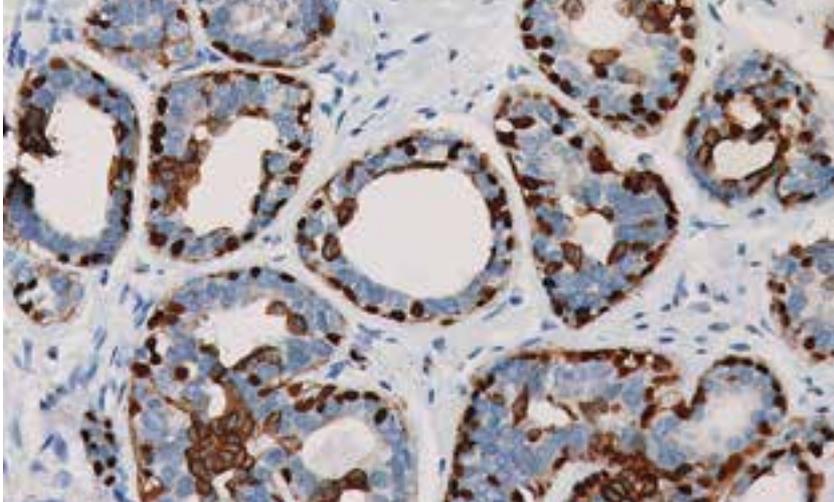
Prostate stained with Cytokeratin 5 (CK5)

Cytokeratin 5 (CK5) **PREFERRED**

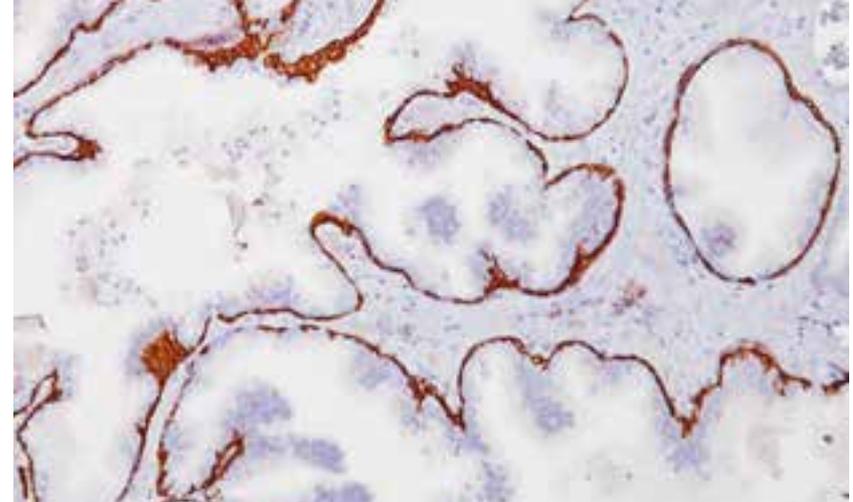
Clone	XM26
Isotype	IgG1/kappa
Reactivity	
Control	Normal prostate
Cat. No.	CM 234 A, C; PM 234 AA

CK5 is a 58 kDa protein that is closely related to CK6. ELISA testing has shown the XM26 clone was positive for CK5 and negative for the CK6 protein. CK5 is in many non-keratinizing stratified squamous epithelia such as tongue mucosa, basal epithelia hair follicles and trachea. It is also expressed in prostate gland basal cells, mammary gland myoepithelial cells and most epithelial and biphasic mesotheliomas. According to various studies, CK5 is expressed in large cell carcinomas and pulmonary squamous cell carcinomas. The sensitivity of CK5 for identifying basal-like tumors in breast was 97% compared with 59% for CK5/6.

1. Bocker W, *et al.* Lab Invest. 2002 Jun; 82(6):737-46. 2. Miettinen M, Sarlomo-Rikala M. Am J Surg Pathol. 2003 Feb; 27(2):150-8. 3. Bhargava R, *et al.* Am J Clin Pathol. 2008 Nov; 130(5):724-30. 4. Brunnstrom H, *et al.* Am J Clin Pathol. 2013 Jul; 140(1):37-46.



Breast cancer stained with CK5 + p63



Prostate stained with Cytokeratin 5/6 (CK5/6)

CK5 + p63

Clone	XM26 + 4A4
Isotype	IgG1 + IgG2a
Reactivity	
Control	Normal breast or prostate
Cat. No.	PM 235 AA, H

Cytokeratin 5 is a 58 kDa protein found in many non-keratinizing, stratified squamous epithelia such as tongue mucosa, basal epithelia hair follicles and trachea, as well as basal cells in prostate and mammary glands. CK5 is also expressed in most epithelial and biphasic mesotheliomas. p63 is detected in prostatic basal cells in normal prostate; however, it is negative in malignant tumors of the prostate gland. Thus, p63 may be useful to aid in the differentiation of benign and malignant tumors of prostate gland. It has been reported that p63 may be useful as a negative marker for malignant mesotheliomas. p63 also stains basal cells in mammary glands.

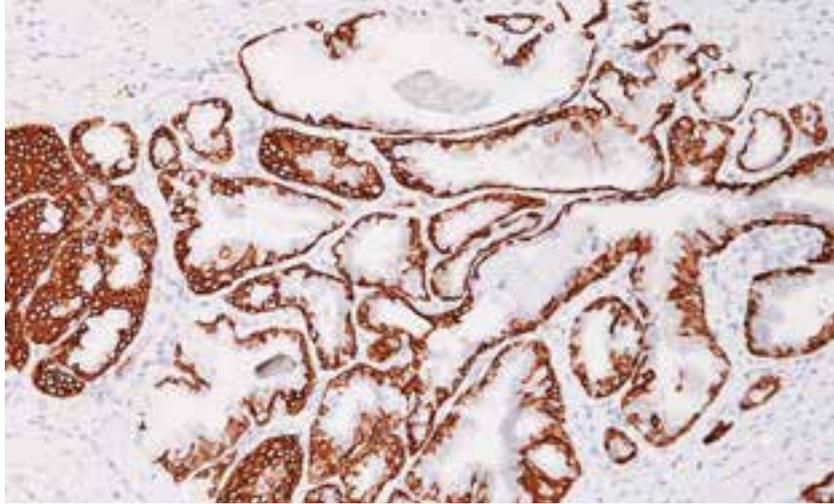
1. Abrahams NA, Ormsby AH, Brainard J. *Histopathology*. 2002 Jul; 41(1):35-41. 2. Khilko N, *et al*. *Breast Cancer (Auckl)*. 2010 Oct; 4:49-55. 3. Zhou M, *et al*. *Am J Surg Pathol*. 2003 Mar; 27(3):365-71. 4. Browne TJ, *et al*. *Hum Pathol*. 2004 Dec; 35(12):1462-8. 5. Hameed O, Humphrey PA. *Semin Diagn Pathol*. 2005 Feb; 22(1):88-104. 6. Douglas-Jones A, *et al*. *Histopathology*. 2005 Aug; 47(2):202-8.

Cytokeratin 5/6 (CK 5/6)

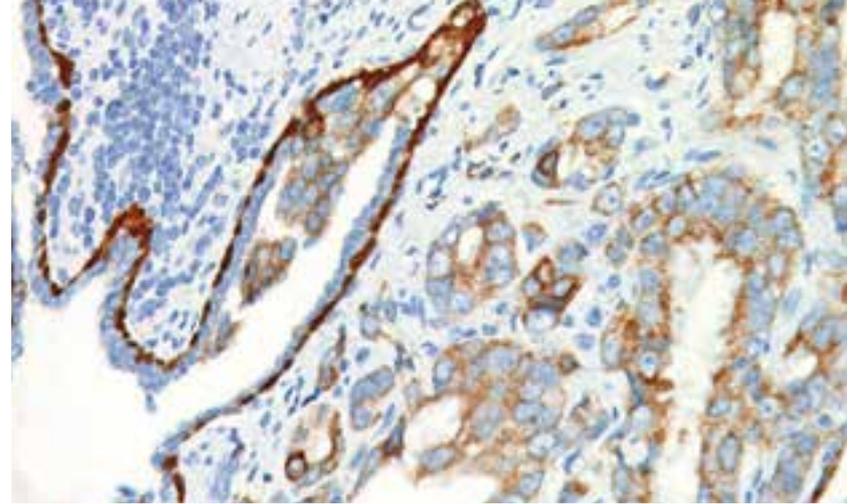
Clone	CK5/6.007
Isotype	IgG1
Reactivity	
Control	Prostate or skin
Cat. No.	CM 105 A, B, C; PM 105 AA

Studies have shown Cytokeratin 5/6 reacts with human epidermis and non-keratinizing epithelium. It has also been shown to react with Cytokeratin 6, weakly with Cytokeratin 4 and does not react with Cytokeratins 1, 7, 8, 10, 13, 14, 18 and 19. CK5/6 has been shown to express in the vast majority of squamous cell carcinoma, basal cell carcinomas, thymomas, salivary gland tumors and mesothelioma. It rarely reacts with pulmonary adenocarcinomas.

1. Ordenez NG. *Am J Surg Pathol*. 1998 Oct; 22(10):1215-21. 2. Chu P, Weiss LM. *Mod Pathol*. 2002 Jan; 15(1):6-10. 3. Aquiar FN, *et al*. *Clinics (Sao Paulo)*. 2013 May; 68(5):638-43.



Prostate stained with Cytokeratin 5/14 Cocktail



Prostate cancer stained with CK5/14 + p63 + P504S

Cytokeratin 5/14 Cocktail

Clone	XM26 + LL002
Isotype	IgG1/kappa + IgG3
Reactivity	
Control	Normal prostate
Cat. No.	ACI 3025 A, C; API 3025 AA

The CK5/CK14 monoclonal antibodies have been shown to be superior to CK5/6 and 34βE12. Cytokeratin 5/14 may be used to identify basal cells in prostate and myoepithelium cells in breast cancer. Loss of epithelium staining along with p63 typically occurs in PIN (prostatic intraepithelial neoplasia) and prostate cancer. Additionally, CK5/CK14 + AMACR (P504S) may be added to the panel of antibodies used to assess neoplasia in prostate biopsies. Studies have shown that CK5/14 positive sporadic breast cancers arise from glandularly committed progenitor cells and represent about 9% of sporadic invasive ductal breast cancers and 78% of BRCA1-associated tumors.

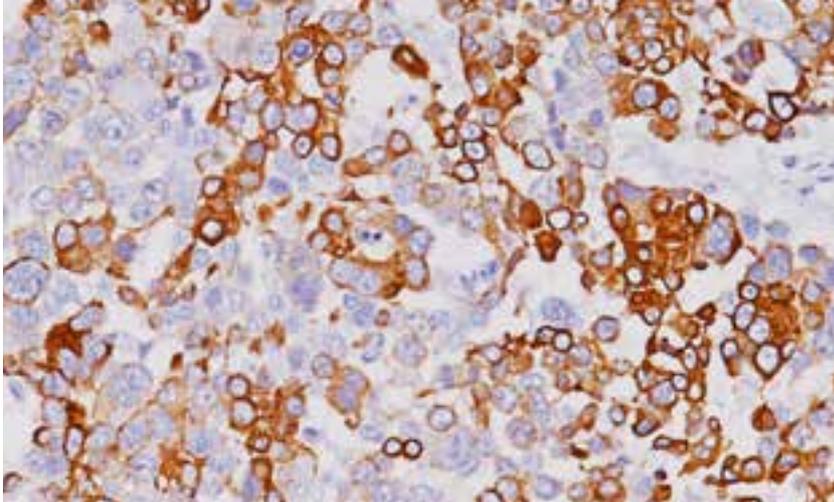
1. Abrahams NA, Ormsby AH, Brainard J. *Histopathology*. 2002; 41(1):35-41. 2. Shah RB, *et al.* *Am J Surg Pathol*. 2002 Sep; 26(9):1161-8. 3. Bhargava R, *et al.* *Am J Clin Pathol*. 2008 Nov; 130(5):724-30. 4. Reis-Filho JS, *et al.* *Virchows Arch*. 2003 Aug; 443(2):122-32. 5. Laakso M, *et al.* *Mod Pathol*. 2005 Oct; 18(10):1321.

CK5/14 + p63 + P504S

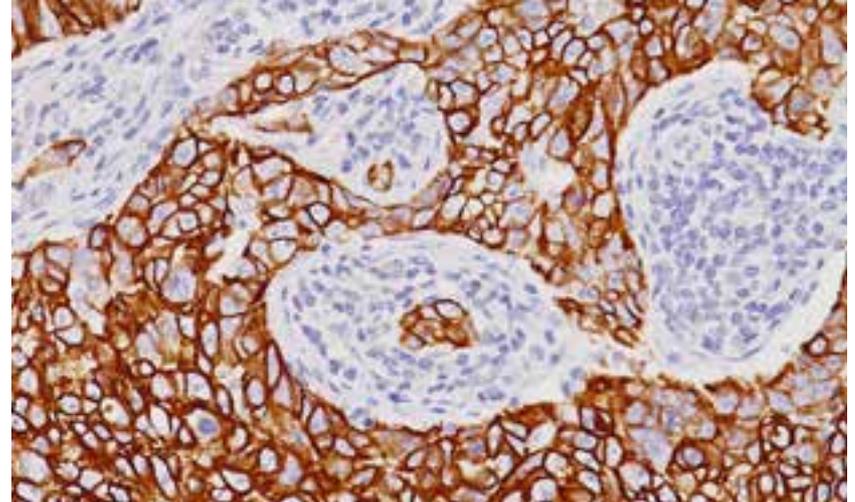
Clone	XM26 / LL002 + 4A4 + N/A
Isotype	IgG1/kappa, IgG3 + IgG2a,/kappa + IgG
Reactivity	
Control	Normal prostate or prostatic adenocarcinoma
Cat. No.	PPM 225 AA, H

CK5 and CK14 are high molecular weight cytokeratins expressed in a variety of normal and neoplastic epithelial tissues. p63, a homolog of the tumor suppressor p53, was detected in nuclei of the basal epithelium in normal prostate glands; however, it was not expressed in malignant tumors of the prostate. Expression of P504S protein is found in prostatic adenocarcinoma but not in benign prostatic tissue. The combination of the basal cell markers (CK5/14 and p63) with P504S may be an extremely useful aid in diagnosing prostatic intraepithelial neoplasia (PIN), especially in difficult and limited tissues cases.

1. Grisanzio C, Signoretti S. *J Cell Biochem*. 2008 Apr; 103(5):1354-68. 2. Tokar EJ, *et al.* *Hum Pathol. Differentiation*. 2005 Dec; 73(9-10):463-73. 3. Herawi M, *et al.* *Am J Surg Pathol*. 2005 Jul; 29(7):874-80. 4. Browne TJ, *et al.* *Hum Pathol*. 2004 Dec; 35(12):1462-8. 5. Wu CL, *et al.* *Hum Pathol*. 2004 Aug; 35(8):1008-13.



Breast cancer stained with Cytokeratin 7 (CK7)



Breast cancer stained with Cytokeratin 7 (CK7)

Cytokeratin 7 (CK7) IVD FFPE PREFERRED

Clone	BC1
Isotype	IgG
Reactivity	
Control	Breast, lung or ovarian cancers
Cat. No.	CRM 339 A, C; PRM 339 AA; IP 339 G10

Cytokeratin 7 is an intermediate filament protein (IFP) of 54 kDa that recognizes the simple epithelium found in most glandular and transitional epithelia; but is not found in the stratified squamous epithelia. This rabbit monoclonal antibody [BC1] has been shown to be highly specific to Cytokeratin 7 and shows no cross-reaction with other IFPs. Cytokeratin 7 is expressed in epithelial cells of ovary, lung and breast. It is often used in conjunction with Cytokeratin 20 and CDX-2 to aid in distinguishing pulmonary, ovarian and breast carcinomas (CK7+) from most colon carcinomas (CK7-).

1. Qi W, *et al.* Appl Immunohistochem Mol Morphol. 2009 May; 17(3):233-8. 2. Ross DS, *et al.* Am J Clin Pathol. 2013 Jan; 139(1):62-70. 3. McCluggage WG, Young RH. Semin Diagn Pathol. 2005 Feb; 22(1):3-32. 4. Sousa V, *et al.* Virchows Arch. 2011 May; 458(5):571-81.

Cytokeratin 7 (CK7) IVD FFPE

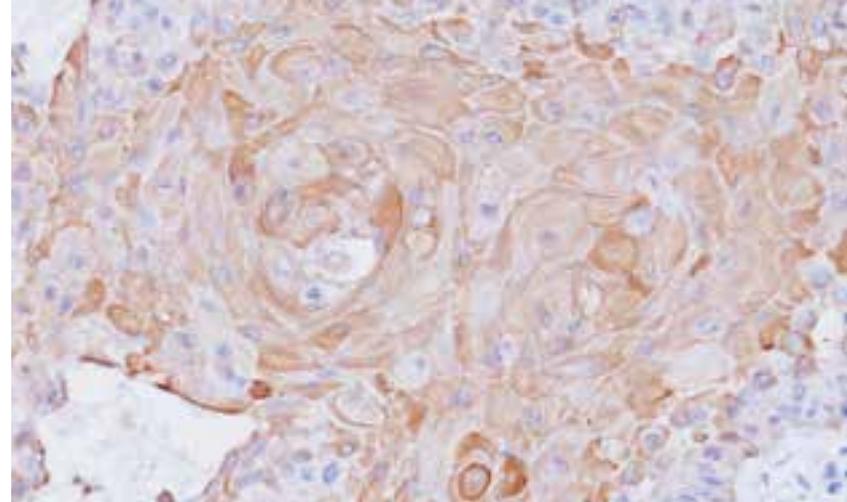
Clone	OV-TL 12/30
Isotype	IgG1
Reactivity	
Control	Ovarian or breast cancer
Cat. No.	CM 061 A, B, C; PM 061 AA

Cytokeratin 7 is an intermediate filament protein (IFP) of 54 kDa that recognizes the simple epithelium found in most glandular and transitional epithelia; but not in stratified squamous epithelia. This monoclonal antibody [OV-TL 12/30] has been shown to be highly specific to Cytokeratin 7 and shows no cross-reaction with other IFPs. Cytokeratin 7 is a basic cytokeratin and is expressed in epithelial cells of ovary, lung and breast, but not of colon or gastrointestinal tract. It is often used in concert with Cytokeratin 20 and COX-2 to aid in distinguishing ovarian, pulmonary and breast carcinomas (CK7+) from colon carcinomas (CK7-).

1. Tot T. Eur J Cancer. 2002 Apr; 38(6):758-63. 2. Lagendijk JH, *et al.* Hum Pathol. 1998 May; 29(5):491-7. 3. Tan J, *et al.* Hum Pathol. 1998 Apr; 29(4):390-6. 4. Bouwens L. J Pathol. 1998 Mar; 184(3):234-9. 5. Loy TS, Calaluce RD, Keeney GL. Mod Pathol. 1996 Nov; 9(11):1040-4. 6. Wauters CC, *et al.* Hum Pathol. 1995 Aug; 26(8):852-5. 7. Loy TS, Calaluce RD. Am J Clin Pathol. 1994 Dec; 102(6):764-7.



Prostate stained with Cytokeratin 14 (CK14)



Lung squamous cell carcinoma stained with Cytokeratin 17 (CK17)

Cytokeratin 14 (CK14)

Clone	LL002
Isotype	IgG3
Reactivity	  
Control	Skin, squamous cell carcinoma or prostate
Cat. No.	ACR 185 B, C

This antibody reacts with a human intermediate filament protein of 50 kDa, known as CK14. Studies have shown that it can be used to distinguish stratified epithelial cells from simple epithelial cells. In neoplastic cells, CK14 may be a useful marker in the differential diagnosis of squamous cell carcinoma from other epithelial tumors. Recent studies also indicate that CK14 expression in breast cancer corresponded with poor clinical outcome and that CK14 may have diagnostic value in the sub-classification of NSCLC.

1. Shao MM, *et al.* Virchows Arch. 2012 Sep; 461(3):313-22. 2. Duhig EE, *et al.* Histopathology. 2011 Nov; 59(5):957-64. 3. Chen Y, *et al.* Oncology. 2011; 80(5-6):333-40. 4. Dos Santos JN, *et al.* J Mol Histol. 2009 Aug; 40(4):269-75. 5. Chu PG, Lyda MH, Weiss LM. Histopathology. 2001 Jul; 39(1):9-16.

Cytokeratin 17 (CK17)

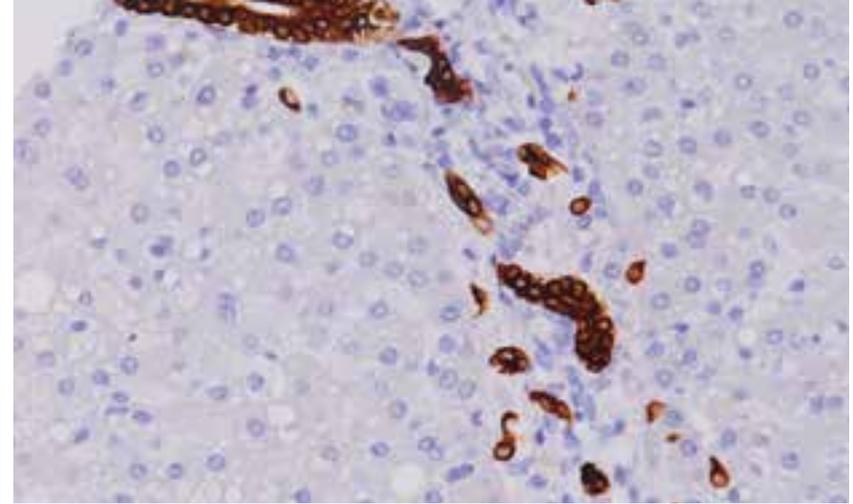
Clone	Ks 17.E3
Isotype	IgG2b
Reactivity	  
Control	Skin
Cat. No.	PM 176 AA

Cytokeratin 17 (CK17) is a type I keratin that reacts with a 40 kDa polypeptide. CK17 staining occurs in human epithelial appendages such as hair follicles. Studies indicate CK17 maybe an excellent marker for the identification of squamous cell carcinomas in various tissues including the cervix, lung and oral cavity. CK17 may also be helpful in distinguishing myoepithelial cells from luminal epithelium of various glands such as mammary, sweat and salivary. Positive expression of CK17 in breast cancer has been associated with a worse prognosis, high tumor grade and positive axillary lymph nodes.

1. van de Rijn M, *et al.* Am J Pathol. 2002 Dec; 161(6):1991-6. 2. Guelstein VI, *et al.* Int J Cancer. 1993 Jan; 53(2):269-77. 3. Lui ZB, *et al.* Tumori. 2009 Jan-Feb; 95(1):53-62. 4. Martens JE, *et al.* Anticancer Res. 2004 Mar-Apr; 24(2B):771-5. 5. Lerma E, Barnadas A, Prat J. Appl Immunohistochem Mol Morphol. 2009 Dec; 17(6):483-94. 6. Liu ZB, *et al.* Tumori. 2009 Jan-Feb; 95(1):53-62.



Colon cancer stained with Cytokeratin 18 (CK18)



Bile ducts in normal liver stained with Cytokeratin 19 (CK19)

Cytokeratin 18 (CK18)

Clone	DC10
Isotype	IgG1
Reactivity	
Control	Colon or skin
Cat. No.	ACI 3061 A, C; API 3061 AA

Cytokeratin 18 (CK18) [DC10] is a 45 kDa acidic intermediate filament protein. It is normally co-expressed with Cytokeratin 8 and is found in most simple ductal and glandular epithelia. Studies have shown that this antibody reacts with a wide variety of simple epithelia such as gastrointestinal tract, lung, breast, pancreas, ovary and thyroid tumors, whereas tumor cells of non-epithelial origin such as glioma, melanoma and osteosarcoma are not reactive. It also does not react with stratified squamous epithelium on most squamous cell carcinoma.

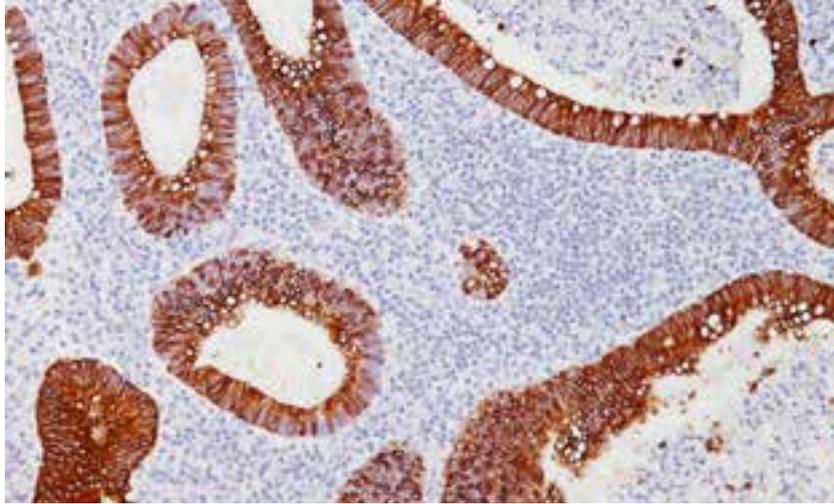
1. Shao MM, *et al.* Virchows Arch. 2012 Sept; 461(3):313-22. 2. Fareed KR, *et al.* World J Gastroenterol. 2012 Apr 28;18(16):1915-20. 3. Lauerova L, *et al.* Hybridoma. 1988 Oct; 7(5):495-504. 4. Nhung NV, *et al.* Cesk Patol. 1999 Jul; 35(3):80-4. 5. Veno T, *et al.* Pathol Int. 2003 May;53(5):265-9.

Cytokeratin 19 (CK19)

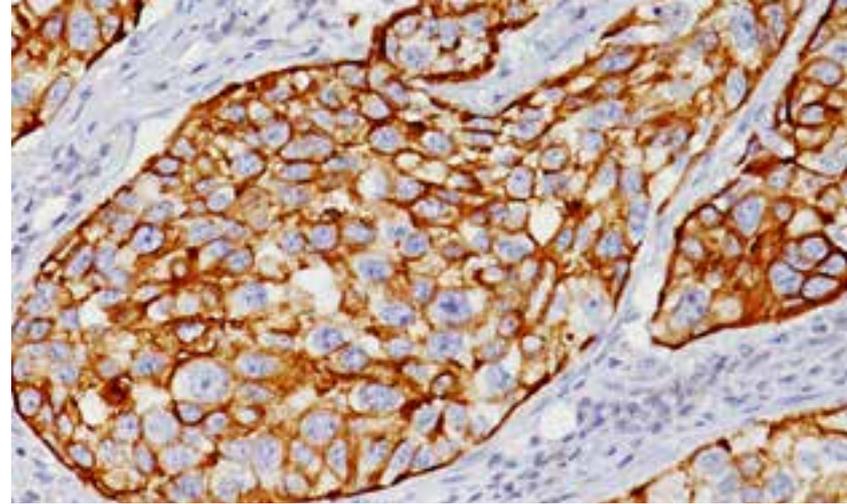
Clone	Ks19.1
Isotype	IgG2a/kappa
Reactivity	
Control	Colon carcinoma or skin
Cat. No.	CM 242 A, C; PM 242 AA

CK19 antibody reacts with the rod domain of human keratin 19, a 40 kDa polypeptide and is expressed in various epithelia, including many simple epithelia. Studies have shown it to label MCF-7 cells, papillary carcinomas and thyroid tumors. It can also be used to highlight native ductules in the liver and helps separate conditions such as focal nodular hyperplasia from hepatic adenoma. CK19 was reported to be of prognostic value in hepatocellular carcinomas distinguishing cholangiocarcinoma from HCC. The vast majority of adenocarcinomas in the gastrointestinal tract and pancreas have also been found to be CK19 positive.

1. Rorive S, *et al.* Mod Pathol. 2002; 15(12):1294-301. 2. Jain R, *et al.* Appl Immunohistochem Mol Morphol. 2010; 18(1):9-15. 3. Cheung CC, *et al.* Mod Pathol. 2001; 14(4):338-42. 4. Moll R. Int J Biol Markers. 1994; 9(2):63-9. 5. Alix-Panabieres C, *et al.* Breast Cancer Res. 2009; 11(3):R39.



Colon cancer stained with Cytokeratin 20 (CK20)



Bladder cancer stained with Cytokeratin 20, 2X

Cytokeratin 20 (CK20) IVD FFPE

Clone	Ks20.8
Isotype	IgG2a
Reactivity	
Control	Colon carcinoma
Cat. No.	CM 062 A, B, C; PM 062 AA, H; IP 062 G10

Cytokeratin 20 is an intermediate filament protein that is expressed in adenocarcinomas of the colon, stomach, pancreas, bile system, mucinous ovarian tumors, transitional cell carcinomas of the urinary tract and Merkel cell carcinomas. CK20 is essentially non-reactive in squamous cell carcinomas and adenocarcinomas of the breast, lung and endometrium, as well as non-mucinous tumors of the ovary and small cell carcinomas. Cytokeratin 20 is often used in conjunction with CK7 and other antibodies in distinguishing colon carcinomas (CK20+) from ovarian, pulmonary and breast carcinomas.

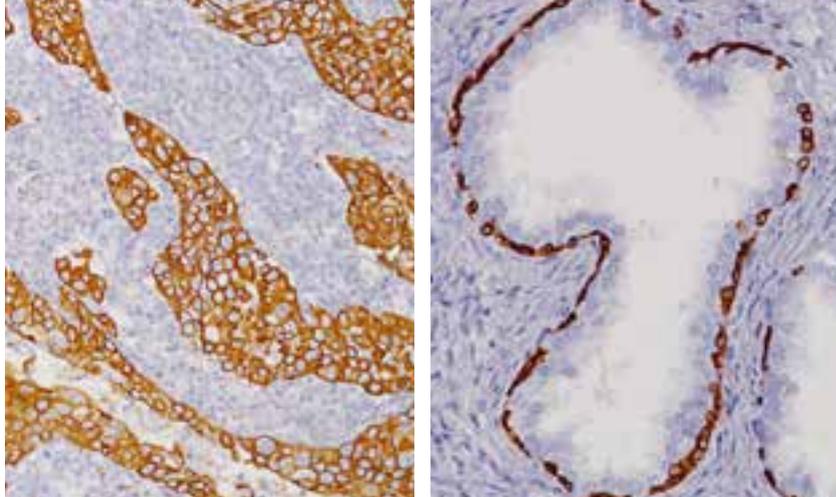
1. Perry A, Parisi JE, Kurtin PJ. Hum Pathol. 1997 Aug; (8):938-43. 2. Sack MJ, Roberts SA. Diagn Cytopathol. 1997 Feb; 16(2):132-6. 3. Moll R, et al. Am J Pathol. 1992 Feb; 140(2):427-47.

Cytokeratin 20, 2X IVD FFPE

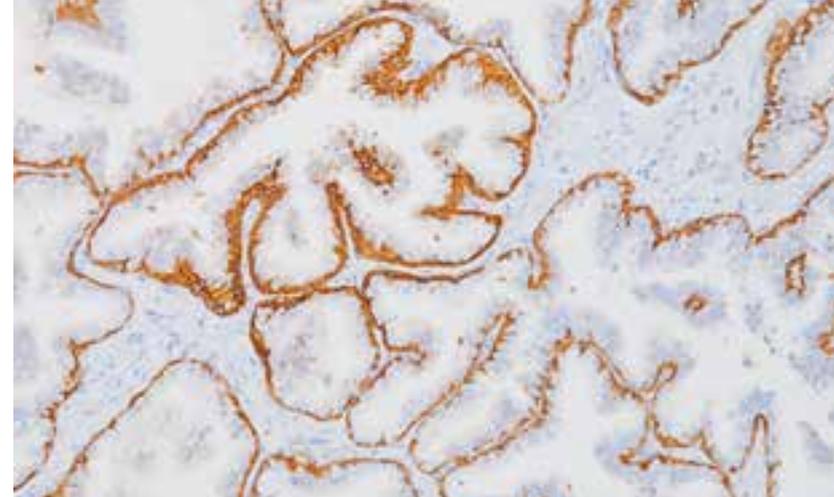
Clone	Ks20.8
Isotype	IgG2a
Reactivity	
Control	CK20 positive bladder carcinoma or normal bladder
Cat. No.	API 3089 AA supernova

Cytokeratin 20 (CK20) is an intermediate filament protein that has been identified with expression primarily restricted to gastric and intestinal epithelium, urothelium and Merkel cells. CK20 is essentially non-reactive in squamous cell carcinomas and adenocarcinomas of the breast, lung and epithelium. CK20, in combination with p53 and CD44, may be a valuable tool in the differentiation of urothelial reactive atypia from carcinoma *in situ* (CIS) of the bladder. In normal urothelium, the umbrella cell layer shows reactivity for CK20. In urothelial reactive atypia, CK20 expression remains as observed in normal urothelium. In CIS, diffuse staining for CK20 is seen throughout the urothelium.

1. Moll R, et al. AM J Pathol. 1992 Feb; 140(2):427-47. 2. Perry A, Parisi JE, Kurtin PJ. Hum Pathol. 1997 Aug; 28(8):938-43. 3. Sack MJ, Roberts SA. Diagn Cytopathol. 1997 Feb; 16(2):132-6. 4. McKenney JK, et al. AM J Surg Pathol. 2001 Aug; 25(8):1074-8.



Lung (L) and Prostate (R) stained with Cytokeratin HMW [34βE12]



Prostate stained with CK HMW [34βE12], 3X

Cytokeratin HMW [34βE12]

Clone 34βE12

Isotype IgG1/kappa

Reactivity   

Control Skin, prostate or squamous cell carcinoma

Cat. No. CM 127 A, C; PM 127 AA, H

Cytokeratin HMW [34βE12] antibody recognizes Cytokeratins 1, 5, 10 and 14. This antibody is expressed in squamous and adenosquamous carcinomas and is negative in adenocarcinomas. In normal epithelia, [34βE12] stains stratified epithelia, myoepithelial cells and basal cells in the prostate gland and bronchi. It is also expressed in ductal and squamous epithelium over a wide range of organ tissues. Studies have shown that [34βE12] is useful as a differential marker for squamous carcinomas and adenocarcinomas as well as for benign and malignant tumors of the prostate gland.

1. Moinfar F, *et al.* Am J Surg Pathol. 1999 Sep; 23(9):1048-58. 2. Varma M, *et al.* Mod Pathol. 1999 May; 12(5):472-8. 3. Iczkowski KA, *et al.* Mod Pathol. 1999 Jan; 12(1):1-4. 4. Morice WG, Ferreiro JA. Hum Pathol. 1998 Jun; 29(6):609-12. 5. Brimo F, Epstein JI. Hum Pathol. 2012 Mar; 43(3):313-24.

CK HMW [34βE12], 3X

Clone 34βE12

Isotype IgG1-kappa

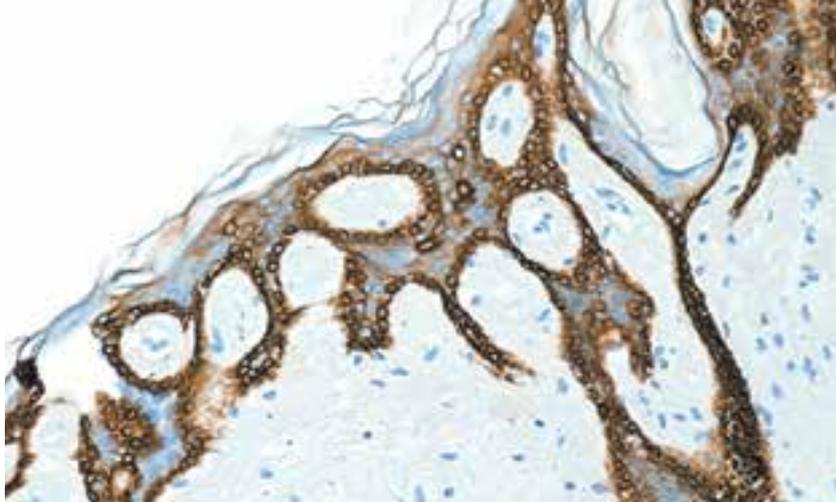
Reactivity 

Control Normal prostate or prostate cancer containing normal glands.

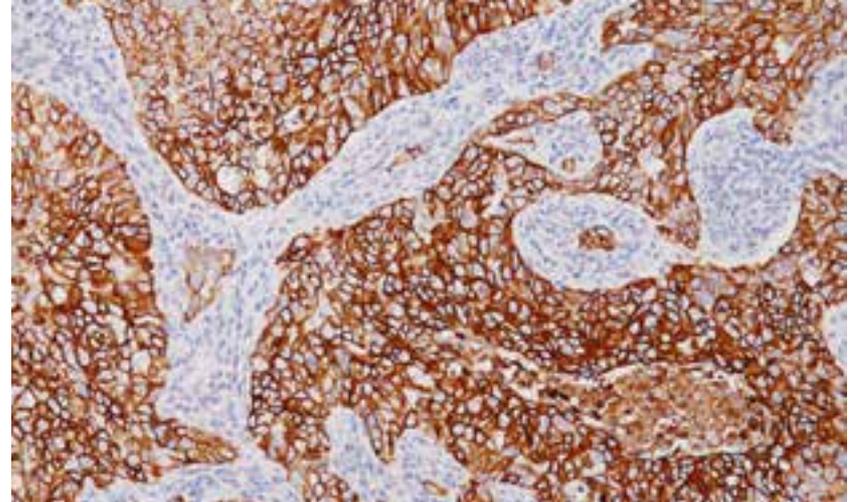
Cat. No. API 3056 G3, H 

CK HMW [34βE12] recognizes Cytokeratins (CK) 1, 5, 10 and 14. This antibody is shown to be reactive with squamous and adenosquamous carcinomas; while adenocarcinomas are negative. In normal epithelia, [34βE12] stains stratified epithelia, myoepithelial cells and basal cells in the prostate gland and bronchi. Studies have shown that [34βE12] maybe useful as a differential marker for squamous carcinomas and adenocarcinomas as well as for benign and malignant tumors of the prostate gland.

1. Moinfar F, *et al.* Am J Surg Pathol. 1999 Sep; 23(9):1048-58. 2. Varma M, *et al.* Mod Pathol. 1999 May; 12(5):472-8. 3. Iczkowski KA, *et al.* Mod Pathol. 1999 Jan; 12(1):1-4. 4. Morice WG, *et al.* Hum Pathol. 1998 Jun; 29(6):609-12. 5. Boran C, *et al.* Urol Oncol. 2011 Nov-Dec;29(6):614-23.



Skin stained with Cytokeratin [AE1] LMW



Breast cancer stained with Cytokeratin LMW (8/18)

Cytokeratin [AE1] LMW

Clone	AE1
Isotype	IgG1
Reactivity	
Control	Skin or adenocarcinoma
Cat. No.	PM 081 AA

This cytokeratin monoclonal antibody [AE1] recognizes the acidic (Type 1) subfamilies of cytokeratins and shows a broad species reactivity. The acidic cytokeratins have molecular weights of 56.5, 50, 50, 48 and 40 kDa (CK10, CK14, CK15, CK16 and CK19, respectively). [AE1] has been shown to be useful for marking tumors for squamous and adenocarcinoma of the lung, liver carcinoma, breast cancer and esophageal cancer. Cytokeratin [AE1] LMW may be useful to aid in the identification of nodal metastases missed by routine H&E examination.

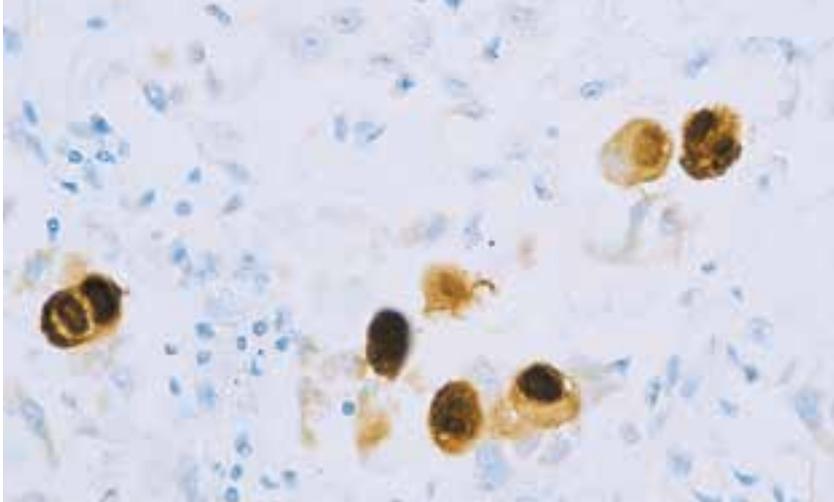
1. Waterman TA, *et al.* Ann Thorac Surg. 2004 Oct; 78(4):1161-9 2. Vollmer RT, *et al.* Clin Cancer Res. 2003 Nov; 9(15):5630-5. 3. Viana EF, *et al.* J Surg Oncol. 2009 Dec; 100(7):534-7.

Cytokeratin LMW (8/18)

Clone	5D3
Isotype	IgG1
Reactivity	
Control	Skin
Cat. No.	CM 056 A, C; PM 056 AA, H

Cytokeratin LMW (8/18) [5D3] recognizes Cytokeratins (CK) 8 and 18 intermediate filament proteins. In normal tissues, [5D3] recognizes all simple and glandular epithelium. In neoplastic tissues, [5D3] may prove useful to aid in the identification of adenocarcinomas and some squamous cell carcinomas. It is generally negative in keratinizing squamous carcinomas. Studies suggest [5D3] can be used in conjunction with HMW CK to rule out squamous cell carcinoma. Studies have also shown CK 8/18 expression in squamous cell carcinomas of the oral cavity may indicate a decreased survival rate.

1. Angus B, *et al.* J Pathol. 1988 May; 155(1):71-5. 2. Angus B, *et al.* J Pathol. 1987 Dec; 153(4):377-84. 3. Rattan B, *et al.* J Clin Diagn Res. 2012 Nov; 6(9):1495-8. 4. Fillies T, *et al.* BMC Cancer. 2006 Jan; 6:10. 5. Reisenbichler ES, *et al.* Mod Pathol. 2011 Feb; 24(2):185-93. 6. Wang Y, *et al.* Diagn Pathol. 2013 Jan 18; 8:8.



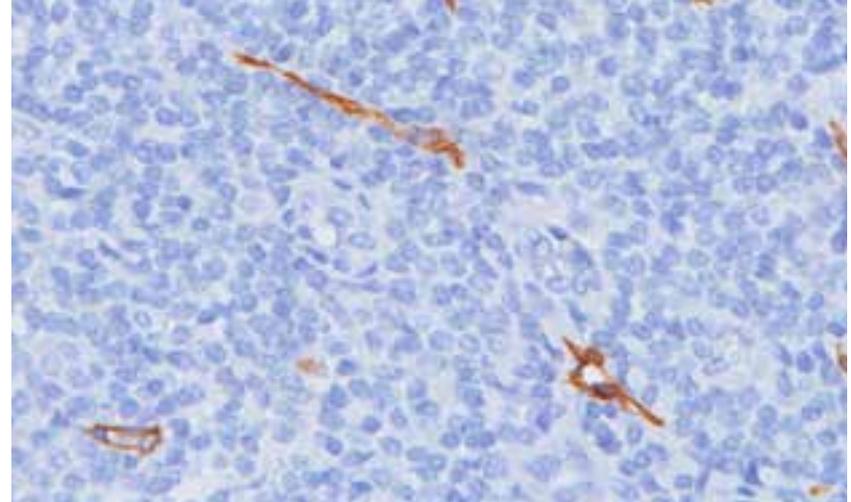
CMV infected tissue stained with Cytomegalovirus (CMV)

Cytomegalovirus (CMV)

Clone	DT10 + BC90
Isotype	IgG2a + IgG1
Reactivity	N/A
Control	N/A
Cat. No.	ACA 118 A, B, C; APA 118 AA

Cytomegalovirus (CMV) can precipitate and exacerbate gastrointestinal mucosal injury. Studies suggest that IHC performed on infected tissue with monoclonal antibodies directed against the CMV immediate early antigen is considered by most to be the current gold standard for diagnosis. This antibody is a mixture of two monoclonal antibodies that reacts with immediate early and early protein antigens in tissues infected with cytomegalovirus. Studies indicate that this antibody does not react with herpes virus or human papilloma virus (HPV). In the later stage of infection, a cytoplasmic reaction may be observed.

1. Vago L, *et al.* Acta Neuropathol. 1996 Oct; 92(4):404-8. 2. Mills AM, *et al.* Am J Surg Pathol. 2013 Jul; 37(7):995-1000. 3. Kandiel A, Lashner B. Am J Gastroenterol. 2006 Dec; 101(12):2857-65.



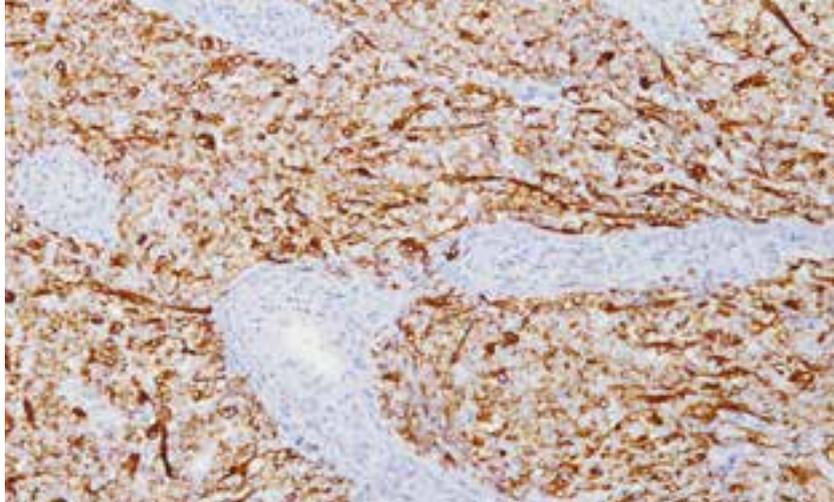
Lymphatic vessel stained with D2-40 (Lymphatic Marker)

D2-40 (Lymphatic Marker)

Clone	D2-40
Isotype	IgG1
Reactivity	  
Control	Skin or tonsil
Cat. No.	CM 266 A, B, C; PM 266 AA; IP 266 G10

D2-40 is a selective marker of lymphatic endothelium in normal tissues and vascular lesions. Studies have shown D2-40 staining occurs in lymphatic channel endothelium, but not in the adjacent capillary. In the same study, D2-40 stained endothelium of lymphangiomas; whereas hemangiomas, glomus tumors, angioliomas, pyogenic granulomas and vascular malformations were negative for staining. D2-40 has also been shown to react with Kaposi's sarcoma and a subset of angiosarcomas. Studies also indicate that D2-40 may be a very specific marker for malignant mesothelioma.

1. Kahn HJ, *et al.* Lab Invest. 2002 Sep; 82(9):1255-7. 2. Chu AY, *et al.* Mod Pathol. 2005 Jan; 18(1):105-10. 3. Rao P, *et al.* Am J Dermatopathol. 2013 Jun; 35(4):432-7. 4. Kao SC, *et al.* Pathology. 2011 Jun; 43(4):313-7.



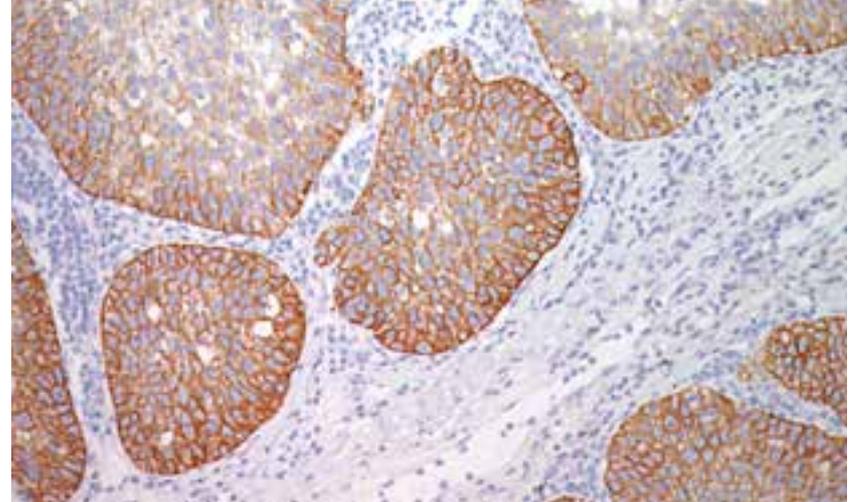
Rhabdomyosarcoma stained with Desmin

Desmin

Clone	D33
Isotype	IgG1/kappa
Reactivity	
Control	Leiomyoma, leiomyosarcoma, rhabdomyosarcoma
Cat. No.	CM 036 A, B, C; PM 036 AA; IP 036 G10

This mouse [D33] recognizes desmin, a 53 kDa intermediate filament protein (IFP). Studies have shown that [D33] is highly specific to desmin and shows no cross-reaction with other IFPs. Studies have also shown Desmin to be useful in identification of tumors of myogenic origin; it has been shown to react with leiomyosarcomas (smooth muscle) as well as rhabdomyosarcomas (striated muscle). Several studies have utilized Desmin in a panel to aid in the classification of uterine sarcomas. Studies addressing desmoplastic reaction in colorectal and pancreatic cancers have demonstrated Desmin to be a helpful marker of tumor invasion.

1. Robin YM, *et al.* Mod Pathol. 2013 Apr; 26(4):502-10. 2. Abeler VM, *et al.* Int J Gynecol Pathol. 2011 May; 30(3):236-43. 3. Ohno K, *et al.* Int J Mol Sci. 2013 Jun; 14(7):13129-36. 4. Apte MV, *et al.* Pancreas. 2004 Oct; 29(3):179-87.



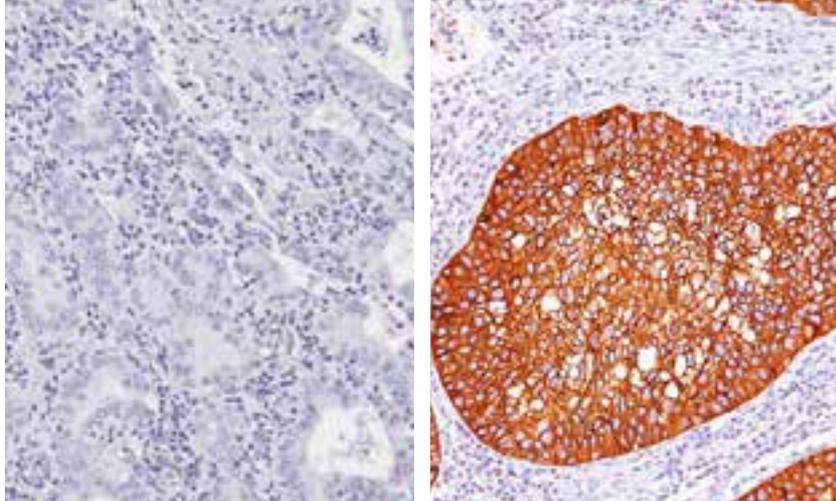
Lung squamous cell carcinoma stained with Desmoglein 3

Desmoglein 3

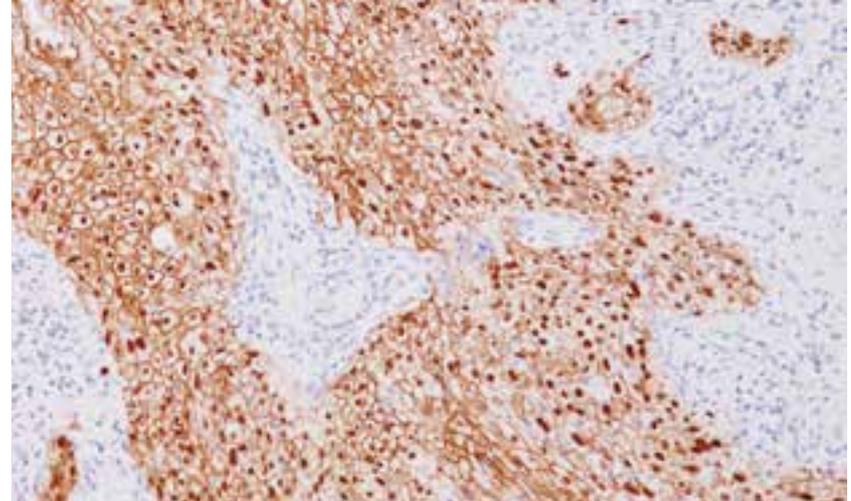
Clone	BC11
Isotype	IgG1
Reactivity	
Control	Lung squamous cell carcinoma
Cat. No.	CM 419 A, C; PM 419 AA

Desmoglein 3 (DSG3) is a component of desmosomes in vertebrate epithelial cells. This protein has been identified as the auto antigen of the skin blistering disease *pemphigus vulgaris*. Lung studies have shown that DSG3 had a sensitivity and specificity of 83% and 100%, respectively, in detecting squamous cell carcinoma (SqCC) vs. adenocarcinoma. Thus, DSG3 is a first class marker for lung SqCC and can be a useful ancillary marker to separate SqCC from other subtypes of lung cancer. Other studies have shown that DSG3 expression in lung SqCC indicated a poor prognosis and portends a more aggressive clinical outcome.

1. Huang CC, *et al.* Laryngoscope. 2010 Jan; 120 (1):26-9. 2. Savci-Heijink CD, *et al.* Am J Pathol. 2009 May; 174(5):1629-37. 3. Wong MP, *et al.* Pathology. 2008 Oct; 40(6):611-6. 4. Kawasaki Y, *et al.* Autoimmunity. 2006 Nov; 39(7):587-90. 5. Xi L, *et al.* Clin Cancer Res. 2006 Apr 15; 12(8):2484-91.



(L) Lung ADC and (R) Lung SqCC stained with Desmoglein 3 + CK5



Lung squamous cell carcinoma stained with Desmoglein 3 + p40 (M)

Desmoglein 3 + CK5

Clone	BC11 + XM26
Isotype	IgG1 + IgG1/Kappa
Reactivity	
Control	Lung squamous cell carcinoma
Cat. No.	ACI 3018 A, C; API 3018 AA

Desmoglein 3 (DSG3) is often highly expressed in various squamous cell carcinomas (SqCC). In studies of lung SqCC, DSG3 has demonstrated a sensitivity of 85-99% and an ability to discriminate lung adenocarcinoma with a specificity of 98-100%. Numerous studies have shown CK5/6 to be a sensitive marker for lung SqCC. Two studies using a cocktail of DSG3 and CK5 reported sensitivities of 93% and 100% for lung SqCC, with a specificity of 100% vs. lung adenocarcinoma. Studies have also shown that a DSG3 and CK5 cocktail provides superior sensitivity and specificity, compared to alternative markers for lung SqCC.

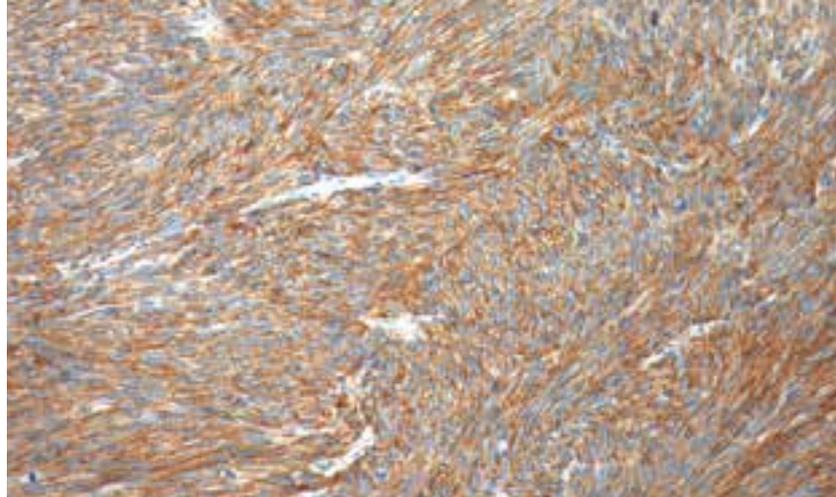
1. Savci-Heijink CD, *et al.* AM J Pathol. 2009 May; 174(5):1629-37. 2. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May; 20(3):201-7. 3. Tacha D, *et al.* Mod Pathol. 2011 Feb; 24 (Supplement 1s):425A. 4. Agackiran Y, *et al.* Appl Immunohistochem Mol Morphol. 2012 Jul; 20(4):350-5. 5. Mukhopadhyay S, *et al.* Am J Surg Pathol. 2011 Jan; 35(1):15-25. 6. Khayyata S, *et al.* Diagn Cytopathol 2009 Mar;37:178-83. 7. Terry J, *et al.* Am J Surg Pathol. 2010 Dec; 34(12):1805-11. 8. Brown AF, *et al.* Arch Pathol Lab Med. 2013 Sep; 137(9):1274-81.

Desmoglein 3 + p40 (M)

Clone	BC11 + BC28
Isotype	IgG1 + IgG1
Reactivity	
Control	Lung squamous cell carcinoma
Cat. No.	API 3067 AA

In lung squamous cell carcinoma (SqCC), Desmoglein 3 (DSG3) has demonstrated a sensitivity of 85-100% and an ability to discriminate lung adenocarcinoma (ADC) with a specificity of 98-100%. p40 (M) is selectively expressed in lung SqCC, offering an opportunity for improved specificity over p63, as fewer ADC cases are stained positive. The combination of both nuclear and cytoplasmic staining of DSG3 and p40, respectively, may increase overall sensitivity for lung SqCC and in some cases, may aid the pathologist with difficult cytology and surgical specimens.

1. Bishop JA, *et al.* Mod Pathol. 2012 Mar; 25(3):405-15. 2. North AJ, *et al.* J Cell Sci. 1999 Dec; 112 (Pt 23):4325-36. 3. Savci-Heijink CD, *et al.* Am J Pathol. 2009 May; 174(5):1629-37. 4. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May; 20(3):201-7. 5. Brown AF, *et al.* Arch Pathol Lab Med. 2013 Sep; 137(9):1274-81. 6. Agackiran Y, *et al.* Appl Immunohistochem Mol Morphol. 2012 Jul; 20(4):350-5. 7. Pelosi G, *et al.* J Thorac Oncol. 2012 Feb; 7(2):281-90.



GIST stained with DOG1

DOG1 IVD FFPE

Clone DOG1.1

Isotype IgG1/kappa

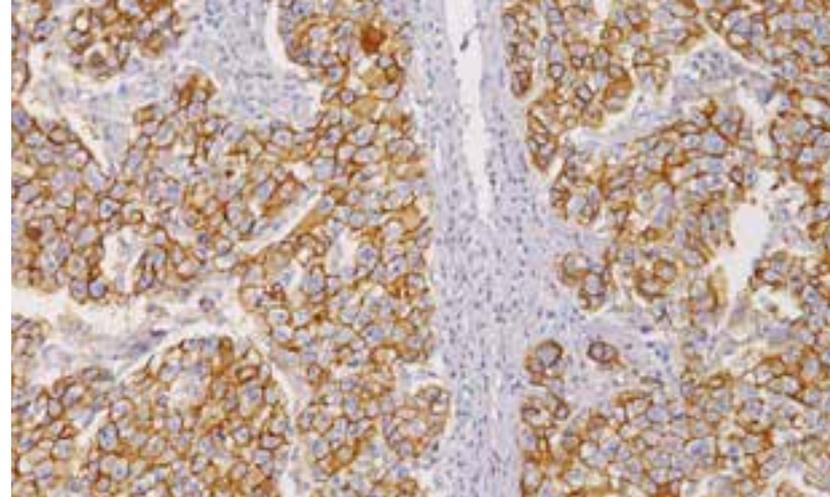
Reactivity 

Control Gastrointestinal stromal tumors

Cat. No. CM 385 A, C; PM 385 AA

DOG1 expression has been reported to be a very sensitive and specific marker for gastrointestinal stromal tumor (GIST) cells. In studies of GIST cases with KIT mutations, DOG1 detected 11% more cases than CD117. As a result of its localization in the cell membrane, its absence in the majority of normal tissue and its presence in most GIST tissue, recent studies suggest that DOG1 may be a helpful target to aid in the diagnosis and assignment of appropriate treatment of GIST. DOG1 expression is seen in fewer cases of mesenchymal and epithelial tumors, seminomas and melanomas when compared with CD117.

1. Espinosa I, *et al.* Am J Surg Pathol. 2008 Feb; 32(2):210-8.
2. Miwa S, *et al.* J Gastroenterol. 2008; 43(7):531-7.
3. Parfitt JR, *et al.* Histopathology. 2008 Jun; 52(7):816-23.
4. West RB, *et al.* Am J Pathol. 2004 Jul; 165(1):107-13.



Breast ductal cell carcinoma stained with E-cadherin

E-cadherin IVD FFPE PREFERRED

Clone EP700Y

Isotype IgG

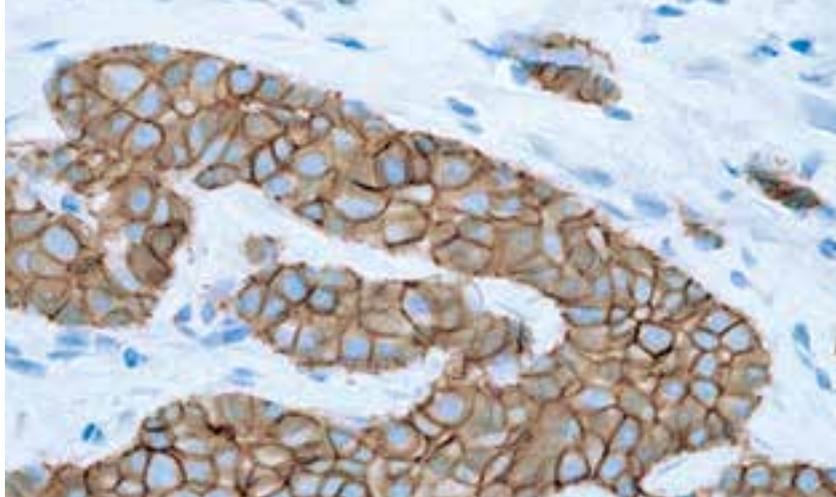
Reactivity 

Control Normal breast or breast ductal cell carcinoma

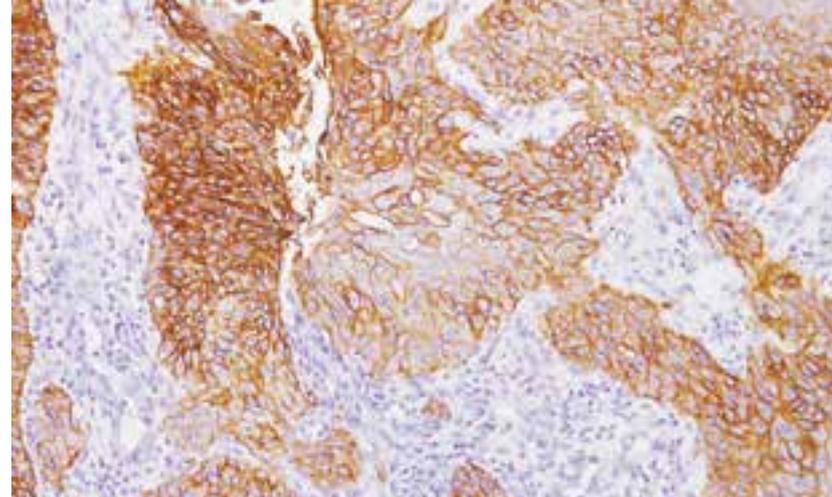
Cat. No. ACI 3012 A, C; API 3012 AA

Immunohistochemical studies have shown E-cadherin to be expressed in breast ductal carcinoma with loss of expression in lobular carcinoma. As a result, mouse monoclonal anti-E-cadherin [HECD-1] has been used by pathologists to differentiate between ductal and lobular carcinomas of the breast, with currently published sensitivity and specificity of approximately 90%. A rabbit monoclonal E-cadherin antibody may combine the best properties of both mouse monoclonal antibodies and rabbit antisera.

1. de Deus Moura R, *et al.* Appl Immunohistochem Mol Morphol. 2013 Jan; 21(1):1-12.
2. Dabbs DJ, *et al.* Am J Surg Path. 2007 Mar;31(3):427-37.
3. Moriya T, *et al.* Pathology. 2009 Jan; 41(1):68-76.
4. Qureshi HS, *et al.* Am J Clin Pathol. 2006 Mar;125(3):37785.



Breast cancer stained with E-cadherin



Lung cancer stained with EGFR

E-cadherin IVD FFPE

Clone HECD-1

Isotype IgG1

Reactivity 

Control Breast cancer

Cat. No. CM 170 A, B, C; PM 170 AA; IP 170 G10

E-cadherin is a transmembrane glycoprotein that mediates epithelial cell-cell adhesion. The loss of E-cadherin can result in the disruption of cell clusters. It has been postulated in literature that E-cadherin may function as a tumor suppressor protein. Several studies have associated the loss of E-cadherin with metastasis and poor prognosis in invasive breast cancer. Additional studies have suggested that E-cadherin can help differentiate between ductal and lobular neoplasms of the breast. E-cadherin immunostaining has also been shown to be an independent predictor of disease progression in bladder cancer.

1. Yoshida R, *et al.* Int J Oncol. 2001 Mar; 18(3):513-20. 2. Byrne RR, *et al.* J Urol. 2001 May; 165(5):1473-9. 3. Acs G, *et al.* Am J Clin Pathol. 2001 Jan; 115(1):85-98.

Epidermal Growth Factor Receptor (EGFR) RUO FFPE

Clone H11

Isotype IgG1

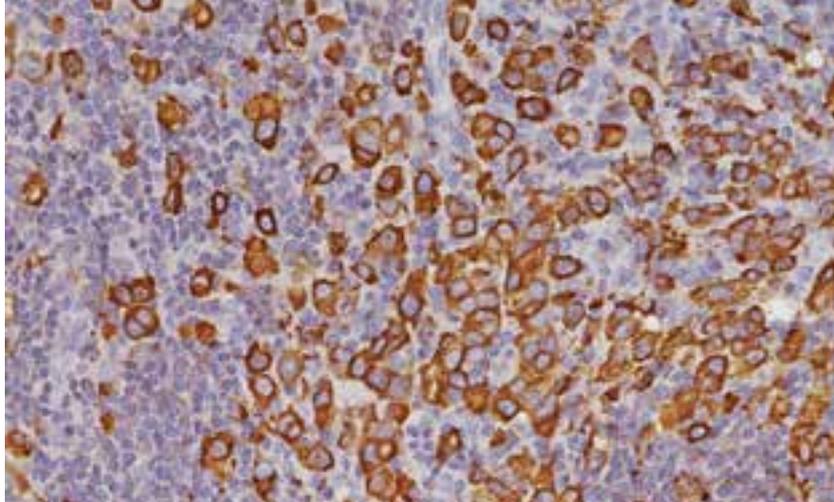
Reactivity 

Control Squamous cell carcinoma or skin

Cat. No. CM 063 AK, CK

EGFR [H11] reacts with a 170 kDa (wild type) and 145 kDa (VIII variant) protein, identified as the first member of type I family of growth factor receptors (initially identified as EGR-Receptor). The EGFR antibody H11 clone shows no cross reactivity with c-erbB-2, c-erbB-3 or c-erbB-4. Various studies have observed and reported over-expression of EGFR in tumors of breast (25%), brain, bladder, lung, gastric, esophagus, cervix, ovary and endometrium.

1. Koo JS, *et al.* Neoplasma. 2011; 58(1):27-34. 2. Brustmann H, *et al.* Int J Gynecol Pathol. 2011 Jan; 30(1):76-83. 3. Vranic S, *et al.* Hum Pathol. 2010 Nov; 41(11):1617-23.



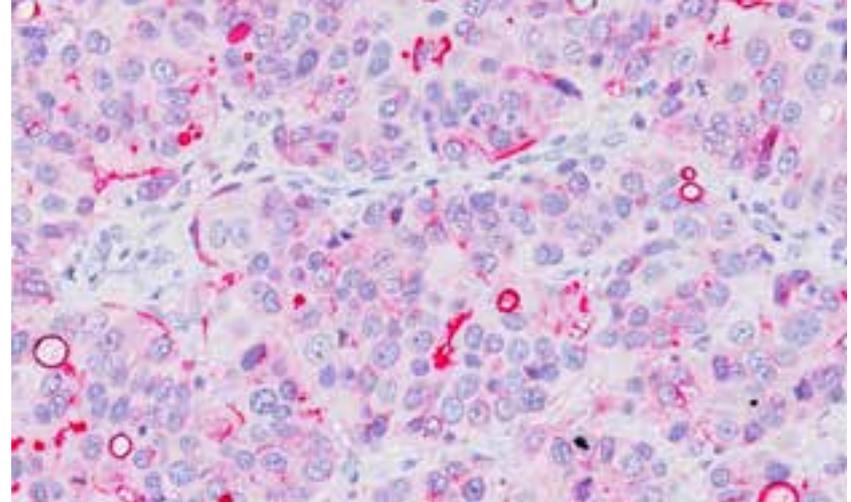
Breast cancer stained with Epithelial Membrane Antigen

Epithelial Membrane Antigen (EMA) [E29]

Clone	E29
Isotype	IgG
Reactivity	
Control	Colon or breast cancer
Cat. No.	ACI 3038 A, C; API 3038 AA

Epithelial membrane antigen (EMA) is considered a broad-spectrum antibody that is reactive against many types of adenocarcinoma. Studies shown that breast and skin adnexal tumors are strongly positive, while less staining is seen in carcinomas of the endometrium, kidney, thyroid, stomach, pancreas, lung, colon, ovary, prostate and cervix. Embryonal carcinomas, medullary carcinomas of thyroid, squamous carcinomas, sarcomas, lymphomas and melanomas all tend to be nonreactive or show rare positive cells. Transitional cell carcinomas may show weak reactivity while anaplastic large cell lymphomas can be positive for EMA.

1. Verdu M, *et al.* Mod Pathol. 2011 May; 24(5):729-38. 2. Saad RS, *et al.* Diagn Cytopathol. 2005 Mar; 32(3):156-9. 3. Carbone A, *et al.* Cancer 1992 Dec; 70(11):2691-8. 4. Heyderman E, *et al.* Br J Cancer. 1985 Sep; 52(3):355-61.



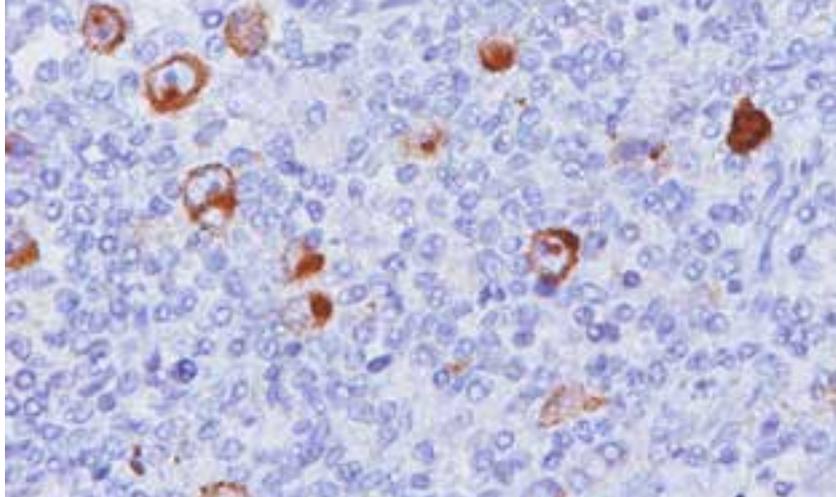
Breast cancer stained with Epithelial Membrane Antigen

Epithelial Membrane Antigen (EMA) [Mc-5] **PREFERRED**

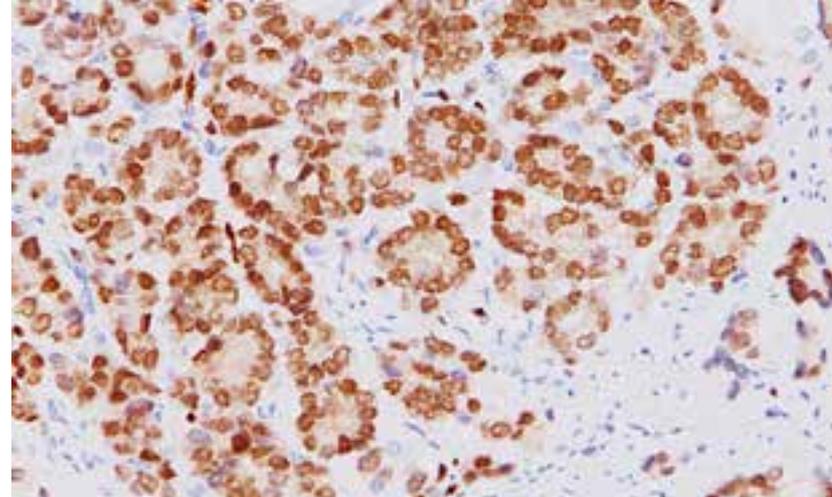
Clone	Mc-5
Isotype	IgG1
Reactivity	
Control	Breast carcinoma
Cat. No.	CM 143 A, B, C; PM 143 AA

This EMA antibody has been shown to be reactive against many types of adenocarcinoma. Breast and skin adnexal tumors are strongly positive. Various studies have demonstrated a lesser degree of EMA staining in endometrial, kidney, thyroid, stomach, pancreas, lung and colon, ovarian, prostate and cervical carcinomas. Studies have shown that embryonal carcinomas, medullary carcinomas of thyroid, squamous carcinomas, sarcomas, lymphomas and melanomas all tend to be nonreactive or show rare positive cells. Transitional cell carcinomas may show weak reactivity. Note that the cells of anaplastic large cell lymphoma are positive for EMA in a minority of cases.

1. Enriquez ML, *et al.* Appl Immunohistochem Mol Morphol. 2012 Mar; 20(2):141-5. 2. Tiltman AJ, *et al.* Histopathology. 2001 Mar; 38(3):237-42. 3. Zhao J, *et al.* Virchows Arch. 2010 Jan; 456(1):31-7.



Hodgkin's lymphoma stained with Epstein-Barr Virus (EBV)



Prostate cancer stained with ERG

Epstein-Barr Virus (EBV) ASR FFPE

Clone	EBV01 + EBV02 + EBV03
Isotype	IgG1/kappa
Reactivity	N/A
Control	N/A
Cat. No.	APA 111 AA

All three antibodies in this combination recognize distinct epitopes in the hydrophilic carboxyl region of the latent membrane protein (LMP) protein encoded by the Epstein Barr Virus (EBV). EBV has been implicated with Hodgkin's disease and may be involved in the pathogenesis of Hodgkin's occurring in children. Other studies have shown a low incidence of EBV in B-cell type lymphomas unless patients were immunologically impaired, such as post-organ transplantation or autoimmune type diseases. Studies have shown that this antibody does stain EBV + Burkitt's lymphomas but also shows some cross reactivity with smooth muscle and blood vessels.

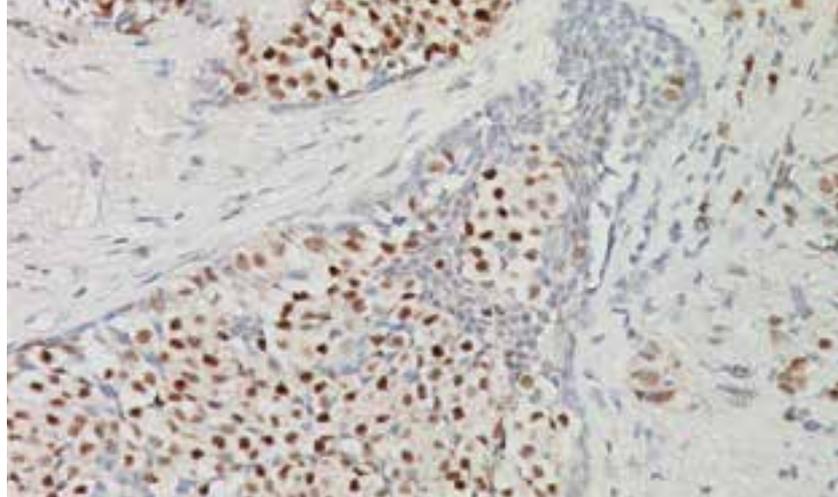
1. Queiroga EM, *et al.* Am J Clin Pathol. 2008 Aug; 130(2):186-92. 2. Prochorec-Sobieszek M, *et al.* Pol J Pathol. 2006; 57(2):63-70. 3. Montes-Moreno S, *et al.* Mod Pathol. 2012 Jul; 25(7):968-82.

ERG IVD FFPE

Clone	9FY
Isotype	IgG1
Reactivity	
Control	ERG positive prostate cancer or PIN glands
Cat. No.	CM 421 A, C; PM 421 AA; VP 421 G

A mouse monoclonal anti-ERG antibody was developed with 99.9% specificity for detecting prostatic adenocarcinomas. ERG [9FY] is highly specific and does not stain lymphocytes. There is a 96.5% concordance of ERG positive prostatic intraepithelial neoplasia (PIN) and ERG positive carcinoma in prostatectomy specimens. Studies have shown that [9FY] may also have application in detecting endothelial malignancies, including Kaposi sarcoma. *Note: ERG [9FY] was developed by the Center for Prostate Disease Research in association with the Henry M. Jackson Foundation, Rockville, Maryland. PATENT PENDING.*

1. Petrovics G, *et al.* Oncogene. 24, 2005 May; 24(23):3847-52. 2. Rosen P, *et al.* Nat Rev Urol. 2012 Feb;9(3):131-7. 3. Furusato B, *et al.* Prostate Cancer Prostatic Dis. 2010 Sep; 13(3):228-37. 4. Braun M, *et al.* Prostate Cancer Prostatic Dis. 2012 Jun;15(2):165-9. 5. Miettinen M, *et al.* Am J Surg Pathol. 2011 Mar; 35(3):432-41. 6. Mohamed AA, *et al.* J Cancer. 2010 Oct;1:197-208.



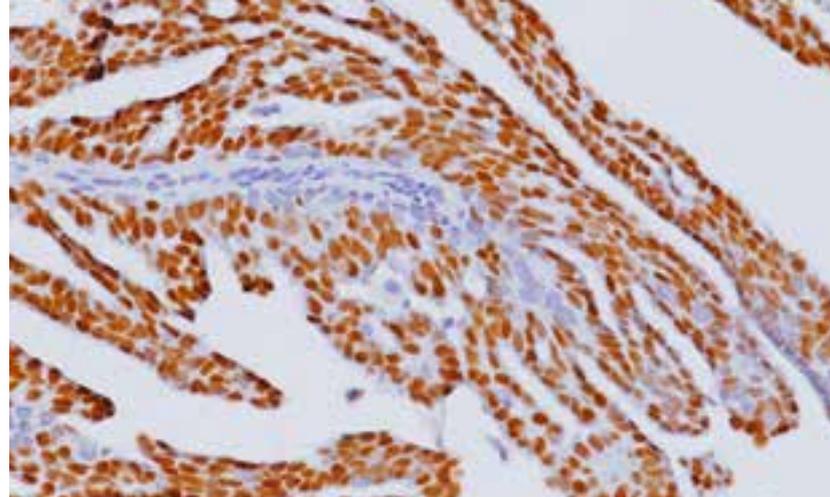
Breast cancer stained with Estrogen Receptor (ER) [1D5]

Estrogen Receptor (ER) [1D5]

Clone	1D5
Isotype	IgG1/kappa
Reactivity	N/A
Control	N/A
Cat. No.	ACA 054 A, C; APA 054 AA

The estrogen receptor (ER) is a 66 kDa protein that acts as an estrogen-dependent, nuclear hormone receptor. Studies have shown ER is present in the nuclei of epithelial cells in normal breast and endometrial tissues, as well as a subset of breast carcinomas. The ER protein has six functionally discrete domains; labeled A through F. ER [1D5] reacts with the amino-terminal domain in the A/B region of ER-alpha. This clone has been established to work in formalin-fixed, paraffin-embedded tissues and has been published in numerous breast cancer research studies.

1. Paech K, *et al.* Science. 1997 Sept; 277(5331):1508-10. 2. Brock JE, *et al.* Am J Clin Pathol. 2009 Sep; 132(3):396-401. 3. Madeira KP, *et al.* Pathol Res Pract. 2012 Nov; 208(11):657-61. 4. Nadji M, *et al.* Am J Clin Pathol. 2005 Jan; 123(1):21-7.



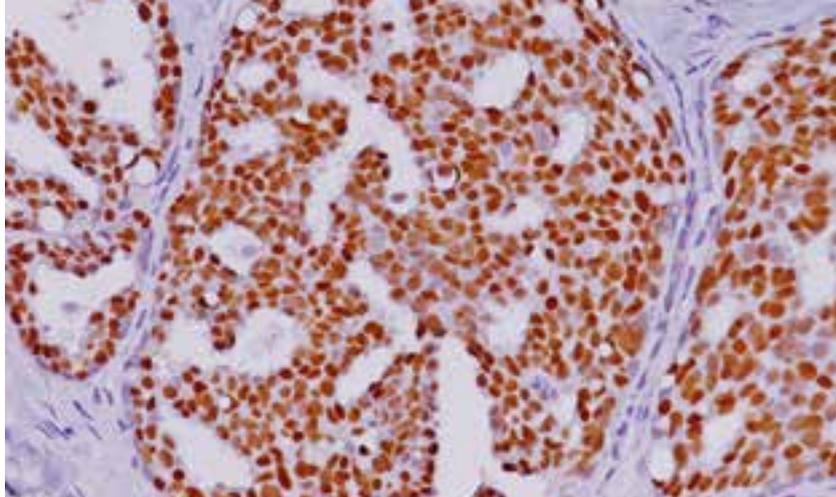
Breast cancer stained with Estrogen Receptor (ER) [6F11]

Estrogen Receptor (ER) [6F11]

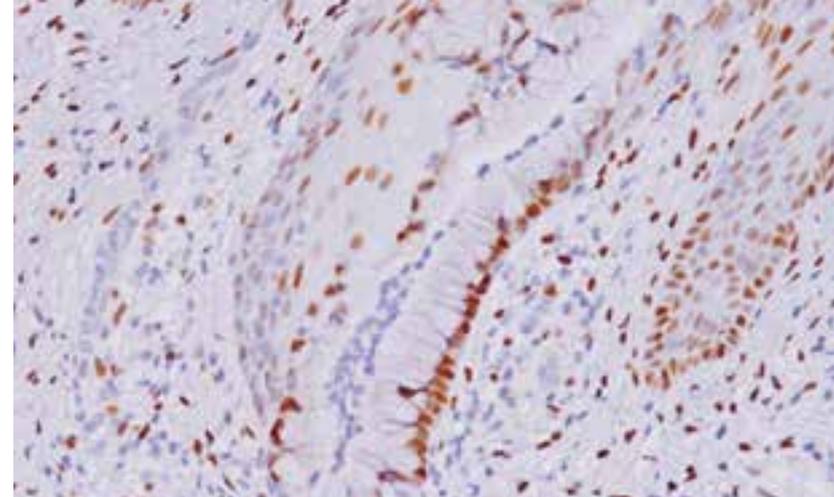
Clone	6F11
Isotype	IgG1/kappa
Reactivity	N/A
Control	N/A
Cat. No.	ACA 093 C; APA 093 AA

Human estrogen receptor (ER) is a 66 KDa protein that acts as an estrogen-dependent, nuclear hormone receptor. Studies have shown ER is present in the nuclei of epithelial cells in normal breast and endometrial tissues, as well as a subset of breast carcinomas. The ER gene consists of more than 140 kb of genomic DNA divided into 8 exons. These translate into a protein with six functionally discrete domains, labeled A through F. Studies have shown the 6F11 clone can be used for labeling estrogen targeted tissues such as breast and uterus and is superior to [1D5] in predicting survival.

1. Bevitt DJ, *et al.* J Pathol. 1997 Oct; 183(2):228-32. 2. Kaplan PA, *et al.* Am J Clin Pathol. 2005 Feb; 123(2):276-80. 3. Bogina G, *et al.* Am J Clin Pathol. 2012 Nov; 138(5):697-702.



Breast cancer stained with Estrogen Receptor (ER) [6F11 + SP1]



Cervix stained with Estrogen Receptor (ER) [SP1]

Estrogen Receptor (ER) [6F11 + SP1] ASR FFPE

Clone	6F11 + SP1
Isotype	IgG1/kappa (6F11) and Rabbit IgG (SP1)
Reactivity	N/A
Control	N/A
Cat. No.	APA 308 AA, H

The estrogen receptor (ER) is a 66 kDa protein that acts as an estrogen-dependent, nuclear hormone receptor. Studies have shown ER is present in the nuclei of epithelial cells in normal breast and endometrial tissues, as well as a subset of breast carcinomas. Studies have shown the 6F11 clone is superior to [1D5] in predicting survival. Studies also have shown that the SP1 clone, a high affinity rabbit monoclonal antibody, has higher sensitivity than available mouse monoclonals in breast cancer. The combination of these two clones may provide increased sensitivity compared to the individual clones.

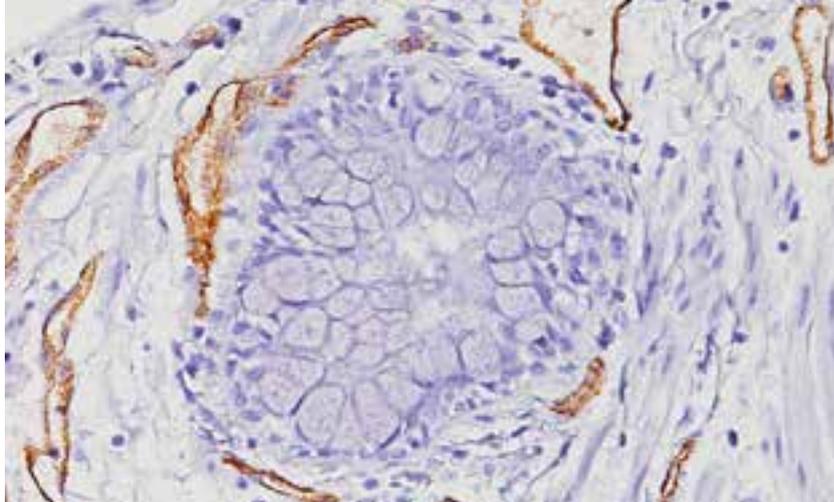
1. Bevti DJ, *et al.* J Pathol. 1997 Oct; 183(2):228-32. 2. Kaplan PA, *et al.* Am J Clin Pathol. 2005 Feb; 123(2):276-80. 3. Bogina G, *et al.* Am J Clin Pathol. 2012 Nov; 138(5):697-702. 4. Cheang MC, *et al.* J Clin Oncol. 2006 Dec; 24(36):5637-44. 5. Rossi S, *et al.* Am J Clin Pathol. 2005 Aug; 124(2):295-302. 6. Cano G, *et al.* Diagn Cytopathol. 2003 Oct; 29(4):207-11. 7. Rocha R, *et al.* Pathol Res Pract. 2008; 204(9):655-62.

Estrogen Receptor (ER) [SP1] ASR FFPE PREFERRED

Clone	SP1
Isotype	IgG
Reactivity	N/A
Control	N/A
Cat. No.	ACA 301 A, B, C; APA 301 AA

Human estrogen receptor (ER) is a 66 kDa protein that acts as an estrogen-dependent, nuclear hormone receptor. Studies have shown ER is present in the nuclei of epithelial cells in normal breast and endometrial tissues, as well as a subset of breast carcinomas. The SP1 clone is a high affinity rabbit monoclonal antibody directed against an epitope of the C-terminus of the ER protein. Studies have shown that the SP1 clone has higher sensitivity than available mouse monoclonals in breast cancer. In some instances, SP1 staining can be obtained even without antigen retrieval.

1. Cheang MC, *et al.* J Clin Oncol. 2006 Dec; 24(36):5637-44. 2. Rossi S, *et al.* Am J Clin Pathol. 2005 Aug; 124(2):295-302. 3. Cano G, *et al.* Diagn Cytopathol. 2003 Oct; 29(4):207-11. 4. Rocha R, *et al.* Pathol Res Pract. 2008; 204(9):655-62.



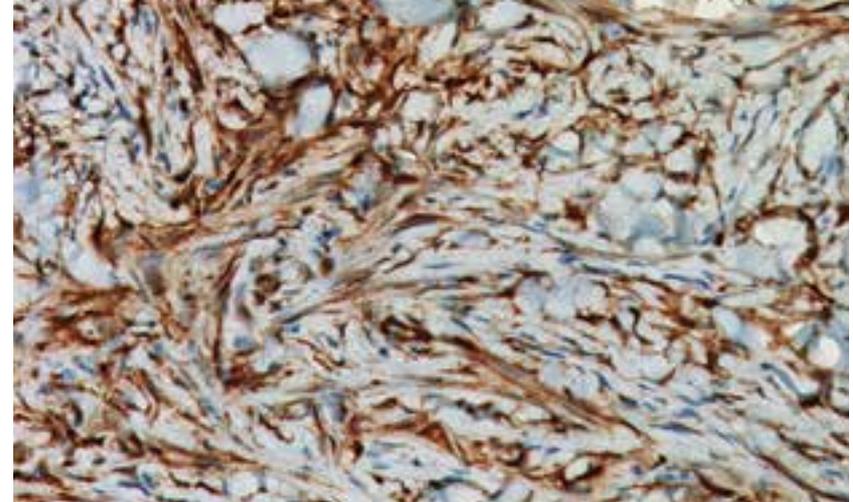
Blood vessels in lung stained with Factor VIII

Factor VIII

Clone	N/A
Isotype	N/A
Reactivity	 
Control	Normal lung or angiosarcoma
Cat. No.	CP 039 A, B; PP 039 AA

Factor VIII (von Willebrand Factor) is synthesized by endothelial cells and stored in the Weibel-Palade granules. This protein has functional binding domains to platelet glycoprotein Ib, glycoprotein IIb/IIIa, collagen and heparin. This antibody has shown to react with the endothelial cells of both normal and reactive, neoplastic blood and lymphatic vessels, endocardium, platelets and megakaryocytes. Factor VIII may be useful in marking and identifying normal endothelial cells of their corresponding neoplasms. Factor VIII has also been used to measure angiogenesis and has been shown in some studies to predict tumor recurrence.

1. Obermair A, *et al.* Am J Obstet Gynecol. 1998 Feb; 178(2):314-9. 2. Sehested M, Hou-Jensen K. Vichows Arch A Pathol Anat Histol. 1981; 391(2):217-25. 3. Weidner N, *et al.* J Natl Cancer Inst. 1992 Dec; 84(24):1875-87. 4. Martin L, *et al.* Br J Cancer. 1997; 76(8):1046-54.



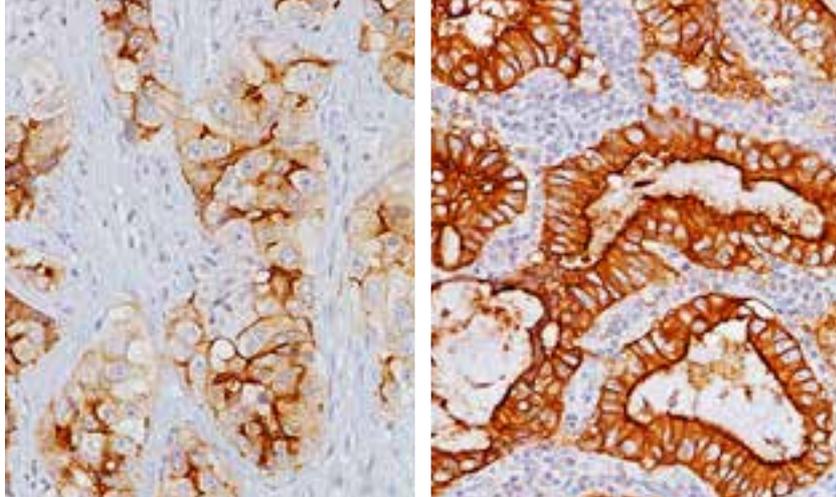
Dermatofibroma stained with Factor XIIIa

Factor XIIIa

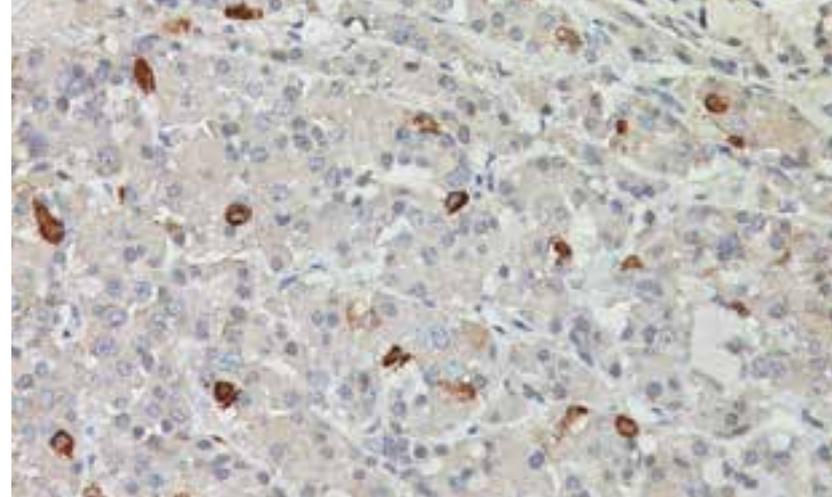
Clone	E980.1
Isotype	IgG1
Reactivity	
Control	Capillary hemangioma, dermatofibroma, placenta or skin
Cat. No.	CM 357 AK, BK, CK; PM 357 AA; IP 357 G10; VP 357 G

Factor XIII is a beta2globulin found in plasma as an alpha2beta2 heterodimer; whereas in platelets, only the alpha2 unit exists. Factor XIIIa recognizes human Factor XIII A-chain in both reduced and non-reduced forms. It does not react with human Factor XIII B-chain or human Factor XII. Studies have shown Factor XIIIa is a dermal dendrocyte marker with variable reactions to these types of tumors. It can be used for histiocytic phenotyping and has been reported to mark capillary hemangiomas and tumors of the central nervous system. Factor XIIIa has also been used with CD34 to differentiate between dermatofibroma and dermatofibrosarcoma protuberans.

1. Probst-Cousin S, Rickert CH, Gullotta F. Clin Neuropathol. 1998 Mar-Apr; 17(2):79-84. 2. Silverman JS, Tamsen A. Cell Vis. 1998 Jan-Feb; 5(1):73-6. 3. Goldblum JR, Tuthill RJ. Am J Dermatopathol. 1997 Apr; 19(2):147-53. 4. Zelger BG, *et al.* Histopathology. 1997 Sep; 31(3):258-62. 5. Silverman JS, Lomvardias S. Pathol Res Pract. 1997; 193(1):51-8. 6. Sangueza OP, *et al.* J Cutan Pathol. 1995 Aug; 22(4):327-35.



Lung adenocarcinoma from L to R: 2+ staining, 3+ staining with Folate Receptor alpha



Pituitary gland stained with Follicle Stimulating Hormone (FSH)

Folate Receptor alpha IHC Assay Kit

Clone	26B3.F2
Isotype	IgG
Reactivity	
Control	LADC or ovarian serous papillary ADC
Cat. No.	BRI 4006K AA; IPI 4006K G10

Mouse anti-human Folate Receptor alpha monoclonal antibody [26B3.F2] specifically recognizes the alpha isoform of Folate Receptor. FR-alpha is primarily expressed in the apical surface of some polarized epithelial cells of normal tissues and on many cancer cells of epithelial origin. In epithelial ovarian cancer, FR-alpha expression increases with tumor stage and is associated with decreased survival. In NSCLC, FR-alpha is specific for adenocarcinomas relative to squamous cell carcinoma and increased expression has been correlated to increased survival.

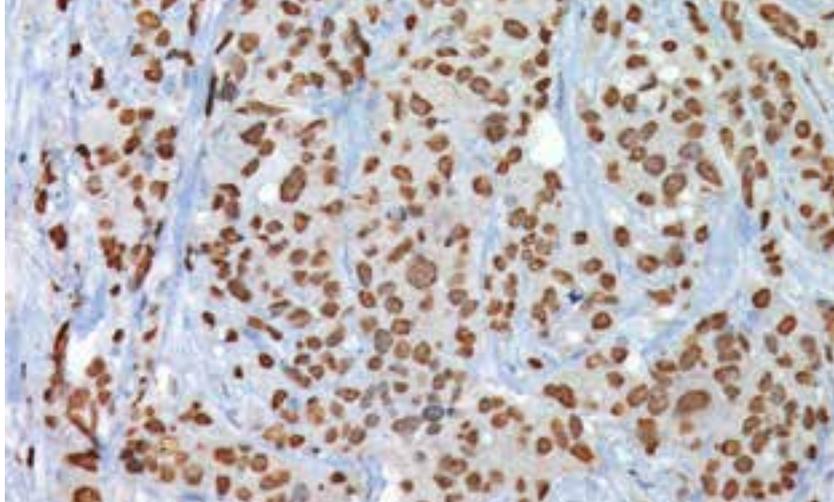
1. O'Shannessy DJ, *et al.* *Oncotarget*. 2011 Dec; 2(12):1227-43. 2. Basal E, *et al.* *PLoS One*. 2009; 4:e6292. 3. Xia W, *et al.* *Blood*. 2009; 113:438-46. 4. Iwakiri S, *et al.* *Annals of Surgical Oncol*. 2008; 15(3):889-99. 5. Smith AE, *et al.* *Hybridoma*. 2007; 26(5):281-8. 6. Parker N, *et al.* *Anal Biochem*. 2005; 338:284-93. 7. Elnakat H, Ratnam M. *Adv Drug Deliv Rev*. 2004; 56:1067-84. 8. Garber ME, *et al.* *PNAS*. 2001; 98(2A):13784-9.

Follicle Stimulating Hormone (FSH)

Clone	FSH03
Isotype	IgG1/kappa
Reactivity	
Control	Anterior pituitary
Cat. No.	CM 411 A, C; PM 411 AA

Follicle Stimulating Hormone (FSH) is a hormone found in humans and other animals. It is synthesized and secreted by gonadotrophs of the anterior pituitary gland. FSH is involved in the maturation of ovarian follicles and estrogen secretion in females. In males, FSH stimulates the secretion of testosterone. Studies have shown that FSH may be a useful marker in the study of pituitary disease, classification of pituitary tumors and in the differential diagnosis of primary and metastatic tumors of the pituitary.

1. Osamura RY, Watanabe K. *Virchows Arch A Pathol Anat Histopathol*. 1988; 413(1):61-8. 2. Trouillas J, *et al.* *Ann Endocrinol (Paris)*. 1990; 51(2):54-64. 3. Pawlikowski M, *et al.* *Folia Histochem Cytobiol*. 2012 Oct; 50(3):325-30.



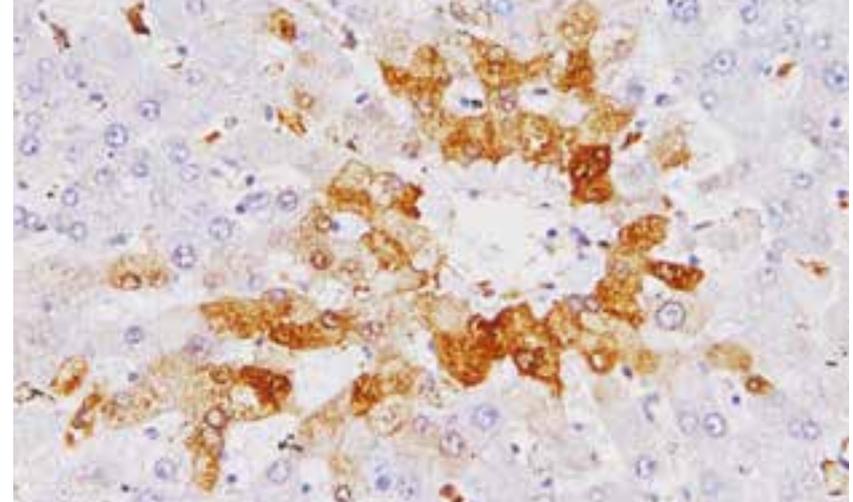
Breast cancer stained with GATA-3

GATA-3

Clone	L50-823
Isotype	IgG1/Kappa
Reactivity	
Control	Bladder and breast cancer
Cat. No.	CM 405 A, B; PM 405 AA

GATA-3 (GATA binding protein 3) is a member of the GATA family of transcription factors. GATA-3 appears to control a set of genes involved in the differentiation and proliferation of breast cancer. The expression of GATA-3 has a strong association with estrogen receptor-alpha expression in breast cancer and evidence exists that GATA-3 may be used to predict response to hormonal therapy of breast cancer patients. GATA-3 has also been shown to be a novel marker for bladder cancer. In one study, GATA-3 stained 67% of 308 urothelial carcinomas but no prostate or renal carcinomas.

1. Raspollini MR, *et al.* Pathologica. 2010 Feb; 102(1):33-5. 2. Esheba GE, *et al.* Am J Surg Pathol. 2009 Mar; 33(3):347-53. 3. Albergaria A, *et al.* Breast Cancer Res. 2009; 11(3):R40. 4. Kouros-Mehr H, *et al.* Cancer Cell. 2008 Feb; 13(2):141-52. 5. Voduc D, *et al.* Cancer Epidemiol Biomarkers Prev. 2008 Feb; 17(2):365-73. 6. Parikh P, *et al.* J Am Coll Surg. 2005 May; 200(5):705-10.



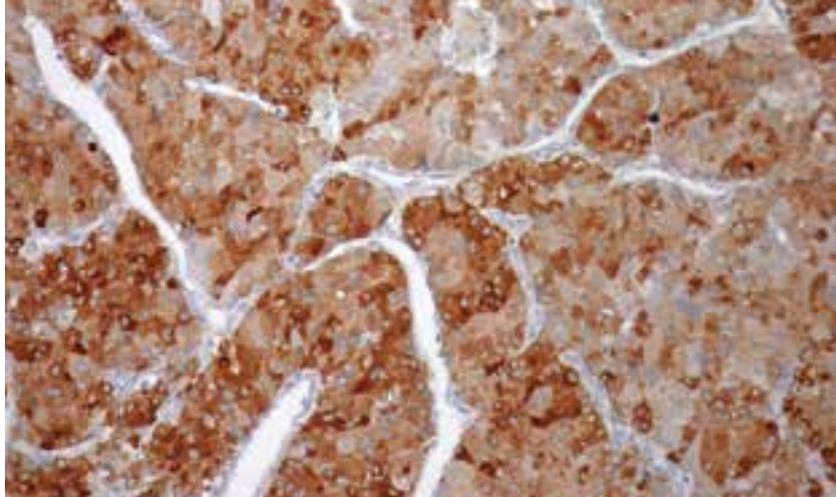
Liver cancer stained with Glutamine Synthetase

Glutamine Synthetase

Clone	6/Glutamine Synthetase
Isotype	IgG2a
Reactivity	
Control	Hepatocellular carcinoma
Cat. No.	ACI 3009 A, B; API 3009 AA

Glutamine Synthetase (GS) catalyzes the synthesis of glutamine, the major energy source of tumor cells. Accumulation of GS was first found in hepatocellular carcinoma (HCC). Liver biopsy for HCC detection is largely restricted to small hepatocellular lesions, which are often morphologically challenging, requiring careful distinction between dysplastic nodules (high-grade) and well-differentiated HCC. When a panel of GS, Heat Shock Protein 70 and Glypican 3 is used, if any 2 of the 3 are positive, the sensitivity and specificity for the detection of early HCC-G1 were 72% and 100% respectively.

1. Zhuang Z, *et al.* J Neurosurg. 2011 Oct; 115(4):789-95. 2. Long J, *et al.* Hepatobiliary Pancreat Dis Int. 2010 Jun; 9(3):296-305. 3. Roskams T, *et al.* Semin Liver Dis. 2010 Feb; 30(1):17-25. 4. Sakamoto M. J Gastroenterol. 2009; 44 Suppl 19:108-11. 5. Di Tommaso L, *et al.* J Hepatol. 2009 Apr; 50(4):746-54.



Liver cancer stained with Glypican-3

Glypican-3 IVD FFPE

Clone 1G12

Isotype IgG1

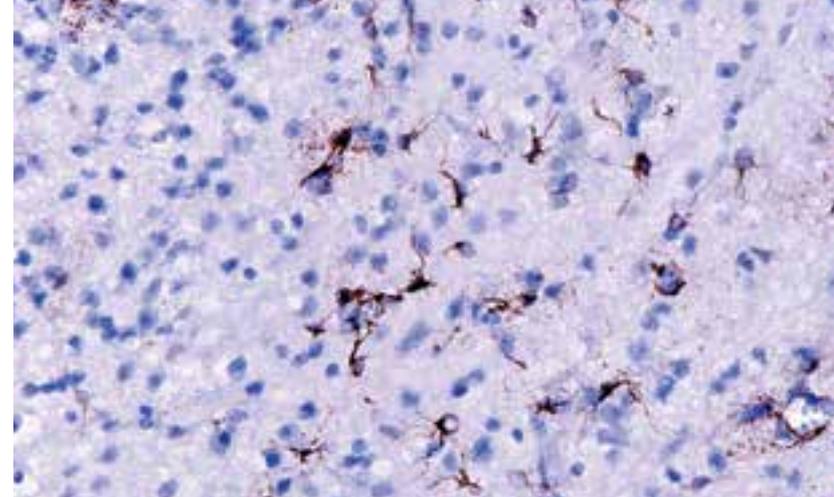
Reactivity 

Control Hepatocellular carcinoma

Cat. No. CM 396 A, B; PM 396 AA

Studies have shown that Glypican-3 (GPC3) protein is expressed in most hepatocellular carcinomas (HCC), but is undetectable in normal liver and benign hepatic lesions, including dysplastic and cirrhotic nodules. GPC3 is also significantly elevated in the serum of most patients with HCC. Several studies report that Glypican-3 is a sensitive diagnostic marker for HCC and a tool for differentiating HCC from non-neoplastic and pre-neoplastic liver disease. Our TMA-based studies have shown that Glypican-3 is positive in 90.4% (66/73) of hepatocellular carcinoma cases and negative in 100% of cholangiocellular carcinoma, normal liver and hyperplasia cases.

1. Kandil DH, *et al.* *Adv Anat Pathol.* 2009 Mar; 16(2):125-9. 2. Shirakawa H, *et al.* *Int J Oncol.* 2009 Mar; 34(3):649-56. 3. Wang XY, *et al.* *Hum Pathol.* 2006 Nov; 37(11):1435-41. 4. Libbrecht L, *et al.* *Am J Surg Pathol.* 2006 Nov; 30(11):1405-11.



Rat cerebellum stained with Glial Fibrillary Acidic Protein (GFAP (M))

Glial Fibrillary Acidic Protein (GFAP (M)) IVD FFPE **PREFERRED**

Clone GA-5

Isotype IgG1

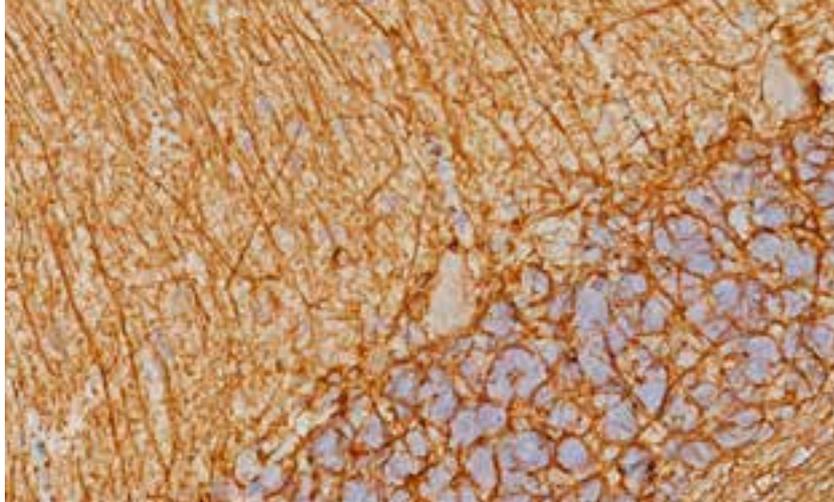
Reactivity   

Control Normal brain or astrocytoma

Cat. No. CM 065 A, C; PM 065 AA

This antibody reacts with human GFAP and does not react with other intermediate filaments. Anti-GFAP stains astrocytes, ependymal cells and corresponding tumors. Studies have shown that GFAP may be useful for distinguishing neoplasms of astrocytic origin. GFAP may also be useful in differentiating gliomas from metastatic lesions in the brain. Neuroblastomas, Schwannomas, as well as extra-CNS tumors are not labeled. Negative staining has been observed with lymphatic tissue, muscle, gastrointestinal tract, liver, kidney, pancreas and bladder. Use of a monoclonal antibody typically will increase specificity and eliminate lot-to-lot variation seen with polyclonals.

1. Motomura K, *et al.* *Cancer Sci.* 2012 Oct; 103(10):1871-9. 2. Kanu OO, *et al.* *Expert Opin Ther Targets.* 2009 Jun; 13(6):701-18. 3. Heo DH, *et al.* *J Neurooncol.* 2012 May; 108(1):45-52.



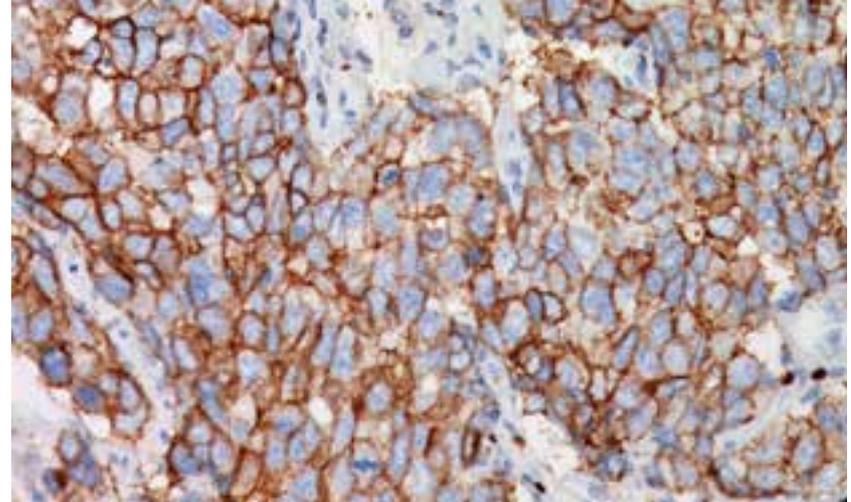
Brain stained with Glial Fibrillary Acidic Protein (P)

Glial Fibrillary Acidic Protein (GFAP{P})

Clone	N/A
Isotype	N/A
Reactivity	  
Control	Normal brain or astrocytoma
Cat. No.	CP 040 A, B; PP 040 AA

This antibody reacts with human GFAP and does not react with other intermediate filaments. Anti-GFAP stains astrocytes, ependymal cells and corresponding tumors. In the peripheral nervous system, GFAP stains Schwann cells, enteric glial cells and satellite cells. Weak staining of axons has been observed which is caused by cross-reaction with neurofilament. Studies have shown GFAP may be useful for distinguishing neoplasms of astrocytic origin from other neoplasms in the central nervous system. Negative staining has been observed with lymphatic tissue, muscle, gastrointestinal tract, liver, kidney, pancreas and bladder.

1. Huang MC, *et al.* Noshuyo Byori. 1996 Apr; 13(1):11-6. 2. Xu KP, Liu SL, Ni C. Br J Ophthalmol. 1995 Aug; 79(8):771-6. 3. Korshunov AG, Sycheva RV. Arkh Patol. 1995 Jul-Aug; 57(4):30-8. 4. McLendon RE, Bigner DD. Brain Pathol. 1994 Jul; 4(3):221-8. 5. Xu QZ, Duan HL, Lu DH. Zhonghua Bing Li Xue Za Zhi. 1994 Apr; 23(2):66-8



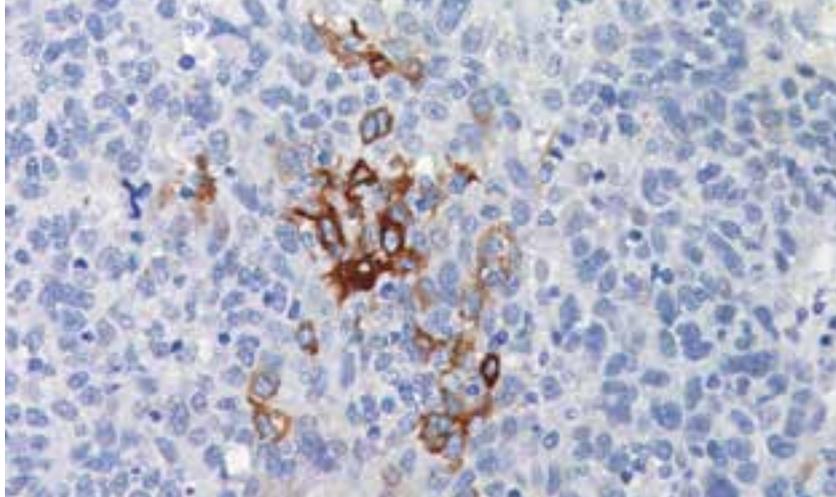
Breast cancer stained with GLUT-1

GLUT-1

Clone	SPM498
Isotype	IgG1/kappa
Reactivity	
Control	Breast cancer, colon cancer or mesothelioma
Cat. No.	CM 408 A, B; PM 408 AA

Glucose transporter 1, also known as GLUT-1, facilitates the transport of glucose across the plasma membranes of mammalian cells. GLUT-1 is responsible for the low-level of basal glucose uptake required to sustain respiration in all cells. A high level of GLUT-1 immunoreactivity in cancer has been associated with aggressive behavior and shorter disease-free survival. Hypoxia in cancer has a significant impact on clinical outcome and surrogate markers for tumor hypoxia, such as GLUT-1 and HIF-1 alpha, have shown prognostic significance for patient outcome. Studies have also shown that GLUT-1 was positive in most mesotheliomas while negative for reactive mesothelium.

1. Martins FC, *et al.* Tumori. 2009 Mar-Apr; 95(2):227-32. 2. Robey IF, *et al.* Neoplasia. 2008 Aug; 10(8):745-56. 3. Li J, *et al.* Zhonghua Bing Li Xue Za Zhi. 2008 Feb; 37(2):103-8. 4. Afify A, *et al.* Acta Cytol. 2005 Nov-Dec; 49(6):621-6. 5. Stackhouse BL, *et al.* Breast Cancer Res Treat. 2005 Oct; 93(3):247-53. 6. Roh MS, *et al.* Hepatogastroenterology. 2004 Sep-Oct; 51(59):1315-8.



Breast cancer stained with Gross Cystic Disease Fluid Protein-15

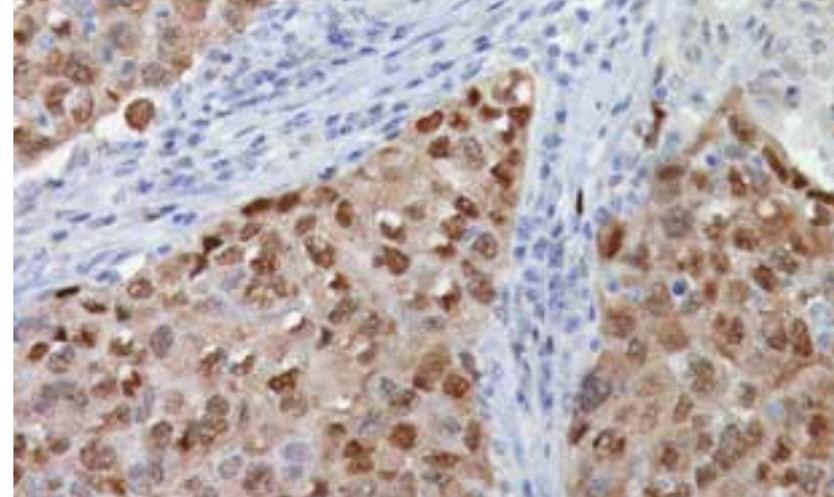
Gross Cystic Disease Fluid Protein-15

Clone	D6
Isotype	IgG2a
Reactivity	
Control	Breast cancer
Cat. No.	CM 113 A, B; PM 113 AA; IP 113 G10



Glycoproteins, including Gross Cystic Disease Fluid Protein-15 (GCDFP-15), are considered to be markers of apocrine differentiation. Numerous studies have shown GCDFP-15 to be a specific marker for breast cancer in formalin-fixed, paraffin-embedded tissues and in cytologic preparation (fine needle aspirates). Studies on breast cancer have shown that GCDFP-15 associated significantly with a profile of good prognosis tumors. Another breast cancer study showed that 73.3% of invasive breast carcinomas expressed GCDFP-15. Other types of tissues that express GCDFP-15 are axillary sweat glands and submandibular salivary glands.

1. Zhao Y, *et al.* Int J Surg Pathol. 2013 Apr 5. 2. Luo MH, *et al.* Hum Pathol. 2013 Jul; 44(7):1241-50. 3. Lopez-Bonet E, *et al.* Breast Cancer Res Treat. 2011 Feb; 126(1):241-5. 4. Fritzsche FR, *et al.* Histol Histopathol. 2007 Nov; 22(11):1221-30. 5. Vaapil M, *et al.* PLoS One. 2012; 7(9):e46543.



Breast cancer stained with Heat Shock Protein 70

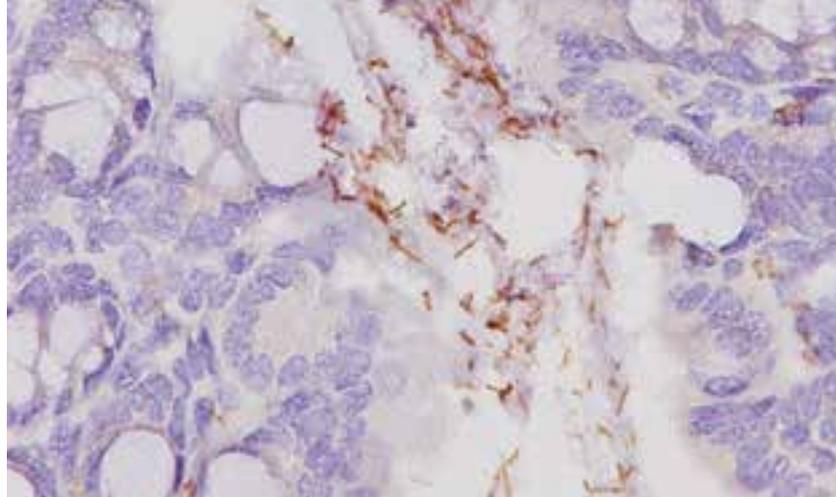
Heat Shock Protein 70

Clone	W27
Isotype	IgG2a
Reactivity	
Control	Breast carcinoma
Cat. No.	CM 407 A



Heat shock proteins (HSPs) are an important part of the cell's machinery for protein folding and also help to protect cells from stress. HSPs are expressed in tumor cell proliferation, differentiation, invasion and metastasis. In addition to improving overall protein integrity, Heat Shock Protein 70 (HSP70) directly inhibits apoptosis and has been shown to be involved in a protective role against thermal stress and cytotoxic drugs. Recently, HSP70 has been reported as a prognostic marker in multiple cancer types.

1. Kang Y, *et al.* Korean J Pathol. 2013 Jun; 47(3):219-26. 2. Murphy ME. Carcinogenesis. 2013 Jun; 34(6):1181-8. 3. Ciocca DR, Calderwood SK. Cell Stress Chaperones. 2005 Summer; 10(2):86-103. 4. Cai MB, *et al.* J Transl Med. 2012 May; 10:96. 5. Rérole AL, Jegou G, Garrido C. Methods Mol Biol. 2011; 787:205-30.

Small intestine stained with *Helicobacter pylori*

Helicobacter pylori

Clone	BC7
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Isotype	IgG1
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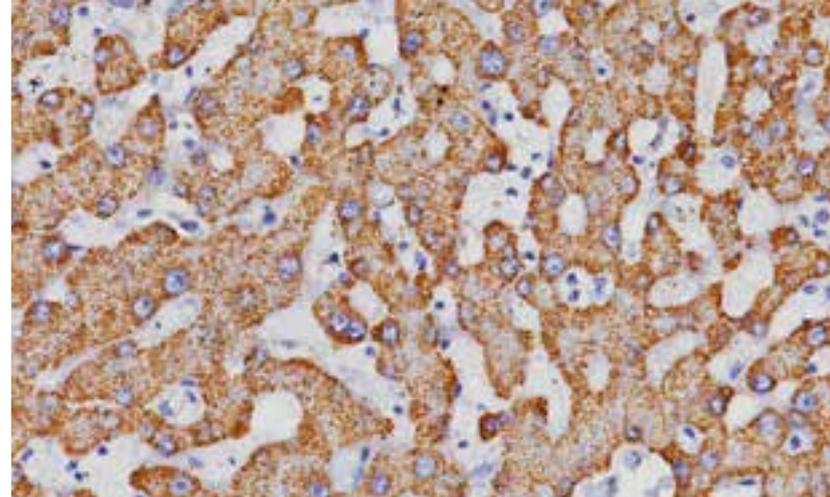
Reactivity	
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Control	Stomach infected with <i>Helicobacter pylori</i>
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Cat. No.	CM 383 A, C; PM 383 AA, H, L; IP 383 G10
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Helicobacter pylori are spiral-curved, gram-negative bacteria that are present on surface epithelium of the mucous layer of the stomach. There is evidence showing that these bacteria may play a significant role in peptic ulcer disease. Immunohistochemical techniques can distinguish *Helicobacter pylori* from other types of curved bacteria. A study has suggested that *Helicobacter pylori* infection is a risk factor for colorectal polyps in children. The small spiral-curved shaped bacterium can be seen clearly using a 100X oil objective under the microscope.

1. Tajalli R, *et al.* Iran Biomed J. 2013; 17(1):36-41. 2. Cheng H, *et al.* Pediatr Infect Dis J. 2012 Apr; 31(4):364-7. 3. Anim JT, *et al.* Acta Histochem. 2000 May; 102(2):129-37. 4. Vonkeman HE, *et al.* BMC Gastroenterol. 2012 Sep; 12:133.



Liver cancer stained with Hepatocyte Specific Antigen (HSA)

Hepatocyte Specific Antigen (HSA)

Clone	OCH1E5
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Isotype	IgG1/kappa
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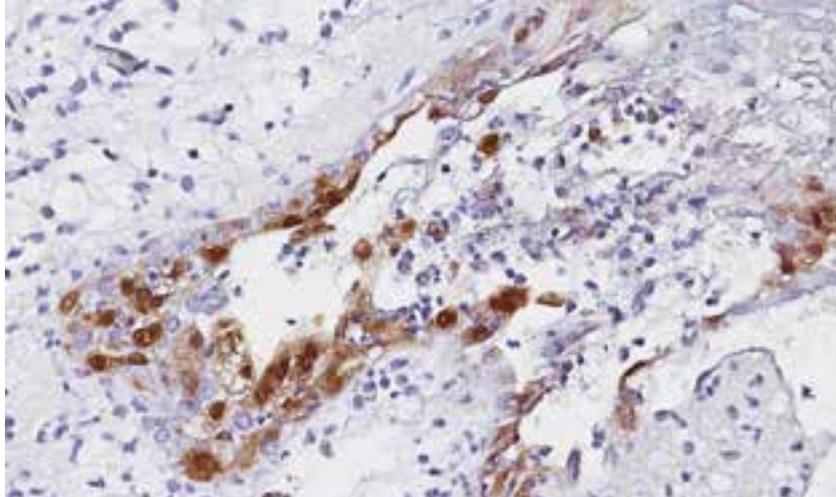
Reactivity	
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Control	Liver or liver carcinoma
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Cat. No.	CM 166 A, C; PM 166 AA
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Hepatocyte Specific Antigen (HSA) is considered very specific for normal and neoplastic hepatocytes. Expression has been demonstrated consistently in the majority of hepatocellular carcinomas. Studies have shown HSA to be an effective marker that may be used in a panel with CEA (Carcinoembryonic Antigen), CK7, AFP (Alpha Fetoprotein) and CD10 to aid in the differential diagnosis of hepatocellular carcinoma from cholangiocarcinoma and/or metastatic adenocarcinoma.

1. Karabork A, Kaygusuz G, Ekinci C. Pathol Res Pract. 2010 Aug; 206(8):572-7. 2. Amarapurkar AD, *et al.* Indian J Pathol Microbiol. 2006 Jul; 49(3):341-4. 3. Fan Z, *et al.* Mod Pathol. 2003 Feb; 16(2):137-44. 4. Siddiqui MT, *et al.* Cancer. 2002 Feb; 96(1):49-52.



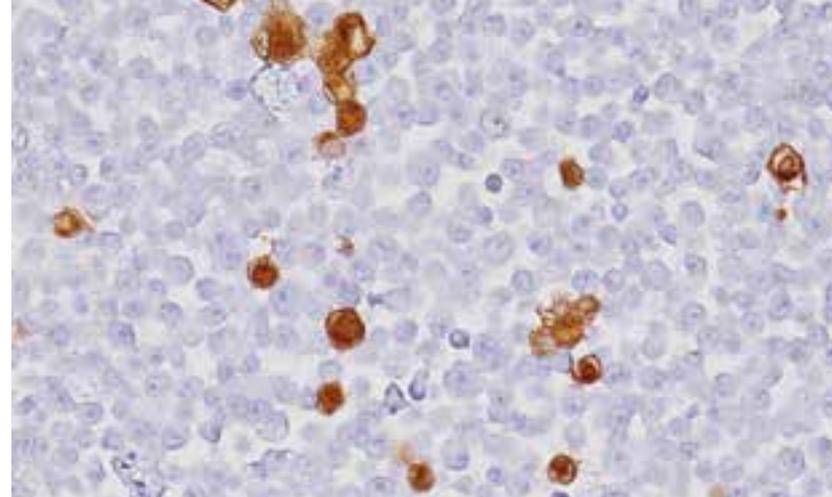
HSV 1 infected skin stained with Herpes Simplex Virus 1 (2X)

Herpes Simplex Virus 1 (2X) ASR FFPE

Clone	N/A
Isotype	N/A
Reactivity	N/A
Control	N/A
Cat. No.	APA 3027 AAK supernova

This antibody reacts with Herpes Simplex Virus (HSV) 1. It reacts with major viral envelope glycoproteins and with core proteins. Infected biopsy tissues include esophagus, lung, liver, cervix and perianal region, as well as cytology specimens. HSV can also infect both the peripheral and central nervous system. Viral antigens may be detected in the cytoplasm and nucleus. Typically, HSV Type 1 infects tissues such as lung and esophagus. This antibody does not cross-react with cytomegalovirus, Epstein-Barr virus, or *varicella zoster* virus.

1. Mehraein Y, *et al.* J Clin Virol. 2004 Sep; 31(1):25-31. 2. Athmanathan S, *et al.* Indian J Med Microbiol. 2001 Jul-Sep; 19(3):127-31. 3. Kaye SB, *et al.* Br J Ophthalmol. 2000 Jun; 84(6):563-71. 4. Subhan S, *et al.* Curr Eye Res. 2004 Aug-Sep; 29(2-3):209-13. 5. Farhatullah S, *et al.* Br J Ophthalmol. 2004 Jan; 88(1):142-4.



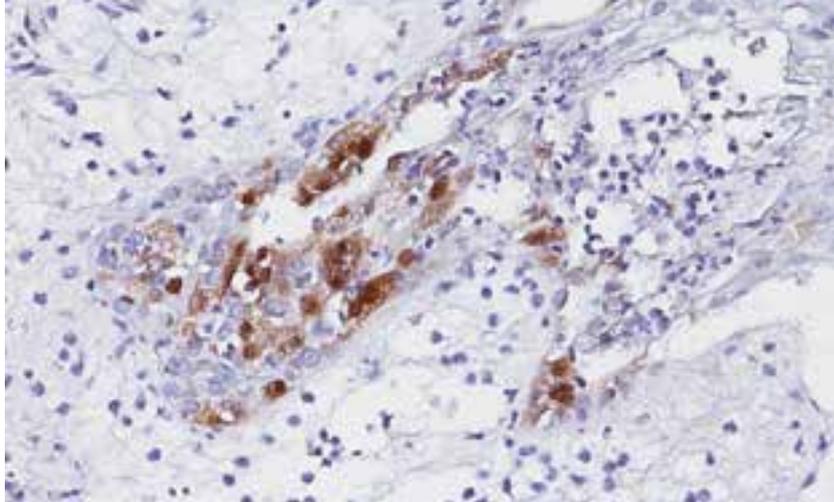
Herpes Simplex infected lung stained with Herpes Simplex Virus 1 & 2 (HSV 1 & 2)

Herpes Simplex Virus 1 & 2 (HSV 1 & 2) RUO FFPE

Clone	N/A
Isotype	N/A
Reactivity	Any infected tissue
Control	HSV infected tissues
Cat. No.	PP 108 AA

This antibody reacts with Herpes Simplex Virus (HSV) 1 and 2. It identifies major viral envelope glycoproteins and core proteins that can be found in the cytoplasm and/or nucleus. HSV can infect both the peripheral and central nervous system. Studies have shown that HSV Type 1 infects tissues such as lung and esophagus and HSV Type 2 infects the genitals and anus. This antibody does not cross-react with cytomegalovirus, Epstein-Barr virus, or *varicella zoster* virus and is compatible with formalin fixation; however, prolonged fixation can be detrimental to HSV staining.

1. Martin JR, *et al.* Hum Pathol. 1991 Jan; 22(1):75-80. 2. Tomita T, *et al.* Virchows Arch A Pathol Anat Histopathol. 1991; 419(2):99-105. 3. Vago L, *et al.* Acta Neuropathol. 1996 Oct; 92(4):404-8. 4. Eyzaguirre E, Haque K. Arch Pathol Lab Med. 2008 Mar; 132(3):424-31.



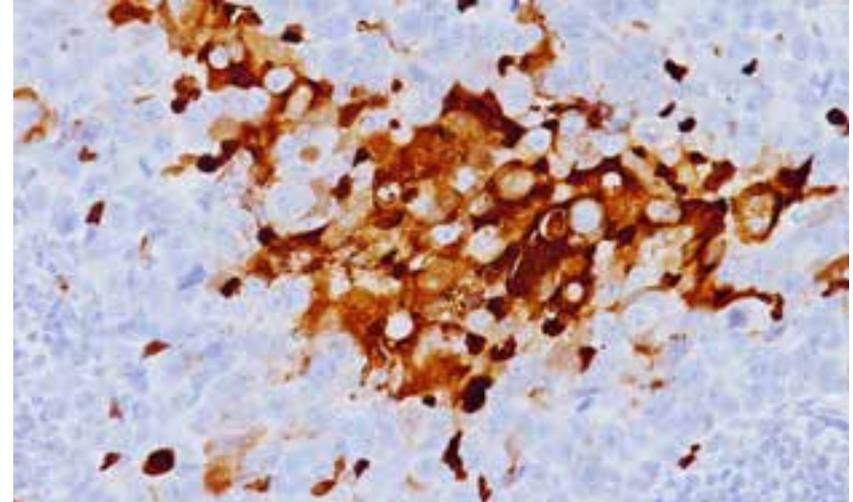
HSV 2 infected skin stained with Herpes Simplex Virus 2 (2X)

Herpes Simplex Virus 2 (2X) ASR FFPE

Clone	N/A
Isotype	N/A
Reactivity	N/A
Control	N/A
Cat. No.	APA 3028 AA supernova

This antibody reacts with Herpes Simplex Virus (HSV) 2. It identifies major viral envelope glycoproteins and core proteins that can be found in the cytoplasm and/or nucleus. HSV can infect both the peripheral and central nervous system. Studies have shown that HSV Type 2 infects the genitals and anus. Studies have shown this antibody does not cross-react with cytomegalovirus, Epstein-Barr virus, or *varicella zoster* virus and is compatible with formalin fixation; however, prolonged fixation can be detrimental to HSV staining.

1. Yoshida K, *et al.* *Diagn Cytopathol.* 2013 Apr; 41(4):354-9. 2. Martin JR, *et al.* *Hum Pathol.* 1991 Jan; 22(1):75-80. 3. Tomita T, *et al.* *Virchows Arch A Pathol Anat Histopathol.* 1991; 419(2):99-105. 4. Eyzaguirre E, Haque K. *Arch Pathol Lab Med.* 2008 Mar; 132(3):424-31.



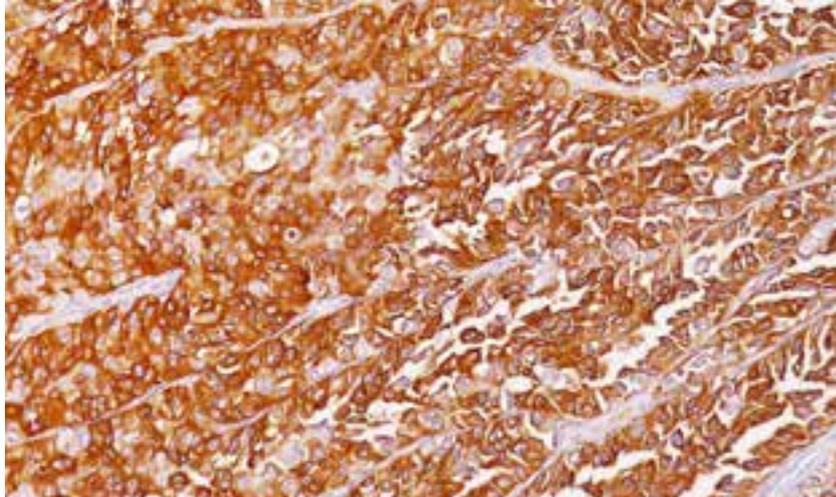
Breast cancer stained with HIF-1 alpha

HIF-1 alpha IVD FFPE

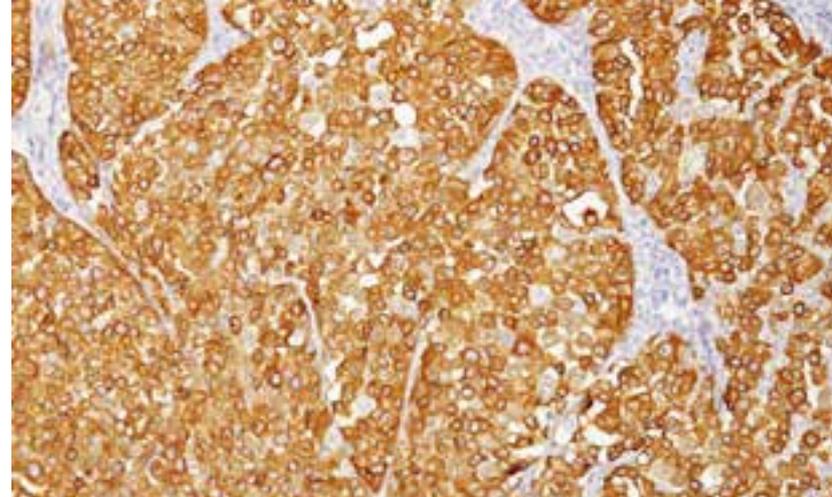
Clone	EP1215Y
Isotype	IgG
Reactivity	
Control	Breast cancer
Cat. No.	CME 349 A, B

HIF-1 alpha has been shown to upregulate several genes to promote survival in hypoxic environments. Oxygen-breathing species express this highly-conserved transcriptional complex. There is evidence that tumor hypoxia promotes metastasis through the induction of MET overexpression by HIF-1 alpha. The mechanism of tumor hypoxia promoting metastasis remains uncertain. HIF-1 alpha is a key mediator of the cellular response to hypoxia and binds the MET promoter, resulting in increased expression of MET. In breast cancer, MET overexpression is associated with metastatic disease and poor prognosis.

1. Takahashi Y, Nishikawa M, Takakura Y. *Gene Ther.* 2008 Apr; 15(8):572-82. 2. Jung SN, *et al.* *Carcinogenesis.* 2008 Apr; 29(4):713-21. 3. Zur Nedden S, Tomaselli B, Baier-Bitterlich G. *J Neurochem.* 2008 Jun; 105(5):1901-14. 4. Volm M, Koomagi R. *Anticancer Research.* 2000 May-Jun; 20(3A):1527-33.



Melanoma stained with HMB45



Melanoma stained with HMB45 + MART-1 + Tyrosinase

HMB45

Clone	HMB45
Isotype	IgG1/kappa
Reactivity	
Control	Melanoma
Cat. No.	CM 057 A, B, C; PM 057 AA; IP 057 G10

HMB45 reacts with a neuraminidase-sensitive oligosaccharide side chain of a glycoconjugate present in immature melanosomes. The HMB45-reactive antigen is present in cutaneous melanocytes, prenatal and infantile retinal pigment epithelium (RPE) and melanoma cells. It is also thought to be oncofetal in nature and has been shown to label the majority of melanomas. Studies support the routine use of HMB45 (anti-gp100) as a sensitive and specific melanocytic marker.

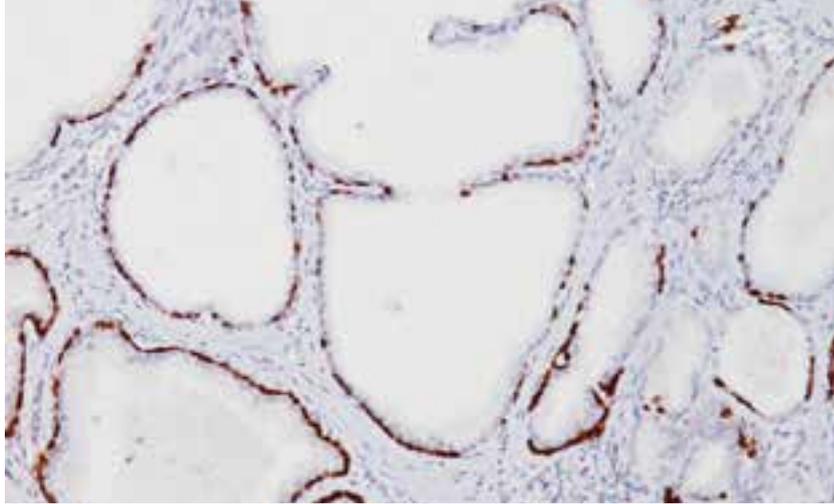
1. Kapur RP, *et al.* J. Histochem Cytochem. 1992 Feb; 40(2):207-12. 2. Yaziji H, Gown AM. Int J Surg Pathol. 2003 Jan; 11(1):11-5. 3. Ohsie SJ, *et al.* J Cutan Pathol. 2008 May; 35(5):433-44.

HMB45 + MART-1 + Tyrosinase

Clone	HMB45 + M2-7C10 / M2-9E3 + T311
Isotype	IgG1/kappa + IgG2b / IgG2b + IgG2a
Reactivity	
Control	Metastatic melanoma
Cat. No.	CM 165 B, C; PM 165 AA, H; VP 165 G

The combination of HMB45, MART-1 and Tyrosinase make this antibody combination a first-order pan melanoma screener. HMB45 has been shown to label the majority of melanomas. MART-1/Melan A is specific to melanocytic lesions. Studies have shown that MART-1 is more sensitive than HMB45 when labeling metastatic melanomas. Tyrosinase has also been shown to be a more sensitive marker when compared to HMB45 and MART-1 and to label a higher percentage of desmoplastic melanomas than HMB45. HMB45 + MART-1 and Tyrosinase may prove to be a valuable marker for melanoma metastasis in sentinel lymph nodes.

1. Orchard G. Br J Biomed Sci. 2002; 59(4):196-202. 2. Cook MG, *et al.* J Pathol. 2003 Jul; 200(3):314-9. 3. Miettinen M, *et al.* Am J Surg Pathol. 2001 Feb; 25(2):205-11. 4. Blessing K, Sanders DS, Grant JJ. Histopathology. 1998 Feb; 32(2):139-46. 5. Ohsie SJ, *et al.* J Cutan Pathol. 2008 May; 35(5):433-44. 6. Xu X, *et al.* Am J Surg Pathol. 2002 Jan; 26(1):82-7.



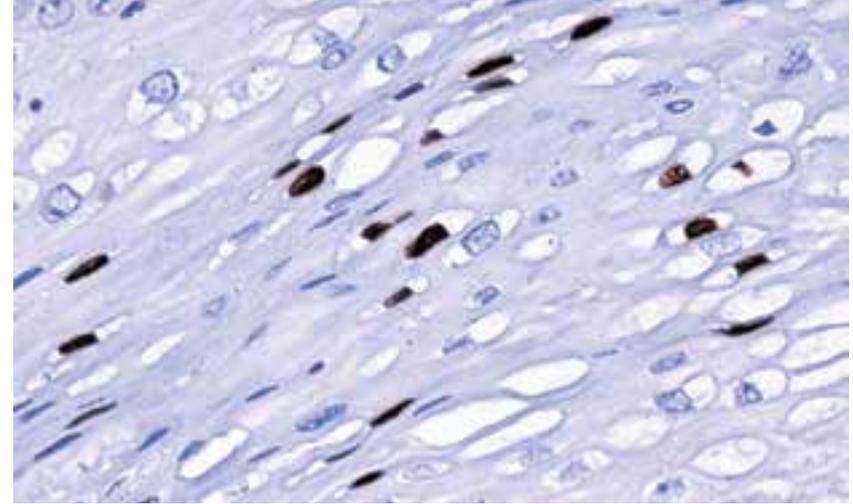
Prostate stained with HMW CK + p63

HMW CK + p63 (Basal Cell Cocktail) IVD FFPE

Clone	XM26 / LL002 + 4A4
Isotype	IgG1 / IgG3 + IgG2a
Reactivity	
Control	Prostatic intraepithelial neoplasia, (PIN) or normal prostate
Cat. No.	CM 210 C; PM 210 AA

In normal epithelia, HMW Cytokeratins (CK5 and CK14) stain stratified epithelia, myoepithelial cells and basal cells in the prostate gland and bronchi. The p63 is detected in prostate basal cells in normal prostate, however, is negative in malignant tumors of the prostate gland. Thus p63 has been shown to be useful as a differential marker for benign and malignant tumors of prostate gland and can be useful as a negative marker. The combination of the HMW CK Cocktail and p63 has been shown to be superior to each alone.

1. Tacha DE, Miller RT. *Appl Immunohistochem Mol Morphol*. 2004 Mar; 12(1):75-8. 2. Signoretti S, *et al*. *Am J Pathol*. 2000 Dec; 157(6):1769-75. 3. Wang Y, *et al*. *Differentiation*. 2001 Oct; 68(4-5):270-9. 4. Tokar EJ, *et al*. *Differentiation*. 2005 Dec; 73(9-10):463-73. 5. Collins, *et al*. *J Cell Sci*. 2001 Nov; 114(Pt 21):3865-72.



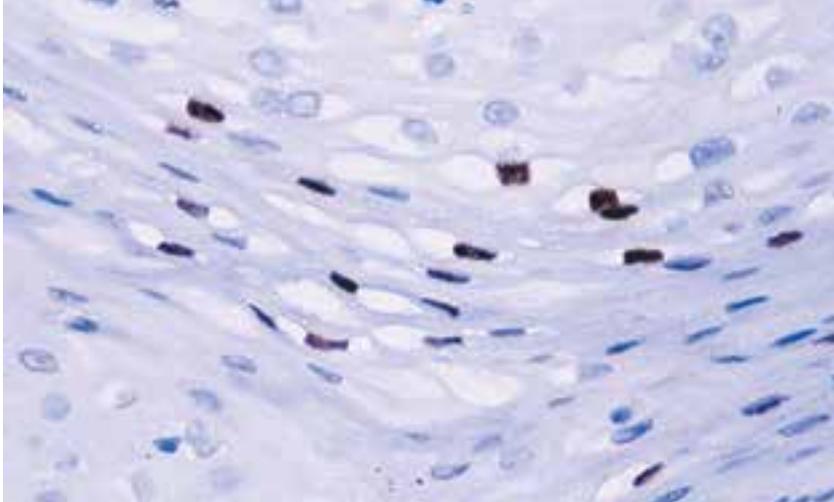
Cervix stained with HPV Cocktail Broad Spectrum

HPV Cocktail Broad Spectrum RUO FFPE

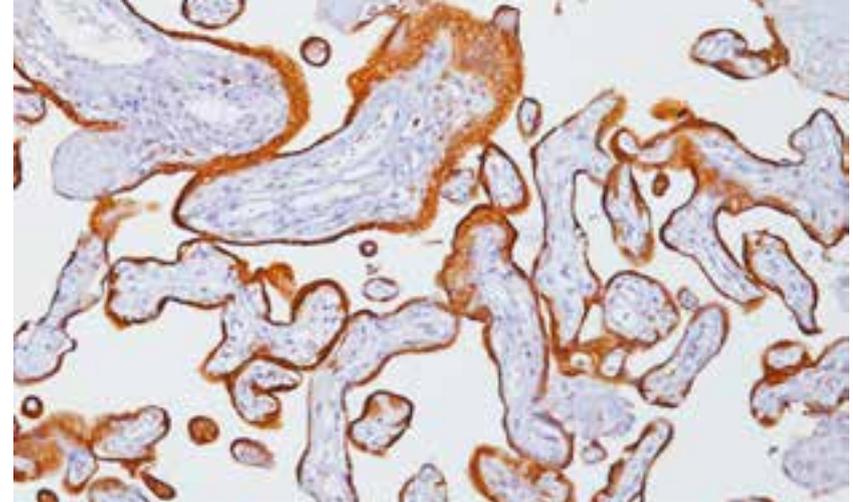
Clone	BPV-1/1H8 + CAMVIR
Isotype	IgG + IgG2a
Reactivity	
Control	Infected cervical biopsy
Cat. No.	CM 177 BK, CK; PM 177 AA

The broad spectrum HPV antibody was produced against SDS-disrupted bovine papillomavirus type 1 (BPV-1) and was used to identify its product of the L1 open reading frame. IH8 was found to be reactive with purified major capsid protein (MCP). The antibody was tested with ELISA and an immunofluorescent technique. It detected HPV-1, 6, 11, 16-16, 18 and 31 in formalin-fixed, paraffin-embedded (FFPE) biopsy specimens. The CAMVIR-1 antibody reacted with a protein in cells infected with L1-*vaccinia* virus and the protein was present in HPV16. Other HPV isotypes may also be reactive with the Broad Spectrum HPV antibody, but have not been tested.

1. Cowsert LM, Pilacinski WP, Jenson AB. *Virology*. 1988 Aug; 165(2):613-5. 2. Wititsuwannakul J, *et al*. *Am J Dermatopathol*. 2013 May; 35(3):327-31. 3. Kreimer AR, *et al*. *J Clin Oncol*. 2013 Jul; 31(21):2708-15.



Cervix stained with HPV-16 (CAMVIR-1)



Placenta stained with Human Chorionic Gonadotropin (Beta)

HPV-16 (CAMVIR-1) RUO FFPE

Clone	CAMVIR-1
Isotype	IgG2a
Reactivity	
Control	Infected cervical biopsy
Cat. No.	CM 186 C

The CAMVIR-1 antibody was raised against the major capsid protein L1 of human papillomavirus (HPV) type 16, using a recombinant *vaccinia* virus that expresses the L1 protein. This antibody also detects the HPV-16 L1 antigen in formalin-fixed, paraffin embedded biopsy specimens and on routine cervical smears. The antibody reacts strongly and consistently with specimens containing HPV-16 or HPV-33, but very weak reactions were occasionally observed with biopsy specimens or smears containing HPV-6 or HPV-11.

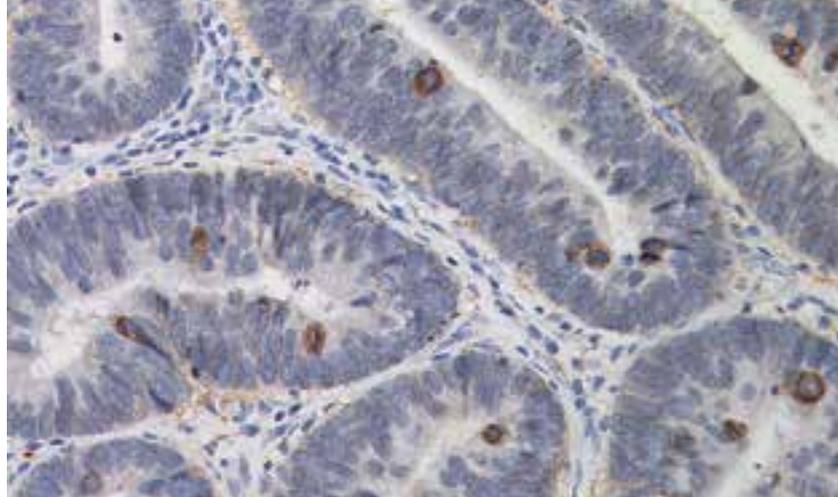
1. Cowsert LM, Pilacinski WP, Jenson AB. *Virology*. 1988 Aug; 165(2):613-5. 2. Wititsuwannakul J, *et al.* *Am J Dermatopathol*. 2013 May; 35(3):327-31. 3. Kreimer AR, *et al.* *J Clin Oncol*. 2013 Jul; 31(21):2708-1.

Human Chorionic Gonadotropin (Beta) IVD FFPE

Clone	N/A
Isotype	N/A
Reactivity	
Control	Placenta
Cat. No.	CP 124 A; PP 124 AA

Human chorionic gonadotropin (hCG) is a glycoprotein hormone synthesized in syncytiotrophoblastic cells of placenta and in certain trophoblastic tumors. The hormone-specific beta chains have molecular weights of 14 kDa and 17 kDa, respectively. It is believed that the C-terminal region of the CG-beta subunit plays a role in the intracellular behavior of the heterodimer. This antibody labels the cytoplasm of syncytiotrophoblastic cells and their tumors, as well as germ cell tumors of the ovaries, testes and extragonadal sites.

1. Weissbach L, Bussar-Maatz R, Mann K. *Eur Urol*. 1997; 32(1):16-22. 2. Sheaff MT, *et al.* *J Clin Pathol*. 1996 Apr; 49(4):329-32. 3. Matias-Guiu X, Prat J. *Cancer*. 1990 May; 65(9):2001-5. 4. Niehans GA, *et al.* *Cancer*. 1988 Sep; 62 (6):1113-23. 5. Heshmati HM, *et al.* *Acta Endocrinol (Copenh)*. 1988 Aug; 118(4):533-7. 6. Schutter EM, *et al.* *Anticancer Res*. 1997 Mar-Apr; 17(2B):1255-72.



Colon stained with IGF-1R

IGF-1R IVD FFPE

Clone	BC10
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Isotype	IgG2a
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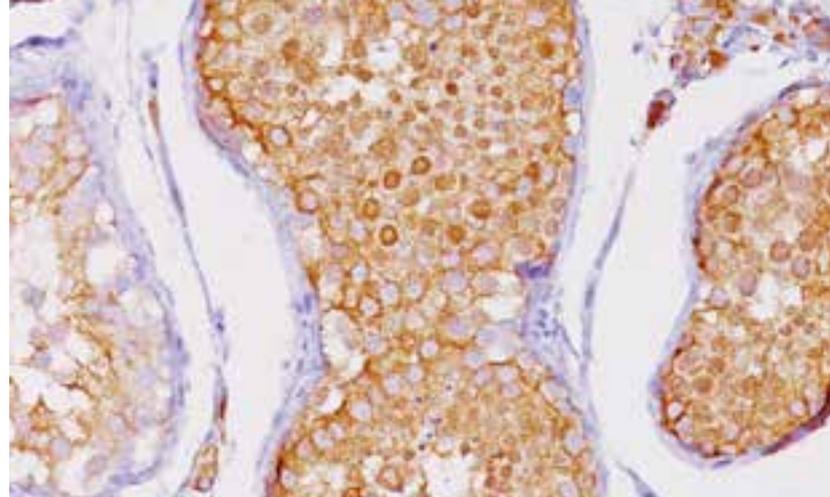
Reactivity	
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Control	Colon or breast cancers or lung squamous cell carcinoma
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Cat. No.	CM 414 A, C
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The Insulin-like Growth Factor 1 Receptor (IGF-1R) is a trans-membrane receptor that is activated by Insulin-like Growth Factor (IGF-1). IGF-1 stimulates mitosis and inhibits apoptosis thus enhancing cell survival. It is expressed in all tissues and is highly over-expressed in most malignant tissues. IGF-1 has been shown to induce hypoxia-inducible factor-1 (HIF-1) mediated vascular endothelial growth factor (VEGF) expression. Studies show IGF-1 to be a likely predictor for resistance to anti-EGFR antibody treatment in K-RAS wild type colorectal cancer. IGF-1 and K-RAS analysis may offer an effective strategy for selection of responding colorectal cancer patients.

1. Appleby PN, *et al.* *Lancet Oncol.* 2010 Jun; 11(6):530-42. 2. Scartozzi M, *et al.* *Int J Cancer.* 2010 Oct; 127(8):1941-7. 3. Wernli KJ, *et al.* *Growth Horm IGF Res.* 2010 Aug; 20(4):305-9. 4. Ludovini V, *et al.* *Ann Oncol.* 2009 May; 20(5):842-9. 5. Creighton CJ, *et al.* *J Clin Oncol.* 2008 Sep; 26(25):4078-85. 6. Fukuda R, *et al.* *J Biol Chem.* 2002 Oct; 277(41):38205-11. 7. Gilam A, *et al.* *Breast Cancer Res Treat.* 2013 Apr; 138(3):753-60. 8. Yamamoto T, *et al.* *Exp Ther Med.* 2012 May; 3(5):797-802.



Testicular tissue stained with Inhibin, Alpha

Inhibin, Alpha IVD FFPE

Clone	BC/R1
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Isotype	IgG2a
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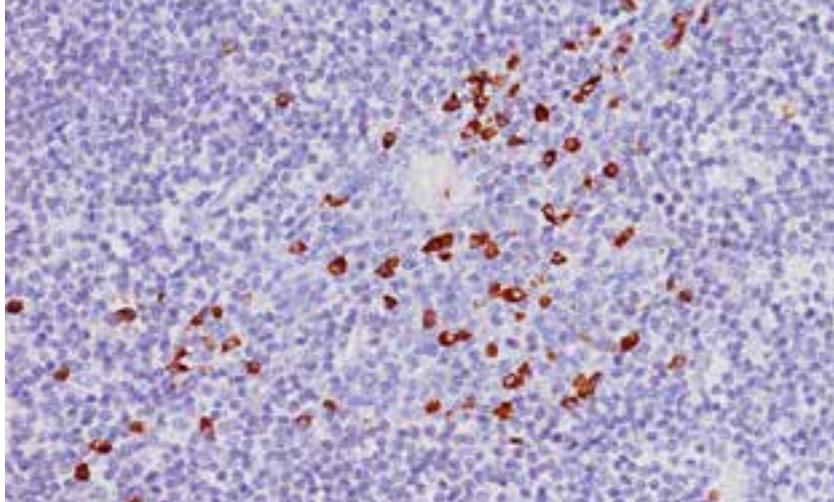
Reactivity	
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Control	Normal testis or normal ovary, adrenal gland
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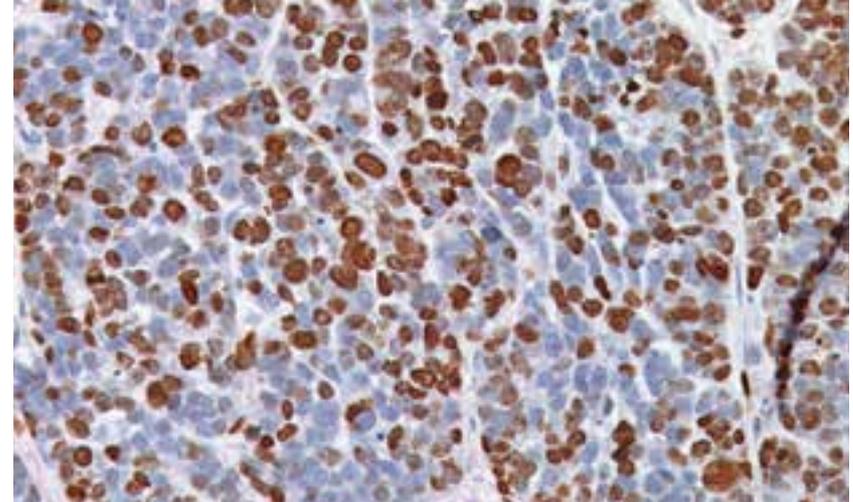
Cat. No.	CM 171 A, B, C; PM 171 AA
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Inhibin, Alpha [BC/R1] antibody recognizes the 32 kDa alpha subunit of human inhibin. Inhibin is a peptide hormone that is produced by ovarian granulosa cells which inhibits the release of Follicle-Stimulating Hormone (FSH). The Inhibin alpha subunit is expressed in a wide range of human tissues outside the reproductive axis such as prostate, brain, adrenal, as well as in the granulosa cells of the ovary, Sertoli cells of the testis and various cells of the fetoplacental unit. Inhibin may be used as a differential marker for adrenocortical tumors, placenta and gestational trophoblastic lesions and sex cord stromal tumors.

1. Rabban JT, *et al.* *Histopathology.* 2013 Jan; 62(1):71-88. 2. Sangoi AR, *et al.* *Am J Surg Pathol.* 2011 May; 35(5):678-86. 3. Zhao C, *et al.* *Am J Surg Pathol.* 2007 Feb; 31(2):255-66. 4. McCluggage WG, *et al.* *Semin Diagn Pathol.* 2005 Feb; 22(1):3-32. 5. Arora DS, *et al.* *J Pathol.* 1997 Apr; 181(4):413-8.



Tonsil stained with Kappa Light Chain (M)



Breast cancer stained with Ki-67

Kappa Light Chain (M)

Clone	KDB-1
Isotype	IgG1
Reactivity	
Control	Tonsil
Cat. No.	CM 012 A, B, C; PM 012 AA; IP 012 G10; VP 012 G

Immunohistochemical detection of immunoglobulins is useful in determining the lymphoid origin of tissues and in the assessment of lymphoid proliferations as reactive or malignant. Studies have shown that this monoclonal antibody is highly specific to the kappa light chain of immunoglobulin and is reportedly useful in the identification of myelomas, plasmacytomas and certain non-Hodgkin's lymphomas. The most common feature of these malignancies is the restricted expression of a single light chain class. Demonstration of clonality in lymphoid infiltrates indicates that the infiltrate is clonal and therefore malignant.

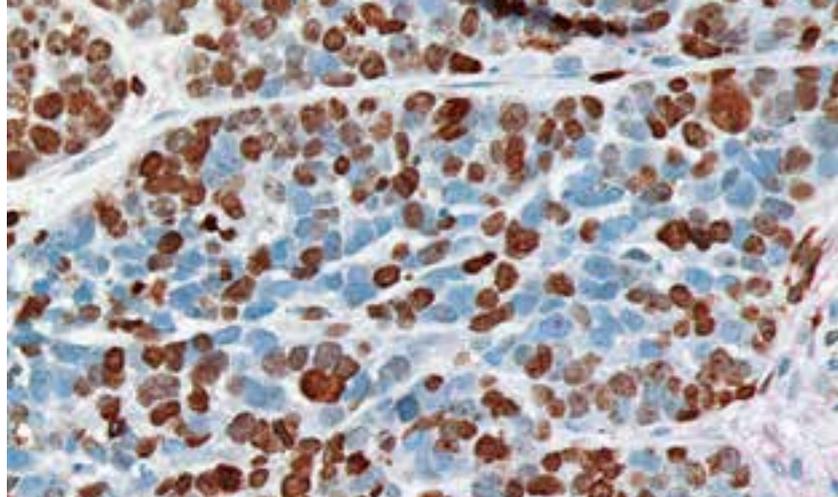
1. Bray M, *et al.* Am J Pathol. 1983 Oct; 80(4):526-8.
2. Abe M, *et al.* Am J Clin Pathol. 1993 Jul; 100(1):67-74.
3. Sobol RE, *et al.* Clin Immunol Immunopathol. 1982 Jul; 24(1):139-44.
4. Abdel-Ghafar AA, *et al.* Hematol Rep. 2012 Jan; 4(1):e3.
5. Boy SC, *et al.* J Oral Pathol Med. 2010 May; 39(5):435-9.
6. Nakayama-Ichihama S, *et al.* Leuk Lymphoma. 2012 Nov; 53(11):2205-9.

Ki-67

Clone	SP6
Isotype	IgG
Reactivity	
Control	Tonsil or breast cancer
Cat. No.	CRM 325 A, B, C; PRM 325 AA

Ki-67 is a non-histone protein expressed in the nucleus during the whole cell cycle, except in the G0 and G1 early phases. Therefore, Ki-67 constitutes an efficient marker of proliferating cells. Due to its role in the cell cycle, the fraction of Ki-67 positive cells in a given tissue sample has often been cited as a useful index for grading the proliferation rates of tumors; including lesions of the breast, brain, cervix and prostate. In pre-cancerous lesions, the Ki-67 labeling index has been associated with an increasing degree of cervical dysplasia. Ki-67 has also been reported as a useful prognostic marker for breast cancer.

1. Batistatou A, *et al.* Anticancer Res. 2013 May; 33(5):2139-45.
2. Sarian LO, *et al.* Gynecol Oncol. 2006; 102:537-41.
3. Bean SM, *et al.* Am J Surg Pathol. 2007 Apr; 31(4):555-61.
4. Goodson WH, *et al.* Breast Cancer Res Treat. 1998 May; 49(2): 155-64.
5. Rossi S, *et al.* Am J Clin Pathol. 2005; 124(2):295-302.
6. Pena LL, *et al.* J Vet Diag Invest. 1998 Jul; 10(3):237-46.
7. Nadler A, *et al.* Virchows Arch. 2013 May; 462(5):501-5.



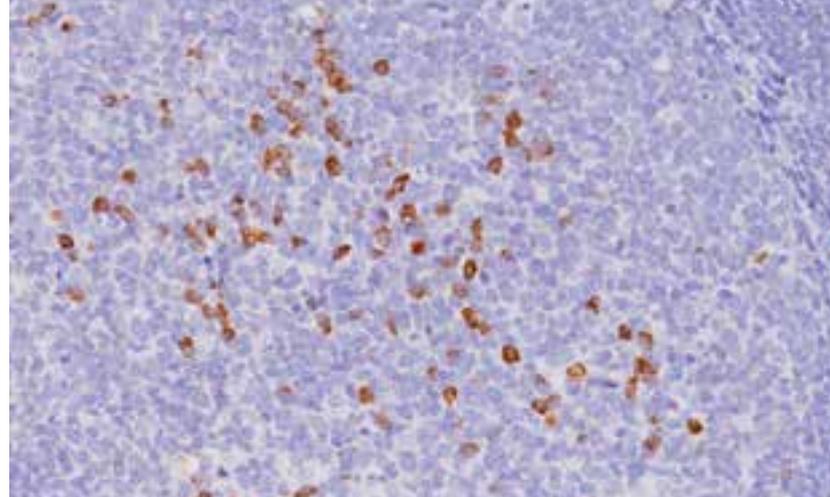
Breast cancer stained with Ki-67 (M)

Ki-67 (M) IVD FFPE PREFERRED

Clone	MM1
Isotype	IgG1
Reactivity	
Control	Tonsil or breast cancer
Cat. No.	CM 375 AK, CK; PM 375 AA, H; IP 375 G10

Ki-67 is a non-histone protein expressed in the nucleus during the whole cell cycle, except in the G0 and G1 early phases. Therefore, Ki-67 constitutes an efficient marker of proliferating cells. Due to its role in the cell cycle, the fraction of Ki-67 positive cells in a given tissue sample has often been cited as a useful index for grading the proliferation rates of tumors; including lesions of the breast, brain, cervix and prostate. In pre-cancerous lesions, the Ki-67 labeling index has been associated with an increasing degree of cervical dysplasia. Ki-67 has also been reported as a useful prognostic marker for breast cancer.

1. Silva-Filho AL, *et al.* Gynecol Oncol. 2004 Dec; 95(3):646-54. 2. Sarian LO, *et al.* Gynecol Oncol. 2006; Sep; 102(3):537-41. 3. Bean SM, *et al.* Am J Surg Pathol. 2007 Apr; 31(4):555-61. 4. Goodson WH, *et al.* Breast Cancer Res Treat. 1998 May; 49(2):155-64. 5. Rossi S, *et al.* Am J Clin Pathol. 2005 Aug; 124(2):295-302. 6. Pena LL, *et al.* J Vet Diag Invest. 1998 Jul; 10(3):237-46. 7. Nadler A, *et al.* Virchows Arch. 2013 May; 462(5):501-5.



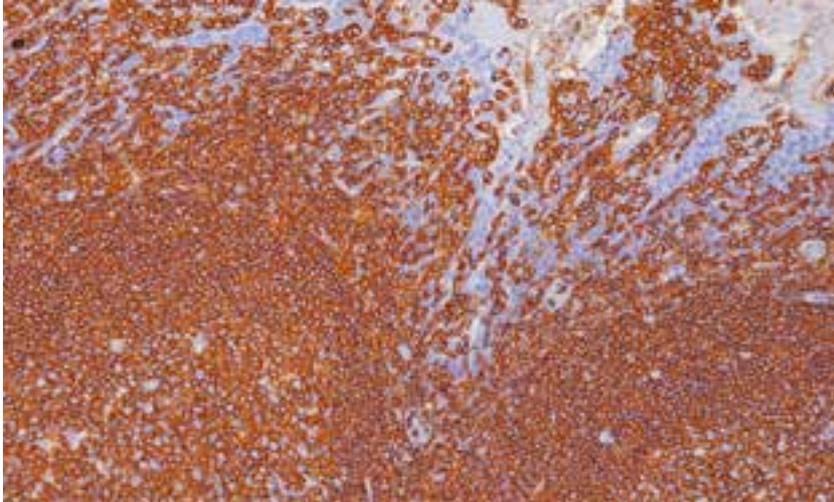
Tonsil stained with Lambda Light Chain (M)

Lambda Light Chain (M) IVD FFPE

Clone	LcN-2
Isotype	IgG2a/kappa
Reactivity	
Control	Tonsil
Cat. No.	CM 014 A, C; PM 014 AA; IP 014 G10; VP 014 G

This mouse monoclonal antibody specifically recognizes lambda light chains of human immunoglobulins. It also recognizes free lambda light chains and Bence-Jones lambda light chains. It does not cross-react with kappa light chains. This antibody is useful to aid in the identification of leukemias, plasmacytomas and certain non-Hodgkin's lymphomas. The most common feature of these malignancies is the restricted expression of a single light chain class. Demonstration of clonality in lymphoid infiltrates indicates that the infiltrate is clonal and therefore malignant.

1. Bray M, *et al.* Am J Pathol. 1983 Oct; 80(4):526-8. 2. Sobol RE, *et al.* Clin Immunol Immunopathol. 1982 Jul; 24(1):139-44. 3. Abdel-Ghafar AA, *et al.* Hematol Rep. 2012 Jan; 4(1):e3. 4. Talaulikar D, *et al.* J Histochem Cytochem. 2008 Oct; 56(10):893-900.



Tonsil stained with Leukocyte Common Antigen (LCA) Cocktail

Leukocyte Common Antigen (LCA) Cocktail

Clone	PD7/26/16 + 2B11
Isotype	IgG1/kappa
Reactivity	
Control	Tonsil or lymphoma
Cat. No.	CM 016 AK, BK, CK; PM 016 AA; IP 016 G10

The PD7/26/16 and 2B11 antibody clones have been designated as CD45. CD45 belongs to a leukocyte common antigen (LCA) family of glycoproteins with molecular weights of 180, 190, 205 and 220 kDa. CD45 recognizes an antigen found on lymphoid cells. Studies have shown that most neoplastic B-cells and T-cells stain positively with CD45 in leukemia and in non-Hodgkin's lymphomas; whereas most neoplastic myeloid and erythroid cells are negative. CD45 has also been observed to be unreactive with epithelium and connective tissues in published studies.

1. Muzaffar S, *et al.* J Pak Med Assoc. 1997 Apr; 47(4):106-9. 2. Michels S, *et al.* Arch Pathol Lab Med. 1987 Nov; 111(11):1035-9. 3. Jaramillo M, *et al.* Methods Mol Med. 2001; 55:301-19. 4. Hallberg D, *et al.* Acta Ophthalmol Scand. 2006 Dec; 84(6):774-80.



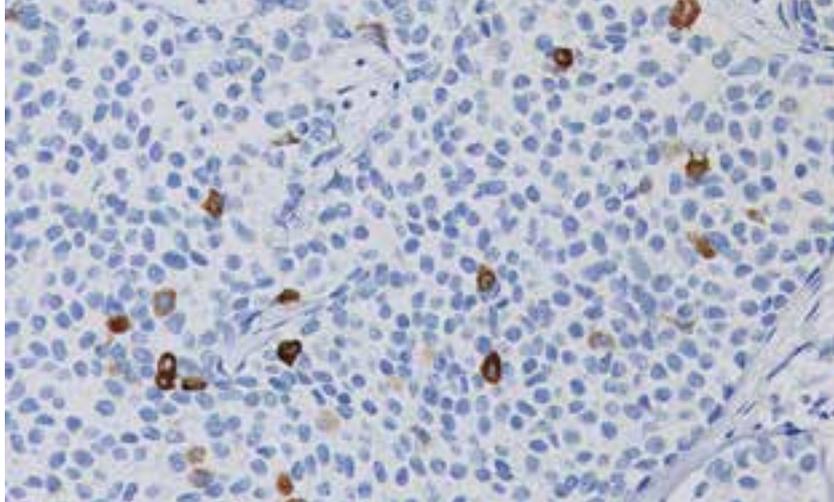
Tonsil stained with Leukocyte Common Antigen (CD45RB)

Leukocyte Common Antigen (CD45RB)

Clone	PD7/26
Isotype	IgG1/kappa
Reactivity	
Control	Tonsil or lymphoma
Cat. No.	PM 091 AA

Leukocyte Common Antigen (CD45RB) recognizes an antigen found on lymphoid cells. This CD45RB antibody has been shown to react with B cells, T-cell subtypes, monocytes and macrophages. Weak expression of CD45RB has also been demonstrated in granulocytes. CD45RB reactivity has been shown with 3 of the 5 glycoproteins in the CD45 family (MW 190, 205 and 220 kDa). Therefore, CD45RB is similar to CD45, except it is not expressed in Langerhans cells and a small subset of T-cells.

1. Muzaffar S, *et al.* J Pak Med Assoc. 1997 Apr; 47(4):106-9. 2. Michels S, *et al.* Arch Pathol Lab Med. 1987 Nov; 111(11):1035-9. 3. Jaramillo M, *et al.* Methods Mol Med. 2001; 55:301-19. 4. Hallberg D, *et al.* Acta Ophthalmol Scand. 2006 Dec; 84(6):774-80.



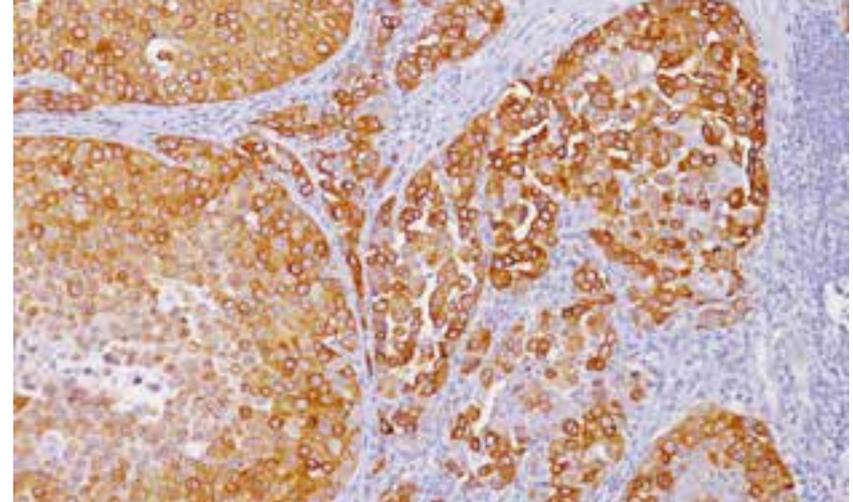
Breast cancer stained with Mammaglobin (M)

Mammaglobin (M)

Clone	1A5
Isotype	IgG1
Reactivity	
Control	Normal breast
Cat. No.	PM 269 AA, H

Mammaglobin encodes a 10 kDa glycoprotein and is distantly related to a family of epithelial secretory proteins that includes rat estramustine-binding protein, prostatein and human Clara cell 10 kDa proteins (CC10)/uteroglobin. Mammaglobin, a mammary-specific member of the uteroglobin family, has been shown to be overexpressed in human breast cancer. Studies suggest that mammaglobin is a relatively mammary-specific and mammary-sensitive marker. Mammaglobin may be valuable in a panel with GCDPF-15 and estrogen receptor in evaluating tumors of unknown primary sites.

- Han JH, *et al.* Arch Pathol Lab Med. 2003 Oct; 127(10):1330-4.
- Noriega M, *et al.* Diagn Pathol. 2012 Jun; 7:73.
- Wang Z, *et al.* Int J Clin Exp Pathol. 2009; 2(4):384-9.
- Bhargava R, Beriwal S, Dabbs DJ. Am J Clin Pathol. 2007 Jan; 127(1):103-13.
- Chia SY, *et al.* Breast. 2010 Oct; 19(5):355-9.



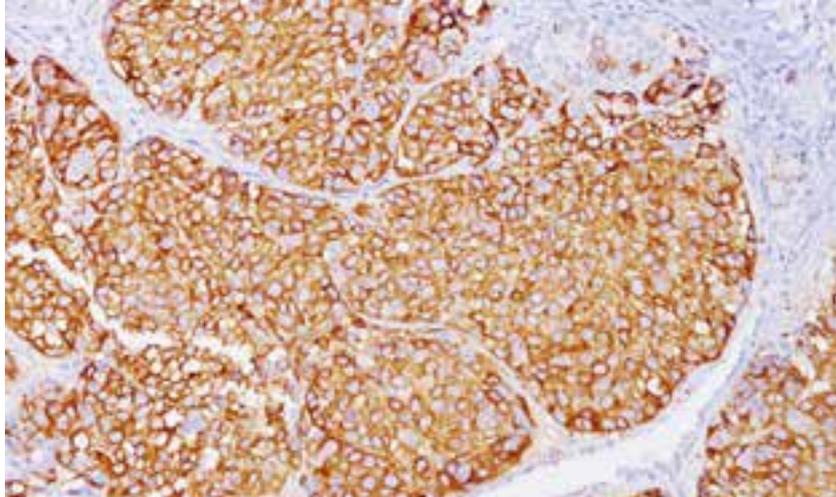
Melanoma stained with MART-1 Cocktail

MART-1 Cocktail

Clone	M2-7C10 + M2-9E3
Isotype	IgG2b + IgG2b
Reactivity	
Control	Melanoma
Cat. No.	CM 077 A, B, C; PM 077 AA, H; IP 077 G10

The MART-1/Melan-A recognizes a protein of 18 kDa, identified as MART-1 (Melanoma Antigen Recognized by T cells 1) or Melan-A. MART-1 recognizes a subcellular fraction found in melanosomes. The antibody labels melanomas and tumors showing melanocytic differentiation. It does not mark neoplasms of epithelial origin, lymphomas or mesenchymal tumors. MART-1 is a useful addition to melanoma panels which are specific to melanocytic lesions. MART-1 is coexpressed with HMB45 in the majority of melanomas, as well as solely expressed in certain cases. Studies have shown that MART-1 is more sensitive than HMB45 when labeling metastatic melanomas.

- Orchard GE. Br J Biomed Sci. 1998 Mar; 55(1):8-9.
- Blessing K, Sanders DS, Grant JJ. Histopathology. 1998 Feb; 32(2):139-46.
- Kageshita T, *et al.* J Immunother. 1997 Nov; 20(6):460-5.



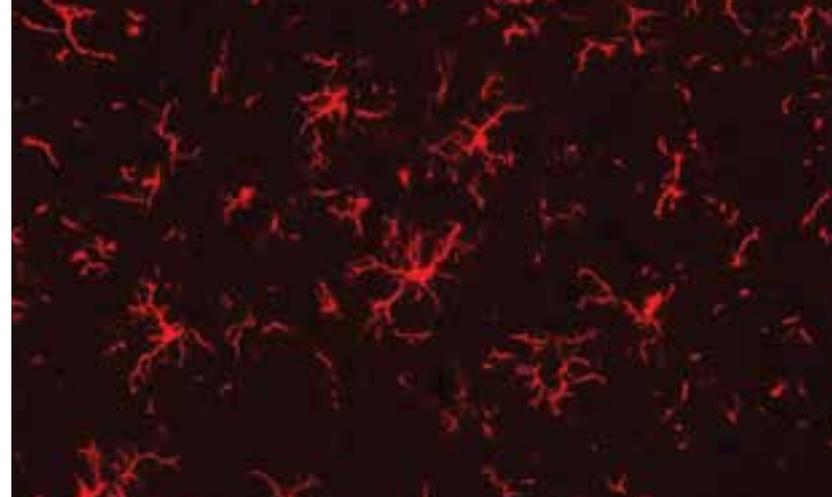
Melanoma stained with Melanoma Cocktail

Melanoma Cocktail

Clone	HMB45 + M2-7C10 / M2-9E3
Isotype	IgG2b + IgG2b / IgG2b
Reactivity	
Control	Melanoma
Cat. No.	CM 078 B, C; PM 078 AA; VP 078 G

Melanoma Cocktail is a combination of HMB45 and MART-1. HMB45 has been shown to react with cutaneous melanocytes, prenatal and infantile retinal pigment epithelium and melanoma cells, labeling the majority of melanomas. MART-1 has been shown to label melanomas and tumors showing melanocytic differentiation. Studies have also shown that MART-1 is more sensitive than HMB-45 when labeling metastatic melanomas. HMB45 and MART-1 are coexpressed in the majority of melanomas, as well as solely expressed in certain cases. Thus, a HMB45 and MART-1 cocktail has been reported to be a potentially sensitive first-order pan melanoma screener.

1. Blessing K, Sanders DS, Grant JJ. *Histopathology*. 1998 Feb; 32(2):139-46. 2. Jungbluth AA, *et al*. *Am J Surg Pathol*. 1998 May; 22(5):595-602. 3. Beatty MW, *et al*. *Cancer*. 1997 Feb; 81(1):57-63. 4. Bonetti F, *et al*. *Amer J Clin Pathol*. 1991 Apr; 95(4):454-9. 5. Ordonez NG, Ji XL, Hickey RC. *Amer J Clin Pathol*. 1988 Oct; 90(4):385-90. 6. Zubovits J, *et al*. *Hum Pathol*. 2004 Feb; 35(2):217-23.



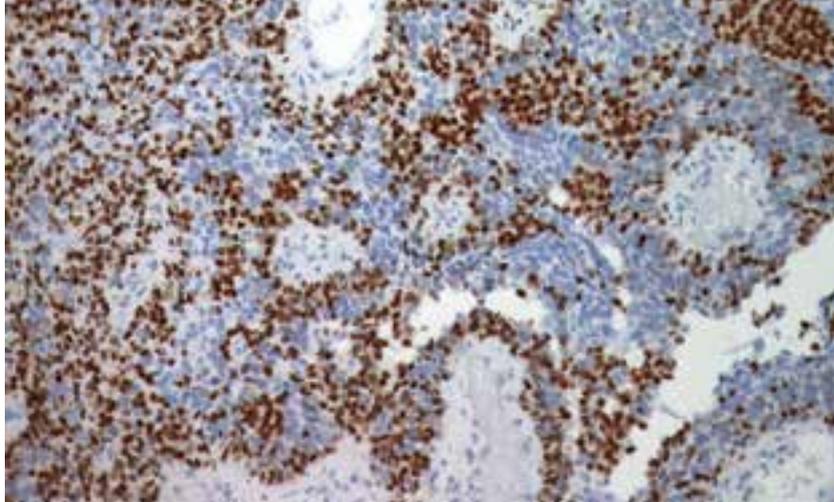
Rat spinal cord stained with Microglia (Iba1)

Microglia (Iba1)

Clone	N/A
Isotype	N/A
Reactivity	
Control	Normal brain
Cat. No.	CP 290 A, B

Studies have shown that Microglia, also known as Iba1 (ionizing calcium-binding adaptor molecule 1), is a novel protein that it is specifically expressed in macrophages/microglia and is upregulated during the activation of these cells. Studies have shown cross-reactivity in human, mouse and rat tissues. Glial Fibrillary Acidic Protein (GFAP) and Microglia antibodies have been used as markers for axonal damage, reactive astrocytes and activated microglia, respectively. The Iba1 polyclonal antibody does not cross-react with neurons or astrocytes.

1. Ito D, *et al*. *Brain Res Mol Brain Res*. 1998 Jun; 57(1):1-9. 2. Okere CO, Kaba H. *Brain Res*. 2000 Sep; 877(1):85-90. 3. Kolenda-Roberts HM, *et al*. *Toxicol Pathol*. 2013 Jan; 41(1):98-108.



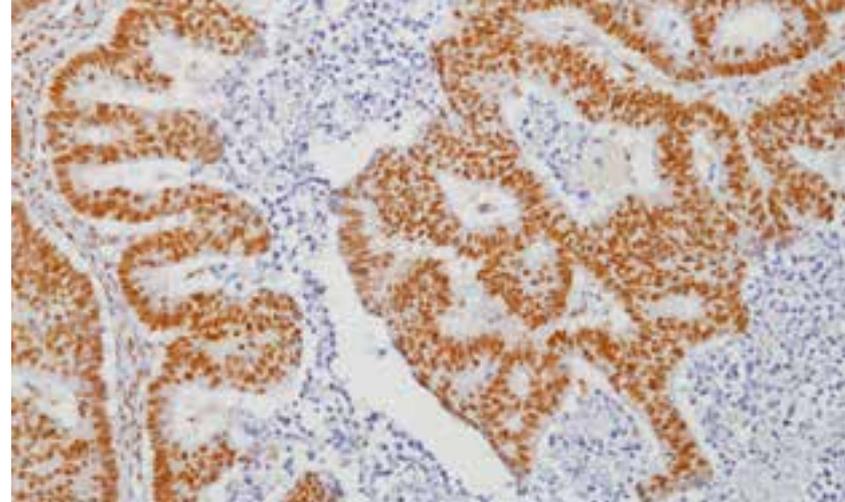
Metastatic melanoma stained with Microphthalmia Transcription Factor (MITF)

Microphthalmia Transcription Factor (MITF)

Clone	34CA5
Isotype	IgG1/kappa
Reactivity	
Control	Melanoma
Cat. No.	CM 423 BK; PM 423 AA

Microphthalmia Transcription Factor (MITF) is a nuclear melanocytic marker. Studies have shown it is a sensitive and specific marker for malignant melanoma, including some spindle-cell variants. MITF has been shown to have superior sensitivity and specificity to S100 and HMB45. MITF may be useful for identification of melanoma, melanocytic soft tissue tumors and the unusual group of tumors that show combined melanocytic and myloid differentiation, the perivascular epithelioid cell family of tumors (PEComas). Microphthalmia Transcription Factor may be a valuable addition to a melanoma marker panel with S-100, HMB45, Tyrosinase and MART-1.

1. Ohsie SJ, *et al.* J Cutan Pathol. 2008 May; 35(5):433-44. 2. Sheffield MV, *et al.* Am J Clin Pathol. 2002 Dec; 118(6):930-6. 3. Dorvault CC, *et al.* Cancer. 2001 Oct; 93(5):337-43. 4. O'Reilly FM, *et al.* J Am Acad Dermatol. 2001 Sep; 45(3):414-9. 5. Miettinen M, *et al.* Am J Surg Pathol. 2001 Feb; 25(2):205-11.



Colon cancer stained with MLH-1

MLH-1

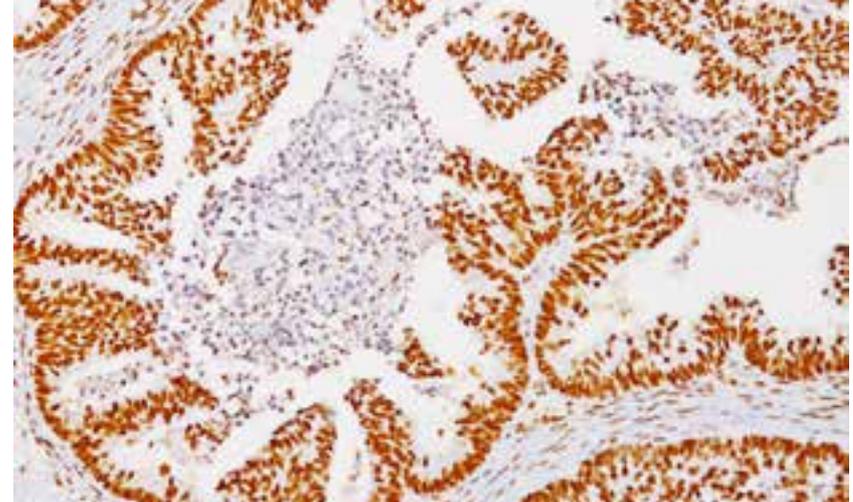
Clone	G168-15
Isotype	IgG1/kappa
Reactivity	  
Control	Colon cancer
Cat. No.	CM 220 AK, BK, CK; PM 220 AA

MLH-1 [G168-15] recognizes human and mouse MLH-1 (80-85 kDa). MLH-1 and MSH2 are involved in the DNA mismatch repair (MMR) process. Microsatellite instability (MSI) is an alteration of microsatellite repeats during DNA replication and is a hallmark of the inactivation of the MMR genes. These defects in MMR have been related to human carcinogenesis. Immunostaining for MLH-1 and MSH2 may be useful to aid in identifying the most probable gene responsible for the MSI. Studies have shown that the expression level of MLH-1 may be a survival indicator.

1. Machin P, *et al.* J Cutan Pathol. 2002 Aug; 29(7):415-20. 2. Shin KH, *et al.* Int J Oncol. 2002 Aug; 21(2):297-302. 3. Menon AG, *et al.* Lab Invest. 2002 Dec; 82(12):1725-33. 4. Peiro G, *et al.* Mod Pathol. 2001 Aug; 14(8):777-83. 5. Thibodeau SN, *et al.* Cancer Res. 1996 Nov; 56(21):4836-40. 6. Renkonen E, *et al.* J Clin Oncol. 2003 Oct; 21(19):3629-37.



Colon cancer stained with MOC-31



Colon cancer stained with MSH2

MOC-31

Clone	MOC-31
Isotype	IgG1
Reactivity	
Control	Colon or breast cancers
Cat. No.	CM 403 A, C; PM 403 AA

MOC-31, also known as Epithelial Specific Antigen/Ep-CAM, recognizes an epithelial-associated, glycoprotein located on the cell membrane surface and in the cytoplasm of virtually all epithelial cells. It is not present in most squamous epithelia, hepatocytes, renal proximal tubular cells, gastric parietal cells and myoepithelial cells. MOC-31 may be used in a panel of antibodies as a negative marker for mesothelioma, or lung adenocarcinoma. Studies have shown that MOC-31 is useful in differentiating tumors of unknown origin in liver cancers and distinguishing cholangiocarcinoma from hepatocellular carcinomas.

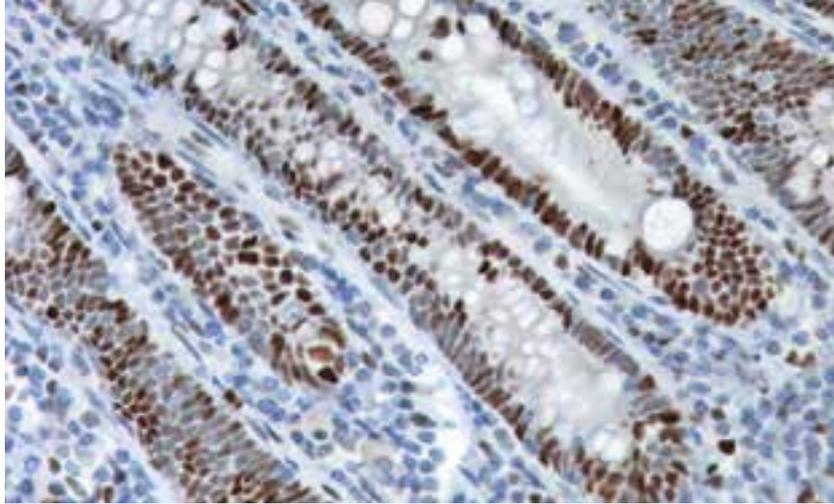
1. Morrison C, March W Jr, Frankel WL. *Mod Pathol.* 2002 Dec; 15(12):1279-87. 2. Proca DM, *et al.* *Appl Immunohistochem Mol Morphol.* 2000 Jun; 8(2):120-5. 3. Pai RK, West RB. *Appl Immunohistochem Mol Morphol.* 2009 May; 17(3):202-6. 4. Ordóñez NG. *Human Pathol.* 1998 Feb; 29(2): 166-9.

MSH2

Clone	FE11
Isotype	IgG1/kappa
Reactivity	  
Control	Colon cancer
Cat. No.	CM 219 AK, BK, CK; PM 219 AA

MSH2 is a 100 kDa nuclear antigen and encodes a protein of 934 amino acids. MLH-1 and MSH2 are involved in the DNA mismatch repair (MMR) process. Microsatellite instability (MSI) is an alteration of microsatellite repeats during DNA replication and is a hallmark of the inactivation of the MMR genes. These defects in MMR have been related to human carcinogenesis. Mutations in the MSH2 gene contribute to the development of sporadic colorectal carcinoma. MSI mutations are responsible for 50% of hereditary non-polyposis colorectal cancer. Immunostaining for MLH-1 and MSH2 may be useful to aid in identifying the most probable gene responsible for the MSI.

1. Machin P, *et al.* *J Cutan Pathol.* 2002 Aug; 29(7):415-20. 2. Shin KH, *et al.* *Int J Oncol.* 2002 Aug; 21(2):297-302. 3. Menon AG, *et al.* *Lab Invest.* 2002 Dec; 82(12):1725-33. 4. Peiro G, *et al.* *Mod Pathol.* 2001 Aug; 14(8):777-83. 5. Thibodeau SN, *et al.* *Cancer Res.* 1996 Nov; 56(21):4836-40. 6. Renkonen E, *et al.* *J Clin Oncol.* 2003 Oct; 21(19):3629-37.



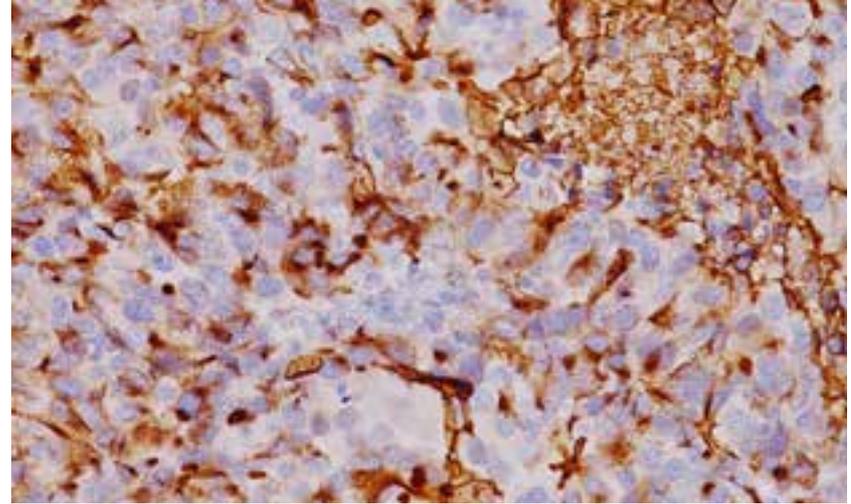
Colon cancer stained with MSH6

MSH6

Clone	BC/44
Isotype	IgG1
Reactivity	  
Control	Colon
Cat. No.	CM 265 AK, BK, CK; PM 265 AA

MSH6 is a heterodimer of MSH2 and binds to DNA containing G/T mismatches. MLH1 and MSH2 are involved in the DNA mismatch repair (MMR) process. Microsatellite instability (MSI) is an alteration of microsatellite repeats during DNA replication and is a hallmark of the inactivation of the MMR genes. These defects in MMR have been related to human carcinogenesis. Studies have shown the mutations in MSH-1, MSH2 and MSH6 genes contribute to the development of sporadic colorectal carcinoma. Immunostaining for MLH-1, MSH2 and MSH6 may be useful to aid in identifying the most probable gene responsible for the MSI.

1. Machin P, *et al.* J Cutan Pathol. 2002 Aug; 29(7):415-20. 2. Shin KH, *et al.* Int J Oncol. 2002 Aug; 21(2):297-302. 3. Menon AG, *et al.* Lab Invest. 2002 Dec; 82(12):1725-33. 4. Peiro G, *et al.* Mod Pathol. 2001 Aug; 14(8):777-83. 5. Thibodeau SN, *et al.* Cancer Res. 1996 Nov; 56(21):4836-40. 6. Renkonen E, *et al.* J Clin Oncol. 2003 Oct; 21(19):3629-37.



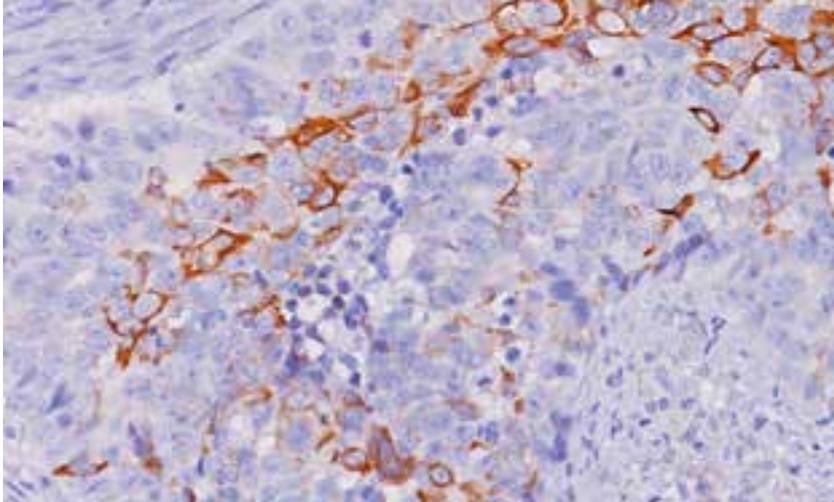
Breast cancer stained with MUC-1

MUC-1

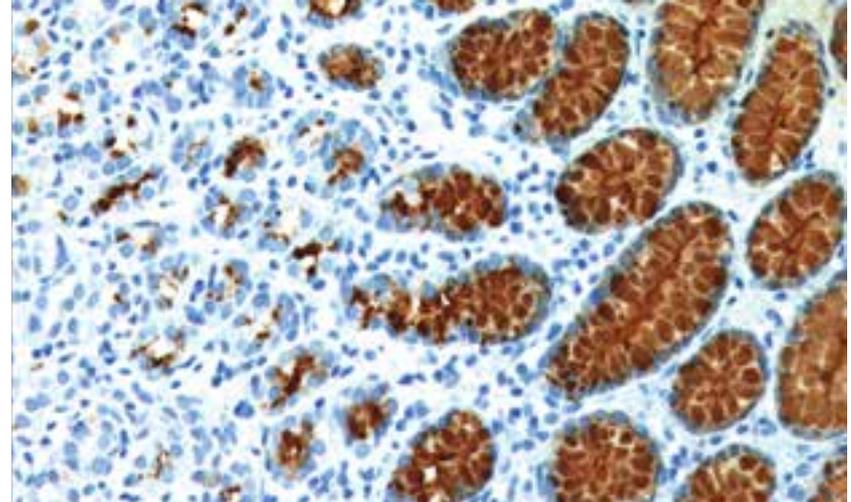
Clone	695
Isotype	IgG1
Reactivity	
Control	Lung or breast cancer
Cat. No.	CM 319 B; PM 319 AA

MUC-1 is a large cell surface mucin glycoprotein expressed by most glandular and ductal epithelial cells and some hematopoietic cell lineages. MUC-1 is secreted from tumor cells. MUC-1 stains cell membranes, but also the cytoplasm of most epithelial cell types. It is expressed abundantly in lactating mammary glands and over-expressed in >90% breast carcinomas and late-stage epithelial ovarian cancers. Aberrant cytoplasmic and membranous localization of MUC-1 expression has been associated with poor patient outcome. Adenocarcinomas are generally positive while squamous carcinomas and non-epithelial malignancies are negative.

1. Wang L, *et al.* Gynecol Oncol. 2007 Jun; 105(3):695-702. 2. Rakha EA, *et al.* Mod Pathol. 2005 Oct; 18(10):1295-304. 3. Nassar H, *et al.* Mod Pathol. 2004 Sep; 17(9):1045-50. 4. Tamura Y, *et al.* PLoS One. 2012; 7(11):e49251.



Breast cancer stained with MUC-4



Stomach stained with Mucin 5AC (Gastric Mucin)

MUC-4

Clone	8G-7
Isotype	IgG1/kappa
Reactivity	
Control	Lung or breast cancer
Cat. No.	CM 326 C

MUC-4 (also called sialomucin complex) is a membrane-bound mucin that has been suggested to be implicated in malignant progression. The MUC-4 gene is expressed in various normal epithelial tissues of endodermic origin and carcinomas. Studies have indicated that over-expression of MUC-4 results in suppression of both cell adhesion and immune killing of tumor cells. Other studies have shown that MUC-4 is a very specific (100%) and sensitive (91.4%) marker of lung adenocarcinomas and is negative for mesotheliomas. MUC-4 expression in invasive ductal carcinoma of the pancreas is an independent factor for poor prognosis and predicts outcome in the patient.

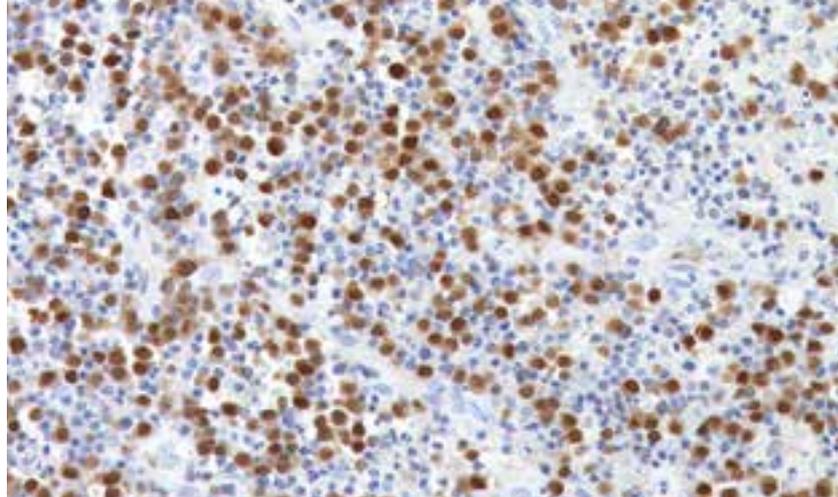
1. Tamura Y, *et al.* PLoS One. 2012; 7(11):e49251.
2. Tsutsumida H, *et al.* Lung Cancer. 2007 Feb; 55(2):195-203.
3. Chauhan SC, *et al.* Mod Pathol. 2006 Oct; 19(10):1386-94.
4. Llinares K, *et al.* Mod Pathol. 2004 Feb; 17(2):150-7.

Mucin 5AC (Gastric Mucin)

Clone	45M1
Isotype	IgM
Reactivity	
Control	Stomach
Cat. No.	CM 231 A

Mucins are high molecular weight glycoproteins with 80% carbohydrate content and the remaining 20% consisting of a protein core. Mucin 5AC (MUC5AC) is defined as a secretory-type mucin and is seen mainly in gastric foveolar cells. A study has suggested that MUC5AC expression is an early event in tumorigenesis. Another study indicates up-regulation of MUC5AC may be associated with carcinogenesis, malignant potential, progression and clinical behaviors in colorectal signet-ring cell carcinoma.

1. Imai Y, *et al.* World J Gastroenterol. 2013 Jul; 19(25):3957-68.
2. Terada T. Int J Clin Exp Pathol. 2013; 6(4):613-21.
3. Vernygorodskiy S. Exp Oncol. 2013 Jun; 35(2):114-7.



Multiple myeloma stained with MUM-1

MUM-1

Clone	BC5
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Isotype	IgG
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Reactivity	
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Control	Tonsil
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Cat. No.	CRM 352 A, B; PRM 352 AA
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Multiple myeloma oncogene-1 (MUM-1) is a lymphocyte-specific member of the interferon regulatory factor family of transcription factors encoded by the MUM-1 gene. MUM-1 is expressed in the nuclei and cytoplasm of plasma cells and a small fraction of B-cells located in the light zone of germinal centers. MUM-1 labels centrocytes and their progeny, plasma cells, activated T-cells and a wide spectrum of hematolymphoid neoplasms derived from these cells. MUM-1 has been reported to play an important role in mediating B-cell activation and differentiation. Therefore, this antibody may be used as a tool for the identification and the sub classification of lymphoid malignancies.

1. Gualco G, *et al.* Hum Pathol. 2009 Apr; 40(4):565-71. 2. Uranishi M, *et al.* Leukemia. 2005 Aug; 19(8):1471-8. 3. Carbone A, *et al.* Br J Haematol. 2002 May; 117(2):366-72. 4. Tsuboi K, *et al.* Leukemia. 2000 Mar; 14(3):449-56.



Smooth muscle stained with Muscle Specific Actin (MSA)

Muscle Specific Actin (MSA)

Clone	HHF35
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Isotype	IgG1/kappa
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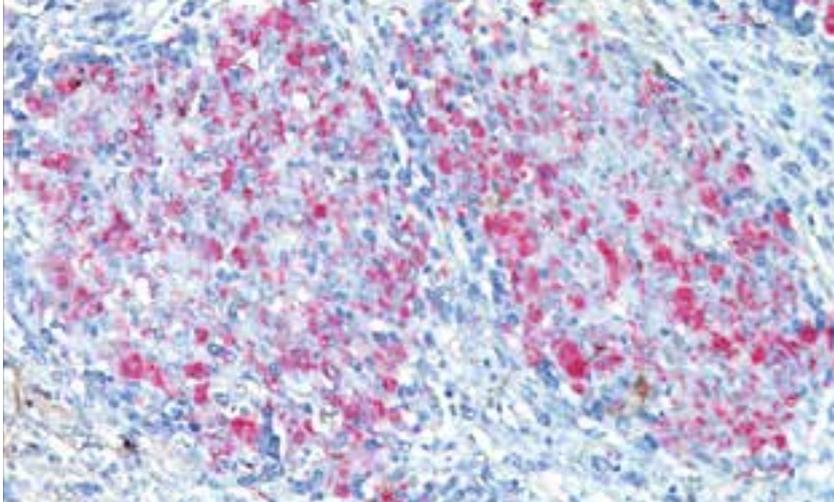
Reactivity	
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Control	Leiomyoma, leiomyosarcoma or muscle
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Cat. No.	CM 079 A, B; PM 079 AA; IP 079 G10
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The Muscle Specific Actin [HHF35] antibody recognizes muscle specific alpha and gamma actin isomers. It does not react with non-muscle actin. Studies have shown that it recognizes the alpha actin from cardiac, skeletal and smooth muscle sources. It does not react with beta or non-smooth muscle gamma actin isomers. The antibody labels leiomyoma, leiomyosarcoma, angiomyolipoma and rhabdomyosarcoma. It does not label melanoma or lymphoma. A study has suggested [HHF35] aids the differential diagnosis of Collagenous Spherulosis and Adenoid-Cystic Carcinoma of the breast.

1. Dal Vecchio A, *et al.* Case Rep Dent. 2013; 2013:943953. 2. Costa S, *et al.* BMJ Case Rep. 2012 Oct; 2012. 3. Cabibi D, *et al.* Pathol Res Pract. 2012 Jul; 208(7):405-9. 4. Matsuyama A, Hisaoka M, Hashimoto H. Hum Pathol. 2007 Apr; 38(4):645-51. 5. Dunder P, Povýsil C, Tvrđík D. Cesk Patol. 2006 Jul; 42(3):139-44. 6. Hisaoka M, *et al.* Appl Immunohistochem Mol Morphol. 2001 Dec; 9(4):302-8.

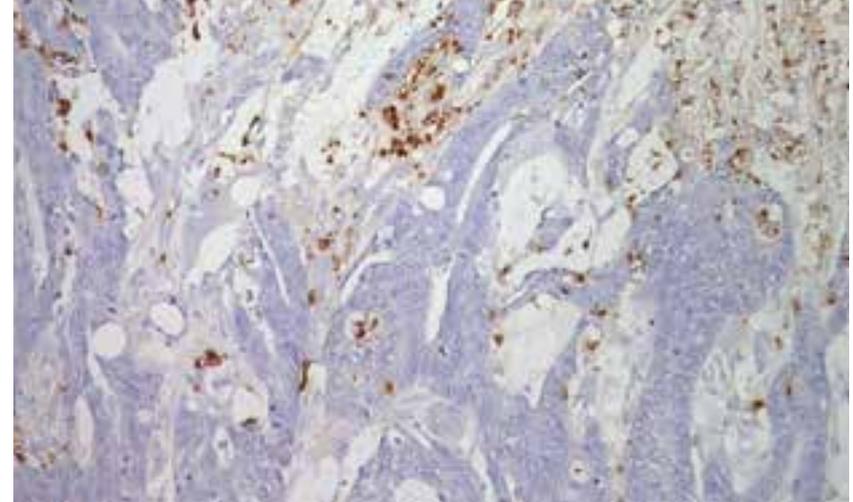
Lung tissue stained with *Mycobacterium tuberculosis* (TB)

Mycobacterium tuberculosis (TB) RUO FFPE

Clone	N/A
Isotype	N/A
Reactivity	
Control	<i>mycobacterium tuberculosis</i> infected tissue
Cat. No.	CP 140 A, C; PP 140 AA

The emergence of new strains of resistant *mycobacterium tuberculosis* has created interest in clinical diagnosis. Studies have shown immunohistochemical and immunofluorescent techniques to be superior to conventional special stains in the detection of *mycobacterium*. Demonstrating mycobacterial antigens is useful in establishing mycobacterial etiology and can be used as an alternative method to the conventional Ziehl-Neelsen method. Studies have shown that this antibody is reactive with other mycobacteria species, but is not reactive with *E. coli* K12, *Salmonella typhimurium*, *Pseudomonas aeruginosa*, *Streptococcus* (group B), *Candida albicans* and *Neisseria meningitides*.

1. Walzl G, et al. Nat Rev Immunol. 2011 May; 11(5):343-54. 2. Yeo WH, et al. Anal Bioanal Chem. 2009 Mar; 393(6-7):1593-600. 3. Sumi MG, et al. Clin Neuropathol. 2001 Jul-Aug; 20(4):176-80.



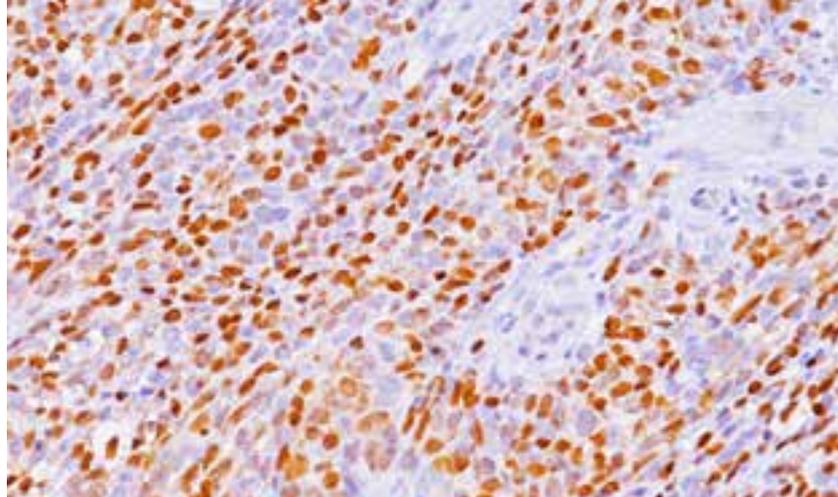
Colon cancer stained with Myeloperoxidase (P)

Myeloperoxidase (P) IVD FFPE

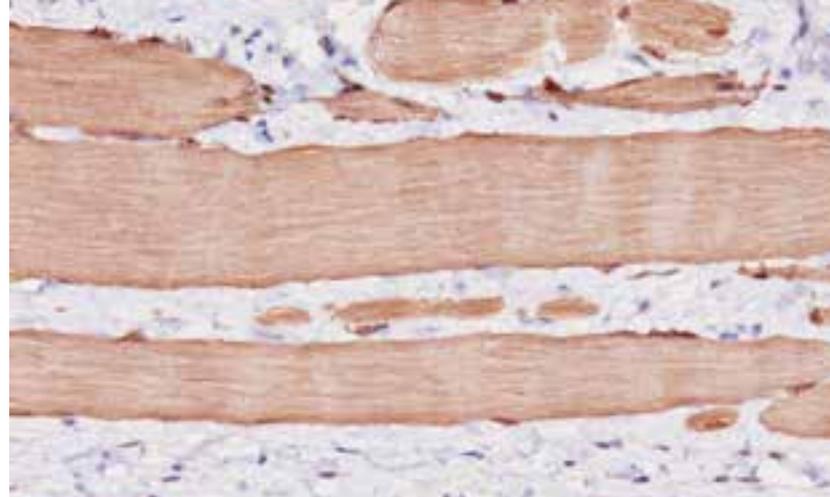
Clone	N/A
Isotype	N/A
Reactivity	
Control	Any tissue with inflammatory process, such as colon cancer or tonsil
Cat. No.	PP 023 AA

The Myeloperoxidase antibody has been shown to be a specific marker for myeloid cells and has been used in a panel for immunophenotyping acute lymphoblastic leukemia in bone marrow biopsies. Myeloperoxidase (MPO) is readily detected in myeloblasts and immature myeloid cells of acute myelogenous leukemia, progranulocytic leukemia, progranulocytic leukemia, monomyelocytic leukemia, erythroleukemia, myeloblastomas and other hematopoietic disorders. Aberrant MPO expression has been found to occur in non-myeloid cells in some disease states, including lung and ovarian cancers.

1. Castillo-Tong DC, et al. Tumour Biol. 2013 2. Zhou JZ. Acta Histochem. 2013. 3. Yang JP, et al. PLoS One. 2013 Jun; 8(6):e65778. 4. Chu H, et al. Mutagenesis. 2010 Jul; 25(4):389-95.



Rhabdomyosarcoma stained with Myogenin



Striated muscle stained with Myoglobin

Myogenin IVD FFPE

Clone MyG007 (also known as F5D)

Isotype IgG1, kappa

Reactivity    

Control Rhabdomyosarcoma

Cat. No. CM 115 A, C; PM 115 AA

Myogenin is a member of a family of myogenic genes that also includes MyoD. These genes encode a set of transcription factors that are essential for muscle development. Expression of myogenin is restricted to cells of skeletal muscle origin. This antibody has been shown to label human myogenin and label neonatal mouse, rat and cat tissues. Staining has also been found in myoblasts from human fetal limbs. No reactivity was found in adult skeletal muscle. Myogenin has been observed to stain the vast majority of rhabdomyosarcomas and Wilm's tumors. No activity was observed in Ewing's sarcoma/peripheral primitive neuroectodermal tumor, or in neuroblastomas.

1. Carroll SJ, Nodit L. Arch Pathol Lab Med. 2013 Aug; 137(8):1155-8. 2. Li DL, *et al.* Chin Med J (Engl). 2012 Jul; 125(14):2618-22. 3. Heerema-McKenney A, *et al.* Am J Surg Pathol. 2008 Oct; 32(10):1513-22. 4. Folpe AL, Patterson K, Gown AM. Mod Pathol. 1997 Sep; 10(9):895-900.

Myoglobin IVD FFPE

Clone N/A

Isotype N/A

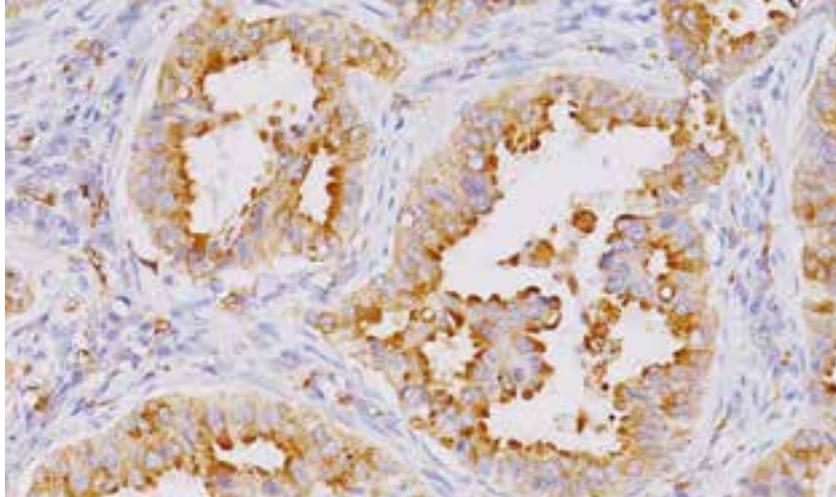
Reactivity 

Control Cardiac and skeletal muscle or rhabdomyosarcoma

Cat. No. PP 041 AA

Myoglobin is a cytoplasmic single-chain polypeptide of 153 amino acids. This antibody reacts with human myoglobin. Studies have shown that it stains slow-twitch oxidative muscle, skeletal muscle and cardiac muscle and type-1 fibers. Myoglobin does not stain smooth muscle cells. It is also useful for labeling rhabdomyosarcomas. Studies have indicated that myoglobin may play a role in fatty acid metabolism in solid tumors and may be a useful marker for luminal-type breast cancer.

1. Scatena C, *et al.* Am J Dermatopathol. 2012 Feb; 34(1):e1-6. 2. Ohta Y, *et al.* Diagn Cytopathol. 2011 Apr; 39(4):301-5. 3. Kristiansen G, *et al.* Br J Cancer. 2010 Jun; 102(12):1736-45. 4. Flonta SE, *et al.* Am J Pathol. 2009 Jul; 175(1):201-6.



Lung adenocarcinoma stained with Napsin A

Napsin A

Clone	TMU-Ad 02
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Isotype	IgG1
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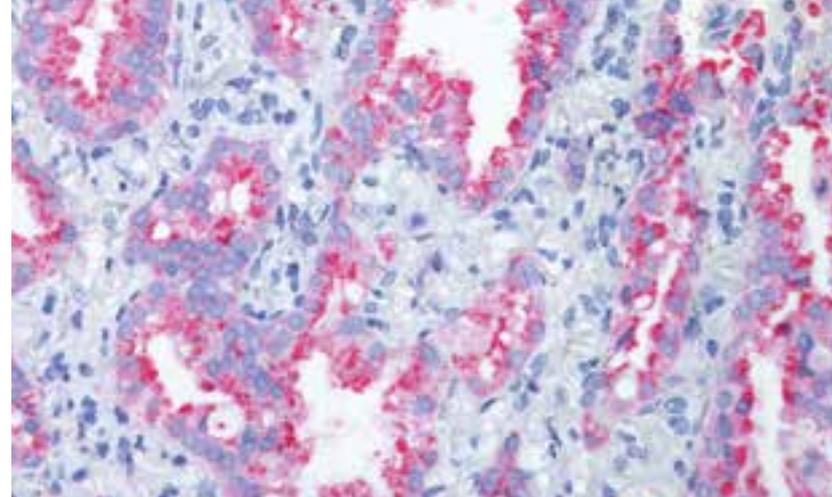
Reactivity	
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Control	Lung adenocarcinoma
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Cat. No.	CM 388 AK, CK; PM 388 AA
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Napsin A is expressed in type II pneumocytes and adenocarcinomas of the lung and kidney. Studies have shown Napsin A to be superior to TTF-1 in sensitivity (87% vs. 64%) with a higher specificity (94.3% vs. 76.1%) for primary non-small cell lung adenocarcinoma. Napsin A is positive in some renal cell carcinomas and shows low expression in other neoplastic tissues such as ovarian cancers with different staining patterns than primary lung cancer (granular cytoplasmic staining). In studies comparing Napsin A and SP-A, Napsin A stained more tumor cells and a higher percentage of lung adenocarcinomas.

1. Hirano T, *et al.* Lung Cancer. 2003 Aug; 41(2):155-62. 2. Ueno T, *et al.* Br J Cancer. 2003 Apr; 88(8):1229-333. 3. Suzuki A, *et al.* Pathol Res Pract. 2005; 201(8-9):579-86. 4. Dejmek A, *et al.* Diagn Cytopathol. 2007 Aug; 35(8):493-7. 5. Turner BM, *et al.* Arch Pathol Lab Med. 2012 Feb; 136(2):163-71. 6. Liu L, Cohen C, Siddiqui MT. Acta Cytol. 2012; 56(4):425-30. 7. Brown A, *et al.* Arch Pathol Lab Med. 2013 Sep; 137(9):1274-81.



Lung adenocarcinoma stained with Napsin A

Napsin A

Clone	N/A
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Isotype	N/A
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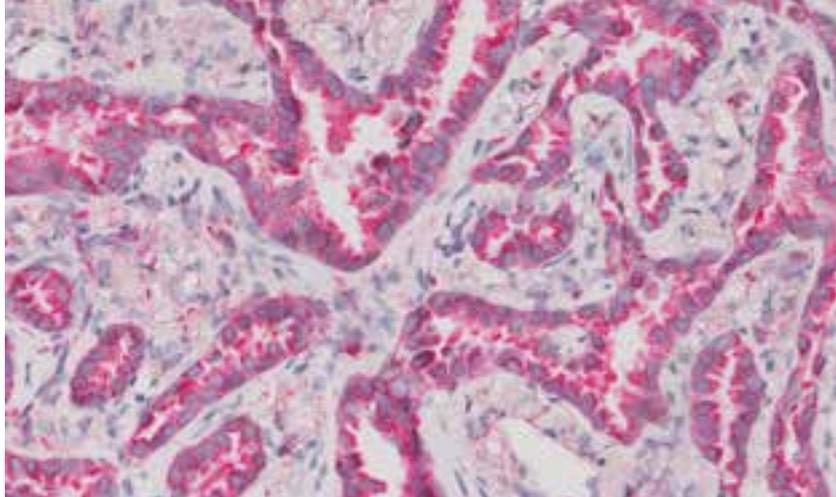
Reactivity	
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Control	Lung adenocarcinoma
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Cat. No.	PP 434 AA
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Napsin A is expressed in type II pneumocytes and adenocarcinomas of the lung and kidney. Studies have shown Napsin A to be superior to TTF-1 in sensitivity (87% vs. 64%) with a higher specificity (94.3% vs. 76.1%) for primary non-small cell lung adenocarcinoma. Napsin A is positive in some renal cell carcinomas and shows low expression in other neoplastic tissues such as ovarian cancers with different staining patterns than primary lung cancer (granular cytoplasmic staining). In studies comparing Napsin A and SP-A, Napsin A stained more tumor cells and a higher percentage of lung adenocarcinomas.

1. Hirano T, *et al.* Lung Cancer. 2003 Aug; 41(2):155-62. 2. Ueno T, *et al.* Br J Cancer. 2003 Apr; 88(8):1229-333. 3. Suzuki A, *et al.* Pathol Res Pract. 2005; 201(8-9):579-86. 4. Dejmek A, *et al.* Diagn Cytopathol. 2007 Aug; 35(8):493-7. 5. Turner BM, *et al.* Arch Pathol Lab Med. 2012 Feb; 136(2):163-71. 6. Liu L, Cohen C, Siddiqui MT. Acta Cytol. 2012; 56(4):425-30. 7. Brown A, *et al.* Arch Pathol Lab Med. 2013 Sep; 137(9):1274-81.



Lung adenocarcinoma stained with Napsin A (RM)

Napsin A (RM) IVD FFPE PREFERRED

Clone	BC15
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Isotype	IgG
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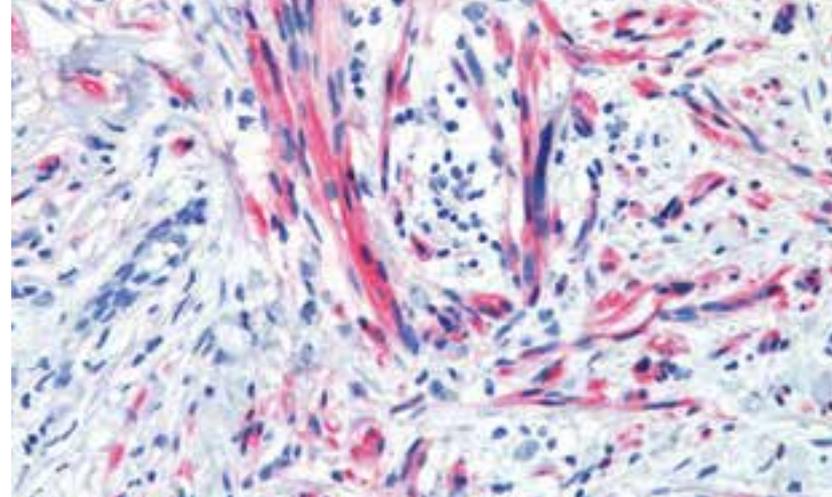
Reactivity	
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Control	Lung adenocarcinoma
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Cat. No.	ACI 3043 A, C; API 3043 AA
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Napsin A is a pepsin-like aspartic proteinase. It is expressed in type II pneumocytes and in adenocarcinomas of the lung and kidney. The use of a rabbit monoclonal antibody may be more sensitive than a mouse monoclonal while eliminating the lot-to-lot variability common in polyclonals. Studies have shown that Napsin A is both a more sensitive and specific marker than TTF-1 and is extremely specific for lung adenocarcinomas. Most studies show Napsin A is 100% specific for lung adenocarcinoma vs. lung squamous cell carcinoma.

1. Mukhopadhyay S, *et al.* Am J Surg Pathol. 2011 Jan; 35(1):15-25. 2. Bishop JA, *et al.* Hum Pathol. 2010 Jan; 41(1):20-5. Epub 2009 Sep 8. 3. Jagirdar J. Arch Pathol Lab Med. 2008 Mar; 132(3):384-96. 4. Dejmek A, *et al.* Diagn Cytopathol. 2007 Aug; 35(8):493-7. 5. Suzuki A, *et al.* Pathol Res Pract. 2005; 201(8-9):579-86. 6. Turner BM, *et al.* Arch Pathol Lab Med. 2012 Feb; 136(2):163-71.



Neurotrophic melanoma stained with Nerve Growth Factor Receptor (NGFR)

Nerve Growth Factor Receptor (NGFR) RUO FFPE

Clone	EP1039Y
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Isotype	IgG
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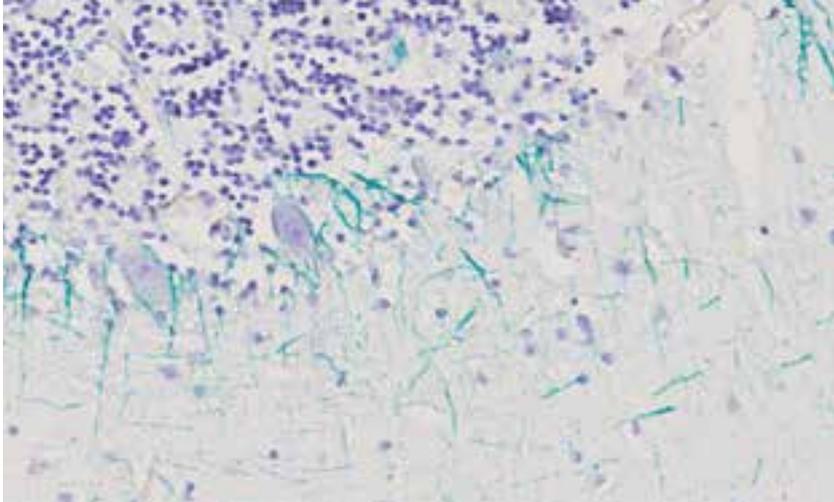
Reactivity	
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Control	Neuronal tissues or pancreas
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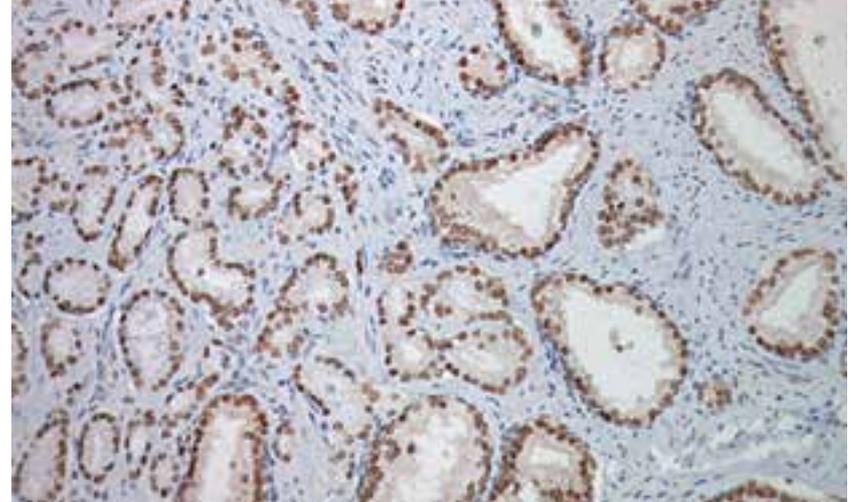
Cat. No.	CME 369 A
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Nerve Growth Factor Receptor (NGFR) antibody is a useful immunohistochemical marker, when used in conjunction with the S100 antibody, to aid in the diagnosis of desmoplastic and neurotrophic malignant melanomas, which are often negative for other melanocytic markers (HMB45, MART-1/Melan-A). Studies have shown that NGFR is expressed on Schwann cells, neuronal axons and perineural cells, as well as tumors derived from those cells, to include malignant peripheral nerve sheath tumors, Schwannomas, granular cell tumors and neurofibromas.

1. Kaplan DR, Miller FD. Curr Opin Cell Biol. 1997 Apr; 9(2):213-21. 2. Bunone G, *et al.* Oncogene. 1997 Mar; 14(12):1463-70. 3. Kanik AB, Yaar M, Bhawan J. J Cutan Pathol. 1996 Jun; 23(3):205-10. 4. Chesa PG, *et al.* J Histochem Cytochem. 1988 Apr; 36(4):383-9.



Normal cerebellum stained with Neurofilament



Prostate cancer stained with NKX3.1

Neurofilament

Clone	2F11
Isotype	IgG1 / kappa
Reactivity	
Control	Normal brain
Cat. No.	CM 066 A, B; PM 066 AA

Neurofilaments are the intermediate filaments of neurons. Studies have shown this antibody stains the 70 kDa and 200 kDa polypeptides of neurofilaments. It stains neurons in tissue sections of brain and other tissues. It does not cross-react with other intermediate filaments such as GFAP, keratin, vimentin and desmin and does not react with small cell lung carcinoma. Neurofilament [2F11] has been shown to react with neuroblastomas, gangliomas, pheochromocytomas, Merkel cell tumors and carcinoid tumors.

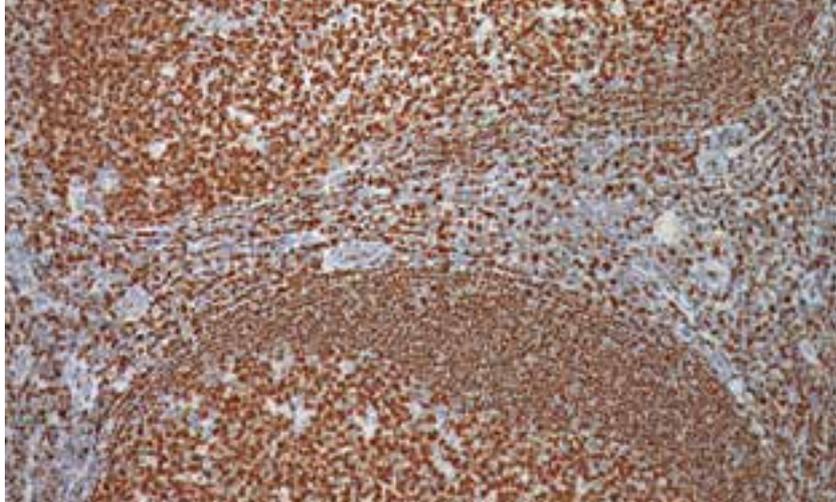
1. Diepholder HM, *et al.* Cancer. 1991 Nov; 15; 68(10):2192-201. 2. Franquemont DW, Mills SE, Lack EE. Am J Clin Pathol. 1994 Aug; 102(2):163-70. 3. Ramaekers FC. Appl Pathol. 1988; 6(1):35-48.

NKX3.1

Clone	N/A
Isotype	N/A
Reactivity	
Control	Normal prostate or prostate cancer
Cat. No.	CP 422 A, B; PP 422 AA

NKX3.1 is a protein encoded by the NKX3-1 gene and has been found to be positive in the vast majority of primary prostatic adenocarcinomas. A study has shown the sensitivity for identifying metastatic prostatic adenocarcinomas was 98.6% (68/69 cases positive) for NKX3.1 and 94.2% (65/69 cases positive) for prostate specific antigen (PSA). The specificity of NKX3.1 was 99.7% in various cancers and stains nuclei in both normal and prostate cancer. NKX3.1, used in combination with ERG monoclonal antibody [9FY], may represent a superior combination to aid in identifying tumors of prostatic origin.

1. Bowen C, Gelmann EP. Cancer Res. 2010 Apr; 70(8):3089-97. 2. Gurel B, *et al.* Am J Surg Pathol. 2010 Aug; 34(8):1097-105. 3. Chuang AY, *et al.* Am J Surg Pathol. 2007 Aug; 31(8):1246-55. 4. Abate-Shen C, Shen MM, Gelmann E. Differentiation. 2008 Jul; 76(6):717-27. 5. Shen MM, Abate-Shen C. Dev Dyn. 2003 Dec; 228(4):767-78.



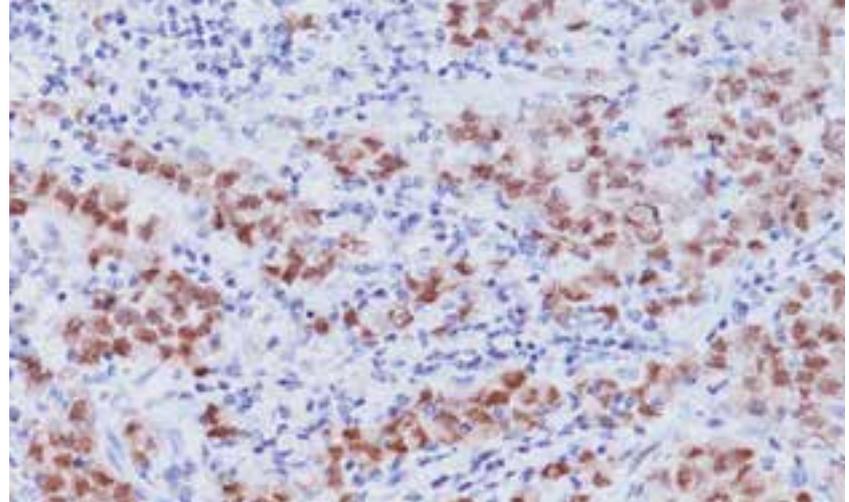
Tonsil stained with Oct-2

Oct-2   

Clone	Oct-207
Isotype	IgG2b
Reactivity	
Control	Tonsil or lymph node
Cat. No.	CM 417 A; PM 417 AA

Oct-2 is a transcription factor that binds to the immunoglobulin gene octamer sites regulating B-cell specific genes. Oct-2 protein expression is seen in germinal center B-cells and is greater in germinal center derived B-cell lymphomas. Studies suggest that morphologic and immunohistochemical studies can distinguish most cases of classic Hodgkin's lymphoma (CHL) from its imitators. However, the differences in expression of BSAP, OCT-2, BOB.1 and the pan B-cell markers CD20, CD22 and CD79a may aid in distinguishing cases of CHL from nodular lymphocyte predominant Hodgkin's lymphoma and diffuse large B-cell lymphomas.

1. Slack GW, *et al.* Leuk Lymphoma. 2009 Jun; 50(6):937-43. 2. Mccune RC, *et al.* Mod Pathol. 2006 Jul; 19(7):1010-8. 3. Garcia-Cosio M, *et al.* Mod Pathol. 2004 Dec; 17(12):1531-8. 4. Browne P, *et al.* Am J Clin Pathol. 2003 Nov; 120(5):767-77. 5. Re D, *et al.* Cancer Res. 2001 Mar; 61(5):2080-4. 6. Cho RJ, *et al.* J Cutan Pathol. 2012 Jun; 39(6):651-8.



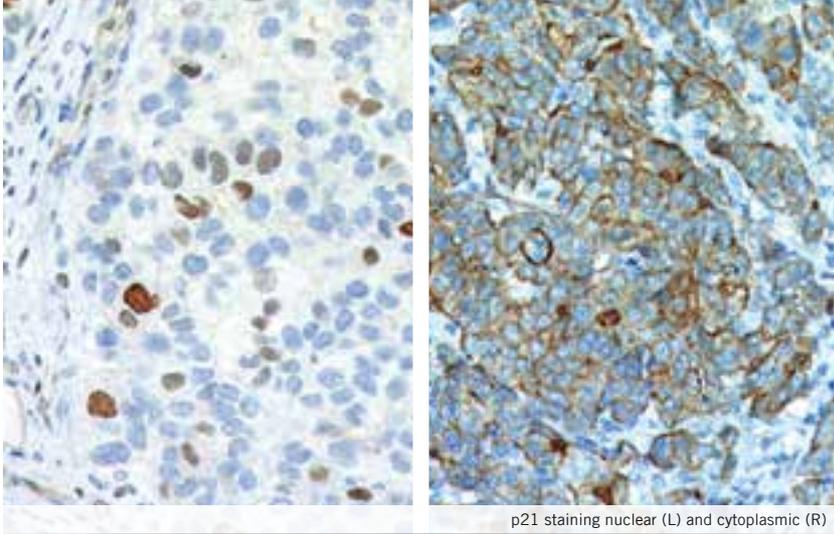
Seminoma stained with Oct-3/4

Oct-3/4   

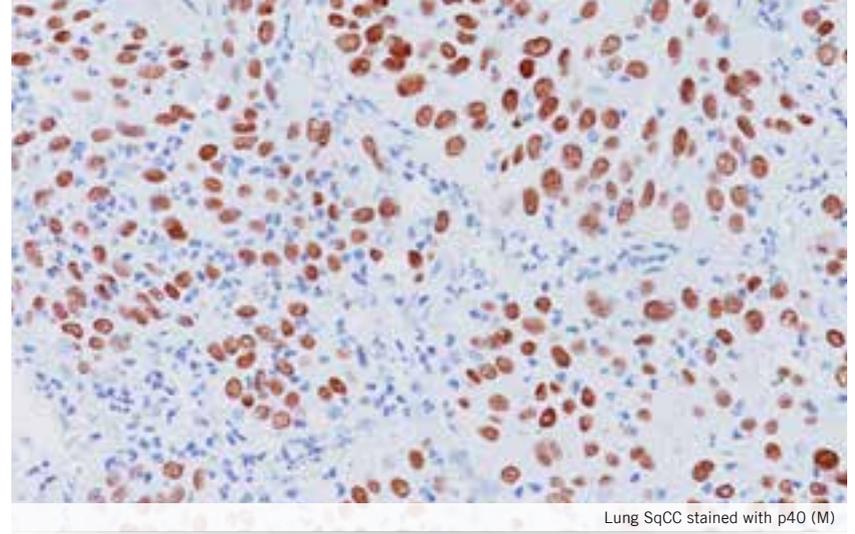
Clone	SEMGC
Isotype	IgG2b
Reactivity	
Control	Seminoma
Cat. No.	PM 313 AA

Oct-3/4 [SEMGC] is a mouse monoclonal antibody that has been reported as a superb nuclear marker of classical seminoma and embryonal carcinoma. It has excellent sensitivity and specificity for these two tumors and can be effectively used as an aid to screen for these neoplasms when dealing with a metastatic tumor of unknown origin. Studies have shown Oct-3/4 to have a high sensitivity and specificity for carcinoma *in situ* (CIS) gonadoblastoma and is also useful for the detection of CIS cells in semen.

1. de Jong J, *et al.* J Pathol. 2005 Jun; 206(2):242-9. 2. Jones TD, *et al.* Clin Cancer Res. 2004 Dec; 10(24):8544-7. 3. Hattab EM, *et al.* Am J Surg Pathol. 2005 Mar; 29(3):368-71. 4. Looijenga LH, *et al.* Cancer Res. 2003 May; 63(9):2244-50. 5. Cheng L, *et al.* J Pathol. 2007 Sep; 213(1):65-71.



p21 staining nuclear (L) and cytoplasmic (R)



Lung SqCC stained with p40 (M)

p21 IVD FFPE

Clone	WA-1
Isotype	IgG1
Reactivity	
Control	Colon cancer
Cat. No.	CM 354 CK

The p21 encoded protein binds to and inhibits the activity of Cyclin-CDK2 or -CDK4 complexes and functions as a regulator of cell cycle progression at G1. The expression of this gene is controlled by the tumor suppressor p53, through which this protein mediates the p53-dependent cell cycle arrest in response to a variety of stress stimuli. Studies have shown that the re-localization of 21WAF1/CIP1 from the nucleus to the cytoplasm, results in a loss of those tumor suppressor functions. This loss has shown to be a negative prognostic factor in breast cancers, renal carcinoma, gastric and colon cancer.

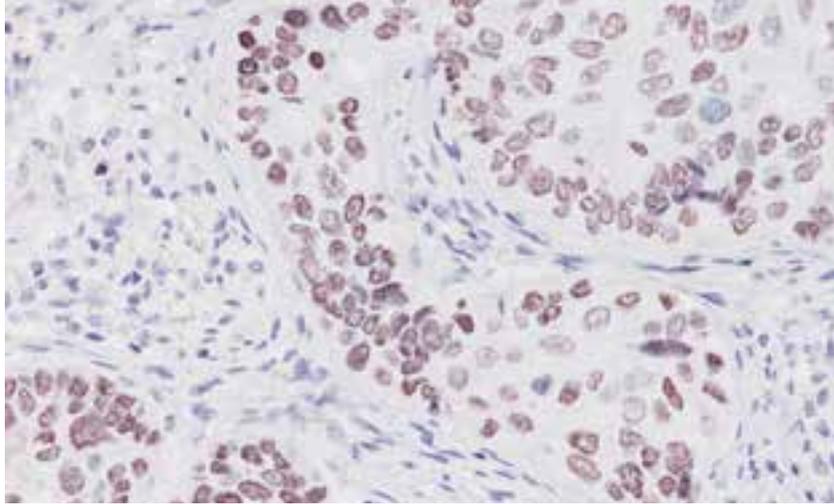
1. Winters ZE, *et al.* Eur J Cancer. 2001 Dec; 37(18):2405-12. 2. Zhou BP, *et al.* Nat Cell Biol. 2001 Mar; 3(3):245-52. 3. Cmielova J, Rezacova M. J Cell Biochem. 2011 Dec; 112(12):3502-6.

p40 (M) IVD FFPE PREFERRED

Clone	BC28
Isotype	IgG1
Reactivity	
Control	Lung squamous cell carcinoma
Cat. No.	ACI 3066 A, C; API 3066 AA; AVI 3066 KG

The mouse monoclonal antibody p40 [BC28] recognizes an epitope unique to the p40 protein and may have applications in cases where p63 has traditionally been used. p63 [4A4] recognizes both the p63 and p40 proteins. As a result, p63 suffers from specificity limitations due to reactivity in a subset of lung adenocarcinomas (ADC). In contrast, p40 is selectively expressed in lung Squamous cell carcinoma (SqCC), offering an opportunity for improved specificity. p40 (M) [BC28] recognizes an epitope unique to p40, which may result in diminished reactivity in lung ADC and increased specificity. Studies have supported routine use of p40 as an alternative for p63. In contrast to the rabbit polyclonal p40, p40 [BC28] does not stain macrophages.

1. Bishop JA, *et al.* Mod Pathol. 2012 Mar; 25(3):405-15. 2. Hibi K, *et al.* Proc Natl Acad Sci U S A. 2000 Mar; 97(10):5462-7. 3. Pelosi G, *et al.* J Thorac Oncol. 2012 Feb; 7(2):281-90. 4. Brown AF, *et al.* Arch Pathol Lab Med. 2013 Sep; 137(9):1274-81. 5. Sailer V, *et al.* Histopathology. 2013 Jul; 63(1):50-6.



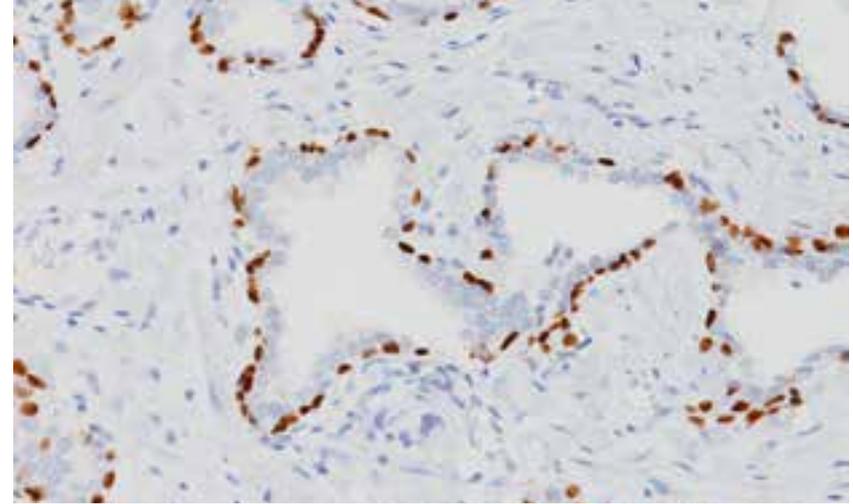
Lung SqCC stained with p40 (P)

p40 (P)   

Clone	N/A
Isotype	IgG
Reactivity	
Control	Lung squamous cell carcinoma
Cat. No.	ACI 3030 A, B; API 3030 AA

p40 recognizes the shortest variant of human p53 and may be a valuable marker in cases where p63 has traditionally been used. At present, p63 is the frequently used marker for lung squamous cell carcinoma (SqCC) and is extremely sensitive; however it suffers from specificity limitations due to its reactivity in a subset of lung adenocarcinomas (ADC) p40 may prove to be an important antibody in the differential diagnosis of lung ADC vs. lung SqCC. In a study, p40 staining was equivalent to p63 in sensitivity for SqCC, but exhibited markedly superior specificity vs. p63, minimizing misinterpreting a p63-positive adenocarcinoma as squamous cell carcinoma.

1. Bishop JA, *et al.* Mod Pathol. 2012 Mar; 25(3):405-15. 2. Pelosi G, *et al.* J Thorac Oncol. 2012 Feb; 7(2):281-90. 3. Hibi K, *et al.* Proc Natl Acad Sci USA. 2000 May; 97(10):5462-7. 4. Brown AF, *et al.* Arch Pathol Lab Med. 2013 Sep; 137(9):1274-81. 5. Sailer V, *et al.* Histopathology. 2013 Jul; 63(1):50-6.



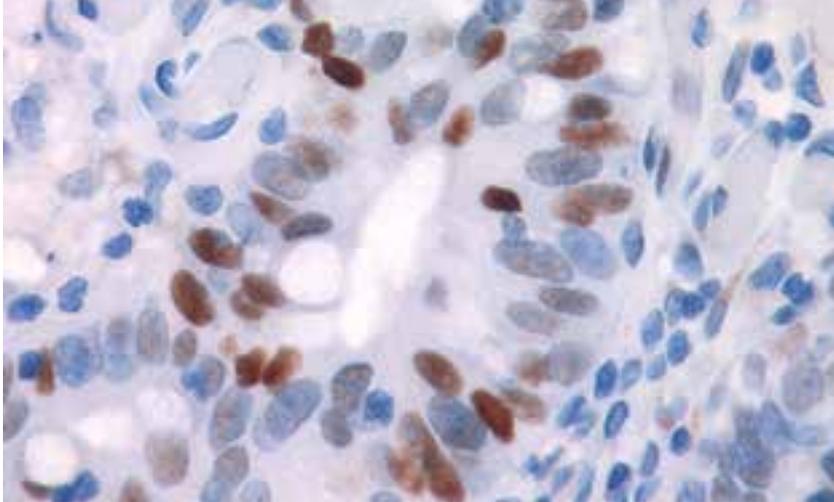
Prostate tissue stained with p40 (M), 3X

p40 (M), 3X (Prostate)   

Clone	BC28
Isotype	IgG1
Reactivity	
Control	Normal prostate or prostate cancer containing normal glands
Cat. No.	API 3079 G3 

The mouse monoclonal antibody p40 [BC28] recognizes an epitope unique to the p40 protein and may have applications in cases where p63 has traditionally been used. To date, p63 [4A4] has been a frequently used marker of basal epithelium in normal prostate, with expression not typically observed in prostatic adenocarcinoma. A study has shown p40 staining of normal prostate glands and prostatic intraepithelial neoplasia (PIN) equivalent to p63, with no p40 staining observed in prostate cancer. p63 [4A4] recognizes both the p63 and p40 proteins. In contrast to the rabbit polyclonal p40 antibody, p40 [BC28] does not stain macrophages.

1. Sailer V, *et al.* Histopathology. 2013 Jul; 63(1):50-6. 2. Bishop JA, *et al.* Mod Pathol. 2012 Mar; 25(3):405-15. 3. Signoretti S, *et al.* Am J Pathol. 2000 Dec; 157(6):1769-75. 4. Pelosi G, *et al.* J Thorac Oncol. 2012 Feb; 7(2):281-90. 5. Brown AF, *et al.* Arch Pathol Lab Med. 2013 Sep; 137(9):1274-81.



Colon cancer stained with p53

p53   

Clone Y5

Isotype IgG

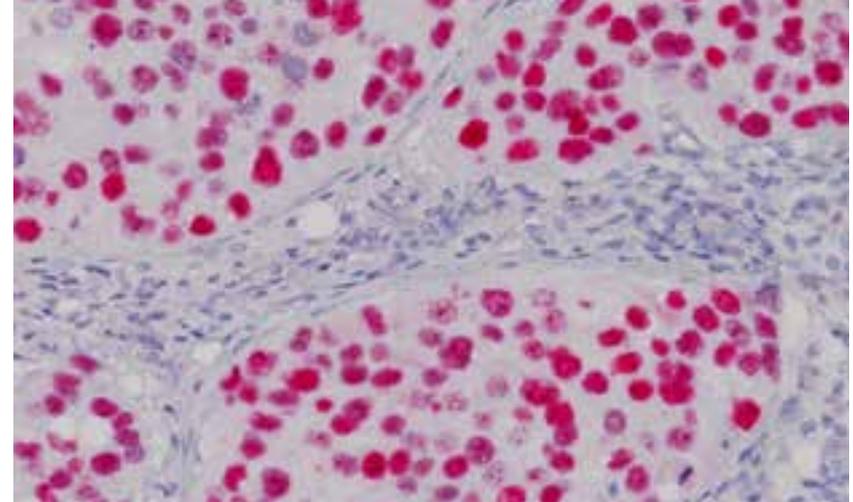
Reactivity  

Control Breast or colon carcinomas

Cat. No. CME 298 AK, BK; PME 298 AA; IP 298 G10

p53 has been observed to act as both as a tumor-suppressor and transcription factor. p53 activation by DNA damage or other stress signals is reported to trigger DNA repair, cell-cycle arrest or apoptosis. The nuclear p53 gene is located on chromosome 17p, a frequent site of allele loss in many tumors (60%) including breast, colon and lung. Studies have shown this high affinity p53 rabbit monoclonal is very specific and is superior to other p53 mouse monoclonal antibodies. This antibody recognizes both wild-type and mutant p53.

1. Harris CC. *Science*. 1993 Dec; 262(5142):1980-1. 2. Alexiev BA, *et al.* *Gen Diagn Pathol*. 1997 Jun; 142(5-6):271-9. 3. Moriki T, *et al.* *Pathol Res Pract*. 1995 Nov; 191(11):1122-32. 4. Nakopoulou LL, *et al.* *J Pathol*. 1996 May; 179(1):31-8.



Bladder cancer stained with p53 (RM), 2X

p53 (RM), 2X   

Clone Y5

Isotype IgG

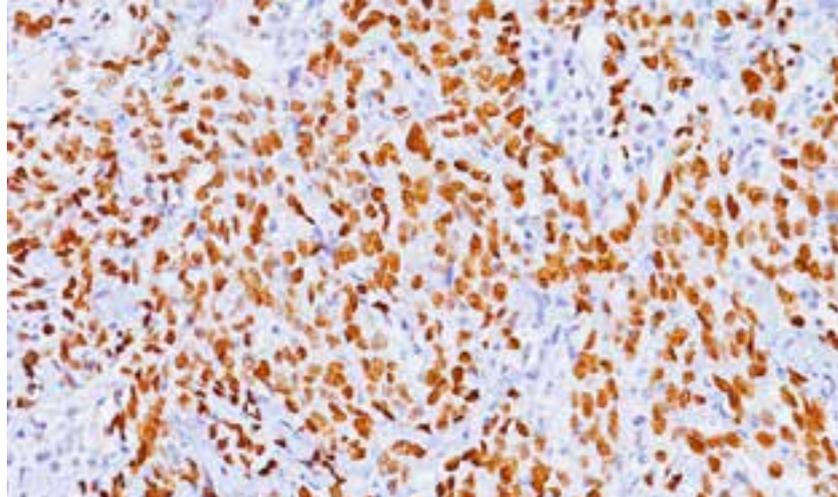
Reactivity 

Control p53 positive bladder cancer

Cat. No. API 3090 AA 

The tumor suppressor p53 plays a key role in regulating urothelial growth and genomic stability. Increased expression of p53 has been observed in high-grade urothelial dysplasia compared to low-grade dysplasia. Studies have also shown that p53 and CK5 together may be useful when evaluating the depth of urothelial carcinoma invasion in the prostate. p53, in combination with CK20 and CD44, may be a valuable tool in the differentiation of urothelial reactive atypia from carcinoma *in situ* (CIS) of the bladder. In normal urothelium, p53 staining is absent to focal. In urothelial reactive atypia, p53 expression remains as observed in normal urothelium. In CIS, diffuse staining for p53 is seen throughout the urothelium.

1. Aron M, *et al.* *Am J Surg Pathol*. 2013 Dec; 37(12):1815-23. 2. Gilbert CM, Parwani A. *J Pathol Inform*. 2010 Oct; 1:23. 3. Yildiz IZ, *et al.* *Diagn Pathol*. 2009 Oct; 4:35. 4. Nese N, *et al.* *J Natl Compr Canc Netw*. 2009 Jan; 7(1):48-57.



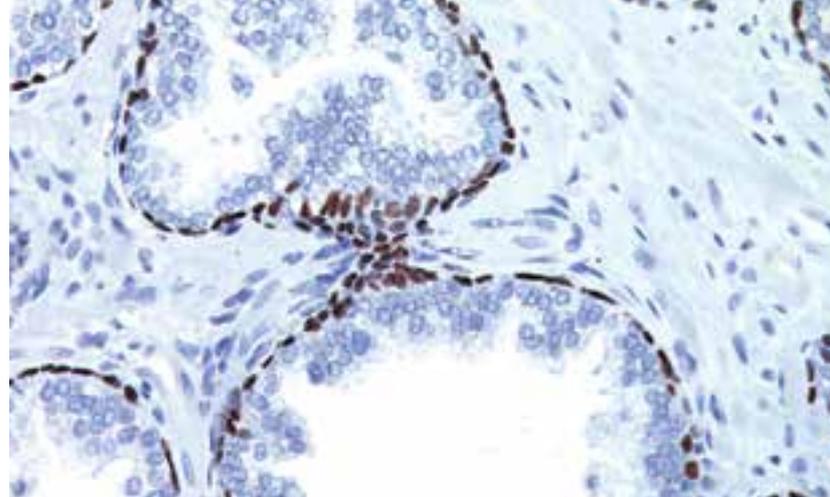
Colon cancer stained with p53 Tumor Suppressor Protein (M)

p53 Tumor Suppressor Protein (M) IVD FFPE PREFERRED

Clone	DO-7
Isotype	IgG2b/kappa
Reactivity	
Control	Breast or colon carcinomas
Cat. No.	CM 042 C; PM 042 AA

p53 has been observed to act as both as a tumor-suppressor and transcription factor. p53 activation by DNA damage or other stress signals is reported to trigger DNA repair, cell-cycle arrest, or apoptosis. The nuclear p53 gene is located on chromosome 17p, a frequent site of allele loss in many tumors (60%) including breast, colon and lung. This mouse monoclonal has also been shown to have prognostic utility for distal colorectal cancer and nasopharyngeal carcinoma by the assessment of mutation and overexpression status.

1. Wu XR. *Nat Rev Cancer*. 2005 Sep;5(9):713-25. 2. Sun W, Zhang PL, Herrera GA. *Appl Immunohistochem Mol Morphol*. 2002 Dec; 10(4):327-31. 3. Fichtenbaum EJ, Marsh WL Jr, Zynger DL. *Am J Clin Pathol*. 2012 Aug; 138(2):190-7. 4. McKenney JK, *et al*. *Am J Surg Pathol*. 2001 Aug; 25(8):1074-8.



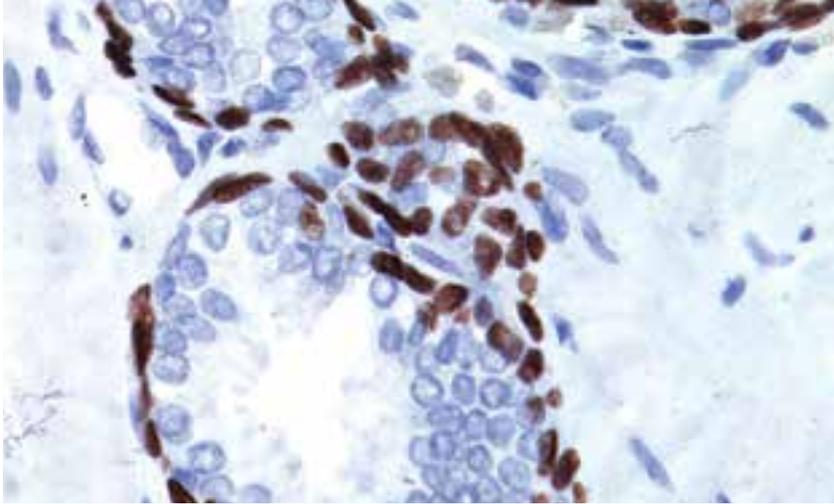
Prostate tissue stained with p63

p63 IVD FFPE

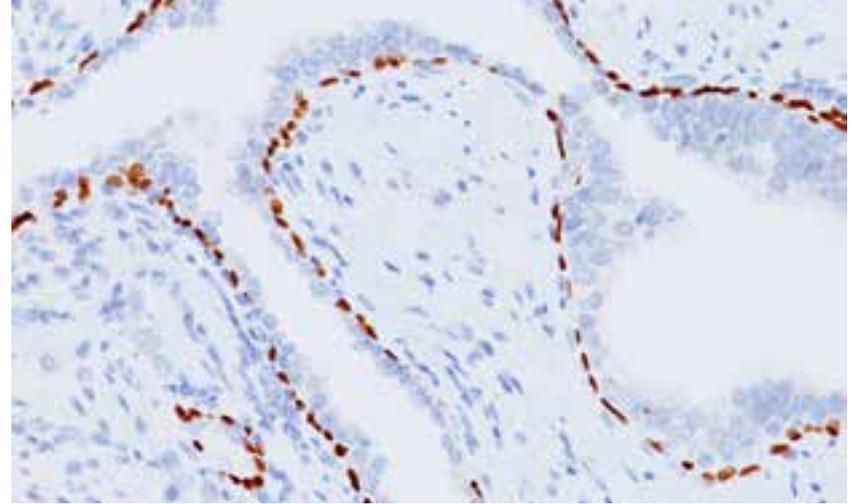
Clone	4A4
Isotype	IgG2a/kappa
Reactivity	  
Control	Normal prostate
Cat. No.	CM 163 A, B, C, H; PM 163 AA, H; IP 163 G10; VP 163 G, G25

p53 homologue p63 encodes for different isotypes able to either transactivate p53 reporter genes (TAp63) or act as p53-dominant-negatives. p63 is detected in prostatic basal cells in normal prostate; however, it is negative in malignant tumors of the prostate gland. Thus p63 may be a valuable tool in the differential diagnosis of benign and malignant tumors of prostate gland and can be used in a panel of antibodies such as HMW CK [34βE12], PSA and PSAP. p63 may play a significant role in prostate development by maintaining a prostate stem cell population. Striated muscle staining may be observed with p63.

1. Signoretti S, *et al*. *Am J Pathol*. 2000 Dec; 157(6):1769-75. 2. Yang A, *et al*. *Mol Cell*. 1998 Sept; 2(3):305-16. 3. Tacha D, *et al*. *Appl Immunohistochem Mol Morphol*. 2012 May; 20(3):201-7. 4. Pignon JC, *et al*. *Proc Natl Acad Sci U S A*. 2013 May; 110(20):8105-10.



Prostate cancer stained with p63, 2X



Prostate tissue stained with p63, 3X

p63, 2X

Clone	4A4
Isotype	IgG2a/kappa
Reactivity	  
Control	Normal prostate
Cat. No.	PM 366 AAK, HK 

p53 homologue p63 encodes for different isoforms able to either transactivate p53 reporter genes (TAp63) or act as p53-dominant-negatives. Studies have shown that p63 detection by IHC has clinical utility in the evaluation of lung, prostate, cervical and other types of cancer in formalin fixed, paraffin-embedded (FFPE) human tissues. A cocktail of p63 and TRIM29 can also be utilized for lung SqCC and studies have shown that when p63 and/or TRIM29 is expressed in lung SqCC, a 95.4% sensitivity and 100% specificity was achieved, if Napsin A and TTF-1 were both negative in the same case.

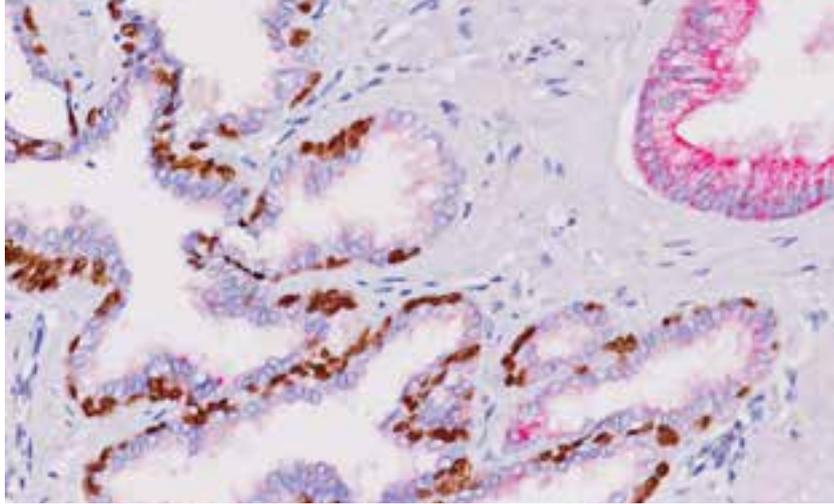
1. Signoretti S, *et al.* Am J Pathol. 2000 Dec; 157(6):1769-75. 2. Yang A, *et al.* Mol Cell. 1998 Sept; 2(3):305-16. 3. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May; 20(3):201-7. 4. Pignon JC, *et al.* Proc Natl Acad Sci U S A. 2013 May; 110(20):8105-10.

p63, 3X (Prostate)

Clone	4A4
Isotype	IgG2a/kappa
Reactivity	  
Control	Normal prostate
Cat. No.	API 3057 G3, H 

p63, a homolog of the tumor suppressor p53, has been identified in proliferating basal cells in the epithelial layers of a variety of tissues, including epidermis, cervix, urothelium and prostate. p63 was detected in nuclei of the basal epithelium in normal prostate glands; and prostatic intraepithelial neoplasia (PIN); however, it was not expressed in malignant tumors of the prostate.

1. Yang A, *et al.* Mol Cell. 1998 Sep; 2(3):305-16. 2. Signoretti S, *et al.* Am J Pathol. 2000 Dec; 157(6):1769-75. 3. Tacha DE, *et al.* Appl Immunohistochem Mol Morphol. 2004 Mar; 12(1):75-8. 4. Paner GP, Luthringer DJ, Amin MB. Arch Pathol Lab Med. 2008 Sep; 132(9):1388-96.



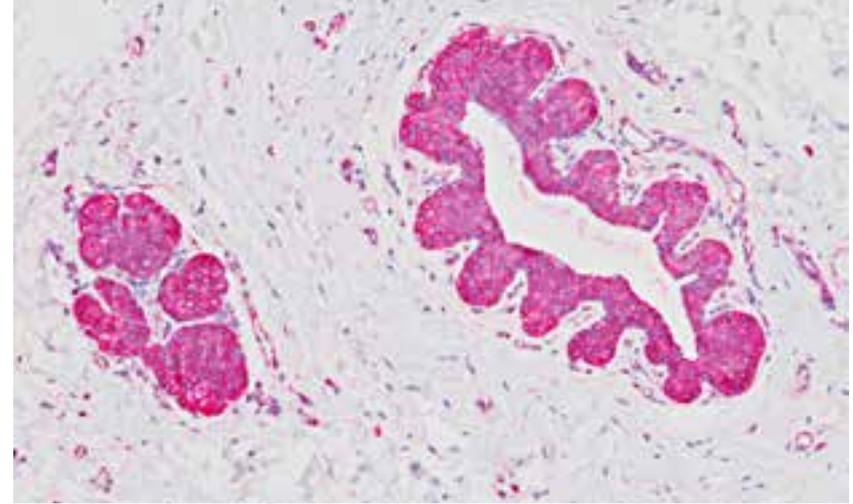
Prostate cancer stained with p63 + P504S

p63 + P504S RUO FFPE

Clone	4A4, N/A
Isotype	IgG2a/kappa + IgG
Reactivity	
Control	Normal prostate or prostate adenocarcinoma
Cat. No.	PPM 201 AA, H; VP 201 G, G25

P504S is an enzyme in the β -oxidation of branched-chain fatty acids. Expression of P504S protein is found in prostatic adenocarcinoma but not in benign prostatic tissue. p63, a homolog of the tumor suppressor p53, encodes for different isoforms able to either transactivate p53 reporter genes (TAp63) or act as p53-dominant-negatives. Expression of p63 is detected in prostate basal epithelial nuclei in normal prostate; however, is negative in malignant tumors of the prostate gland. The combination of p63 + P504S may be an extremely useful aid in diagnosing prostatic intraepithelial neoplasia (PIN), especially in difficult and limited tissues cases.

1. Grisanzio C, Signoretti S. *J Cell Biochem.* 2008 Apr 1; 103(5):1354-68. 2. Herawi M, *et al.* *Am J Surg Pathol.* 2005 Jul; 29(7):874-80. 3. Browne TJ, *et al.* *Hum Pathol.* 2004 Dec; 35(12):1462-8. 4. Wu CL, *et al.* *Hum Pathol.* 2004 Aug; 35(8):1008-13.

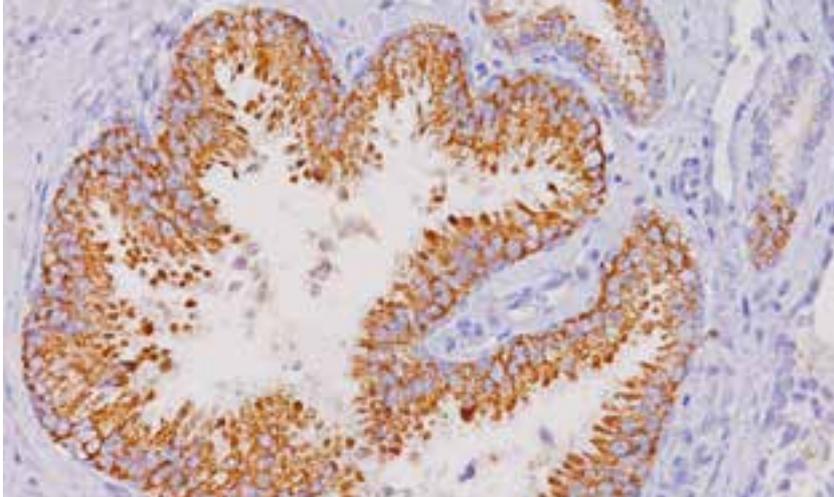
Lobular breast carcinoma *in situ* stained with p120 Catenin

p120 Catenin IVD FFPE

Clone	98/pp120
Isotype	IgG1
Reactivity	
Control	Breast cancer
Cat. No.	ACI 3008 A, B; API 3008 AA

p120 is a proliferation-associated nucleolar protein found in most human malignant tumors, but not in resting normal cells. In colorectal cancer the altered localization of p120 Catenin corresponds with loss of cytoplasmic localization of E-cadherin. Studies have shown accurate categorization of ductal vs. lobular neoplasia in the breast was achieved with p120 staining. p120 expression further clarifies the separation of low-grade ductal carcinoma *in situ* from lobular neoplasia. Studies also have shown that altered expression of p120 Catenin predicts poor outcome in invasive breast cancer.

1. Talvinen K, *et al.* *J Cancer Res Clin Oncol.* 2010 Sep; 136(9):1377-87. 2. Yu J, Bhargava R, Dabbs DJ. *Diagn Pathol.* 2010 Jun; 5:36. 3. Chivukula M, *et al.* *Am J Surg Pathol.* 2008 Nov; 32(11):1721-6. 4. Esposito NN, Chivukala M, Dabbs DJ. *Mod Pathol.* 2007 Jan; 20(1):130-8. 5. Dabbs DJ, Bhargava R, Chivukala M. *Am J Surg Pathol.* 2007 Mar; 31(3):427-37. 6. Bellovin DI, *et al.* *Cancer Res.* 2005 Dec; 65(23):10938-45.



Prostate cancer stained with P504S (P)

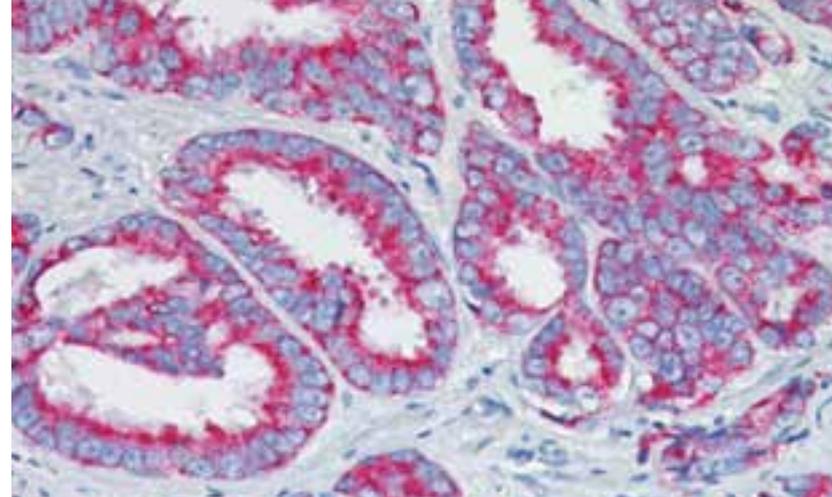
P504S (P) ASR FFPE

Clone	N/A
Isotype	IgG
Reactivity	N/A
Control	N/A

Cat. No. ACA 200 AK, BK, CK; APA 200 AA, H; AVA 200 G, G25

P504S, also known as α -methylacyl coenzyme A racemase (AMACR), is a peroxisomal and mitochondrial enzyme that plays a role in bile acid synthesis and β -oxidation of branched chain fatty acids. P504S was initially identified from a cDNA library as a gene that is overexpressed in human prostate cancer; with little or no expression in normal prostate. In immunohistochemistry, P504S has been shown to be a specific marker of prostatic adenocarcinoma. Additionally, prostate glands involved in PIN have been found to express P504S, whereas P504S was nearly undetectable in benign glands.

1. Ferdinandusse S, *et al.* J Lipid Res. 2000 Nov; 41(11):1890-6. 2. Xu J, *et al.* Cancer Res. 2000 Mar; 60(6):1677-82. 3. Rubin MA, *et al.* JAMA. 2002 Apr; 287(13):1662-70. 4. Luo J, *et al.* Cancer Res. 2002 Apr; 62(8):2220-6. 5. Zhou M, *et al.* Am J Surg Pathol. 2002 Jul; 26(7):926-31. 6. Wu CL, *et al.* Hum Pathol. 2004 Aug; 35(8):1008-13.



Prostate cancer stained with P504S, 2X

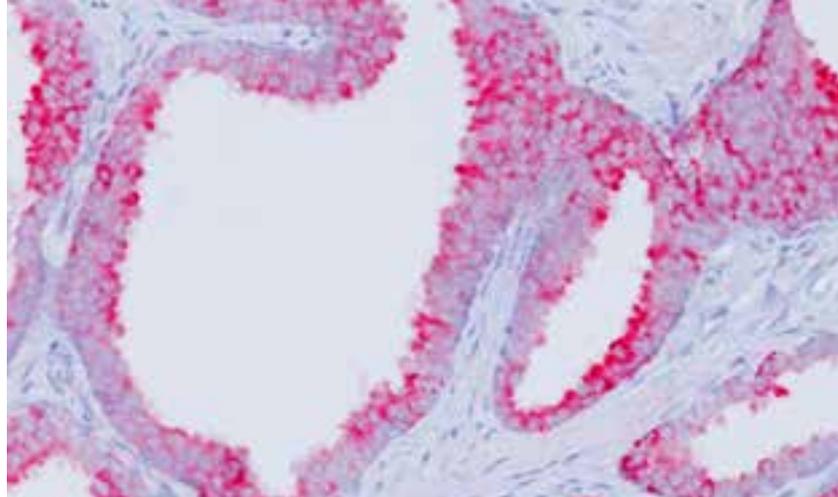
P504S, 2X ASR FFPE

Clone	N/A
Isotype	N/A
Reactivity	N/A
Control	N/A

Cat. No. PP 365 AA, H, JJ; IP 365 G10 supernova

P504S, also known as α -methylacyl coenzyme A racemase (AMACR), is a peroxisomal and mitochondrial enzyme that has been shown to play a role in bile acid synthesis and β -oxidation of branched chain fatty acids. In immunohistochemistry studies, P504S has been shown to be a specific marker of prostatic adenocarcinoma. Additionally, prostate glands involved in PIN have been found to express P504S, whereas P504S was nearly undetectable in benign glands. P504S has also been shown to stain many other types of carcinoma such as hepatoma, breast carcinoma, pancreatic islet tumor and desmoplastic small round cell tumor. HMW CK and p63 may serve as a useful panel with P504S.

1. Ferdinandusse S, *et al.* J Lipid Res. 2000 Nov; 41(11):1890-6. 2. Xu J, *et al.* Cancer Res. 2000 Mar; 60(6):1677-82. 3. Rubin MA, *et al.* JAMA. 2002 Apr; 287(13):1662-70. 4. Luo J, *et al.* Cancer Res. 2002 Apr; 62(8):2220-6. 5. Zhou M, *et al.* Am J Surg Pathol. 2002 Jul; 26(7):926-31. 6. Wu CL, *et al.* Hum Pathol. 2004 Aug; 35(8):1008-13. 7. Tacha DE, Miller RT. Appl Immunohistochem Mol Morphol. 2004 Mar; 12(1):75-8.



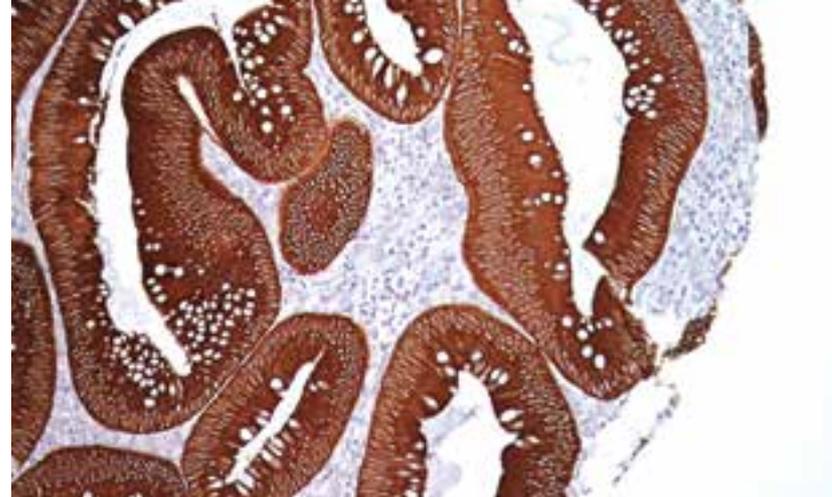
Prostate cancer stained with P504S, 3X

P504S, 3X

Clone	N/A
Isotype	N/A
Reactivity	N/A
Control	N/A
Cat. No.	APA 3054 G3, H 

P504S, also known as β -methylacyl coenzyme A racemase (AMACR), is a peroxisomal and mitochondrial enzyme that plays a role in bile acid synthesis and β -oxidation of branched chain fatty acids. In immunohistochemistry, P504S has been shown to be a specific marker of prostatic adenocarcinoma. Additionally, prostate glands involved in prostatic intraepithelial neoplasia (PIN) have been found to express P504S, whereas, P504S was nearly undetectable in benign glands.

1. Ferdinandusse S, *et al.* J Lipid Res. 2000 Nov; 41(11):1890-6. 2. Xu J, *et al.* Cancer Res. 2000 Mar;60(6):1677-82. 3. Rubin MA, *et al.* JAMA. 2002; Apr;287(13):1662-70. 4. Luo J, *et al.* Cancer Res. 2002 Apr;62(8):2220-6. 4. Zhou M, *et al.* Am J Surg Pathol. 2002 Jul;26(7):926-31. 5. Wu CL, *et al.* Hum Pathol. 2004 Aug; 35(8):1008-13.



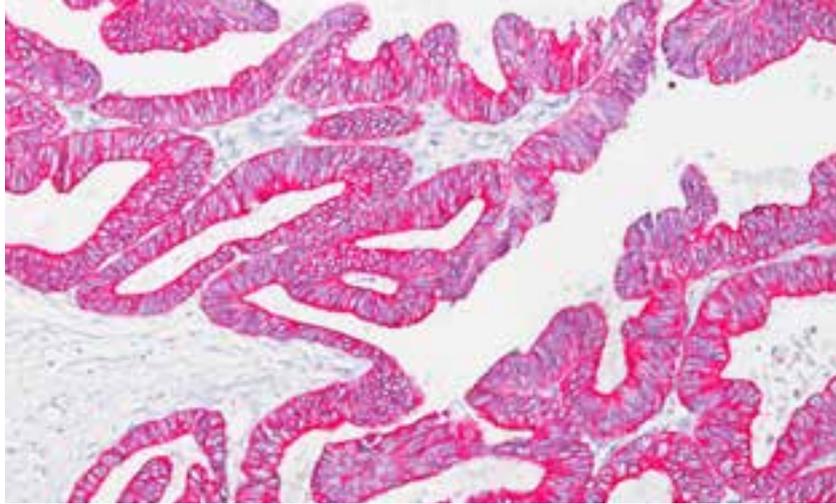
Colon cancer stained with Pan Cytokeratin [AE1/AE3]

Pan Cytokeratin [AE1/AE3]

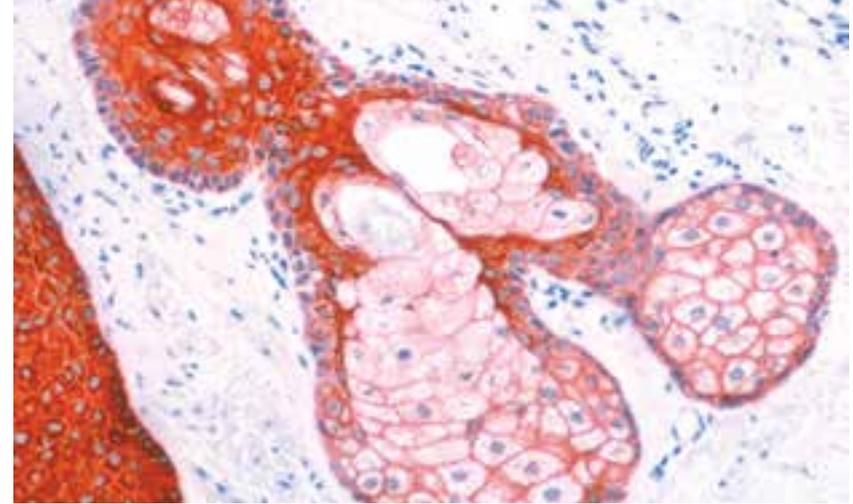
Clone	AE1/AE3
Isotype	IgG1
Reactivity	  
Control	Skin or adenocarcinoma
Cat. No.	CM 011 A, B, C; PM 011 AA, H; VP 011 G, G25

Pan Cytokeratin [AE1/AE3] recognizes the acidic and basic (Type I and II) subfamilies of cytokeratins. The cocktail of these two antibodies has been shown to detect in human epithelia. The acidic cytokeratins have molecular weights of 56.5, 55, 51, 50, 50, 48 46, 45 and 40 kDa. The basic cytokeratins have molecular weights of 65-67, 64, 59, 58, 56 and 52 kDa. In immunohistochemistry studies, this Pan Cytokeratin antibody has proven useful as a screener for the majority of human carcinomas.

1. Bunton TE. Vet Pathol. 1993 Sep; 30(5):418-25. 2. Sorenson SC, *et al.* J Pathol. 1987 Oct; 153(2):151-62. 3. Luo WR, *et al.* Histopathology. 2012 Dec; 61(6):1072-81. 4. Rekhi B, *et al.* Virchows Arch. 2012 Dec; 461(6):687-97.



Colon cancer stained with Pan Cytokeratin [Lu-5]



Skin stained with Pan Cytokeratin Plus [AE1/AE3 + 8/18]

Pan Cytokeratin [Lu-5]

Clone	Lu-5
Isotype	IgG1
Reactivity	
Control	Skin or adenocarcinoma
Cat. No.	CM 043 C; PM 043 AA; IP 043 G10; VP 043 G

Pan Cytokeratin [Lu-5] has been demonstrated as a useful marker for the differentiation of epithelial and mesothelial cells from mesenchymal cells in normal and tumor tissues. It has been shown to serve as a first-order pan cytokeratin antibody for both acidic (type I) and basic (type II) cytokeratin subfamilies of all vertebrates tested so far. In immunohistochemical studies, [Lu-5] stains an intracytoplasmic, formaldehyde-resistant epitope on the surface of cytokeratin filaments. [Lu-5] has been shown to be superior to [AE1/AE3].

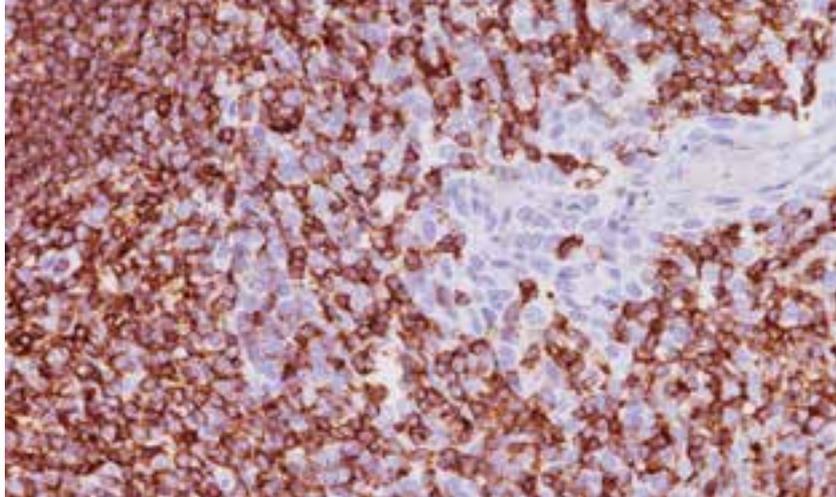
1. Schroder S, *et al.* Pathologe. 1996 Nov; 17(6):425-32. 2. Mullhaupt B, *et al.* J Hepatol. 1993 Aug; 19(1):23-35. 3. Langer I, *et al.* Ann Surg. 2005 Jan; 241(1):152-8. 4. Naumann CM, *et al.* Anticancer Res. 2010 Feb; 30(2):467-71.

Pan Cytokeratin Plus [AE1/AE3 + 8/18]

Clone	AE1/AE3+ 5D3
Isotype	IgG1
Reactivity	
Control	Skin or adenocarcinoma
Cat. No.	CM 162 A, B, C; PM 162 AA, H; IP 162 G10

Pan Cytokeratin Plus is a combination of [AE1/AE3] and Cytokeratin (CK) 8/18 [5D3] and can be used to detect most human epithelia. [AE1/AE3] recognizes acidic and basic subfamilies of cytokeratins, with molecular weights ranging from 40 to 67 kDa. CK8/18 [5D3] recognizes Cytokeratin 8 and 18 intermediate filament proteins. In normal tissues, [5D3] recognizes all simple and glandular epithelium. It has been observed that [AE1/AE3] has had problems marking certain tissues types and adenocarcinomas. The addition of CK 8/18 may remedy some of the limitations observed when staining with [AE1/AE3] alone.

1. Seidman JD, Abbondanzo SL, Bratthauer GL. Int J Gynecol Pathol. 1995 Oct; 14(4):331-8. 2. Bunton TE. Vet Pathol. 1993 Sep; 30(5):418-25. 3. Sorensen SC, *et al.* J Pathol. 1987 Oct; 153(2):151-62. 4. Pinkus GS, Etheridge CL, O'Connor EM. Am J Clin Pathol. 1986 Mar; 85(3):269-77. 5. Pinkus GS, *et al.* J Histochem Cytochem. 1985 May; 33(5):465-73.



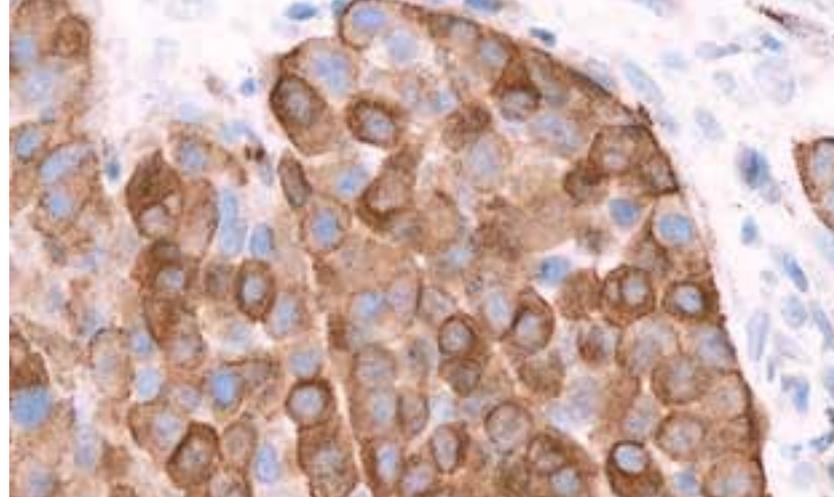
Tonsil stained with Pan Lymphoma Cocktail

Pan Lymphoma Cocktail

Clone	PD7/26/16 + 2B11 + L26 + PS1 + DF-T1
Isotype	IgG1/kappa + IgG1/kappa + GgG2a/kappa + IgG2a + IgG1
Reactivity	
Control	Tonsil or B-cell and T-cell lymphomas
Cat. No.	API 3035 AA

Pan Lymphoma Cocktail (LCA + CD20 + CD3 + CD43) are specific leukocyte markers used in the identification and assessment of lymphoid neoplasms. This combination of antibodies offers a marker for the identification of a variety of leukocytes. CD45 also known as leucocyte common antigen (LCA), is expressed on hematopoietic cell lines, but absent on non-hematopoietic cell lines and non-hematopoietic tissues. CD43 is involved in activation of T-cells, B-cells, NK-cells and monocytes. CD3 antigen is a specific marker for T-cells and is present in T-cell neoplasms, but absent in B-cells. CD20 expression is restricted to normal and neoplastic B-cells, but absent from other leukocytes and tissues.

1. Lucas Dr, *et al.* Am J Clin Pathol. 2001 Jan;115(1):11-7. 2. Olsen RJ, *et al.* Arch Pathol Lab Med. 2008 Mar; 132(3):462-75. 3. Steward M, *et al.* Histopathology. 1997 Jan; 30(1):16-22. 4. de Smet W, Walter H, Van Hove L. Immunology. 1993 May; 79(1):46-54. 5. Basadonna GP, *et al.* Proc Natl Acad Sci USA. 1998 Mar; 95(7):3821-6.



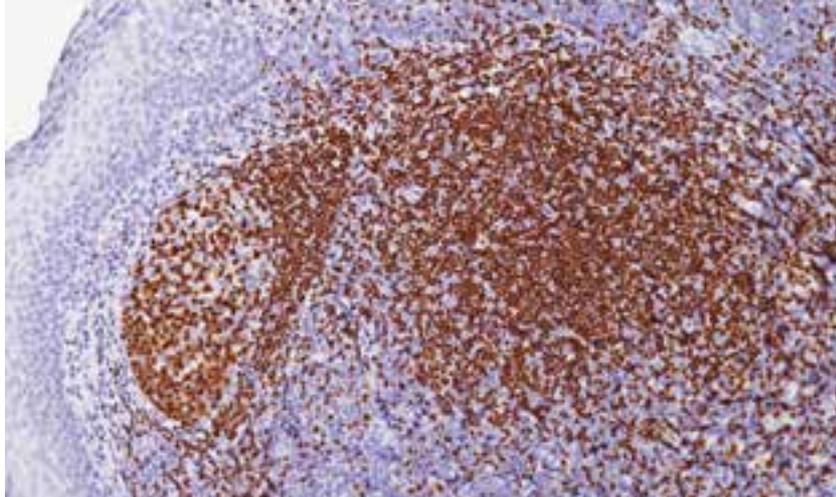
Melanoma stained with Pan Melanoma Cocktail-2

Pan Melanoma Cocktail-2

Clone	M2-7C10 + M2-9E3 + T311
Isotype	IgG2b + IgG2b + IgG2a
Reactivity	
Control	Melanoma
Cat. No.	CM 178 A; PM 178 AA

Pan Melanoma Cocktail-2 is a cocktail of MART-1 and Tyrosinase antibodies. MART-1 is a useful addition to melanoma panels as it is apparently specific for melanocytic lesions. Studies show that MART-1 is more sensitive than HMB45 when labeling metastatic melanomas. These MART-1 clones do not stain steroid tumors unlike Melan A [103]. Tyrosinase has also been shown to be a more sensitive marker when compared to HMB45 and MART-1 and to label a higher percentage of desmoplastic melanomas than HMB45. The combination of MART-1 and Tyrosinase may aid in identifying metastatic melanoma in sentinel lymph nodes.

1. Orchard G. Br J Biomed Sci. 2002; 59(4):196-202. 2. Cook MG, *et al.* J Pathol. 2003 Jul; 200(3):314-9. 3. Miettinen M, *et al.* Am J Surg Pathol. 2001 Feb; 25(2):205-11. 4. Blessing K, Sanders DS, Grant JJ. Histopathology. 1998 Feb; 32 (2):139-46. 5. Ohsie SJ, *et al.* J Cutan Pathol. 2008 May; 35(5):433-44. 6. Xu X, *et al.* Am J Surg Pathol. 2002 Jan; 26(1):82-7.



Tonsil stained with PAX-5

PAX-5

Clone BC/24

Isotype IgG1

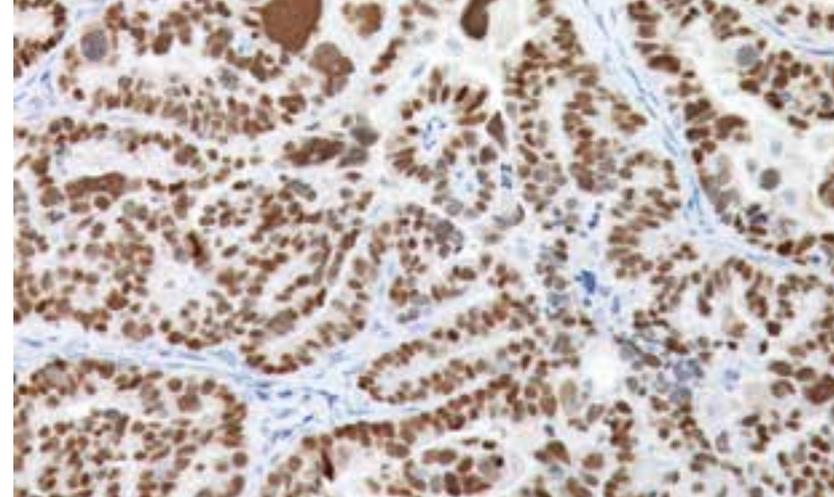
Reactivity 

Control Tonsil

Cat. No. CM 207 A, B, C; PM 207 AA

PAX5 is a B-cell specific activator protein. In early stages of B-cell development, PAX5 influences the expression of several B-cell specific genes such as CD20. PAX5 is expressed primarily in pro-, pre- and mature B-cells, but not in plasma cells. It is very specific to B-cell lineage and does not stain T-cells. There is an excellent correlation between CD20 and PAX5 expression; however the anti-PAX-5 antibody exceeds the specificity and sensitivity of L26 (CD20) due to its expression in early B-cell differentiation and its ability to detect all committed B-cells, including classic Hodgkin's lymphoma. PAX5 may be a superior pan B-cell marker to CD20.

1. Desouki MM, *et al.* Clin Med Res. 2010 Jul; 8(2):84-8. 2. Torlakovic E, *et al.* Am J Clin Pathol. 2006 Nov; 126(5):798-804. 3. Torlakovic E, *et al.* Am J Surg Pathol. 2002 Oct; 26(10):1343-50.



Serous ovarian adenocarcinoma stained with PAX8

PAX8

Clone N/A

Isotype N/A

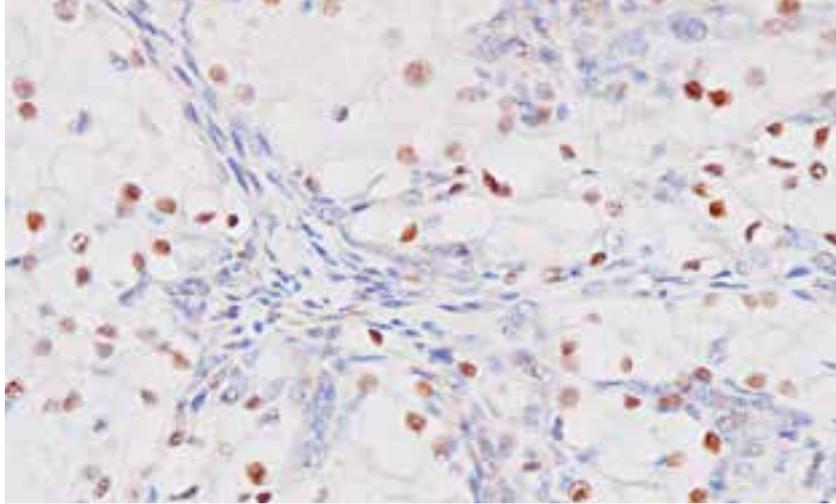
Reactivity  

Control Renal tissue

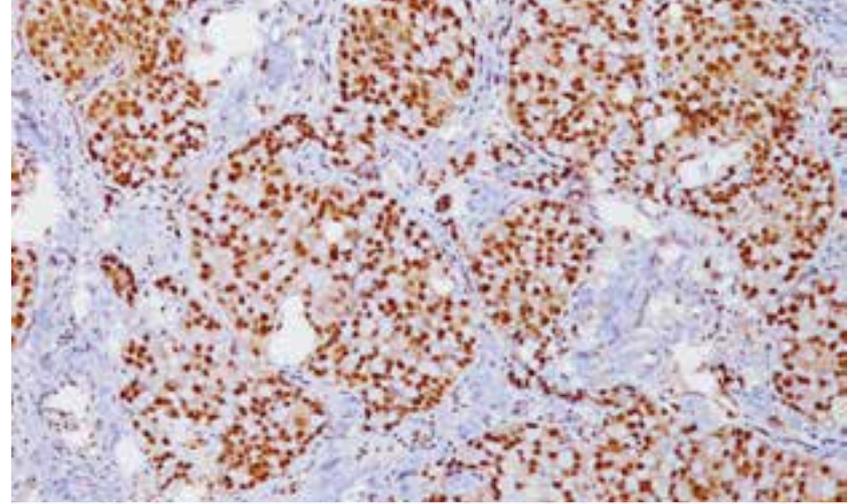
Cat. No. CP 379 AK, CK; PP 379 AA

PAX8 is a member of the paired box (PAX) family of transcription factors. Studies have shown that expression of the PAX8 gene was found in 89% of analyzed kidney tumor samples. The expression of the PAX8 target genes were found in all normal renal samples. PAX8 has been shown to be expressed in three of the most common types of renal cell carcinoma including clear cell, chromophobe and papillary carcinoma but negative for urothelial carcinoma of renal pelvis. PAX8 stains nuclei exclusively and has been shown to be a superior marker compared to Renal Cell Carcinoma (RCC).

1. Lotan TL, *et al.* Am J Surg Pathol. 2009 Jul; 33(7):1037-41. 2. Viktorová T, *et al.* Cas Lek Cesk. 2005; 144 Suppl 2:30-3. 3. Narlis M, *et al.* J Am Soc Nephrol. 2007 Apr; 18(4):1121-9. 4. Ozcan A, *et al.* Arch Pathol Lab Med. 2012 Dec; 136(12):1541-51.



Renal cell carcinoma stained with PAX8 (M)



Breast cancer stained with PCNA

PAX8 (M) IVD FFPE  **PREFERRED**

Clone	BC12
Isotype	IgG1
Reactivity	    
Control	Normal kidney, renal cell or serous ovarian carcinomas
Cat. No.	ACI 438 A, B, C; API 438 AA; AVI 438 G

PAX8 is expressed in a high percentage of renal cell carcinomas and ovarian cancers. PAX8 [BC12] has been designed to target restricted epitopes and exhibits higher specificity and provides sharper staining than the PAX8 rabbit polyclonal antibody. PAX8(M) stains nuclei exclusively and does not stain B-cells, nor does it recognize epitopes of pancreatic origin and neuroendocrine cells in stomach and colon. The expression of the mouse monoclonal PAX8 target antigens was found in normal kidney, thyroid and cervix, but was not identified in normal ovary. By western blot, [BC12] has been shown to recognize PAX8 and not PAX2, PAX5 or PAX6 proteins.

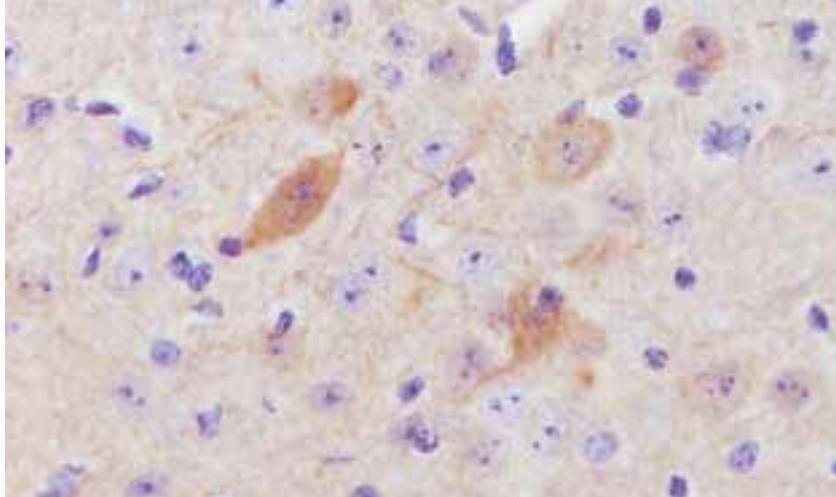
1. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2011 Jul; 19(4):293-9. 2. Lotan TL, *et al.* Am J Surg Pathol. 2009 Jul; 33(7):1037-41-3. Viktorova T, *et al.* Diagn Cytopathol. 2008 Aug; 36(8):568-73. 4. Nalis M, *et al.* J Am Soc Nephrol. 2007 Apr; 18(4):1121-9. 5. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2013 Jan;21(1):59-63. 6. Moretti L, *et al.* Mod Pathol. 2012 Feb; 25(a):231-6. 7. Lorenzo PI, *et al.* Histochem Cell Biol. 2011 Nov; 136(5):595-607.

PCNA IVD FFPE 

Clone	PC10
Isotype	IgG2a
Reactivity	
Control	Breast or colon cancer
Cat. No.	CM 152 B

Proliferating Cell Nuclear Antigen (PCNA) is known as a cyclin or polymerase delta auxiliary protein. Elevated expression of PCNA has been shown in the nucleus of cells during late G1, S, G2 and M phases of the cell cycle. PCNA status in transitional cell carcinomas of the urinary bladder may be related to the histopathological findings. PCNA has multiple applications for cell proliferation studies and has been shown to be a valuable marker for breast, prostate and colon cancer studies.

1. Xie W, Wong YC, Tsao SW. Prostate. 2000 Jun; 44(1):31-9. 2. Goel MM, *et al.* Indian J Exp Biol. 2000 Mar; 38(3):225-30. 3. Morita T, *et al.* Histochemistry. 1994 Jan; 101(1):13-20. 4. Inagaki T, *et al.* Int J Urol. 1997 Mar; 4(2):172-7.



Mouse brain stained with PGP9.5

PGP9.5

Clone 31A3

Isotype IgG1

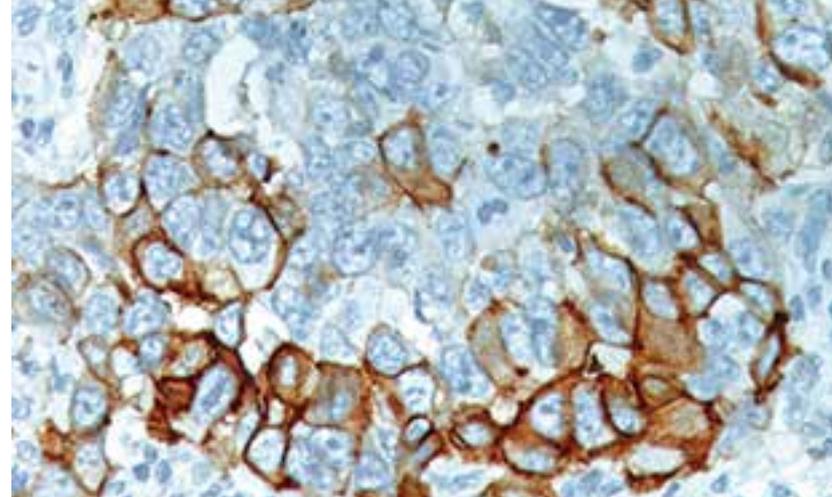
Reactivity  

Control Brain

Cat. No. CM 329 AK

Protein Gene Product 9.5 (PGP9.5) is also known as ubiquitin C-terminal hydrolase 1 (UCHL-1). Expression of PGP9.5 is highly specific to neurons and to cells of the diffuse neuroendocrine system and their tumors. It is estimated that PGP9.5 comprises 1-2% of total soluble proteins in the brain. Immunohistochemistry of routinely processed neuronal tissues has identified central and peripheral nerve fibers of all sizes. PGP9.5 has been identified in renal tubule, spermatogonia, Leydig cells of the testis and in pregnant and non-pregnant corpus luteum.

1. Wilson PO, *et al.* Br J Exp Pathol. 1998 Feb; 69(1):91-104. 2. Romeo HE, *et al.* Cell Tissue Res. 1993 Mar; 271(3):477-84. 3. Krammer HJ, *et al.* Ann Anat. 1993 Aug; 175(4):321-5. 4. Ramos-Vara JA, Miller MA. Vet Pathol. 2007 Jan; 44(1):74-9.



Breast cancer stained with Phospho-EGFR

Phospho-EGFR

Clone EP774Y

Isotype IgG

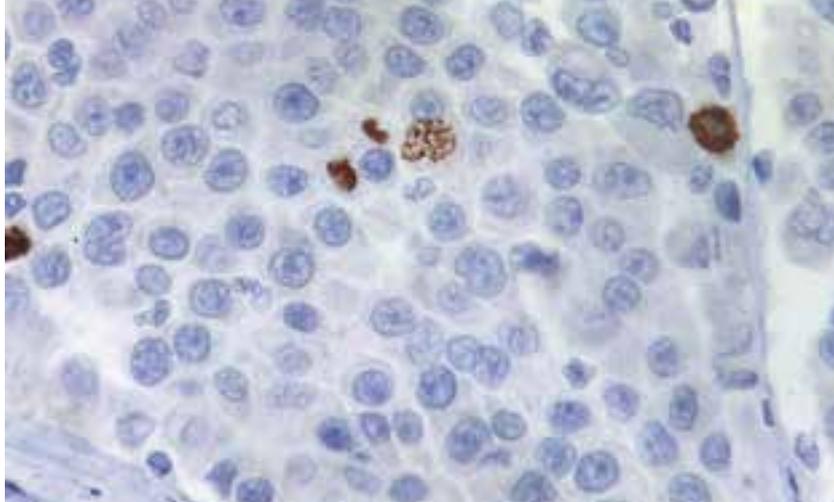
Reactivity  

Control Squamous cell carcinoma or colon cancer

Cat. No. PME 300 AA

Epidermal Growth Factor Receptor (EGFR) is a transmembrane glycoprotein receptor tyrosine kinase and is activated by EGF. The carboxy terminal tyrosine residues on EGFR, Tyr1068, Tyr1148 and Tyr1173 are major sites of autophosphorylation, which occurs as the result of EGF binding. Once activated, phosphotyrosines mediate the binding of growth factor receptor-binding protein-2 (Grb2) to the EGFR. This antibody only detects EGFR phosphorylated on Tyrosine 1068 of the mature human isoform. Over-expression of EGFR has been reported in tumors of breast, lung, colon, cervix, ovary, esophagus and endometrium.

1. Cornianu M, Tudose N. Rom J Morphol Embryol. 1997 Jul-Dec; 43(3-4):181-91. 2. Bue P, *et al.* Int J Cancer. 1998 Apr; 76(2):189-93. 3. Mansour OA, *et al.* Anticancer Res. 1997 Jul-Aug; 17(4B):3107-10. 4. Willsher PC, *et al.* Anticancer Res. 1997 May-Jun; 17(3C):2335-8.



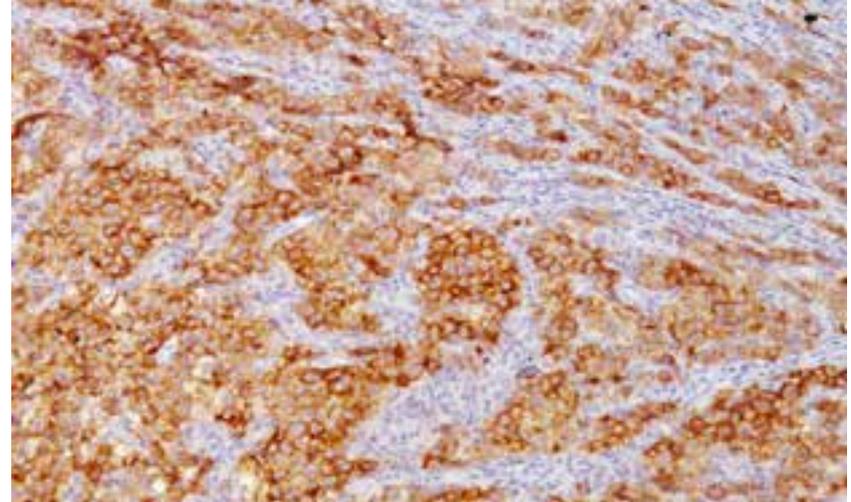
Melanoma stained with Phospho-Histone H3

Phospho-Histone H3

Clone	N/A
Isotype	N/A
Reactivity	
Control	Melanoma
Cat. No.	CP 404 A, C; PP 404 AA

Phospho-Histone H3 (pHH3) is an immunomarker specific for cells undergoing mitosis. The phosphorylation of histone H3 plays an important role in gene expression, chromatin remodeling, chromosome condensation and cell division. Across different organisms, metaphase chromosomes are always found to be heavily histone H3 phosphorylated. Determination of the mitotic index using pHH3 has been reported to be of prognostic significance in breast cancer, melanoma and meningiomas. pHH3 immunostaining may also provide an accurate proliferation potential which can be relevant to tumor grading.

1. Skaland I, *et al.* Cell Oncol. 2009; 31(4):261-71. 2. Nasr MR, El-Zammar O. Am J Dermatopathol. 2008 Apr; 30(2):117-22. 3. Skaland I, *et al.* Mod Pathol. 2007 Dec; 20(12):1307-15. 4. Kim YJ, *et al.* Am J Clin Pathol. 2007 Jul; 128(1):118-25.



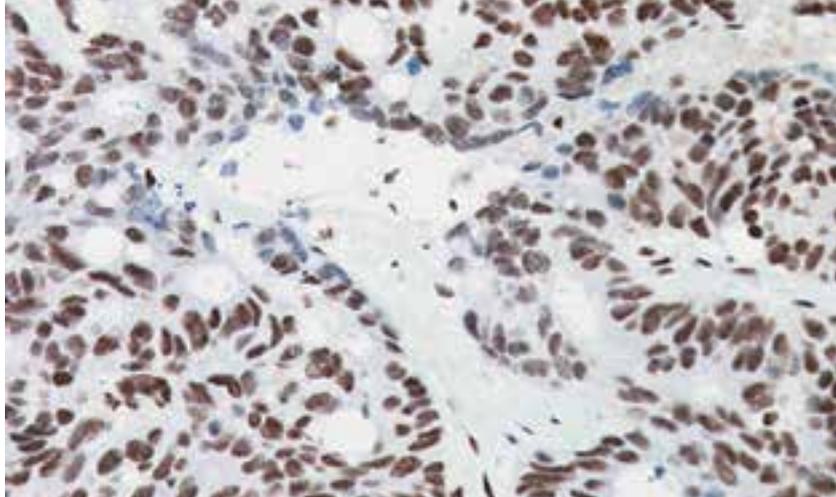
Ovarian dysgerminoma stained with Placental Alkaline Phosphatase (PLAP)

Placental Alkaline Phosphatase (PLAP)

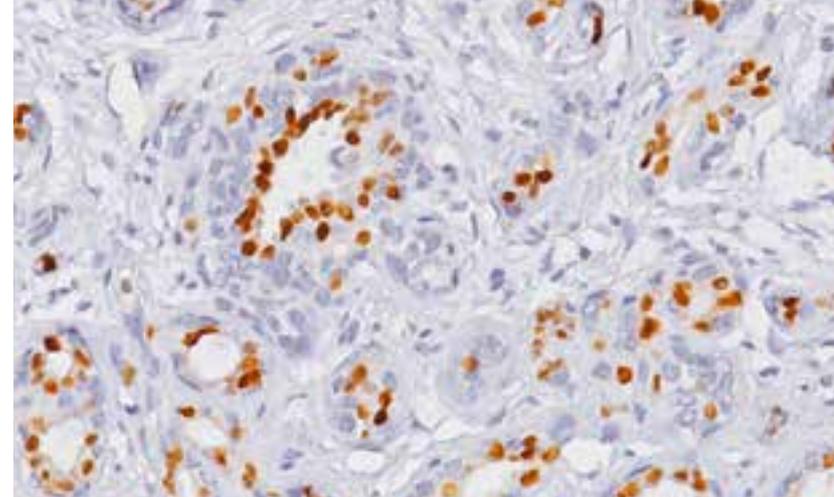
Clone	SP15
Isotype	IgG
Reactivity	
Control	Placenta or seminoma
Cat. No.	CRM 350 A, C; PRM 350 AA

Placental Alkaline Phosphatase (PLAP) reacts with a membrane-bound isozyme (Regan and Nagao type) of PLAP occurring in the placenta during the 3rd trimester of gestation. This antibody is highly specific to PLAP and shows no cross-reaction with other isozymes of alkaline phosphatases. It is useful in the identification of testicular germ cell tumors and in separating thymic neoplasms from germ cell tumors. Unlike germ cell tumors, PLAP-positive somatic cell tumors uniformly express epithelial membrane antigen (EMA). PLAP may also be a useful marker in distinguishing classical seminoma from spermatocytic seminoma.

1. Takei H, *et al.* Arch Pathol Lab Med. 2007 Feb; 131(2):234-41. 2. Saad RS, *et al.* Appl Immunohistochem Mol Morphol. 2003 Jun; 11(2):107-12. 3. Kraggerud SM, *et al.* APMIS. 1999 Mar; 107(3):297-302.



Colon cancer stained with PMS2



Breast cancer stained with Progesterone Receptor (PR) [16]

PMS2

Clone A16-4

Isotype IgG1/kappa

Reactivity 

Control Placenta

Cat. No. CM 344 AK, BK; PM 344 AA

The post meiotic segregation increased 2 (PMS2) protein forms a heterodimer with MLH1 that interacts with MSH2 bound to mismatched bases in DNA. PMS2 functions as one of the four major DNA mismatch repair genes along with MSH2, MLH1 and PMS1. Mutations in these genes are associated with hereditary nonpolyposis colon cancer (HNPCC), one of the most common hereditary diseases in humans. Studies have determined that the microsatellite instability (MSI) phenotype in endometrial carcinoma is linked to concurrent loss of MLH1/PMS2. PMS2 protein expression may be a useful tool to screen for Lynch syndrome (LS) after a colorectal cancer diagnosis.

1. Beamer LC, *et al.* J Clin Oncol. 2012 Apr 1; 30(10):1058-63. 2. Molaei M, *et al.* Indian J Pathol Microbiol. 2011 Oct-Dec; 54(4):725-9. 3. de la Chapelle A, Hampel H. J Clin Oncol. 2010 Jul; 28(20):3380-7. 4. Vaughn CP, *et al.* Hum Mutat. 2010 May; 31(5):588-93. 5. Modica I, *et al.* Am J Surg Pathol. 2007 May; 31(5):744-51.

Progesterone Receptor (PR) [16] **PREFERRED**

Clone 16

Isotype IgG1

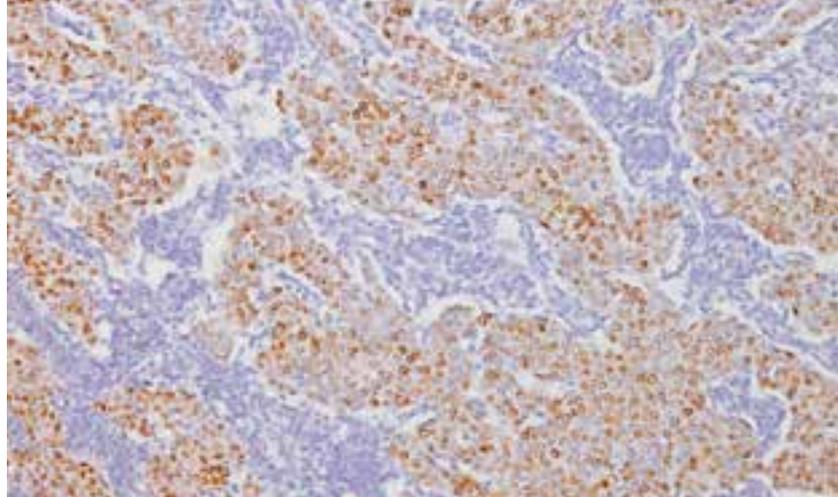
Reactivity N/A

Control N/A

Cat. No. ACA 424 A, C

Progesterone Receptor (PR) content of breast cancer tissue is an important parameter in the prediction of prognosis and response to endocrine therapy. PR [16] is directed against the human progesterone receptor molecule. A prokaryotic recombinant protein, corresponding to the N-terminal region of the A-form of human progesterone receptor, was used as the immunogen. Antibody characterization studies demonstrated that PR [16] reacts with both A- and B- forms of human progesterone receptor in Western Blotting procedures.

1. Qiu J, *et al.* Am J Clin Pathol. 2010 Nov; 134(5):813-9. 2. Arihito K, *et al.* Am J Clin Pathol. 2007; 127(3): 356-65. 3. Press M, *et al.* Steroids. 2002 Aug; 67(9): 799-813. 4. Mote P, *et al.* J Clin Pathol. 2001 Aug; 54(8):624-30. 5. Bevitt D, *et al.* J Pathol. 1997 Oct; 183(3): 228-32.



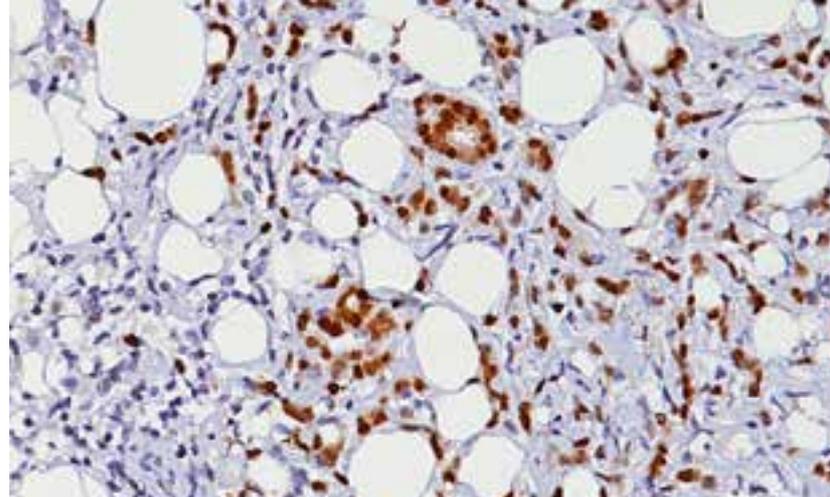
Breast cancer stained with Progesterone Receptor (PR) [1A6]

Progesterone Receptor (PR) [1A6]

Clone	1A6
Isotype	IgG1
Reactivity	N/A
Control	N/A
Cat. No.	ACA 055 A; APA 055 AA

This progesterone receptor (PR) monoclonal antibody recognizes both PR-alpha and PR-beta. According to studies, progesterone receptor status of breast cancer is an important prognostic factor and predictive parameter of the response to hormone therapy. Research has shown PR to reflect intact estrogen regulatory machinery and predicts a higher response to endocrine therapy than ER alone. A study has implicated the loss of PR expression as an independent predictor of poor prognosis and lymph node metastasis in endometrial carcinomas.

1. Trovik J, *et al.* Eur J Cancer. 2013 Nov; 49(16): 343-41. 2. Pinto AE, *et al.* Springerplus. 2013 Aug; 2:375. 3. Chen X, *et al.* BMC Cancer. 2013 Aug; 13:390. 4. Lee AH. J Clin Pathol. 2007 Dec; 60(12):1333-41.



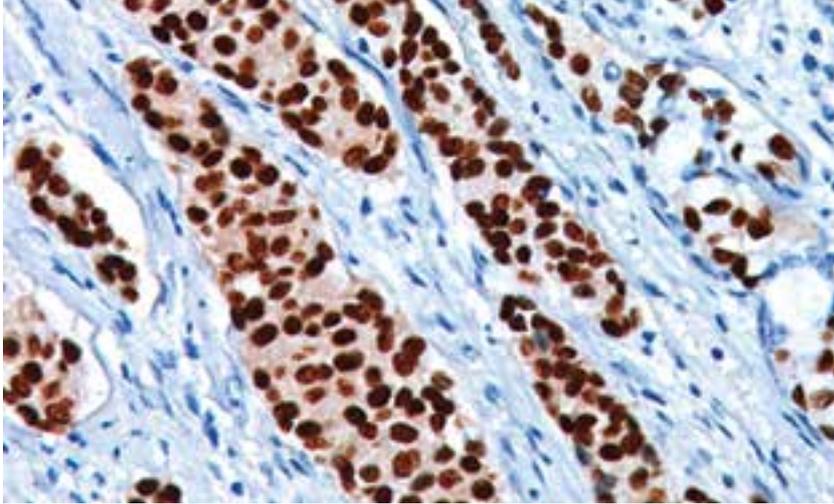
Breast cancer stained with Progesterone Receptor (PR) [PgR636]

Progesterone Receptor (PR) [PgR636]

Clone	PgR636
Isotype	IgG1/kappa
Reactivity	N/A
Control	N/A
Cat. No.	APA 343 AA, H; IP 343 G10

The progesterone receptor is a member of the steroid-receptor family. Steroid hormones bind to intracellular receptors and these receptors can bind to DNA and regulate gene expression directly. Research has shown PR to reflect intact estrogen regulatory machinery and predicts a higher response to endocrine therapy than ER alone. A study has implicated the loss of PR expression as an independent predictor of poor prognosis and lymph node metastasis in endometrial carcinomas.

1. Trovik J, *et al.* Eur J Cancer. 2013 Nov; 49(16): 343-41. 2. Pinto AE, *et al.* Springerplus. 2013 Aug; 2:375. 3. Chen X, *et al.* BMC Cancer. 2013 Aug; 13:390. 4. Khoury T, *et al.* Breast J. 2011 Mar-Apr; 17(2):180-6. 5. Press M, *et al.* Steroids. 2002 Aug; 67(9):799-813.



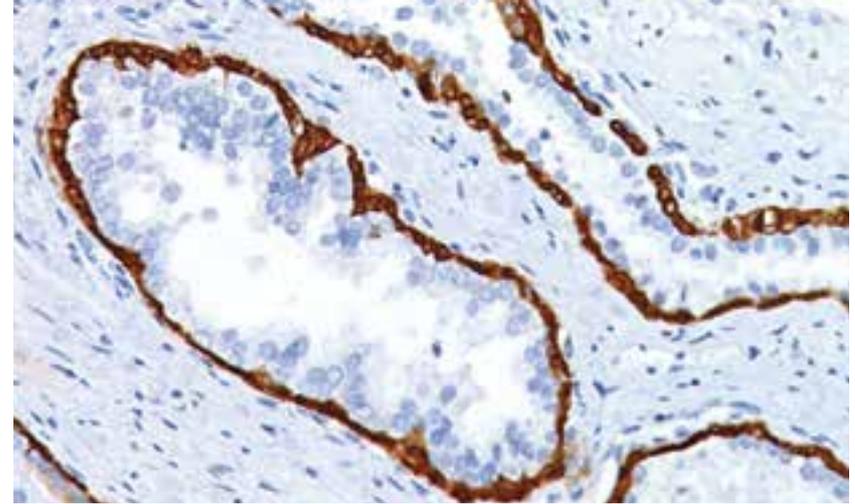
Breast cancer stained with Progesterone Receptor (PR) [SP2]

Progesterone Receptor (PR) [SP2] ASR FFPE

Clone	SP2
Isotype	IgG
Reactivity	N/A
Control	N/A
Cat. No.	ACA 302 A, B, C; APA 302 AA

The presence of progesterone receptor (PR) in breast tumors indicates an increased likelihood of response to anti-estrogen (tamoxifen) therapy. The SP2 clone is a high affinity rabbit monoclonal. A study has shown that the SP2 clone had a much higher affinity as compared to mouse monoclonals for the progesterone receptor. Studies have also shown that the SP2 clone provides supplementary evidence to ER in predicting survival in human breast cancer.

1. Prat A, *et al.* J Clin Oncol. 2013 Jan; 31(2):203-9. 2. Huang Z, *et al.* Appl Immunohistochem Mol Morphol. 2006 Jun; 14(2):229-33. 3. Rossi S, *et al.* Am J Clin Pathol. 2005 Aug; 124(2):295-302. 4. Cano G, *et al.* Diagn Cytopathol. 2003 Oct; 29(4):207-11. 5. Elledge RM, *et al.* Int J Cancer. 2000 Mar 20; 89(2):111-7.



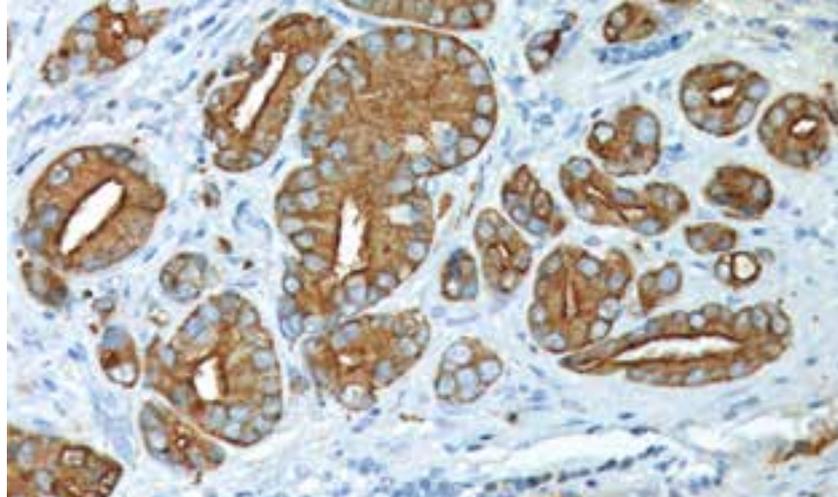
Prostate stained with Prostate Cocktail, 2X

Prostate Cocktail, 2X (CK5 + CK14 + p63) IVD FFPE

Clone	XM26 + LL002 + 4A4
Isotype	IgG1/kappa + IgG3 + IgG2a/kappa
Reactivity	
Control	Prostate
Cat. No.	PM 364 AAK, HK, JJK; IP 364 G10 supernova

CK5 and CK14 are high molecular weight cytokeratins expressed in a variety of normal and neoplastic epithelial tissues. p63, a homolog of the tumor suppressor p53, has been identified in proliferating basal cells in the epithelial layers of a variety of tissues, including epidermis, cervix, urothelium and prostate. p63 was detected in nuclei of the basal epithelium in normal prostate glands; however, it was not expressed in malignant tumors of the prostate. Thus p63 may be useful as a differential marker for benign and malignant tumors of the prostate gland and can be useful as a negative marker.

1. Grisanzio C, Signoretti S. J Cell Biochem. 2008 Apr 1; 103(5):1354-68. 2. Tokar EJ, *et al.* Hum Pathol. Differentiation. 2005 Dec; 73(9-10):463-73. 3. Herawi M, *et al.* Am J Surg Pathol. 2005 Jul; 29(7):874-80. 4. Browne TJ, *et al.* Hum Pathol. 2004 Dec; 35(12):1462-8.



Prostate cancer stained with Prostate Specific Antigen (PSA)

Prostate Specific Antigen (PSA)

Clone EP1588Y

Isotype IgG

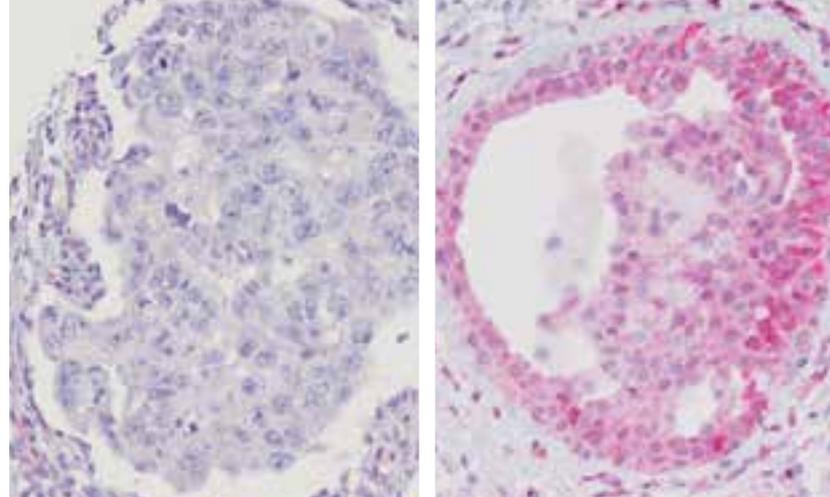
Reactivity 

Control Prostate or prostate carcinoma

Cat. No. CME 390 AK, CK; PME 390 AA

Prostate Specific Antigen (PSA) is a chymotrypsin-like serine protease (kallikrein family) produced by the prostate epithelium. PSA can be used as a screening marker for differentiating high-grade prostate adenocarcinoma from high-grade urothelial carcinoma. PSA may also be a useful aid to confirm prostatic acinar cell origin in primary and metastatic carcinomas and to rule out non-prostatic carcinoma mimics. PSA can be a valuable tool in the diagnostic evaluation of metastatic adenocarcinoma of unknown primary origin in males.

1. Furtado P, *et al.* Prostate Cancer. 2011; 2011:543272. 2. Berretta R, Moscato P. PLoS One. 2010 Aug 18; 5(8):e12262. 3. Chuang AY, *et al.* Am J Surg Pathol. 2007 Aug; 31(8):1246-55. 4. Varma M, Jasani B. Histopathology. 2005 Jul; 47(1):1-16. 5. Hameed O, Humphrey PA. Semin Diagn Pathol. 2005 Feb; 22(1):88-104.



(Left) PTEN deletion in breast cancer; (Right) PTEN staining in breast cancer (DCIS)

PTEN (Tumor Suppressor)

Clone 6H2.1

Isotype IgG

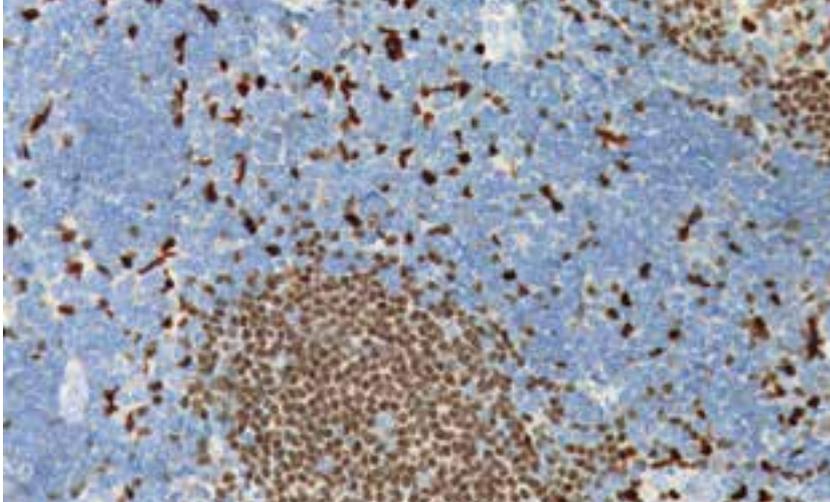
Reactivity  

Control Breast, renal cell or prostate carcinomas

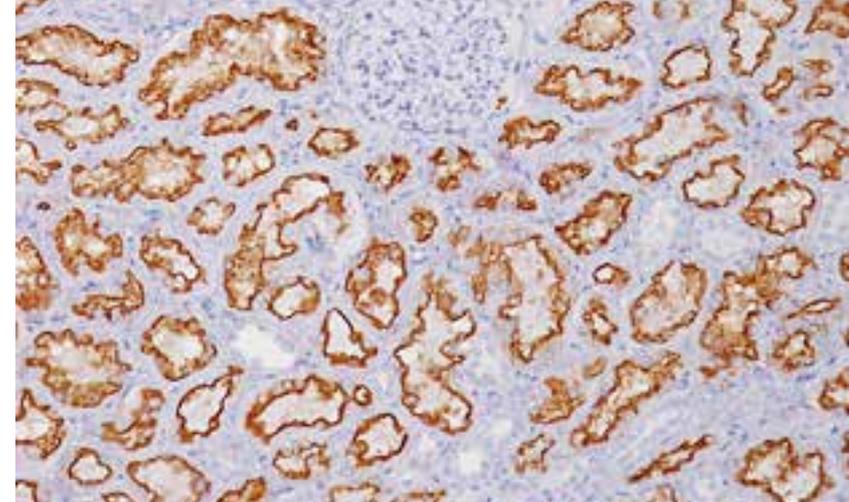
Cat. No. CM 278 AK, BK; PM 278 AA

PTEN, a novel tumor suppressor, functions as a regulator of both cell cycle progression and apoptosis. Potentially, mutation and deletion of PTEN gene may result in a new signal transduction pathway related to human malignant tumors. Studies have demonstrated a reduction of PTEN expression in advanced breast, prostate and other cancers. In addition, studies also suggest that patients with ErbB2 overexpressing tumors and concurrent low levels of PTEN expression have a poor response to trastuzumab treatment.

1. Bose S, *et al.* Hum Pathol. 2002 Apr; 33(4):405-9. 2. Bose S, *et al.* Mod Pathol. 2006 Feb; 19(2):238-45. 3. Roberts JA, *et al.* Korean J Pathol. 2013 Aug; 47(4):307-315. 4. Sakr RA, *et al.* Appl Immunohistochem Mol Morphol. 2010 July; 18(4):371-4.



Normal tonsil stained with PU.1



Kidney cancer stained with Renal Cell Carcinoma

PU.1

Clone	G148-74
Isotype	IgG2a
Reactivity	
Control	Lymphocyte predominant Hodgkin's
Cat. No.	CM 309 AK

PU.1 regulates the expression of immunoglobulin and other genes that are important for B-cell development. It is expressed in B-lymphocytes, macrophages and appears to be involved in the control of monocyte development. Results have shown a lack of PU.1 expression by neoplastic cells in classic Hodgkin's disease (cHD) but not in lymphocyte prevalent HD. The lack of PU.1 protein expression in cHD likely contributes to the lack of immunoglobulin expression and incomplete B-cell phenotype characteristic of the Reed-Sternberg cells in cHD. Therefore, PU.1 may represent a useful marker to aid the interpretation of lymphocyte-predominant Hodgkin's disease.

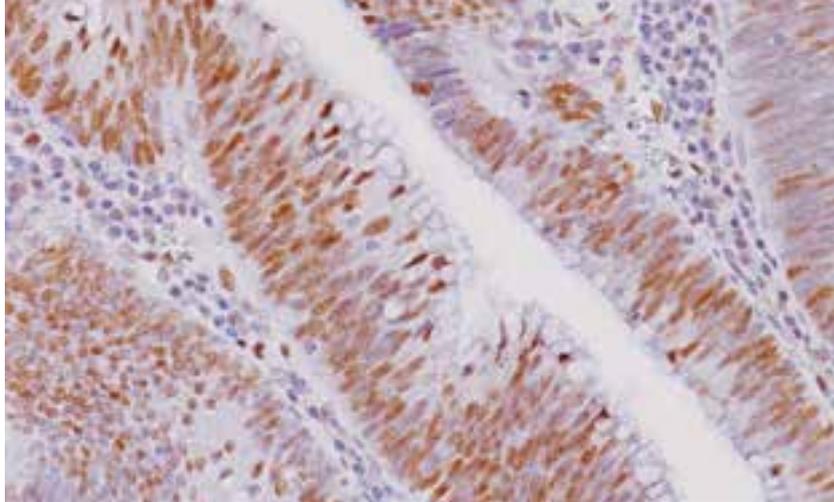
1. Marafioti T, *et al.* Haematologica. 2004 Aug; 89(8):957-64. 2. Torlakovic EE, *et al.* J Pathol. 2006 Jul; 209(3):352-9. 3. Torlakovic E, *et al.* Am J Pathol. 2001 Nov; 159(5):1807-14. 4. Okuno Y, Yuki H. Oncotarget. 2012 Dec; 3(12):1495-6.

Renal Cell Carcinoma

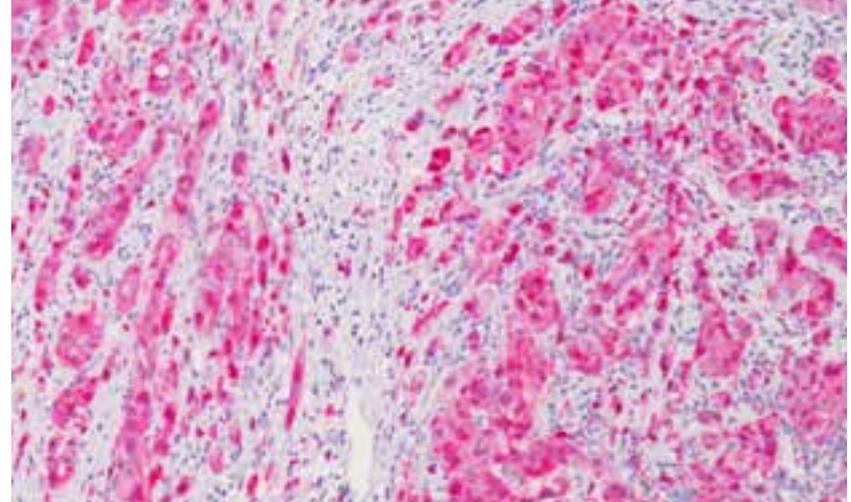
Clone	66.4.C2
Isotype	IgG2a
Reactivity	
Control	Normal kidney or renal cell carcinoma
Cat. No.	PM 173 AA

Renal cell carcinoma (RCC), also known as a gurnistical tumor, is a common form of adult kidney cancer localized to the tubule linings of the kidney. The prognosis for advanced RCC is poor due to its resistant to chemotherapy and radiation therapy. The RCC clone 66.4.C2 is a monoclonal antibody raised against a 200 kDa glycoprotein found in the renal proximal tubular brush border carcinoma. Renal tumor associated antigen is recognized by the clone 66.4.C2 and is frequently detected in both malignant cells and normal renal cells. Its sensitivity is higher for primary (80%) than metastatic (67%) renal cell carcinomas.

1. Ordonez NG. Human Pathol. 2004; 35(6):697-710. 2. Pan CC, *et al.* Histopathol. 2004; 45:452-9. 3. Avery AK, *et al.* Am J Surg Pathol. 2000; 24(2):203-10. 4. McGregor DK, *et al.* Am J Surg Pathol. 2001; 25(12):1485-92. 5. Yoshida S, Imam A. Cancer Res. 1989; 49:1802-9.



Squamous cell carcinoma stained with Retinoblastoma



Melanoma stained with S100 Protein (P)

Retinoblastoma IVD FFPE

Clone	1F8
Isotype	IgG1
Reactivity	
Control	Esophageal or colon carcinomas
Cat. No.	CM 211 A

Clone 1F8 recognizes a 105 kDa phosphoprotein, identified as retinoblastoma (Rb) gene product. The epitope is localized between aa 703-772 of human Rb protein and shows no cross-reaction with p107 or p300. Studies have shown the retinoblastoma gene product to play a key role in cell cycle control. It has been identified as a known tumor suppressor gene whose loss of its function leads to tumor development. It is widely expressed in a variety of human tissues including mammary carcinoma, esophageal cancer, squamous cell carcinoma and cervical cancer.

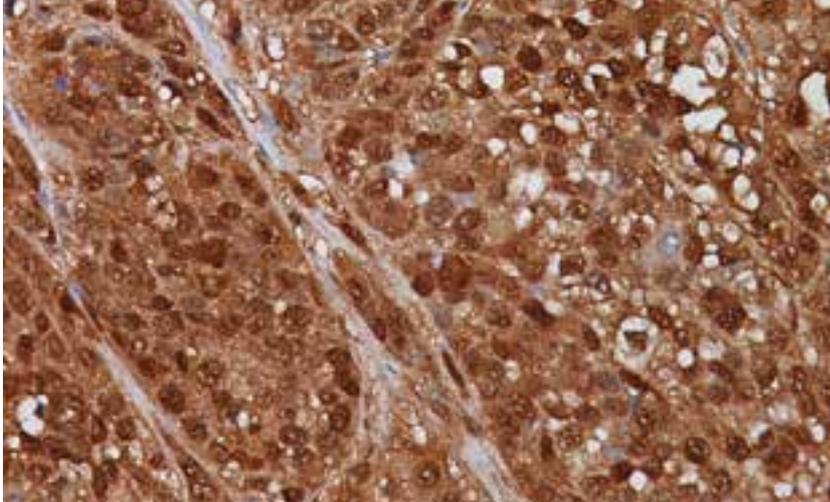
1. Kato H, *et al.* *Anticancer Res.* 2000 Jan-Feb; 20(1A):345-9 2. Sano T, *et al.* *Pathol Int.* 1998 Aug; 48(8):580-5. 2. Derenzini M, *et al.* *Clin Cancer Res.* 2008 Apr 1; 14(7):2199-209.

S100 Protein (P) IVD FFPE PREFERRED

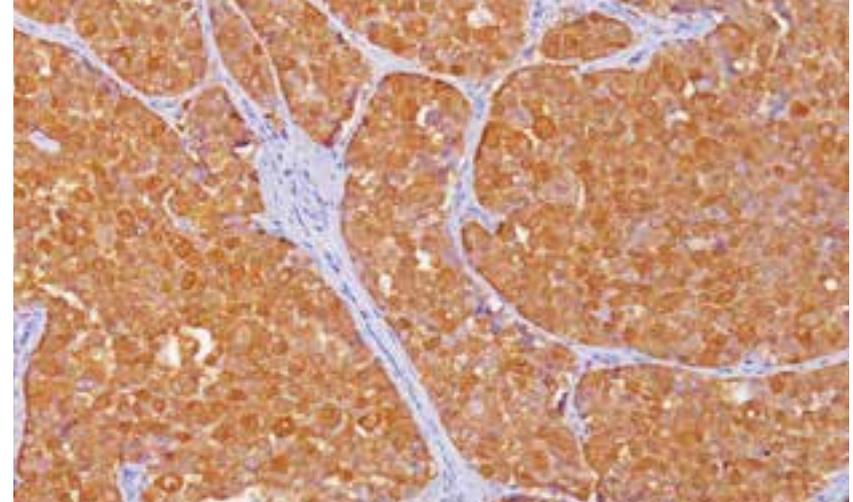
Clone	N/A
Isotype	N/A
Reactivity	  
Control	Melanoma or schwannoma
Cat. No.	CP 021 A, B, C; PP 021 AA

S100 belongs to the family of calcium binding proteins such as calmodulin and troponin C. The S100 antibody stains Schwannomas, ependymomas, astroglomas, almost all benign and malignant melanomas and their metastases. S100 protein is also expressed in the antigen presenting cells such as the Langerhan's cells in skin and interdigitating reticulum cells in the paracortex of lymph nodes. S100 protein is highly soluble and may be eluted from frozen tissue during staining, however it is excellent for immunohistochemical staining of formalin-fixed, paraffin-embedded (FFPE) tissues.

1. Banerjee SS, *et al.* *J Clin Pathol.* 1996 Nov; 49(11):950-1. 2. Argenyi ZB, *et al.* *Am J Dermatopathol.* 1994 Jun; 16(3):233-40. 3. Fernando SS, Johnson S, Bate J. *Pathology.* 1994 Jan; 26(1):16-9. 4. Tousignant J, *et al.* *Arch Anat Cytol Pathol.* 1990; 38(1-2):5-10. 6. Viray H, *et al.* *Arch Pathol Lab Med.* 2013 Aug; 137(8):1063-73. 7. Ohsie SJ, *et al.* *J Cutan Pathol.* 2008 May; 35(5):433-44.



Melanoma stained with S100 Protein [15E2E2] (M)



Melanoma stained with S100 Protein Cocktail

S100 Protein [15E2E2] (M)

Clone	15E2E2
Isotype	IgG2a
Reactivity	
Control	Melanoma or schwannoma lymphoblastic leukemia
Cat. No.	CM 128 A, C; PM 128 AA

S100 belongs to the family of calcium binding proteins such as calmodulin and troponin C. The S100 antibody stains melanocytes, schwannomas, peripheral neural tissue, astrocytes, benign and malignant melanomas and their metastases. Studies have shown S100 protein is also expressed in the antigen presenting cells such as the Langerhan's cells in skin and interdigitating reticulum cells in the paracortex of lymph nodes. S100 protein is highly soluble and may be eluted from frozen tissue during staining, however it is excellent for immunohistochemical staining of formalin-fixed, paraffin-embedded (FFPE) tissues.

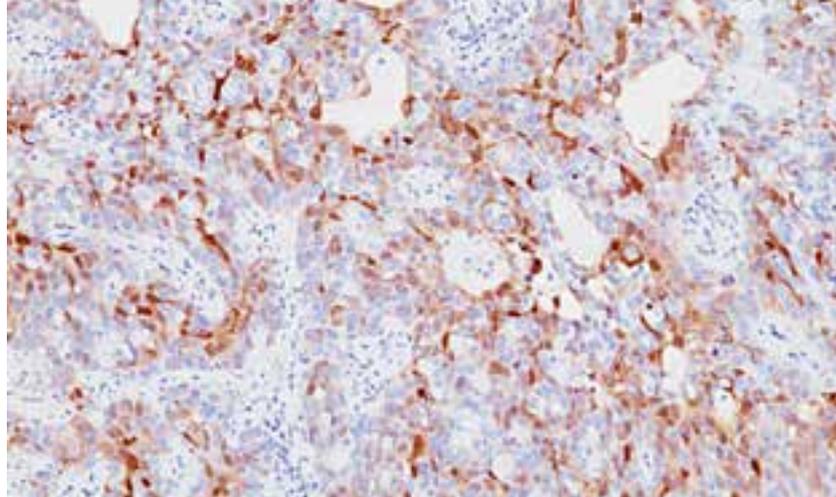
1. Banerjee SS, *et al.* J Clin Pathol. 1996 Nov; 49(11):950-1. 2. Argenyi ZB, *et al.* Am J Dermatopathol. 1994 Jun; 16(3):233-40. 3. Fernando SS, Johnson S, Bate J. Pathology. 1994 Jan; 26(1):16-19. 4. Tousignant J, *et al.* Arch Anat Cytol Pathol. 1990; 38(1-2):5-10. 6. Viray H, *et al.* Arch Pathol Lab Med. 2013 Aug; 137(8):1063-73. 7. Ohsie SJ, *et al.* J Cutan Pathol. 2008 May; 35(5):433-44.

S100 Protein Cocktail

Clone	15E2E2 + 4C4.9
Isotype	IgG2ak + IgG2a
Reactivity	  
Control	Melanoma
Cat. No.	CM 089 A, B, C; PM 089 AA, H; IP 089 G10

S100 belongs to the family of calcium binding proteins such as calmodulin and troponin C. The S100 antibody stains melanocytes, schwannomas, peripheral neural tissue, astrocytes, benign and malignant melanomas and their metastases. S100 protein is also expressed in the antigen presenting cells such as the Langerhan's cells in skin and interdigitating reticulum cells in the paracortex of lymph nodes. S100 protein is highly soluble and may be eluted from frozen tissue during staining. The S100 monoclonal cocktail is potentially more sensitive than other S100 single clone antibodies and may be an excellent pan-melanoma marker.

1. Banerjee SS, *et al.* J Clin Pathol. 1996 Nov; 49(11):950-1. 2. Argenyi ZB, *et al.* Am J Dermatopathol. 1994 Jun; 16(3):233-40. 3. Fernando SS, Johnson S, Bate J. Pathology. 1994 Jan; 26(1):16-9. 4. Tousignant J, *et al.* Arch Anat Cytol Pathol. 1990; 38(1-2):5-10. 6. Viray H, *et al.* Arch Pathol Lab Med. 2013 Aug; 137(8):1063-73. 7. Ohsie SJ, *et al.* J Cutan Pathol. 2008 May; 35(5):433-44.



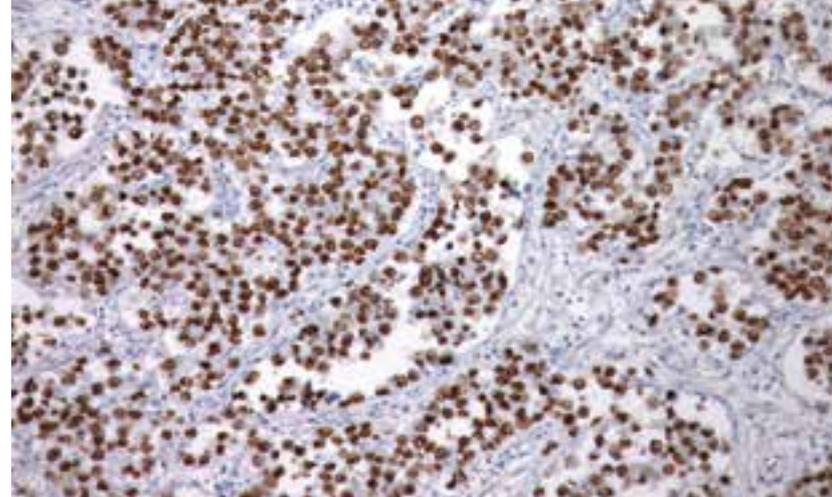
Bladder cancer stained with S100P

S100P

Clone	N/A
Isotype	N/A
Reactivity	 
Control	Bladder cancer
Cat. No.	ACI 3010 A, B; API 3010 AA

Placental S100 (S100P) is a member of S100 protein family, whose members function as extracellular and intracellular regulators of diverse cellular processes. S100P expression has been detected in human tumor cell lines derived from breast, prostate, pancreas, lung and colon; and is associated with a malignant phenotype, hormone independence and chemotherapy resistance. Over-expression of S100P promoted tumorigenesis and metastasis in diverse cancer models. Recent studies have shown that S100P is highly expressed in both the cytoplasm and nucleus of cells in poorly differentiated bladder cancers.

1. Esheba GE, *et al.* Am J Surg Pathol. 2009 Mar; 33(3):347-53. 2. Chuang AY, *et al.* Am J Surg Pathol. 2007 Aug; 31(8):1246-55. 3. Higgins JP, *et al.* Am J Surg Pathol. 2007 May; 31(5):673-80. 4. Gibadulinova A, *et al.* Amino Acids. 2011 Oct; 41(4):885-92. 5. Deng H, *et al.* Am J Clin Pathol. 2008 Jan; 129(1):81-8. 6. Shiota M, *et al.* BJU Int. 2011 Apr; 107(7):1148-53.



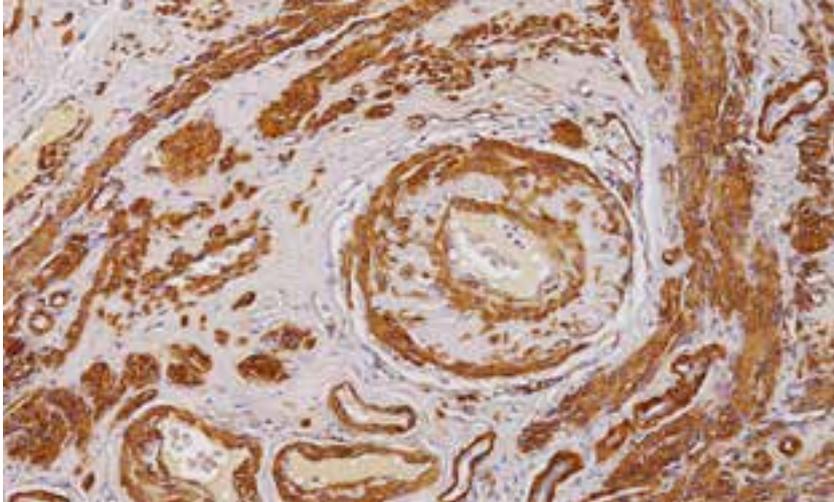
Seminoma stained with SALL4

SALL4

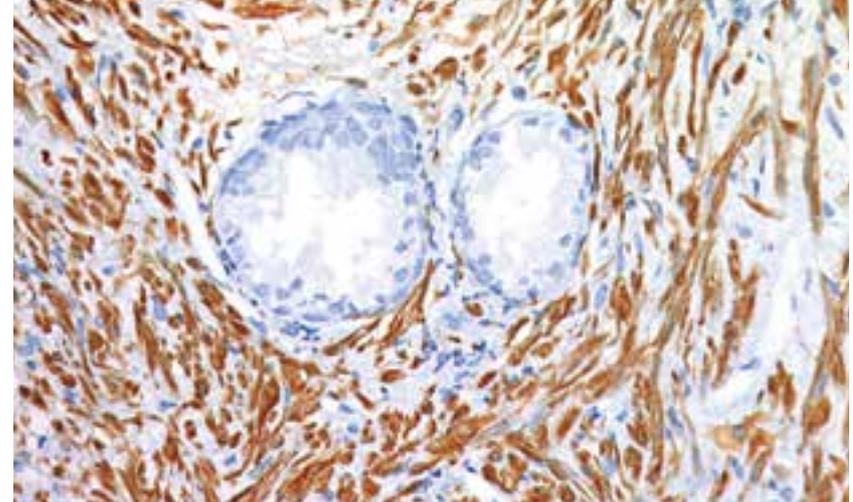
Clone	6E3
Isotype	IgG1/kappa
Reactivity	
Control	Seminoma
Cat. No.	CM 384 A, C; PM 384 AA

SALL4 is required for the maintenance of embryonic stem cell pluripotency by modulating Oct4. Studies support SALL4 as a sensitive and specific marker for seminomas and ovarian primitive germ-cell tumors. Studies have demonstrated that over 90% of tumor cells in intratubular germ-cell neoplasias and embryonal carcinomas show strong SALL4 staining. In addition, 100% of 31 yolk sac tumors (5 pediatric and 26 postpubertal) showed strong positive SALL4 staining of tumor cells, but were negative for Oct4. SALL4 is a promising pan germ-cell marker, with studies showing that it is superior to PLAP and Oct4 antibodies.

1. Bai S, *et al.* Int J Surg Pathol. 2013 Aug; 21(4):342-51. 2. Liu A, *et al.* Am J Surg Pathol. 2010 May; 34(5):697-706. 3. Cao D, Humphrey PA, Allan RW. Cancer. 2009 Jun 15; 115(12):2640-51. 4. Cao D, *et al.* Am J Surg Pathol. 2009 Jun; 33(6): 894-904. 5. Cui W, *et al.* Mod Pathol. 2006 Dec; 19(12): 1585-92. 6. Ma Y, *et al.* Blood. 2006 Oct; 108(8):2726-35.



Blood vessels stained with Smooth Muscle Actin (SMA)



Prostate connective tissue stained with Smooth Muscle Actin (SMA)

Smooth Muscle Actin (SMA) **PREFERRED**

Clone	1A4
Isotype	IgG2a/kappa
Reactivity	  
Control	Blood vessels, leiomyoma or leiomyosarcoma
Cat. No.	CM 001 A, B, C; PM 001 AA; IP 001 G10

This antibody recognizes the alpha-smooth muscle isoform of actin. According to studies, it shows no cross-reactivity with actin from fibroblasts (beta- and gamma-cytoplasmic), striated muscle (alpha-sarcomeric) and myocardium (alpha-myocardial). Smooth Muscle Actin (SMA) [1A4] has been shown to stain smooth muscle cells in vessel walls, gut wall and myometrium. Myoepithelial cells in breast and salivary glands are also stained as they also contain actin. SMA is reportedly useful for identifying tumors arising from smooth muscle and myoepithelial cells.

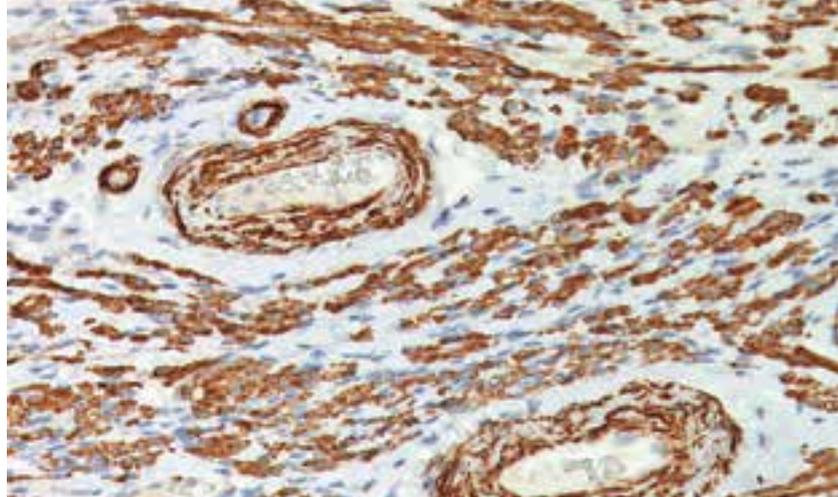
1. Sheehan M, *et al.* Arch Pathol Lab Med. 1995 Mar; 119(3):225-8. 2. Bailly, M, *et al.* Curr Biol. 2001 Apr 17; 11(8):620-5. 3. Lim YP, *et al.* Clin. Cancer Res. 2004 Jun; 10(12 Pt 1):3980-7. 4. Olson TM, *et al.* Science. 1998 May 1; 280(5364):750-2.

Smooth Muscle Actin (SMA)

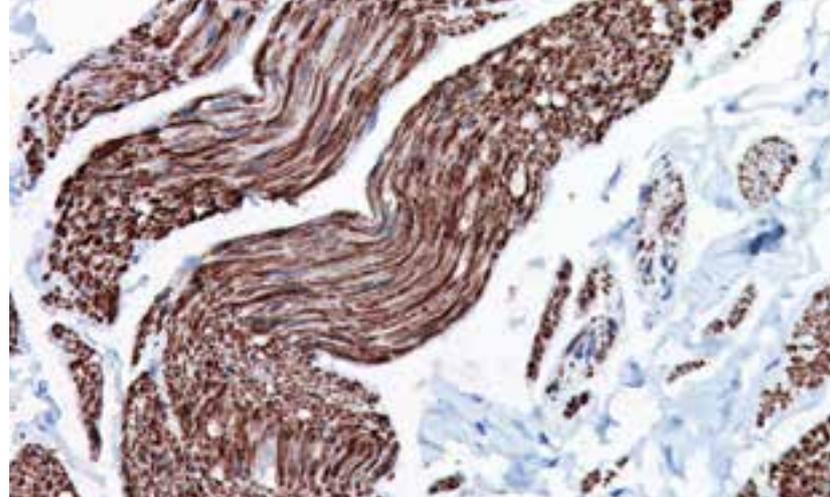
Clone	C04018
Isotype	IgG
Reactivity	  
Control	Blood vessels, leiomyoma or leiomyosarcoma
Cat. No.	CME 305 A, B; PME 305 AA

Smooth Muscle Actin (SMA) recognizes the alpha-smooth muscle isoform of actin. According to studies, it shows no cross-reactivity with actin from fibroblasts (beta- and gamma-cytoplasmic), striated muscle (alpha-sarcomeric) and myocardium (alpha-myocardial). A synthetic peptide corresponding to N-terminus of human alpha-actin was used as immunogen. SMA stains smooth muscle cells in vessel walls, gut wall and myometrium. Myoepithelial cells in breast and salivary glands are also stained as they contain actin. SMA is reportedly useful for identifying tumors arising from smooth muscle and myoepithelial cells.

1. Sheehan M, O' Brian Ds. Arch Pathol Lab Med. 1995 Mar; 119(3):225-8. 2. Bailly M, *et al.* Curr Biol. 2001 Apr; 11(8):620-5. 3. Lim YP, *et al.* Clin Cancer Res. 2004 Jun; 10(12 Pt 1):3980-7. 4. Olson TM, *et al.* Science. 1998 May; 280(5364):750-2.



Uterus stained with Smooth Muscle Myosin Heavy Chain



Bladder muscle stained with Smoothelin

Smooth Muscle Myosin Heavy Chain

Clone	SMMS-1
Isotype	IgG1/kappa
Reactivity	
Control	Uterus or normal breast
Cat. No.	CM 420 A, B; PM 420 AA

Smooth Muscle Myosin Heavy Chain (SM-MHC) is a cytoplasmic structural protein that is a major component of the contractile apparatus in smooth muscle cells. SM-MHC stains the intact myoepithelial cell (MEC) layers present in lesions of breast and bronchioloalveolar tissues and has been shown to be very helpful in distinguishing between benign and malignant tumors. Studies have shown that Calponin, SM-MHC and p63-labelled MECs in intraductal and micropapillary ductal carcinoma *in situ* cases while invasive papillary carcinomas were uniformly negative for all cases. SM-MHC also reacts with visceral and vascular smooth muscle cells.

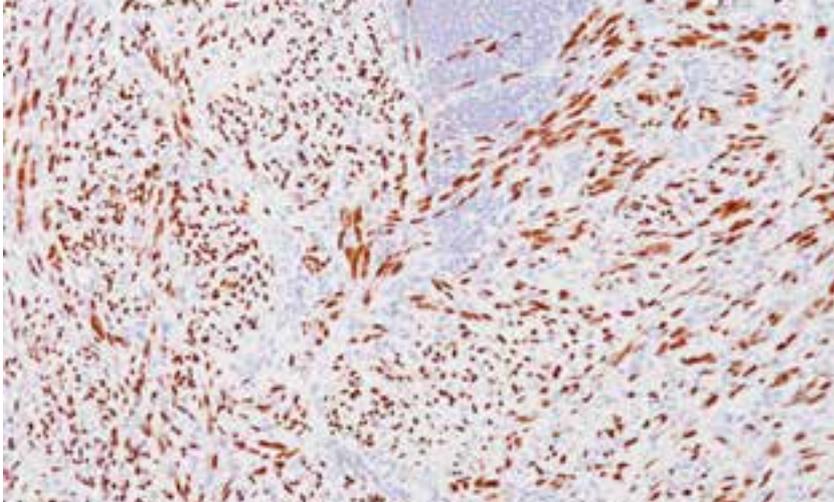
1. Nicolas MM, *et al.* Hum Pathol. 2010 May; 41(5):663-71. 2. Hilson JB, *et al.* Am J Surg Pathol. 2010 Jun; 34(6):896-900. 3. Saad RS, *et al.* Appl Immunohistochem Mol Morphol. 2010 May; 18(3):219-25. 4. Hill CB, *et al.* Am J Clin Pathol. 2005 Jan; 123(1):36-44. 5. Kalof AN, *et al.* J Clin Pathol. 2004 Jun; 57(6):625-9.

Smoothelin

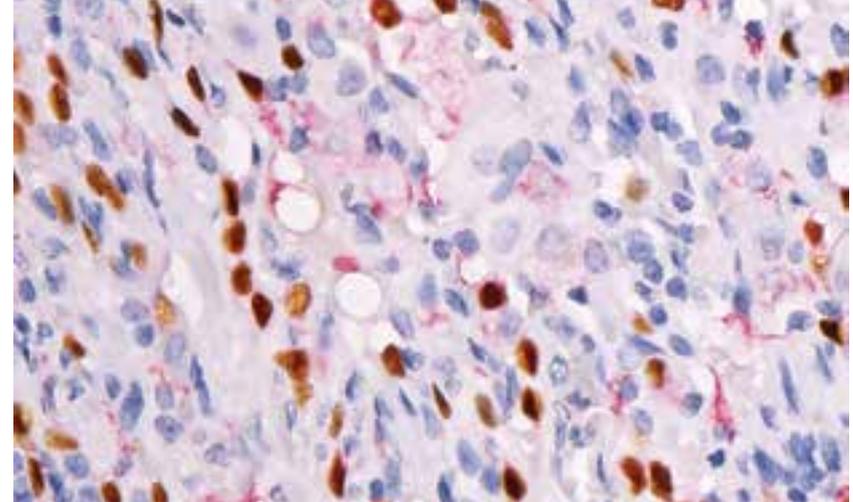
Clone	R4A
Isotype	IgG1
Reactivity	
Control	Bladder or colon carcinomas
Cat. No.	CM 372 A, C; PM 372 AA

Smoothelin [R4A] is a mouse monoclonal antibody directed to the cytoskeletal component of smooth muscle cells (SMC) known as smoothelin. Smoothelin is exclusively expressed in fully differentiated (contractile) SMCs. This antibody has been reported to be a useful tool in monitoring SMC differentiation; and may aid in the distinction of terminally differentiated smooth muscle cells, smooth muscle neoplasms of the gastrointestinal tract and the staging of bladder carcinoma. Cells with SMC-like characteristics, such as myofibroblasts and myoepithelial cells, as well as skeletal and cardiac muscle, do not contain smoothelin.

1. Paner GP, *et al.* Am J Surg Pathol. 2009 Jan; 33(1):91-8. 2. Maake C, *et al.* J Urol. 2006 Mar; 175(3 Pt 1):1152-7. 3. Van der Loop FT, *et al.* Arterioscler Thromb Vasc Biol. 1997 Apr; 17(4):665-71.



Spindle cell carcinoma stained with SOX10 (M)



Double stain of Surfactant apoprotein-A (red) and TTF-1 (brown)

SOX10 (M) **PREFERRED**

Clone	BC34
Isotype	IgG1
Reactivity	
Control	Melanoma
Cat. No.	ACI 3099 A, C; API 3099 AA; AVI 3099 G

The SOX10 protein is widely expressed in normal human tissues including melanocytes and breast tissue. It is also an important marker in malignant tumors such as melanoma, breast carcinoma, gliomas and benign tumors such as schwannomas. SOX10 has been shown to be expressed in 97-100% of desmoplastic and spindle cell melanomas and was also shown to be expressed in 100% of nevi. The majority of oligodendrogliomas but also a large percentage of astrocytomas and poorly differentiated glioblastomas have also been shown to express SOX10. PATENT PENDING.

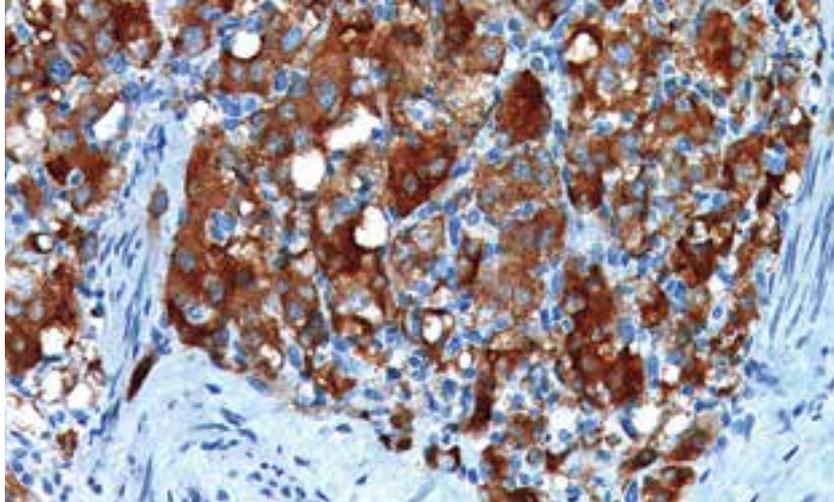
1. Mohamed A, *et al.* Appl Immunohistochem Mol Morphol. 2013 Dec; 21(6):506-10. 2. Pusch C, *et al.* Hum Genet. 1998 Aug; 103(2):115-23. 3. Mollaaghababa R, Pavan WJ. Oncogene. 2003 May; 22(20):3024-34. 4. Bondurand N, *et al.* FEBS Lett. 1998 Aug; 432(3):168-72. 5. Bannykh SI, *et al.* J Neurooncol. 2006 Jan; 76(2):115-27. 6. Britsch S, *et al.* Genes Dev. 2001 Jan; 15(1):66-78. 7. Feng Z, *et al.* J Cutan Pathol. 2011 Aug; 38(8):616-24.

Surfactant apoprotein-A [32E12]

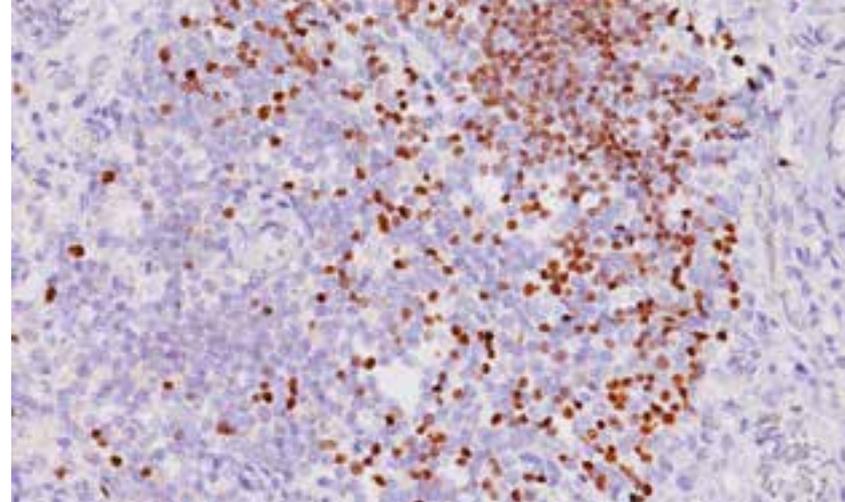
Clone	32E12
Isotype	IgG2a/kappa
Reactivity	
Control	Lung carcinoma
Cat. No.	CM 275 A, C; PM 275 AA

The expression of Surfactant-apoprotein-A (SP-A) by tumor cells has been shown to be a helpful diagnostic tool for the identification of primary lung carcinomas. SP-A is expressed in pneumocytes II of lung tissue and in a portion of non-small cell lung carcinomas. Immunohistochemically detected SP-A [32E12] in conjunction with thyroid transcription factor-1 (or other lung carcinoma identifying antibodies) may be a useful tool to aid in diagnosing lung malignancies of unknown primary origin.

1. Zamecnik J, *et al.* Virchows Arch. 2002 Apr; 440(4):353-61. 2. Sano H, *et al.* Mol Immunol. 2005 Feb; 42(3):279-87. 3. Sorensen GL, *et al.* Immunobiology. 2007; 212(4-5):381-416.



Pheochromocytoma stained with Synaptophysin



Thymus stained with Terminal Deoxynucleotidyl Transferase (TdT(P))

Synaptophysin

Clone	27G12
Isotype	IgG1
Reactivity	
Control	Pancreas, colon or small cell lung carcinoma
Cat. No.	CM 371 AK, CK; PM 371 AA; IP 371 G10

Synaptophysin [27G12] is an antibody targeted to the integral membrane glycoprotein known as synaptophysin. Synaptophysin is reported to play a role in the formation of presynaptic vesicles and exocytosis in neurons in brain, spinal cord, retina and in similar vesicles of the adrenal medulla as well as in neuromuscular junctions. Synaptophysin is also reported to be expressed in a wide spectrum of neuroendocrine tumors including neuroblastomas, ganglioneuroblastomas, pheochromocytomas and paragangliomas.

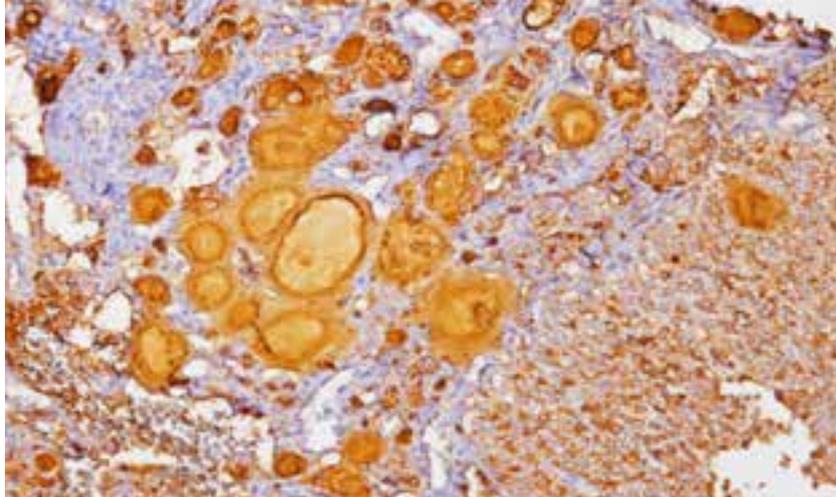
1. Chejfec G, *et al.* Am J Surg Pathol. 1987 Apr; 11(4):241-7. 2. Wiedenmann B, *et al.* Proc Natl Acad Sci U S A. 1986 May; 83(10):3500-4. 3. Takeda S, *et al.* Neuropathology. 2003 Dec; 23(4):254-61. 4. Romero-Rojas AE, *et al.* Neurocirugia (Astur). 2013 Sep 9. pii: S1130-1473(13)00108-5.

Terminal Deoxynucleotidyl Transferase (TdT(P))

Clone	N/A
Isotype	IgG
Reactivity	
Control	Lymphoblastic leukemia or fetal thymus
Cat. No.	CP 134 AK, CK; PP 134 AA

Terminal Deoxynucleotidyl Transferase (TdT) is a nuclear protein widely used as a marker for lymphoblastic leukemia. TdT is a template-independent DNA polymerase which has been shown to be responsible for the addition of nucleotides at the N-region junction of rearranged Ig heavy chain and T-cell receptor gene segments during the maturation of B- and T-cells. Studies have shown that a panel of antibodies consisting of TdT, CD10, CD99 (MIC2), Bcl-2 and CD34 can be used to distinguish lymphoblastic leukemias from small noncleaved cell lymphomas.

1. Orazi A, *et al.* Am J Clin Pathol. 1994 Nov; 102(5):640-5. 2. Pileri SA, *et al.* Br J Haematol. 1999 May; 105(2):394-401. 3. Soslow RA, *et al.* Hum Pathol. 1997 Oct; 28(10):1158-65. 4. Boubakour-Azzouz I, *et al.* Nucleic Acids Res. 2012 Sep 1; 40(17):8381-91.



Thyroid cancer stained with Thyroglobulin Cocktail

Thyroglobulin Cocktail

Clone 2H11+ 6E1

Isotype IgG1 + IgG1

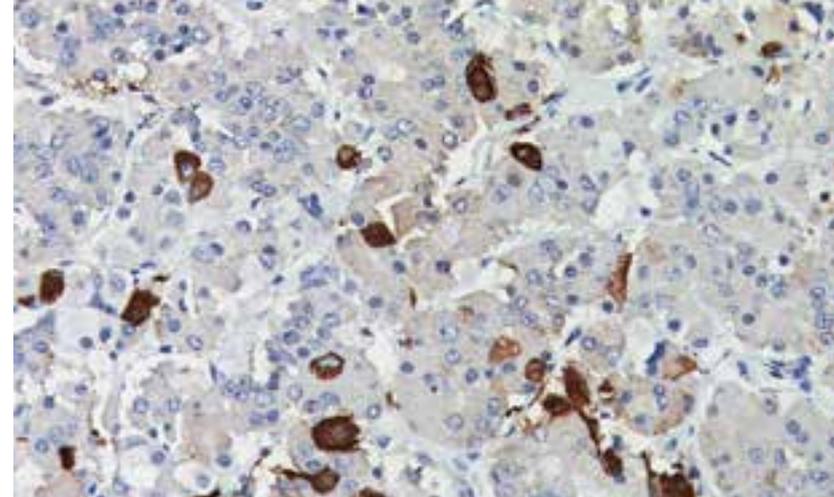
Reactivity 

Control Thyroid or thyroid carcinoma

Cat. No. CM 022 A; PM 022 AA; IP 022 G10

This antibody cocktail has been shown to react with human thyroglobulin, staining thyroglobulin in follicular epithelial cells as well as colloid tissue. Clones 2H11+ 6E1 have been shown to be useful in positive identification of both papillary and follicular types of thyroid carcinomas. Demonstration of thyroglobulin staining via immunohistochemistry in a metastatic lesion establishes the thyroid origin of the tumor. Poorly differentiated carcinomas of the thyroid are frequently thyroglobulin negative. Adenocarcinomas from a non-thyroid origin are not reactive.

1. Abrosimov A. *Arkh Patol.* 1996 Jul; 58(4):43-8. 2. Pastolero GC, *et al.* *Am J Surg Pathol.* 1996 Feb; 20(2):245-50. 3. Brasanac D, *et al.* *Srp Arh Celok Lek.* 1993 Mar-Jul; 121(3-7):70-3. 4. Ghali VS, *et al.* *Hum Pathol.* 1992 Jan; 23(1):21-5. 5. Harach HR, *et al.* *Histopathology.* 1988 Jul; 13(1):43-54. 6. Shvero J, *et al.* *Cancer.* 1988 Jul; 62(2):319-25.



Pituitary gland stained with Thyroid Stimulating Hormone (TSH)

Thyroid Stimulating Hormone (TSH)

Clone TSH01 + TSH02

Isotype IgG1/kappa

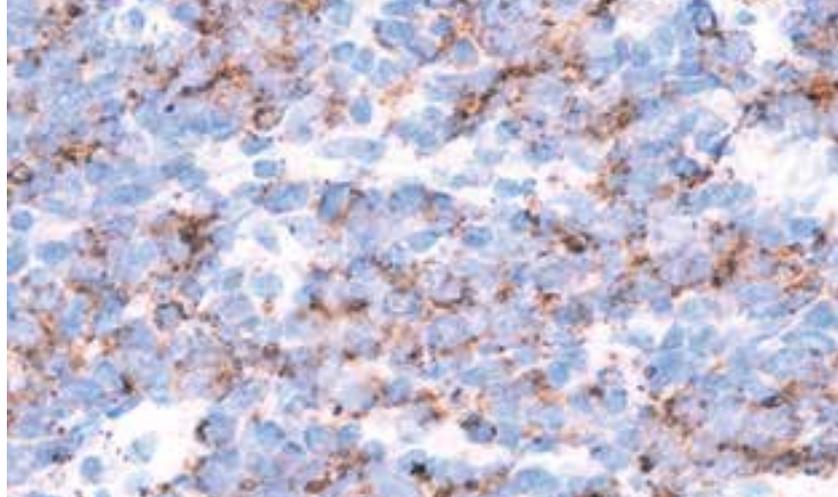
Reactivity 

Control Anterior pituitary

Cat. No. CM 412 A, B; PM 412 AA

Thyroid Stimulating Hormone (also known as TSH or thyrotropin) is a peptide hormone synthesized and secreted by thyrotrope cells in the anterior pituitary gland, which regulates the endocrine function of the thyroid gland. TSH may be a useful marker in the classification of pituitary adenomas and can aid in the differential identification of primary and metastatic tumors of the pituitary. TSH secreting pituitary adenomas is a very rare cause of hyperthyroidism.

1. Jha S, Kumar S. *J Assoc Physicians India.* 2009 Jul; 57:537-9. 2. Foppiani L, *et al.* *J Endocrinol Invest.* 2007 Jul-Aug; 30 (7):603-9. 3. Ness-Abramof R, *et al.* *Pituitary.* 2007;10(3):307-10.



Anaplastic large cell lymphoma stained with TIA-1

TIA-1

Clone	TIA-1
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Isotype	IgG1
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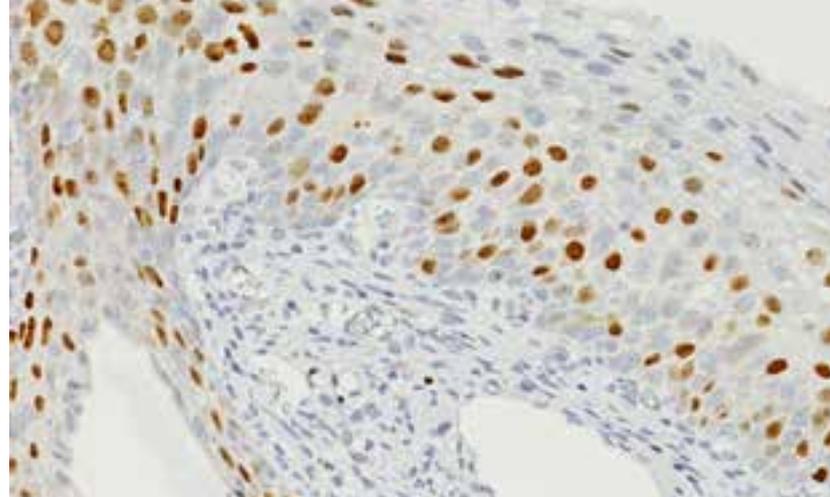
Reactivity	
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Control	Anaplastic large cell lymphoma or tonsil
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Cat. No.	CM 130 A, B, C; PM 130 AA
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TIA-1 (T-cell intracytoplasmic antigen) is expressed in lymphocytes processing cytolytic potential. Studies show that 60 to 70% of anaplastic large cell lymphoma reacts with TIA-1. Studies also indicate that TIA-1 reacts with most large granular lymphocytic leukemias, hepatosplenic T-cell lymphomas, intestinal T-cell lymphomas, NK-like T-cell lymphomas, NK cell lymphomas, nasal T/NK-cell lymphomas, subcutaneous T-cell lymphomas and pulmonary angiocentric lymphomas of T- or NK-phenotype. All B-cell lymphomas, Hodgkin's and lymphoblastic leukemias were negative for TIA-1.

1. Dukers DF, *et al.* J Clin Pathol. 1999 Feb; 52(2):129-36. 2. Kanavaros P, *et al.* Anticancer Res. 1999 Mar-Apr; 19(2A):1209-16. 3. Felgar RE, *et al.* Hum Pathol. 1999 Feb; 30(2):228-36. 4. Kanavaros P, *et al.* Leuk Lymphoma. 2000 Jul; 38(3-4):317-26.



Normal cervix stained with Topoisomerase II alpha

Topoisomerase II alpha

Clone	31
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Isotype	IgG1
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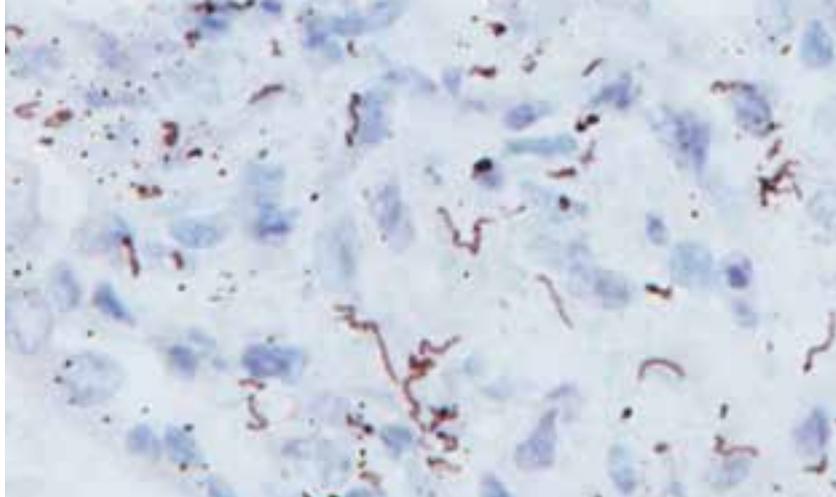
Reactivity	
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Control	Cervix or tonsil
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Cat. No.	ACI 3045 A, B; API 3045 AA
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Topoisomerase II alpha (Topo IIa) plays an important role in DNA synthesis and RNA transcription, as well as chromosomal segregation during mitosis. It is reported to be a sensitive and specific marker of late S-, G2- & M-phases in transformed and developmentally regulated normal cells. Topo IIa is also implicated in drug resistance of tumor cells and has been shown to be over-expressed in many human cancers. Decreased expression of Topo IIa is the predominant mechanism of resistance to several chemotherapeutic agents.

1. Gao XH, *et al.* Int J Colorectal Dis. 2012 Apr;27(4):429-35. 2. Nikolényi A, *et al.* Oncology. 2011; 80(3-4):269-77. 3. Karnes RJ, *et al.* Cancer Res. 2010 Nov; 70(22):8994-9002. 4. Ferrandina G, *et al.* Br J Cancer. 2008 Jun; 98(12):1910-5. 5. Kim EJ, *et al.* Urology. 2010 Jun; 75 (6):1516.e9-13.

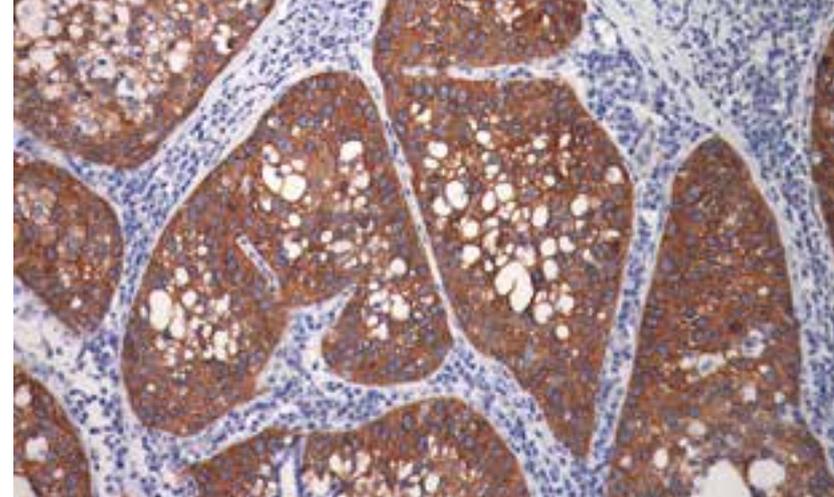
Spirochete infected tissue stained with *Treponema pallidum* (Spirochete)

Treponema pallidum (Spirochete)

Clone	N/A
Isotype	IgG
Reactivity	N/A
Control	N/A
Cat. No.	ACA 135 A, B, C; APA 135 AA

Spirochete (*Treponema pallidum*) is the causative agent of syphilis. In the past, localization of the spirochete agent was achieved with silver stains such as Steiner's and/or Warthin-Starry. *Treponema pallidum* can now be successfully localized with immunohistochemical techniques in formalin-fixed, paraffin-embedded (FFPE) tissue. This offers a substantial advantage over silver techniques. The antibody consists of a rabbit purified IgG fraction and is highly specific for spirochete. *Treponema pallidum* also cross-reacts with *burgdorferi* (Lyme disease).

1. Hoang MP, High WA, Molberg KH. J Cutan Pathol. 2004 Oct; 31(9):595-9. 2. Phelps RG, et al. Int J Dermatol. 2000 Aug; 39(8):609-13. 3. Quatresooz P, Pierard GE. Appl Immunohistochem Mol Morphol. 2009 Jan; 17(1):47-50. 4. Martin-Ezquerria G, et al. Hum Pathol. 2009 May; 40(5):624-30.



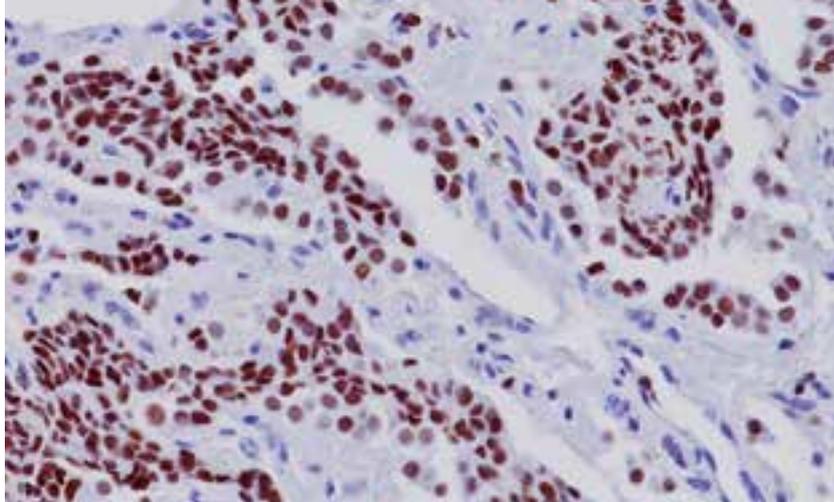
Lung squamous carcinoma stained with TRIM29 (P)

TRIM29 (P)

Clone	N/A
Isotype	IgG
Reactivity	
Control	Lung squamous cell carcinoma
Cat. No.	PP 416 AA

Tripartite motif-containing 29 (TRIM29) is also known as ataxia-telangiectasia group D complementing gene (ATDC). A high expression of TRIM29 has been reported in gastric and pancreatic cancers and correlates with enhanced tumor growth and lymph node metastasis. In-house studies showed that TRIM29 was able to aid in distinguishing lung squamous cell carcinoma from lung adenocarcinoma with a 92% positive accuracy if used in a panel with antibodies such as TTF-1, p63, CK5/6 and Napsin A. Studies have also shown that TRIM29 expression is strongly associated with histological grade, tumor size, extent of invasion and poorer survival rates.

1. Ring BZ, et al. Mod Pathol. 2009 Aug; 22(8): 1032-43. 2. Kosaka Y, et al. Ann Surg Oncol. 2007 Sep; 14(9): 2543-9. 3. Tacha D, Yu C, Haas T. Mod Pathol. 2011 Feb; 24(Supplement 1s):425A. 4. Tacha D, et al. Appl Immunohistochem Mol Morphol. 2012 May; 20(3):201-7.



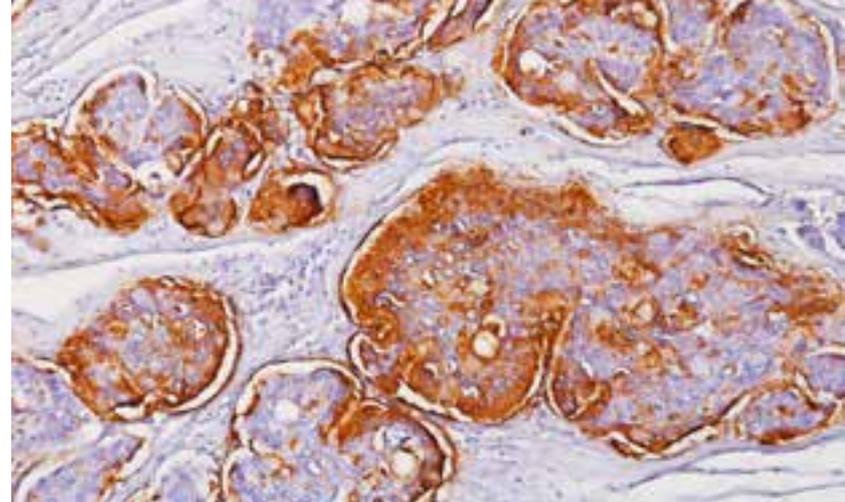
Lung adenocarcinoma stained with TTF-1

TTF-1

Clone	8G7G3/1
Isotype	IgG1
Reactivity	
Control	Lung adenocarcinoma or thyroid
Cat. No.	CM 087 A, B, C; PM 087 AA, H; IP 087 G10; VP 087 G

Thyroid transcription factor-1 (TTF-1) is a member of the NKX2 family of homeodomain transcription factors. Studies show TTF-1 is expressed in epithelial cells of the thyroid gland and the lung. TTF-1 is detected in primary lung adenocarcinomas and small cell carcinomas. It is absent in mesotheliomas, colon cancer and breast cancer. Studies show a panel of TTF-1, Napsin A and p63 and CK5/6 can sub-classify poorly differentiated areas of non-small cell lung carcinomas. A TTF-1 + p40 cocktail has been reported to differentiate between primary lung squamous cell carcinomas from adenocarcinomas.

1. Di Loreto C, *et al.* Cancer Lett. 1998 Feb 13; 124(1):73-8. 2. Bejarano PA, *et al.* Mod Pathol. 1996 Apr; 9(4):445-52. 3. Holzinger A, *et al.* Hybridoma. 1996 Feb; 15(1):49-53. 4. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May; 20(3):201-7. 5. Brown AF, *et al.* Arch Pathol Lab Med. 2013 Sep; 137(9):1274-81. 6. Mukhopadhyay S, Katzenstein AL. Am J Surg Pathol. 2011 Jan; 35(1):15-25. 7. Noh S, Shim H. Lung Cancer. 2012 Apr; 76(1):51-5.



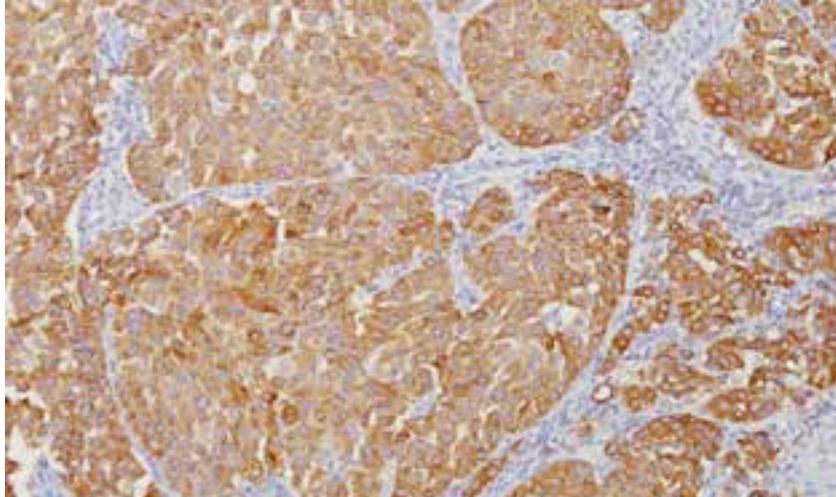
Breast cancer stained with Tumor Associated Glycoprotein [B72.3]

Tumor Associated Glycoprotein [B72.3]

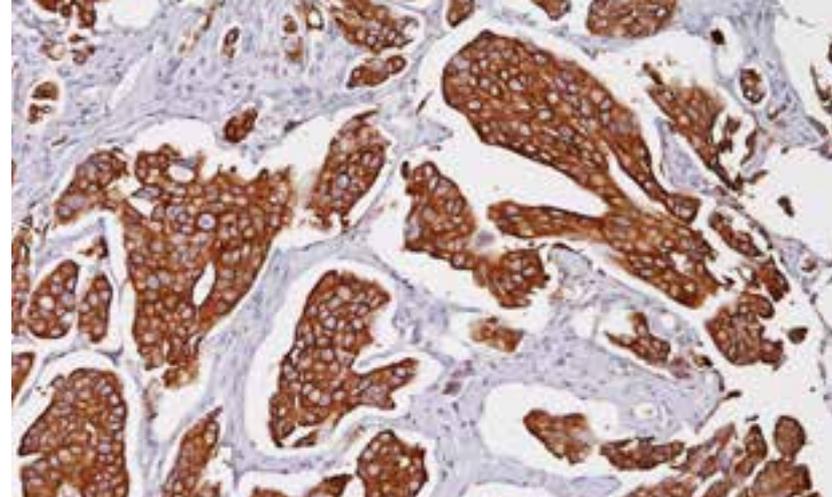
Clone	B72.3
Isotype	IgG1/kappa
Reactivity	
Control	Colon carcinoma or breast cancer
Cat. No.	CM 002 B, C; PM 002 AA

Tumor Associated Glycoprotein [B72.3], also known as TAG-72, has the properties of a mucin. The majority of human adenocarcinomas including colorectal, pancreatic, gastric, ovarian, endometrial, mammary and non-small cell lung cancer display some cell populations that are positive for TAG-72 staining. Weak or no reactivity has been observed with most cell types of normal adult tissue with the exception of the secretory endometrium. Tumor Associated Glycoprotein [B72.3] is reportedly useful in distinguishing pulmonary adenocarcinomas from pleural mesotheliomas.

1. van Niekerk CC, *et al.* Cancer Detect Prev. 1997; 21(3):247-57. 2. Guadagni F, *et al.* Anticancer Res. 1996 Jul; 16(4B):2141-8. 3. Zhang Y, *et al.* Pathol Oncol Res. 2012 Oct; 18(4):911-6. 4. Wang D, *et al.* Med Oncol. 2012 Sep; 29(3):2027-31.



Melanoma stained with Tyrosinase



Bladder cancer stained with Uroplakin II

Tyrosinase

Clone T311

Isotype IgG2a

Reactivity 

Control Melanoma

Cat. No. CM 155 A, B, C; PM 155 AA

Tyrosinase is a key enzyme involved in the initial stages of melanin biosynthesis. Studies have shown Tyrosinase to be a more sensitive marker for melanoma when compared to HMB45 and MART-1. It has also shown to label a higher percentage of desmoplastic melanomas than HMB45. Unlike HMB45, Tyrosinase does not discriminate between activated or resting melanocytes. Other studies have shown Tyrosinase to be a very specific marker for melanomas that did not cross react with any tumors or normal tissues tested. Tyrosinase is reported to be a superior melanoma marker when compared to HMB45.

1. Orchard GE. *Histochem J.* 2000 Aug; 32(8):475-81. 2. Jungbluth AA, *et al. Pathol Res Pract.* 2000; 196(4):235-42. 3. Kaufmann O, *et al. Mod Pathol.* 1998 Aug; 11(8):740-6. 4. Hofbauer GF, *et al. J Cutan Pathol.* 1998 Apr; 25(4):204-9.

Uroplakin II

Clone BC21

Isotype IgG1/kappa

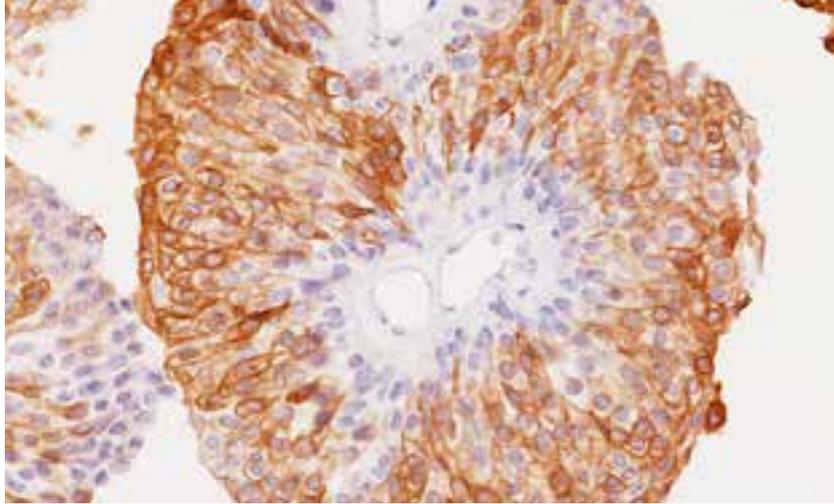
Reactivity 

Control Normal bladder or urothelial carcinoma

Cat. No. ACI 3051 A, C; API 3051 AA; AVI 3051 KG

Uroplakin II is a 15 kDa protein component of urothelial plaques. Studies have shown Uroplakin II mRNA was highly specific and was expressed in both bladder cancer tissues and peripheral blood of patients with primary and metastatic urothelial carcinoma of the bladder. Uroplakin II [BC21] has exhibited an increased sensitivity (46/59, 78%) when compared to Uroplakin III [AU1] (191/56, 34%) in cases of urothelial carcinoma of the bladder with the exception of bladder and ureter, staining was highly specific in various normal and neoplastic tissues in an in-house study. Uroplakin II [BC21] is a highly specific antibody that may be useful in identifying tumors of urothelial origin. PATENT PENDING.

1. Wu XR, *et al. Kidney Int.* 2009 Jun; 75 (11):1153-65. 2. Wu X, *et al. J Urol.* 2005 Dec; 174 (6):2138-42. 3. Lu JJ, *et al. Clin Cancer Res.* 2000 Aug;6 (8):3166-71. 4. Li SM, *et al. J Urol.* 1999 Sep;162(3 Pt 1):931-5.



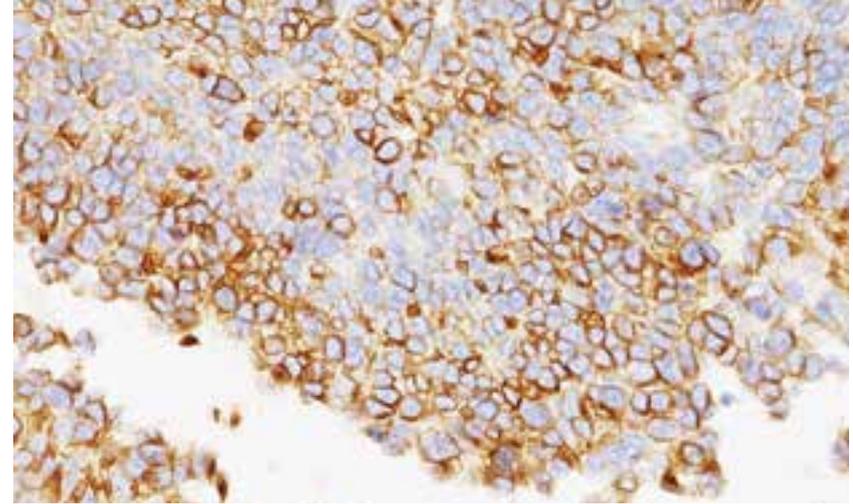
Urothelial carcinoma stained with Uroplakin II + Uroplakin III

Uroplakin II + Uroplakin III +

Clone	BC21 + BC17
Isotype	IgG1 + IgG1
Reactivity	
Control	Normal bladder or urothelial carcinoma
Cat. No.	API 3094 AA

Uroplakin II [BC21] and Uroplakin III [BC17] are highly specific antibodies that may be useful in identifying tumors of urothelial origin. With the exception of bladder and ureter, staining was highly specific in various normal and neoplastic tissues in an in-house study. Both antibodies exhibited increased staining sensitivity when compared to Uroplakin III [AU1] in cases of urothelial carcinoma of the bladder. Uroplakin II + Uroplakin III may be a specific and sensitive antibody cocktail for urothelial carcinoma and in discriminating bladder cancer from renal and prostate carcinomas. PATENT PENDING.

1. Wu XR, *et al.* Kidney Int. 2009 Jun; 75(11):1153-65. 2. Moll R, *et al.* AM J Pathol. 1995 Nov; 147(5):1383-97. 3. Kaufmann O, Volmerig J, Dietel M. Am J Clin Pathol. 2000 May; 113(5):683-7. 4. Olsburgh J, *et al.* J Pathol. 2003 Jan; 199(1):41-9. 5. Huang Hy, *et al.* Hum Pathol. 2007 Nov; 38(11):1703-13.



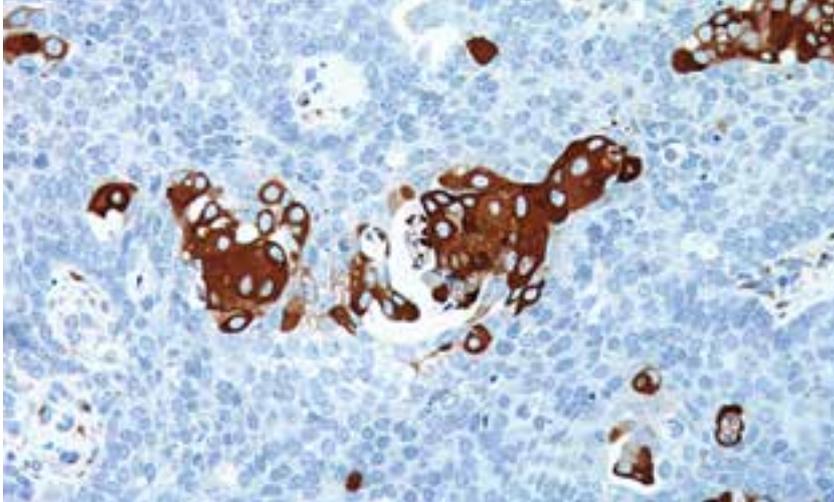
Bladder transitional cell carcinoma stained with Uroplakin III

Uroplakin III

Clone	BC17
Isotype	IgG1
Reactivity	
Control	Bladder cancer
Cat. No.	ACI 3023 A, C; API 3023 AA

Uroplakin III is present in the urothelial surface membrane of human renal pelvis, ureter, bladder and urethra. Uroplakin III [BC17] demonstrated a higher sensitivity compared with [AU1] on urothelial transitional cell carcinomas, in in-house studies. [BC17] staining was negative in all normal and neoplastic tissues except for bladder; hence it is highly specific to uroepithelial tumors and may be a useful tool in the discrimination of bladder, renal and prostate cancers. Loss of Uroplakin III expression in bladder cancers has been associated with higher grade, muscle-invasive cancer and lymphovascular invasion. Uroplakin III [BC17] may be used in a panel of antibodies including GATA3, p63 and S100P. PATENT PENDING.

1. Matsumoto K, *et al.* Urology. 2008 Aug; 72(2):444-9. 2. Koga F, *et al.* Clin Cancer Res. 2003 Nov; 9(15):5501-7. 3. Brown HM, Wilkinson EJ. Hum Pathol. 2002 May; 33(5):545-8. 4. Riedel I, *et al.* Virchows Arch. 2001 Feb; 438(2):181-91. 5. Moll R, *et al.* Verh Dtsch Ges Pathol. 1993; 77:260-5.



Ovarian cancer stained with VEGF



Colon cancer stained with Villin

VEGF RUO FFPE

Clone	EP1176Y
Isotype	IgG
Reactivity	
Control	Tonsil, breast or ovarian cancers
Cat. No.	CME 356 AK, BK

Vascular Endothelial Growth Factor (VEGF) is a sub-family of growth factors, more specifically the platelet-derived growth factor family of cystine-knot growth factors. VEGF proteins are important signaling factors involved in both vasculogenesis (the formation of the embryonic circulatory system) and angiogenesis (the growth of blood vessels from pre-existing vasculature). Studies indicate that in certain cancers, high VEGF expression is correlated with shorter survival. This indicates that VEGF is a valuable prognostic marker and holds the potential to be a predictive marker for anti-angiogenic cancer treatment.

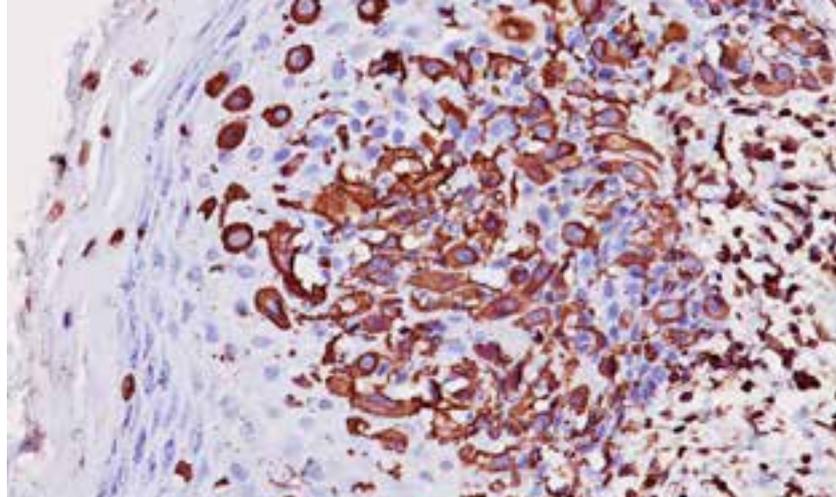
1. Maae E, *et al.* J Histochem Cytochem. 2011 Aug; 59(8):750-60. 2. Zhu L, Loo WT, Louis WC. Biomed Pharmacother. 2007 Oct; 61(9):558-61. 3. Saad RS, *et al.* Mod Pathol. 2006 Oct; 19(10):1317-23. 4. Kostopoulos I, *et al.* Breast Cancer Res Treat. 2006 Apr; 96(3):251-61.

Villin IVD FFPE

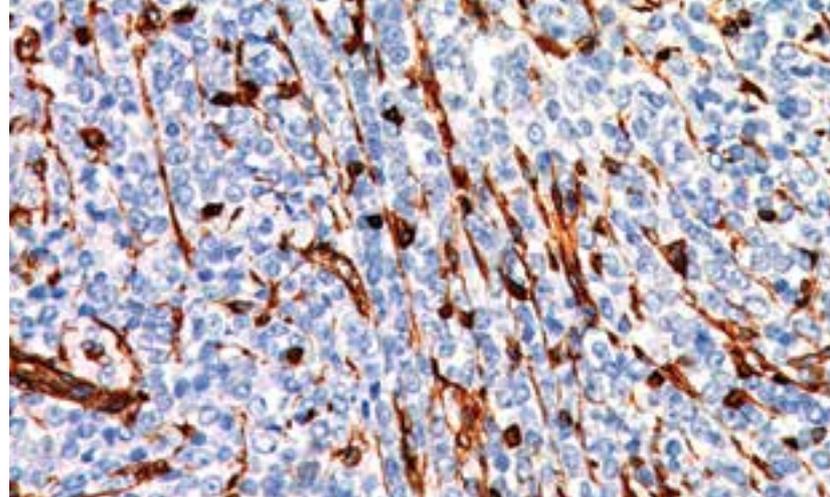
Clone	1D2C3
Isotype	IgG1/kappa
Reactivity	
Control	Small intestine or colon cancers
Cat. No.	CM 094 A, C; PM 094 AA

Villin is a cytoskeletal protein of microvilli of epithelial cell brush border found in absorptive cells of the intestine and proximal renal tubes. Villin is a very specific marker for gastrointestinal tumors and adenocarcinomas of the pancreas. Other subsets of tumors stained with Villin are Merkel cell, lung (with rootlets), ovarian and kidney. It does not stain breast cancer. One study indicates Villin immunoreactivity may be a prognostic indicator for better survival in colorectal carcinomas. Used in a panel with CK7, CK20/CDX-2 and TTF-1, Villin can be a very useful tool in differentiating colon adenocarcinoma from breast carcinoma or lung adenocarcinoma.

1. Al-Maghrabi J, *et al.* ISRN Gastroenterol. 2013 Sep 5; 2013:679724. 2. Lin D, *et al.* J Thorac Dis. 2013 Feb; 5(1):E17-20. 3. Zhang MQ, *et al.* Am J Clin Pathol. 2007 Nov; 128(5):808-16. 4. Vang R, *et al.* Am J Surg Pathol. 2007 Jun; 31(6):854-69. 5. Kerkhof M, *et al.* Aliment Pharmacol Ther. 2006 Dec; 24(11-12):1613-21.



Cutaneous melanoma stained with Vimentin



Tissue stained with Vimentin

Vimentin IVD FFPE PREFERRED

Clone V9

Isotype IgG1/kappa

Reactivity 

Control Melanoma

Cat. No. CM 048 A, C; PM 048 AA; IP 048 G10

Vimentin is the main intermediate filament protein in mesenchymal cells. This antibody shows no cross-reactivity with other closely related intermediate filament proteins such as Desmin and GFAP. Vimentin may be useful as an epithelial-mesenchymal transition (EMT) marker, giving an indication of tumor progression and potential for metastasis and is of value in the differential diagnosis of undifferentiated neoplasms including melanoma and sarcoma. Vimentin can also serve as an internal control for formalin-fixed tissues that are over-fixed.

1. Behnsawy HM, *et al.* Korean J Urol. 2013 Aug; 54(8):547-54. 2. Kim MK, *et al.* Int J Clin Exp Pathol. 2013 Aug 15; 6(9):1747-58. 3. Zeisberg M, Neilson EG. J Clin Invest. 2009 Jun; 119(6):1429-37. 4. Yang J, Weinberg RA. Dev Cell. 2008 Jun; 14(6):818-29.

Vimentin IVD FFPE

Clone SP20

Isotype IgG

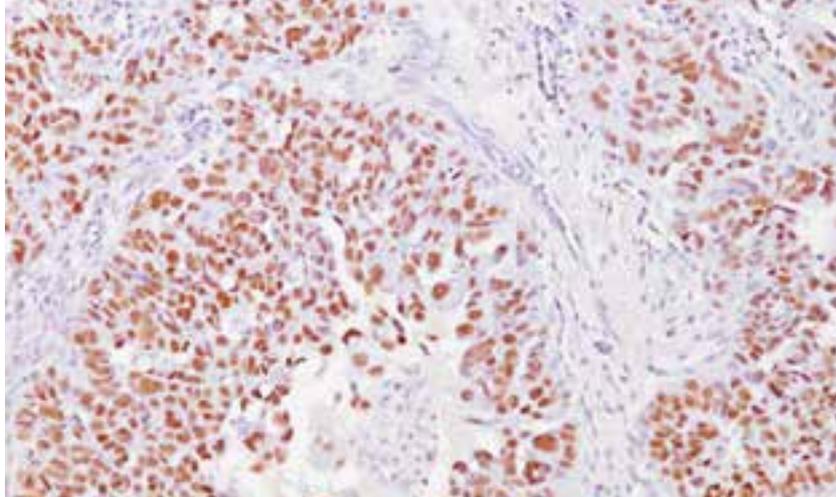
Reactivity 

Control Melanoma or sarcoma

Cat. No. CRM 312 A, B; PRM 312 AA

Vimentin is the main intermediate filament protein in mesenchymal cells. This antibody shows no cross-reactivity with other closely related intermediate filament proteins such as Desmin and GFAP. Vimentin may be useful as an epithelial-mesenchymal transition (EMT) marker, giving an indication of tumor progression and potential for metastasis and is of value in the differential diagnosis of undifferentiated neoplasms including melanoma and sarcoma. Vimentin can also serve as an internal control for formalin-fixed tissues that are over-fixed.

1. Behnsawy HM, *et al.* Korean J Urol. 2013 Aug; 54(8):547-54. 2. Kim MK, *et al.* Int J Clin Exp Pathol. 2013 Aug 15; 6(9):1747-58. 3. Zeisberg M, Neilson EG. J Clin Invest. 2009 Jun; 119(6):1429-37. 4. Yang J, Weinberg RA. Dev Cell. 2008 Jun; 14(6):818-29.



Ovarian cancer stained with WT1 (Wilms' Tumor)

WT1 (Wilms' Tumor)

Clone BC.6F-H2

Isotype IgG1/kappa

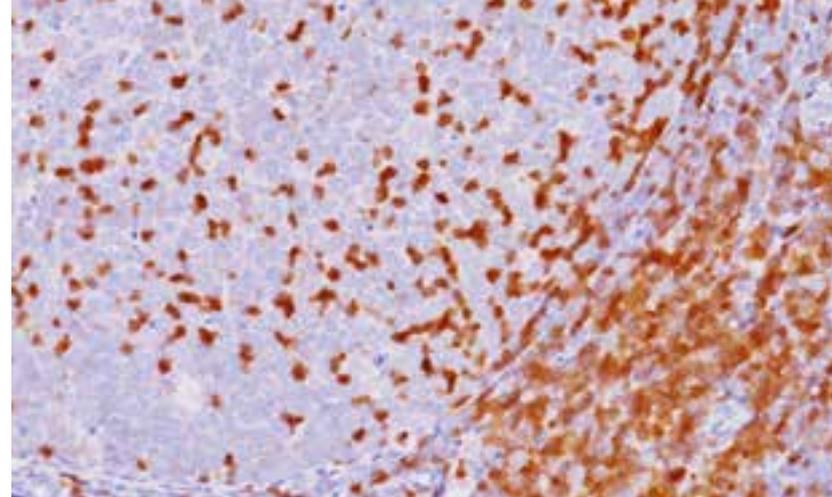
Reactivity 

Control Mesothelioma, normal kidney or Wilms' tumor

Cat. No. CM 258 AK, BK, CK; PM 258 AA

WT1 is a protein involved in the induction of Wilms' Tumor. The WT1 gene, located on 11p13, is inactivated in 5 to 10% of sporadic Wilms' tumors and in nearly 100% of Denys-Drash patients. In normal tissues, WT1 (mRNA) has been observed in human kidney, spleen and gonadal ridge mesoderm. The WT1 gene has also been observed in Sertoli cells of testes and in granulosa cells of the ovary. In tumors, WT1 has been demonstrated in Wilms' tumors and in the majority of mesotheliomas. A study indicates WT1 may be a useful tool in distinguishing schwannoma from fibroblastic meningioma.

1. Köbel M, *et al.* Cancer Epidemiol Biomarkers Prev. 2013 Oct; 22(10):1677-86. 2. Wang Y, Wang Y, Zheng W. Int J Clin Exp Pathol. 2013 Sep 15; 6(10):2121-8. 3. Singh A, *et al.* Pathol Oncol Res. 2012 Apr; 18(2):383-9. 4. Ordóñez NG. Mod Pathol. 2006 Mar; 19(3):417-28.



Tonsil stained with ZAP-70 (LR)

ZAP-70 (LR)

Clone BC.2F3.2

Isotype IgG2a

Reactivity 

Control Tonsil

Cat. No. CM 259 A

Zeta-associated protein-70 (ZAP-70) is a tyrosine kinase normally expressed by natural killer cells and T cells. Several studies have indicated a correlation between ZAP-70 expression and immunoglobulin heavy-chain variable-region (IgVH) mutational status in the leukemic cells of chronic lymphocytic leukemia (CLL), with ZAP-70 suggested as a surrogate marker for IgVH mutational status. The mutational status of IgVH genes in CLL is an important prognostic factor in the disease and ZAP-70 overexpression indicates an unfavorable disease course in terms of progression and overall survival.

1. Rosenquist R, *et al.* Leuk Lymphoma. 2013 Nov; 54(11):2351-64. 2. Roullet M, *et al.* Appl Immunohistochem Mol Morphol. 2007 Dec; 15(4):471-6. 3. Zanotti R, *et al.* Leukemia. 2007 Jan; 21(1):102-9.



Multiplex IHC™

CD4 (M) + CD8 (RM)	137	Ki-67 + Caspase-3.	143
CDX2 + CK7	137	L26 + CD3	143
CK5/14 + p63 + CK7/18	138	p120 + E-cadherin	144
CK5/14 + p63 + P504S.	138	p63 + CK5	144
D2-40 + CD31	139	p63 + TRIM29	145
D2-40 + CK8/18.	139	Pan Melanoma + Ki-67	145
D2-40 + Ki-67	140	Pan Melanoma + S100	146
Desmoglein 3 + Napsin A.	140	TTF-1 + CK5.	146
ERG + AMACR	141	TTF-1 + Napsin A	147
ERG-2™ (ERG + CK5).	141	TTF-1 + Napsin A (RM)	147
GCDFP-15 + Mammaglobin	142	Uro-2™ (CK20 + p53).	148
Kappa + Lambda	142	URO-3™ Triple Stain	148

Biocare Medical's innovative range of Multiplex IHC™ products, including novel antibody combinations and highly sensitive multiplex detection technology, offer a portfolio of integrated products to address the expanding cancer, infectious disease and research markets. The Multiplex IHC product line allows for testing of morphologically distinct markers which aid in solving clinical problems and simplifying interpretation while conserving precious patient tissue. With key Multiplex IHC products for prostate, breast, lung and additional tissues we offer pathologists and clinical IHC laboratories a set of tools to aid in cancer detection.

Multiplex IHC

Simultaneously test for multiple IHC markers • Prevent the unnecessary staining of limited tissue • Reduce labor and reagent costs over 50%

Bladder Markers	Cat. No.
Uro-2™ (CK20 + p53)	API 3001DS
URO-3 Triple Stain™	PM 370TS

Breast Markers	Cat. No.
CK5/14 + p63 + CK7/18	PM 360DS; VP 360DSK
GCDFP-15 + Mammaglobin	PM 317DS
p120 + E-cadherin	API 3011DS

Lung Markers	Cat. No.
Desmoglein 3 + Napsin A	PPM 428DS
p63 + CK5	PM 391DS
p63 + TRIM29	PPM 427DS
TTF-1 + CK5	PM 425DS
TTF-1 + Napsin A (M); (RM)	PPM 394DS ^(M) ; API 3078DS ^(RM)

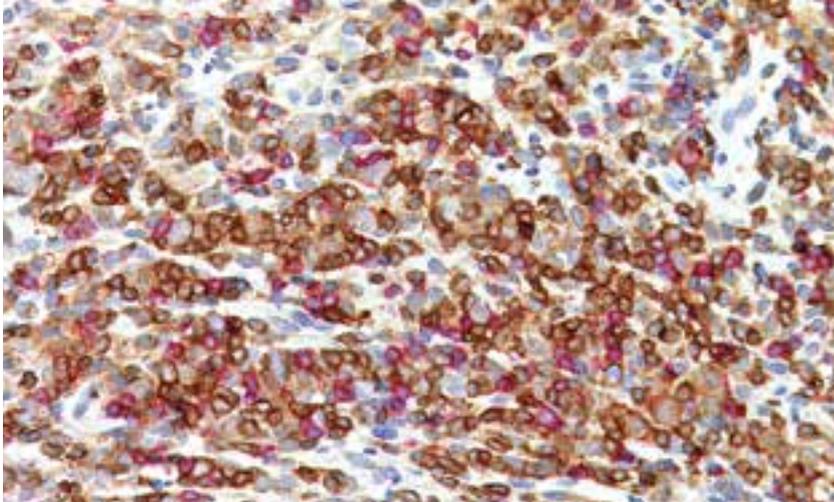
Lymphatic Markers	Cat. No.
D2-40 + CD31	APR 3021DS
D2-40 + CK8/18	APR 3034DS
D2-40 + Ki-67	PM 399DS

Melanoma Markers	Cat. No.
Pan Melanoma + Ki-67	PM 362DS
Pan Melanoma + S100	PPM 213DS

Prostate Markers	Cat. No.
CK5/14 + p63 + P504S	PPM 225DS
ERG + AMACR	APR 3013DS
ERG-2™ (ERG + CK5)	API 437DS; AVI 437DSK

Additional Markers	Cat. No.
CD4 (M) + CD8 (RM)	PM 395DS
CDX2 + CK7	PM 367DS; IP 367DS
Kappa + Lambda	PPM 214DS
Ki-67 + Caspase-3	PPM 240DS
L26 + CD3	PM 237DS

Multiplex Detection	Cat. No.
MACH 2 Double Stain 1	MRCT523
MACH 2 Double Stain 2	MRCT525
intelliPATH™ Multiplex Secondary Reagent 2	IPSC5004 G20, G80



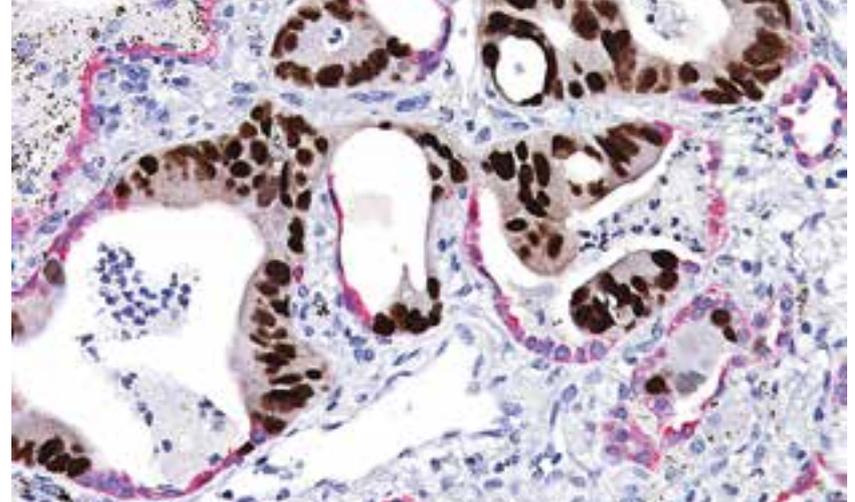
Tonsil stained with CD4 (M) + CD8 (RM)

CD4 (M) + CD8 (RM) IVD FFPE

Clone	BC/1F6 + SP16
Isotype	IgG1 + IgG
Reactivity	
Control	Tonsil or <i>mycosis fungoides</i>
Cat. No.	PM 395DS AA

CD4, a T-cell subset found in thymocytes and peripheral blood lymphocytes, is expressed in the majority of T-cell lymphomas. CD8 is a T-cell subset found in cortical thymocytes, T-cells and NK cells. The CD4:CD8 ratio may be helpful in distinguishing *mycosis fungoides* from its inflammatory mimics or as an aid in determining clinical outcome in cervical carcinoma. It was reported that CD4 and CD8 expression in gastric mucosal of HIV-infected individuals is closely correlated with disease progression. This Multiplex IHC allows ratios and/or cell counts to be done on a single slide.

1. Boone SL, et al. G Ital Dermatol Venereol. 2008 Dec; 143(6):409-14. 2. Hodak E, et al. J Am Acad Dermatol. 2006 Aug; 55(2):276-84. 3. Huang L, et al. Zhonghua Shi Yan He Lin Chuang Bing Du Xue Za Zhi. 2009 Aug; 23(4):261-4. 4. Tirumalae R, Panjwani PK. Indian J Dermatol. 2012 Nov; 57(6):424-7. 5. Shah W, et al. Cell Mol Immunol. 2011 Jan; 8(1):59-66.



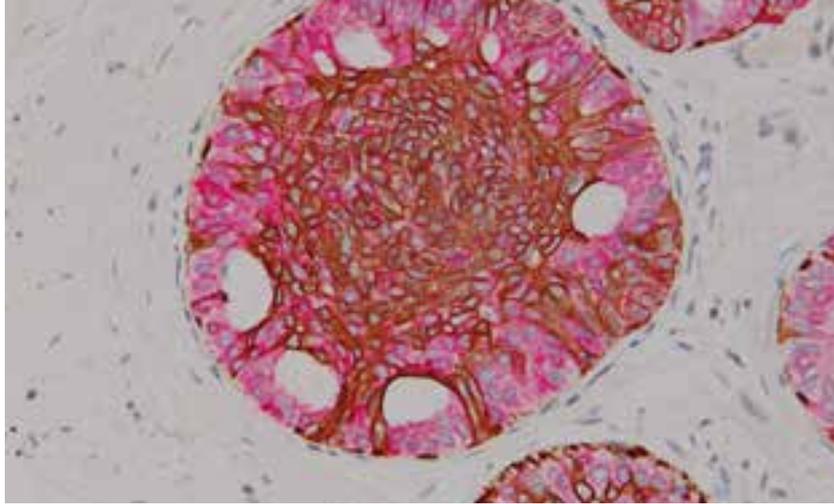
Colon cancer metastasized into lung tissue stained with CDX2 + CK7

CDX2 + CK7 IVD FFPE

Clone	CDX2-88 + BC1
Isotype	IgG1 + IgG
Reactivity	
Control	Colon, breast, ovary or lung cancers
Cat. No.	PM 367DS AA, H

Studies show CDX2 is a sensitive marker for colonic carcinoma metastatic to the ovary and is also expressed in mucinous ovarian carcinomas. CDX2 is not expressed by serous and endometrioid carcinomas making it more specific than CK20. CDX2 is reported to be advantageous over CK20 for distinguishing primary ovarian tumors from metastases of upper gastrointestinal tract origin. Cytokeratin 7 (CK7) shows expression in primary ovarian tumors and metastases of upper gastrointestinal tract origin. A CDX2 and CK7 panel may help in distinguishing colonic carcinomas metastatic to the ovaries from primary ovarian carcinomas.

1. Kim MJ. J Korean Med Sci. 2005 Aug; 20(4):643-8. 2. Vang R, et al. Mod Pathol. 2006 Nov; 19(11):1421-8. 3. Werling RW, et al. Am J Surg Pathol. 2003 Mar; 27(3):303-10. 4. Raspollini MR, et al. Appl Immunohistochem Mol Morphol. 2004 Jun; 12(2):127-31. 5. Groisman GM, Meir A, Sabo E. Int J Gynecol Pathol. 2004 Jan; 23(1):52-7.



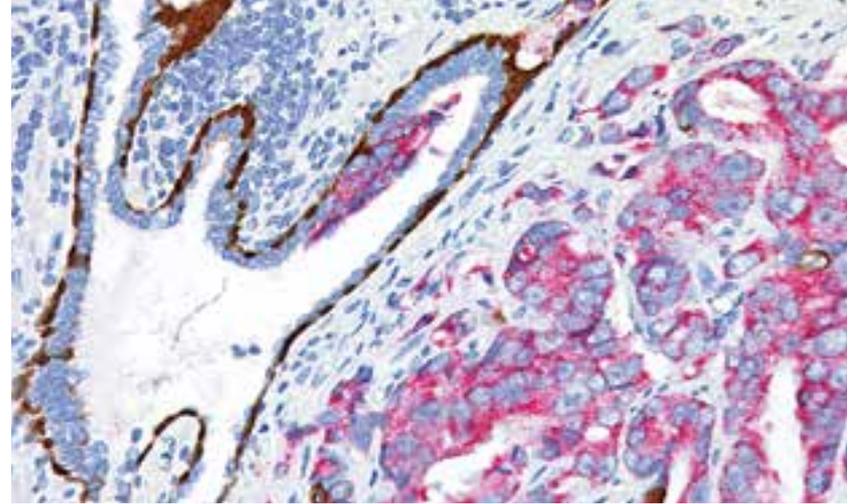
Breast tissue stained with CK5/14 + p63 + CK7/18

CK5/14 + p63 + CK7/18 IVD FFPE

Clone	XM26 / LL002 + 4A4 + BC1 / ER31-1
Isotype	IgG1, kappa / IgG3 + IgG2a, kappa + IgG
Reactivity	
Control	Breast carcinoma or normal breast
Cat. No.	PM 360DS AA, H; VP 360DSK G

IHC markers CK5, CK14, p63, CK7 and CK18 complement morphological evaluation of breast lesions due to the differential expression of the luminal (CK7/8) vs. basal and myoepithelial markers (CK5/14, p63). Usual ductal hyperplasia is associated with positive basal cells markers intermixed with positive luminal cells. Most atypical ductal hyperplasia and low grade ductal carcinoma *in situ* cases are basal marker negative and luminal marker positive. These antibodies, in combination with hematoxylin and eosin (H&E), have been shown to significantly increase diagnostic inter-observer agreement among pathologists.

1. Hicks DG. Appl Immunohistochem Mol Morph. 2011 Dec; 19(6):501-5. 2. Jain RK, et al. Mod Pathol. 2011 Jul; 24(7):917-23. 3. Tacha DE, et al. Mod Pathol. 2009 Jan; 22(Suppl 1s):388A. 4. Moriya T, et al. Med Mol Morphol. 2006 Mar; 39(1):8-13.



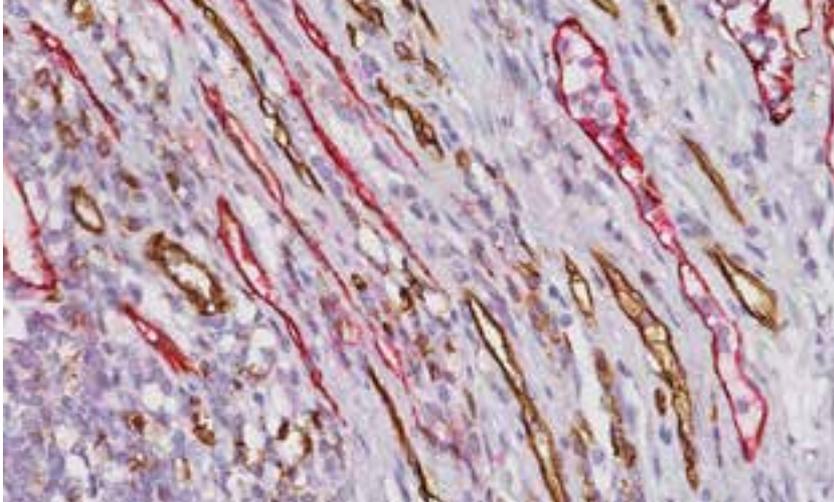
Prostate cancer and PIN stained with CK5/14 + p63 + P504S

CK5/14 + p63 + P504S RUO FFPE

Clone	XM26 + LL002 + 4A4 + N/A
Isotype	IgG1, kappa / IgG3 + IgG2a / kappa + N/A
Reactivity	
Control	Prostatic intraepithelial neoplasia (PIN)
Cat. No.	PPM 225DS AA, H

In prostate tissue, mRNA for CK5 and CK14 has been detected in the basal cells of normal glands and prostatic intraepithelial neoplasia (PIN), a precursor lesion to prostatic adenocarcinoma; however, expression of CK5 or CK14 was not identified in invasive prostatic adenocarcinoma. p63 was detected in nuclei of the basal epithelium in normal prostate glands; however, it was not expressed in malignant tumors of the prostate. In IHC, P504S has been shown to be a specific marker of prostatic adenocarcinoma. Additionally, prostate glands involved in PIN have been found to express P504S, whereas P504S was nearly undetectable in benign glands. *Previously known as PIN-4™, U.S. patent 8,603,735.

1. Tacha DE, Miller RT. Appl Immunohistochem Mol Morphol. 2004 Mar; 12(1):75-8. 2. Tacha DE, et al. Mod Pathol. 2009 Jan; 22(Supplement 1s):388A. 3. Signoretti S, et al. Am J Pathol. 2000 Dec; 157(6):1769-75. 4. Beach R, et al. Am J Surg Pathol. 2002 Dec; 26(12):1588-96. 5. Luo J, et al. Cancer Res. 2002 Apr; 62(8):2220-6. 6. Wang Y, et al. Differentiation. 2001 Oct; 68(4-5):270-9. 7. Tokar EJ, et al. Differentiation. 2005 Dec; 73(9-10):463-73. 8. Collins AT, et al. J Cell Sci. 2001 Nov; 114(Pt 21):3865-72.



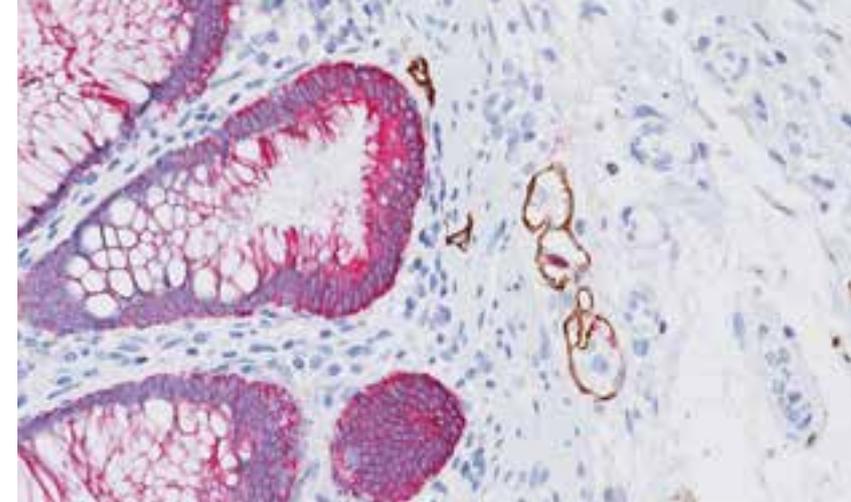
Colon cancer stained with D2-40 + CD31

D2-40 + CD31 RUO FFPE

Clone	D2-40 + EP78
Isotype	IgG1 + IgG
Reactivity	
Control	Colon cancer
Cat. No.	APR 3021DS AA

In studies, D2-40 effectively marked the lymphatic channel endothelium but not the adjacent capillary. CD31, also known as PECAM-1, labels endothelial cells of arteries, arterioles, venules, veins and non-sinusoidal capillaries in various tissues. In addition, CD31 has been used to evaluate vascular invasion of tumors and assess angiogenesis. The combination of D2-40 + CD31 can serve as a co-marker for both lymphatic density and blood vascular studies.

1. Yaman S, *et al.* Am Surg. 2012; 78(11):1238-42. 2. Engel CJ, *et al.* Am J Surg Pathol. 1996 Oct; 20(10):1260-5. 3. El-Gohary YM, *et al.* Breast J. 2009 May-Jun; 15(3):261-7. 4. Saad RS, *et al.* Int J Gynecol Pathol. 2010 Jul; 29(4):386-93. 5. El-Gohary YM, *et al.* Am J Clin Pathol. 2008 Apr; 129(4):578-86. 5. Renyi-Vamos F, *et al.* Clin Cancer Res. 2005 Oct; 11(20):7344-53.



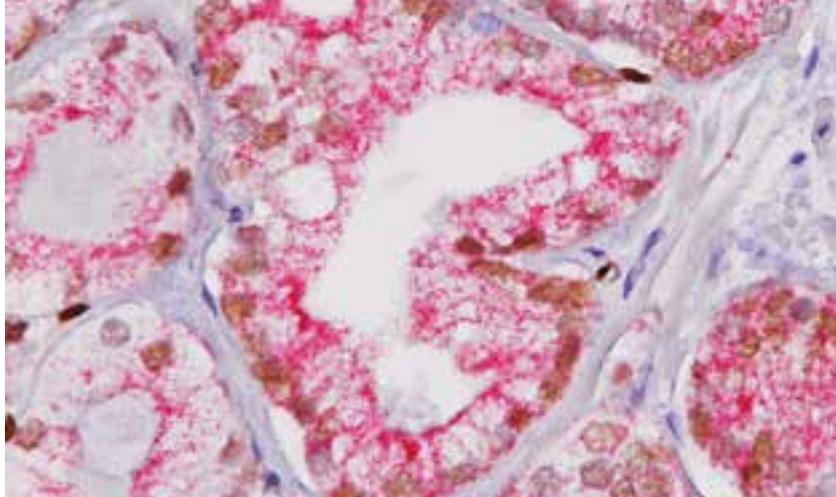
Lymphatic vessels and colon cancer stained with D2-40 + CK8/18

D2-40 + CK8/18 RUO FFPE

Clone	D2-40 + EP17/EP30
Isotype	IgG1 + IgG/IgG
Reactivity	
Control	Normal breast or breast carcinoma
Cat. No.	APR 3034DS AA

In studies, D2-40 has shown a staining reaction in lymphatic channel endothelium but not in the adjacent capillaries. Cytokeratin 8/18 (CK8/18) has been shown to stain most carcinomas such as liver, prostate, pancreatic, lung, breast and colon cancers. Labeling lymphatic endothelium with D2-40 and carcinomas with CK8/18 in a single section may simplify the evaluation and assessment of lymphatic microinvasion.

1. Yaman S, *et al.* Am Surg. 2012; 78(11):1238-42. 2. Engel CJ, *et al.* Am J Surg Pathol. 1996; 20(10):1260-5. 3. El-Gohary YM, *et al.* Breast J. 2009; 15(3):261-7. 4. Saad RS, *et al.* Int J Gynecol Pathol. 2010; 29(4):386-93. 5. El-Gohary YM, *et al.* Am J Clin Pathol. 2008; 129(4):578-86. 5. Renyi-Vamos F, *et al.* Clin Cancer Res. 2005; 11(20):7344-53.



Prostate cancer stained with ERG + AMACR

ERG + AMACR RUO FFPE

Clone 9FY + 13H4

Isotype IgG1 + IgG

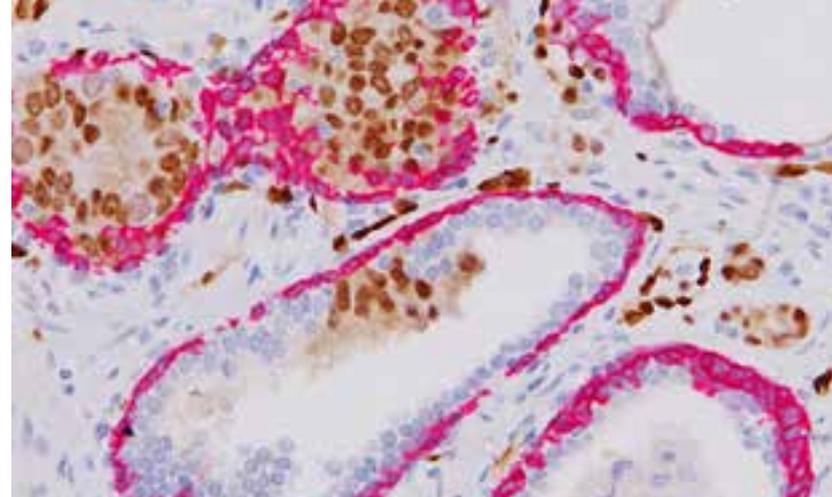
Reactivity 

Control ERG positive prostate cancer or PIN glands

Cat. No. APR 3013DS AA

Studies show a 96.5% concordance between the TMPRSS2:ERG rearrangement and ERG-positive prostatic intraepithelial neoplasia (PIN) and ERG positive carcinoma in prostatectomy specimens. AMACR (P504S) protein is expressed in prostatic adenocarcinoma and some PIN, but not in benign prostatic tissue. ERG + AMACR may be used to aid in identification of ERG positive PIN and prostate cancer. *Note: ERG [9FY] was developed by the Center for Prostate Disease Research in association with the Henry M. Jackson Foundation, Rockville, Maryland. PATENT PENDING.*

1. Petrovics G, *et al.* *Oncogene*. 2004; 24(23):3847-52. 2. Kumar-Sinha C, *et al.* *Nat Rev Cancer*. 8, 2008; 8(7):497-511. 3. Furusato B, *et al.* *Prostate Cancer Prostatic Dis*. 13, 2010; 13(3):228-37. 4. Mohamed AA, *et al.* *J of Cancer*. 1, 2010; 1:197-208. 5. Miettinen M, *et al.* *Am J of Surg Pathol*. 2011; 35(3):432-41. 6. Trpkov K, *et al.* *Am J Clin Pathol*. 2009; 132(2):211-20.



ERG positive prostate cancer stained with ERG-2™ (ERG + CK5)

ERG-2™ (ERG + CK5) IVD FFPE

Clone 9FY + EP1601Y

Isotype IgG1 + N/A

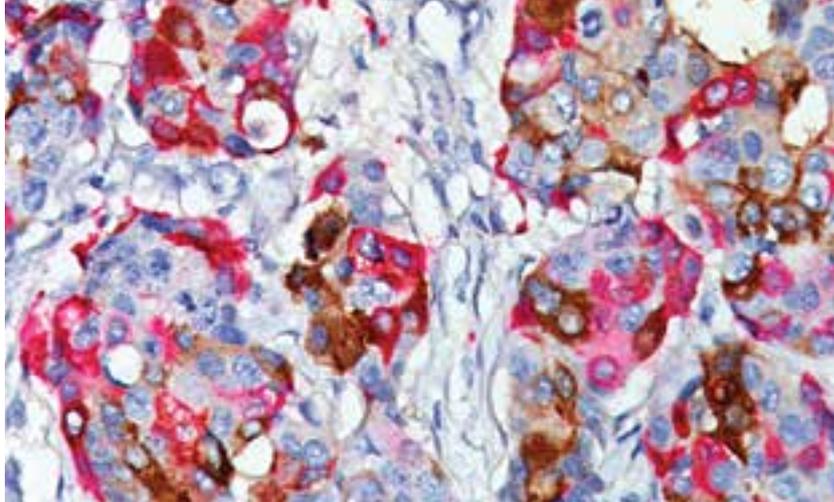
Reactivity 

Control ERG positive prostate cancer or PIN glands

Cat. No. API 437DS AA; AVI 437DSK G

Studies show a 96.5% concordance between the TMPRSS2:ERG rearrangement and ERG-positive prostatic intraepithelial neoplasia (PIN) and ERG positive carcinoma in prostatectomy specimens. CK5 stains normal basal cell layers in prostate, benign prostate hyperplasia (BPH) and PIN. The combination of ERG + CK5 provides a unique stain that helps to visualize ERG positive PINs. *Note: ERG [9FY] was developed by the Center for Prostate Disease Research in association with the Henry M. Jackson Foundation, Rockville, Maryland. PATENT PENDING.*

1. Kumar-Sinha C, *et al.* *Nat Rev Cancer*. 2008; 8(7):497-511. 2. Furusato B, *et al.* *Prostate Cancer Prostatic Dis*. 2010; 13(3):228-37. 3. Mohamed AA, *et al.* *J Cancer*. 2010; 1:197-208. 4. Miettinen M, *et al.* *Am J of Surg Pathol*. 2011; 25(3):432-41. 5. Dalfior D, *et al.* *Pathology*. 2010; 42(1):1-5. 6. Abrahams NA, *et al.* *Am J Clin Pathol*. 2003; 120(3):368-76.



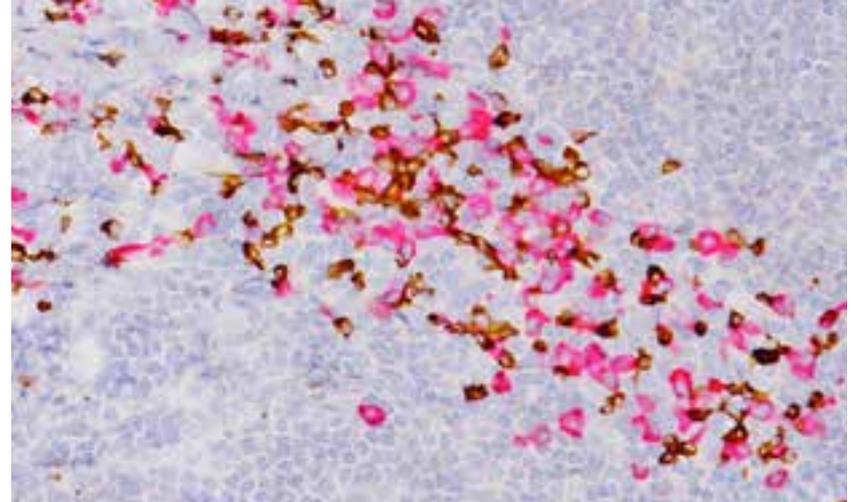
Breast cancer stained with GCDFP-15 + Mammaglobin

GCDFP-15 + Mammaglobin

Clone	D6 + 31A5
Isotype	IgG2a + IgG
Reactivity	
Control	Breast
Cat. No.	PM 317DS AA

Numerous studies have shown GCDFP-15 to be a specific marker for breast cancer. Mammaglobin is also a specific and sensitive marker known to be overexpressed in human breast cancer. In normal breast tissue, it labels breast ductal and lobular epithelial cells. Mammaglobin is expressed in 50-60% of metastatic breast cancers while GCDFP-15 is expressed in approximately 20-25%. Mammaglobin is reported to be a more sensitive marker than GCDFP-15 for breast carcinoma; however, it lacks the specificity of GCDFP-15. The combination of GCDFP-15 and Mammaglobin may help to establish the correct interpretation of metastatic breast carcinoma.

1. Bhargava R, Beriwal S, Dabbs DJ. *Am J Clin Pathol.* 2007 Jan; 127(1):103-13. 2. Wick MR, *et al.* *Hum Pathol.* 1989 Mar; 20(3):281-7. 3. Han JH, *et al.* *Arch Pathol Lab Med.* 2003 Oct; 127(10):1330-4.



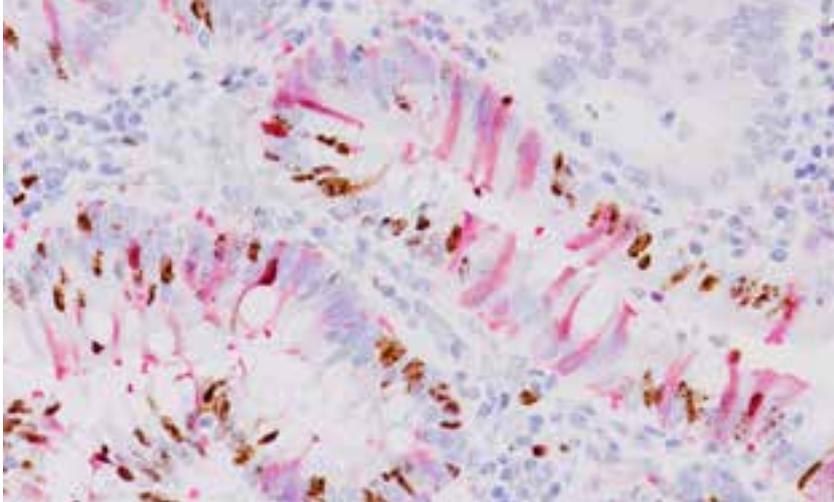
Tonsil stained with Kappa + Lambda

Kappa + Lambda

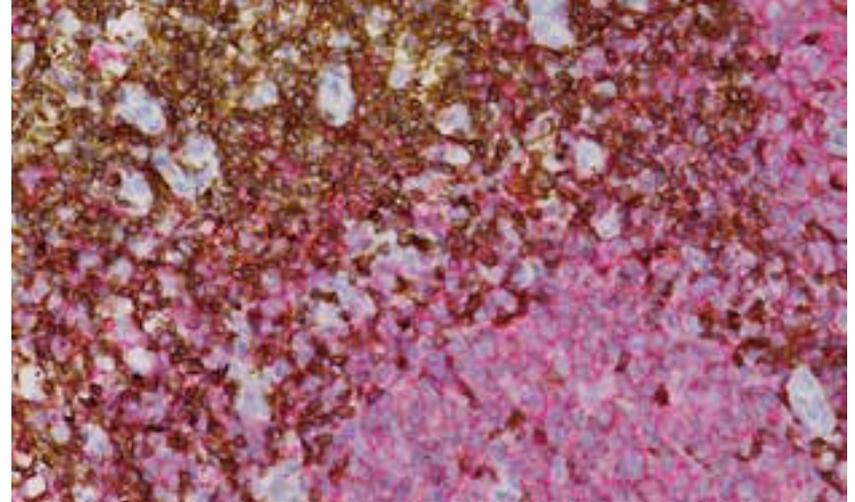
Clone	KDB-1 + N/A
Isotype	IgG1 + IgG
Reactivity	
Control	Tonsil
Cat. No.	PPM 214DS AA, H

Kappa and Lambda light chain counts and ratio may be useful in the identification of myelomas, plasmacytomas and certain non-Hodgkin's lymphomas. The most common feature of these malignancies is the restricted expression of a single light chain class. In normal tissue, the Kappa:Lambda cell ratio is approximately 2:1. While Kappa and Lambda antibodies may be assessed on two separate tissues, this Multiplex IHC stain allows the investigator to simultaneously see both Kappa and Lambda on the same tissue section, allowing the end-user a more accurate and easier assessment of the Kappa:Lambda ratio.

1. Samoszuk MK, *et al.* *Diagn Immunol.* 1985; 3(3):133-8. 2. Bray M, Alper MG. *Am J Clin Pathol.* 1983 Oct; 80(4):526-8. 3. Sobol RE, *et al.* *Clin Immunol Immunopathol.* 1982 Jul; 24(1):139-44. 4. Falini B, *et al.* *J Histochem Cytochem.* 1982 Jan; 30(1):21-6. 5. Marshall-Taylor CE, *et al.* *Appl Immunohistochem Mol Morphol.* 2002 Sep; 10(3):258-62.



Colon cancer stained with Ki-67 + Caspase-3



Tonsil stained with L26 + CD3

Ki-67 + Caspase-3 IVD FFPE

Clone	DVB-2 + N/A
Isotype	IgG1 + IgG
Reactivity	
Control	Tonsil or colon cancer
Cat. No.	PPM 240DS AA

Ki-67 + Caspase-3 can provide information on cell death vs. cell proliferation in the same tissue section. Ki-67 is associated with cell proliferation and is used to grade proliferation rates of tumors. Ki-67 is found throughout the cell cycle that includes the G1, S, G2 and M phases; but not the G0 phase. Apoptosis has importance in the study of many biological processes, including neoplasia, neurodegenerative diseases and development. Cleaved Caspase-3 detects endogenous levels of the large fragment of activated Caspase-3, a protease that mediates apoptosis. Caspase-3 does not cross react with other cleaved caspases.

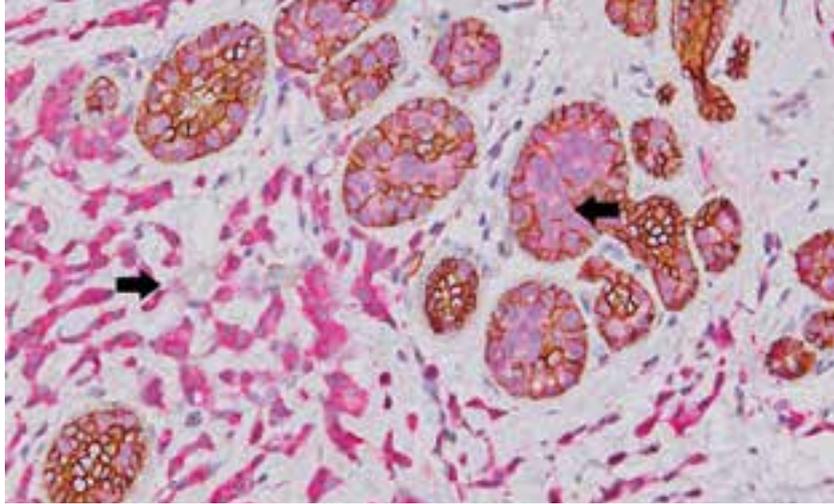
1. Gown AM, Willingham MC. *J Histochem Cytochem.* 2002 Apr; 50(4):449-54. 2. Bouzubar N, *et al.* *Br J Cancer.* 1989 June; 59(6):943-7. 3. Brown RW, *et al.* *Clin Cancer Res.* 1996 Mar; 2(3):585-92. 4. Veronese SM, *et al.* *Cancer.* 1993 Jun; 71(12):3926-31. 5. Wang L, *et al.* *Zhong Nan Da Xue Xue Bao Yi Xue Ban.* 2008 Mar; 33(3):222-6. 6. Chrysomali E, *et al.* *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2003 Nov; 96(5):566-72.

L26 + CD3 IVD FFPE

Clone	L26 + SP7
Isotype	IgG2a + IgG
Reactivity	
Control	Tonsil
Cat. No.	PM 237DS AA

L26 + CD3 antibodies allow B-cell and T-cell lymphomas to be identified on the same slide. L26 (CD20) reacts with the majority of B-cells present in peripheral blood and lymphoid tissues. In normal lymphoid tissue, L26 marks B-cells in germinal centers, particularly immunoblasts and rarely marks T-cells. L26 is a reliable pan B-cell marker. The rabbit monoclonal CD3 reacts with the intracytoplasmic portion of the CD3 antigen expressed by T-cells. CD3 stains human T-cells in both the cortex and medulla of the thymus and in peripheral lymphoid tissues.

1. Nguyen DT, *et al.* *Hematopathol Mol Hematol.* 1996; 10(3):135-50. 2. Chadburn A, Knowles DM. *Am J Clin Pathol.* 1994 Sep; 102(3):284-91. 3. Davey FR, *et al.* *Am J Pathol.* 1987 Oct; 129(1):54-63.



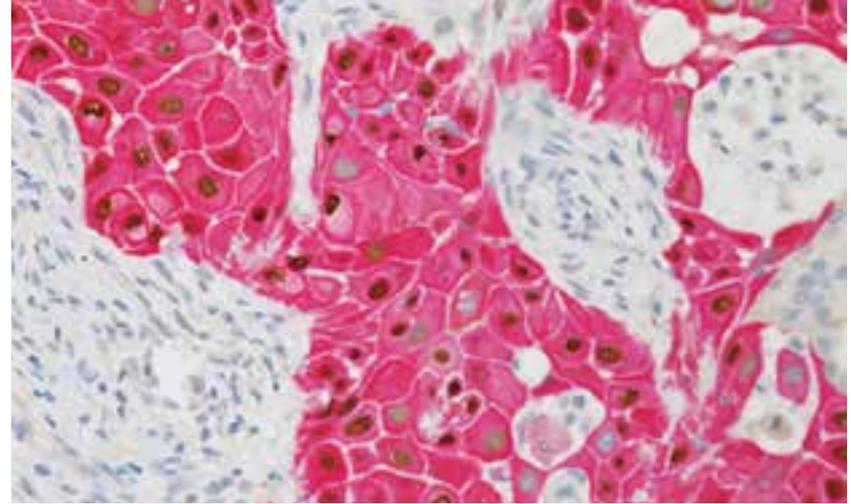
Lobular hyperplasia with invasive lobular carcinoma stained with p120 + E-cadherin

p120 + E-cadherin 

Clone	98/pp120 + EP700Y
Isotype	IgG1 + IgG
Reactivity	
Control	Breast cancer
Cat. No.	API 3011DS AA

Studies have shown that E-cadherin, a negative membrane marker for lobular neoplasia, is useful in the distinction of ductal neoplasia vs. lobular neoplasia; however as a negative marker for lobular carcinoma, it can be difficult to interpret. p120 displays membrane staining in ductal cell carcinoma and cytoplasmic staining in lobular carcinoma. Studies have shown accurate categorization of ductal vs. lobular neoplasia in the breast with p120 Catenin + E-cadherin and helped give further clarification in the separation of low-grade ductal carcinoma *in situ* from lobular neoplasia.

1. Esposito NN, *et al.* Mod Pathol. 2007 Jan; 20(1):130-8. 2. Dabbs DJ, *et al.* Am J Surg Pathol. 2007 Mar; 31(3):427-37. 3. Bellocin DI, *et al.* Cancer Res. 2005 Dec; 65(23):10938-45. 4. de Dues Moura R, *et al.* AIMM. 2013; 21(1):1-12



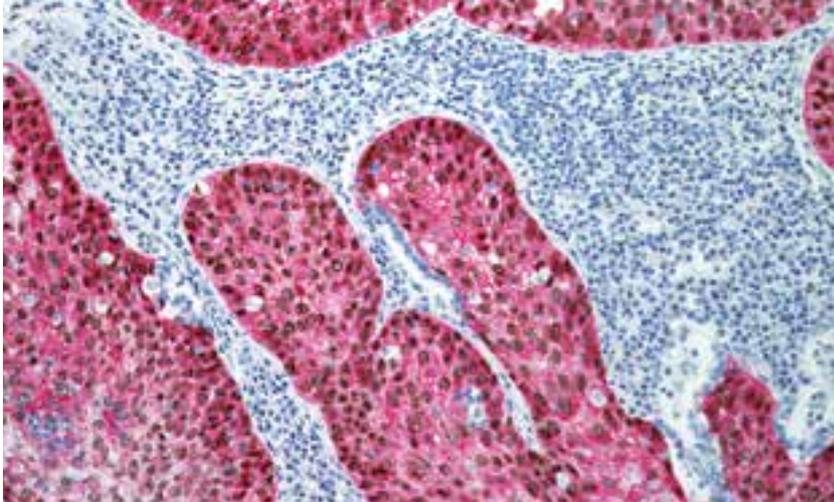
Squamous cell carcinoma stained with p63 + CK5

p63 + CK5 

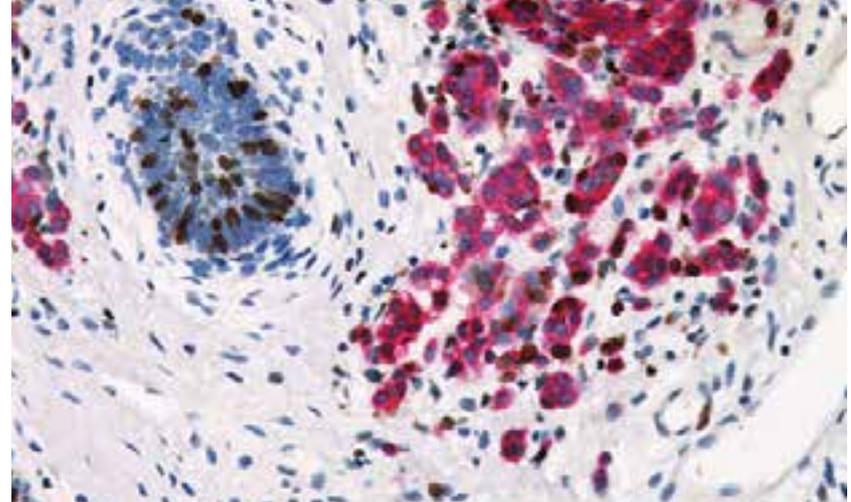
Clone	4A4 + EP1601Y
Isotype	IgG2a / kappa + IgG
Reactivity	
Control	Lung squamous cell carcinoma
Cat. No.	PM 391DS AA

In-house studies have shown that greater than 80% of squamous cell carcinoma of the lung was positive for p63 and CK5, and other studies have shown that the combination of p63 and CK5 was useful for differentiating adenocarcinoma (100% specificity and 82% sensitivity) from squamous cell carcinoma (89% specificity and 79% sensitivity). When used in a panel with TTF-1 + Napsin A, p63 + CK5 should prove useful for analysis of poorly differentiated lung adenocarcinomas vs. squamous cell carcinomas in formalin-fixed, paraffin-embedded (FFPE) tissues.

1. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May; 20(3):201-7. 2. Khayata S, *et al.* Diagn Cytopathol. 2009 Mar; 37(3):178-83. 3. Kargi A, Gurel B, Tuna B. Appl Immunohistochem Mol Morphol. 2007 Dec; 15(4):415-20. 4. Rekhman N, *et al.* Mod Pathol. 2011 Oct; 24(10):1348-59. 5. Tacha D, Yu C, Haas T. Mod Pathol. 2011 Feb; 24(Suppl 1s):425A 6. Tacha D, Zhou D, Henshall-Powell RL. Mod Pathol. 2010 Feb; 23(Suppl 1s):414A.



Lung squamous cell carcinoma stained with p63 + TRIM29



Melanoma stained with Pan Melanoma + Ki-67

p63 + TRIM29      PulmoPanel™

Clone	4A4 + N/A
Isotype	IgG2a / kappa + IgG
Reactivity	
Control	Lung squamous cell carcinoma
Cat. No.	PPM 427DS AA

p63 has been shown to mark approximately 5-10% of lung adenocarcinomas. A comprehensive study has shown that TRIM29 (Tripartite motif-containing 29) is a sensitive (92.6%) and specific (93.0%) marker for lung squamous cell carcinoma (SqCC). In most cases, a co-expression of both antibodies will be observed in lung SqCC. Studies have also shown that when p63 and/or TRIM29 is expressed in lung SqCC, a 94.7% sensitivity and 100% specificity was achieved, if Napsin A and TTF-1 were both negative in the same case. p63 + TRIM29 may provide an excellent diagnostic tool for discriminating lung SqCC vs. lung adenocarcinoma. Available individually or as part of the PulmoPanel™ Multiplex Kit. Cat No: PPM 436 AAK

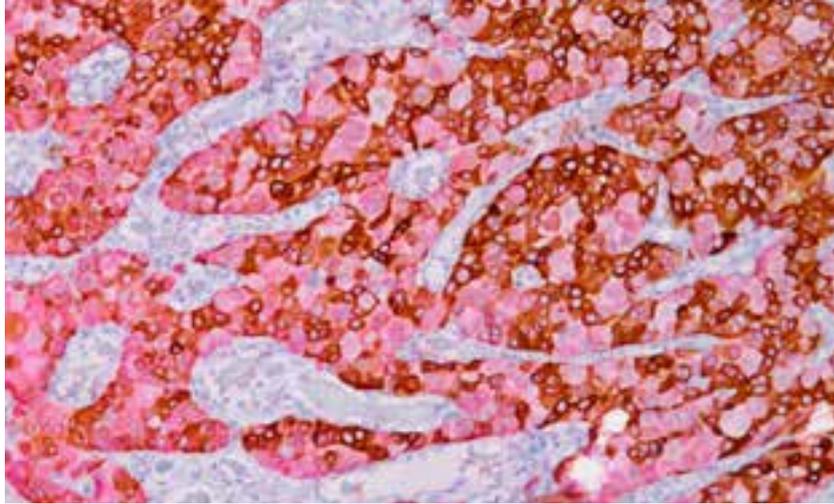
1. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May; 20(3):201-7. 2. Terry J, *et al.* Am J Surg Pathol. 2010 Dec; 34(12):1805-11. 3. Ring BZ, *et al.* Mod Pathol. 2009 Aug; 22(8):1032-43. 4. Tacha D, Yu C, Haas T. Mod Pathol. 2011 Feb; 24(Suppl 1s):425A. 5. Tacha D, Zhou D, Henshall-Powell RL. Mod Pathol. 2010 Feb; 23 (Suppl 1s):414A.

Pan Melanoma + Ki-67    

Clone	M2-7C10 / M2-9E3 + T311 + SP6
Isotype	IgG2a / IgG2b, kappa + IgG2b, kappa + IgG
Reactivity	
Control	Melanoma
Cat. No.	PM 362DS AA, H

Pan Melanoma (MART-1 + Tyrosinase) + Ki-67 serves as a tool to identify the proliferation rate of melanocytic lesions in cases with sparse melanocytes, dense lymphocytic infiltrates, or melanocytes mixed with fibroblasts. In general, a higher proliferative fraction is seen in melanoma than in melanocytic nevi. There are many types of nevi and some simulate melanoma closely. Benignity is favored if there is a very low Ki-67 labeling rate in MART-1/Tyrosinase positive cells. A high Ki-67 labeling rate, especially toward the deep part of a melanocytic lesion, raises the possibility of malignancy.

1. Nielsen PS, Riber-Hansen R, Steiniche T. Am J Dermatopathol. 2011 Jun; 33(4):361-70. 2. Orchard G. Br J Biomed Sci. 2002; 59(4):196-20. 3. Orchard GE. Br J Biomed Sci. 1998 Mar; 55(1):8-9. 4. Blessing K, Sanders DS, Grant JJ. Histopathology. 1998 Feb; 32(2):139-46.



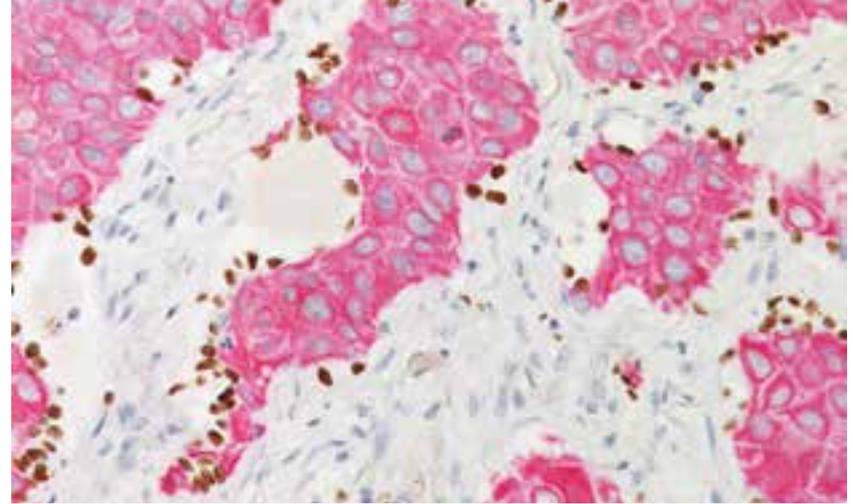
Melanoma stained with Pan Melanoma + S100

Pan Melanoma + S100 IVD FFPE

Clone	M2-7C10 / M2-9E3 + T311 + N/A
Isotype	IgG2a / IgG2b,kappa + IgG2b / kappa + N/A
Reactivity	
Control	Melanoma
Cat. No.	PPM 213DS AA, H

Pan Melanoma (MART-1 + Tyrosinase) + S100 may aid in identifying metastatic melanoma. MART-1 (Melanoma Antigen Recognized by T cells 1) is a useful addition to melanoma panels as studies show it is specific for melanocytic lesions and is more sensitive than HMB45 when labeling metastatic melanomas. Tyrosinase is a sensitive melanoma marker shown to label a high percentage of desmoplastic melanomas. S100 stains Schwannomas, ependymomas, astroglomas and almost all benign and malignant melanomas and their metastases.

1. Shidham VB, *et al.* BMC Cancer. 2003 May; 3:15. 2. Orchard G. Br J Biomed Sci. 2002; 59(4):196-202. 3. Fernando SS, Johnson S, Bate J. Pathology. 1994 Jan; 26(1):16-9.



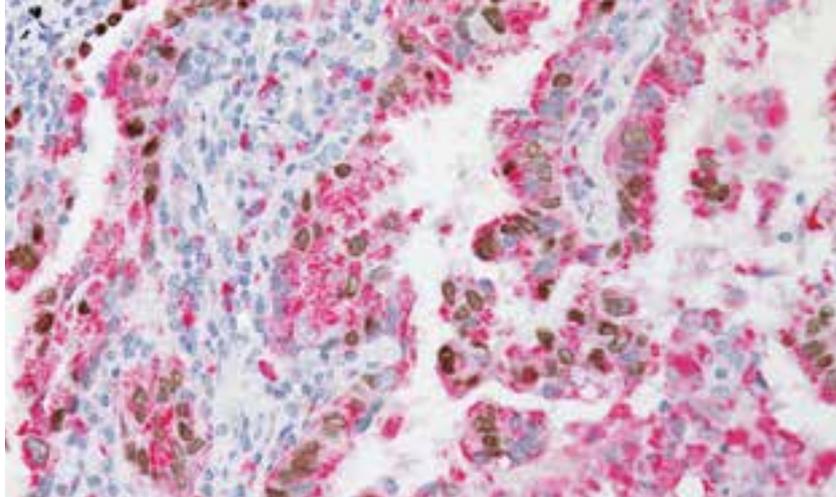
Lung squamous cell carcinoma stained with TTF-1 + CK5

TTF-1 + CK5 IVD FFPE PulmoPanel™

Clone	8G7G3/1 + EP1601Y
Isotype	IgG1+ IgG
Reactivity	
Control	Lung adenocarcinoma (TTF-1) or lung SqCC (CK5)
Cat. No.	PM 425DS AA

TTF-1 has been shown to be a sensitive (65-81%) and specific marker (94%) in the majority of primary lung adenocarcinomas. Studies have shown that CK5, used in combination with Desmoglein 3, provided 93.7% sensitivity with 100% specificity for lung squamous cell carcinoma (SqCC). In most lung cancers tested, only a single antibody stain will be observed. Co-expression of both antibodies may be an indication of adenosquamous cell carcinomas. The antibody combination of TTF-1 + CK5 can aid the discrimination between lung adenocarcinoma (TTF-1) vs. lung SqCC (CK5). Available individually or as part of the PulmoPanel™ Multiplex Kit. Cat No: PPM 436 AAK

1. Mukhopadhyay S, Katzenstein AL. Am J Surg Pathol. 2011 Jan; 35(1):15-25. 2. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May; 20(3):201-7. 3. Tacha D, Yu C, Haas T. Mod Pathol. 2011 Feb; 24(Suppl 1s):425A. 4. Tacha D, Zhou D, Henshall-Powell RL. Mod Pathol. 2010 Feb; 23(Suppl 1s):414A. 5. Terry J, *et al.* Am J Surg Pathol. 2010 Dec; 34(12):1805-11. 6. Kargi A, Gurel D, Tuna B. Appl Immunohistochem Mol Morphol. 2007 Dec; 15(4):415-20. 7. Downey P, *et al.* APMIS. 2008 Jun; 116(6):526-9.



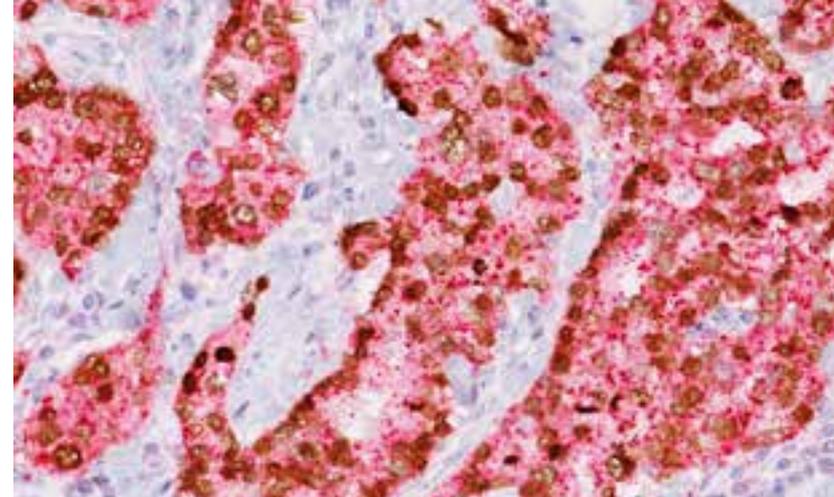
Lung adenocarcinoma stained with TTF-1 + Napsin A

TTF-1 + Napsin A

Clone	8G7G3/1 + N/A
Isotype	IgG1 + IgG
Reactivity	
Control	Lung adenocarcinoma
Cat. No.	PPM 394DS AA

TTF-1 has been the premier marker for lung adenocarcinoma. Napsin A is expressed in type II pneumocytes and in adenocarcinomas of the lung. Studies have shown Napsin A to be more sensitive and specific than TTF-1 in lung adenocarcinomas and virtually negative in all squamous carcinomas. Other studies have shown that when TTF-1 and Napsin A are used in combination, a higher sensitivity and specificity is achieved compared to either antibody alone. When used in a panel with p63 and CK5, TTF-1 + Napsin A may aid in the analysis of poorly differentiated lung adenocarcinomas vs. squamous cell carcinomas.

1. Hirano T, *et al.* Lung Cancer. 2003 Aug; 41(2):155-62. 2. Ye J, *et al.* Appl Immunohistochem Mol Morphol. 2011 Jul; 19(4):313-7. 3. Bishop JA, Sharma R, Illei PB. Hum Pathol. 2010 Jan; 41(1):20-5. 4. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May; 20(3):201-7. 5. Tacha D, Yu C, Haas T. Mod Pathol. 2011 Feb; 24(Suppl 1s):425A. 6. Tacha D, Zhou D, Henshall-Powell RL. Mod Pathol. 2010 Feb; 23(Suppl 1s):414A.



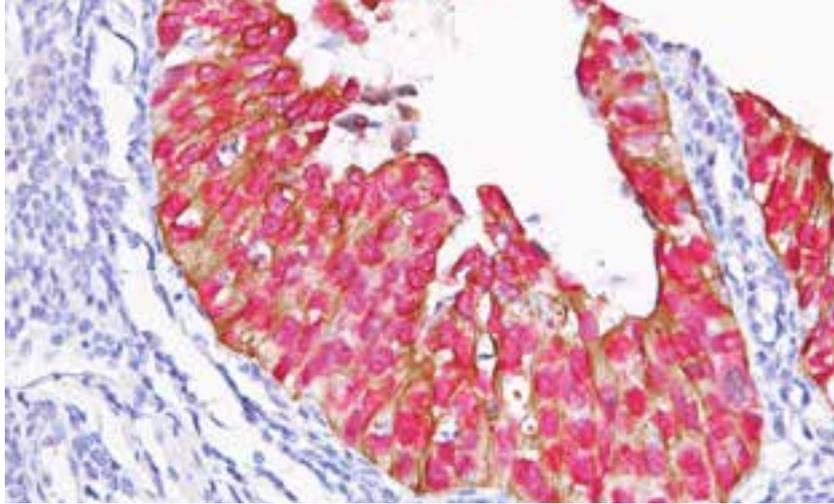
Lung adenocarcinoma stained with TTF-1 + Napsin A (RM)

TTF-1 + Napsin A (RM) **PREFERRED**

Clone	8G7G3/1 + BC15
Isotype	IgG1 + IgG
Reactivity	
Control	Lung adenocarcinoma
Cat. No.	API 3078DS AA

Thyroid transcription factor-1 (TTF-1) is detected in primary lung adenocarcinomas and small cell carcinomas. Napsin A is expressed in type II pneumocytes and in adenocarcinomas of the lung. Studies have shown Napsin A to be more sensitive and specific than TTF-1 in lung adenocarcinomas and virtually negative in all squamous carcinomas. When TTF-1 and Napsin A are used in combination, studies show a higher sensitivity and specificity is achieved for lung adenocarcinomas. The use of a rabbit monoclonal reduces lot-to-lot variation often seen when using a polyclonal. TTF-1 + Napsin A (RM) may aid in the analysis of poorly differentiated lung adenocarcinomas vs. squamous cell carcinomas.

1. Hirano T, *et al.* Lung Cancer. 2003 Aug; 41(2):155-62. 2. Ueno T, Linder S, Steterger G. Br J Cancer. 2003 Apr; 88(8):1229-33. 3. Suzuki A, *et al.* Pathol Res Pract. 2005; 201(8-9):579-86. 4. Dejmeek A, *et al.* Diagn Cytopathol. 2007 Aug; 35(8):493-7.



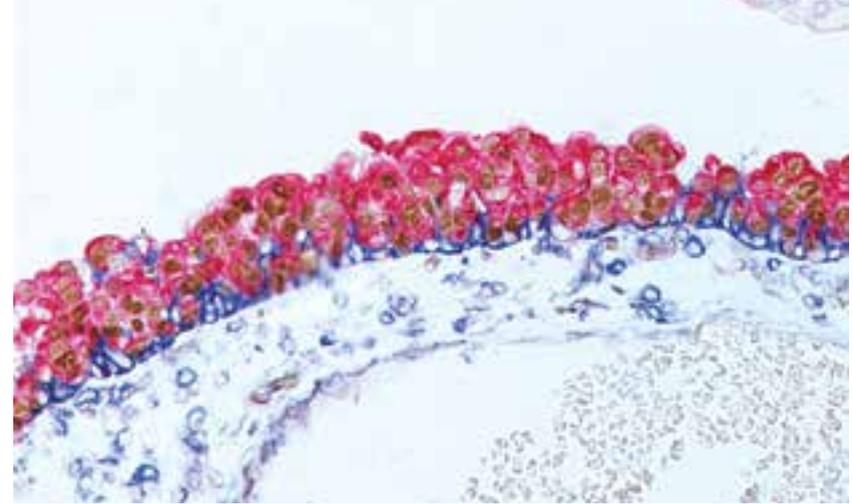
Bladder CIS stained with Uro-2™ (CK20 + p53)

Uro-2™ (CK20 + p53)

Clone	Ks20.8 + Y5
Isotype	IgG2a + IgG
Reactivity	
Control	p53 positive bladder or colon cancers
Cat. No.	API 3001DS AA

Studies have shown that in normal urothelium, the superficial umbrella cell layer shows reactivity for CK20 only; whereas, p53 nuclear staining is absent to focal. For urothelium with reactive atypia, particularly in cases with marked atypia, CK20 and p53 staining remain identical to those seen in normal urothelium. In cases of carcinoma *in situ* (CIS), diffuse, strong cytoplasmic reactivity for CK20 and diffuse nuclear reactivity for p53 is observed throughout the urothelium.

1. Russo S, *et al.* Pathologica. 2007 Apr; 99(2):46-9. 2. McKenney JK, *et al.* Am J Surg Pathol. 2001 Aug; 25(8):1074-8. 3. Sun W, *et al.* Appl Immunohistochem Mol Morphol. 2002 Dec; 10(4):327-31. Mallofre C, *et al.* Mod Pathol. 2003 Mar; 16(3):187-91.



CIS in bladder stained with URO-3™ Triple Stain

URO-3™ Triple Stain (CD44 + p53) with CK20

Clone	BC8 + Y5 + Ks20.8
Isotype	IgG2a + IgG + IgG2a
Reactivity	
Control	p53-positive bladder or colon carcinomas
Cat. No.	PM 370TS AA

URO-3 Triple Stain (CD44 + p53) with CK20 can be used to aid in differentiating urothelial reactive atypia from carcinoma *in situ* (CIS) in bladder. In normal urothelium, superficial umbrella cell layer shows reactivity for CK20 only, whereas CD44 staining is limited to the basal and parabasal urothelial cells and p53 nuclear staining is absent to focal. For urothelium with reactive atypia, CD44 shows increased reactivity in all layers of the urothelium and is often absent in neoplastic cells while CK20 and p53 staining is identical to normal urothelium. In cases of CIS, diffuse, strong cytoplasmic reactivity for CK20 and diffuse nuclear reactivity for p53 is observed throughout the urothelium.

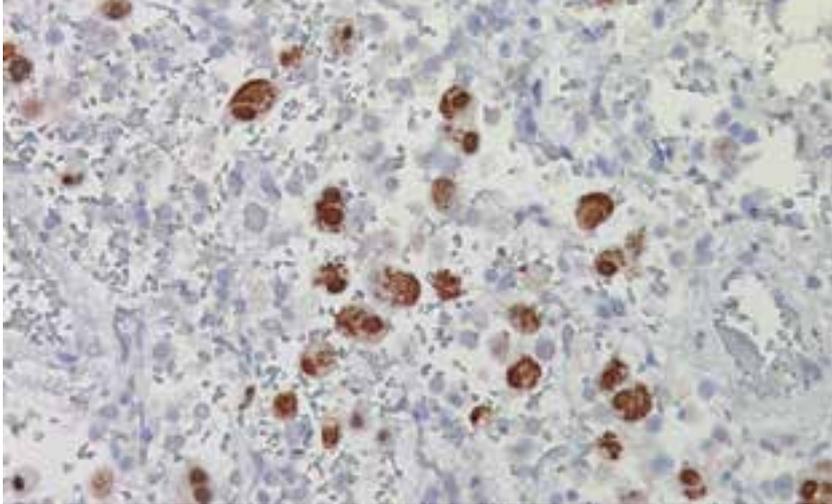
1. Russo S, *et al.* Pathologica. 2007 Apr; 99(2):46-9. 2. McKenney JK, *et al.* Am J Surg Pathol. 2001 Aug; 25(8):1074-8. 3. Mallofre C, *et al.* Mod Pathol. 2003 Mar; 16(3):187-91. 4. Oliva E, *et al.* Hum Pathol. 2013 May; 44(5):860-6.

Molecular

Cytomegalovirus (CMV) Probe	150
Epstein-Barr Encoded RNA (EBER) Probe	150
Kappa & Lambda Light Chain DNA Probe	151
Dual Kappa / Lambda Probe	151
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DNA Negative Control Probe	153
RNA Positive Control Probe	153
RNA Negative Control Probe	153
RISH™ Retrieval Solution	154



The use of *in situ* hybridization is increasing due to higher information content in the context of cellular morphology and better signal-to-noise ratio than immunohistochemistry. Biocare Medical's RISH™ probes and detection kits simplify ISH for the Histotechnologist, allowing RISH to fit easily into a typical daily workflow easily. The RISH probe technology enables extremely stable hybridization with the mRNA target, resulting in a more abundant signal and conferring highly specific staining. The 5-step protocol has been simplified by removal of the overnight hybridization step, the requirement for RNase free solutions and labware and harsh stringent wash conditions resulting in a procedure that is completed in approximately 3 hours. The result is clear, with virtually no background. The chromogenic signal, along with the tissue morphology, is easily visualized under brightfield microscopy on a single slide and is easily archived for extended storage.



Cytomegalovirus (CMV) mRNA and DNA in CMV infected lung cells

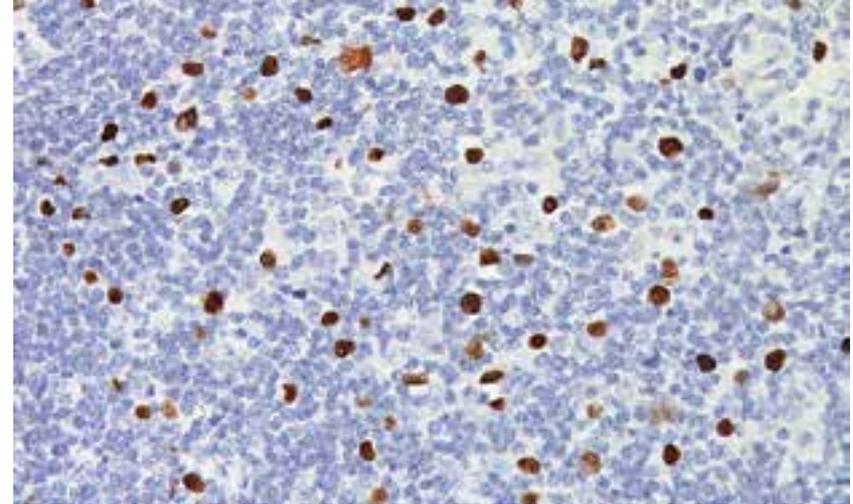
Cytomegalovirus (CMV) Probe ASR FFPE

Cat. No. BRA 0011 T

Cytomegalovirus (CMV) is a member of the human herpes virus-5 (HHV-5) group. It can be transmitted in breast milk, during organ transplantation, sexual activity or blood transfusions. It is estimated that 40-100% of people may be infected with this virus. CMV infections are common cause of morbidity and mortality, especially in immune-compromised individuals. CMV detection is localized to the cell cytoplasm and nucleus.

- ▶ Detects CMV genomic DNA & mRNA in infected tissues or cells
- ▶ CMV mRNA & DNA is localized to the cell cytoplasm and nucleus
- ▶ CMV infections are common cause of morbidity and mortality

1. Scheurer ME, *et al.* Acta Neuropathol. 2008 Jul; 116(1):79-86. 2. Cobbs CS, *et al.* Cancer Res. 2008 Feb; 68(3):724-30. 3. Harkins L, *et al.* Lancet. 2002 Nov; 360(9345):1557-63.



Epstein-Barr Encoded RNA (EBER) in Hodgkin's lymphoma

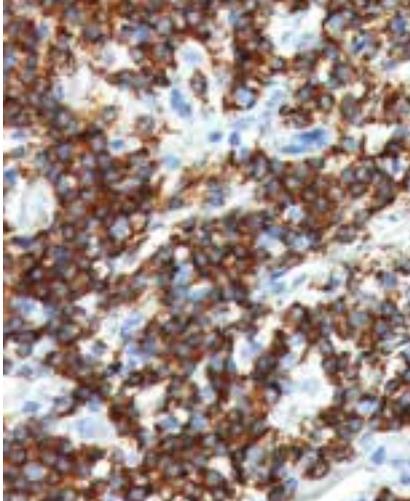
Epstein-Barr Encoded RNA (EBER) Probe ASR FFPE

Cat. No. RI 0001 T

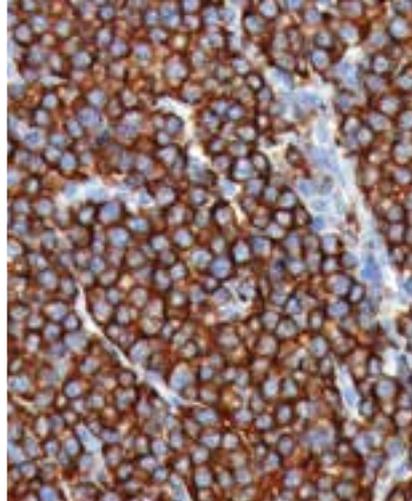
The Epstein-Barr virus is a member of the gamma-herpes viruses (HHV-4). Numerous human pathological conditions associated with EBER include infectious mononucleosis, non-differentiated nasopharyngeal carcinoma, African Burkitt's lymphoma, Hodgkin's disease mixed cellularity, some B, T and NK lymphomas, as well as lymphoproliferative processes associated with immunodeficiency. EBER detection is localized to the cell nucleus.

- ▶ Detects Epstein-Barr Virus in Reed-Sternberg (RS) Cells
- ▶ Detects Epstein-Barr Virus in nasopharyngeal carcinoma
- ▶ Used to diagnose infectious mononucleosis, lymphoid and non-lymphoid tumors

1. Epstein M, Achong B, Barr Y. J Exp Med. 1965 May; 121:761-70. 2. Henle G, *et al.* J Natl Cancer Inst. 1969 Nov; 43(5):1147-57. 3. Komano J, *et al.* J Virol. 1999 Dec; 73(12):9827-31.



Kappa mRNA in bone marrow plasma cell myeloma (L)



Lambda mRNA in bone marrow myeloma of the neck (R)

Kappa & Lambda Light Chain DNA Probe ASR FFPE

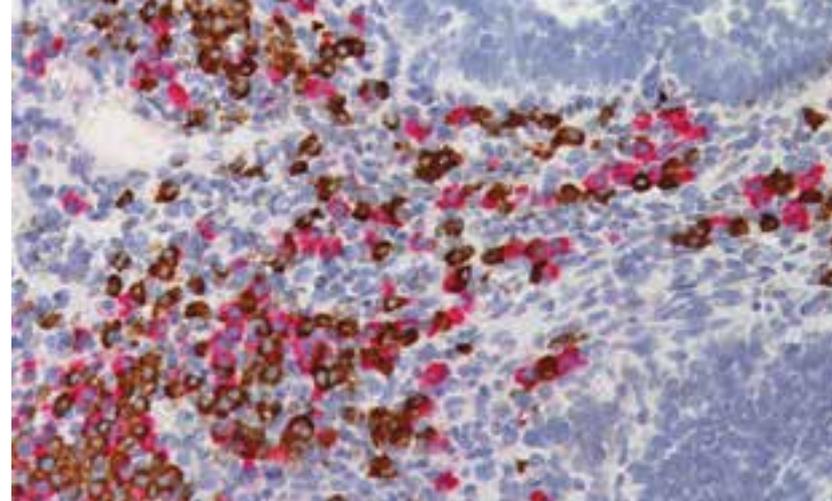
Cat. No. BRA 0004 T (Kappa)

Cat. No. BRA 0005 T (Lambda)

Kappa and Lambda light chain mRNA may be detected in normal and neoplastic B-cells in human lymphoid tissue. Kappa and Lambda tests are useful in differentiating immunoblastic reactions related to viral infections such as mononucleosis, from lymphoid tumors. They are used in the study of monoclonality of lymphoid tumors, lymphoproliferative syndromes, myelomas and immunodeficiency-associated lymphoproliferative syndromes. Mono- or polyclonality in lymphoid tumor proliferation of reactive processes can be diagnosed. Kappa and Lambda detection is localized to the cell cytoplasm.

- ▶ Aids in differentiating immunoblastic reactions related to viral infections
- ▶ Used in the study of monoclonality of associated lymphoproliferative syndromes
- ▶ Diagnose mono- or polyclonality in lymphoid tumor proliferation or reactive process

1. Beck RC, *et al.* *Diagn Mol Pathol.* 2003 Mar; 12(1):14-20. 2. Shaw GR. *Arch Pathol Lab Med.* 2006 Aug; 130(8):1212-5. 3. Lee LH, Cioc A, Nuovo GJ. *Appl Immunohistochem Mol Morphol.* 2004 Sep; 12(3):252-8.



Dual Kappa / Lambda staining polyclonal plasma cells (K: Brown, L: Red) surrounding nests of basal cell carcinoma

Dual Kappa / Lambda Probe RUO FFPE

Cat. No. RI 0027 T

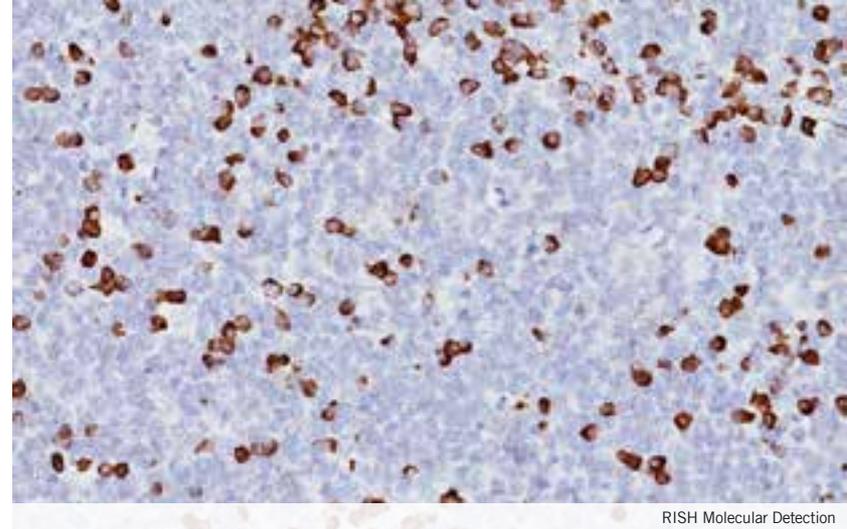
The multiplex Dual Kappa/Lambda Probe enables simultaneous evaluation of immunoglobulin light chain ratios in one tissue section. This capability allows the user a more accurate and easier assessment of both stains resulting in superior diagnostic results. Possible restricted expression of a single light chain class demonstrates the clonality in lymphoid infiltrates, indicating that malignancy is simplified. Kappa and Lambda detection is localized to the cell cytoplasm.

- ▶ Enables simultaneous evaluation of immunoglobulin light chain ratios
- ▶ Kappa and Lambda detection is localized to the cell cytoplasm
- ▶ Allows the user a more accurate and easier assessment of both stains

1. Beck RC, *et al.* *Diagn Mol Pathol.* 2003 Mar; 12(1):14-20. 2. Shaw GR. *Arch Pathol Lab Med.* 2006 Aug; 130(8):1212-5. 3. Lee LH, Cioc A, Nuovo GJ. *Appl Immunohistochem Mol Morphol.* 2004 Sep; 12(3):252-8.

RISH™ Molecular Detection

The RISH Detection Kits are specifically designed for rapid visualization of *in situ* hybridization (ISH) staining. This innovative ISH detection technology ensures high specificity and accuracy. The result is clear, with virtually no background. The kits are optimized for use with Biocare's proprietary RISH probes and other digoxigenin labeled probes that hybridize with mRNA targets in formalin-fixed, paraffin-embedded (FFPE) tissues. This two-step micro-polymer detection system is designed to produce highly accurate and specific results. The chromogenic signal, along with the tissue morphology, is easily visualized under brightfield microscopy on a single slide. The detection system includes three kit formats: RISH AP Detection Kit, RISH HRP Detection Kit and RISH Dual Detection Kit.



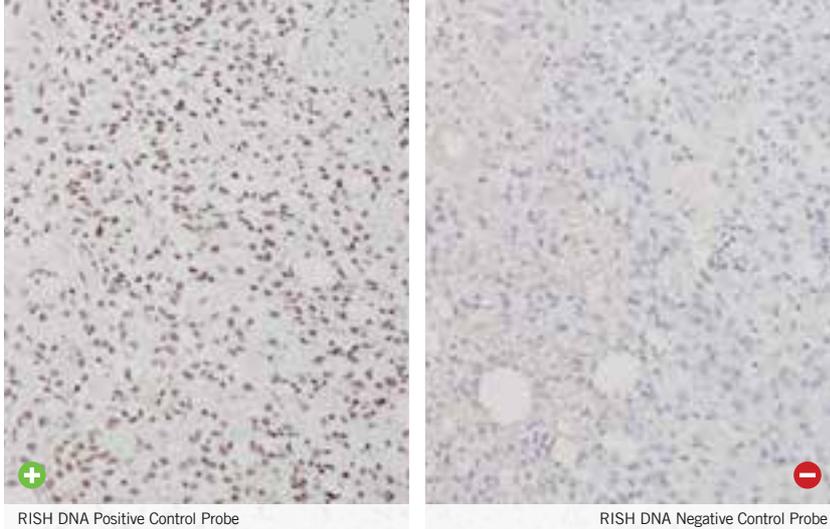
RISH Molecular Detection

AP and HRP RISH Detection Kits are designed for use with proprietary RISH probes and can be used with digoxigenin labeled probes that hybridize to mRNA targets in FFPE tissues. The RISH AP and HRP Detection Kits provide reagents and materials for the preparation, pretreatment, hybridization and detection of digoxigenin labeled RISH probes.

RISH Dual Detection kit is optimized for use with the RISH Dual Kappa / Lambda probe, which specifically hybridizes to mRNA in FFPE tissue. The Dual Detection Kit provides reagents and materials for the preparation, pretreatment, hybridization and detection of a dual digoxigenin and biotin labeled RISH probe.

Each RISH Detection Kit contains the following components and has enough reagent for approximately 40 tests.

RISH™ HRP Detection Kit Components	RISH AP Detection Kit Components	RISH Dual Detection Kit Components
RISHzyme™ Buffer	RISHzyme Buffer	RISHzyme Buffer
RISHzyme	RISHzyme	RISHzyme
RISH Secondary Reagent	RISH Secondary Reagent	RISH Dual Secondary Reagent
RISH HRP Tertiary Reagent	RISH AP Tertiary Reagent	RISH Dual Tertiary Reagent
Betazoid DAB Chromogen	Warp Red™ Chromogen	Betazoid DAB Chromogen
Betazoid DAB Buffer	Warp Red Substrate Buffer	Betazoid DAB Buffer
DAB Sparkle	Mixing Vial	Vulcan Fast Red Chromogen
Mixing Vial		Vulcan Fast Red Buffer
		DAB Sparkle
		Mixing Vial



RISH DNA Positive Control Probe

RISH DNA Negative Control Probe

DNA Positive Control Probe ASR FFPE

Cat. No. BRA 4026 T

This digoxigenin-labeled oligonucleotide probe recognizes Alu repetitive sequences present within the mammalian genome. Specific hybridization of this probe to human Alu in FFPE tissues indicates that the test material contains intact DNA. This probe is to be used as a control when running specific DNA targeting probes. Weak or light staining in a test sample indicates that specifically targeted DNA may be compromised.

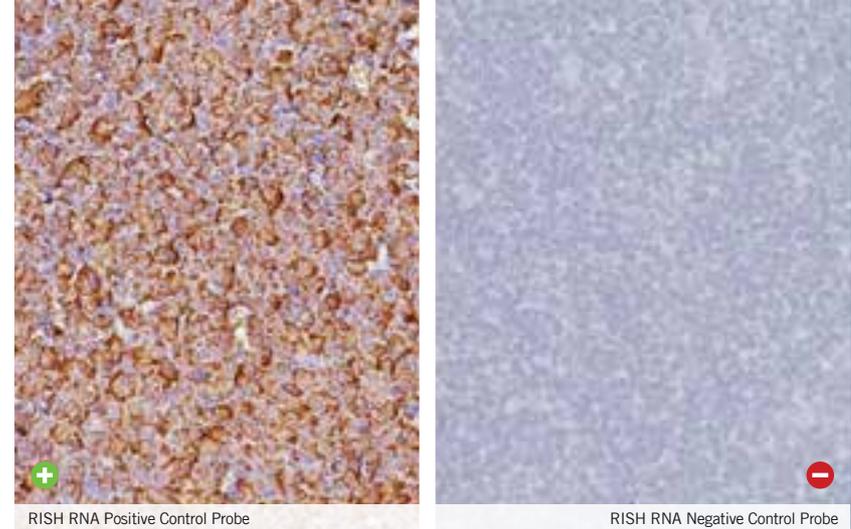
1. Weber AD, *et al.* *Pediatr Surg Int.* 2011 Mar; 27(3):255-61. 2. Warncke B, *et al.* *Virchows Arch.* 2004 Jan; 444(1):74-81. 3. Wilkinson DG. Oxford University Press. 1992. ISBN 0 19 963327 4.

DNA Negative Control Probe ASR FFPE

Cat. No. BRA 4027 T

This digoxigenin-labeled oligonucleotide probe negative control probe consists of a random set of oligonucleotide sequences with a GC content of 40-70%. It should be used to assess non-specific staining when performing *in situ* hybridization. No positive staining should result.

1. Autillo-Touati A, *et al.* *Acta Cytol.* 1998 May-Jun; 42(3):631-8. 2. Wilkinson DG. Oxford University Press. 1992. ISBN 0 19 963327 4.



RISH RNA Positive Control Probe

RISH RNA Negative Control Probe

RNA Positive Control Probe ASR FFPE

Cat. No. BRA 4028 T

This digoxigenin-labeled poly (dT) oligonucleotide probe recognizes poly (A) tails of mRNAs within tissue sections. Specific hybridization of this probe to poly (A) tails in FFPE tissues indicates that the test material contains intact mRNA. This probe can be used as a control when running specific RNA targeting probes. Weak or light staining in a test sample indicates that specifically targeted mRNA may be compromised.

1. Lee D, Xiong S, Xiong WC. *Methods Mol Biol.* 2013; 1018:165-74. 2. Wilkinson DG. Oxford University Press. 1992. ISBN 0 19 963327 4.

RNA Negative Control Probe ASR FFPE

Cat. No. BRA 4029 T

This RNA negative control probe consists of a random set of oligonucleotide sequences with a GC content of 40-70%. It should be used to assess non-specific staining when performing *in situ* hybridization in formalin-fixed, paraffin-embedded tissues. No positive staining should result.

1. Wilkinson DG. Oxford University Press. 1992. ISBN 0 19 963327 4.

RISH™ Retrieval Solution

RISH Retrieval is a heat retrieval solution that is compatible with Biocare's series of RISH probes for *in situ* hybridization. The need for multiple retrieval buffers including EDTA, citrate buffer or high pH Tris buffers is eliminated when the use of RISH Retrieval is employed. RISH Retrieval can be used with Biocare's digital electric pressure cooker, the Decloaking Chamber™ NxGen, a steamer, waterbath or microwave oven. When used in combination with RISHzyme™ for *in situ* hybridization, a synergistic effect on probe accessibility to nucleic acid targets is achieved. RISH Retrieval incorporates Assure™ technology, a color-coded high temperature pH indicator solution. The end-user is assured by visual inspection that the solution is at the correct dilution and pH. This product is specially formulated for superior pH stability at high temperature. RISH Retrieval is odorless, non-toxic, non-flammable, and sodium azide and thimerosal free.

Ordering Information

RISH™ Probes	Status	Cat. No.
RISH Epstein-Barr Encoded RNA (EBER) Probe	ASR	RI 0001 T
RISH Kappa Light Chain DNA Probe	ASR	BRA 0004 T
RISH Lambda Light Chain DNA Probe	ASR	BRA 0005 T
RISH Cytomegalovirus (CMV) Probe	ASR	BRA 0011 T
RISH Dual Kappa/Lambda Probe	RUO	RI 0027 T
RISH™ Detection Kits	Status	Cat. No.
RISH Retrieval, 10X	IVD	RI 0209 M
RISH AP Detection Kit	IVD	RI 0213 KG
RISH HRP Detection Kit	IVD	RI 0207 KG
RISH Dual Detection Kit	IVD	RI 0208 KG
RISH™ Controls		Cat. No.
RISH DNA Positive Control Probe	ASR	BRA 4026 T
RISH DNA Negative Control Probe	ASR	BRA 4027 T
RISH RNA Positive Control Probe	ASR	BRA 4028 T
RISH RNA Negative Control Probe	ASR	BRA 4029 T
RISH™ Ancillaries		Cat. No.
RISH HybriSlips™	N/A	RI 0210 C (100 coverslips)

Instrumentation



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Biocare Medical offers the most advanced instruments to support your anatomic pathology, immunohistochemistry (IHC), *in situ* hybridization (ISH) and research needs. We provide instrumentation to fit any workflow requirements and simplify laboratory procedures. Ranging from automated to manual, our instrument offerings include the fully-open intelliPATH Staining Instrument allowing the use of reagents from any provider and the new ONCORE Automated Slide Staining System with a full range of reagents from Biocare Medical for both IHC and ISH. The Decloaking Chamber NxGen ensures optimal antigen retrieval with consistently superior results. The IQ Kinetic Slide Stainer minimizes manual slide handling for IHC, immunofluorescence (IF), ISH or special stains. The Desert Chamber Pro Slide Drying Oven delivers extremely efficient drying of slides.

intelliPATH™

Your Tests · Your Workflow · Your Freedom

Using a complement of advanced technologies for increased productivity and turnaround time, the intelliPATH is the intelligent choice for anatomic pathology and research laboratories for immunohistochemistry staining.

The intelliPATH offers true continuous random access, the ability to run up to 5 simultaneous and independent batches and prioritized STAT capability - delivering maximum flexibility to meet the needs of any laboratory. A suite of high performance technologies including simultaneous Multiplex IHC capability, no-touch ultrasonic liquid level sensing and simultaneous X and Y movement provide the most rapid turnaround time and sheer volume of IHC results available. On-board chromogen mixing and built-in reminder notifications to add bulk reagent and empty waste deliver convenient walk-away automation.

Control up to four intelliPATH instruments from one computer. The report generation module creates multiple reports on all runs and tracks reagent usage and tests performed by month, quarter and year. The software architecture allows sharing of all protocols and case lists between intelliPATH instruments. Uni- or bi-directional LIS interfaces are compatible with XML and HL-7 messaging standards. LIS interface technology saves hours of hands-on time spent entering patient and test information.

Whether your workflow involves running large slide batches, discrete small batches or a combination of batch and STAT slides, the intelliPATH delivers the right solution with an innovative slide staining system, optimized reagents and award-winning technical support for a variety of applications.



Specifications

Slide capacity	50
Independent trays	5 trays (10 slides per tray)
Reagent vial capacity	48 vials (20 ml)
Cold spot capacity	2 vials (6 ml)
Mixing vial capacity	18 vials (6 ml)
Reagent dispense volume	Delivers 100 µl to 600 µl
Multi-dispensing capacity	4.5 ml
Buffer inlets	3
Waste separation	Separated hazardous and non-hazardous
LIS connectivity	Compatible with HL-7 and XML messaging standards
Weight	145 lbs, 66 kg
Electrical requirements	115 / 230 V; 50 / 60Hz; 900 W
Dimensions (W x H x D)	Benchtop; 40" x 24" x 25" / 102 cm x 61 cm x 64 cm
Regulatory	CE marked, ETL approved

Ordering Information

intelliPATH Automated Staining Instrument* (110 V markets)
intelliPATH Automated Staining Instrument* (220 V markets)

Cat. No.

IPS0001US
IPS0001INTL

*Includes the intelliPATH Automated Staining Instrument, PC, monitor, keyboard, mouse, UPS, label and report printers (IPS0001 Only).

intelliPATH™ Reagents & Ancillaries

Use Biocare companion and detection reagents with intelliPATH validated protocols for optimal results. A series of intelliPATH pretreatment solutions, blocking reagents and counterstain solutions have been optimized for intelliPATH validated protocols. intelliPATH-ready antibodies are listed throughout the antibodies section of this catalog.

Ordering Information	Volume	Cat. No.
intelliPATH Pepsin	20 ml	IPE5007 G20
intelliPATH Background Punisher	20 ml	IP974 G20
intelliPATH Pronase Kit	20 ml	IPK5014 G20
intelliPATH Peroxidase Blocking Reagent	20 ml, 100 ml	IPB5000 G20, L
intelliPATH Universal Negative Control	20 ml	IP498 G20
intelliPATH Universal HRP Detection Kit	80 ml	IPK5011 G80
intelliPATH Multiplex Secondary Reagent 2	20 ml, 80 ml	IPSC5004 G20, G80
intelliPATH DAB Chromogen Kit	80 ml	IPK5010 G80
intelliPATH Ferangi Blue™ Chromogen Kit	20 ml	IPK5027 G20
intelliPATH Warp Red™ Chromogen Kit	80 ml	IPK5024 G80
intelliPATH Fast Red Chromogen Kit	80 ml	IPK5017 G80
intelliPATH Hematoxylin	20 ml, 100 ml	IPCS5006 G20, L
Automation Wash Buffer, 20X	500 ml	TWB945 M
Automation Tween 20, 20X	500 ml	TWA20 M
DAB Away	250 ml	DA000-250-KIT
intelliPrep Solution	20 ml	IPA5018 G20

Ancillaries	Quantity	Cat. No.
Reagent Vials and Caps, 20 ml	25 each	IPVL115
Mixing Vials and Caps, 6 ml	50 each	IPVL114
HP-Barrier Slide Label Kit	1 each	IPS70063
Label Ribbon	1 each	NM002
Reagent Label Roll	1500 labels	NM029
Reagent Labels Kit	3000 labels	NM129
Slide Label Roll	2500 labels	IPS60040
intelliPATH Slide Carrier	1 each	IPS22002
Reagent Tray for intelliPATH Stainer	1 each	IPS20007
Carboy Cart	1 each	IPC100

ONCORE

Fully Automated for IHC & ISH

The ONCORE Automated Slide Stainer is a compact and convenient bench-top instrument that is capable of performing both IHC and ISH procedures on FFPE tissues. The on-board capabilities include baking, deparaffinization, antigen retrieval and antibody or probe detection for IHC, ISH and Multiplex IHC applications.

The ONCORE Automated Slide Staining System provides full automation performing on-line protocol steps from deparaffinization through chromogen incubation. Independent positioning of slides allows separate protocols to be processed simultaneously during a run. The 7 ml Improv vials enable the use of primary antibodies from alternate vendors.

The ONCORE offers kinetic incubations via unique reaction modules which enclose slides between a heated platform and a novel reagent containment chamber. Gentle chamber agitation maximizes stain intensity and minimizes background. Intelligent reagent tracking is provided by RFID tags storing vital information including name, lot, expiration and number of tests. User error is minimized through real-time tracking of reagent volumes.

The ONCORE System Software delivers an easy to use graphical user interface allowing the user to go from start to finish with minimal user interaction. The software is capable of uni- or bi-directional LIS interfaces compatible with XML or HL-7 messaging standards.

A full range of reagents for both IHC and ISH are available for the Oncore System. See website for more details.



Specifications

Slide capacity	36 slides
Heating capacity	Room temperature to 103 °C
On-board reagent capacity	40 vials (7 ml or 15 ml)
Dispense volume	200 µl
Waste separation	Separated hazardous and non-hazardous
LIS connectivity	Compatible with XML and HL-7 messaging standards
Electrical requirements	100-240 V, 50 / 60 Hz; 875 W
Dimensions (W x H x D)	33" x 22" x 24" / 84 cm x 56 cm x 61 cm
Weight	110 lbs / 50 kg
Regulatory	CE Marked, ETL approved

Ordering Information

ONCORE Automated Staining Instrument (110 V markets)
ONCORE Automated Staining Instrument (220 V markets)

Cat. No.

ONC0001-110V
ONC0001-220V

Includes the ONCORE Automated Staining Instrument, PC, monitor, keyboard, mouse, UPS, label and report printers (ONC0001-110V Only).

Decloaking Chamber™ NxGen

The Decloaking Chamber NxGen has been designed for easy heat-induced epitope retrieval (HIER). It has 5 discrete temperature settings ranging between 60 °C and 110 °C with user programmable times. The 110 °C antigen retrieval protocol can be completed from start to finish in under an hour. With a 72 slide capacity and only minutes of hands-on time per run, the NxGen offers walk-away capability.

Transfer run data to a USB drive for export to a computer. Recorded data includes: date, time per run, temperature and pressure readings throughout. The Decloaking Chamber NxGen recalls the settings from the last run allowing a quick start of the same protocol.

The Decloaking Chamber is an excellent tool for HIER. The proper use of heat and pressure in conjunction with the appropriate buffer solutions is of the utmost importance for consistent immunohistochemistry staining. The NxGen is designed to optimize and standardize antibody staining procedures and has been engineered to pass strict laboratory safety and quality control requirements. Temperature, pressure and time can be monitored and recorded with the Decloaking Chamber to produce consistent staining.

Ordering Information	Cat. No.
Decloaking Chamber NxGen (110 V markets)	DC2012
Decloaking Chamber NxGen (220 V markets)	DC2012-220V

Ancillaries	Quantity	Cat. No.
Metal Slide Canister	1 or 3	DCA004 / DCA004-3PK
Steam Monitor Strips	25, 100, 250 strips	613 H, C, D
Pressure Limit Valve	1 each	DCA120
Water Pot	1 each	DCA069
Sealing Gasket Kit	1 each	DCA061
Condensation Collector	1 each	DCA070
Basket, Rack Holder DC2012	1 each	DCA125



U.S. patent 6,580,056

Specifications	
Temperature range	60 °C to 110 °C
Slide capacity	72 slides
Electrical requirements	115 V, 60 Hz, 1000 W; 230 V, 50 Hz, 1000W
Dimensions	14.2" x 13.5" x 13" / 36.1 cm x 34.3 cm x 33.0 cm
Weight	13 lbs / 6.91 kg
Regulatory	CE marked, ETL approved

Desert Chamber Pro™

This innovative compact oven is extremely efficient and is specifically designed for rapid drying of slides. The Desert Chamber Pro has a slide capacity of over 750 slides and operates within a temperature range of 25 °C to 100 °C. The combination of a small footprint, turbo fan, 365-Watt element and a digital temperature process controller makes this oven unique compared to conventional drying ovens. The digital temperature process controller automatically calibrates for the amount of mass and volume placed inside the oven, keeping the inside temperature constant.

The turbo-action drying oven is extremely efficient for bulk drying, especially with today's aggressive HIER methods for immunohistochemistry. The turbo fan quickly removes excess moisture between the tissue and glass slide. Fast and efficient slide drying methods are especially useful for IHC, H&E, special stains and *in situ* hybridization. The Desert Chamber Pro can be programmed with variable segments, times, temperatures and alarms. Use the five pre-configured time and temperature programs or create your own.



Specifications

Programmable temperature range	25 °C to 100 °C
Cubic foot capacity	0.7 cubic feet
Dimensions	13" x 13.5" x 16" / 33.3 cm x 34.3 cm x 40.6 cm
Weight	27 lbs / 12.2 kg
Electrical Requirements	115 V, 60 Hz, 365 W; 230, 50 / 60 Hz, 365 W
Regulatory	UL approved

Ordering Information

Desert Chamber Pro (110 V markets)	
Desert Chamber Pro (220 V markets)	

Desert Chamber Pro Pre-Configured Programs

Standard	37 °C for 30 min and then continues to 60 °C for 30 min
Fast Dry	45 °C for 20 min and then continues to 70 °C for 10 min
Bulk	45 °C for 30 min and then continues to 70 °C for 30 min
Overnight	37 °C for 60 min and then continues to 60 °C for 60 min
Delayed	25 °C for 720 min to 37 °C for 60 min to 60 °C for 60 min

Cat. No.

DRY2008US
DRY2008INT

IQ Kinetic Slide Stainer™

The IQ Kinetic Slide Stainer offers the flexibility and reliable performance that both clinical and research investigators need for *in situ* hybridization, immunohistochemistry, immunofluorescence, or special stains.

This compact, modular open staining platform minimizes manual slide handling while providing throughput of up to 36 slides. Slide racks can be tilted at a 45-degree angle, eliminating individual slide handling and preventing cross-contamination. The excess reagents conveniently drain into the waste basin.

The digital programmable Hot Bar™ enables users to program the temperature up to 95 °C. The optional Orbital Shaker provides smooth agitation action for reagents on slides. The combination of heat and agitation allows tissues to be evenly and optimally stained while accelerating enzymatic reactions and increasing probe or antibody binding specificity.



U.S. patent 6,358,473

Specifications	
Programmable temperature range	20 °C to 95 °C
Temperature accuracy	± 4 °C
Power requirements (Stainer only)	100-200 / 200-240 VAC; 50 / 60 Hz
Regulatory	UL approved

Ordering Information	Capacity	Dimensions	Weight	Cat. No.
IQ1000 (110 V)	1 Digital Hot Bar, 1 Waste Basin, 12 Slides	23" x 14" x 14" / 58 cm x 36 cm x 36 cm	29 lbs / 13 kg	IQ1000US (w/ Shaker) / IQ1000US-NS (No Shaker)
IQ1000 (220 V)	1 Digital Hot Bar, 1 Waste Basin, 12 Slides	23" x 14" x 14" / 58 cm x 36 cm x 36 cm	29 lbs / 13 kg	IQ1000INTL (w/ Shaker) / IQ1000INTL-NS (No Shaker)
IQ2000 (110 V)	2 Digital Hot Bars, 1 Waste Basin, 24 Slides	23" x 15" x 19" / 58 cm x 38 cm x 48 cm	69 lbs / 31 kg	IQ2000US (w/ Shaker) / IQ2000US-NS (No Shaker)
IQ2000 (220 V)	2 Digital Hot Bars, 1 Waste Basin, 24 Slides	23" x 15" x 19" / 58 cm x 38 cm x 48 cm	69 lbs / 31 kg	IQ2000INTL (w/ Shaker) / IQ2000INTL-NS (No Shaker)
IQ3000 (110 V)	3 Digital Hot Bars, 1 Waste Basin, 36 Slides	23" x 15" x 19" / 58 cm x 38 cm x 48 cm	79 lbs / 36 kg	IQ3000US (w/ Shaker) / IQ3000US-NS (No Shaker)
IQ3000 (220 V)	3 Digital Hot Bars, 1 Waste Basin, 36 Slides	23" x 15" x 19" / 58 cm x 38 cm x 48 cm	79 lbs / 36 kg	IQ3000INTL (w/ Shaker) / IQ3000INTL-NS (No Shaker)
Ancillaries		Volume		Cat. No.
IQ Aqua Sponge		3-pack		IQ030
Thermal Test Strips		1 box (10 tests)		TS002 A (30-65 °C), TS001 A (49-71 °C), TS003 A (77-120 °C)
Digital Hot Bar with Temperature Control		1 each		IQ105
Slide Rack Lid, Tinted (for fluorescence)		1 each		IQ049
Slide Rack Lid Holder (optional)		1 each		IQ037

GenASIs HiPath

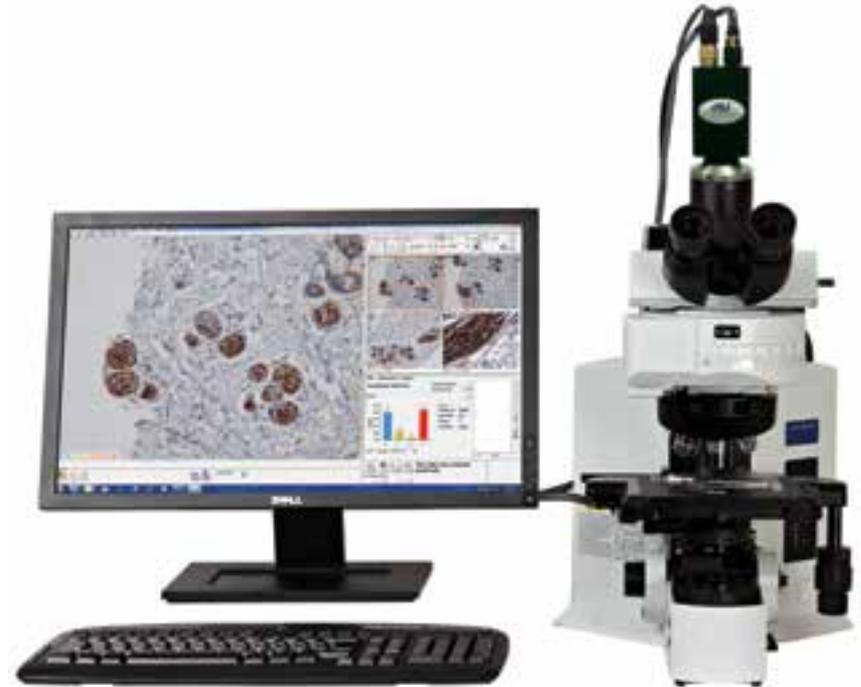
Quantitative Analysis of Cell Membrane & Nuclei

Applied Spectral Imaging's GenASIs HiPath is a solution for computer-aided evaluation of immunohistochemistry assays, delivering quick and accurate analysis of IHC staining. Quantitative analysis of protein expression in cell membranes and nuclei is the cornerstone of pathology *in vitro* image analysis. The use of GenASIs HiPath adds the benefits of quick and accurate analysis with result standardization, reproducibility and documentation. Computer-aided scoring, counting and ratio analysis offers clinically relevant quantitative results through Allred, H-score and M-score automation. The system provides standardized results for stains such as ER, PR and HER-2 (c-erbB-2), eliminating variability that can occur during subjective evaluations.

IHC analysis using the GenASIs Pathology platform offers clinicians the ability to select regions of interest (ROI) while evaluating immunohistochemistry results within the ROI in the tissue sample. Accurate IHC quantitative analysis is achieved by using a highly sensitive color camera, attached to a microscope and combined with state-of-the-art image analysis. This combination enables physicians to use a single slide, in which they can clearly identify tissue regions of interest. These regions are marked for automated, computer aided IHC quantitative evaluation, offering unparalleled clinical accuracy and time savings.

Ordering Information

Please call 1-800-799-9499 for more information, Available in the US only.



Detection

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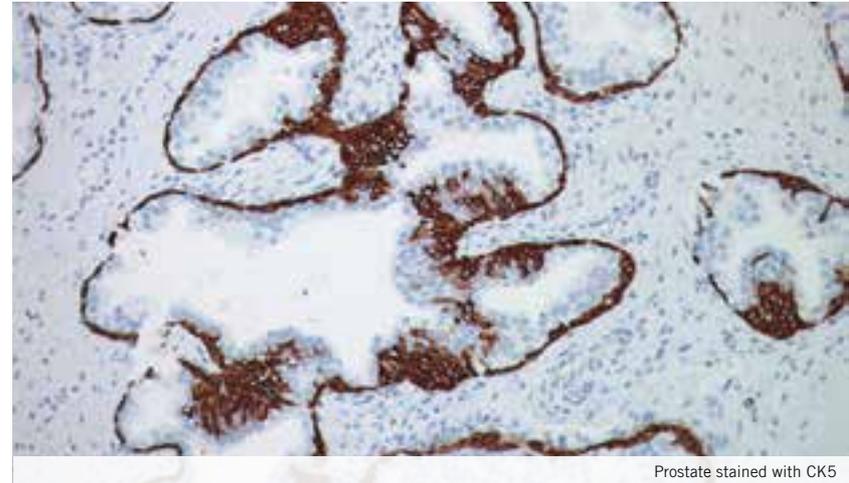
Biocare offers sensitive, specific and reproducible detection systems. Available optimized for either human or animal tissues, detection includes both biotin-free micro-polymers for single or double stains and streptavidin-biotin. The streptavidin-biotin 4plus™ detection reagents provide a high level of sensitivity while also reducing non-specific background. The micro-polymer MACH™ and PromARK™ detection systems enable superior antigen access, giving unsurpassed specificity and sensitivity. In addition, Biocare has a USDA accredited Prion IHC Assay for Chronic Wasting Disease (CWD) and Scrapie. Biocare offers both chromogenic and fluorescent substrates. DyLight™ detection is a family of high-intensity, photostable, conjugated fluorescent dyes. A variety of IHC-specific permanent chromogens that are vivid and clear under bright-field microscopy complement the Horseradish Peroxidase (HRP) and Alkaline Phosphatase (AP) enzyme labels.

IHC Detection for Clinical Use

MACH 4™, MACH 3™, MACH 2™ & IntelliPATH™ Detection

Biocare Medical has sensitive and reliable detection systems ideal for human tissue. Using innovative micro-polymer technology, MACH 4, MACH 3, MACH 2 and IntelliPATH detection systems enable superior antigen access, giving unsurpassed specificity and sensitivity. Greater dilution of primary antibodies provides higher specificity, thus potentially eliminating false positives. These detection systems are biotin-free, specific, sensitive, clean and reproducible.

The micro-polymer detection systems were developed to avoid problems inherent in the use of biotin-streptavidin systems – specifically, nonspecific background staining that results from endogenous biotin, present in nearly all tissues, but particularly prevalent in such tissues as kidney, stomach, colon and brain. Unlike enzyme-labeled streptavidin reagents, micro-polymer systems do not have a natural affinity for endogenous biotin, resulting in minimal background staining. The micro-polymer technology gives significantly sharper and cleaner results with superior work flow compared to conventional methods.



Prostate stained with CK5

- ▶ High sensitivity enables increased primary antibody dilutions
- ▶ High specificity reduces background staining
- ▶ Minimum cross-reactivity reduces number of false positives
- ▶ Avidin-biotin blocking steps reduce technician time
- ▶ Compact micro-polymer enhances nuclear staining
- ▶ Compatible with automated immunostainers

Comparison of Detection Systems

Detection	Multiplex	MACH 4 / IntelliPATH	MACH 3	MACH 2	4plus
Primary Antibody	+	Universal for &	or	Universal, or	Universal for &
Technology	One-step Micro-polymer	Two-step Micro-polymer	Two-step Micro-polymer	One-step Micro-polymer	Two-step Streptavidin-Biotin
Sensitivity	+++	++++ / ++	+++	++	++
Antibody Dilution	N/A	1:300 - 1:400 / 1:50-1:100	1:100-1:200	1:50-1:100	1:50-1:100

Detection Systems For Every Laboratory

MACH 4™

This is an extremely sensitive universal detection for mouse and rabbit primary antibodies. It provides 20- to 40- fold more staining than conventional dextran polymer products. MACH 4 enables a significantly higher dilution of concentrated antibodies compared to other polymer-based detection systems.

MACH 3™

MACH 3 is a two-step, biotin-free detection system which provides excellent specificity, sensitivity and nuclear staining for mouse or rabbit primary antibodies. The use of a secondary reagent increases sensitivity, allowing higher primary antibody dilutions. Available for either mouse or rabbit primary antibodies.

MACH 2™

MACH 2 is a one-step / one-solution, biotin-free detection system which combines superior work flow and sensitivity for mouse and rabbit primary antibodies. MACH 2 may be used for 7-step Multiplex IHC stains with certain antibodies.

Multiplex

Biocare is the proven leader in Multiplex detection systems that enable simultaneous staining with multiple antibodies and chromogens on a single slide. The micro-polymer detection provides superior sensitivity and specificity for mouse and rabbit antibodies. Multiplex detection simplifies double staining procedures, improves turnaround time and reduces reagent usage.

intelliPATH™

Optimized and packaged for the intelliPATH automated staining instrument, these detection systems enable maximum sensitivity for detection of tissue antigens in an automated format. This is a very sensitive and clean universal detection for mouse and rabbit primary antibodies. Available in either single stain or Multiplex IHC simultaneous double stain format.

4Plus™

Biocare's 4plus streptavidin-biotin detection systems are affinity-purified, biotinylated secondary antibodies designed for reliable, cost-effective, two-step detection to provide a high level of sensitivity while minimizing background staining.

Reference Chart

Product Name	Antibody Species	Tissue Species	Enzyme Label*	Retrieval Reagent	Blocking Reagent
Multiplex	 + 		HRP and AP	Reveal / Diva / Borg	Background Sniper
intelliPATH	Universal for  & 		HRP	Reveal / Diva / Borg	
MACH 4	Universal for  & 		HRP or AP	Reveal / Diva / Borg	
MACH 3	 or 		HRP or AP	Reveal / Diva / Borg	
MACH 2	 or  or Universal		HRP or AP	Reveal / Diva / Borg	
4plus	Universal for  & 	      	HRP or AP	Reveal / Diva / Borg	Avidin-Biotin, Background Sniper

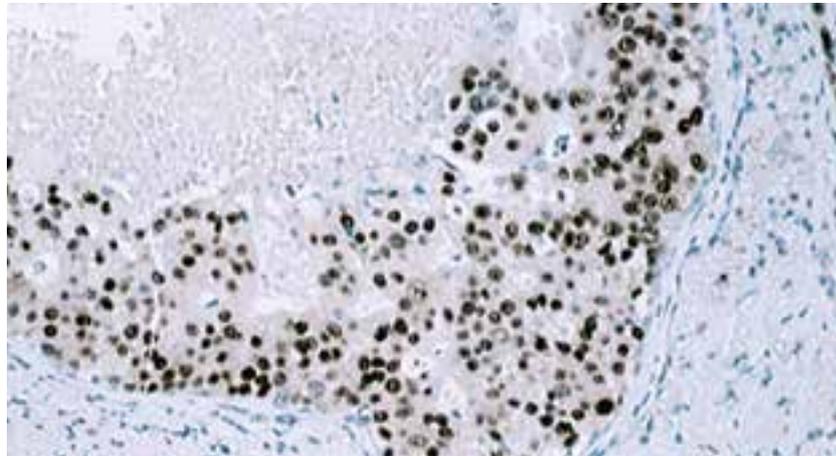
*Horseradish Peroxidase (HRP) and Alkaline Phosphatase (AP).

MACH 4™ Micro-polymer Detection

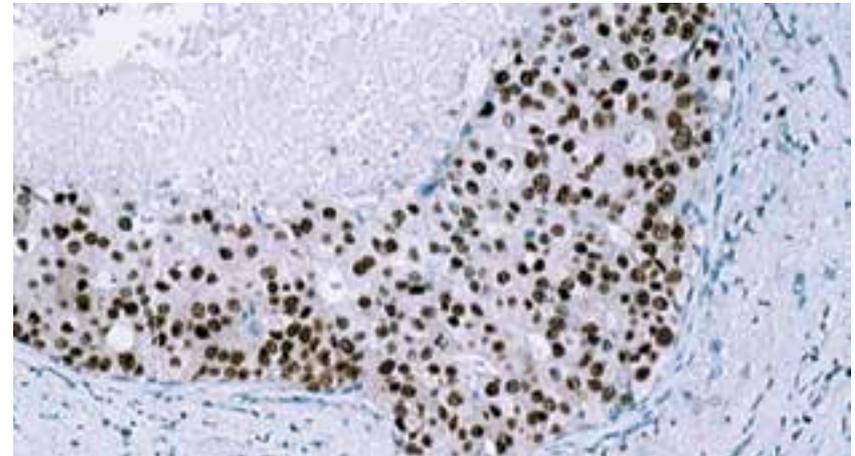
MACH 4 is a highly sensitive detection system that can detect mouse and rabbit antibodies with a two-step universal detection method. MACH 4 detection consists of two reagents: the secondary, also known as the enhancing reagent, is applied between the primary antibody and micro-polymer reagent. MACH 4 is ideal for use with antibody solutions prepared from concentrates or prediluted antibody solutions. Due to its increased sensitivity, MACH 4 enables a significantly higher dilution of concentrated antibodies compared to other polymer-based detection systems.

- ▶ Increased density of enzymes bound to tertiaries
- ▶ 10 - 20 times more sensitive than conventional dextran polymer systems
- ▶ 20 - 40 times more sensitive for nuclear staining than other polymers
- ▶ Micro-polymer allows superior specificity and minimum cross reactivity
- ▶ Compatible with automated immunostainers

Competitor Polymer vs. MACH 4



Breast stained with ER (1D5), 1:25 dilution



Breast stained with ER (1D5), 1:1000 dilution

MACH 4 Micro-polymer Detection

MACH 4 Universal HRP-Polymer

MACH 4 Universal AP-Polymer

Cat. No.

M4U534 G, H, L, MM

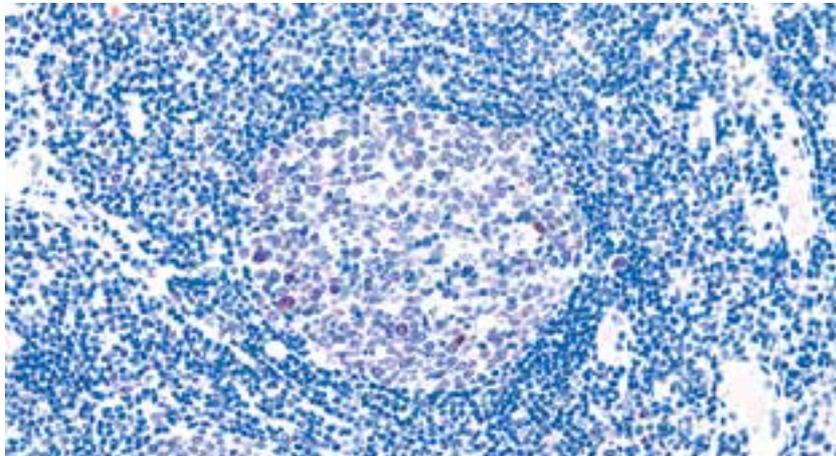
M4U536 G, H, L

MACH 3™ Micro-polymer Detection

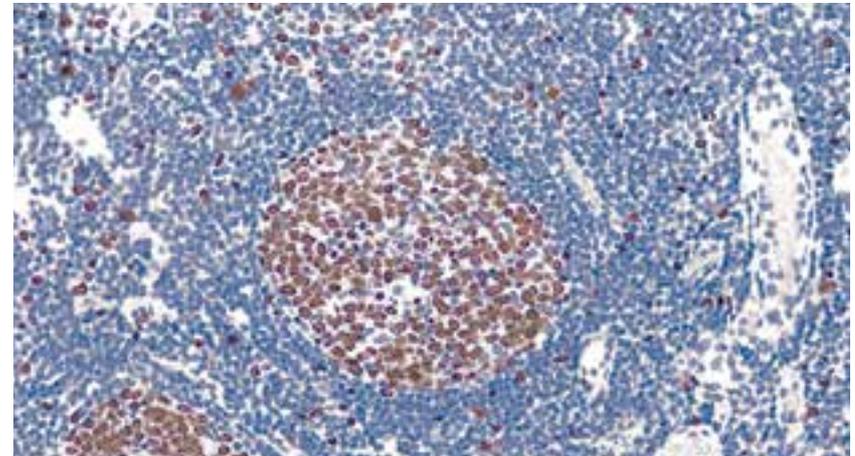
MACH 3 is a two-step, biotin-free detection system which provides excellent specificity, sensitivity and nuclear staining for mouse or rabbit primary antibodies. Available for either mouse or rabbit primary antibodies, labeled with either Horseradish Peroxidase (HRP) or Alkaline Phosphatase (AP).

- ▶ Use of a secondary reagent increases sensitivity
- ▶ 5 - 10 fold increase in sensitivity compared to conventional dextran polymer detection
- ▶ Superior for nuclear and cytoplasmic / cell surface antigens
- ▶ High primary antibody dilution significantly improves specificity and reduces cost
- ▶ Compatible with automated immunostainers

Competitor Polymer vs. MACH 3



Tonsil stained with Ki-67, 1:200 dilution



Tonsil stained with Ki-67, 1:200 dilution

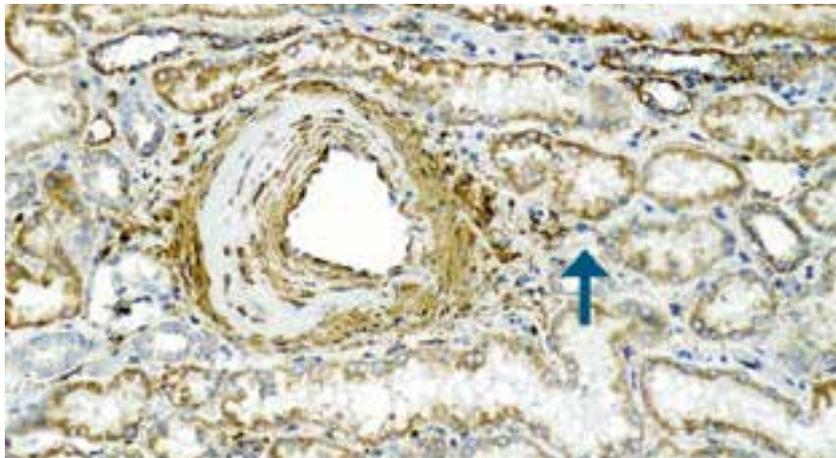
MACH 3 Micro-polymer Detection	Cat. No.
MACH 3 Mouse HRP-Polymer	M3M530 G, H, L
MACH 3 Mouse AP-Polymer	M3M532 G, H, L
MACH 3 Rabbit HRP-Polymer	M3R531 G, H, L
MACH 3 Rabbit AP-Polymer	M3R533 G, H, L

MACH 2™ Micro-polymer Detection

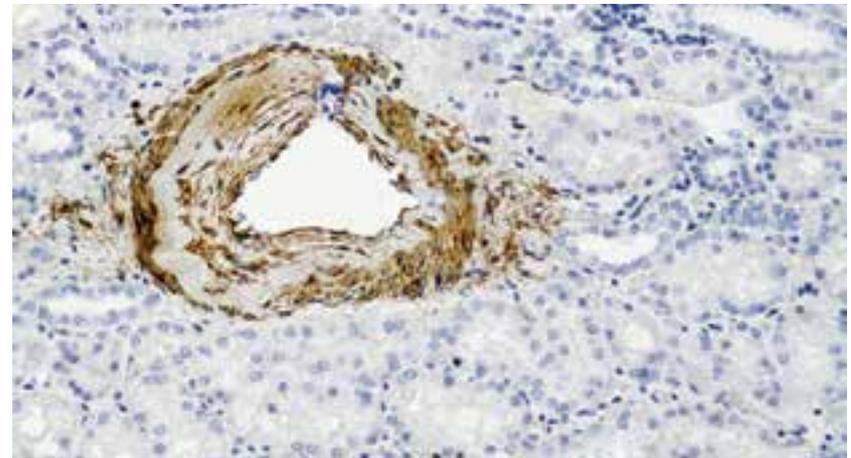
MACH 2 Detection is a one-step / one-solution, biotin-free detection system which combines superior work flow and sensitivity for mouse and rabbit primary antibodies. Consisting of a single reagent applied after the primary antibody, MACH 2 is ideal for use with prediluted antibodies or concentrates with equal success. MACH 2 may be used for 7-step Multiplex IHC stains with certain antibodies. Available in anti-mouse, anti-rabbit, and 'universal' (anti-mouse & anti-rabbit) formulations and labeled with either Horseradish Peroxidase (HRP) or Alkaline Phosphatase (AP).

- ▶ Increase specificity 3-4 fold in nuclear staining
- ▶ 2 fold sensitivity increase in cytoplasmic / cell surface staining
- ▶ Superior to dextran backbone polymers
- ▶ Biotin-free
- ▶ Single solution simplifies protocol steps

Avidin-Biotin System vs. MACH 2



Kidney stained with MSA. Arrow showing endogenous biotin



Kidney stained with MSA

MACH 2 Micro-polymer Detection	Cat. No.
MACH 2 Universal HRP-Polymer	M2U522 G, H, L
MACH 2 Mouse HRP-Polymer	MHRP520 G, H, L, MM
MACH 2 Mouse AP-Polymer	MALP521 G, H, L
MACH 2 Rabbit HRP-Polymer	RHRP520 G, H, L, MM
MACH 2 Rabbit AP-Polymer	RALP525 G, H, L

intelliPATH™ Micro-polymer Detection

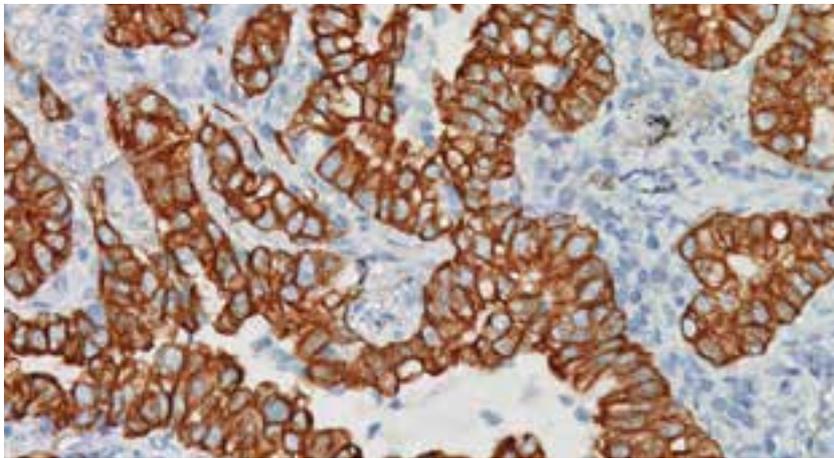
These micro-polymer detections are optimized and packaged for use on Biocare's automated slide stainer, the intelliPATH. These micro-polymers feature a compact molecular design, reducing steric hindrance and enabling crisp, intense staining patterns even in nuclei and other sub-cellular structures for human tissues.

intelliPATH™ Universal HRP Detection

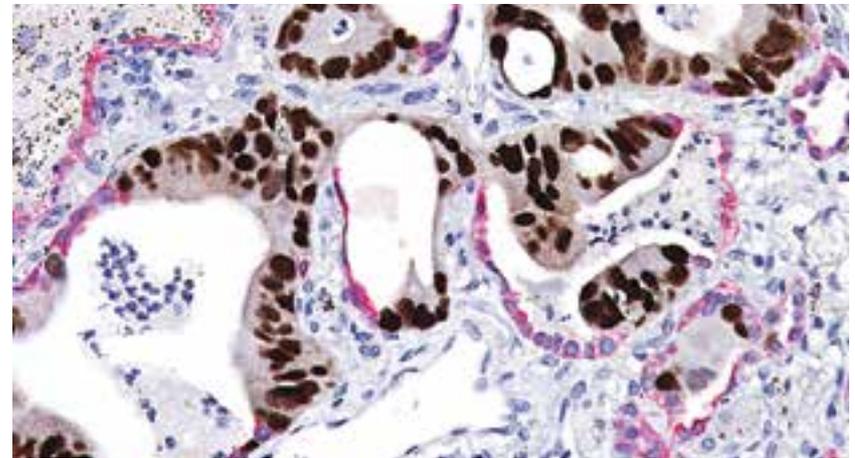
This sensitive two-step universal detection for mouse and rabbit primary antibodies offers superior specificity and minimal background staining. It is provided as a kit with the mouse secondary, a universal HRP tertiary, peroxidase block, DAB chromogen and hematoxylin in intelliPATH vials.

intelliPATH™ Multiplex Secondary Reagent 2

This innovative simultaneous detection of mouse and rabbit primary antibodies allows multiple antigens to be distinguished via unique colors in about the same time as a single stain. The mouse antibody is detected with HRP, while the rabbit antibody is detected with AP.



Adenocarcinoma stained with CK7



Colon cancer metastasized into lung tissue stained with CDX2 + CK7

intelliPATH Micro-polymer Detection	Cat. No.
intelliPATH Universal HRP Detection Kit	IPK5011 G80
intelliPATH Multiplex Secondary Reagent 2	IPSC5004 G20, G80

Multiplex Micro-polymer Detection

Biocare Medical is the proven leader in providing Multiplex detection to enable simultaneous IHC staining of multiple antibodies on a single slide. This superior micro-polymer technology, simplifies protocols, reduces reagents and improves turnaround time. The micro-polymer provides significant increase in staining sensitivity when compared to conventional polymer detection systems. Double Stain 1 is anti-mouse-AP with anti-rabbit-HRP while Double Stain 2 is anti-mouse-HRP with anti-rabbit AP.

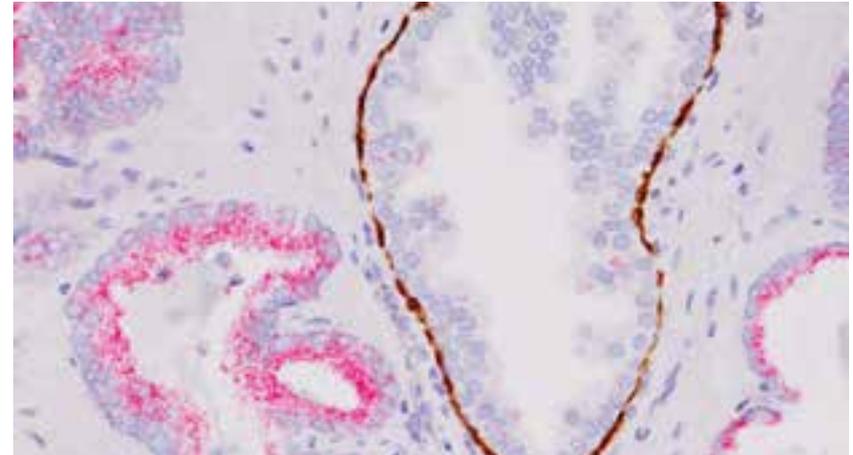
- ▶ Simplifies protocols with simultaneous detection
- ▶ Reduces reagent use
- ▶ Significant staining sensitivity

Multiplex Micro-polymer Detection	Cat. No.
MACH 2 Double Stain 1	MRCT523 G, H, L
MACH 2 Double Stain 2	MRCT525 G, H, L

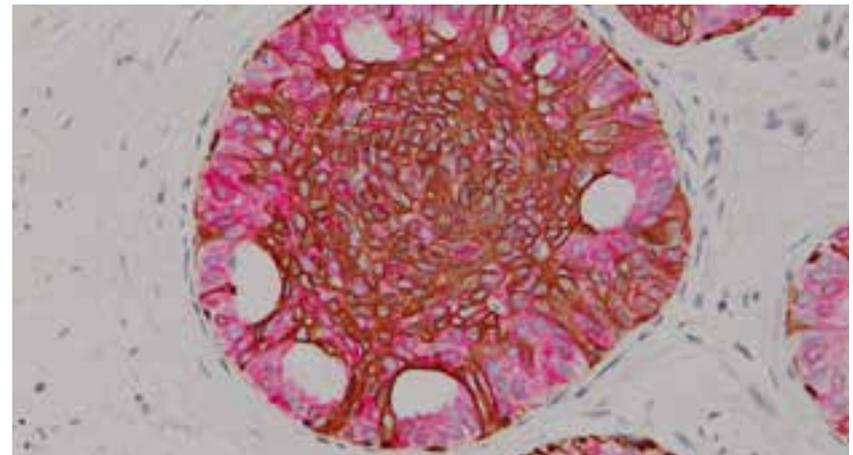
Denaturing Solution (Elution Step)

In a seven-step double stain procedure, this solution denatures the first antibody to ensure the second staining protocol will not cross-react with the first.

Denaturing Solution	Cat. No.
Denaturing Solution	DNS001 H, L



Prostate cancer stained with CK5/14 + p63 + P504S



Breast tissue stained with CK5/14 + p63 + CK7/18

4plus™ Detection

Sensitive two-step streptavidin-biotin HRP and AP detection

Biocare's 4plus Detection systems are affinity-purified, biotinylated secondary antibodies designed for reliable, cost-effective, two-step detection, providing a high-level of sensitivity. The Mouse-on-Mouse Biotinylation system permits a primary antibody to be biotinylated by the user prior to detection on mouse tissues.

4plus Biotinylated Secondary Antibodies		Antibody Species	Tissues Species	Cat. No.
Universal Goat		 or 	  	GU600 G, H, L
Goat Anti-Mouse IgG			  	GM601 H
Goat Anti-Rabbit IgG				GR602 H
Goat Anti-Rabbit IgG			  	GR608 H
Goat Anti-Rat IgG			   	GR607 H
Horse Anti-Mouse IgG			      	HM606 H, L
Goat Anti-Mouse IgG			 	GM612 G
4plus Streptavidin-Enzyme Conjugates				Cat. No.
HRP Label				HP604 G, H, L
AP Label				AP605 H, L
4plus Detection Kits	Slides	Antibody Species	Tissue Species	Cat. No.
HRP 500 Universal	500	 or 	  	HP504 UR
HRP 1000 Universal	1000	 or 	  	HP504 US
HRP 2000 Universal	2000	 or 	  	HP504 US-CC
HRP 5000 Universal	5000	 or 	  	HP504 UM
AP 1000 Universal	1000	 or 	  	AP506 US
Mouse Antibody Biotinylation Kit		Antibody Species	Tissue Species	Cat. No.
Mouse-on-Mouse Biotinylation System				MMBK H

IHC Detection for Research

PromARK™ Detection

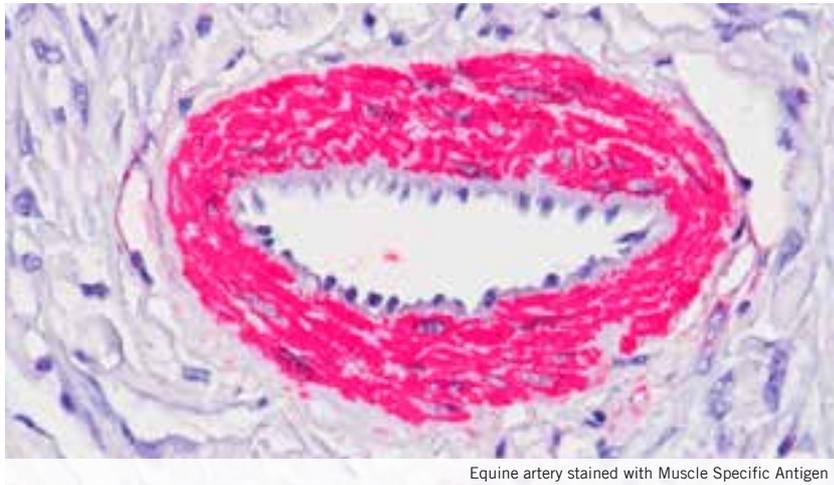
PromARK includes optimally formulated heat-retrieval solutions, blocking agents, and one- and two-step micro-polymers to minimize background staining while providing sensitive and specific detection. The micro-polymer detection systems are designed for use with various primary antibodies on a variety of tissues. This advanced micro-polymer technology provides superior sensitivity and specificity, resulting in simplified IHC procedures. Rodent tissues contain endogenous immunoglobulins that produce significantly high levels of background staining when standard anti-mouse / anti-rabbit detection systems are employed. The use of specialized retrieval and blocking reagents for rodent tissue will dramatically reduce unwanted endogenous IgG background.

- ▶ High staining sensitivity and specificity
- ▶ Micro-polymer technology eliminates endogenous biotin background
- ▶ Minimum cross-reactivity to endogenous IgG
- ▶ Highly effective ancillary reagents for rodent tissues
- ▶ Use with FFPE, floating sections, frozen sections and cell culture preparations
- ▶ Suitable for both manual and automated staining procedures

PromARK™ Micro-polymer	Primary Ab Species	Tissue Species	Label	Blocking Reagent	Retrieval Reagent
Mouse-on-Farma			HRP or AP	Background Punisher	Reveal / Diva / Borg
Rabbit-on-Farma			HRP or AP		
Mouse-on-Canine			HRP or AP		
Rabbit-on-Canine			HRP or AP		
Goat-on-Rodent			HRP or AP	Background Punisher, Rodent Block M or R	Reveal / Diva / Borg or Rodent Decloaker
Mouse-on-Mouse			HRP or AP	Rodent Block M	Rodent Decloaker
Mouse-on-Rat			HRP or AP	Rodent Block R	
Rat-on-Mouse			HRP or AP	Rodent Block M	
Rabbit-on-Rodent			HRP or AP	Rodent Block M or R	
Mouse-&-Rabbit-on-Rodent Double Stain			HRP and AP	Rodent Block M or R	

Cow, Horse, Pig & Sheep Tissues with Mouse or Rabbit Antibodies

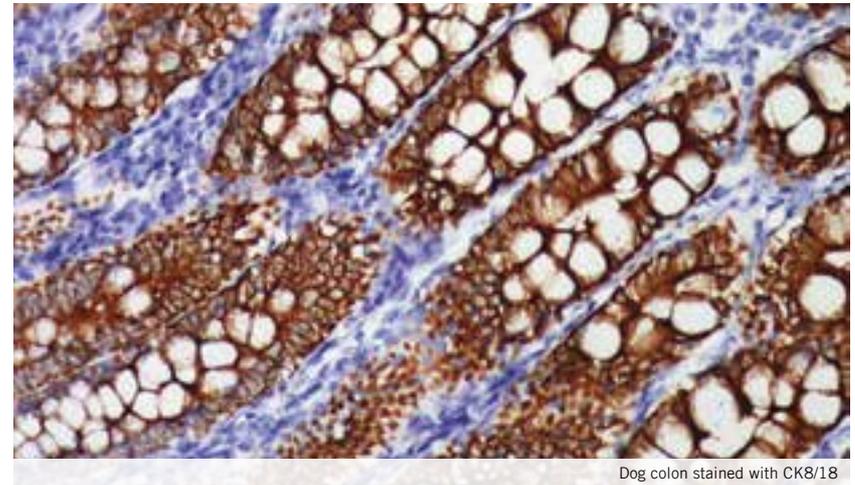
The Mouse-on-Farma and Rabbit-on-Farma detection polymers are adsorbed against cow horse, pig and sheep IgG, providing superior specificity and sensitivity for mouse or rabbit primary antibodies. The advanced one-step polymer technology virtually eliminates cross-reactivity to endogenous IgG's and reduces IHC steps. In most cases, tissues do not require a protein block. Combine together for universal or simultaneous double stains.



Cow, Horse, Pig & Sheep Tissues	Cat. No.
Mouse-on-Farma HRP-Polymer	BRR4002 G, H
Mouse-on-Farma AP-Polymer	BRR4010 G, H
Rabbit-on-Farma HRP-Polymer	BRR4009 G, H
Rabbit-on-Farma AP-Polymer	BRR4011 G, H

Dog & Cat Tissues with Mouse or Rabbit Antibodies

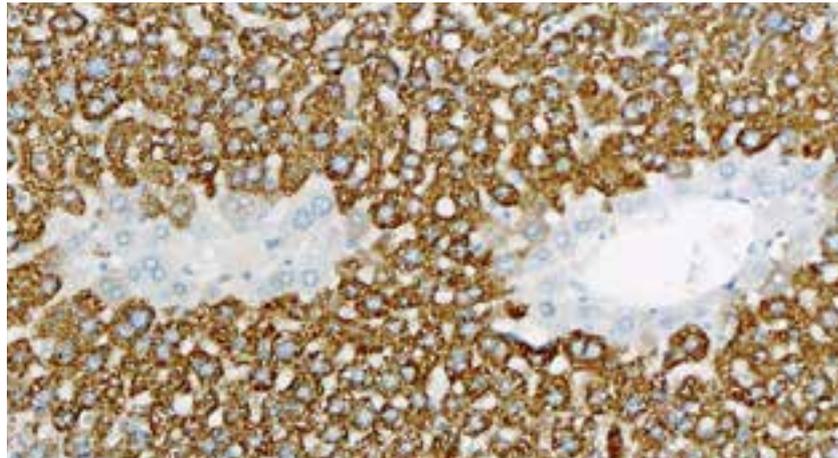
The Mouse-on-Canine and Rabbit-on-Canine detection polymers are specially designed for use on canine and feline tissues. The advanced polymer technology and adsorption against canine IgG provide increased sensitivity, reduced IHC steps and virtually eliminates cross-reactivity to endogenous canine and feline IgG. Usable with paraffin-embedded tissues, floating sections and frozen sections. Combine together for universal or simultaneous double stains.



Canine & Feline Tissues	Cat. No.
Mouse-on-Canine HRP-Polymer	MC541 G, H, L
Mouse-on-Canine AP-Polymer	BRR4003 G, H, L
Rabbit-on-Canine HRP-Polymer	RC542 G, H, L
Rabbit-on-Canine AP-Polymer	BRR4004 G, H, L

Mouse Tissues with Mouse Antibodies

The Mouse-on-Mouse micro-polymer detection technology allows for use of mouse primary antibodies on mouse tissues. It helps minimize non-specific false positive staining often seen when detecting mouse antibodies on mouse tissue. The Mouse-on-Mouse HRP Polymer Bundle consists of micro-polymer detection, blocker and HIER solution.

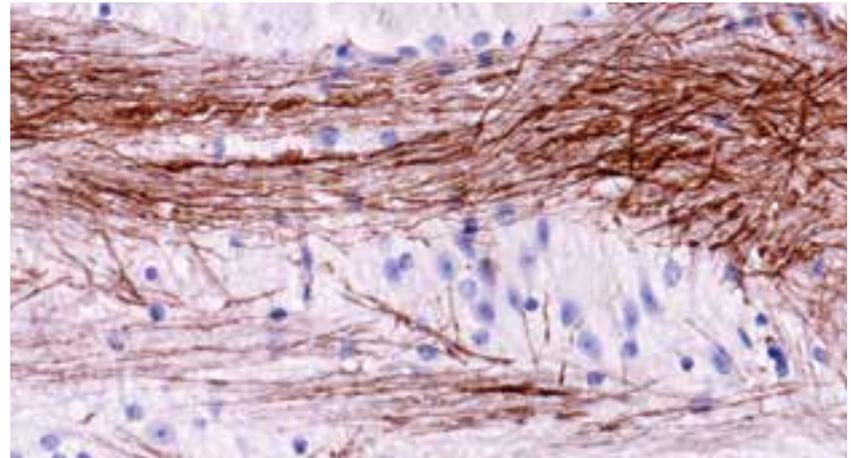


Mouse liver stained with Hepatocyte Specific Antigen

Mouse-on-Mouse	Cat. No.
Mouse-on-Mouse HRP-Polymer	MM620 G, H, L, MM
Mouse-on-Mouse HRP-Polymer Bundle	MM510 G, H, L
Mouse-on-Mouse AP-Polymer	MM624 G, H

Rat Tissues with Mouse Antibodies

The Mouse-on-Rat micro-polymer detection is for use with mouse primary antibodies on rat tissues. This detection system is adsorbed against rat IgG for minimum cross-reactivity to endogenous rat IgG. The bundle contains micro-polymer detection, blocker and HIER solution.

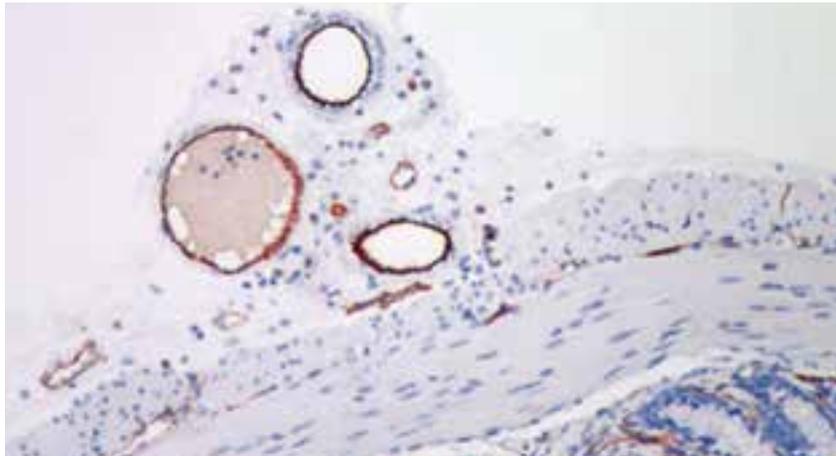


Rat brain stained with Neurofilament

Mouse-on-Rat	Cat. No.
Mouse-on-Rat HRP-Polymer	MRT621 G, H, L
Mouse-on-Rat HRP-Polymer Bundle	MRT511 G, H
Mouse-on-Rat AP-Polymer	MRT623 G, H
Rat Detection Kit for Anti-Mouse CD31	RT517SK

Mouse Tissues with Rat Antibodies

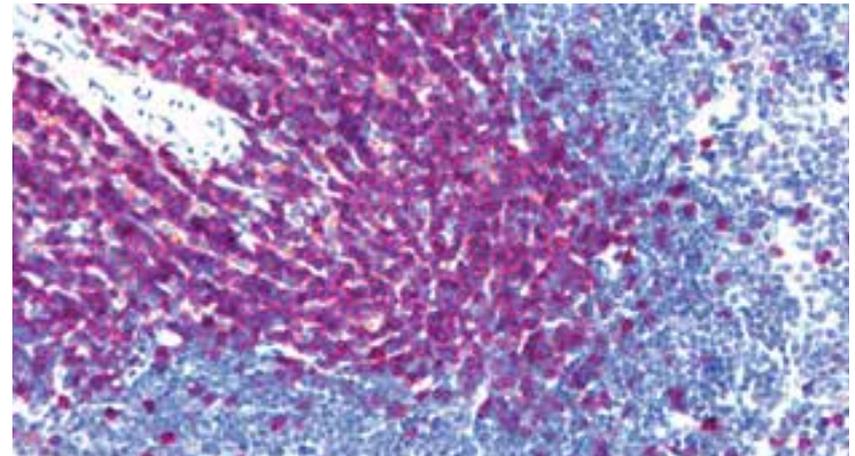
The Rat-on-Mouse micro-polymer detection is for use with rat primary antibodies on mouse tissues. This detection system is mouse adsorbed for minimum cross-reactivity to endogenous mouse IgG. This two-step system is more sensitive than conventional conjugated mouse adsorbed anti-rat secondary detections.



Mouse colon stained with CD31

Rodent Tissues with Rabbit Antibodies

The Rabbit-on-Rodent micro-polymer detection technology allows for use of rabbit primary antibodies on mouse or rat tissues. Rabbit primary antibodies can be advantageous on rodent tissues as rabbit secondary detection systems exhibit minimum cross-reactivity to endogenous rodent IgG.



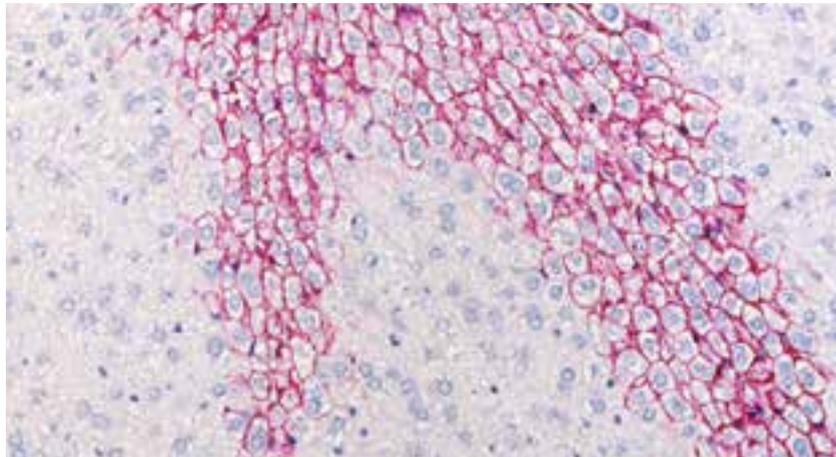
Mouse spleen stained with CD3

Rat-on-Mouse	Cat. No.
Rat-on-Mouse HRP-Polymer	RT517 G, H, L
Rat HRP-Polymer, 1-Step	BRR4016 G, H, L
Rat-on-Mouse AP-Polymer	RT518 G, H

Rabbit-on-Rodent	Cat. No.
Rabbit-on-Rodent HRP-Polymer	RMR622 G, H, L
Rabbit-on-Rodent AP-Polymer	RMR625 G, H

Rodent Tissues with Goat Antibodies

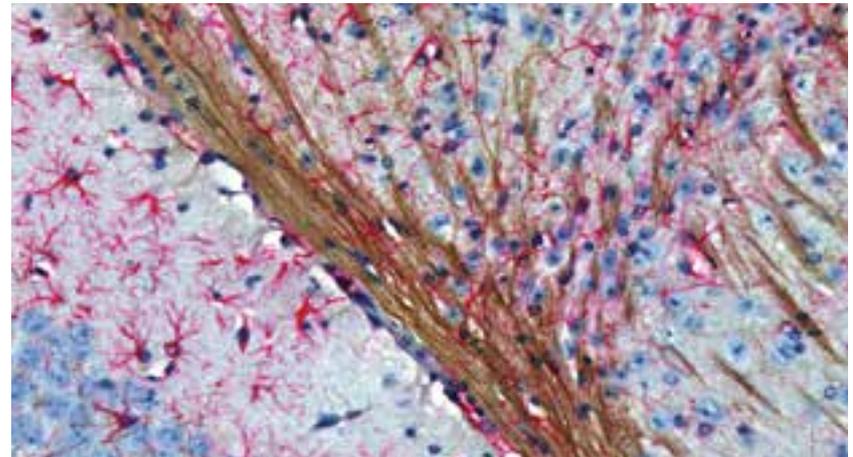
These polymers are for goat primary antibodies on mouse, rat or human tissues. Goat primary antibodies are advantageous as the secondary detection displays minimum cross-reactivity to mouse, rat or human IgG. This two-step system is 10-20 times more sensitive than conventional mouse anti-goat secondary detection systems.



Mouse liver stained with E-cadherin

Rodent Tissues with a Mouse and Rabbit Antibody Cocktail

This simultaneous Multiplex polymer detection is for a mouse and rabbit antibody cocktail on mouse or rat tissue. The double staining procedure is comprised of 5 major steps and can be completed in approximately 2 hours. The micro-polymer technology provides simplified procedures, increased sensitivity and virtually eliminates background staining.



Rat brain stained with Neurofilament and GFAP

Rabbit-on-Rodent	Cat. No.
Goat-on-Rodent HRP-Polymer	GHP516 G, H, L
Goat-on-Rodent AP-Polymer	GAP514 G, H

Product Name	Cat. No.
Mouse-&-Rabbit-on-Rodent Double Stain Polymer	RDS513 H

Sheep, Goat & Deer Tissues with Prion Antibody

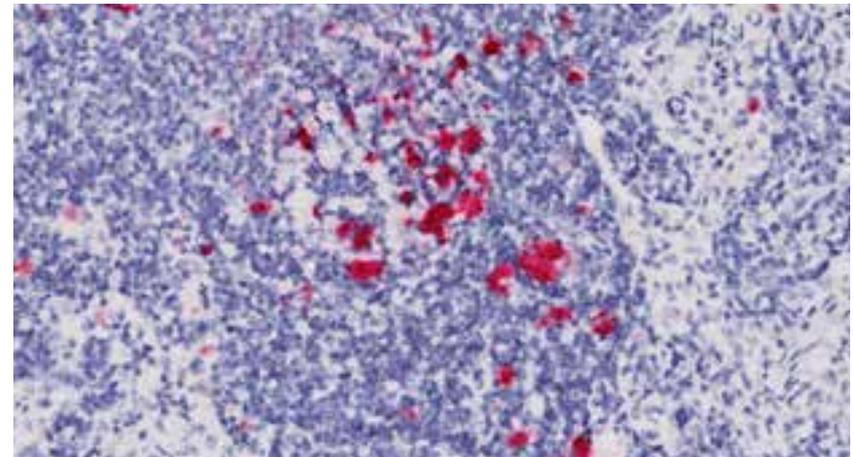
IHC Detection of Prion Infection in Animal Tissue

The “gold standard” diagnostic test for Chronic Wasting Disease (CWD) and Scrapie is the immunohistochemistry (IHC) test performed on the obex tissue of the brain or specific lymphoid tissues. Definitive diagnosis of CWD and Scrapie depends on the histopathology results from relevant brain material.

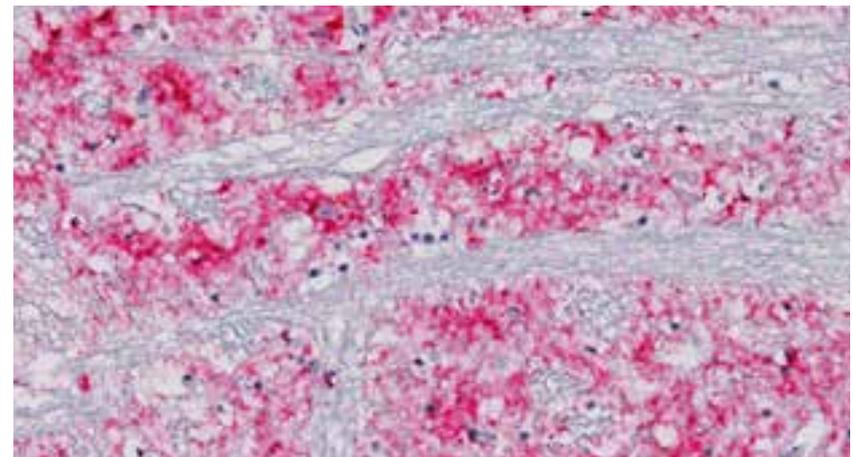
With Biocare’s column-adsorbed anti-prion antibody, sensitive and highly specific results are seen when staining prion positive tissue from infected brain and lymphoid tissues. Use of the Prion IHC Assay on the IntelliPATH system results in high-quality, artifact-free staining targeted to the abnormal prion protein only.

Biocare’s Prion IHC Assay is a comprehensive product solution for prion detection. The Biocare assay platform, the IntelliPATH™ is a proven, random access 50 slide capacity automated stainer, designed for maximum flexibility and productivity. Combined with the fully programmable Decloaking Chamber™, Biocare’s Diva Retrieval Buffer and our Prion IHC Assay Kit, Biocare’s IntelliPATH is the only USDA accredited solution for prion detection that supports the prion detection workflow from HIER (heat induced epitope retrieval) to counterstain application.

- ▶ Streamlined kit format
- ▶ Quality assured F99 MAb
- ▶ Suitable for both manual and automated staining procedures



Prion-positive sheep spleen stained with Prion IHC Assay Kit



Prion-positive sheep brain stained with Prion IHC Assay Kit

Prion	Description	Cat. No.
Prion IHC Assay Kit A	F99 Anti-Prion Detection	IPR5030K G15
Prion IHC Assay Kit B	Counterstain Kit (250 tests)	IPR5033K G80
anti-Prion Protein MAb F99	Prediluted Mouse Monoclonal Antibody	IPR3047 G10

Fluorescent Detection

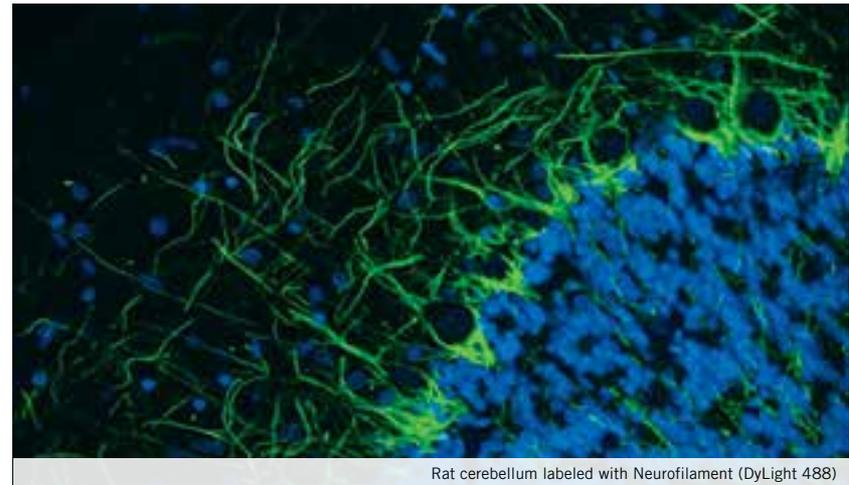
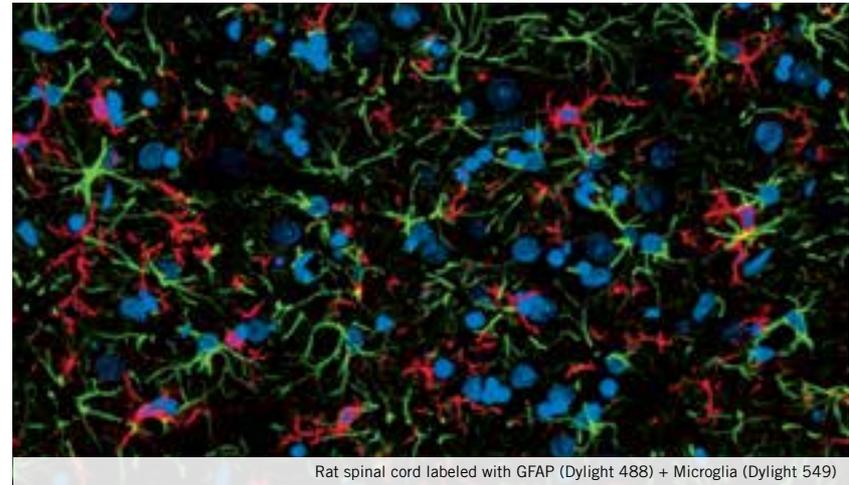
DyLight™ Detection Kits

The Biocare DyLight fluors are a family of high-intensity, photostable, conjugated fluorescent dyes for immunofluorescent studies. DyLight fluors exhibit comparable fluorescence intensity and photostability to Alexa Fluor® and CyDye™ dyes. Biocare fluors remain highly fluorescent over a broad pH range (pH 4-9). Narrow emission spectra enable multi-color detection by minimizing cross talk. DyLight detection is provided as concentrated secondary anti-mouse or anti-rabbit antibodies. Biocare's fluorescent signal amplification reagent may be added to the standard DyLight detection kit to greatly increase the signal.

- ▶ For FFPE sections, frozen tissues & cell culture preparations
- ▶ Spectrum and photosensitivity equivalent to Alexa Fluor® 488, 546, & 555
- ▶ Room temperature photostability of > 30 days
- ▶ Advanced mountants simplify slide handling compared to PBS glycerol

Fluorescent Detection	Excitation	Emission	Cat. No.
Goat Anti-Mouse DyLight 488	493	518	FDM488 AK, CK
Goat Anti-Rabbit DyLight 488	493	518	FDR488 AK, CK
Goat Anti-Mouse DyLight 549	550	568	FDM549 AK, CK
Goat Anti-Rabbit DyLight 549	550	568	FDR549 AK, CK
Goat Anti-Mouse DyLight 594	593	618	FDM594 AK, CK
Goat Anti-Rabbit DyLight 594	593	618	FDR594 AK, CK

DyLight™ is a trademark of Pierce Biotechnology, Inc. Alexa Fluor® is a registered trademark of Molecular Probes, Inc. CyDye™ is a trademark of Amersham Biosciences.



Fluorescent Enhancement Probe

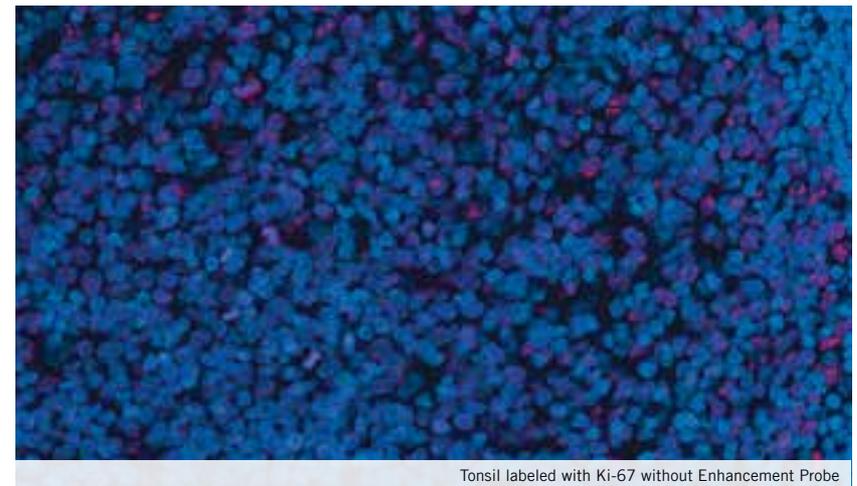
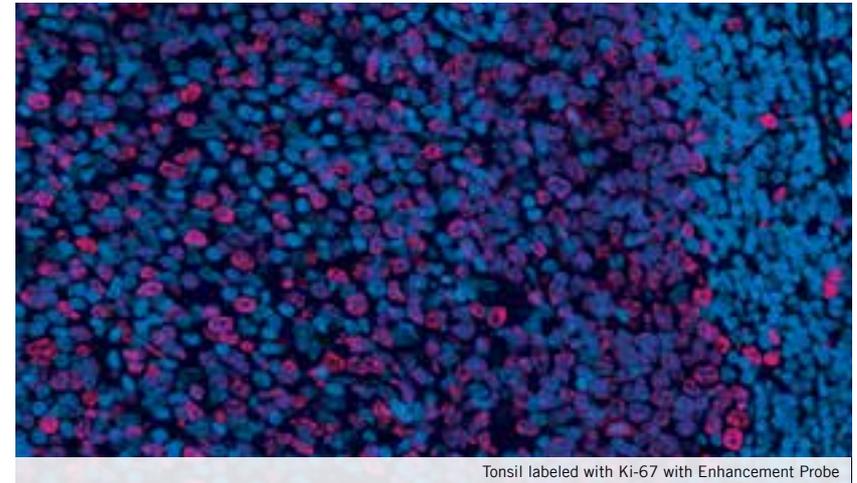
Biocare's Fluorescent Enhancement Probe increases fluorescent signals 3 to 5-fold when used in combination with the DyLight immunofluorescent detection kits. This increased sensitivity is perfect for identification of low abundance proteins as well as routine work. The probe is specific for either mouse or rabbit primary antibodies and can be used with any anti-Mouse or Anti-Rabbit DyLight, respectively. Amplify staining intensity for nuclear, cell membrane and cytoplasmic antigens with Biocare's Fluorescent Enhancement Probe technology.

Fluorescent Enhancement Probes	Cat. No.
Fluorescence Enhancement Probe (Mouse)	FP002 G, H
Fluorescence Enhancement Probe (Rabbit)	FP003 G, H

Fluorescent Signal Preservation

Biocare's anti-fade mountants and antibody diluents deliver superior performance and signal preservation. This innovative, liquid-based, anti-fade mounting medium is especially designed for the permanent preservation of fluorescent specimens. The protease-free antibody diluent stabilizes fluorescent dyes for up to one month in a prediluted format.

Fluorescent Signal Preservation	Cat. No.
Fluorescence Antibody Diluent	FAD901 L
Fluoro Care Anti-Fade Mountant	FP001 G5, G10



Chromogens for Horseradish Peroxidase (HRP)

Betazoid DAB Chromogen Kit

Betazoid DAB is the third-generation of DAB products developed by Biocare. It is superior to conventional DAB and Cardassian DAB in terms of stability and staining intensity. This chromogen is not soluble in alcohol or xylene and can be coverslipped just like any other DAB. Betazoid DAB may increase antibody titers by two-fold and can be used in manual or automated protocols.

Cardassian DAB Chromogen Kit

DAB is widely used in IHC staining and immunoblotting, as it is insoluble in alcohol and xylene, permitting permanent mounting. This three-component system consists of a liquid stable DAB chromogen, substrate buffer and enhancer. The enhancer adds contrast and staining intensity.

DAB Chromogen Kit

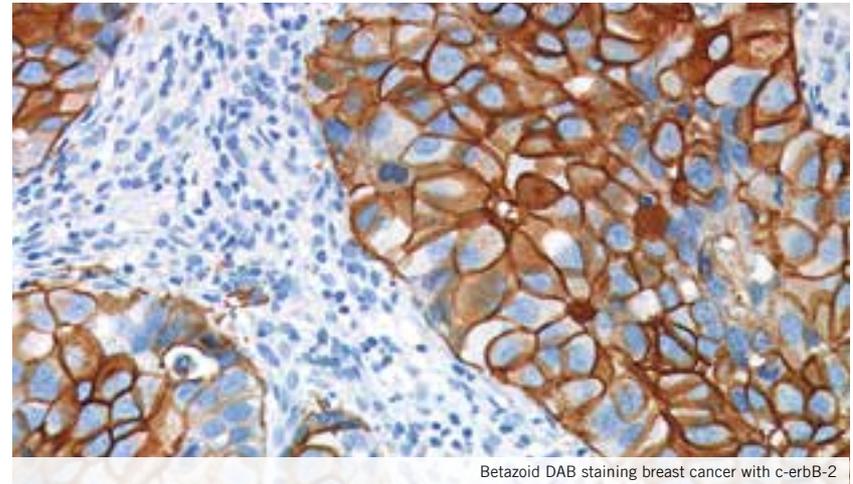
DAB is a permanent chromogen that produces a brown stain in the presence of HRP. DAB is clearly distinguishable from other chromogen colors on a single slide, enabling high flexibility for Multiplex IHC™ applications. This two-component system consists of a liquid stable DAB chromogen and DAB substrate buffer.

Bajoran Purple Chromogen Kit

Bajoran Purple produces a permanent lavender-purple stain. This chromogen kit is not soluble in alcohol or xylene and can be coverslipped. This four-component system consists of a ready-to-use buffer, stabilizer, chromogen and hydrogen peroxide and can be used in double- and triple-stain procedures, nitrocellulose blots and can be viewed by brightfield or darkfield microscopy.

Deep Space Black™ Chromogen Kit

Deep Space Black is a novel permanent chromogen that produces a dark grey to black stain. Stable for at least 8 hours at room temperature once mixed, Deep Space Black is clearly distinguishable from other chromogen colors on a single slide, enabling high flexibility for Multiplex IHC™ applications. Developed for both manual and automated platforms.



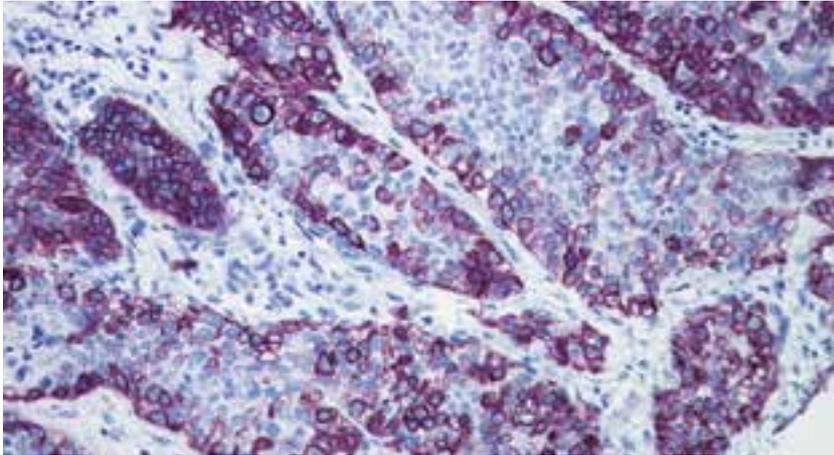
Betazoid DAB staining breast cancer with c-erbB-2

Vina Green™ Chromogen Kit

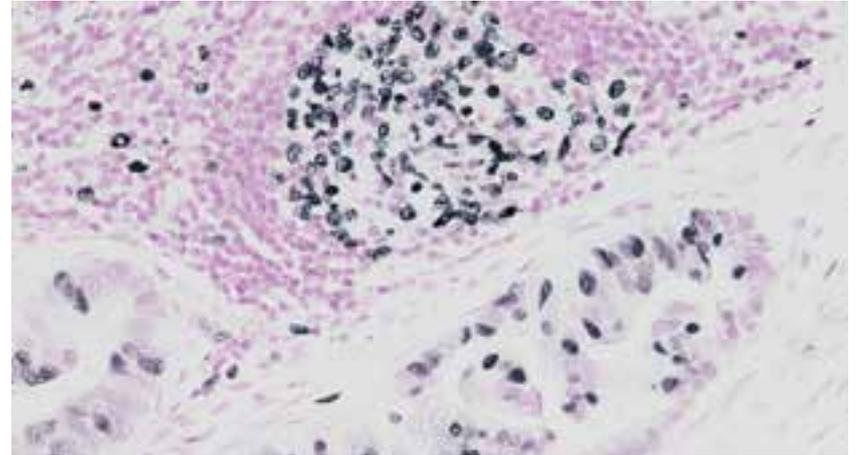
Vina Green is a novel permanent chromogen that produces a green stain. Stable for at least 4 hours at room temperature, Vina Green is clearly distinguishable from other chromogen colors on a single slide, enabling high flexibility for its application in Multiplex IHC. Developed for both manual and automated platforms.

Romulin AEC Chromogen Kit

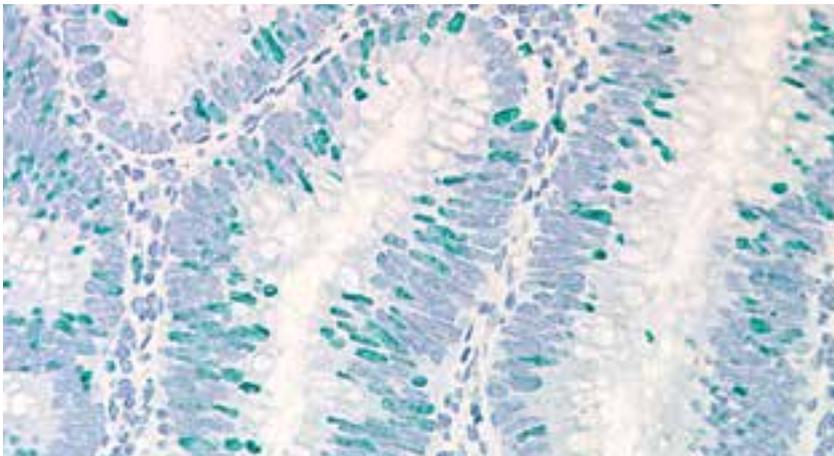
Romulin AEC produces a brick-red stain. It is not soluble in alcohol, xylene or xylene substitutes and can be coverslipped just like DAB. It does not fade with permanent mounting media. This four component system consists of buffer, stabilizer, chromogen and hydrogen peroxide. This chromogen is compatible with both manual and automatic coverslippers.



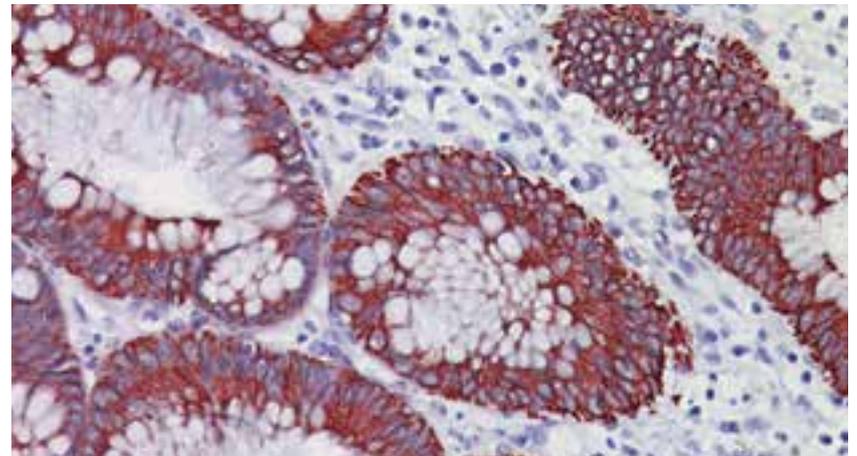
Bajoran Purple staining squamous cell carcinoma with CK5



Deep Space Black Chromogen Kit staining colon cancer with Ki-67



Vina Green Chromogen Kit staining colon cancer with Ki-67



Romulin AEC staining colon cancer with Pan Cytokeratin AE1/AE3

Chromogens for Alkaline Phosphatase (AP)

Warp Red™ Chromogen Kit

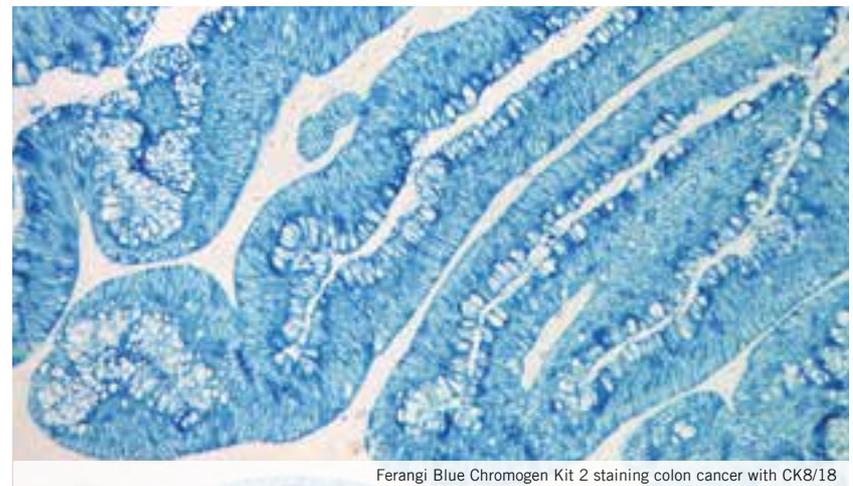
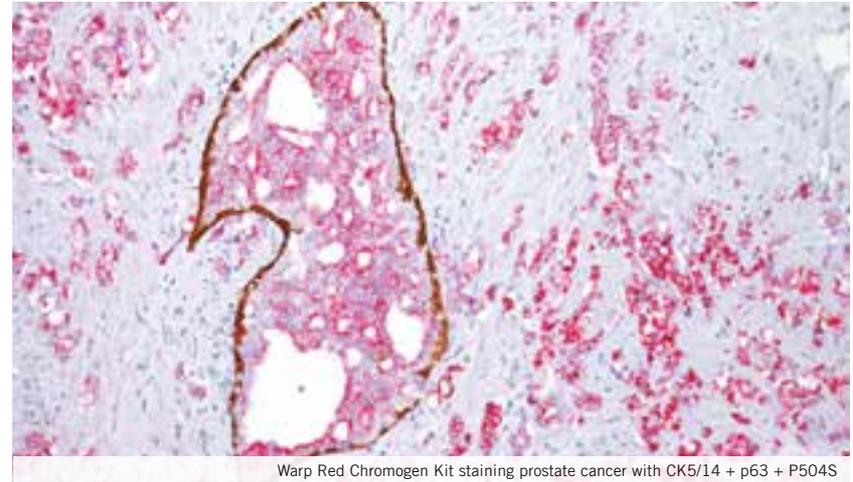
Warp Red Chromogen is a faster, sharper and more stable red chromogen for both manual and automated systems, such as the IntelliPATH™. Warp Red is quick and sensitive, similar to DAB, providing an accelerated protocol and consistent staining quality. The sharp and intense red stain creates superior contrast for Multiplex IHC. These advanced features of Warp Red result in a faster turnaround time, greater staining consistency and improved flexibility.

Vulcan Fast Red Chromogen Kit 2

Vulcan Fast Red Chromogen produces a bright fuchsin-red precipitate in the presence of AP. This chromogen is insoluble in organic solvents and can be coverslipped with a permanent mounting media. For optimum results, use Immunocare TBS Wash Buffer. Vulcan Fast Red can be viewed by both brightfield and darkfield microscopy.

Ferangi Blue™ Chromogen Kit 2

Ferangi Blue Chromogen Kit 2 consists of liquid Ferangi Blue chromogen and buffer, which produces a bright royal blue stain. This improved system results in simplified chromogen mixing steps and enhanced staining signals. Ferangi Blue is clearly distinguishable from other chromogen colors enabling high flexibility for Multiplex IHC applications. Suitable for both manual and automated systems such as the IntelliPATH™.



HRP Chromogens	End-Product Color	Cat. No.
Betazoid DAB Chromogen Kit	Brown	BDB2004 H, L, MM
Betazoid DAB Buffer	N/A	DS900 H
intelliPATH™ DAB Chromogen Kit	Brown	IPK5010 G80
Cardassian DAB Chromogen Kit	Dark Brown	DBC859 H, L10
DAB Chromogen Kit	Brown	DB801 R, L
DAB Chromogen	Brown	DB851-60
DAB Substrate Buffer	N/A	DS854 H, MM
DAB Sparkle	N/A	DS830 H, L, M
Bajoran Purple Chromogen Kit	Purple	BJP811 L
Deep Space Black™ Chromogen Kit	Black	BRI4015 H, L
Vina Green™ Chromogen Kit	Green	BRR807 AH, AS
Romulin AEC Chromogen Kit	Brick Red	RAEC810 L, M
AP Chromogens	End-Product Color	Cat. No.
Warp Red™ Chromogen Kit	Fuchsin Red	WR806 H, S
intelliPATH™ Warp Red™ Chromogen Kit	Fuchsin Red	IPK5024 G80
Vulcan Fast Red Chromogen Kit 2	Fuchsin Red	FR805 H, S, M, 5L
intelliPATH™ Fast Red Chromogen Kit	Fuchsin Red	IPK5017 G80
Ferangi Blue™ Chromogen Kit 2	Royal Blue	FB813 H, S
intelliPATH™ Ferangi Blue™ Chromogen Kit	Royal Blue	IPK5027 G20

Reference Table for Micro-polymer Detection Systems

Human Tissue: MACH & IntelliPATH Detection						
Antibody	Tissue Species	Technology	HRP	AP	Retrieval Reagents	Blocking Reagents
Mouse & Rabbit		IntelliPATH™	IPK5011	N/A	Diva, Reveal, Borg	Background Punisher
Mouse & Rabbit		MACH 4	M4U534	M4U536		
Mouse		MACH 3	M3M530	M3M532		
Rabbit		MACH 3	M3R531	M3R533		
Mouse & Rabbit		MACH 2	M2U522	N/A		
Mouse		MACH 2	MHRP520	MALP521		
Rabbit		MACH 2	RHRP520	RALP525		
Mouse + Rabbit		MACH 2 DS 1	MRCT523			
Mouse + Rabbit		MACH 2 DS 2	MRCT525			
Mouse + Rabbit		IntelliPATH Multiplex 2	IPSC5004			
Animal Tissue: PromARK Detection						
CD31		One-Step	RT517SK	N/A	Rodent Decloaker (RD913)	Rodent Block R (RBR962)
Mouse		One-Step	MM510	MM624		Rodent Block M (RBM961)
Mouse		One-Step	MRT511	MRT623		Rodent Block R (RBR962)
Rat		Two-Step	RT517	RT518		Rodent Block M (RBM961)
Rat		One-Step	BRR4016	N/A		Rodent Block M (RBM961)
Rabbit		One-Step	RMR622	RMR625		Rodent Block M or Block R
Mouse + Rabbit		One-Step	RDS513			Rodent Block M or Block R
Goat	  	Two-Step	GHP516	GAP514		Diva, Reveal, Borg or Rodent Decloaker
Mouse	 	One-Step	MC541	BRR4003	Diva, Reveal, Borg	Background Punisher
Rabbit	 	One-Step	RC542	BRR4004		
Mouse	   	One-Step	BRR4002	BRR4010		
Rabbit	   	One-Step	BRR4009	BRR4011		

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Biocare Medical supports the complete IHC workflow including Heat-Induced Epitope Retrieval (HIER) buffers, antibody diluents, blocking reagents, enzymes, buffers, dewaxing and deparaffinization reagents, mounting media and hematoxylin. HIER buffers are specially formulated for superior pH stability at high temperatures with Assure™ color-coded pH indicators. Blocking reagents reduce non-specific background staining and are available in casein, serum and serum-free formats. Rodent tissue specialty blocking solutions help eliminate endogenous mouse and rat IgG. Endogenous peroxidase and avidin-biotin blockers reduce background staining. Enzymes have been designed for optimum digestion and ease of use. Biocare's dewaxing, deparaffinization and mounting medias are non-flammable and non-toxic alternatives to hazardous reagents such as xylene. Hematoxylin & Eosin (H&E) is available for manual and automated IHC and provides a high contrast.

Heat-Induced Epitope Retrieval (HIER) Buffers

HIER buffers unmask epitopes that have been cross-linked by formalin fixation. These solutions are specially formulated for superior pH stability at high temperatures which helps prevent the loss of pH-sensitive antigens. All Decloaker solutions incorporate Assure™ color-coded pH indicator technology allowing the correct dilution and pH to be confirmed by visual inspection. These buffers may be used with a variety of heat retrieval methods, including the Biocare Decloaking Chamber, microwave oven, pressure cooker, water bath or steamer. Products can be stored at room temperature with the exception of EDTA. Reveal, Borg and Universal Decloaker may be used for deparaffinization when paired with Hot Rinse or Aqua DePar. All buffers are non-flammable, non-toxic, odorless and sodium azide and thimerosal free.

Diva Decloaker

This proprietary composition buffer, pH 6.2, is compatible with virtually all antibodies and eliminates the need for multiple retrieval products such as citrate, EDTA or high pH Tris buffers. Antibody titers may be doubled or tripled when compared to a standard citrate buffer.

Reveal Decloaker

This citrate-based buffer, pH 6.0, reduces non-specific background staining, blocks endogenous peroxidase and removes mercury crystals. Suitable for most antibodies, antibody titers may be increased when compared to other citrate buffers.

Borg Decloaker

This Tris-based buffer, pH 9.5, may increase antibody titers when compared to other heat-retrieval buffers.

EDTA Decloaker

This EDTA-based buffer, pH 8.4-8.7, is recommended for use with low antigen expression antibodies such as Cyclin D1, CD1a, CD3, CD4, CD8, CD23, Bcl-6, CD61, CD79a and TdT.

Rodent Decloaker

This proprietary composition buffer, pH 6.0, is for performing HIER on rodent tissue and blocking endogenous mouse and rat IgG at the same time. Formulated to work with Biocare's PromARK™ detection, it is compatible with virtually all antibodies. Antibody titers may be doubled or tripled when compared to a citrate buffer. It is for Research Use Only (RUO) and not intended for therapeutic or diagnostic purposes.

RISH™ Retrieval

This proprietary composition buffer, pH 6.2, is compatible with Biocare's RISH probes for *in situ* hybridization. When used in combination with RISHzyme™ for *in situ* hybridization, a synergistic effect on probe accessibility to nucleic acid targets is achieved.

Universal Decloaker

This proprietary composition buffer, pH 6.0, reduces non-specific background staining, block endogenous peroxidase and removes mercury crystals. For many antibodies, titers may double when compared to a citrate buffer.

Bull's Eye Decloaker

This proprietary composition buffer, pH 6.0, blocks for endogenous peroxidase and non-specific background staining while simultaneously performing antigen retrieval. This universal retrieval solution is compatible with virtually all antibodies and eliminates the need for EDTA or high pH retrieval buffers.

Antigen Decloaker

This specially formulated citrate buffer, pH 6.0, has been designed for superior pH stability at high temperature incubations.

Nuclear Decloaker

This Tris-based buffer, pH 9.5, is designed for nuclear antigens including ER, PR, Ki-67, p53, Cyclin D1, TdT and TTF-1. Other antibodies may also show improved staining when using this retrieval solution.



HIER Buffers	Status	Composition	pH	Formulation	Volume	Cat. No.
Diva Decloaker, RTU	IVD	Proprietary	pH 6.2	Ready-to-Use	1000 ml, 1 gallon	DV2004 MM, G1
Diva Decloaker, 10X	IVD	Proprietary	pH 6.2	Concentrate	100, 500 ml	DV2004 LX, MX
Diva Decloaker, 20X	IVD	Proprietary	pH 6.2	Concentrate	250 ml	DV2005 L2J
Reveal Decloaker, RTU	IVD	Citrate-based	pH 6.0	Ready-to-Use	1000 ml, 1 gallon	RV1000 MMRTU, G1; RVS1000 G1
Reveal Decloaker, 10X	IVD	Citrate-based	pH 6.0	Concentrate	500 ml	RV1000 M; RVS1000 M-RVS
Borg Decloaker, RTU	IVD	Tris-based	pH 9.5	Ready-to-Use	250, 1000 ml, 1 gallon	BD1000 S-250, MM, G1; BDS1000 G1
EDTA Decloaker, 5X	IVD	EDTA-based	pH 8.5	Concentrate	100, 500 ml	CB917 L, M
Rodent Decloaker, 10X	RUO	Proprietary	pH 6.0	Concentrate	100, 500 ml	RD913 L, M
RISH™ Retrieval, 10X	IVD	Proprietary	pH 6.2	Concentrate	500 ml	RI0209 M
Universal Decloaker, 10X	IVD	Proprietary	pH 6.0	Concentrate	500 ml	UD1000 M
Bull's Eye Decloaker, 20X	IVD	Proprietary	pH 6.0	Concentrate	500 ml	BULL1000 MX
Antigen Decloaker, 10X	IVD	Citrate-based	pH 6.0	Concentrate	500 ml	CB910 M
Nuclear Decloaker, 10X	IVD	Tris-based	pH 9.5	Concentrate	500 ml	CB911 M

*Includes 25 Steam Monitor Strips

Enzymes

Carezyme Series

In FFPE tissues, certain antibody protocols require enzyme pretreatment for proper IHC staining. The Carezyme series has been designed for optimum digestion and ease of use.

Enzymes	Volume	Cat. No.
Carezyme I: Trypsin Kit	6, 25 ml	TRP955 KG, KH
Carezyme II: Pepsin Kit	6, 25, 100 ml	PEP956 G, H, L
Carezyme III: Pronase Kit	6, 25 ml	PRT957 KG, KH
Protease XXIV	15 ml	PR960 KG15
intelliPATH™ Pepsin	20 ml	IPE5007 G20
intelliPATH™ Pronase	20 ml	IPK5014 G20

Ion-Exchange Decalcification (IED)

For Bone Marrow Biopsies

An advanced decalcification system that removes calcium from bone quickly while leaving superior cellular detail. The IED Unit incorporates a strong cation ion-exchange resin in a weak acid solution to remove calcium ions from bone and replacing them with hydrogen ions. Because the IED Unit does not require strong concentrated acid solutions, as in traditional decalcification methods, delicate cellular structures and antigenicity remain intact, providing superior IHC staining.

Ion Exchange Decalcification	Volume	Cat. No
IED Unit (Ion-Exchange Decal Unit)	140, 500 ml	IED1203, IED1204

Deparaffinization

Aqua DePar

Aqua DePar is a water-soluble deparaffinization reagent which can be used for IHC, H&E's and special stains which eliminates the use of xylenes and alcohols, reducing disposal costs and toxic waste. Paraffin is completely dissolved by this non-flammable and non-toxic solution.

Hot Rinse

Designed for use with Biocare's Decloaking Chamber, this clarifying reagent is used with Reveal, Borg or Universal HIER reagents to remove residual paraffin after depaffinization. It is sodium azide and thimerosal free, non-toxic, non-flammable and odorless.

Slide Brite

Slide Brite is a non-flammable, non-hazardous alternative to xylene for the deparaffinization and clearing of tissue sections. Its flash-point is above 140 °F; almost double that of xylene. Slide Brite has been designated non-hazardous on the basis of aquatic toxicity, eliminating hazardous waste and requires no hood or ventilation.

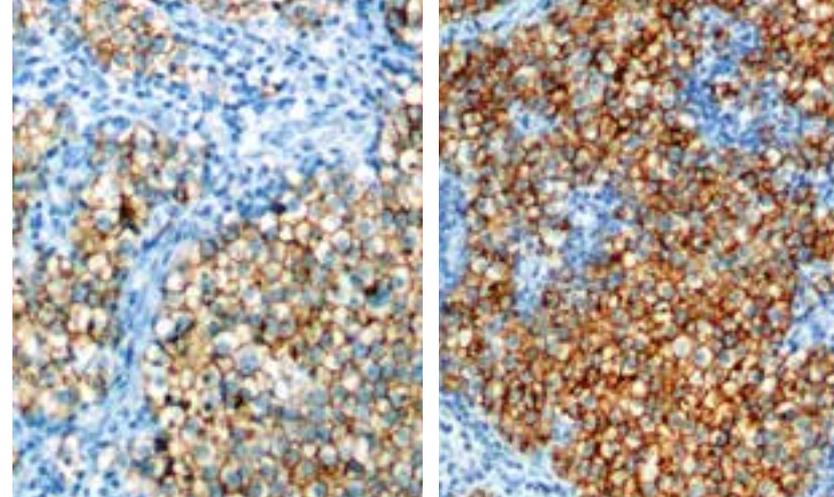
Deparaffinization	Volume	Cat. No.
Aqua DePar, 10X	500 ml	ADP1002 M
Hot Rinse, 25X	100, 500 ml	HTR1001 L, M
Slide Brite	1 gallon	SBT G1

Antibody Diluents

Biocare Medical's antibody diluents are optimized formulations for improving primary antibody titers and are extremely stable for long-term antibody storage. In most cases, when compared against other PBS-based and Tris-based diluents, primary antibody titers may be improved 2-4 fold. Greater primary antibody dilutions may provide cost-savings, higher specificity and reduce non-specific background staining.

The Revival Series Sampler of diluents include Da Vinci Green, Renoir Red, Van Gogh Yellow and Monet Blue. Da Vinci Green is Biocare Medical's standard universal diluent that has been formulated for superior performance and stability. Da Vinci Green and Van Gogh Yellow are PBS-based diluents, pH 7.3 or pH 6.0, respectively. Renoir Red and Monet Blue are Tris-based diluents, pH 6.0 or pH 7.9, respectively. VP Monet Blue has been specially formulated to enhance primary antibodies used on Ventana® immunostainers. The Revival Series Sampler pack includes all four diluents for finding a primary antibody's ideal diluent.

Additional specialty diluents include Renaissance Background Reducing Diluent and Fluorescence Antibody Diluent. Renaissance Background Reducing Diluent includes potent background reducing agents and is ideal for antibodies that have a tendency to produce non-specific background staining. Fluorescence Antibody Diluent stabilizes fluorescent dyes for up to one month after dilution, delivering superior performance and signal preservation.

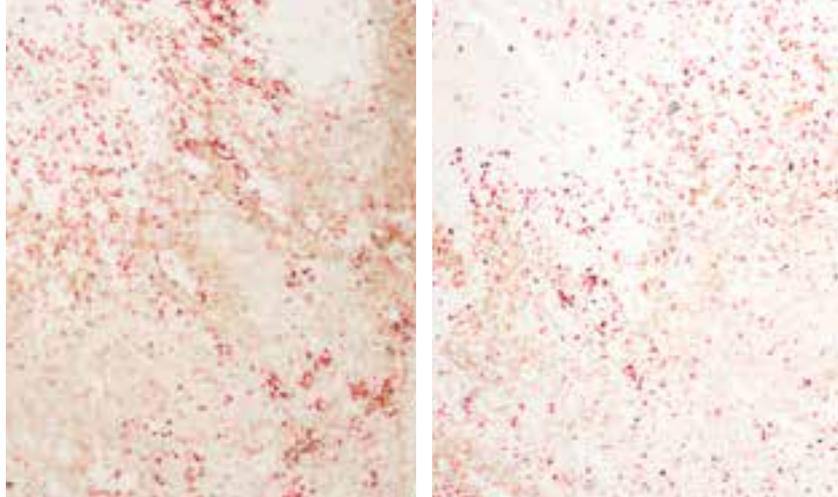


Standard PBS (L) vs. enhanced staining with Renoir Red (R) with CD117, 1:800

Standard PBS vs. Enhanced Staining with Renoir Red



Antibody Diluents	Composition	Volume	Cat. No.
Da Vinci Green	pH 7.3, Phosphate-based solution	25, 100, 500 ml	PD900 H, L, M
Renoir Red	pH 6.0, Tris-based solution	25, 100, 500 ml	PD904 H, L, M
Van Gogh Yellow	pH 6.0, Phosphate-based solution	25, 100, 500 ml	PD902 H, L, M
Monet Blue	pH 7.9, Tris-based solution	25, 100, 500 ml	PD901 H, L, M
VP Monet Blue	pH 8.2, For antibodies used on Ventana® Systems	100 ml	VPD901 L
Revival Series Sampler (25 ml of ea)	Da Vinci Green, Renoir Red, Van Gogh Yellow, Monet Blue	25 ml x 4	PD912 H4
Renaissance Background Reducing Diluent	pH 7.3, For antibodies with non-specific background	25, 100 ml	PD905 H, L
Fluorescence Antibody Diluent	pH 7.3, For antibodies used with fluorescent detection	25, 100 ml	FAD901 L



Tonsil stained without IntelliPATH Background Punisher (L) & with IntelliPATH Background Punisher (R)

Blocking Reagents

Background Punisher

A universal blocking reagent for reducing nonspecific background staining often found in IHC and ELISA techniques. This proprietary combination of proteins can be used on both human and animal tissue with automated or manual staining protocols.

Background Sniper

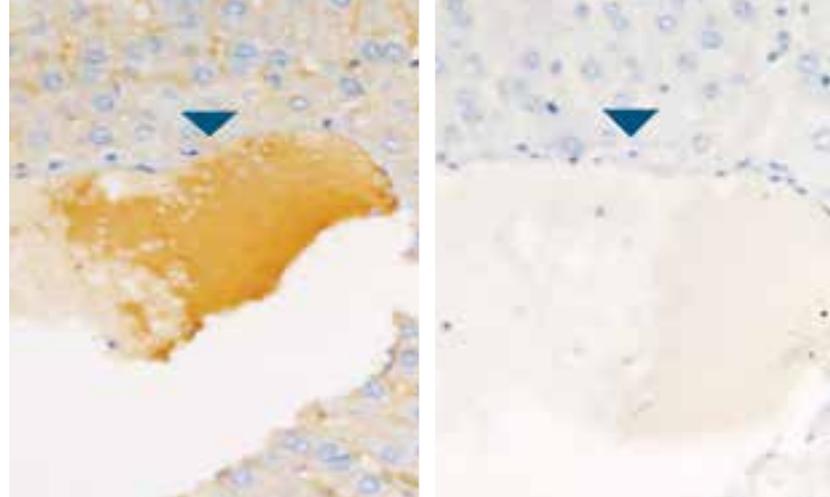
A universal casein blocker used for reducing nonspecific background staining often found with IHC, ELISA, immunoelectron microscopy and immunogold techniques. Casein has proven to be a superior blocking reagent compared to serum proteins.

Background Eraser

A 10% goat serum with surfactant blocker that has been optimized to work with Biocare's 4plus avidin-biotin detection systems. Ideal for when secondary antibodies have been derived from goat.

Background Terminator

A goat serum with surfactant blocker that is used when excessive background problems exist. Designed for use with MACH 2 detection, not suitable for two-step detections such as MACH 3, MACH 4, PromARK™ or IntelliPATH™ detection.



Arrows show endogenous IgG background staining. Mouse liver without, (L) and with Rodent Blocker, (R).

Blocking Reagents for Rodent Tissue

Rodent Block M

Designed for use exclusively with mouse tissue, it makes use of proprietary blocking agents to reduce endogenous mouse IgG and non-specific background. To be used with mouse-on-mouse, rat-on-mouse, rabbit-on-rodent and goat PromARK™ micro-polymer detection systems.

Rodent Block R

Designed for use exclusively with rat tissue, it makes use of proprietary blocking agents to reduce endogenous rat IgG and non-specific background. To be used with mouse-on-rat, rabbit-on-rodent and goat PromARK™ micro-polymer detection systems.

XM Factor

A potent blocker for blocking endogenous mouse IgG in mouse tissues. XM Factor is formulated for use with anti-rat, rabbit or goat PromARK™ micro-polymer detection systems, but is not suitable for use with any anti-mouse micro-polymer detection systems.

XR Factor

A potent blocker for eliminating endogenous rat IgG in rat tissues. XR Factor is formulated for use with anti-mouse, rabbit or goat PromARK™ micro-polymer detection systems, but is not suitable for use with any anti-rat micro-polymer detection systems.

Endogenous Peroxidase Blockers

Peroxidazed 1

This highly stable form of hydrogen peroxide is for blocking endogenous peroxidase in FFPE and frozen tissues. It is very effective for blocking non-specific staining in red blood cells. Peroxidazed 1 may be diluted with Peroxidazed Diluent as some frozen tissues or delicate antigens require different concentrations of hydrogen peroxide for blocking endogenous peroxidase.

Peroxabolish

This non-hydrogen peroxide blocking reagent is safe and extremely gentle on tissues and cells. It is highly effective in quenching endogenous peroxidase and can be used on FFPE tissues, cell culture, blood smears, cell preparations and frozen sections.

Endogenous Biotin Blockers

Avidin-Biotin Kit

This kit contains Avidin and Biotin blockers for use with streptavidin-biotin detection systems. In most cases, endogenous biotin in tissue sections is masked by formalin fixation. However, if avidin-biotin IHC detection systems are used with frozen sections or tissues pretreated with HIER, an avidin-biotin blocking technique may be needed.

Mouse Detective

Mouse Detective is designed for blocking both endogenous biotin and mouse IgG in mouse tissues. Suitable for mouse primary antibodies detected in mouse tissue using streptavidin-biotin detection.

Blocking Reagents	Volume	Cat. No.
Background Punisher	6, 25, 100, 500 ml	BP974 G, H, L, M
intelliPATH™ Background Punisher	20 ml	IP974 G20
Background Sniper	6, 25, 50, 100, 500, 1000 ml	BS966 G, H, JJ, L, M, MM
Background Eraser	25 ml	BE965 H
Background Terminator	25, 100 ml	BT967 H, L
V-Blocker	6 ml	BRI4001 G
Rodent Block M	6, 25, 100 ml, 1000 ml	RBM961 G, H, L, MM
Rodent Block R	6, 25, 100 ml	RBR962 G, H, L
XM Factor	1, 6 ml	XMF963 C, G
XR Factor	1, 6 ml	XRF964 C, G
Peroxidazed 1	6, 25, 500, 1000 ml	PX968 G, H, M, MM
Peroxidazed Diluent	125 ml	PX970 LH
Peroxabolish	6, 100, 500 ml	PXA969 G, L, M
intelliPATH™ Peroxidase Blocking Reagent	20, 100 ml	IPB5000 G20, L
Avidin-Biotin Kit	25, 100, 500 ml	AB972 H, L, M
Mouse Detective	6, 25 ml	MD975 G, H

Negative Controls

In order to verify that a reagent is staining according to its correct specificity, a negative reagent control should be included in each staining run. These negative controls have been titrated for Biocare's antibodies and optimized to work with Biocare's 4plus streptavidin-biotin, MACH™ or PromARK™ micro-polymer detection systems. These are suitable for manual or automated protocols.

Mouse IgG1

This negative control is intended for mouse antibodies that are of the IgG1/kappa isotype.

Mouse IgG

This negative control is intended for mouse monoclonal antibodies. The purified IgG pooled serum contains a spectrum of the IgG subclasses.

Rabbit IgG

This negative control is intended for rabbit antibodies. The purified pooled serum of adult rabbits contains the full spectrum of the IgG subclasses.

Universal Serum

Intended for both mouse and rabbit antibodies when using streptavidin-biotin detection.

Polymer Serum (Mouse & Rabbit)

This negative control is intended for both mouse and rabbit antibodies when using polymer single or double-stain detection.

intelliPATH™ Universal

This negative control is intended for both mouse and rabbit antibodies and has been packaged for use on the intelliPATH™ Slide Stainer. It contains the full spectrum of the Mouse IgG subclasses and Rabbit IgG. It can be used with any of Biocare's mouse and/or rabbit streptavidin kits or polymer detection systems.

Negative Controls	Usage	Volume	Cat. No.
Negative Control Mouse IgG1	Mouse IgG1/kappa antibodies	6, 25 ml	NC490 AA, H
Negative Control Mouse IgG	Mouse IgG antibodies	25 ml	NC494 H
Negative Control Rabbit IgG	Rabbit antibodies	6, 25 ml	NC495 AA, H
Universal Negative Control Serum	Mouse and rabbit antibodies with streptavidin-biotin detection	6, 25, 100, 1000 ml	NC498 AA, H, L, MM
Polymer Negative Control Serum (Mouse & Rabbit)	Mouse and rabbit antibodies with polymer detection	6, 25, 100 ml	NC499 AA, H, L
intelliPATH™ Universal Negative Control	Mouse and rabbit antibodies on the intelliPATH™ Slide Stainer	20 ml	IP498 G20

Hematoxylin and Eosin

CAT Hematoxylin

This modified Lillie-Mayer's Method formulation provides incredible nuclear detail in routine H&E's and IHC procedures, as well as for some special stains. This hematoxylin requires virtually no filtering and produces minimum scum due to oxidation. It has been specially formulated to eliminate the necessity for differentiation of the section.

Tacha's Automated Hematoxylin

A water-based hematoxylin, specially formulated for automated IHC. This hematoxylin can be used on FFPE or frozen tissue. Nuclei stain a sky blue, providing high contrast staining.

Edgar Degas Eosin

This modified alcoholic Eosin Y includes the addition of stabilizers for a prolonged shelf life. It is intended for use in the histologic demonstration of cytoplasm. Erythrocytes, collagen and the cytoplasm of muscle or epithelial cells should stain with three different intensities of pink.

Rubens Eosin-Phloxine

This Eosin Y and Phloxine solution is a counterstain for hematoxylin. When Eosin-Phloxine is used, pink shades are more vivid and alcoholic hyalin is also stained.

Tacha's Bluing Solution

A highly stable bluing solution, which is designed for bluing hematoxylin stained nuclei. This solution can be used for both FFPE and frozen sections. It is non-toxic and odorless, available in ready-to-use or concentrated formats.

Hematoxylin and Eosin	Volume	Cat. No.
CAT Hematoxylin	6, 25, 500, 1000 ml, 1 gallon	CATHE G, H, M, MM, GL
intelliPATH™ Hematoxylin	20 ml, 100 ml	IPCS5006 G20, L
Tacha's Automated Hematoxylin	100, 500 ml	NM-HEM L, M
Edgar Degas Eosin	1000 ml, 1 gallon	HTE MM, GL
Rubens Eosin-Phloxine	1000 ml, 1 gallon	HTEP MM, GL
Tacha's Bluing Solution, RTU	500 ml	HTBLU M
Tacha's Bluing Solution, 10X	500 ml	HTBLU MX

Mounting Media

EcoMount

EcoMount is a low hazard, non-toxic, non-flammable and environmentally friendly mounting medium that is compatible on automatic cover slipping machines. This polymer-based mounting medium does not contain hazardous reagents such as xylene, toluene or benzene. It dries quickly and retains excellent refractivity. EcoMount is designed for the permanent preservation of HRP, AP and Qdot techniques.

Fluoro Care Anti-Fade Mountant

Fluoro Care Anti-Fade Mountant is especially designed for long-term preservation of fluorescently labeled specimens. It is compatible with Dylight™ Fluors, Alexa Fluors®, fluorescein, rhodamine and Texas Red.

Mounting Media	Volume	Cat. No.
EcoMount	100 ml	EM897 L
Fluoro Care Anti-Fade Mountant	5, 10 ml	FPO01 G5, G10

Buffers & Wash Buffers

Biocare's PBS and TBS buffers are suitable for manual and automated IHC applications requiring a high quality buffer with superior pH stability. Sodium azide and thimerazol free, the buffers are available with or without surfactant. TBS Automation Wash Buffer, Immunocare PBS Wash Buffer and Immunocare TBS Wash Buffer all contain a surfactant. Immunocare TBS Wash Buffer also has been specifically formulated with an enzyme activator for alkaline phosphate (AP) detection systems. PBS Plus and TBS Plus are high quality buffers without surfactant. 20% Tween 20 and Automation Tween 20 contain Tween 20, a nonionic polysorbate detergent (surfactant) commonly used as an additive to buffers and reagents in IHC procedures to enhance reagent spreading across tissues and reduce background staining.

Buffers & Wash Buffers	Volume	Cat. No.
TBS Automation Wash Buffer, 20X	500 ml	TWB945 M
Immunocare PBS Wash Buffer, 10X	500 ml	PWB941 M
Immunocare TBS Wash Buffer, 10X	500 ml	TWB943 M
PBS Plus, 10X	500 ml	PBS940 M
TBS Plus, 10X	500 ml	TBS942 M
20% Tween 20	25, 100, 500 ml	TWN20 H, L, M
Automation Tween 20, 20X	500 ml	TWA20 M

Miscellaneous Supplies

Super Pap Pen

The Super Pap Pen is mainly used for making hydrophobic barriers on glass slides for IHC procedures. The hydrophobic properties keep anti-sera or reagents in a confined area, allowing small amounts of reagents to be used on the specimen. The hydrophobic barrier does not dissolve in alcohol, acetone or xylene, thus preventing contamination.

Kling-On Slides

Kling-On Slides work well in HIER procedures, contain a frosted white portion for labeling and have a more consistent charge lot-to-lot than standard slides. A stronger positive charge than poly-L-lysine ensures tissue adherence while minimizing glass background.

Miscellaneous Supplies	Volume	Cat. No.
Coplin Jars	3 each	CJ-3PK
Tissue Tek® Containers	4 each	TTSET-4PK
Super Pap Pen	1 each	PEN1111
Kling-On Slides	1, 10 gross	SFH1103 A, B
Q-Barrier Slides, Full	1, 10 gross	SFHB1300 A, B
Q-Barrier Slides, Two Thirds	1, 10 gross	SFHB1367 A

Tissue Tek® is a registered trademark of Sakura Finetek USA, Inc.; 1 gross = 144 slides / 10 gross = 1,440 slides

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6/Glutamine Synthetase	Glutamine Synthetase	72
66.4.C2	Renal Cell Carcinoma	117

Appendix - Clones

Clone	Product Title	Page
695	MUC-1	90
6E1	Thyroglobulin Cocktail	125
6E3	SALL4	120
6F11	Estrogen Receptor (ER) [6F11]	68
6F11	Estrogen Receptor (ER) [6F11 + SP1]	69
6H2.1	PTEN (Tumor Suppressor)	116
8G-7	MUC-4	91
8G7G3/1	TTF-1	128
8G7G3/1	TTF-1 + Napsin A (RM)	7, 147
8G7G3/1	TTF-1 + CK5	146
8G7G3/1	TTF-1 + Napsin A	147
98/pp120	p120 Catenin	104
98/pp120	p120 + E-cadherin	144
9FY	ERG	67
9FY	ERG + AMACR	141
9FY	ERG-2™ (ERG + CK5)	141
A16-4	PMS2	113
AE1	Cytokeratin [AE1] LMW	60
AE1/AE3	Pan Cytokeratin [AE1/AE3]	106
AE1/AE3	Pan Cytokeratin Plus [AE1/AE3 + 8/18]	107
AR441	Androgen Receptor	17
B-A38	CD138	47
B72.3	Tumor Associated Glycoprotein [B72.3]	128
BC.2F3.2	ZAP-70 (LR)	133
BC.6F-H2	WT1 (Wilms' Tumor)	133
BC/121SLE	CA 19-9	24
BC/1A5	CD8	32

Clone	Product Title	Page
BC/1F6	CD4 (Helper/Inducer)	30
BC/1F6	CD4 (M) + CD8 (RM)	137
BC/24	PAX-5	109
BC/44	MSH6	90
BC/R1	Inhibin, Alpha	82
BC1	Cytokeratin 7 (CK7)	55
BC1	CDX2 + CK7	137
BC1	CK5/14 + p63 + CK7/18	138
BC10	IGF-1R	82
BC11	Desmoglein 3	62
BC11	Desmoglein 3 + p40 (M)	3, 63
BC11	Desmoglein 3 + Napsin A	140
BC11	Desmoglein 3 + CK5	63
BC12	PAX8 (M)	110
BC15	TTF-1 + Napsin A (RM)	7, 147
BC15	Napsin A (RM)	96
BC17	Uroplakin III	130
BC17	Uroplakin II + Uroplakin III	7, 130
BC2	CD31 (PECAM-1)	40
BC21	Uroplakin II	129
BC21	Uroplakin II + Uroplakin III	7, 130
BC28	Desmoglein 3 + p40 (M)	3, 63
BC28	p40 (M), 3X Prostate	4, 100
BC28	p40 (M)	99
BC34	SOX10 (M)	6, 123
BC5	MUM-1	92
BC56C04	CD56	44

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Clone	Product Title	Page
BC7	<i>Helicobacter pylori</i>	76
BC8	CD44	43
BC8	URO-3™ (CD44 + p53) with CK20	148
BC90	Cytomegalovirus (CMV)	61
Ber-EP4	Ber-EP4	20
Ber-H2	CD30 (Ki-1)	38
Ber-H2	CD30 Cocktail	39
BPV-1/1H8	HPV Cocktail Broad Spectrum	80
BU20a	Biotinylated Bromodeoxyuridine (BrdU)	21
BY87	CD15 Cocktail	34
C04018	Smooth Muscle Actin (SMA)	121
CALP	Calponin	25
CAMVIR	HPV Cocktail Broad Spectrum	80
CAMVIR-1	HPV-16 (CAMVIR-1)	81
CB11	c-erbB-2 [CB11]	22
CD19	CD19	35
CD1a007	CD1a	28
CDX2-88	CDX2	48
CDX2-88	CDX2 + CK7	137
CK5/6.007	Cytokeratin 5/6 (CK 5/6)	53
Col 94	Collagen IV	50
COL-1	Carcinoembryonic Antigen (CEA [M])	26
CON6D/B5	CD30 Cocktail	39
CON6D/B5	CD30 (Ki-1)	39
D2-40	D2-40 (Lymphatic Marker)	61
D2-40	D2-40 + CK8/18	139
D2-40	D2-40 + Ki-67	140

Clone	Product Title	Page
D2-40	D2-40 + CD31	139
D33	Desmin	62
D6	Gross Cystic Disease Fluid Protein-15	75
D6	GCDFP-15 + Mammaglobin	142
DC10	Cytokeratin 18 (CK18)	57
DF-T1	CD43	42
DF-T1	Pan Lymphoma Cocktail	108
DO-7	p53 Tumor Suppressor Protein (M)	102
DOG1.1	DOG1	64
DT10	Cytomegalovirus (CMV)	61
DVB-2	Ki-67 + Caspase-3	143
E272	CD3	29
E29	Epithelial Membrane Antigen (EMA) [E29]	66
E980.1	Factor XIIIa	70
EBV01	Epstein-Barr Virus (EBV)	67
EBV02	Epstein-Barr Virus (EBV)	67
EBV03	Epstein-Barr Virus (EBV)	67
EP1039Y	Nerve Growth Factor Receptor (NGFR)	96
EP1045Y	c-erbB-2/HER2	23
EP1176Y	VEGF	131
EP1933Y	ALDH1a1 Rabbit Monoclonal	14
EP12	Cyclin D1	51
EP1215Y	HIF-1 alpha	78
EP1588Y	Prostate Specific Antigen (PSA)	116
EP1601Y	p63 + CK5	144
EP1601Y	TTF-1 + CK5	146
EP1601Y	ERG-2™ (ERG + CK5)	141

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Clone	Product Title	Page
EP1601Y	Cytokeratin 5 (CK5)	52
EP17	D2-40 + CK8/18	139
EP30	D2-40 + CK8/18	139
EP700Y	p120 + E-cadherin	144
EP700Y	E-cadherin	64
EP774Y	Phospho-EGFR	111
EP78	D2-40 + CD31	139
EPR3097Y	CD99	46
EPR6672(B)	Arginase-1	2, 18
ER31-1	CK5/14 + p63 + CK7/18	138
FE11	MSH2	89
FPC1	CD22	37
FSH03	Follicle Stimulating Hormone (FSH)	71
G148-74	PU.1	117
G168-15	MLH-1	88
GA-5	Glial Fibrillary Acidic Protein (GFAP (M))	73
H11	Epidermal Growth Factor Receptor (EGFR)	65
H2A10	Cat Scratch Fever (<i>Bartonella henselae</i>)	28
HECD-1	E-cadherin	65
HHF35	Muscle Specific Actin (MSA)	92
HM47/A9	CD79a	45
HMB45	HMB45	79
HMB45	Melanoma Cocktail	87
HMB45	HMB45 + MART-1 + Tyrosinase	79
HO36-1.1	CD99	46
JC/70A	CD31 (PECAM-1)	41
KDB-1	Kappa Light Chain (M)	83

Clone	Product Title	Page
KDB-1	Kappa + Lambda	142
KP1	CD68 [KP1]	45
Ks 17.E3	Cytokeratin 17 (CK17)	56
Ks19.1	Cytokeratin 19 (CK19)	57
Ks20.8	URO-3™ (CD44 + p53) with CK20	148
Ks20.8	Cytokeratin 20 (CK20)	58
Ks20.8	Cytokeratin 20, 2X	2, 58
Ks20.8	Uro-2™ (CK20 + p53)	148
L26	CD20	35
L26	L26 + CD3	143
L26	Pan Lymphoma Cocktail	108
L50-823	GATA-3	72
LcN-2	Lambda Light Chain (M)	84
LK2H10	Chromogranin A	49
LL002	Cytokeratin 14 (CK14)	56
LL002	CK5/14 + p63 + CK7/18	138
LL002	HMW CK + p63 (Basal Cell Cocktail)	80
LL002	CK5/14 + p63 + P504S	54
LL002	Prostate Cocktail, 2X (CK5 + CK14 + p63)	115
LL002	CK5/14 + p63 + P504S	138
LL002	Cytokeratin 5/14 Cocktail	54
LN22	Bcl-6 [LN22]	20
LP15	CD7	32
Lu-5	Pan Cytokeratin [Lu-5]	107
M2-7C10	Melanoma Cocktail	87
M2-7C10	HMB45 + MART-1 + Tyrosinase	79
M2-7C10	Pan Melanoma + Ki-67	145

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M2-7C10	Pan Melanoma + S100	146
M2-7C10	MART-1 Cocktail	86
M2-7C10	Pan Melanoma Cocktail-2	108
M2-9E3	Melanoma Cocktail	87
M2-9E3	HMB45 + MART-1 + Tyrosinase	79
M2-9E3	Pan Melanoma + Ki-67	145
M2-9E3	Pan Melanoma + S100	146
M2-9E3	MART-1 Cocktail	86
M2-9E3	Pan Melanoma Cocktail-2	108
Mc-5	Epithelial Membrane Antigen (EMA [Mc-5])	66
mc1	Amyloid A	16
Mec13.3	CD31	40
MM1	Ki-67 (M)	84
MMA	CD15 [MMA]	34
MMA	CD15 Cocktail	34
MOC-31	MOC-31	89
MS110	BRCA-1	22
MyG007	Myogenin	94
NK-1	CD57 (Natural Killer Cell)	44
OC125	CA 125	24
OCH1E5	Hepatocyte Specific Antigen (HSA)	76
Oct-207	Oct-2	98
OV-TL 12/30	Cytokeratin 7 (CK7)	55
P1F6	Bcl-6	19
PC10	PCNA	110
PD7/26	Leukocyte Common Antigen (CD45RB)	85
PD7/26/16	Leukocyte Common Antigen (LCA) Cocktail	85

Clone	Product Title	Page
PD7/26/16	Pan Lymphoma Cocktail	108
PgR636	Progesterone Receptor (PR) [PgR636]	114
PHE5	Chromogranin A	49
PS1	Pan Lymphoma Cocktail	108
PS1	CD3 T-Cell (M)	30
QBEnd/10	CD34	41
R4A	Smoothelin	122
SEMGC	Oct-3/4	98
SMMS-1	Smooth Muscle Myosin Heavy Chain	122
SN3b	CD24	38
SP1	Estrogen Receptor (ER) [6F11 + SP1]	69
SP1	Estrogen Receptor (ER) [SP1]	69
SP15	Placental Alkaline Phosphatase (PLAP)	112
SP16	CD4 (M) + CD8 (RM)	137
SP16	CD8	33
SP19	CD5	31
SP2	Progesterone Receptor (PR) [SP2]	115
SP20	Vimentin	132
SP21	COX-2	50
SP4	Cyclin D1	51
SP6	D2-40 + Ki-67	140
SP6	Pan Melanoma + Ki-67	145
SP6	Ki-67	83
SP7	L26 + CD3	143
SPM498	GLUT-1	74
T311	Pan Melanoma + Ki-67	145
T311	HMB45 + MART-1 + Tyrosinase	79

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T311	Pan Melanoma + S100	146
T311	Pan Melanoma Cocktail-2	108
T311	Tyrosinase	129
TG14	BOB-1	21
TIA-1	TIA-1	126
TMU-Ad 02	Napsin A	95
TSH01	Thyroid Stimulating Hormone (TSH)	125
TSH02	Thyroid Stimulating Hormone (TSH)	125
UCHL-1	CD45RO [UCHL-1]	43
V9	Vimentin	132
W27	Heat Shock Protein 70	75
WA-1	p21	99
XM26	Desmoglein 3 + CK5	63
XM26	Cytokeratin 5 (CK5)	52
XM26	CK5/14 + p63 + CK7/18	138
XM26	HMW CK + p63 (Basal Cell Cocktail)	80
XM26	CK5/14 + p63 + P504S	54
XM26	CK5 + p63	53
XM26	Prostate Cocktail, 2X (CK5 + CK14 + p63)	115
XM26	CK5/14 + p63 + P504S	138
XM26	Cytokeratin 5/14 Cocktail	54
Y145	CD117/c-kit	47
Y5	URO-3™ (CD44 + p53) with CK20	148
Y5	Uro-2™ (CK20 + p53)	148
Y5	p53	101
Y5	p53 (RM), 2X	5, 101
Y69	c-Myc	23



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