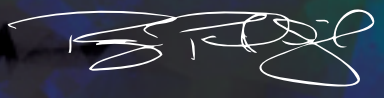

BIOCARE
MEDICAL
Product Catalog
www.biocare.net

Fighting Cancer

One Slide at a Time

Our key mission is to advance patient care by continuing to provide only the most innovative & highest quality IHC and Molecular Pathology products.

It's our promise, to your patients.



Roy Paxton Yih, President & CEO

BIOCARE
MEDICAL

4040 Pike Lane, Concord, CA 94520

Table of Contents

Contact Customer Service
7:00 am - 5:00 pm PST
Toll Free 800-799-9499
customerservice@biocare.net

Contact Biocare Medical
Toll Free 800-799-9499
Local 925-603-8000
Fax 925-603-8080

Contact Technical Support
24/7 Live Technical Support
Toll Free 800-799-9499 **Option 3**
techsupport@biocare.net

International Ordering
For a list of current international distributors visit us online at
www.biocare.net

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".

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.

Image Identification Key

Size Key

Letter	Volume
U	25 mg
V	0.025 mL
Y	0.05 mL
A, AK	0.1 mL
W	0.25 mL
X	0.35 mL
T	0.4 mL
B, BK	0.5 mL

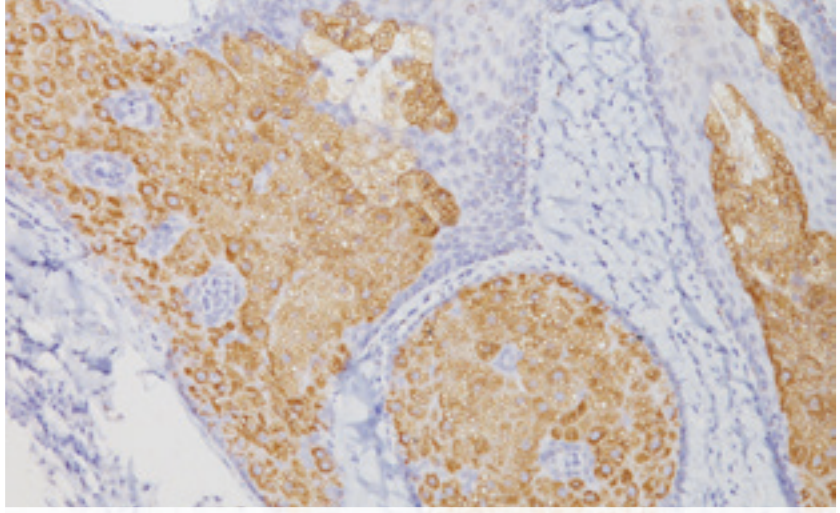
Letter	Volume
C, CK	1.0 mL
G3	3.0 mL
G5	5.0 mL
G, AA, AAK, KG, SK	6.0 mL
G10	10 mL
G15	15 mL
G20	20 mL
G25, H, HK	25 mL

Letter	Volume
JJ, R, JJK	50 mL
G80	80 mL
L, LX, S	100 mL
L10	110 mL
LH	125 mL
LL	200 mL
L2J, L2JX, -250	250 mL
M, MX, M-RVS	500 mL

Letter	Volume
MM, MMRTU	1 L
5L	5 L
G1, GL	1 gal
G2	2 gal
T30	30 tests
T60	60 tests
T90	90 tests
T180	180 tests

New Products

Biocare Medical is proud to be the leader of innovation, continually improving IHC and ISH testing for cancer diagnostics. Novel antibodies developed in-house, including p40 (M) 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 IVD PIN-4™ technology of P504S + p63 + HMW CK with simultaneous one-step detection. The addition of our patent-pending del-TECT FISH technology expanded our clinical molecular offering considerably. 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.



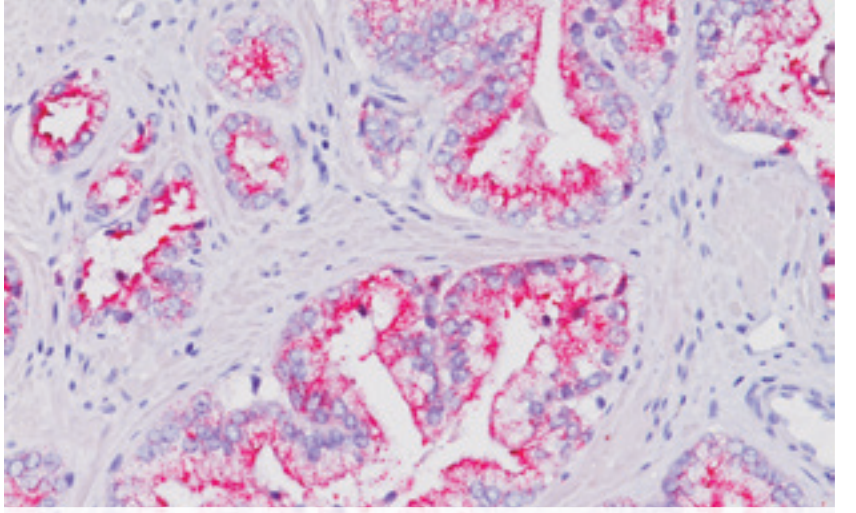
Sebaceous carcinoma stained with Adipophilin

Adipophilin IVD FFPE

Clone	N/A
Isotype	IgG
Reactivity	
Control	Skin
Cat. No.	ACI 3138 A; API 3138 AA

Adipophilin (also known as PLIN2) has been shown to detect the expression of adipocyte differentiation-related protein (ADRP/ADFP) in sebocytes and sebaceous lesions. Sebaceous carcinoma is a relatively uncommon cutaneous malignancy which can mimic other malignant neoplasms as well as benign processes. Adipophilin may be a useful marker in the identification of intracytoplasmic lipids, as seen in sebaceous lesions. It is especially helpful in identifying intracytoplasmic lipid vesicles in poorly differentiated sebaceous carcinomas. In addition, adipophilin has shown strong expression in the majority of Burkitt lymphomas and to be upregulated in lung adenocarcinoma.

1. Heid HW, *et al.* Cell Tissue Res. 1998 Nov; 294(2):309-21. 2. Ostler DA, *et al.* Mod Pathol. 2010 Apr; 23(4):567-73. 3. Milman T, Schear MJ, Eagle RC Jr. Ophthalmology. 2014 Apr; 121(4):964-71. 4. Ambrosio MR, *et al.* PLoS One. 2012; 7(8):e44315. 5. Zhang XD, *et al.* Int J Clin Exp Med. 2014 Apr 15; 7(4):1190-6.



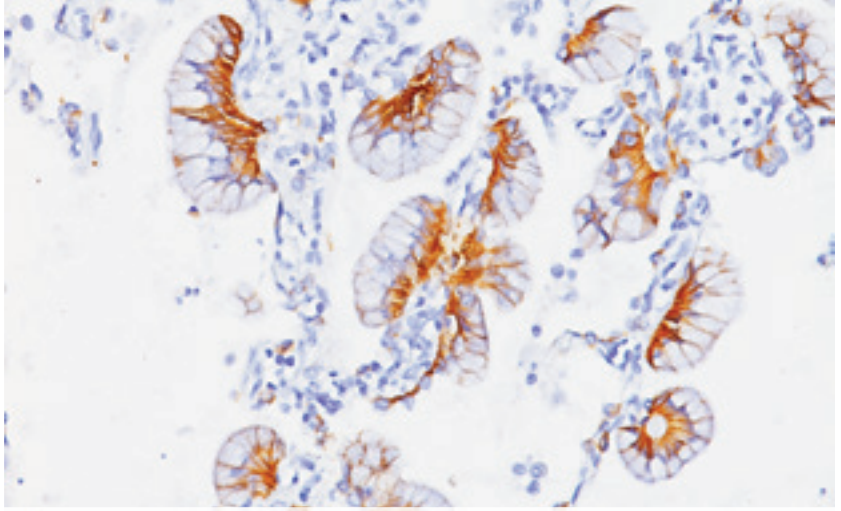
Prostate cancer stained with AMACR (RM), 2X

AMACR (RM), 2X ASR FFPE

Clone	13H4
Isotype	IgG
Reactivity	N/A
Control	N/A
Cat. No.	OAA 3125 G10 supernova

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. AMACR was initially identified from a cDNA library as a gene that is overexpressed in human prostate cancer; with little or no expression in normal or benign prostate glands. In immunohistochemistry, AMACR has been shown to be a marker of prostatic adenocarcinoma. Additionally, prostate glands involved in prostatic intraepithelial neoplasia (PIN), have been found to express AMACR; whereas AMACR 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 15; 60(6):1677-82. 3. Rubin MA, *et al.* JAMA. 2002 Apr 3; 287 (13):1662-70. 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



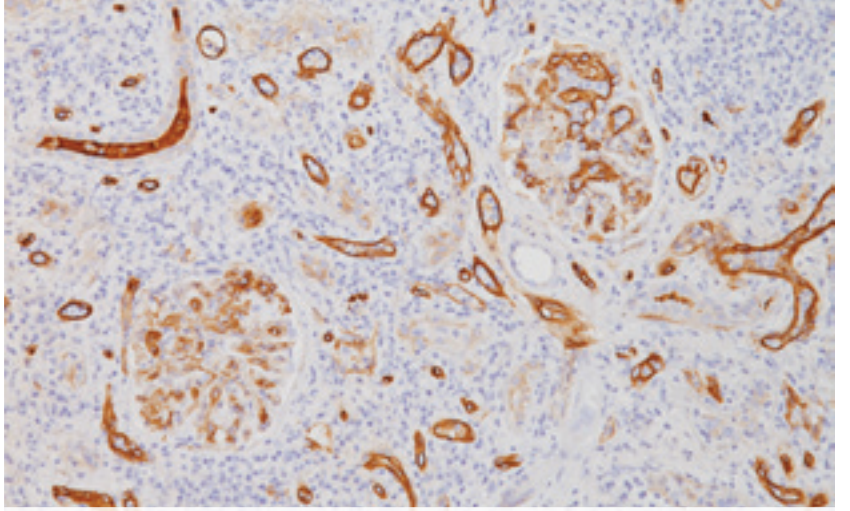
Lung cancer stained with Ber-EP4 + BG8

Ber-EP4 + BG8 IVD FFPE

Clone	Ber-EP4 + F3
Isotype	IgG1 + IgM
Reactivity	
Control	Colon cancer, lung adenocarcinoma
Cat. No.	API 3112 AA

Ber-EP4 labels epithelial tissues but does not label mesothelial cells. Ber-EP4 can assist in differentiating epithelial pleural mesotheliomas from adenocarcinomas. Ber-EP4 appears to stain all adenocarcinomas, including lung, with exceptions for breast and kidney. BG8 (Blood Group Lewis Y) [F3] detects the Lewis Y antigen. BG8 was negative for almost all epithelial malignant mesotheliomas (91% sensitivity). When trying to distinguish epithelioid mesothelioma from adenocarcinoma, BG8 appears to be very sensitive for breast carcinoma. Studies show specificity of BG8 and Ber-EP4 for adenocarcinoma was 98% and 95%, respectively. A cocktail of Ber-EP4 and BG8 may be a useful tool to distinguish adenocarcinoma from mesothelioma.

1. Sheibani K, *et al.* Am J Surg Pathol. 1991 Aug; 15 (8):779-84. 2. Ordóñez NG. Am J Clin Pathol. 1998 Jan; 109(1):85-9. 3. Kao SC, *et al.* Pathology. 2011 Jun;43(4):313-7. 4. Yaziji H, *et al.* Mod Pathol. 2006 Apr; 19(4):514-23.



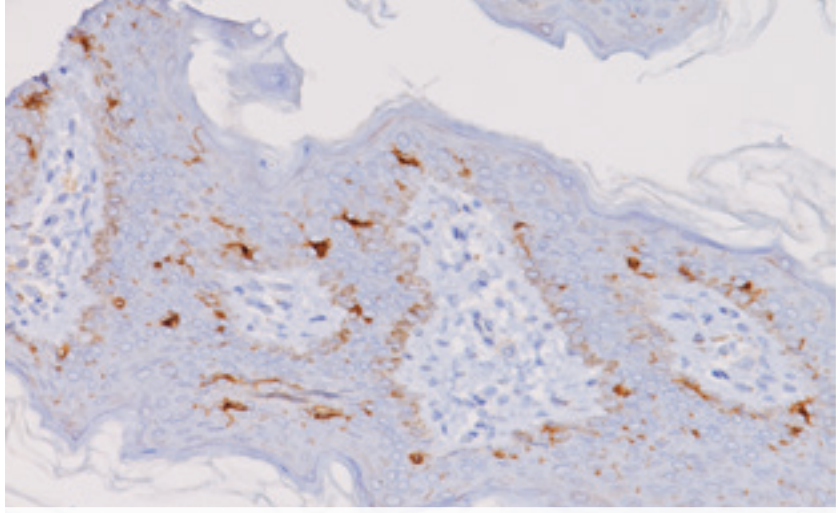
Kidney transplant tissue stained with C4d (RM)

C4d (RM) IVD FFPE

Clone	A24-T
Isotype	IgG
Reactivity	
Control	Renal allograft tissue
Cat. No.	ACI 3134 A, B; API 3134 AA

C4d is a stable split product remnant of classical complement activation which becomes covalently bound to endothelium and basement membrane. Capillary deposition of complement C4d has been suggested to be a valuable marker for humoral rejection and endothelial C4d deposition in kidney allograft has been associated with inferior graft outcome. The detection of C4d in formalin-fixed, paraffin-embedded tissue has been documented to be valuable in the evaluation of various inflammatory diseases. Membranous nephropathy (MN) is the most common cause of nephrotic syndrome in adults and C4d immunohistochemical staining has been shown to be a very useful tool for MN.

1. Troxell ML, *et al.* Clin J Am Soc Nephrol. 2006 May; 1(3):583-91. 2. Regele H, *et al.* Nephrol Dial Transplant. 2001 Oct; 16(10):2058-66. 3. Böhmig GA, *et al.* J Am Soc Nephrol. 2002 Apr; 13(4):1091-9. 4. Magro CM, Dyrsen ME. J Am Acad Dermatol. 2008 Nov; 59(5):822-33. 5. Espinosa-Hernández M, *et al.* Nefrologia. 2012 May 14; 32(3):295-9.



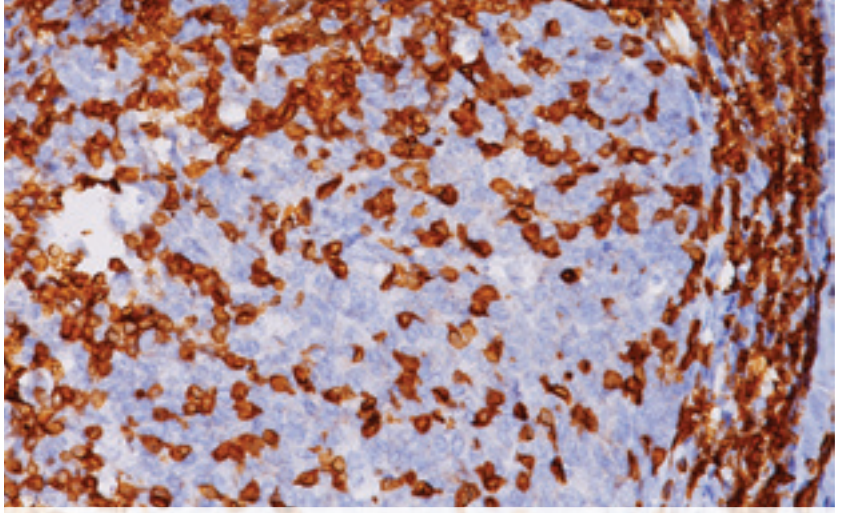
Normal skin stained with CD1a [O10]

CD1a [O10] IVD FFPE

Clone	O10
Isotype	IgG1/kappa
Reactivity	
Control	Skin
Cat. No.	ACI 3158 A, B; API 3158 AA

CD1a is a protein of 43 - 49 kDa and is expressed on dendritic cells and cortical thymocytes. CD1a [O10] staining has been shown to be useful in the differentiation of Langerhans cells from interdigitating cells. It has also proved useful for phenotyping Langerhans cell histiocytosis. CD1a may be a novel biomarker for Barrett's metaplasia, and its expression may help to predict the prognosis of this pathology.

1. Krenacs L, *et al.* J Pathol. 1993 Oct;171(2):99-104. 2. Fivenson DP, *et al.* J Cutan Pathol. 1995 Jun;22(3):223-8. 3. Emile JF, *et al.* Am J Surg Pathol. 1995 Jun;19(6):636-41. 4. Cappello F, *et al.* Br J Cancer. 2005 Mar 14;92(5):888-90.



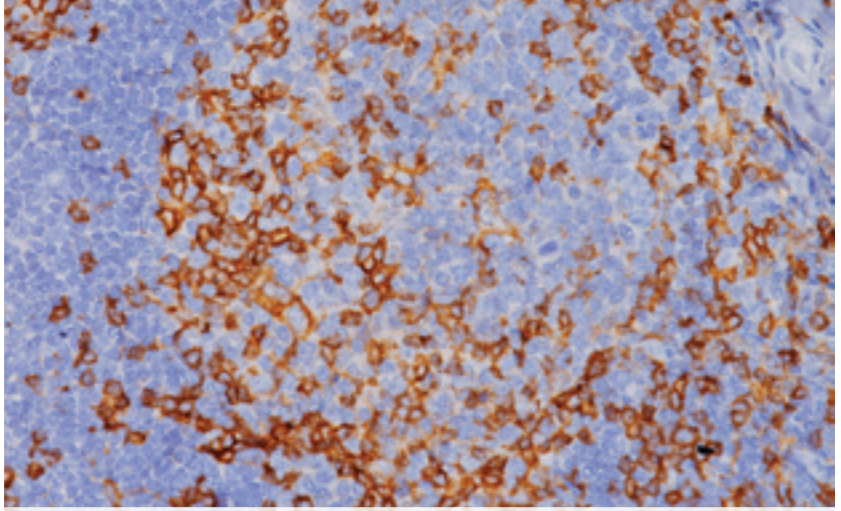
Tonsil stained with CD3 [LN10]

CD3 [LN10] IVD FFPE

Clone	LN10
Isotype	IgG1
Reactivity	
Control	Tonsil
Cat. No.	ACI 3152 A, C; API 3152 AA

CD3 is expressed throughout the T-cell differentiation process. CD3 is a highly specific and sensitive T-cell lineage marker, making it ideal for the immunophenotypic analysis of lymphohaematopoietic malignancies. Notable exceptions include some of the more aggressive large T-cell lymphomas and CD30 (Ki-1) positive anaplastic large cell lymphomas, which may not express detectable antigen. CD3 [LN10] has demonstrated optimal staining when compared to other CD3 clones including PS1, F7.2.38 and SP7. A monoclonal antibody to human CD3 is regarded as a reliable pan T-cell antibody used in the immunophenotyping of lymphomas in paraffin sections.

1. Campana D, *et al.* J Immunol. 1987 Jan; 138(2):648-55. 2. Cabeçadas JM, Isaacson PG. Histopathology. 1991 Nov; 19(5):419-24. 3. Steward M, *et al.* Histopathology. 1997 Jan; 30(1):16-22. 4. "CD3 Assessment Run 37 2013." NordiQC. 04 Dec. 2013. Web. 16 June 2015.



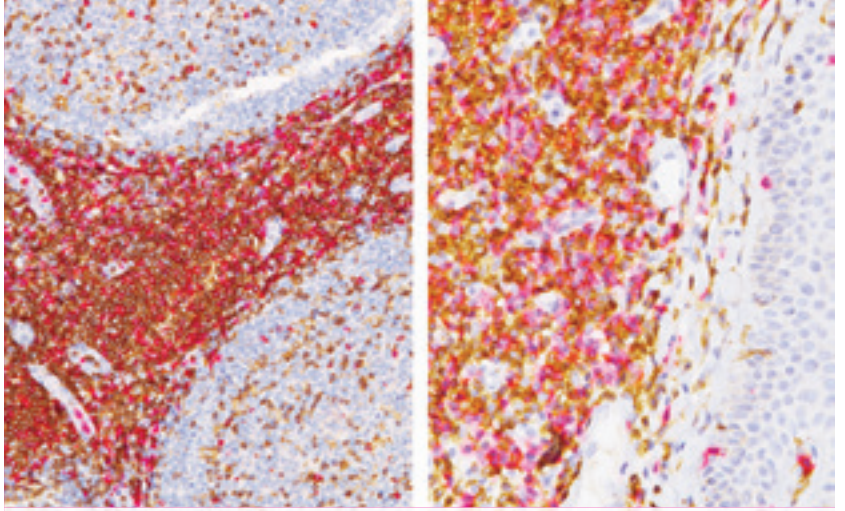
Tonsil stained with CD4 [4B12]

CD4 [4B12] IVD FFPE

Clone	4B12
Isotype	IgG1/kappa
Reactivity	
Control	Tonsil
Cat. No.	ACI 3148 A, C; API 3148 AA

CD4 is expressed on normal thymocytes, T-helper cells, the majority of mature peripheral T cells, a subset of suppressor or cytotoxic T cells and the majority of T-cell lymphomas, including mycosis fungoides. CD4 has been used in lymphoma panels that include CD3, CD5, CD8, CD7 and TIA-1. A panel consisting of CD4, CD2 and CD56 was used to help identify agranular natural killer cell lymphoma of the skin. CD4 may be useful in HIV-infected individuals, as HIV infection depletes intestinal CD4(+) T cells and has a strong association with the level of systemic CD4(+) T cell activation. Tumor infiltrating CD4 T cells may also be a prognostic factor for the strategy of early antitumor immunity.

1. Leong A S-Y, Cooper K and Leong F J W-M eds. Greenwich Medical Media Ltd: p. 65-6. 2. Izban KF, Hsi ED, Alkan S. Mod Pathol. 1998 Oct; 11(10):978-82. 3. Macon WR, Salhany KE. Am J Clin Pathol. 1998 May; 109(5):610-7. 4. Uchiyama N, *et al.* Am J Dermatopathol. 1998 Oct; 20(5):513-7. 5. Gordon SN, *et al.* J Immunol. 2010 Nov 1; 185(9):5169-79. 6. Rathore AS, *et al.* Indian J Med Res. 2014 Sep; 140(3):361-9.



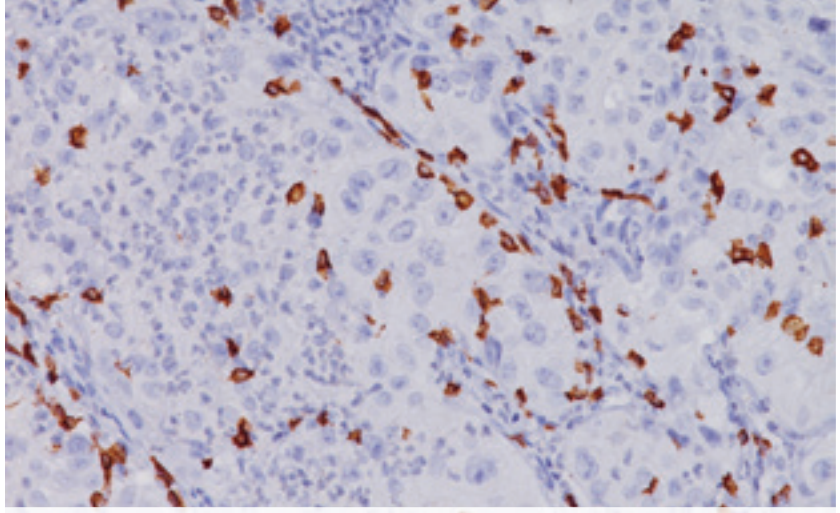
(L) Tonsil and (R) *Mycosis fungoides* stained with CD4 + CD8

CD4 + CD8 IVD FFPE

Clone	4B12 + SP16
Isotype	IgG1/kappa + IgG
Reactivity	
Control	*Mycosis fungoides* and normal tonsil
Cat. No.	API 3157DS AA

CD4 + CD8 is helpful in distinguishing *mycosis fungoides*, a common form of cutaneous T-cell lymphoma. CD4 is found in 80% of thymocytes and in 45% of peripheral blood lymphocytes. CD4 is expressed in the majority of T-cell lymphomas, including *mycosis fungoides*. CD8 is an important marker in the analysis of T-cell mediated inflammatory dermatoses and for *mycosis fungoides*. CD8 can be used with CD4, CD56, and TIA-1 for identifying subsets of inflammatory skin diseases. CD4 and CD8 have also been shown to be valuable in squamous cell cervical cancer and gastric mucosa in HIV infection. Multiplex IHC may also give distinct advantages if ratios and/or cell counts on a single slide are desired.

1. Boone SL, Guitart J, Gerami P. G Ital Dermatol Nenereol. 2008 Dec;143(6):409-14. 2. Hodak E , *et al.* J Am Acad Dermatol. 2006 Aug;55(2):276-84. 3. Tirumalae R, Panjwani PK. Indian J Dermatol. 2012 Nov;57(6):424-7. 4. Harvell JD, Nowfar-Rad M, Sundram U. J Cutan Pathol. 2003 Feb;30(2):108-13. 5. Shi Z, *et al.* Za Zhi. 2009 Aug;23(4):261-4. 6. Shah W, *et al.* Cell Mol Immunol. 2011 Jan;8(1):59-66. 7. Barth TF, *et al.* Virchows Arch. 2000 Apr; 436(4):357-64.



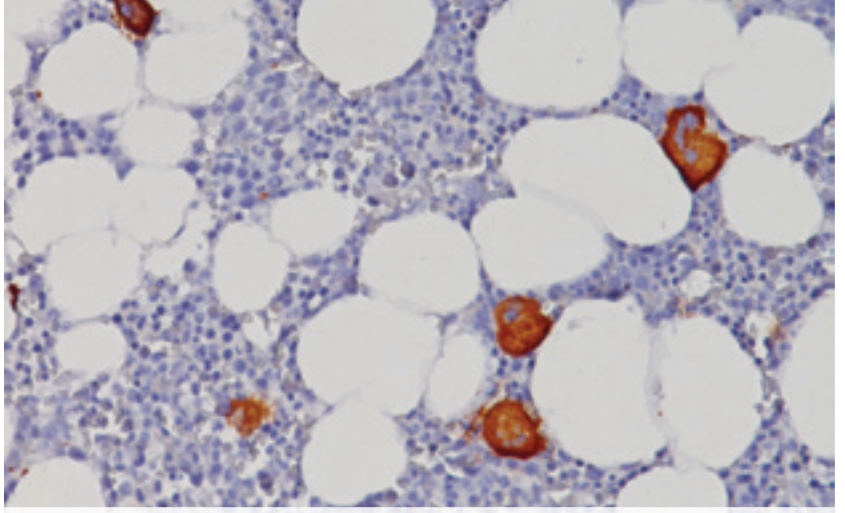
Colon cancer stained with CD8 [C8/144B]

CD8 [C8/144B] IVD FFPE PREFERRED

Clone	C8/144B
Isotype	IgG1/kappa
Reactivity	
Control	Tonsil and normal colon
Cat. No.	ACI 3160 A, C; API 3160 AA

The CD8 antibody reacts with the 32 kDa CD8 protein. CD8 stains cells with cytotoxic activity, including cortical thymocytes, cytotoxic/suppressor T-cells and a subset of natural killer cells. CD4 and CD8 positive and negative staining are indicative of T-cell neoplasms. CD4 and CD8 may also be used to differentiate between *mycosis fungoides* and cutaneous inflammatory processes. CD8 can be used in panels with CD4, CD56, TIA-1 to aid in identifying subsets of inflammatory skin diseases. Recently, CD8 has been used in panels with CD103, FOXP3, and PD-1 for the identification of CD8+ tumor infiltrating lymphocytes and their potential value for immune therapy.

1. Barth TF, *et al.* Virchows Arch. 2000 Apr; 436(4):357-64. 2. Deguchi M, *et al.* Arch Dermatol Res. 2001 Sep; 293(9):442-7. 3. Izban KF, *et al.* Mod Path. 1998 Oct; 11(10):978-82. 4. Harvell JD, Nowfar-Rad M, Sundram U. J Cutan Pathol. 2003 Feb;30(2):108-13. 5. Webb JR, Milne K, Nelson BH. Cancer Immunol Res. 2015 Aug;3(8):926-35. 6. Liu S, *et al.* Breast Cancer Res. 2014 Sep 6;16(5):432. 7. Tumeh PC, *et al.* Nature. 2014 Nov 27;515(7528):568-71.



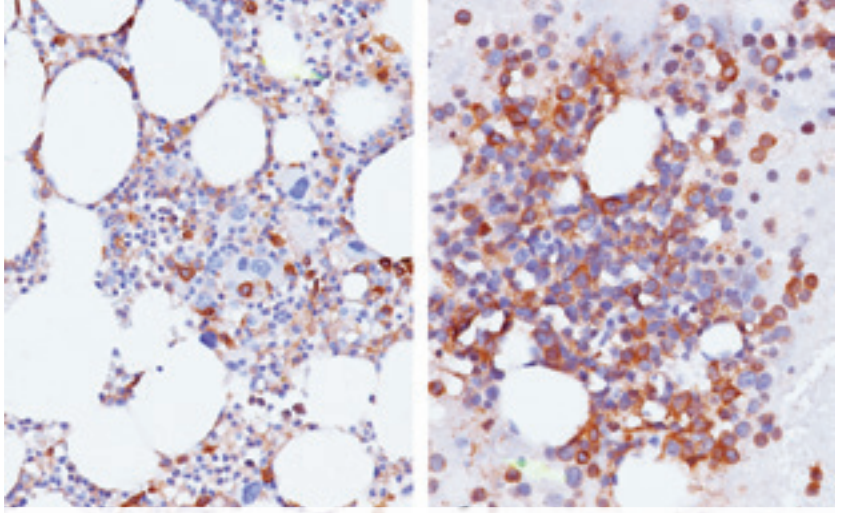
Megakaryocyte in bone marrow stained with CD11c (Leu-M5)

CD11c (Leu-M5) IVD FFPE

Clone	5D11
Isotype	IgG2a
Reactivity	
Control	Skin
Cat. No.	ACI 3122 A, B; API 3122 AA

CD11c (also known as Leu-M5 or Integrin alpha X) is expressed in tissue macrophages, dendritic cells, monocytes, NK cells and granulocytes. CD11c has been shown to be both sensitive and specific for hairy cell leukemia (HCL), differentiating it from other small B-cell lymphomas. Hairy cell leukemia cells have been shown to be positive for CD11c and negative for CD5. A panel of CD103, CD11c, CD25, CD5, CD10 and CD23 has been useful in definitively diagnosing HCL. With regard to high-grade cervical intraepithelial neoplasia, specimens with higher rates of CD4+ T-cells, CD11c+ dendritic cells and T-bet+ transcription factors showed a strong correlation with favorable clinical outcomes.

1. Johrens K, *et al.* Pathobiology. 2008; 75(4):252-6. 2. Vardiman JW, *et al.* Am J Clin Pathol. 1988 Sep; 90(3):250-6. 3. Chen YH, *et al.* Am J Clin Pathol. 2006 Feb; 125(2):251-9. 4. Sojitra P, *et al.* Am J Clin Pathol. 2013 Nov; 140(5):686-92. 5. Noel P. Leuk Lymphoma. 2011 Jun; 52 Suppl 2:62-4. 6. Origoni M, *et al.* Biomed Res Int. 2013; 2013:831907. 7. Sandvik LF, *et al.* Acta Derm Venereol. 2014 Mar; 94(2):173-8.



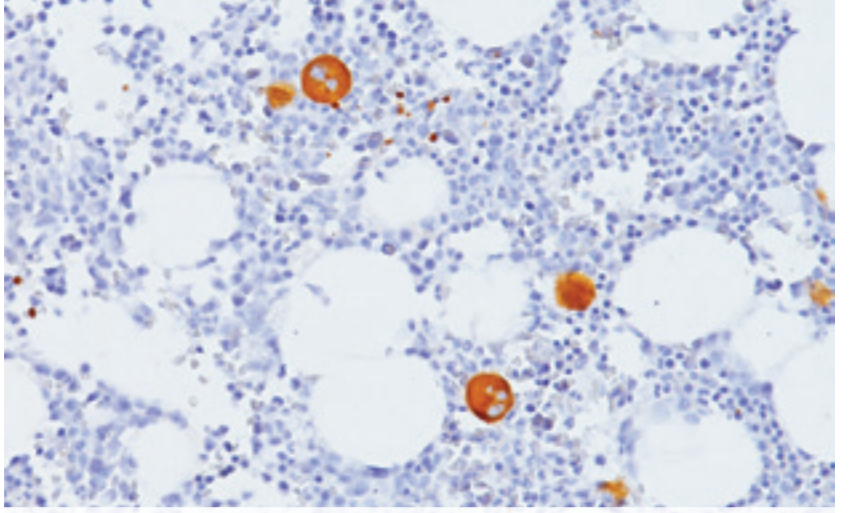
Bone marrow stained with CD33

CD33 IVD FFPE

Clone	PWS44
Isotype	IgG2b
Reactivity	
Control	Myeloid leukemia
Cat. No.	ACI 3116 A, C; API 3116 AA

CD33 or Siglec-3 is a 67kD glycosylated transmembrane receptor expressed on myeloid-specific cells. In cases of acute leukemia, the CD33 antibody showed equivalent results by immunohistochemical analysis compared with flow cytometric analysis. CD33 was also found to be a useful marker in the workup of myeloid sarcomas. In normal bone marrow trephine biopsies, clone PWS44 stains myeloid, myelomonocytic hemopoiesis and mature macrophages; cells of the erythroid and megakaryocytes series are negative. CD33 may be a useful marker as part of an antibody panel for the identification of acute leukemias, myeloid proliferative disorders and myeloid sarcomas on paraffin-embedded tissue samples.

1. Hoyer JD, *et al.* Am J Clin Pathol. 2008 Feb; 129(2):316-23. 2. Rollins-Raval MA, Roth CG. Histopathology. 2012 May; 60(6):933-42. 3. Amador-Ortiz C, *et al.* J Cutan Pathol. 2011 Dec; 38(12):945-53. 4. Brotelle T, *et al.* Bull Cancer. 2014 Feb; 101(2):211-8.



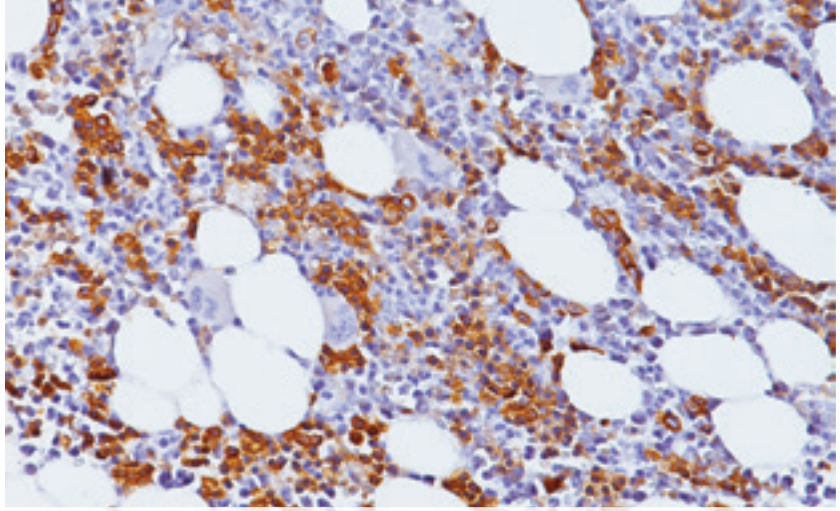
Megakaryocytes & platelets in bone marrow stained with CD61

CD61 IVD FFPE

Clone	2f2
Isotype	IgG1
Reactivity	
Control	Bone marrow
Cat. No.	ACI 3139 A, C; API 3139 AA

The CD61 antigen, also known as GPIIIa, has been shown to be expressed in myeloid cells, monocytes, endothelial cells, smooth muscle cells, macrophages and platelets. CD61 may be useful in evaluating megakaryocytopoiesis as it relates to myelodysplastic disorders, acute myeloid leukemias and acute megakaryoblastic leukemias. Immunohistochemistry with CD61 has also been useful in identifying platelet adhesion in advanced atherosclerosis and was helpful in identifying fat embolism in pulmonary tissue. The identification of CD61 expression in patients with insudative platelet arteriolopathy helped facilitate recognition of vascular calcineurin inhibitor toxicity in renal allograft biopsies.

1. Jiménez-Marín A, *et al.* Gene. 2008 Jan 31; 408(1-2):9-17. 2. Fox SB, *et al.* Histopathology. 1990 Jul; 17(1):69-74. 3. Thiele J, *et al.* Virchows Arch B Cell Pathol Incl Mol Pathol. 1992; 62(5):275-82. 4. Gonzalez J, *et al.* J Obes. 2014; 2014:591270. 5. Neri M, *et al.* Forensic Sci Int. 2010 Oct 10; 202(1-3):e13-7. 6. Meehan SM, *et al.* Hum Pathol. 2008 Apr; 39(4):550-6.



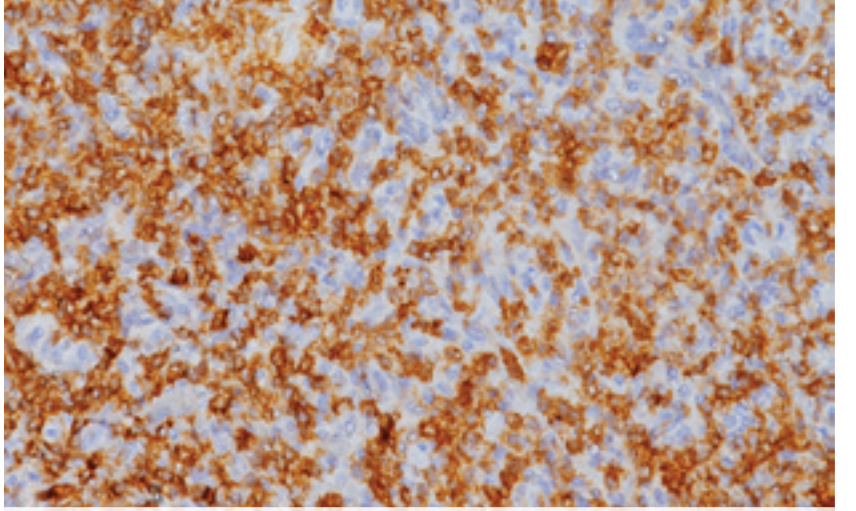
Bone marrow stained with CD71

CD71 IVD FFPE

Clone	H68.4
Isotype	IgG1
Reactivity	
Control	Bone marrow
Cat. No.	ACI 3110 A, B; API 3110 AA

CD71 (transferrin receptor) has been shown to exhibit strong membranous and cytoplasmic staining in all erythroid precursors of normal and dyspoietic bone marrow biopsies. CD71 expression decreases with the maturation of erythrocytes; mature erythrocytes do not express CD71. Compared to hemoglobin or CD235a (glycophorin A), CD71 displayed the most specific distinct staining and did not label mature red blood cells. CD71 was positive in all cases of parvovirus and acute erythroleukemia, unlike glycophorin A and hemoglobin A. CD71 did not stain benign lymphoid infiltrates or low grade lymphomas involving the marrow. CD71 may therefore be a reliable erythroid marker in bone marrow.

1. Dong HY, Wilkes S, Yang H. Am J Surg Pathol. 2011 May; 35(5):723-32. 2. Marsee DK, Pinkus GS, Yu H. Am J Clin Pathol. 2010 Sep; 134(3):429-35. 3. Habashy HO, *et al.* Breast Cancer Res Treat. 2010 Jan; 119(2):283-93.



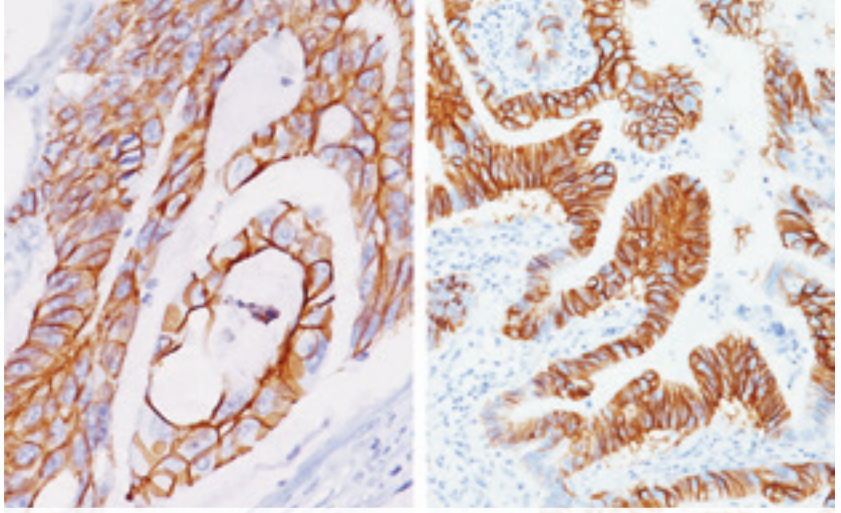
Hairy cell leukemia stained with CD103 (RM)

CD103 (RM) IVD FFPE

Clone	EP206
Isotype	IgG
Reactivity	
Control	Hairy cell leukemia
Cat. No.	ACI 3117 A, B; API 3117 AA

CD103 antibody recognizes the integrin subunit CD103 cell surface antigen, which is characteristically expressed in hairy cell leukemia (HCL), a B-cell lymphoproliferative disorder. CD103 [EP206] has demonstrated reactivity in FFPE tissue, eliminating the need for flow cytometric analysis or frozen section IHC, making it a valuable addition to an IHC panel for the diagnosis of HCL. Other antibodies that have been used in conjunction with CD103 for the detection of HCL include CD25, TIA-1, DBA44 and CD11c. Intraepithelial CD8(+) tumor-infiltrating lymphocytes (TIL) that express CD103 have been shown to be strongly associated with patient survival in high-grade serous ovarian cancer.

1. Morgan EA, *et al.* Am J Clin Pathol. 2013 Feb; 139(2):220-30. 2. Dong HY, *et al.* Am J Clin Pathol. 2009 Apr; 131(4):586-95. 3. Mori N, *et al.* Mod Pathol. 2004 Jul; 17(7):840-6. 4. Webb JR, *et al.* Clin Cancer Res. 2014 Jan 15; 20(2):434-44.



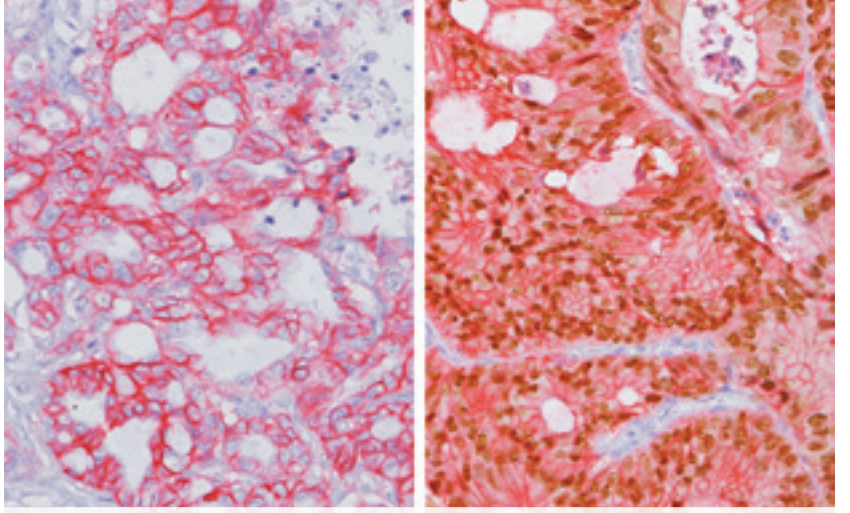
Colon adenocarcinoma (L) and stomach adenocarcinoma (R) stained with CDH17 (M)

CDH17 (M) IVD FFPE

Clone	1H3
Isotype	IgG1/kappa
Reactivity	
Control	Colon carcinoma
Cat. No.	ACI 3111 A, C; API 3111 AA; AVI 3111 G

CDH17 antibody (Cadherin 17 or LI-cadherin) is a novel oncogene which is involved in tumor invasion and metastasis and is expressed in intestinal epithelium. CDH17 is a highly specific marker in colon cancer (99/99, 100%) and is a more sensitive marker than CDX2 (93/99, 94%) and CK20 (91/99, 92%). Overexpression of CDH17 (and conversely, underexpression of CDX2) correlates to poor prognosis in patients with epithelial ovarian cancer. CDH17 may be helpful for early diagnosis of Barrett's esophagus. CDH17 has been shown to be a useful marker for distinguishing between primary urinary bladder adenocarcinoma and urothelial carcinoma with glandular differentiation.

1. Huang LP, *et al.* Int J Gynecol Cancer. 2012 Sep; 22(7):1170-6. 2. Panarelli NC, *et al.* Am J Clin Pathol. 2012 Aug; 138(2):211-22. 3. Tacha D, Zhou D. Poster session presented at: CAP'14; 2014 Sep 7-10; Chicago, IL. 4. Mokrowiecka A, *et al.* Dig Dis Sci. 2013 Mar; 58(3):699-705. 5. Rao Q, *et al.* Mod Pathol. 2013 May; 26(5):725-32.



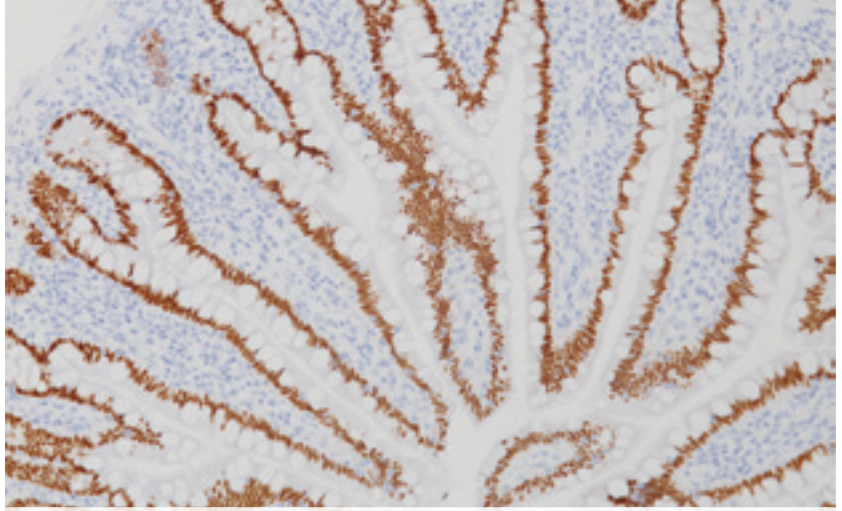
(L) Colon cancer stained with CDH17 (+) and CDX2 (-) / (R) Colon cancer stained with CDH17 (+) and CDX2 (+)

CDX2 (M) + CDH17 (RM) IVD FFPE

Clone	CDX2-88 + EP86
Isotype	IgG1 + IgG
Reactivity	
Control	Normal colon or colon cancer
Cat. No.	API 3135DS AA

CDX2 has been useful to establish gastrointestinal origin of metastatic adenocarcinomas and carcinoids. CDX2 has been shown to be more specific and more sensitive than villin or CK20. CDH17 is a highly specific marker in colon cancer and is a more sensitive marker than CDX2 and CK20. Data suggests that the combination of CDX2 and CDH17 along with CK7 may improve specificity compared to the panel consisting of CK20, CDX2, villin and CK7. Compared to CDX2 or CK20 alone, the combination of CDX2 and CDH17 is highly sensitive and somewhat specific for colorectal and stomach adenocarcinoma in routine immunohistochemistry, especially in cases with a CK7-/CDX2-/CK20- carcinoma.

1. Werling RW, *et al.* Am J Surg Pathol. 2003 Mar; 27(3):303-10. 2. Saad RS, *et al.* Appl Immunohistochem Mol Morphol. 2009 May; 17(3):196-201. 3. Bayrak R, Haltas H, Yenidunya S. Diagn Pathol. 2012 Jan 23; 7:9. 4. Panarelli NC, *et al.* Am J Clin Pathol. 2012 Aug; 138(2):211-22. 5. Lin F, *et al.* Arch Pathol Lab Med. 2014 Aug; 138 (8):1015-26.



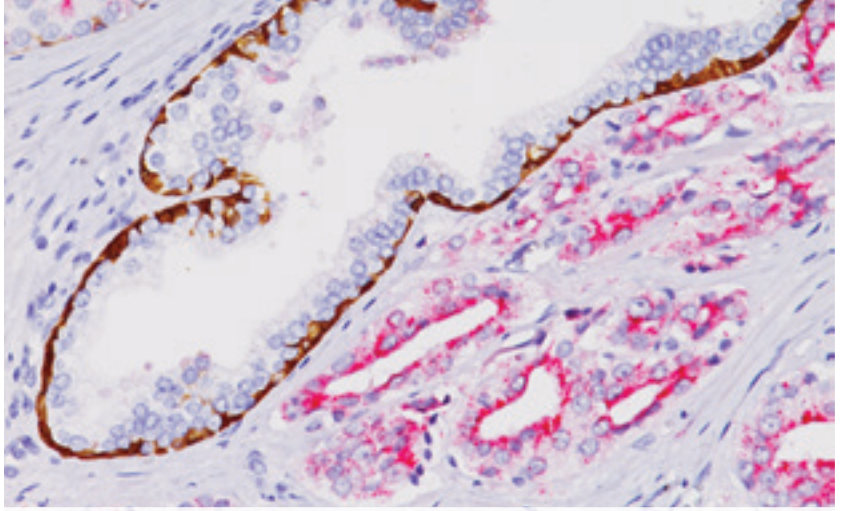
Small intestine stained with CDX2 (RM)

CDX2 (RM) IVD FFPE PREFERRED

Clone	EP25
Isotype	IgG
Reactivity	
Control	Normal colon or colon cancer
Cat. No.	ACI 3144 A, B; API 3144 AA

CDX2 has been useful to establish gastrointestinal origin of metastatic adenocarcinomas and carcinoids and can be especially useful in distinguishing metastatic colorectal adenocarcinoma from tumors of unknown origin. CDX2 has been shown to be more specific and more sensitive than Villin or CK20. The CDX2 rabbit monoclonal is a more sensitive clone than other CDX2 mouse monoclonal antibodies. Data has also shown that rabbit monoclonal CDX2 had fewer false negatives. The specificity was similar when compared to other mouse monoclonal CDX2 antibodies. The overall specificity for CDX2 antibodies can be significantly improved in a panel with CK7, TTF-1 and CDH17.

1. Kim JH, *et al.* Acta Cytol. 2010 May-Jun; 54(3):277-82. 2. Saad RS, *et al.* Appl Immunohistochem Mol Morphol. 2009 May; 17(3):196-201. 3. Qi W, *et al.* Appl Immunohistochem Mol Morphol. 2009 May; 17(3):233-8. 4. Bayrak R, Haltas H, Yenidunya S. Diagn Pathol. 2012 Jan 23; 7:9. 5. Lee MJ, *et al.* Tumour Biol. 2012 Dec; 33(6):2185-8. 6. Vang R, *et al.* Mod Pathol. 2006 Nov;19(11):1421-8. 7. Borrisholt M, Nielsen S, Vyberg M. Appl Immunohistochem Mol Morphol. 2013 Jan; 21(1):64-72. 8. Panarelli NC, *et al.* Am J Clin Pathol. 2012 Aug; 138(2):211-22



Prostate cancer stained with CK HMW + p63 + AMACR (RM)

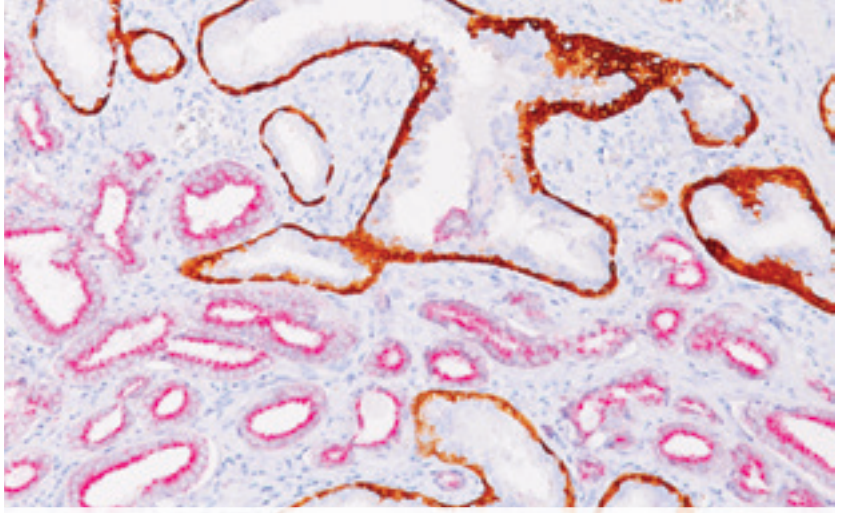
CK HMW + p63 + AMACR (RM) RUO FFPE

Clone	34βE12 + 4A4 + 13H4
Isotype	IgG1/kappa + IgG2a/kappa + IgG
Reactivity	
Control	Normal prostate and prostatic adenocarcinoma
Cat. No.	OAR 3123 T60

In prostate, CK HMW [34βE12] has been shown to be a useful marker of basal cells of normal glands and prostatic intraepithelial neoplasia (PIN). p63 was detected in nuclei of the basal epithelium in normal prostate glands but is not expressed in malignant tumors of the prostate. α-Methylacyl coenzyme A racemase (AMACR), also known as P504S, is a specific marker of prostatic adenocarcinoma and was nearly undetectable in benign glands. Combinations of CK HMW [34βE12], p63, and/or AMACR may be useful in the evaluation of normal prostate glands, PIN and prostatic adenocarcinoma.

U.S. Patent 8,603,765 and patents pending.

1. Humphrey PA. J Clin Pathol. 2007 Jan; 60(1):35-42. 2. Signoretti S, *et al.* Am J Pathol. 2000 Dec; 157(6):1769-75. 3. Wu CL, *et al.* Hum Pathol. 2004 Aug; 35(8):1008-13. 4. Shah RB, *et al.* Am J Clin Pathol. 2004 Oct; 122(4):517-23. 5. Sung MT, *et al.* Hum Pathol. 2007 Feb; 38(2):332-41.



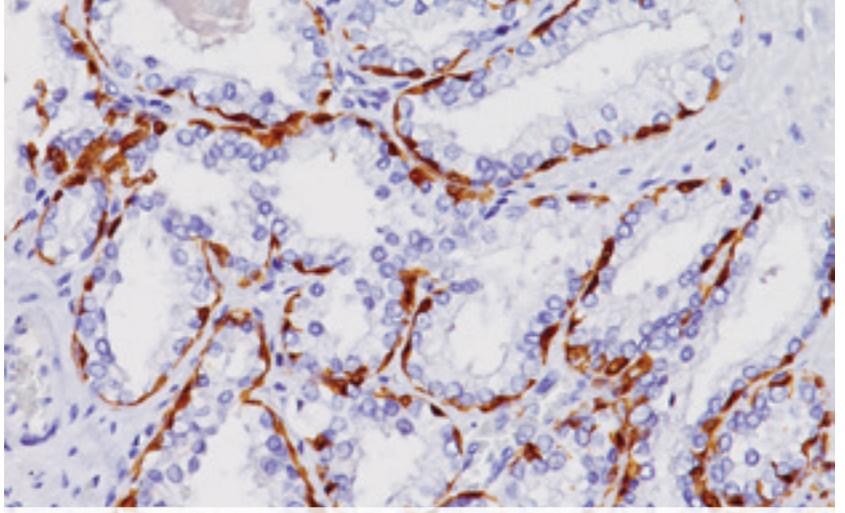
Prostate cancer stained with CK HMW + p63 + AMACR (RM)

CK HMW + p63 + AMACR (RM) IVD FFPE

Clone	34βE12 + 4A4 + 13H4
Isotype	IgG1/kappa + IgG2a/kappa + IgG
Reactivity	
Control	Normal prostate and prostatic adenocarcinoma
Cat. No.	API 3154DS AA, H; IPI 3154DS G10

In prostate, CK HMW [34βE12] has been shown to be a useful marker of basal cells of normal glands and prostatic intraepithelial neoplasia (PIN). p63 was detected in nuclei of the basal epithelium in normal prostate glands but is not expressed in malignant tumors of the prostate. α-Methylacyl coenzyme A racemase (AMACR), also known as P504S, is a specific marker of prostatic adenocarcinoma and was nearly undetectable in benign glands. Combinations of CK HMW [34βE12], p63, and/or AMACR may be useful in the evaluation of normal prostate glands, PIN and prostatic adenocarcinoma. U.S. Patent 8,603,765 and patents pending.

1. Bostwick DG, Qian J. Mod Pathol. 2004 Mar; 17(3):360-79. 2. Humphrey PA. J Clin Pathol. 2007 Jan; 60(1):35-42. 3. Shah RB, *et al.* Am J Surg Pathol. 2002 Sep; 26(9):1161-8. 4. Signoretti S, *et al.* Am J Pathol. 2000 Dec; 157(6):1769-75. 5. Rubin MA, *et al.* JAMA. 2002 Apr 3; 287(13):1662-70. 6. Zhou M, *et al.* Am J Surg Pathol. 2002 Jul; 26(7):926-31. 7. Wu CL, *et al.* Hum Pathol. 2004 Aug; 35(8):1008-13. 8. Shah RB, *et al.* Am J Clin Pathol. 2004 Oct; 122(4):517 -23. 9. Sung MT, *et al.* Hum Pathol. 2007 Feb; 38(2):332-41.



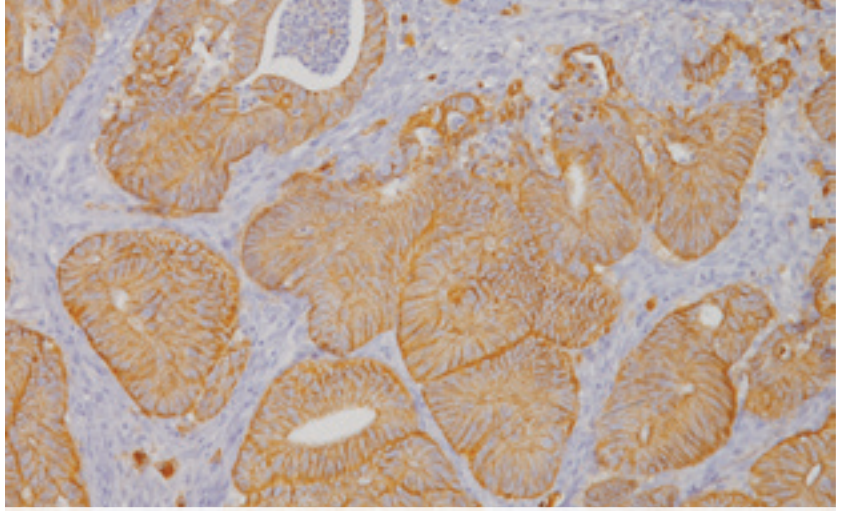
Prostate cancer stained with CK HMW + p63, 2X

CK HMW + p63, 2X IVD FFPE

Clone	34βE12 + 4A4
Isotype	IgG1/kappa + IgG2a/kappa
Reactivity	
Control	Normal prostate glands
Cat. No.	OAI 3124K T90 supernova

In prostate, CK HMW [34βE12] has been shown to be a useful marker of basal cells of normal glands and prostatic intraepithelial neoplasia (PIN), a precursor lesion to prostatic adenocarcinoma; whereas invasive prostatic adenocarcinoma typically lacks a basal cell layer. p63 was detected in nuclei of the basal epithelium in normal prostate glands; however, it was not expressed in malignant tumors of the prostate. Studies have shown that CK HMW [34βE12] with p63 may be useful in the evaluation of normal prostate glands, PIN and prostatic adenocarcinoma. A 2-fold dilution of CK HMW + p63, 2X is intended to create a ready-to-use antibody cocktail for use on the ONCORE Automated Slide Stainer.

1. Moll R, *et al.* Cell. 1982 Nov; 31(1):11-24. 2. Bostwick DG, Qian J. Mod Pathol. 2004 Mar; 17(3):360-79. 3. Humphrey PA. J Clin Pathol. 2007 Jan; 60(1):35-42. 4. Yang A, *et al.* Mol Cell. 1998 Sep; 2(3):305-16. 5. Signoretti S, *et al.* Am J Pathol. 2000 Dec; 157(6):1769-75. 6. Shah RB, *et al.* Am J Surg Pathol. 2002 Sep; 26(9):1161-8. 7. Shah RB, *et al.* Am J Clin Pathol. 2004 Oct; 122(4):517-23.



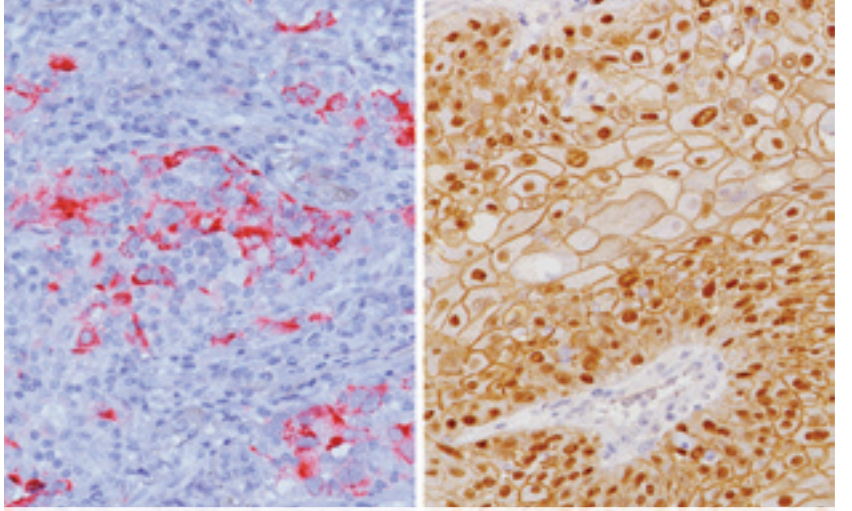
Colon cancer stained with Claudin-4

Claudin-4 IVD FFPE

Clone	3E2C1
Isotype	IgG1
Reactivity	
Control	Colon carcinoma or breast carcinoma
Cat. No.	ACI 3121 A, B; API 3121 AA

Claudin-4 (*Clostridium perfringens* enterotoxin receptor) expression has been associated with different outcomes, depending on the cancer type. Claudin-4 has been shown to distinguish adenocarcinoma from malignant mesothelioma with 99% specificity. In some breast cancers, Claudin-4 overexpression was associated with poor prognosis, high tumor grade and Her2 expression. However, the presence of Claudin-4 in triple negative breast cancer demonstrated a favorable prognosis. Claudin-4 loss was also seen in 69% of advanced gastric cancers and correlated with poor differentiation. Low expression also correlated with lymphatic metastasis and higher recurrence risk in esophageal squamous cell cancer.

1. Jo VY, Cibas ES, Pinkus GS. Cancer Cytopathol. 2014 Apr; 122(4):299-306. 2. Lanigan F, *et al.* Int J Cancer. 2009 May 1; 124(9):2088-97. 3. Kolokytha P, *et al.* Appl Immunohistochem Mol Morphol. 2014; 22(2):125-31. 4. Lu S, *et al.* Mod Pathol. 2013 Apr; 26(4):485-95. 5. Lee SK, *et al.* Oncol Rep.2005 Feb; 13(2):193-9. 6. Shi M, *et al.* Med Oncol. 2014 May; 31(5):951. 7. Maeda T, *et al.* Prostate. 2012 Mar; 72(4):351-60.



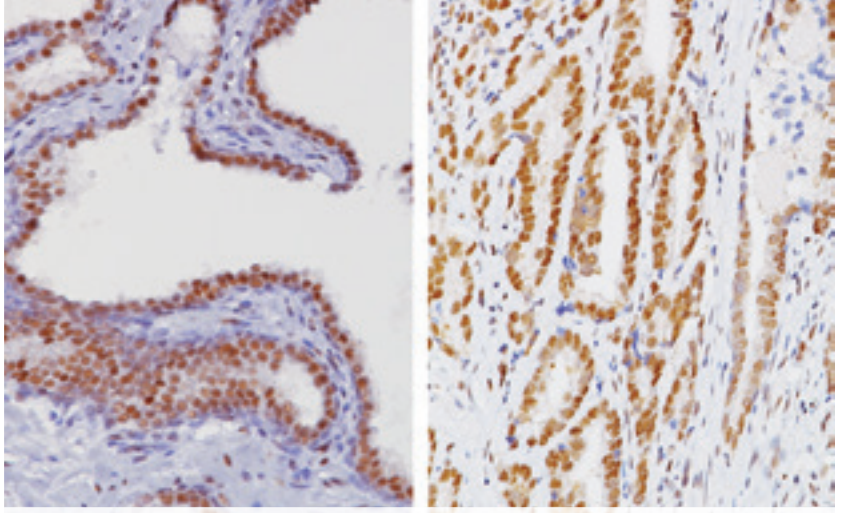
Lung adenocarcinoma (L) and lung squamous cell carcinoma (R) stained with DSG3 + p40 (M) + Napsin A (RM)

DSG3 + p40 (M) + Napsin A (RM) IVD FFPE

Clone	BC11 + BC28 + BC15
Isotype	IgG1 + IgG1 + IgG
Reactivity	
Control	Lung squamous cell carcinoma and lung adenocarcinoma
Cat. No.	API 3132DS 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 [BC28] is selectively expressed in lung SqCC with diminished reactivity in lung ADC compared to p63. The combination of both membrane (DSG3) and nuclear (p40) staining may increase overall sensitivity for lung SqCC. Napsin A is extremely specific for lung ADC vs. 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. Brown AF, *et al.* Arch Pathol Lab Med. 2013 Sep; 137(9):1274-81. 4. Agackiran Y, *et al.* Appl Immunohistochem Mol Morphol. 2012 Jul;20(4):350-5. 5. Bishop JA, *et al.* Mod Pathol. 2012 Mar; 25(3):405-15. 6. Tacha D, *et al.* Arch Pathol Lab Med. 2014 Oct; 138(10):1358-64.



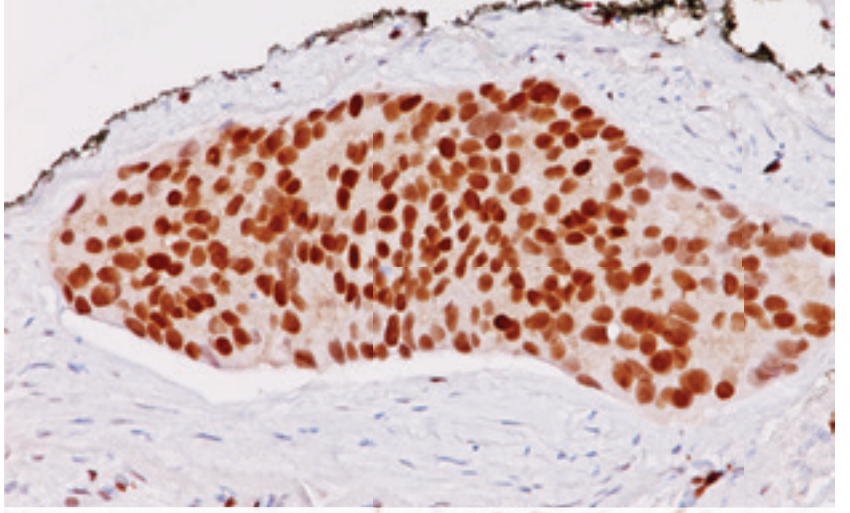
(L) Normal prostate and (R) Prostate cancer stained with ERCC1

ERCC1 IVD FFPE

Clone	4F9
Isotype	IgG1
Reactivity	
Control	Prostate or prostate cancer
Cat. No.	ACI 3147 A, B

The excision repair cross-complementation group 1 (ERCC1) gene encodes a protein required for nucleotide excision repair and inter-strand crosslink repair of DNA. Platinum chemotherapy drug resistance has been linked to elevated levels of ERCC1-XPF nuclease, making ERCC1 a potential predictive diagnostic biomarker. ERCC1 expression may have prognostic value in lung, colorectal, head and neck, bladder, breast and cervical cancers. Although clone 8F1 has traditionally been used in IHC to detect ERCC1 expression, 8F1 has been found to cross-react with PCYT1A, an unrelated nuclear membrane protein. Clone 4F9 does not show this cross-reaction, providing superior specificity for ERCC1 expression.

1. Bhagwat NR, *et al.* Cancer Res. 2009 Sep 1; 69(17):6831-8. 2. Ma D, *et al.* BMC Biotechnol. 2012 Nov 21; 12:88. 3. Smith DH, *et al.* Sci Rep. 2014 Mar 7; 4:4313. 4. Bauman JE, *et al.* Br J Cancer. 2013 Oct 15; 109(8):2096-105. 5. Ozcan MF, *et al.* Urol Oncol. 2013 Nov; 31(8):1709-15. 6. Palomba G, *et al.* J Transl Med. 2014 Sep 25; 12:272.



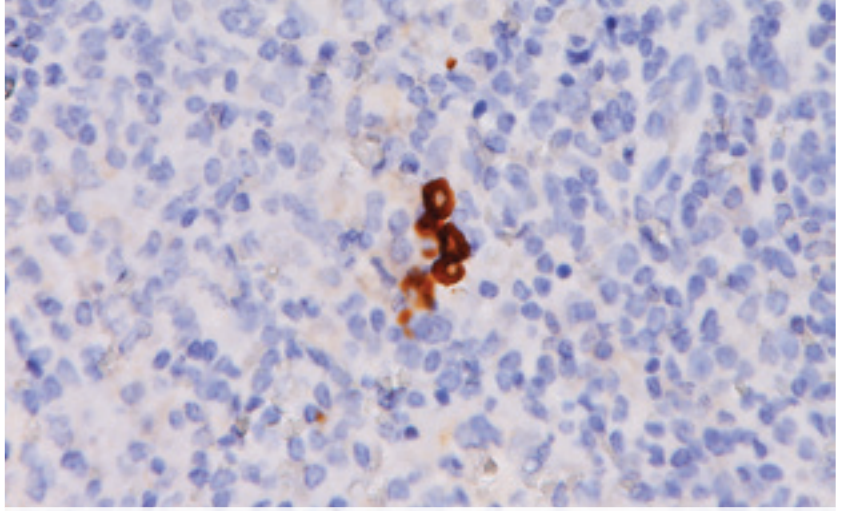
Prostate cancer stained with ERG (M), 2X

ERG (M), 2X IVD FFPE

Clone	9FY
Isotype	IgG1
Reactivity	
Control	ERG positive prostate cancer and/or PIN glands
Cat. No.	API 3017 AAK supernova

TMPRSS2:ERG has been found to be a frequent gene rearrangement in prostate cancers, occurring in 45-65% of North American patients. There is a strong correlation between ERG protein expression and the presence of TMPRSS2:ERG rearrangement and a high concordance of ERG positive prostatic intraepithelial neoplasia (PIN) and ERG positive carcinoma. ERG expression offers a rare, but definitive marker of adenocarcinoma of prostatic origin. ERG (M), 2X may be combined with AMACR (RM), 2X to form a primary antibody combination. *Note: ERG [9FY] was developed by the Center for Prostate Disease Research in association with the Henry M. Jackson Foundation, Rockville, Maryland.* US Patent: 8,765,916 B2

1. Petrovics G, *et al.* Oncogene. 2005 May 26; 24(32):3847-52. 2. Kumar-Sinha C, Tomlins SA, Chinnaiyan AM. Nat Rev Cancer. 2008 Jul; 8(7):497-511. 3. Furusato B, *et al.* Prostate Cancer Prostatic Dis. 2010 Sep; 13(3):228-37. 4. Mohamed AA, *et al.* J Cancer. 2010 Oct 25; 1:197-208. 5. Miettinen M, *et al.* Am J Surg Pathol. 2011 Mar; 35(3):432-41. 6. Mohamed AA, *et al.* Cancer Biol Ther. 2011 Feb 15;11(4):410-7. 7. Hameed O, Humphrey PA. Semin Diagn Pathol. 2005 Feb; 22(1):88-104. 8. Trpkov K, Bartczak-McKay J, Yilmaz A. Am J Clin Pathol. 2009 Aug; 132(2):211-20.



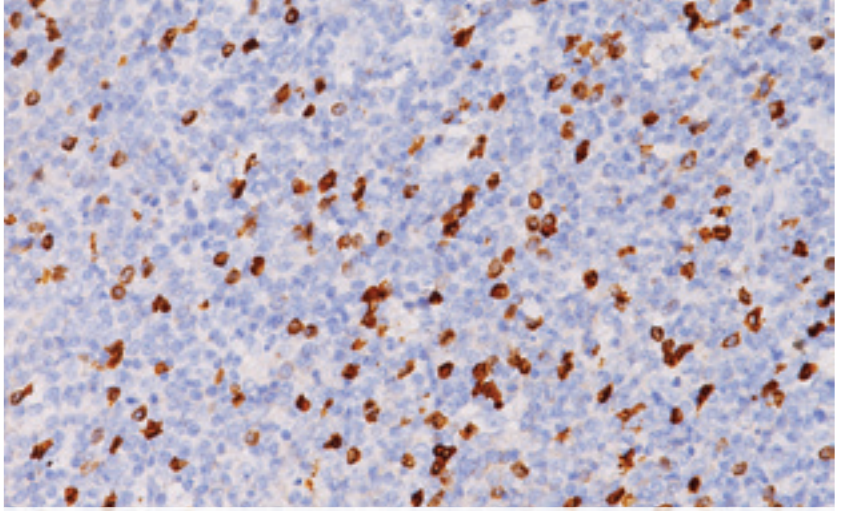
Human spleen stained with IgG4 (M)

IgG4 (M) IVD FFPE

Clone	HP6025
Isotype	IgG1
Reactivity	
Control	Spleen
Cat. No.	ACI 3115 A, B; API 3115 AA

IgG4 is specific for the Fc region of human IgG4. IgG4 can aid in the diagnosis of IgG4 related systemic disease (IgG4-RSD). IgG4-RSD can be found in many different organs with symptoms such as lymphoplasmacytic infiltration, mass formation, sclerosis and increased expression of IgG4+ plasma cells as well as a high IgG4+/IgG+ ratio. IgG4 has been shown to be overexpressed in inflammatory pseudotumor (IPT) and under expressed in inflammatory myofibroblastic tumor (IMT). In pulmonary nodular lymphoid hyperplasia (PNLH), there are an increased number of IgG4+ plasma cells compared to other proliferations. Overexpression of IgG4 has also been found in primary cutaneous marginal zone lymphomas.

1. Khosroshahi A, *et al.* Curr Opin Rheumatol. 2011 Jan; 23(1):57-66. 2. Divatia M, Kim S, Ro J. Yonsei Med J. 2012 Jan; 53(1):15-34. 3. Sato Y, *et al.* Mod Pathol. 2013 Apr; 26(4):523-32. 4. Saab ST, *et al.* Mod Pathol. 2011 Apr; 24(4):606-12. 5. Bhagat P, *et al.* Virchows Arch. 2013 Dec; 463 (6):743-7. 6. Guinee DG Jr, *et al.* Am J Surg Pathol. 2010 Dec; 34(12):1812-9. 7. Brenner I, *et al.* Mod Pathol. 2013 Dec; 26(12):1568-76.



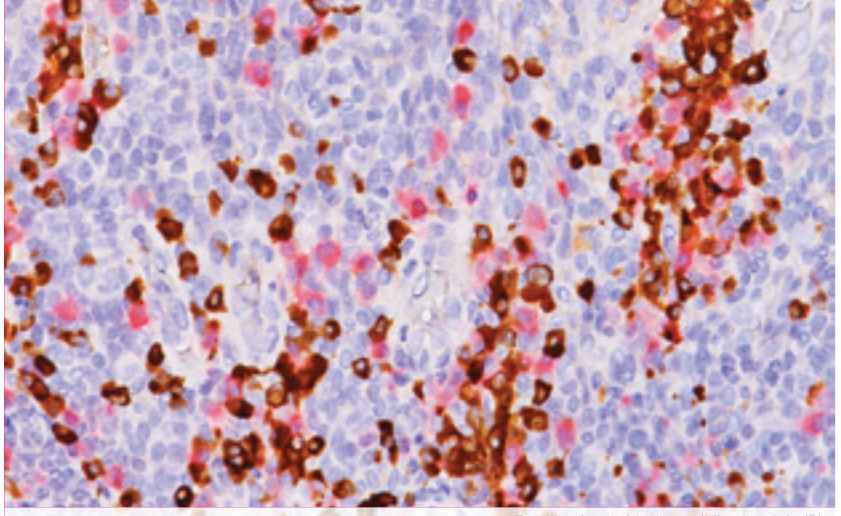
Tonsil stained with Kappa Light Chain [L1C1]

Kappa Light Chain [L1C1] IVD FFPE

Clone	L1C1
Isotype	IgG1
Reactivity	
Control	Tonsil or bone marrow
Cat. No.	ACI 3149 A, C; API 3149 AA

The Kappa Light Chain antibody recognizes kappa light chains of human immunoglobulins, which may be useful 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. The normal human kappa/lambda ratio is approximately 2:1. The presence of clear cut light chain restriction with a kappa/lambda ratio more than 10:1 is consistent with a malignant proliferation.

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. 6. Kremer M, *et al.* Virchows Arch. 2005 Dec; 447(6):920-37.



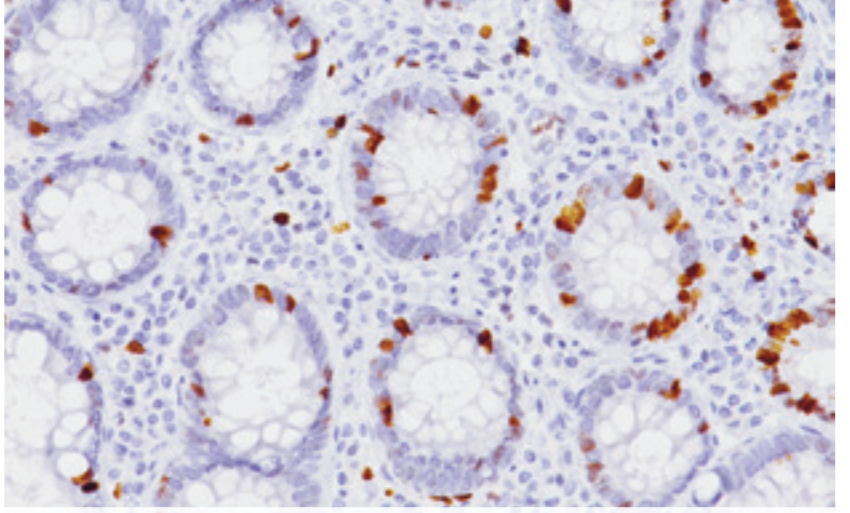
Tonsil stained with Kappa (M) + Lambda (P)

Kappa (M) + Lambda (P) IVD FFPE

Clone	L1C1 + N/A
Isotype	IgG1 + IgG
Reactivity	
Control	Tonsil or bone marrow
Cat. No.	API 3159DS AA

Kappa and Lambda antibodies are usually run together on two separate tissues. In normal tissue, the Kappa and Lambda cell ratio is approximately 2:1. The double stain antibody allows the investigator to simultaneously see both Kappa (M) (brown) and Lambda (P) (red) on the same tissue section, thus allowing the end-user a more accurate and easier assessment of both stains. It 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 may indicate that the infiltrate is malignant.

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.



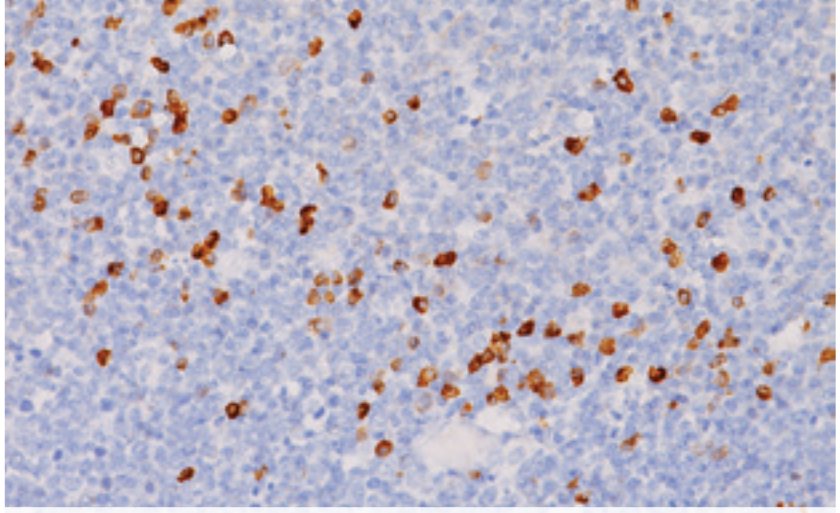
Normal colon adjacent to colon cancer stained with Ki-67 [MIB-1]

Ki-67 [MIB-1] IVD FFPE

Clone	MIB-1
Isotype	IgG1/kappa
Reactivity	
Control	Colon cancer
Cat. No.	API 3156 AA

The Ki-67 nuclear antigen is associated with cell proliferation. It is found throughout the cell cycle that includes the G1, S, G2, and M phases; but not the (G0) phase. 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. Key G, *et al.* Lab Invest. 1993 Jun; 68(6):629-36. 2. Jansen RL, *et al.* Br J Cancer. 1998 Aug; 78(4):460-5. 3. Goodson WH 3rd, *et al.* Breast Cancer Res Treat. 1998 May; 49(2):155-64.



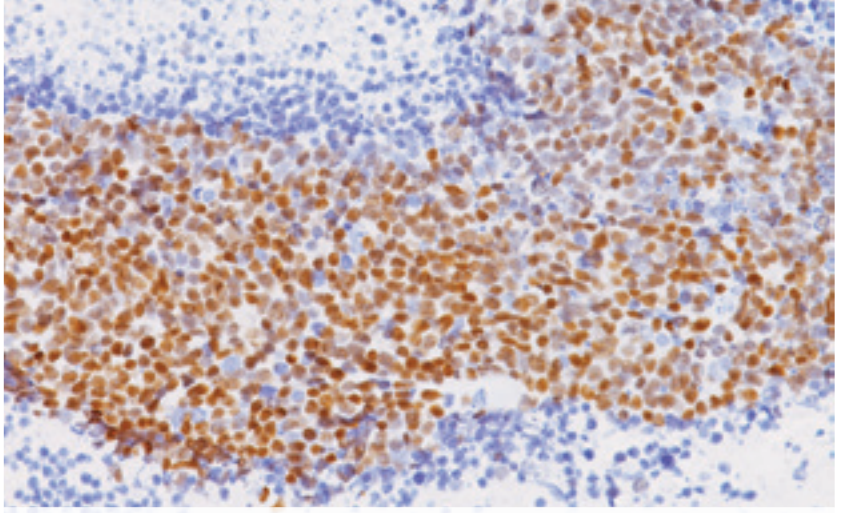
Tonsil stained with Lambda Light Chain [N10/2]

Lambda Light Chain [N10/2] IVD FFPE

Clone	N10/2
Isotype	IgG1
Reactivity	
Control	Tonsil or bone marrow
Cat. No.	ACI 3063 A, C; API 3063 AA

The Lambda Light Chain antibody recognizes lambda light chains of human immunoglobulins, which may be useful 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. The normal human kappa/lambda ratio is approximately 2:1. The presence of clear cut light chain restriction with a kappa/lambda ratio more than 10:1 is consistent with a malignant proliferation.

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. 6. Kremer M, *et al.* Virchows Arch. 2005 Dec; 447(6):920-37



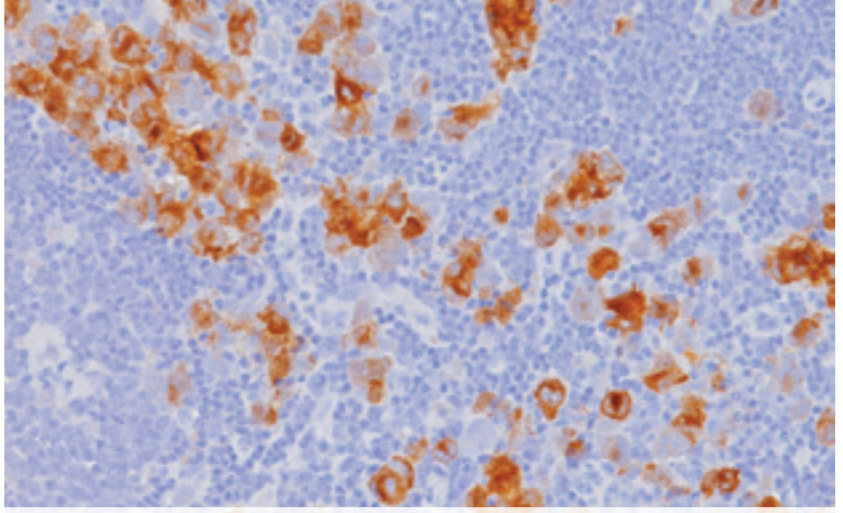
Small cell lung cancer stained with MASH1

MASH1 IVD FFPE

Clone	24B72D11.1
Isotype	IgG1
Reactivity	
Control	Small cell lung cancer
Cat. No.	ACI 3131 A; API 3131 AA

Achaete-scute complex homolog-1 (ASCL1), known as mASH1 in rodents and hASH1 in humans, is a transcription factor critical for neuroendocrine cell differentiation. Neuroendocrine markers such as chromogranin and CD56 cannot distinguish high grade, poorly differentiated neuroendocrine carcinomas (NECs) from low grade neuroendocrine tumors (NETs). MASH1 stains hASH1 in human tissues and can distinguish NECs from NETs. MASH1 has also been shown to distinguish large cell neuroendocrine carcinomas (LCNECs) and small cell lung carcinomas (SCLCs) from other lung cancers. MASH1 may assist in distinguishing neuroendocrine carcinomas from neuroendocrine tumors in poorly differentiated cases.

1. Ball DW, *et al.* Proc Natl Acad Sci U S A. 1993 Jun 15; 90(12):5648-52. 2. La Rosa S, *et al.* Hum Pathol. 2013 Jul; 44(7):1391-9. 3. Schnabel PA, Junker K. Pathologe. 2014 Nov; 35(6):557-64. 4. Hiroshima K, *et al.* Mod Pathol. 2006 Oct; 19(10):1358-68. 5. Jiang SX, *et al.* Mod Pathol. 2004 Feb; 17(2):222-9. 6. Ralston J, Chiriboga L, Nonaka D. Mod Pathol. 2008 Nov; 21(11):1357-62.



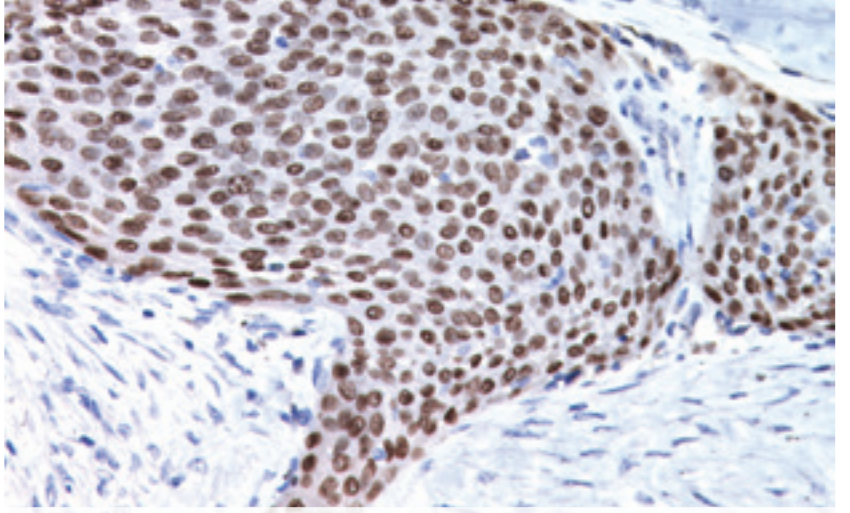
Metastatic melanoma in lymph node stained with Melan A (M)

Melan A (M) IVD FFPE

Clone	A103
Isotype	IgG1
Reactivity	
Control	Melanoma
Cat. No.	ACI 3114 A, B; API 3114 AA

Melan-A (MART-1) [A103], a melanoma-specific antigen, is a transmembrane protein and a melanocyte differentiation marker recognized by cytotoxic T lymphocytes. Melan-A is expressed in skin, in the majority of melanocytes and in renal angiomyolipomas. The Melan-A A103 clone, unlike clones M2-7C10 and M2-9E3, can also aid in the recognition of steroid hormone-producing tumors and may be particularly useful in the diagnosis of adrenocortical carcinoma.

1. Shidham VB, *et al.* Am J Surg Pathol. 2001 Aug;25(8):1039 -46. 2. Zubovits J, *et al.* Hum Pathol. 2004 Feb; 35(2):217-23. 3. Tuna EB, Lebe B, Yörükoğlu K. Tumori. 2003 Jan-Feb; 89 (1):46-8. 4. Busam KJ, *et al.* Am J Surg Pathol. 1998 Jan; 22(1):57-63. 5. Zhang HY, *et al.* Zhonghua Bing Li Xue Za Zhi. 2004 Jun; 33(3):203-7.



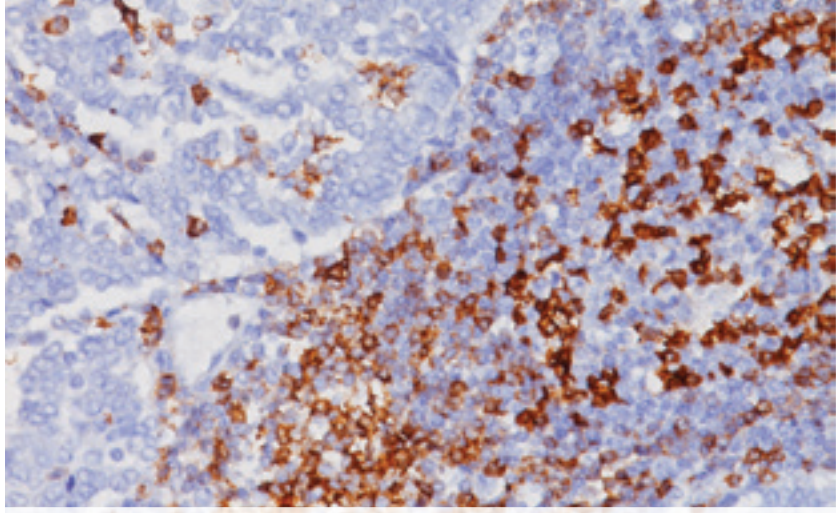
Lung squamous cell carcinoma stained with p63, 2X

p63, 2X (Lung) IVD FFPE

Clone	4A4
Isotype	IgG2a/kappa
Reactivity	
Control	Lung squamous cell carcinoma
Cat. No.	API 3070 AA supernova

p63 has been shown to be a sensitive marker for lung squamous cell carcinomas (SqCC), with reported sensitivities of 80-100%. Specificity for lung SqCC, vs. lung adenocarcinoma (LADC), has been reported to be approximately 70-90%, as positive staining with p63 has been typically observed in 10-30% of LADC. Cocktails of p63 with complementary markers for lung SqCC have also proven useful. A cocktail of p63 + TRIM29 demonstrated a 94.7% sensitivity for lung SqCC and 100% specificity vs. LADC, in cases where Napsin A and TTF-1 were both negative. Similarly, the combination of p63 + CK5 identified 87% of cases of lung SqCC, with 94% specificity.

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. Kargi A, Gurel D, Tuna B. Appl Immunohistochem Mol Morphol. 2007 Dec; 15(4):415-20. 4. Khayyata S, *et al.* Diagn Cytopathol. 2009 Mar; 37:178–83. 5. Terry J, *et al.* Am J Surg Pathol. 2010 Dec; 34(12):1805-11. 6. Pu RT, Pang Y, Michael CW. Diagn Cytopathol. 2008 Jan; 36(1):20-5. 7. Tacha D, Yu C, Haas T. Mod Pathol. 2011 Feb; 24 (Supplement 1s):425A. 8. Tacha D, Zhou D, Henshall-Powell RL. Mod Pathol. 2010 Feb; 23 (Supplement 1s):222A.



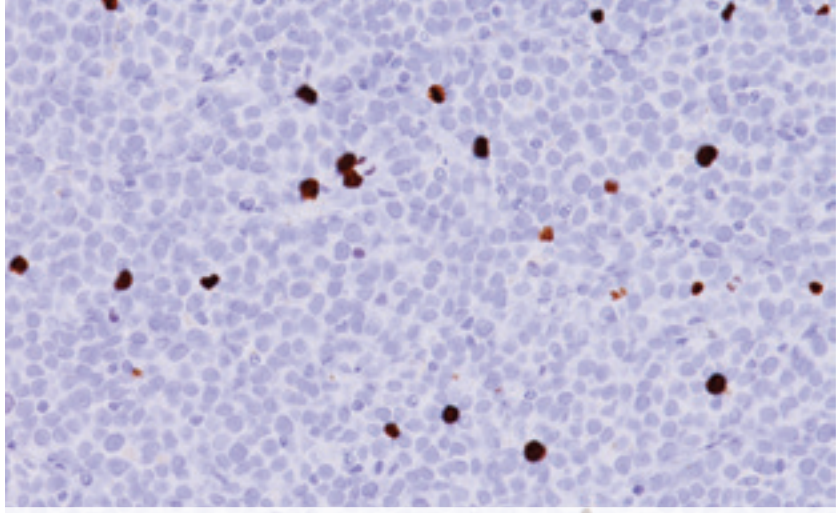
Breast cancer stained with PD-1

PD-1 IVD FFPE

Clone	NAT105
Isotype	IgG1/kappa
Reactivity	
Control	Tonsil
Cat. No.	ACI 3137 AK, CK; API 3137 AA

Programmed death 1 (PD-1) functions as a down regulator of the immune system through a dual mechanism of inhibition. PD-1 is expressed on the cell surface of activated T- and B-cells. Anti-tumor immunity may be controlled by the PD-1/PD-L1 signaling pathway. The presence of PD-1 positive tumor infiltrating lymphocytes (TIL) has been associated with poor prognosis in human breast cancers and may be useful in antibody therapy targeting the PD-1/PD-L1 signaling pathway. Treatments targeting PD-1 and its ligand, PD-L1, have also shown encouraging results in non-small-cell lung cancer, renal cell carcinoma and melanoma.

1. Muenst S, *et al.* Breast Cancer Res Treat. 2013 Jun; 139(3):667-76. 2. Kim JW, Eder JP. Oncology. (Williston Park). 2014 Nov; 28(11 Suppl 3). 3. Tumeh PC, *et al.* Nature. 2014 Nov 27; 515(7528):568-71. 4. D'Incecco A, *et al.* Br J Cancer. 2015 Jan 6; 112(1):95-102. 5. Tykodi SS. Onco Targets Ther. 2014 Jul 25; 7:1349-59.



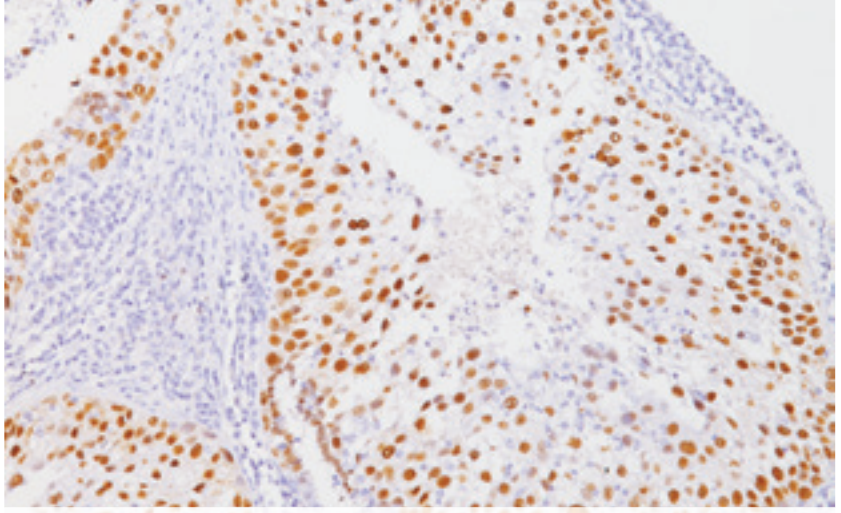
Melanoma stained with pHH3 (RM)

pHH3 (RM) IVD FFPE PREFERRED

Clone	BC37
Isotype	IgG
Reactivity	
Control	Tonsil or melanoma
Cat. No.	ACI 3130 A, C; API 3130 AA

Phosphohistone H3 (pHH3) is specific for cells undergoing mitosis. Serine 10 of Histone H3 is phosphorylated in association with mitotic chromatin condensation in late G2 and M phase of the cell cycle. H&E staining may misclassify mitotic cells as apoptotic bodies or piknotic nuclei, resulting in an underestimation of the mitotic index (MI). IHC with pHH3 may provide a more accurate assessment of all mitotic cells, as well as cells in which Histone H3 has been phosphorylated immediately prior to entering prophase. pHH3 (RM) [BC37] displays stronger staining intensity in mitotic figures and does not exhibit granular staining in interphase nuclei compared to the polyclonal pHH3.

1. Ladstein RG, *et al.* J Invest Dermatol. 2012 Apr; 132(4):1247-52. 2. Jannink I, van Diest PJ, Baak JP. Hum Pathol. 1995 Oct; 26(10):1086-92. 3. Yadav KS, *et al.* J Contemp Dent Pract. 2012 May 1; 13(3):339-44. 4. Thareja S, *et al.* Am J Dermatopathol. 2014 Jan; 36(1):64-7. 5. Ikenberg K, *et al.* J Cutan Pathol. 2012 Mar; 39(3):324-30. 6. Casper DJ, *et al.* Am J Dermatopathol. 2010 Oct; 32(7):650-4. 7. Veras E, *et al.* Int J Gynecol Pathol. 2009 Jul; 28(4):316-21. 8. Skaland I, *et al.* Mod Pathol. 2007 Dec; 20(12):1307-15. 9. Kim YJ, *et al.* Am J.Clin Pathol. 2007 July; 128(1):118-25.



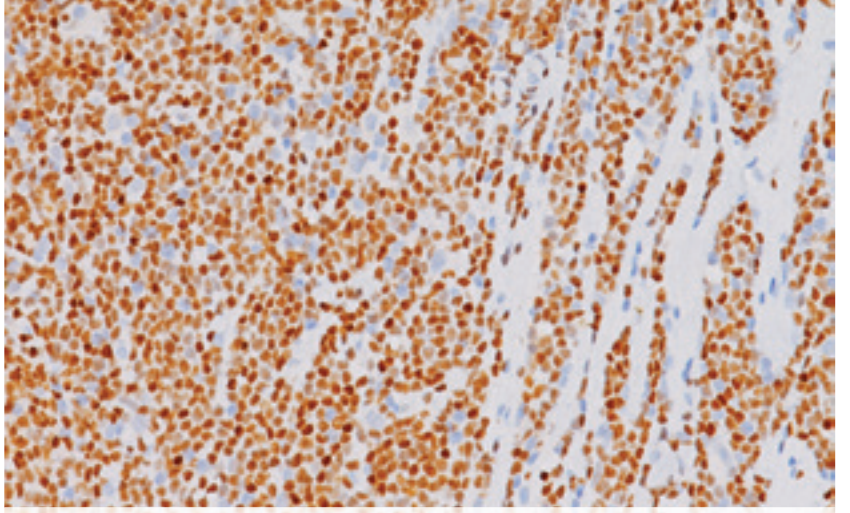
Lung squamous cell carcinoma stained with SOX2

SOX2 IVD FFPE

Clone	BC36
Isotype	IgG1/kappa
Reactivity	
Control	Lung squamous cell carcinoma
Cat. No.	ACI 3109 A, C; API 3109 AA

The SOX2 gene encodes a member of the SRY-related HMG-box (SOX) family of transcription factors. SOX2 is expressed in multipotent neuronal stem cells, and may aid to identify cells that are capable of self-renewal and multipotent differentiation. SOX2 has been shown to be a negative prognostic factor and associated with aggressive phenotypes in breast, head and neck, gastric, colorectal and bladder cancers. In small cell lung cancers, SOX2 was also correlated with a poor prognosis. Conversely, SOX2 is expressed in a high percentage of lung squamous cell carcinomas and was shown to be an independent positive prognostic marker.

1. Graham V, *et al.* Neuron. 2003 Aug 28; 39(5):749-65. 2. Ellis P, *et al.* Dev Neurosci. 2004 Mar-Aug; 26 (2-4):148-65. 3. Rodriguez-Pinilla SM, *et al.* Mod Pathol. 2007 Apr; 20(4):474-81. 4. Huang YH, *et al.* Histopathology. 2014 Mar; 64(4):494-503. 5. Li W, *et al.* Acta Otolaryngol. 2014 Nov; 134(11):1101-8. 6. Camilo V, *et al.* BMC Cancer. 2014 Oct 9; 14:753. 7. Lundberg IV, *et al.* PLoS One. 2014 Jul 10; 9(7):e101957. 8. Velcheti V, *et al.* PLoS One. 2013 Apr 19; 8(4):e61427. 9. Yang F, *et al.* Int J Clin Exp Pathol. 2013 Nov 15; 6 (12):2846-54.



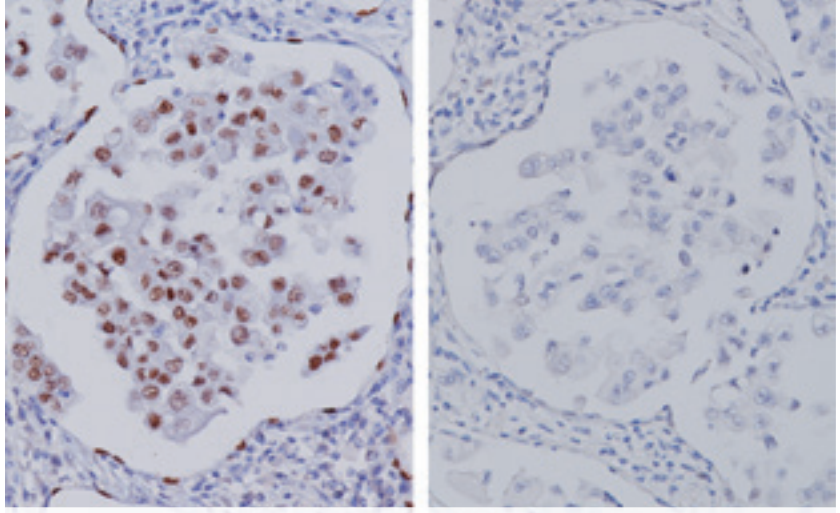
Mantle cell lymphoma stained with SOX11 (M)

SOX11 (M) IVD FFPE

Clone	SOX11-C1
Isotype	IgG1/kappa
Reactivity	
Control	Mantle cell lymphoma
Cat. No.	ACI 3120 A, C; API 3120 AA

SOX11 antibody (SRY (Sex Determining Region Y)-Box 11) is a member of the SOX family of transcription factors. The diagnosis of mantle cell lymphoma (MCL) can be difficult, especially when t(11;14) translocation and cyclin D1 overexpression are not detected. In such cases, the transcription factor SOX11 represents an important diagnostic marker as it is expressed in most MCLs and, in particular, in all cyclin D1(-) MCLs reported so far. The novel SOX11-C1 offers high sensitivity and improved specificity compared to previous SOX11 antibodies in IHC based detection of MCL. SOX11 expression has also been shown to be a favorable prognostic marker in glioblastoma.

1. Pusch C, *et al.* Hum Genet. 1998 Aug; 103(2):115-23. 2. Soldini D, *et al.* Am J Surg Pathol. 2014 Jan; 38(1):86-93. 3. Chen YH, *et al.* Mod Pathol. 2010 Jan; 23(1):105-12. 4. Nordström L, *et al.* BMC Cancer. 2012 Jun 27;12:269. 5. Korkolopoulou P, *et al.* Br J Cancer. 2013 May 28;108(10):2142-52.



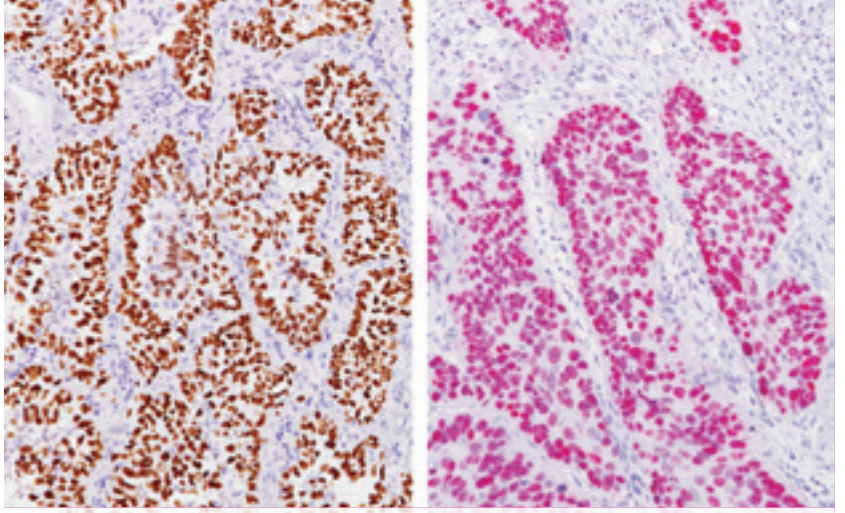
(L) Lung adenocarcinoma stained with TTF-1 [SPT24]; (R) TTF-1 [8G7G3/1]

TTF-1 [SPT24] IVD FFPE PREFERRED

Clone	SPT24
Isotype	IgG1/kappa
Reactivity	
Control	Lung adenocarcinoma
Cat. No.	ACI 3126 A, C; API 3126 AA; OAI 3126 T60

Thyroid transcription factor-1 (TTF-1) is mostly detected in primary lung adenocarcinomas and small cell carcinomas. TTF-1 can be very useful in lung cancers when used in a panel with Desmoglein 3, p40 and Napsin A antibodies. TTF-1 monoclonal antibodies 8G7G3/1 and SPT24 have been shown to have different sensitivities in lung adenocarcinomas (LADC) and lung squamous cell carcinomas (SqCC). Higher sensitivity for LADC vs. lung SqCC can be achieved with SPT24, compared to 8G7G3/1, while retaining specificity, by the use of a cut-off value and optimal antibody titer. Unlike clone 8G7G3/1, no cytoplasmic staining in lung cancers has been observed with clone SPT24.

1. Di Loreto C, *et al.* J Clin Pathol. 1997 Jan; 50(1):30-2. 2. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May; 20 (3):201-7. 3. Brown AF, *et al.* Arch Pathol Lab Med. 2013 Sep; 137(9):1274-81. 4. Masai K, *et al.* Appl Immunohistochem Mol Morphol. 2013 Jul; 21(4):292-7. 5. Matoso A, *et al.* Appl Immunohistochem Mol Morphol. 2010 Mar; 18(2):142-9. 6. Ordóñez NG. Appl Immunohistochem Mol Morphol. 2012 Oct; 20 (5):429-44. 7. Bejarano PA, Mousavi F. Arch Pathol Lab Med. 2003 Feb; 127(2):193-5.



(L) - Lung ADC / (R) - Lung SqCC stained with TTF-1 + p40 (cRM)

TTF-1 + p40 (cRM) IVD FFPE

Clone	8G7G3/1 + BC28/cRM
Isotype	IgG1 + IgG
Reactivity	
Control	Lung adenocarcinoma (TTF-1); lung SqCC (p40)
Cat. No.	API 3141DS AA

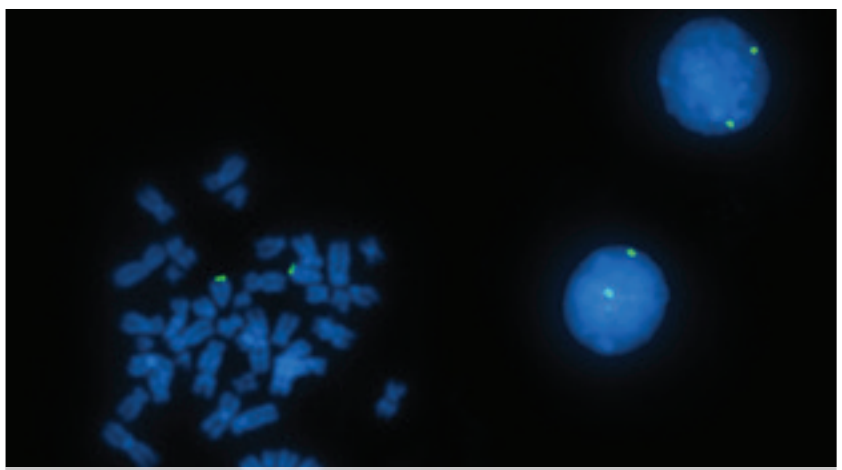
Thyroid transcription factor-1 (TTF-1) been shown to be a sensitive and specific marker in the majority of primary lung adenocarcinomas (ADC). Mouse monoclonal p40 [BC28] recognizes an epitope unique to p40 and has been shown to be sensitive and specific for lung SqCC. Chimeric rabbit monoclonal rabbit p40 [BC28/cRM] was designed to replicate the sensitivity and specificity of mouse monoclonal p40 [BC28] as a rabbit antibody that would be suitable for a double-stain procedure. In a side-by-side study on the same tissues, mouse monoclonal p40 [BC28] and chimeric rabbit monoclonal p40 [BC28/cRM] exhibited identical sensitivity for lung SqCC and specificity vs. lung ADC. Patent Pending.

1. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May;20 (3):201-7. 2. Mukhopadhyay S, Katzenstein AL. Am J Surg Pathol. 2011 Jan; 35(1):15-25. 3. Bishop JA, Sharma R, Illei PB. Hum Pathol. 2010 Jan; 41(1):20-4. 5. Brown AF, *et al.* Arch Pathol Lab Med. 2013 Sep;137(9):1274-81. 5. Bishop JA, *et al.* Mod Pathol. 2012 Mar; 25(3):405-15. 6. Tacha D, Bremer R, Haas T, Qi W. Arch Pathol Lab Med. 2014 Oct;138(10):1358-64. 7. Pelosi G, *et al.* J Thorac Oncol. 2012 Feb; 7(2):281-90.

HematoFISH™

Chronic Lymphocytic Leukemia (CLL)

Over the past decade, several prognostic fluorescence *in situ* hybridization (FISH) cytogenetic markers have shown great utility for chronic lymphocytic leukemia (CLL). A specific panel of defined chromosomal aberrations has been shown to have predictive value for patient course and outcome.[1,2] This panel includes probes for the detection of deletion at 13q14, trisomy of chromosome 12, deletion at 11q22, and deletion at 17p13, listed in order of decreasing survival time.[3,4] The variable region of the immunoglobulin heavy chain (IgH – 14q32) gene is another predictive marker useful for CLL, showing a high correlation between non-mutated IgH status and poor survival and, correspondingly, better prognosis in cases with mutations in IgH.[5,6,7] CLL with a deletion at 6q21-q23 is associated with elevated atypical morphology, intermediate incidence of IgH hypermutation, and overall intermediate risk.[8]



LAMP1 (13q34) Green FISH Probe (HFA 7281) hybridized on normal blood sample

1. Döhner H, *et al.* N Engl J Med. 2000 Dec 28;343(26):1910-6. 2. Oscier DG. Blood Rev. 1994 Jun;8(2):88-97. 3. Chiorazzi N, *et al.* Hematology Am Soc Hematol Educ Program. 2012;2012:76-87. 4. Mertens D, Stilgenbauer S. J Clin Oncol. 2014 Mar 20;32(9):869-72. 5. Nelson BP, *et al.* Am J Clin Pathol. 2007 Aug;128(2):323-32. 6. Damle RN, *et al.* Blood. 1999 Sep 15;94(6):1840-7. 7. Hamblin TJ, *et al.* Blood. 1999 Sep 15;94(6):1848-54. 8. Cuneo A, *et al.* Leukemia. 2004 Mar;18(3):476-83.

HematoFISH™	Color	Cat. No.
D13S25 (13q14.3) Orange	●	HFA 7266 A
D13S319 (13q14.2) Orange	●	HFA 7267 A
RB1 (13q14.2) Orange	●	HFA 7298 A
RB1 (13q14.2) Green	●	HFA 7315 A
LAMP1 (13q34) Green	●	HFA 7281 A
LAMP1 (13q34) Aqua	●	HFA 7282 A
Copy Control 12 Green	●	HFA 7210 A
Copy Control 12 Aqua	●	HFA 7211 A
ATM (11q22.3) Orange	●	HFA 7262 A
TP53 (17p13) Orange	●	HFA 7306 A
IgH (14q32) Constant Orange	●	HFA 7278 A
IgH (14q32) Variable Green	●	HFA 7279 A
CCND1 (11q13) Orange	●	HFA 7260 A
MYB (6q23) Orange	●	HFA 7283 A
6q21 Green	●	HFA 7309 A

Primary Antibodies

Antibodies By Letter

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, p40 (M), SOX10 (M), p63, PAX8 (M) and Uroplakin II, 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 stainers, the intelliPATH™ and the ONCORE as well as 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 addition of 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.

ONCORE Antibodies

ONCORE antibodies are ready-to-use antibodies in pre-labeled ONCORE vials. These are ready to be used on the ONCORE Automated Slide 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
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, MASH1
Breast	ER, PR, CK5/14 + p63 + CK7/18, CK5+p63, CK8/18, CK7, Calponin, E-cadherin, p120 + E-cadherin, GATA-3, GCDFP-15, Mammaglobin, c-erbB-2
Colon	CDX2, CK20, CDH17, CEA, Villin, MLH-1, MSH2, MSH6, PMS2
Esophagus	p40, p63, CK5 + CK14, HMW CK (34ßE12)
Germ Cell	SALL4, OCT3/4, PLAP, AFP, CD117, hCG
Infectious	*Helicobacter pylori*, Spirochete, Cat Scratch, CMV, Herpes Simplex 1 & 2, TB
Kidney	PAX8, WT-1, CD10, Amyloid A, Amyloid P
Liver	Arginase-1, Glypican-3, Hepatic Specific Antigen, CK19, MOC-31, AFP
Lung	Napsin A, TTF-1, Desmoglein 3, p40, CK5, p63, TRIM29, CK7, Surfactant apoprotein-A, SOX11, MASH1
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, MUM1, CD11C, CD71, CD61, CD33, CD103
Macrophage	CD68, CD163
Melanoma	S100, SOX10, Pan Melanoma (HMB45 + Melan A/MART-1 + Tyrosinase), MiTF
Mesothelioma	CK5, D2-40, MOC31, Ber-EP4, Calretinin, Mesothelin
Neuroendocrine	Chromogranin A, Synaptophysin, CD56, NSE, Neurofilament, CD57, CD56, CK20, MASH1
Ovary	PAX8, WT-1, CA125, CK7, CDX2, CD117, CDH17
Pancreas	Synaptophysin, Chromogranin, NSE
Pituitary	TSH, FSH
Prognostic	Ki-67, pHH3, EGFR, D2-40, CD8, FOXP3, PD-1, CD103, COX2, Folate Receptor Alpha, HIF-1 alpha, p53, PTEN, Topoisomerase II alpha, PD-L1
Prostate	AMACR, 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, Cytokeratins, Ber-EP4, CD8, CD4, SOX10, CD34, Adipophillin, IgG4
Thyroid	Thyroglobulin, TTF-1, Napsin A, Calcitonin, Galactin 3
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/SOX10	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 / Desmoglein 3	Tyrosinase	Desmin
CD3	CK7 / CK19	MART-1	Myogenin
CD15 / CD30	CDX2 / CK20 / CDH17	Pan Melanoma	CD31
ALKc	TTF-1 / Napsin A	Microphthalmia	CD34
Kappa / Lambda	ER/PR	Vimentin	CD99
CD68 / CD163	c-erbB-2		ERG
CD10	PSA / NKX3.1 / ERG / Prostein		
Cyclin D1	Synaptophysin		
CD4 / CD8	PAX8		
Bcl-2 / Bcl-6	SALL4		
CD7	CD56 / MASH1		
TdT	HSA / Arginase-1		
MUM1 / CD138	Glypican-3		
	GATA-3 / Uroplakin II		

Antibody Panels

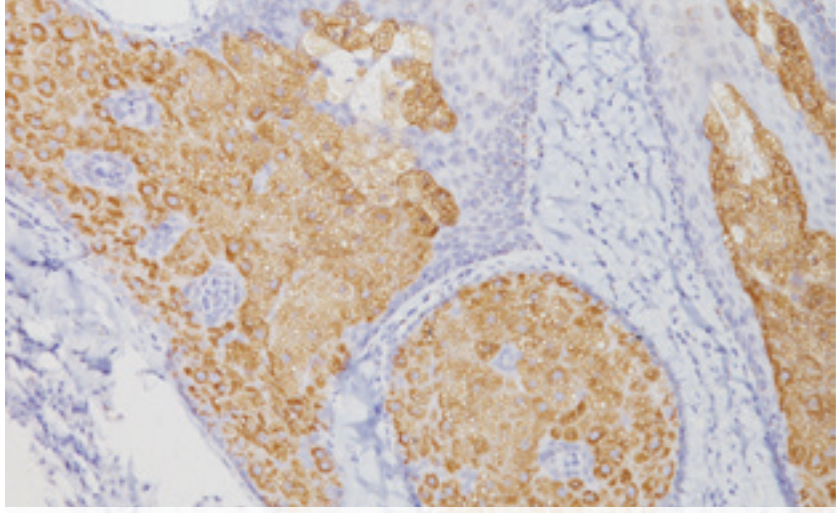
Carcinoma Panel	Markers
Squamous Cell Carcinoma	Desmoglein-3 / CK5 / p40 / p63 / SOX2
Adenocarcinoma	LMW CK (CK8/18) / CK7 / CK19
Lung, Pancreas, Breast & Ovarian	CK7 (Screener)
Gastrointestinal, Stomach & Colon	CK20 / CDX2 / CDH17
Lung	TTF-1 / Napsin A / p40 / Desmoglein-3 / CK5
Prostate	PSA / NKX3.1 / ERG / Prostein
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 / MASH1

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

Melanoma Panel	Tertiary Melanoma Panel (phenotype)
S100	
SOX10	
HMB45	MiTF (Melanocytic)
Pan Melanoma-2	NGFR (Neurotropic)
MART-1 (Melan A)	SOX10 (Spindle cell)
Tyrosinase	
Microphthalmia (MiTF)	

Mesothelioma Panel	
CK5	Ber-EP4
MOC31	Calretinin
Mesothelin	BG8
D2-40	

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



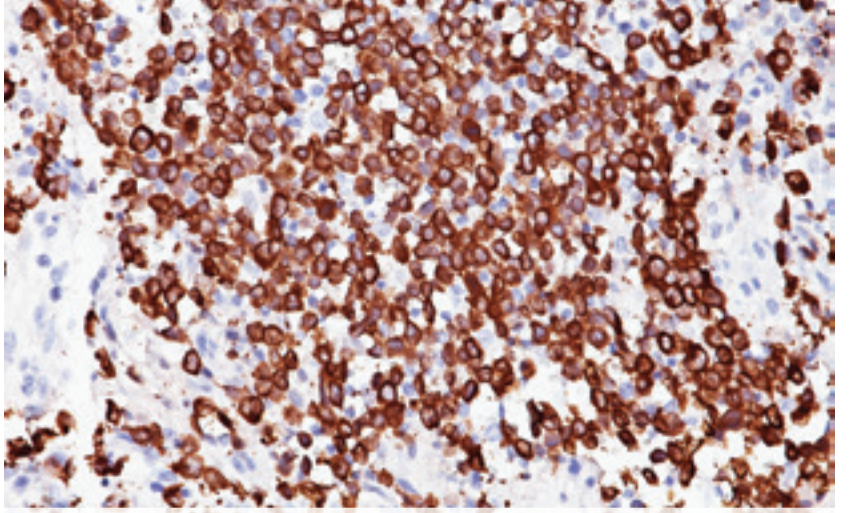
Sebaceous carcinoma stained with Adipophilin

Adipophilin IVD FFPE

Clone	N/A
Isotype	IgG
Reactivity	
Control	Skin
Cat. No.	ACI 3138 A; API 3138 AA

Adipophilin (also known as PLIN2) has been shown to detect the expression of adipocyte differentiation-related protein (ADRP/ADFP) in sebocytes and sebaceous lesions. Sebaceous carcinoma is a relatively uncommon cutaneous malignancy which can mimic other malignant neoplasms as well as benign processes. Adipophilin may be a useful marker in the identification of intracytoplasmic lipids, as seen in sebaceous lesions. It is especially helpful in identifying intracytoplasmic lipid vesicles in poorly differentiated sebaceous carcinomas. In addition, adipophilin has shown strong expression in the majority of Burkitt lymphomas and to be upregulated in lung adenocarcinoma.

1. Heid HW, *et al.* Cell Tissue Res. 1998 Nov; 294(2):309-21. 2. Ostler DA, *et al.* Mod Pathol. 2010 Apr; 23(4):567-73. 3. Milman T, Schear MJ, Eagle RC Jr. Ophthalmology. 2014 Apr; 121(4):964-71. 4. Ambrosio MR, *et al.* PLoS One. 2012; 7(8):e44315. 5. Zhang XD, *et al.* Int J Clin Exp Med. 2014 Apr 15; 7(4):1190-6.



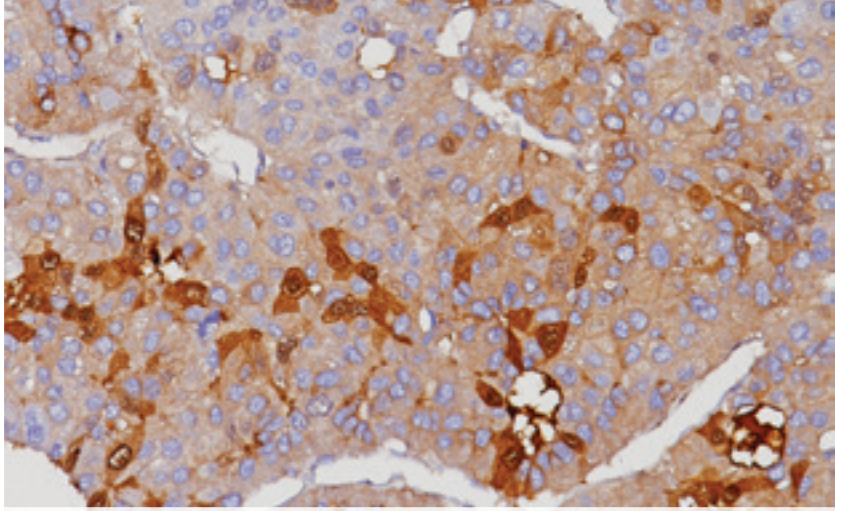
Anaplastic large cell lymphoma stained with ALK [5A4]

ALK [5A4] IVD FFPE

Clone	5A4
Isotype	IgG1
Reactivity	
Control	Anaplastic large cell lymphoma
Cat. No.	ACI 3041 A, B; API 3041 AA; OAI 3041 T60

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.



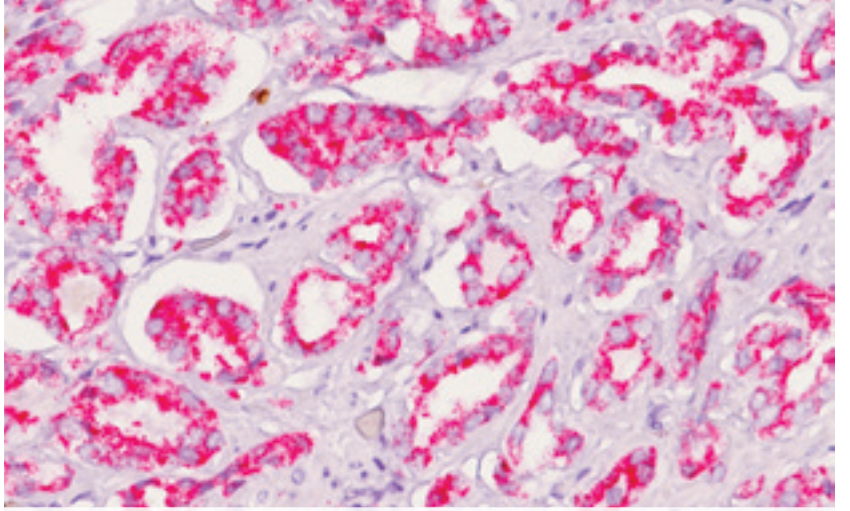
Liver cancer stained with Alpha-1-Fetoprotein (AFP)

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.



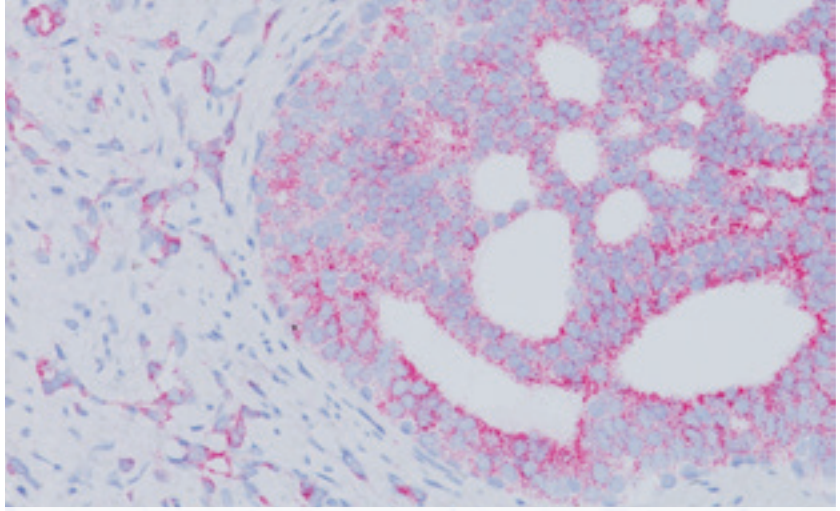
Prostate cancer stained with AMACR (RM)

AMACR (RM) ASR FFPE

Clone	13H4
Isotype	IgG
Reactivity	N/A
Control	N/A
Cat. No.	APA 3024 AA; OAA 3024 T60

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, 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.



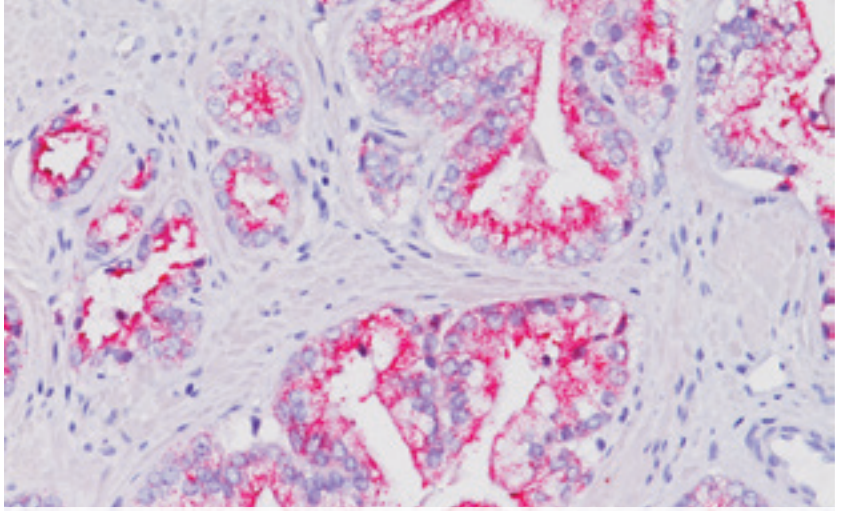
Prostate cancer stained with AMACR (RM), 2X

AMACR (RM), 2X ASR FFPE

Clone	13H4
Isotype	IgG
Reactivity	N/A
Control	N/A
Cat. No.	APA 3016 AA, H supernova

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.



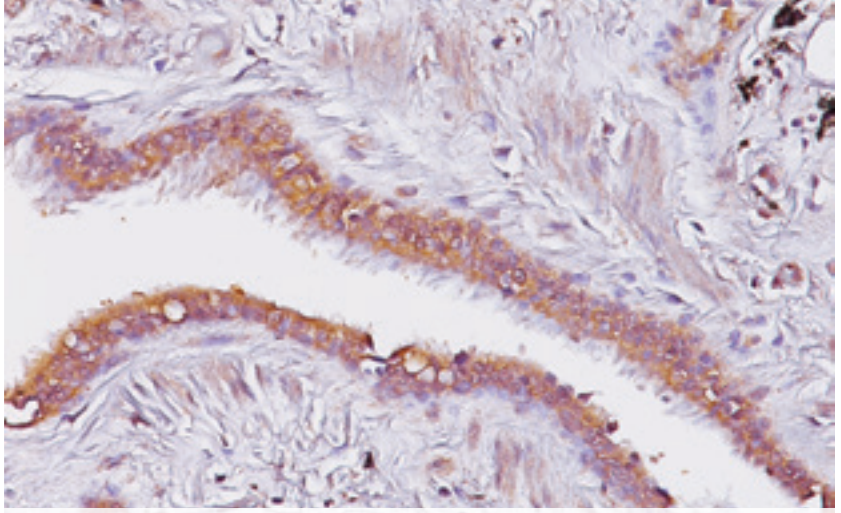
Prostate cancer stained with AMACR (RM), 2X

AMACR (RM), 2X ASR FFPE

Clone	13H4
Isotype	IgG
Reactivity	N/A
Control	N/A
Cat. No.	OAA 3125 G10 supernova

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. AMACR was initially identified from a cDNA library as a gene that is overexpressed in human prostate cancer; with little or no expression in normal or benign prostate glands. In immunohistochemistry, AMACR has been shown to be a marker of prostatic adenocarcinoma. Additionally, prostate glands involved in prostatic intraepithelial neoplasia (PIN), have been found to express AMACR; whereas AMACR 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 15; 60(6):1677-82. 3. Rubin MA, *et al.* JAMA. 2002 Apr 3; 287 (13):1662-70. 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.



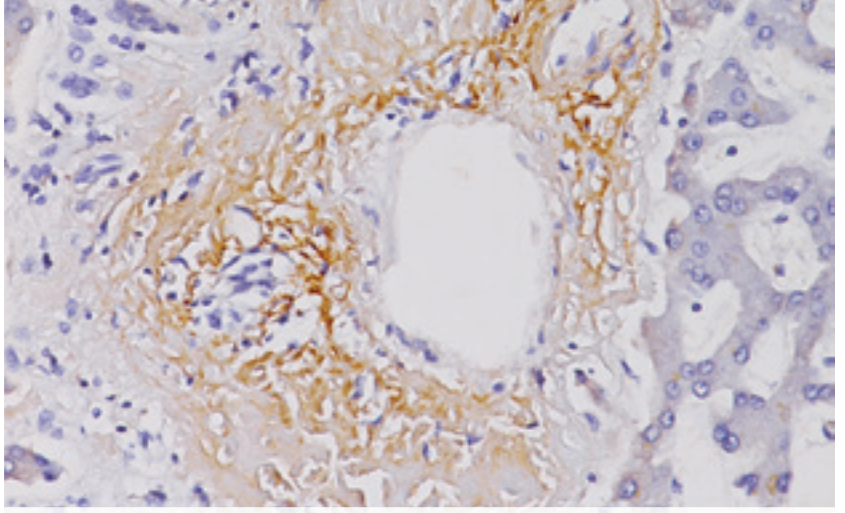
Lung tissue stained with Amyloid A

Amyloid A IVD FFPE

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.



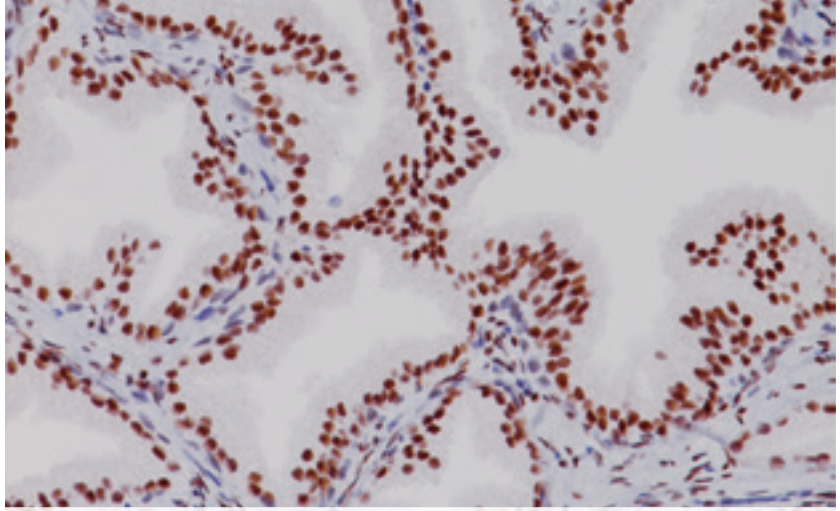
Stomach tissue stained with Amyloid P

Amyloid P IVD FFPE

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.



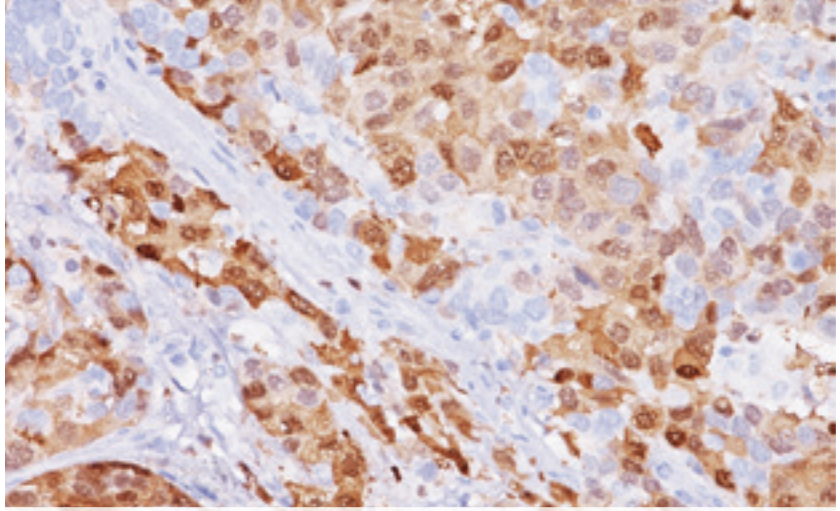
Normal prostate gland stained with Androgen Receptor

Androgen Receptor IVD FFPE

Clone	AR441
Isotype	IgG1
Reactivity	
Control	Prostate cancer or normal prostate
Cat. No.	ACI 109 A; API 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.



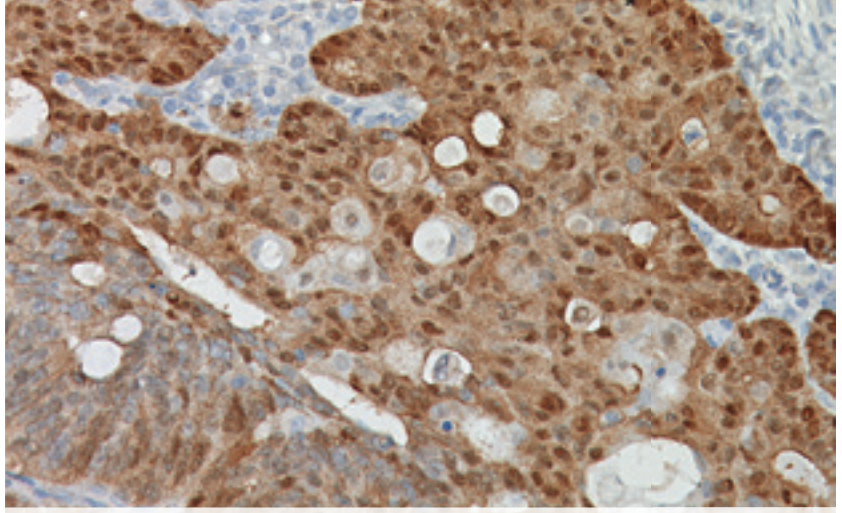
Hepatocellular carcinoma stained with Arginase-1

Arginase-1 IVD FFPE

Clone	EP261
Isotype	IgG
Reactivity	
Control	Normal human liver
Cat. No.	ACI 3058 A, B; API 3058 AA; AVI 3058 G; OAI 3058 T60

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.



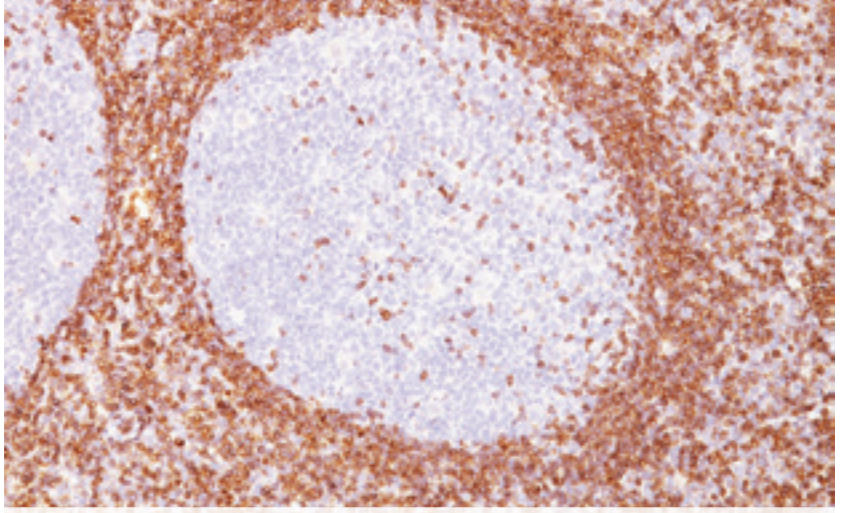
Colon cancer stained with β-Catenin

β-Catenin IVD FFPE

Clone	14
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.



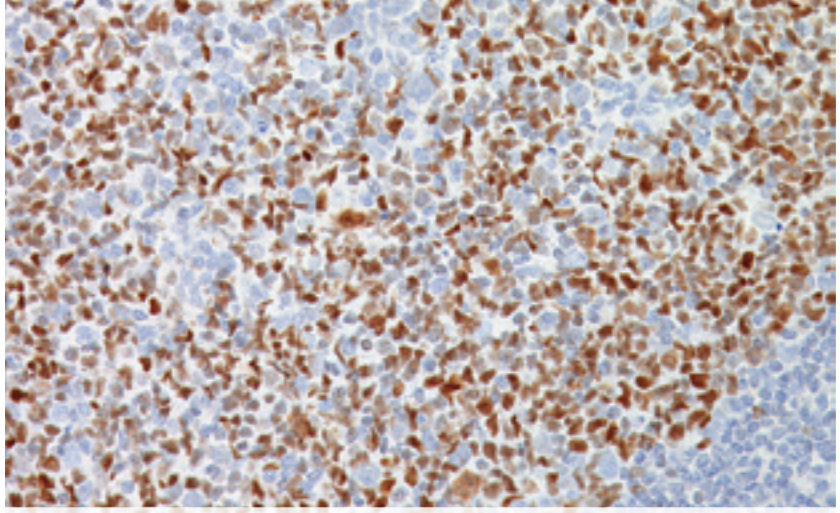
Tonsil stained with Bcl-2

Bcl-2 IVD FFPE

Clone	100/D5
Isotype	IgG1/kappa
Reactivity	
Control	Follicular lymphomas or tonsil
Cat. No.	CM 003 A, C; PM 003 AA; IP 003 G10; OAI 003 T60

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.



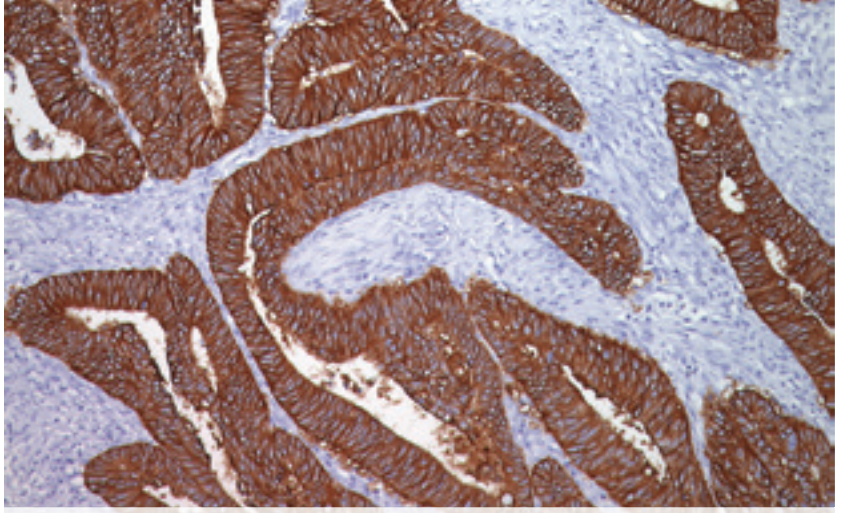
Tonsil stained with Bcl-6 [LN22]

Bcl-6 [LN22] IVD FFPE

Clone	LN22
Isotype	IgG2b
Reactivity	
Control	Tonsil or follicular lymphoma
Cat. No.	CM 410 A, C; PM 410 AA; OAI 410 T60

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.

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.



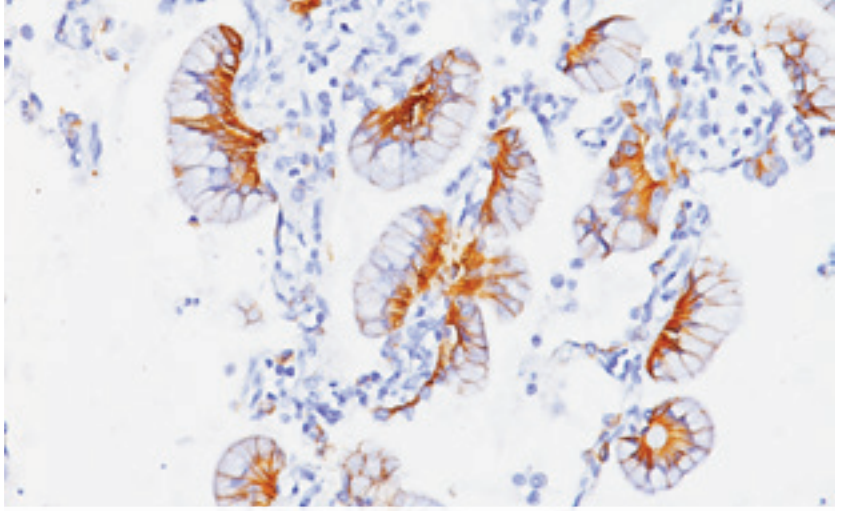
Breast cancer stained with Ber-EP4

Ber-EP4 IVD FFPE

Clone	Ber-EP4
Isotype	IgG1
Reactivity	
Control	Colon or breast cancer
Cat. No.	PM 107 AA, H; IP 107 G10; OAI 107 T60

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.



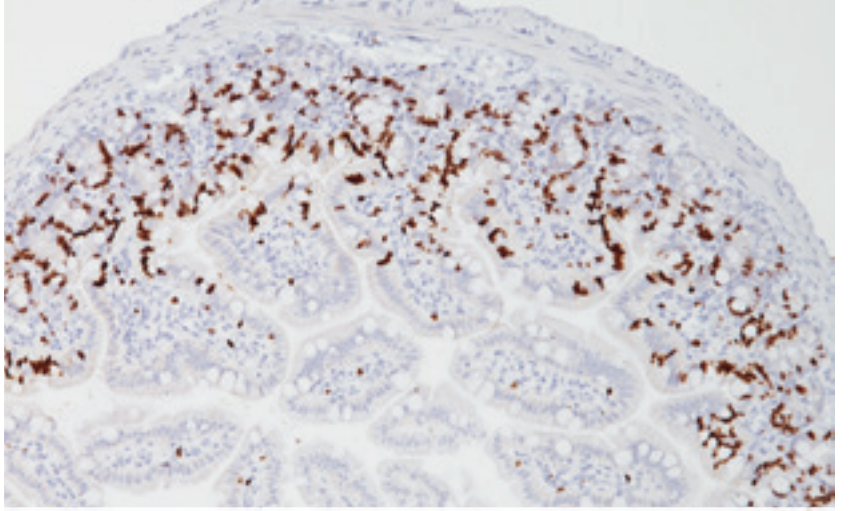
Lung cancer stained with Ber-EP4 + BG8

Ber-EP4 + BG8 IVD FFPE

Clone	Ber-EP4 + F3
Isotype	IgG1 + IgM
Reactivity	
Control	Colon cancer, lung adenocarcinoma
Cat. No.	API 3112 AA

Ber-EP4 labels epithelial tissues but does not label mesothelial cells. Ber-EP4 can assist in differentiating epithelial pleural mesotheliomas from adenocarcinomas. Ber-EP4 appears to stain all adenocarcinomas, including lung, with exceptions for breast and kidney. BG8 (Blood Group Lewis Y) [F3] detects the Lewis Y antigen. BG8 was negative for almost all epithelial malignant mesotheliomas (91% sensitivity). When trying to distinguish epithelioid mesothelioma from adenocarcinoma, BG8 appears to be very sensitive for breast carcinoma. Studies show specificity of BG8 and Ber-EP4 for adenocarcinoma was 98% and 95%, respectively. A cocktail of Ber-EP4 and BG8 may be a useful tool to distinguish adenocarcinoma from mesothelioma.

1. Sheibani K, *et al.* Am J Surg Pathol. 1991 Aug; 15 (8):779-84. 2. Ordóñez NG. Am J Clin Pathol. 1998 Jan; 109(1):85-9. 3. Kao SC, *et al.* Pathology. 2011 Jun;43(4):313-7. 4. Yaziji H, *et al.* Mod Pathol. 2006 Apr; 19(4):514-23.



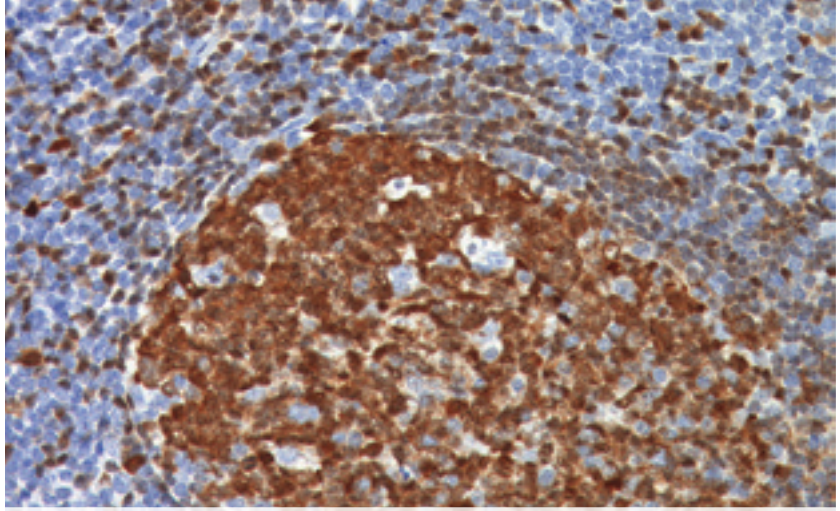
Bromodeoxyuridine positive mouse intestine stained with BrdU

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.



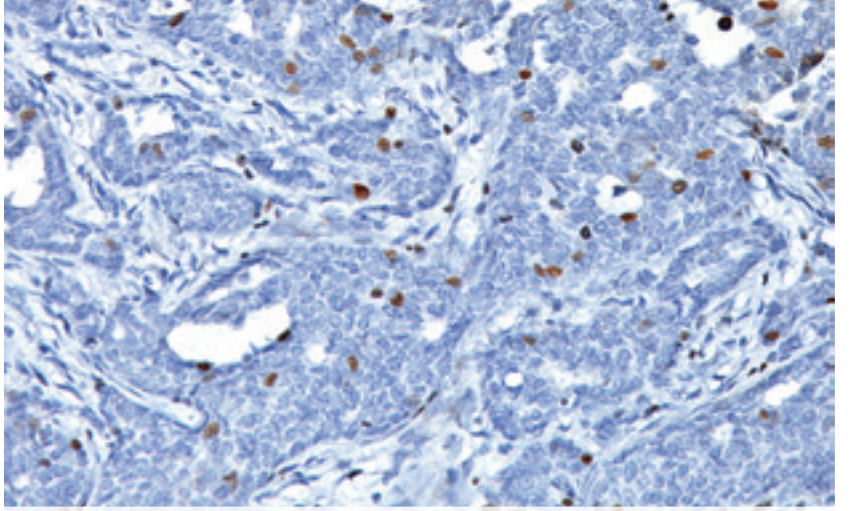
Tonsil stained with BOB-1

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.



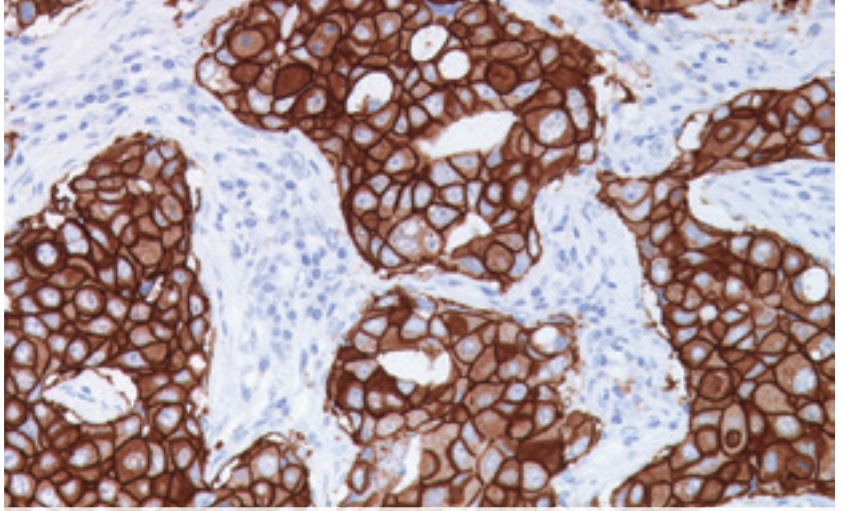
Breast cancer stained with BRCA-1

BRCA-1 IVD FFPE

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.



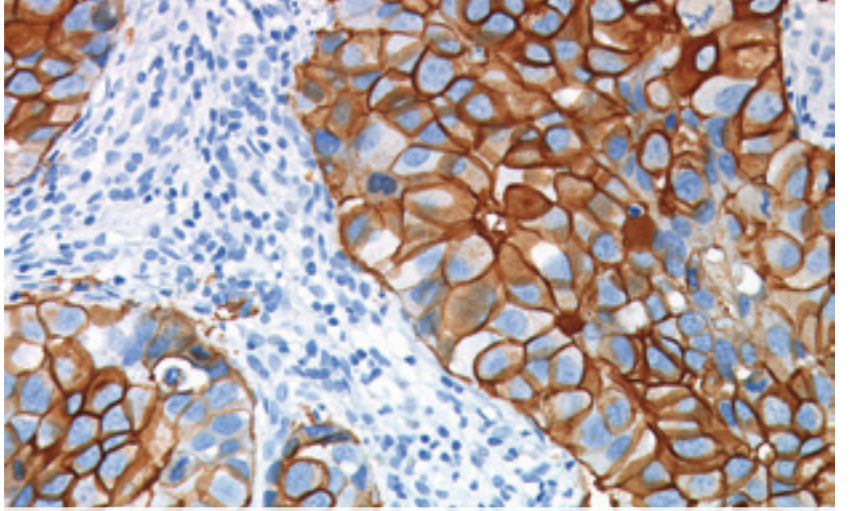
Breast cancer stained with c-erbB-2 [CB11]

c-erbB-2 [CB11] ASR FFPE

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.



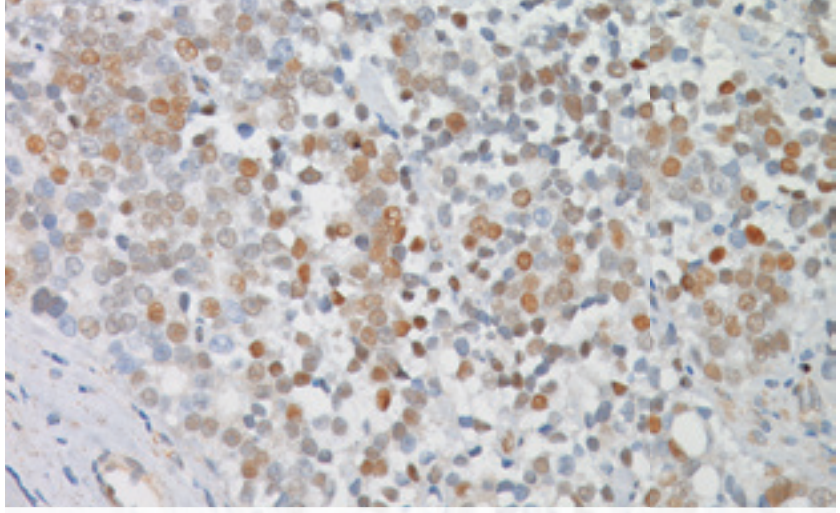
Breast cancer stained with c-erbB-2/HER2

c-erbB-2/HER2 ASR FFPE PREFERRED

Clone	EP3
Isotype	IgG
Reactivity	N/A
Control	N/A
Cat. No.	ACA 342 A, B; APA 342 AA; OAA 342 T60

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.



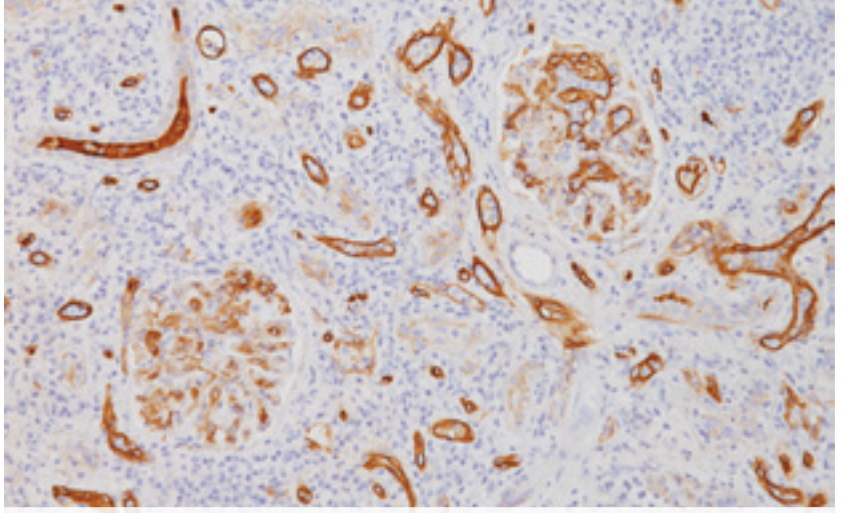
Prostate cancer stained with c-Myc

c-Myc IVD FFPE

Clone	EP121
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



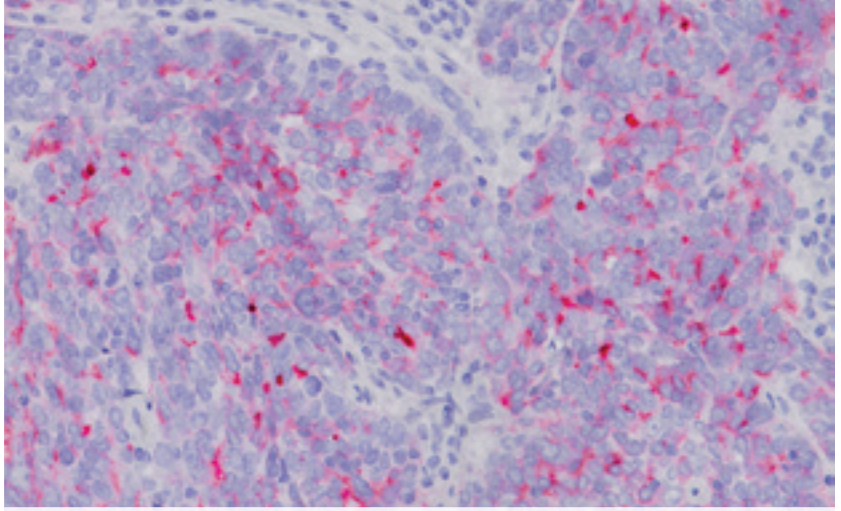
Kidney transplant tissue stained with C4d (RM)

C4d (RM) IVD FFPE

Clone	A24-T
Isotype	IgG
Reactivity	
Control	Renal allograft tissue
Cat. No.	ACI 3134 A, B; API 3134 AA

C4d is a stable split product remnant of classical complement activation which becomes covalently bound to endothelium and basement membrane. Capillary deposition of complement C4d has been suggested to be a valuable marker for humoral rejection and endothelial C4d deposition in kidney allograft has been associated with inferior graft outcome. The detection of C4d in formalin-fixed, paraffin-embedded tissue has been documented to be valuable in the evaluation of various inflammatory diseases. Membranous nephropathy (MN) is the most common cause of nephrotic syndrome in adults and C4d immunohistochemical staining has been shown to be a very useful tool for MN.

1. Troxell ML, *et al.* Clin J Am Soc Nephrol. 2006 May; 1(3):583-91. 2. Regele H, *et al.* Nephrol Dial Transplant. 2001 Oct; 16(10):2058-66. 3. Böhmig GA, *et al.* J Am Soc Nephrol. 2002 Apr; 13(4):1091-9. 4. Magro CM, Dyrsen ME. J Am Acad Dermatol. 2008 Nov; 59(5):822-33. 5. Espinosa-Hernández M, *et al.* Nefrologia. 2012 May 14; 32(3):295-9.



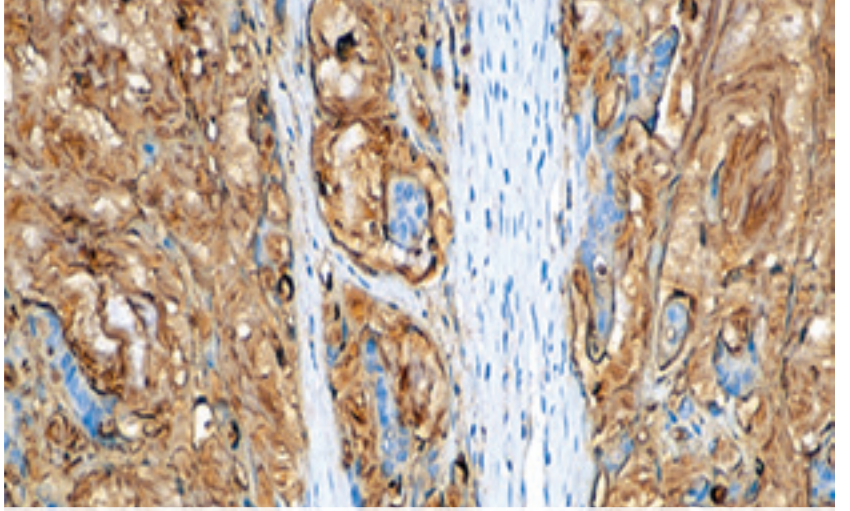
Ovarian cancer stained with CA 125

CA 125 IVD FFPE

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.



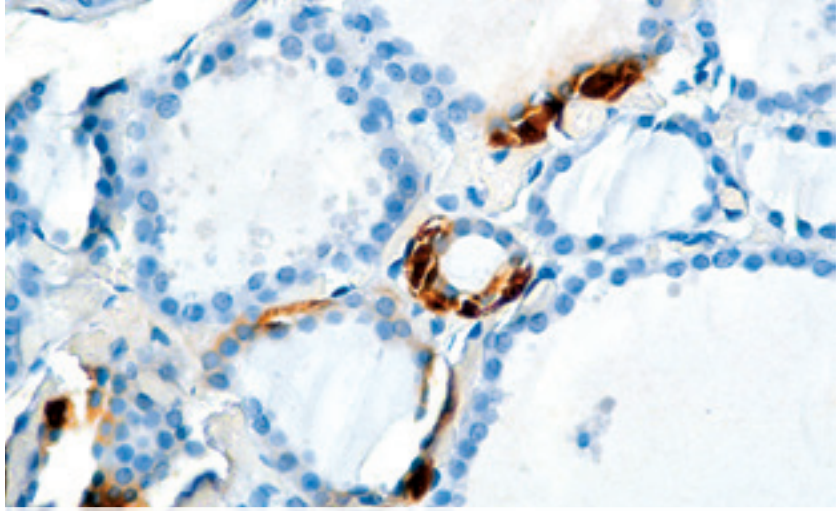
Breast cancer stained with CA 19-9

CA 19-9 IVD FFPE

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.



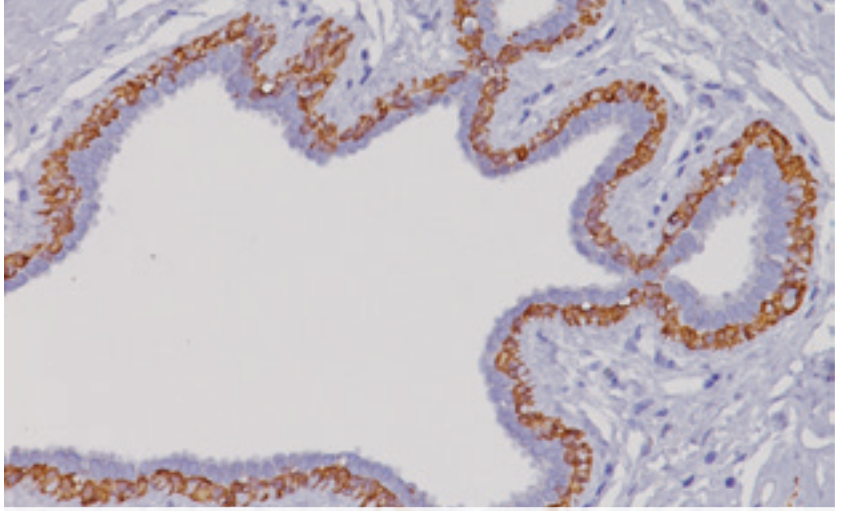
Thyroid stained with Calcitonin

Calcitonin IVD FFPE

Clone	N/A
Isotype	N/A
Reactivity	
Control	Medullary carcinoma or 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, Sarcević 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.



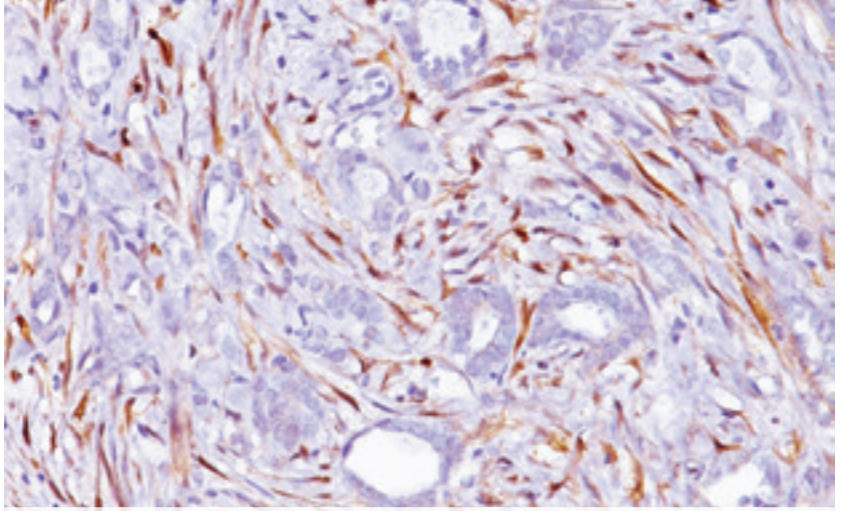
Normal breast gland stained with Calponin

Calponin IVD FFPE

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.



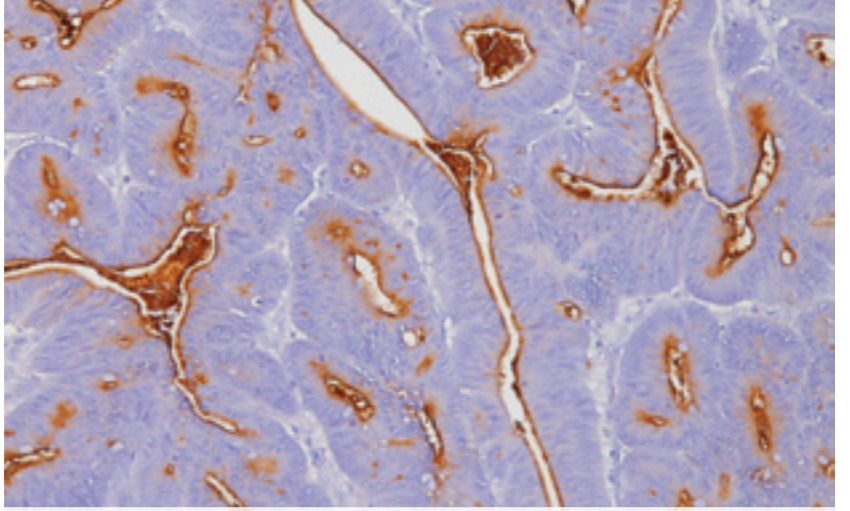
Mesothelioma stained with Calretinin

Calretinin IVD FFPE

Clone	N/A
Isotype	N/A
Reactivity	
Control	Mesothelioma
Cat. No.	CP 092 A, C; PP 092 AA; IP 092 G10; OAI 092 T60

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.



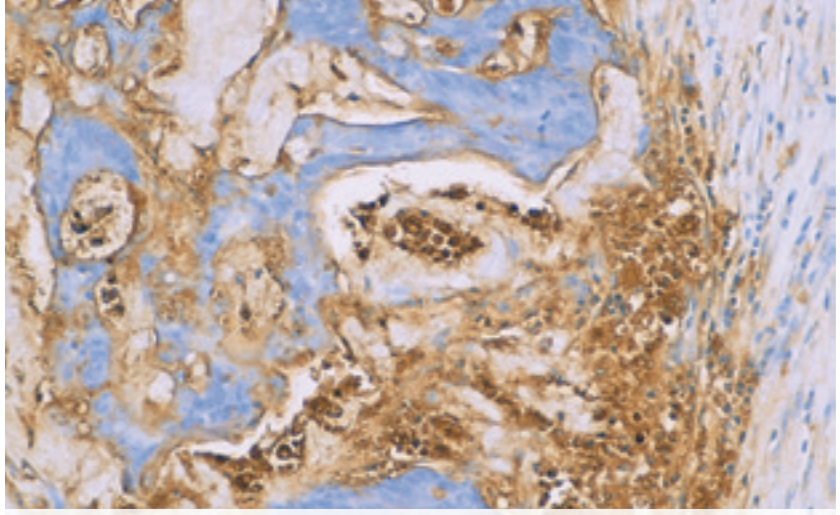
Colon cancer stained with CEA (M)

Carcinoembryonic Antigen (CEA {M}) IVD FFPE 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 glycophosphatidyl 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. Screaton 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.



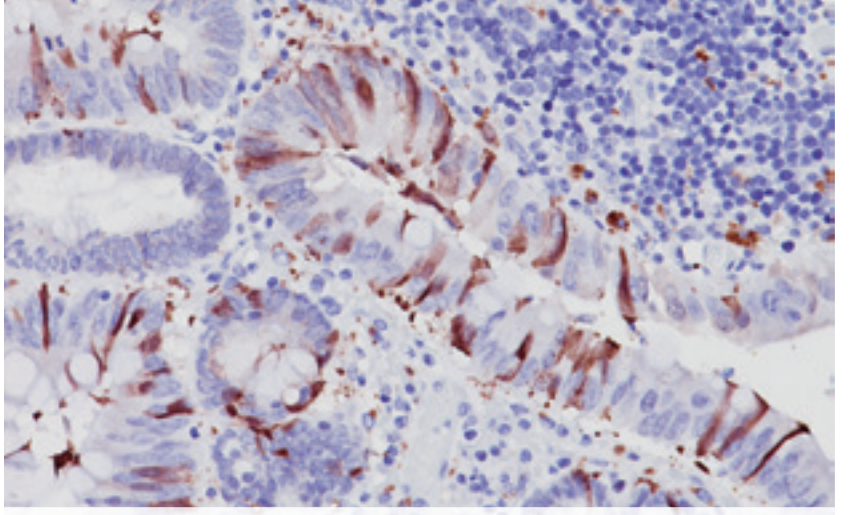
Colon cancer stained with CEA (P)

Carcinoembryonic Antigen (CEA {P}) IVD FFPE

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 (non-specific 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.



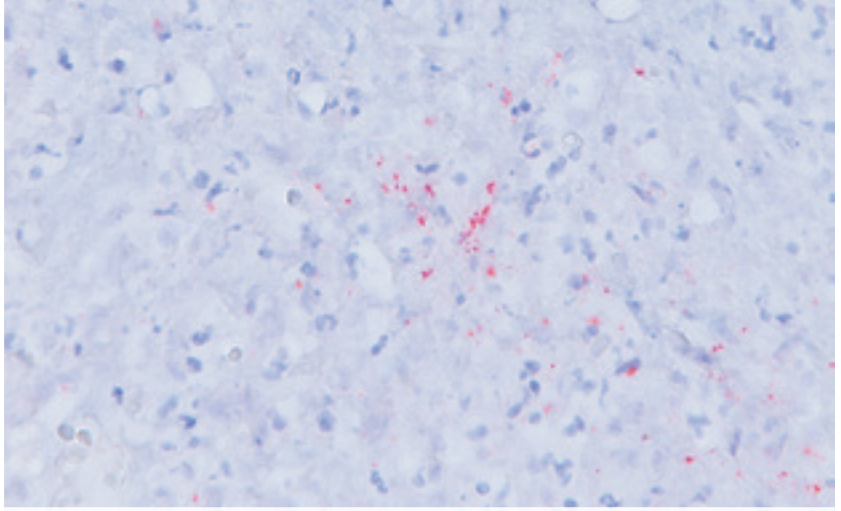
Colon cancer stained with Caspase-3 (Cleaved)

Caspase-3 (Cleaved) IVD FFPE

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 (cysteinyl-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. Chrysomali E, *et al.* Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2003 Nov; 96(5):566-72.



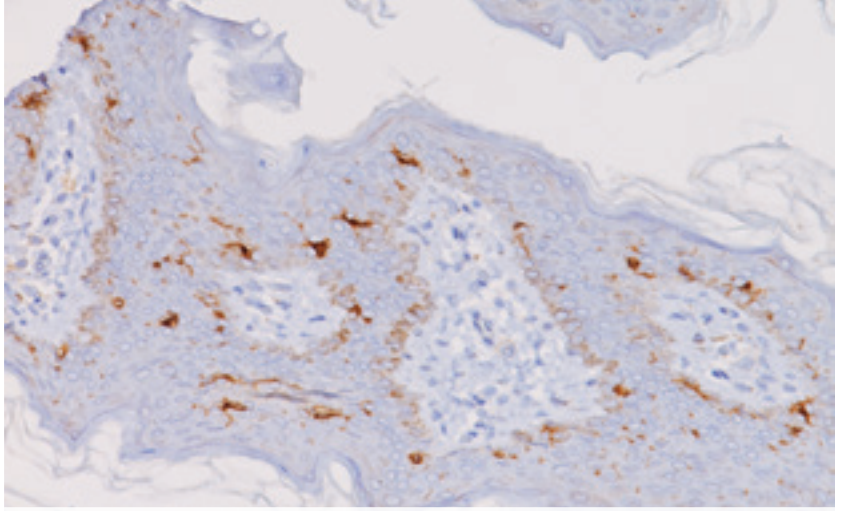
Infected lymph node stained with Cat Scratch Fever

Cat Scratch Fever (*Bartonella henselae*) IVD FFPE

Clone	H2A10
Isotype	IgG2b
Reactivity	
Control	*Bartonella henselae* infected lymph node
Cat. No.	ACI 144 A, C; API 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.



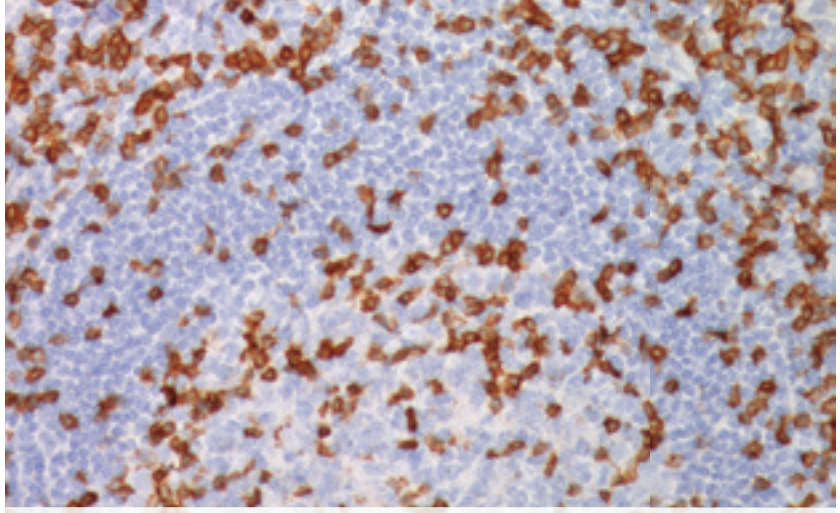
Normal skin stained with CD1a [O10]

CD1a [O10] IVD FFPE

Clone	O10
Isotype	IgG1/kappa
Reactivity	
Control	Skin
Cat. No.	ACI 3158 A, B; API 3158 AA

CD1a is a protein of 43 - 49 kDa and is expressed on dendritic cells and cortical thymocytes. CD1a [O10] staining has been shown to be useful in the differentiation of Langerhans cells from interdigitating cells. It has also proved useful for phenotyping Langerhans cell histiocytosis. CD1a may be a novel biomarker for Barrett's metaplasia, and its expression may help to predict the prognosis of this pathology.

1. Krenacs L, *et al.* J Pathol. 1993 Oct;171(2):99-104. 2. Fivenson DP, *et al.* J Cutan Pathol. 1995 Jun;22(3):223-8. 3. Emile JF, *et al.* Am J Surg Pathol. 1995 Jun;19(6):636-41. 4. Cappello F, *et al.* Br J Cancer. 2005 Mar 14;92(5):888-90.



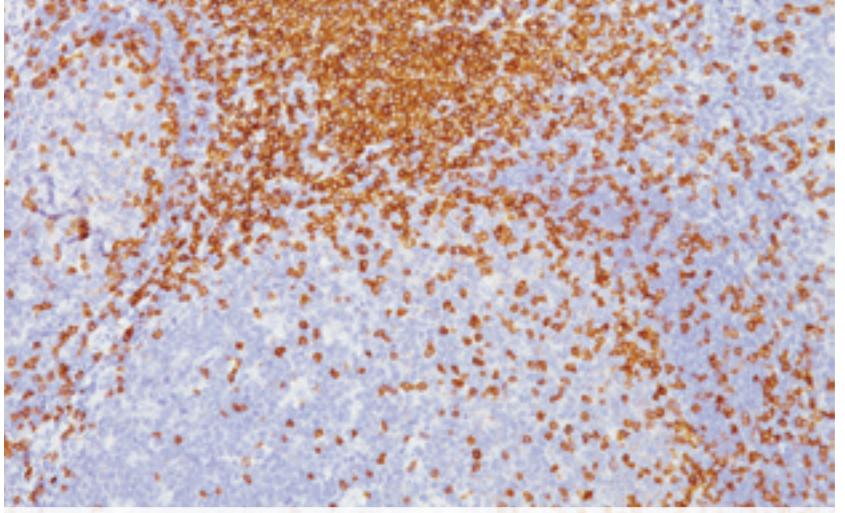
Tonsil stained with CD3

CD3 IVD FFPE

Clone	EP41
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.



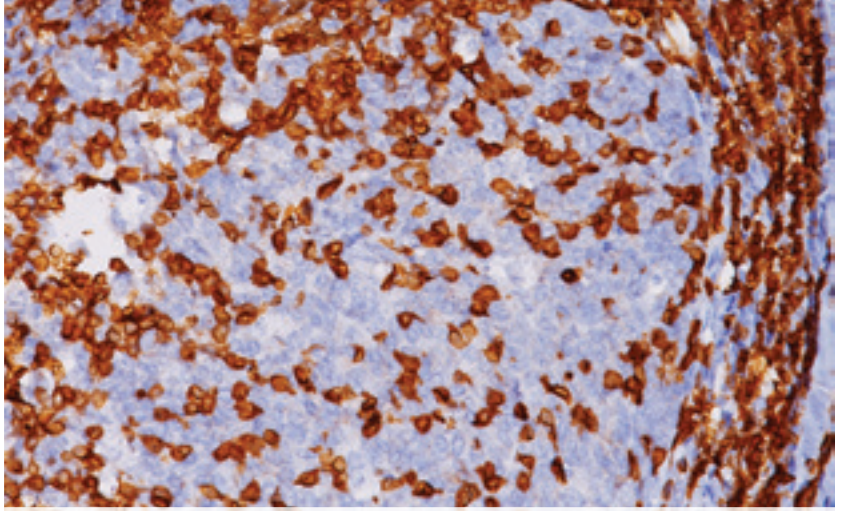
Tonsil stained with CD3 (P)

CD3 (P) IVD FFPE

Clone	N/A
Isotype	N/A
Reactivity	
Control	Tonsil or T-cell lymphoma
Cat. No.	CP 215 A, 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.



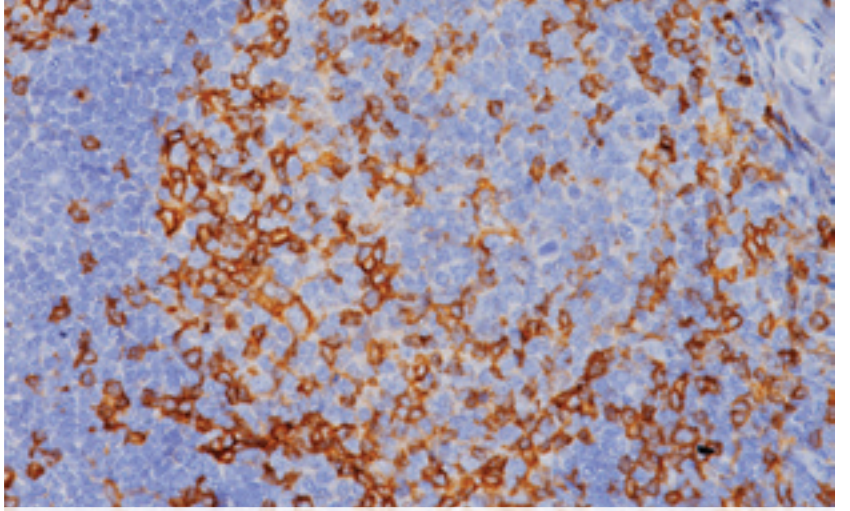
Tonsil stained with CD3 [LN10]

CD3 [LN10] IVD FFPE PREFERRED

Clone	LN10
Isotype	IgG1
Reactivity	
Control	Tonsil
Cat. No.	ACI 3152 A, C; API 3152 AA

CD3 is expressed throughout the T-cell differentiation process. CD3 is a highly specific and sensitive T-cell lineage marker, making it ideal for the immunophenotypic analysis of lymphohaematopoietic malignancies. Notable exceptions include some of the more aggressive large T-cell lymphomas and CD30 (Ki-1) positive anaplastic large cell lymphomas, which may not express detectable antigen. CD3 [LN10] has demonstrated optimal staining when compared to other CD3 clones including PS1, F7.2.38 and SP7. A monoclonal antibody to human CD3 is regarded as a reliable pan T-cell antibody used in the immunophenotyping of lymphomas in paraffin sections.

1. Campana D, *et al.* J Immunol. 1987 Jan; 138(2):648-55. 2. Cabeçadas JM, Isaacson PG. Histopathology. 1991 Nov; 19(5):419-24. 3. Steward M, *et al.* Histopathology. 1997 Jan; 30(1):16-22. 4. "CD3 Assessment Run 37 2013." NordiQC. 04 Dec. 2013. Web. 16 June 2015.



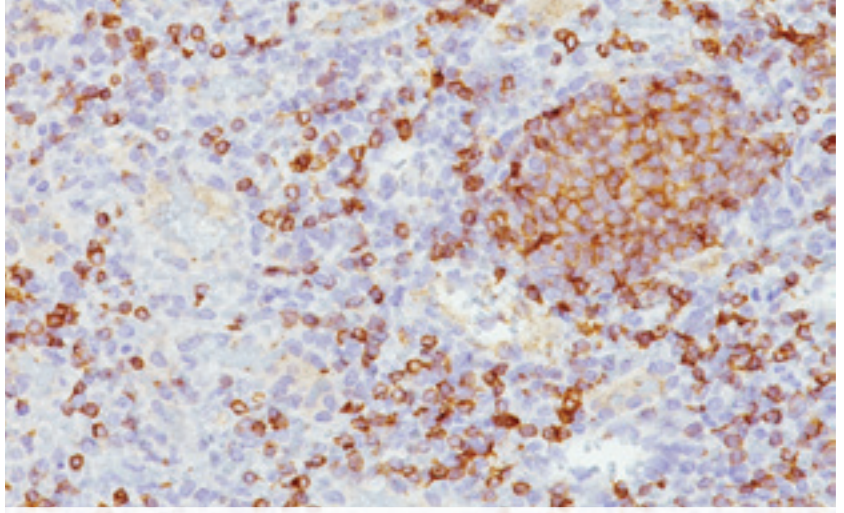
Tonsil stained with CD4 [4B12]

CD4 [4B12] IVD FFPE

Clone	4B12
Isotype	IgG1/kappa
Reactivity	
Control	Tonsil
Cat. No.	ACI 3148 A, C; API 3148 AA

CD4 is expressed on normal thymocytes, T-helper cells, the majority of mature peripheral T cells, a subset of suppressor or cytotoxic T cells and the majority of T-cell lymphomas, including *mycosis fungoides*. CD4 has been used in lymphoma panels that include CD3, CD5, CD8, CD7 and TIA-1. A panel consisting of CD4, CD2 and CD56 was used to help identify agranular natural killer cell lymphoma of the skin. CD4 may be useful in HIV-infected individuals, as HIV infection depletes intestinal CD4(+) T cells and has a strong association with the level of systemic CD4(+) T cell activation. Tumor infiltrating CD4 T cells may also be a prognostic factor for the strategy of early antitumor immunity.

1. Leong A S-Y, Cooper K and Leong F J W-M eds. Greenwich Medical Media Ltd: p. 65-6. 2. Izban KF, Hsi ED, Alkan S. Mod Pathol. 1998 Oct; 11(10):978-82. 3. Macon WR, Salhany KE. Am J Clin Pathol. 1998 May; 109(5):610-7. 4. Uchiyama N, *et al.* Am J Dermatopathol. 1998 Oct; 20(5):513-7. 5. Gordon SN, *et al.* J Immunol. 2010 Nov 1; 185(9):5169-79. 6. Rathore AS, *et al.* Indian J Med Res. 2014 Sep; 140(3):361-9.



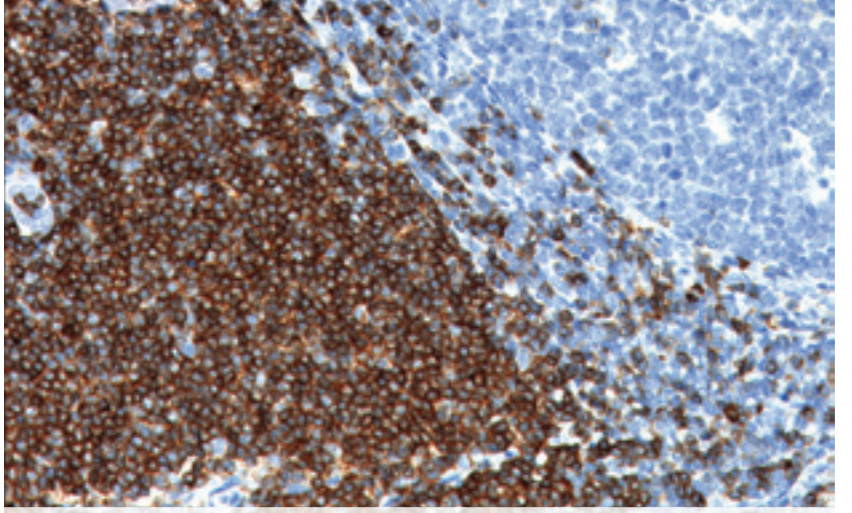
Mantle cell lymphoma stained with CD5 (M)

CD5 (M) IVD FFPE

Clone	4C7
Isotype	IgG1/kappa
Reactivity	
Control	Mantle cell lymphoma
Cat. No.	CM 099 A, C; PM 099 AA; OAI 099 T60

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.



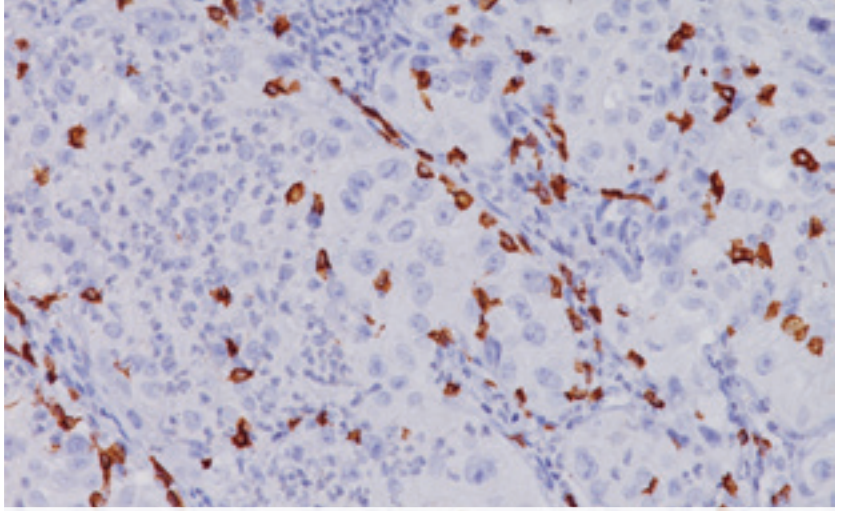
Tonsil stained with CD7

CD7 IVD FFPE

Clone	LP15
Isotype	IgG1
Reactivity	
Control	Tonsil
Cat. No.	CM 158 AK, BK, CK; PM 158 AA; OAI 158 T60

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.



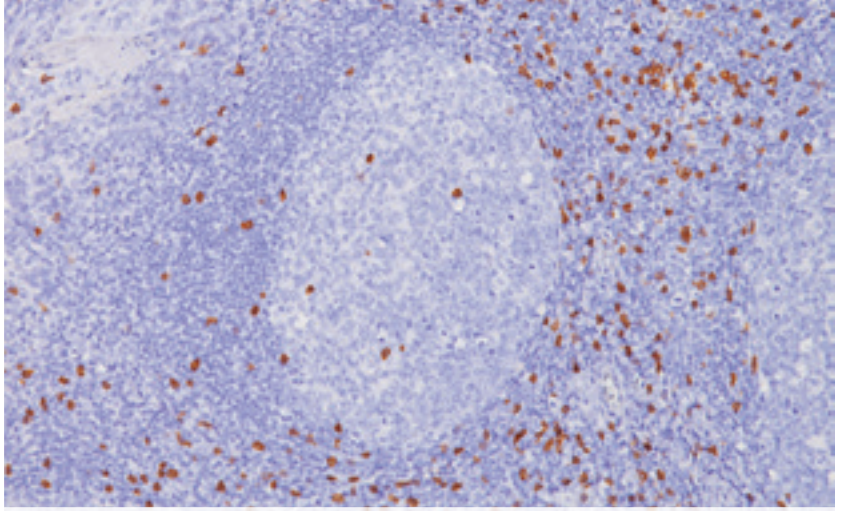
Colon cancer stained with CD8 [C8/144B]

CD8 [C8/144B] IVD FFPE PREFERRED

Clone	C8/144B
Isotype	IgG1/kappa
Reactivity	
Control	Tonsil and normal colon
Cat. No.	ACI 3160 A, C; API 3160 AA

The CD8 antibody reacts with the 32 kDa CD8 protein. CD8 stains cells with cytotoxic activity, including cortical thymocytes, cytotoxic/suppressor T-cells and a subset of natural killer cells. CD4 and CD8 positive and negative staining are indicative of T-cell neoplasms. CD4 and CD8 may also be used to differentiate between *mycosis fungoides* and cutaneous inflammatory processes. CD8 can be used in panels with CD4, CD56, TIA-1 to aid in identifying subsets of inflammatory skin diseases. Recently, CD8 has been used in panels with CD103, FOXP3, and PD-1 for the identification of CD8+ tumor infiltrating lymphocytes and their potential value for immune therapy.

1. Barth TF, *et al.* Virchows Arch. 2000 Apr; 436(4):357-64. 2. Deguchi M, *et al.* Arch Dermatol Res. 2001 Sep; 293(9):442-7. 3. Izban KF, *et al.* Mod Path. 1998 Oct; 11(10):978-82. 4. Harvell JD, Nowfar-Rad M, Sundram U. J Cutan Pathol. 2003 Feb;30(2):108-13. 5. Webb JR, Milne K, Nelson BH. Cancer Immunol Res. 2015 Aug;3(8):926-35. 6. Liu S, *et al.* Breast Cancer Res. 2014 Sep 6;16(5):432. 7. Tumeh PC, *et al.* Nature. 2014 Nov 27;515(7528):568-71.



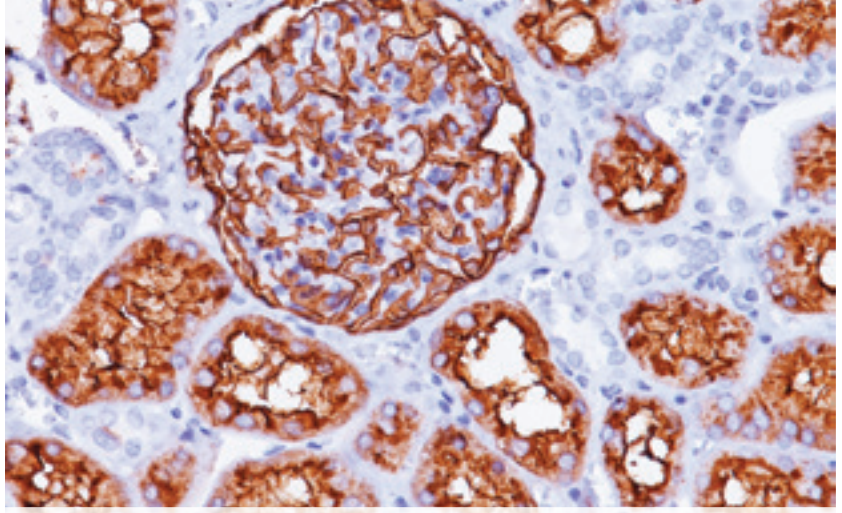
Tonsil stained with CD8

CD8 IVD FFPE

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.



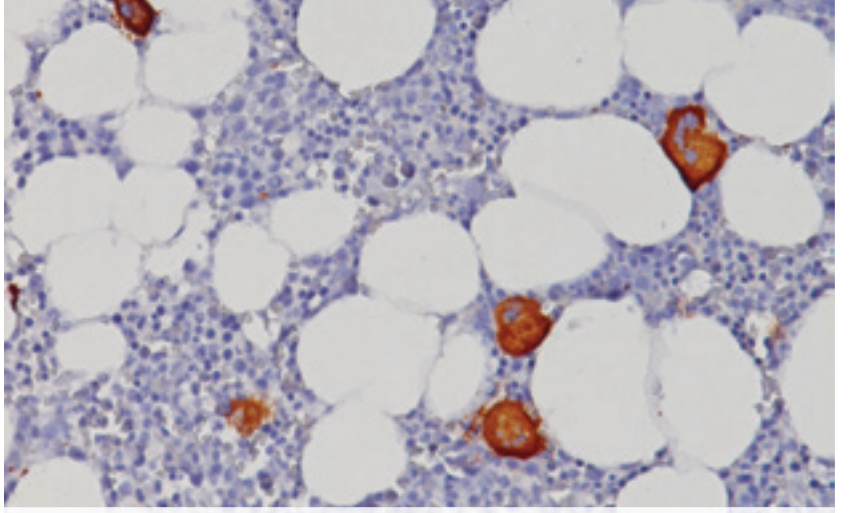
Renal cell carcinoma stained with CD10

CD10 IVD FFPE

Clone	56C6
Isotype	IgG1
Reactivity	
Control	Tonsil or kidney
Cat. No.	CM 129 AK, BK, CK; PM 129 AA; IP 129 G10; OAI 129 T60

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.



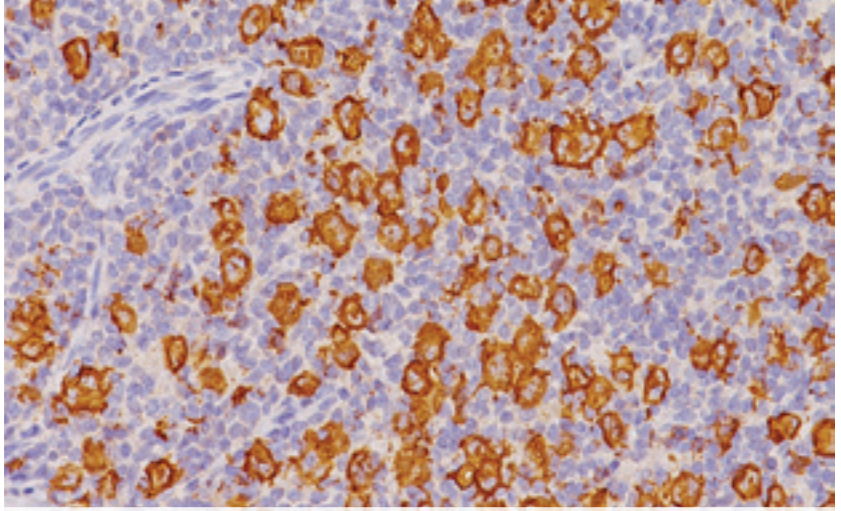
Megakaryocyte in bone marrow stained with CD11c (Leu-M5)

CD11c (Leu-M5) IVD FFPE

Clone	5D11
Isotype	IgG2a
Reactivity	
Control	Skin
Cat. No.	ACI 3122 A, B; API 3122 AA

CD11c (also known as Leu-M5 or Integrin alpha X) is expressed in tissue macrophages, dendritic cells, monocytes, NK cells and granulocytes. CD11c has been shown to be both sensitive and specific for hairy cell leukemia (HCL), differentiating it from other small B-cell lymphomas. Hairy cell leukemia cells have been shown to be positive for CD11c and negative for CD5. A panel of CD103, CD11c, CD25, CD5, CD10 and CD23 has been useful in definitively diagnosing HCL. With regard to high-grade cervical intraepithelial neoplasia, specimens with higher rates of CD4+ T-cells, CD11c+ dendritic cells and T-bet+ transcription factors showed a strong correlation with favorable clinical outcomes.

1. Johrens K, *et al.* Pathobiology. 2008; 75(4):252-6. 2. Vardiman JW, *et al.* Am J Clin Pathol. 1988 Sep; 90(3):250-6. 3. Chen YH, *et al.* Am J Clin Pathol. 2006 Feb; 125(2):251-9. 4. Sojitra P, *et al.* Am J Clin Pathol. 2013 Nov; 140(5):686-92. 5. Noel P. Leuk Lymphoma. 2011 Jun; 52 Suppl 2:62-4. 6. Origoni M, *et al.* Biomed Res Int. 2013; 2013:831907. 7. Sandvik LF, *et al.* Acta Derm Venereol. 2014 Mar; 94(2):173-8.



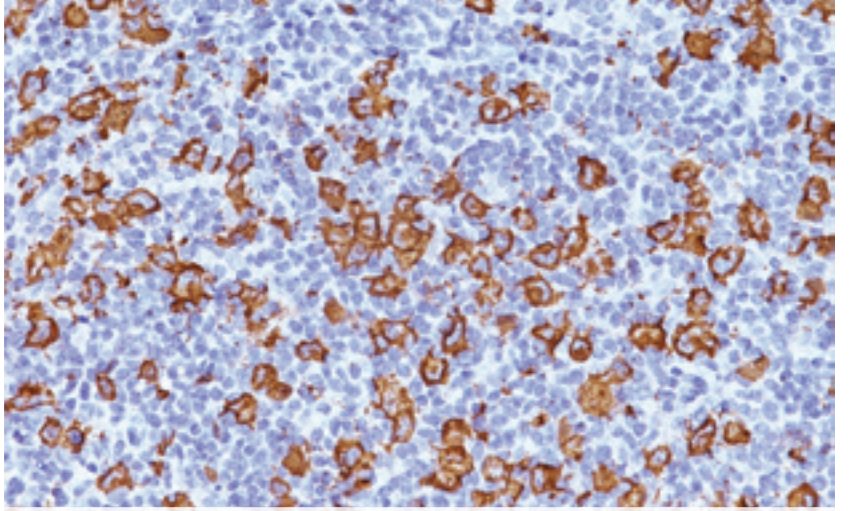
Hodgkin's lymphoma stained with CD15 [MMA]

CD15 [MMA] IVD FFPE

Clone	MMA
Isotype	IgM/kappa
Reactivity	
Control	Reed-Sternberg cells (Hodgkin's)
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.



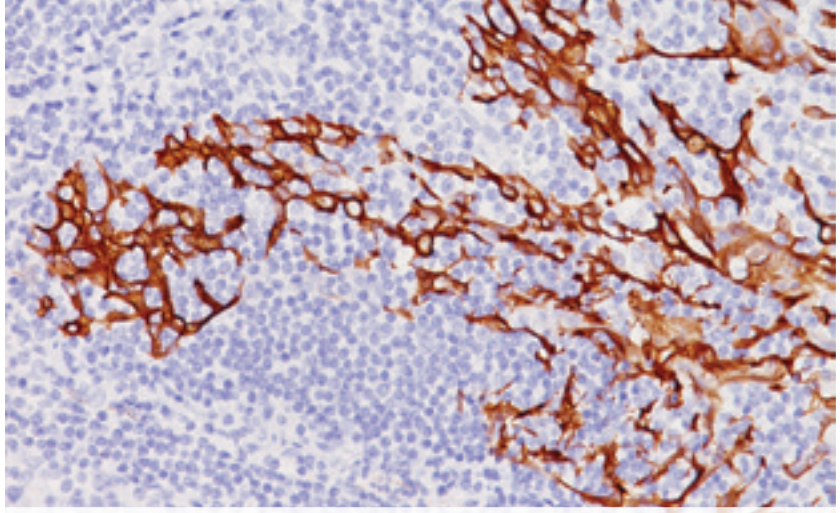
Hodgkin's lymphoma stained with CD15 Cocktail

CD15 Cocktail IVD FFPE PREFERRED

Clone	MMA + BY87
Isotype	IgM/kappa + IgM/kappa
Reactivity	
Control	Hodgkin's
Cat. No.	CM 073 A, B, C; PM 073 AA; IP 073 G10; OAI 073 T60

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.



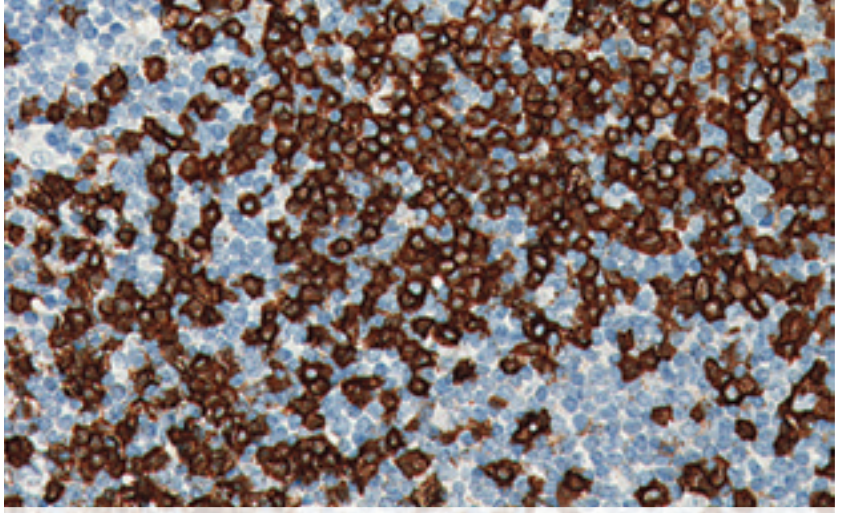
Tonsil stained with CD19

CD19 IVD FFPE

Clone	CD19
Isotype	IgG1
Reactivity	
Control	Tonsil
Cat. No.	CM 310 A; 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.



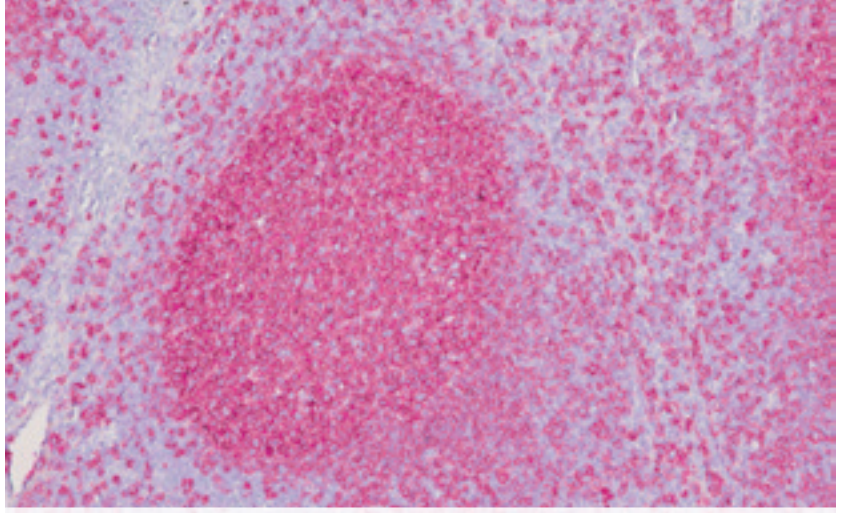
Tonsil stained with CD20

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; OAI 004 T60

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.



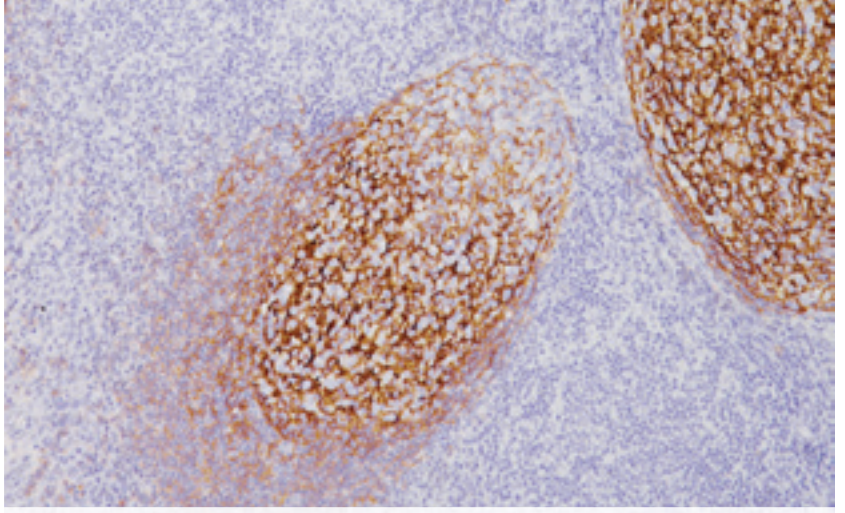
Dog tonsil stained with CD20 (P)

CD20 (P) RUO FFPE FARMA

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.



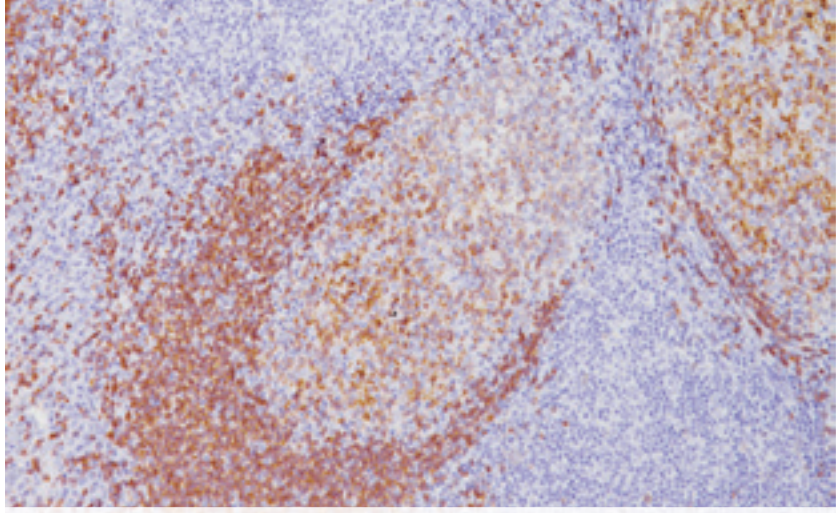
Tonsil stained with CD21

CD21 IVD FFPE

Clone	2G9
Isotype	IgG2a
Reactivity	
Control	Tonsil or spleen
Cat. No.	CM 142 A, C; PM 142 AA; OAI 142 T60

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.



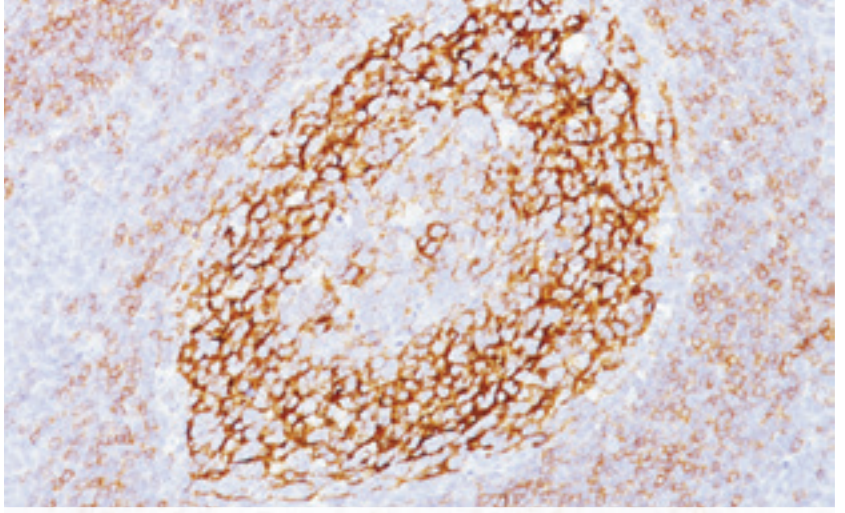
Tonsil stained with CD22

CD22 IVD FFPE

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 - 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.



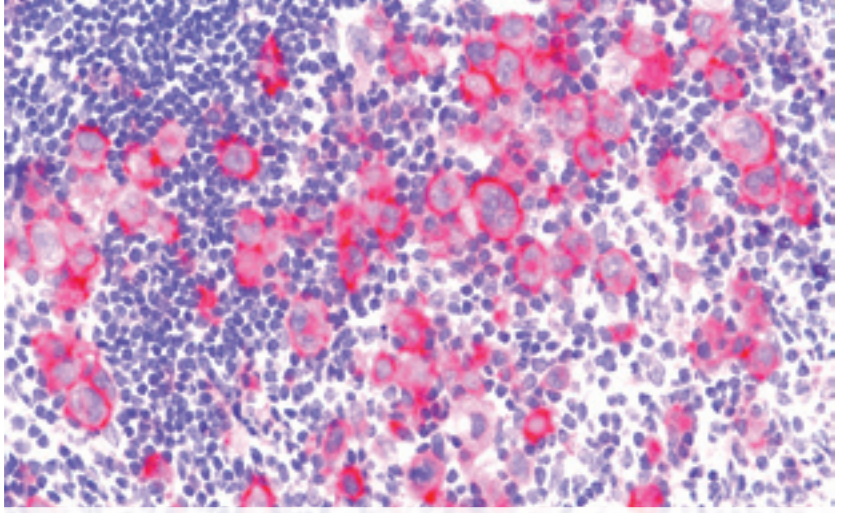
Tonsil stained with CD23

CD23 IVD FFPE

Clone	1B12
Isotype	IgG1
Reactivity	
Control	Follicular lymphomas or tonsil
Cat. No.	CM 100 A, C; PM 100 AA; OAI 100 T60

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.



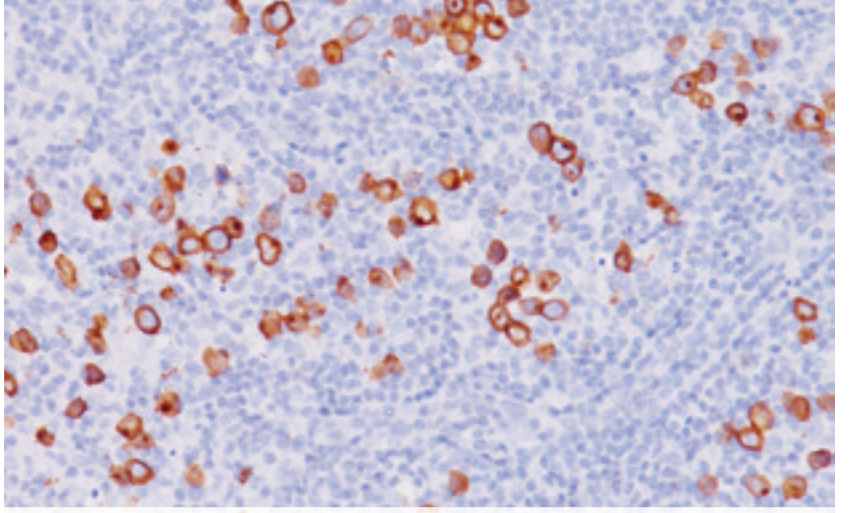
Hodgkin's lymphoma stained with CD30 (Ki-1)

CD30 (Ki-1) IVD FFPE

Clone	Ber-H2
Isotype	IgG1/kappa
Reactivity	
Control	Hodgkin's or anaplastic large cell lymphoma
Cat. No.	PM 031 AA, H; 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. Schwarting R, *et al.* Blood. 1989 Oct; 74(5):1678-89.



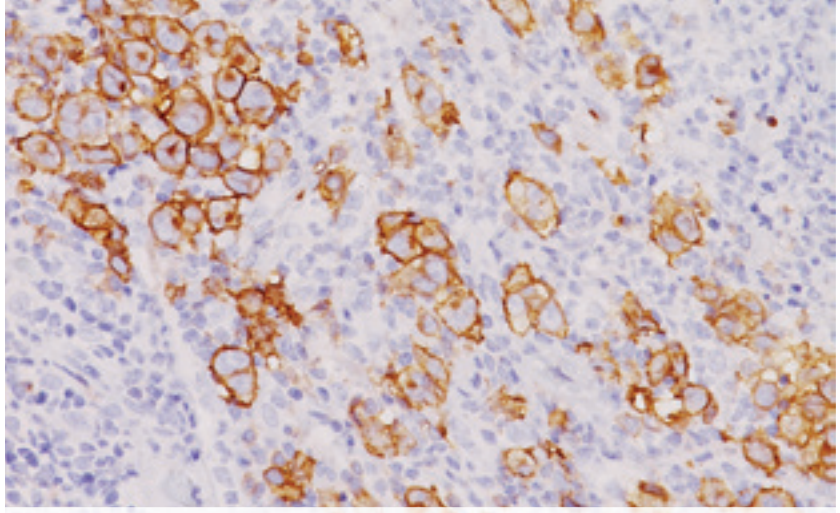
Hodgkin's disease stained with CD30 (Ki-1)

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.



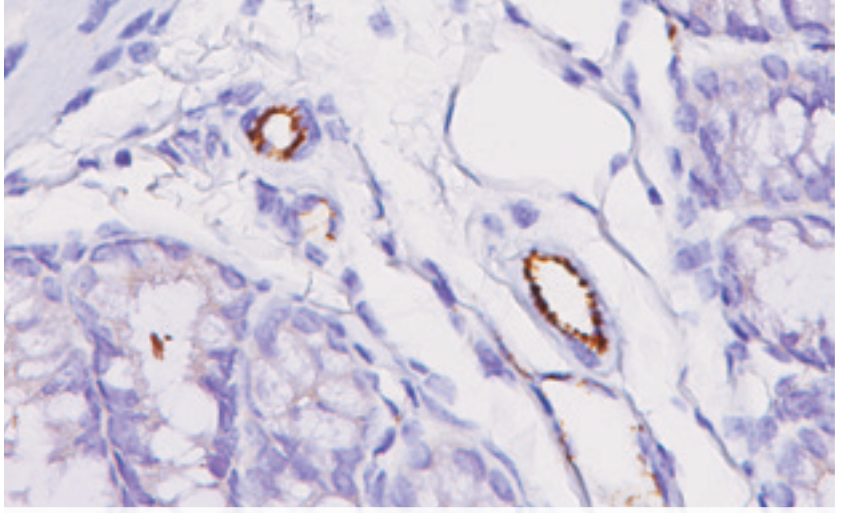
Hodgkin's lymphoma stained with CD30 Cocktail

CD30 Cocktail IVD FFPE

Clone	Ber-H2 + CON6D/B5
Isotype	IgG1/kappa + IgG2a
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.



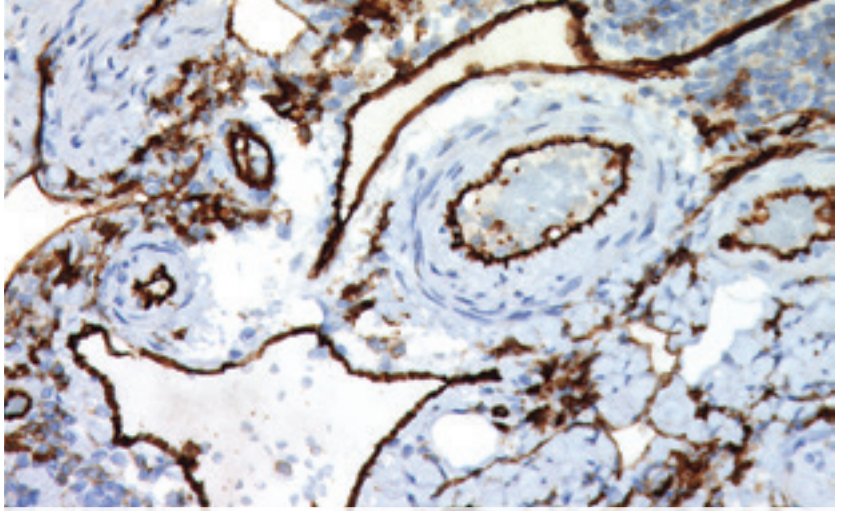
Mouse artery stained with CD31

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.



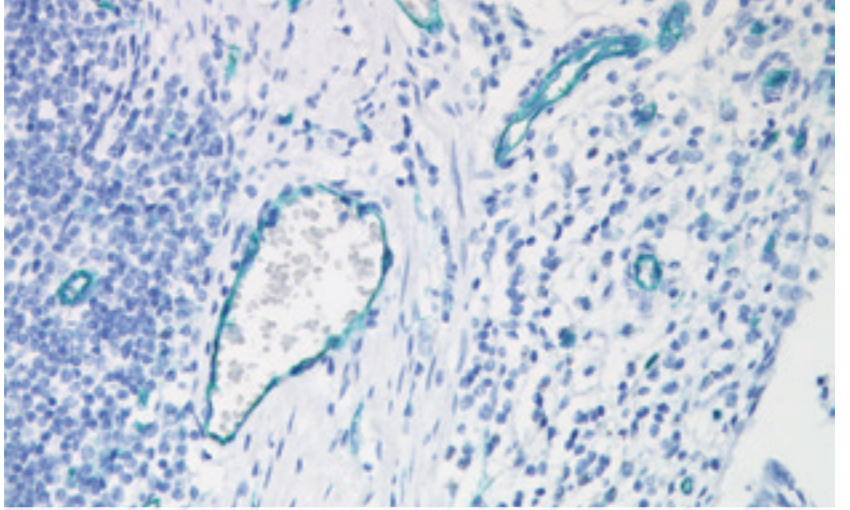
Blood vessels stained with CD31 (PECAM-1)

CD31 (PECAM-1) IVD FFPE PREFERRED

Clone	BC2
Isotype	IgG1/kappa
Reactivity	
Control	Angiosarcoma, colon cancer or 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.* Virchous 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.



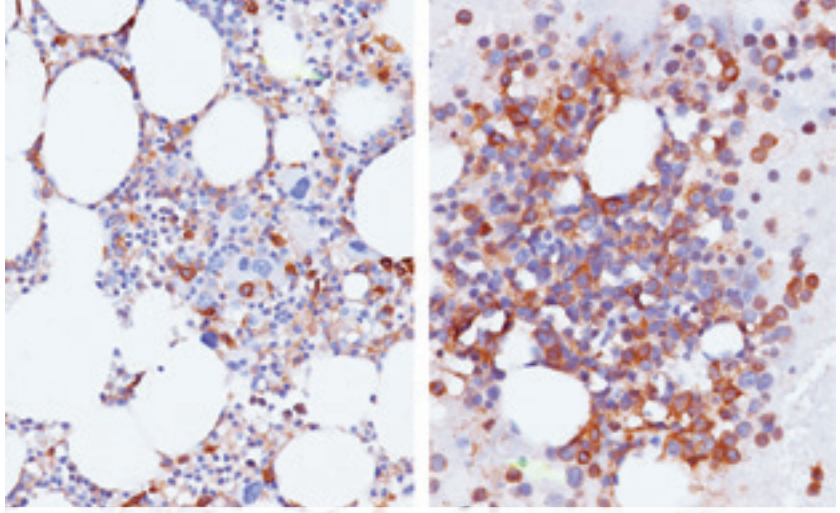
Blood vessels stained with CD31 (PECAM-1)

CD31 (PECAM-1) IVD FFPE

Clone	JC/70A
Isotype	IgG1/kappa
Reactivity	
Control	Tonsil, colon or hemangioma
Cat. No.	CM 131 A, C; PM 131 AA; OAI 131 T60

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.



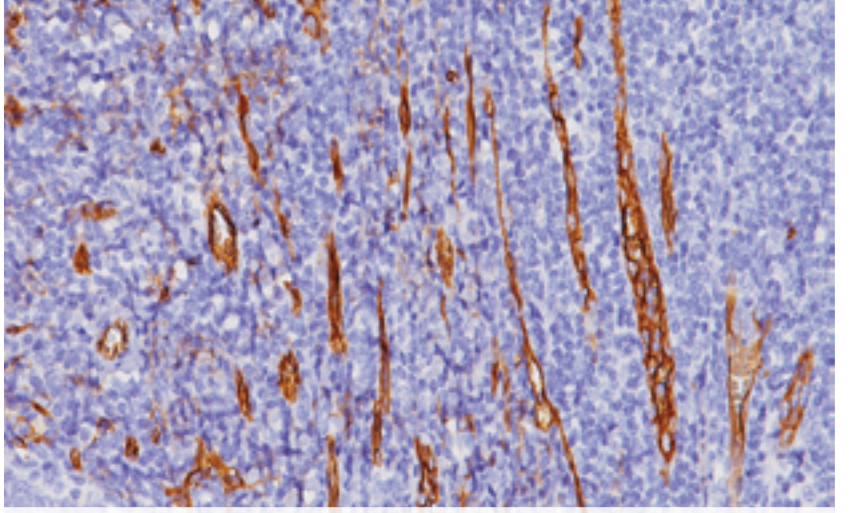
Bone marrow stained with CD33

CD33 IVD FFPE

Clone	PWS44
Isotype	IgG2b
Reactivity	
Control	Myeloid leukemia
Cat. No.	ACI 3116 A, C; API 3116 AA

CD33 or Siglec-3 is a 67 kD glycosylated transmembrane receptor expressed on myeloid-specific cells. In cases of acute leukemia, the CD33 antibody showed equivalent results by immunohistochemical analysis compared with flow cytometric analysis. CD33 was also found to be a useful marker in the workup of myeloid sarcomas. In normal bone marrow trephine biopsies, clone PWS44 stains myeloid, myelomonocytic hemopoiesis and mature macrophages; cells of the erythroid and megakaryocytes series are negative. CD33 may be a useful marker as part of an antibody panel for the identification of acute leukemias, myeloid proliferative disorders and myeloid sarcomas on paraffin-embedded tissue samples.

1. Hoyer JD, *et al.* Am J Clin Pathol. 2008 Feb; 129(2):316-23. 2. Rollins-Raval MA, Roth CG. Histopathology. 2012 May; 60(6):933-42. 3. Amador-Ortiz C, *et al.* J Cutan Pathol. 2011 Dec; 38(12):945-53. 4. Brotelle T, *et al.* Bull Cancer. 2014 Feb; 101(2):211-8.



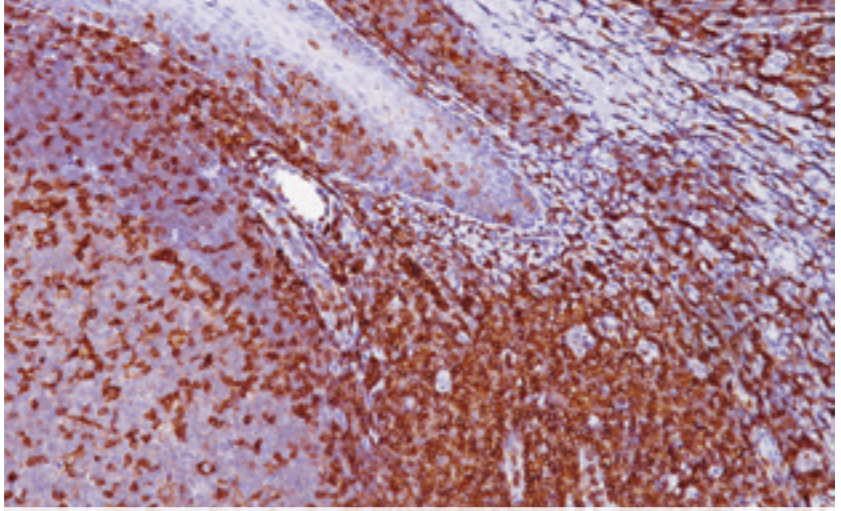
Blood vessels stained with CD34

CD34 IVD FFPE

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; OAI 084 T60

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.



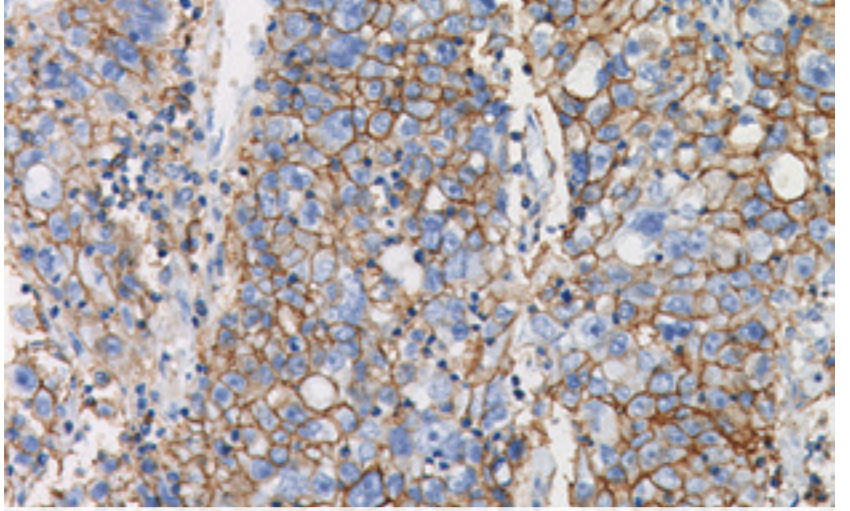
Tonsil stained with CD43

CD43 IVD FFPE

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.



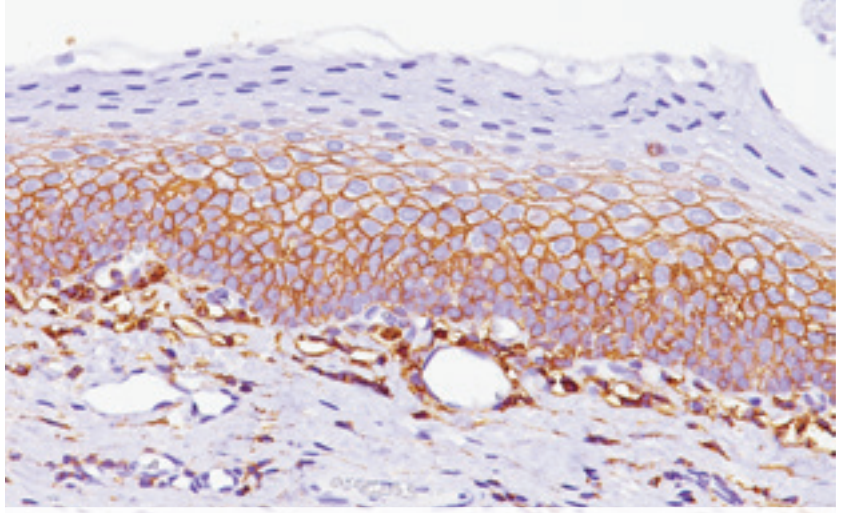
Breast cancer stained with CD44

CD44 IVD FFPE

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.



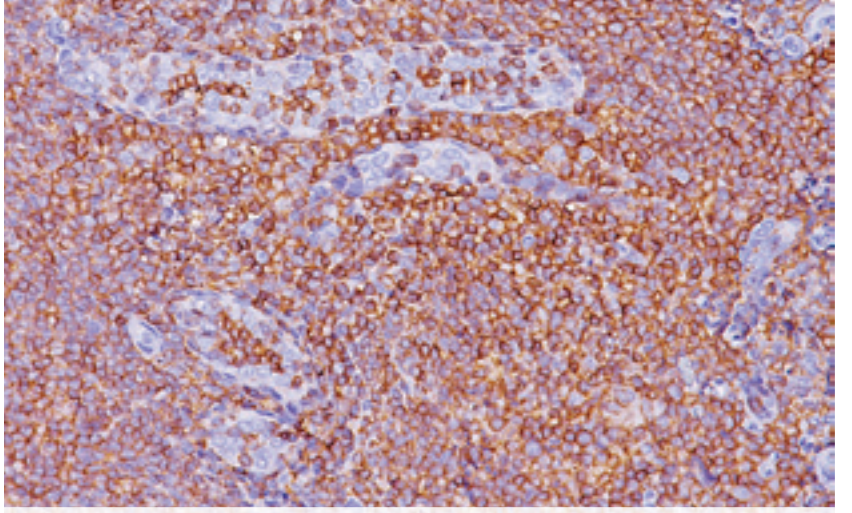
Stratified squamous epithelium stained with CD44

CD44 IVD FFPE PREFERRED

Clone	BC8
Isotype	IgG1
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.



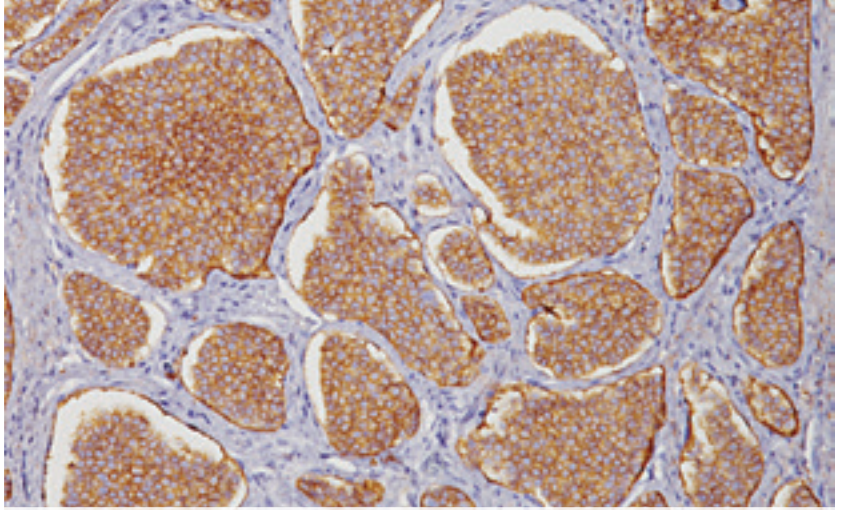
Tonsil stained with CD45RO [UCHL-1]

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.



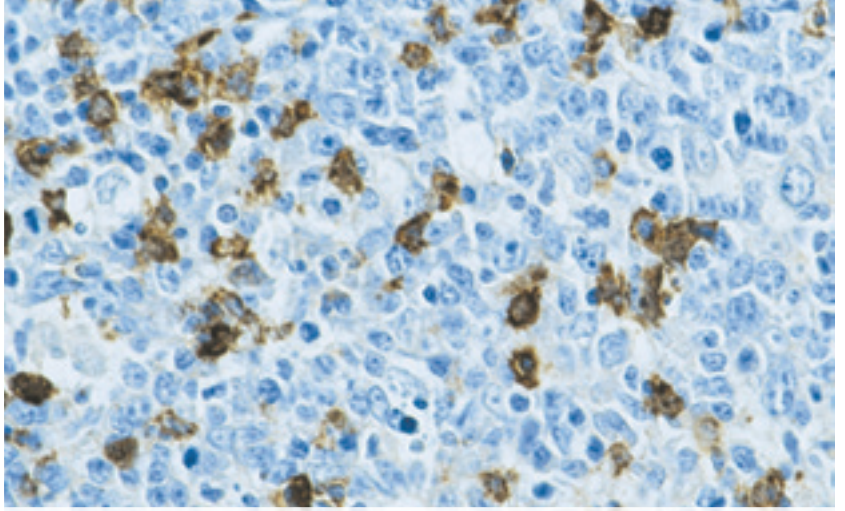
Pancreatic cancer stained with CD56

CD56 IVD FFPE

Clone	BC56C04
Isotype	IgG1/kappa
Reactivity	
Control	Neuroblastoma, pancreas, normal colon or rhabdomyosarcoma
Cat. No.	CM 164 A, B, C; PM 164 AA; OAI 164 T60

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.



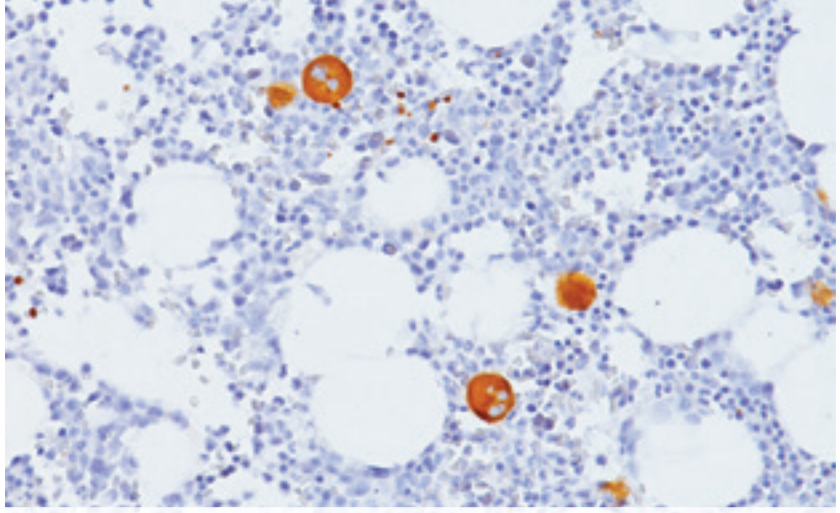
Tonsil stained with CD57 (Natural Killer Cell)

CD57 (Natural Killer Cell) IVD FFPE

Clone	NK-1
Isotype	IgM/kappa
Reactivity	
Control	Tonsil
Cat. No.	CM 007 B, C; PM 007 AA; OAI 007 T60

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.* Tsitologiia. 1994; 36(9-10):1006-11. 4. Liu XH, *et al.* Hinyokika Kiyo. 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.



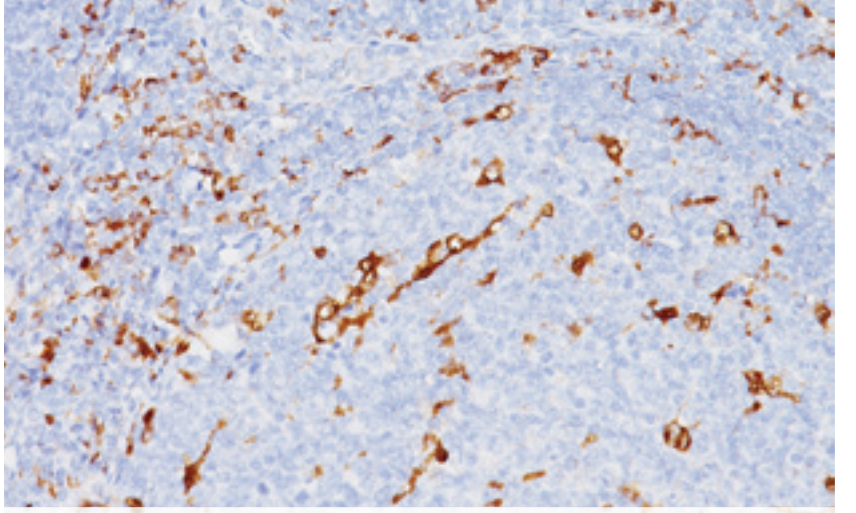
Megakaryocytes & platelets in bone marrow stained with CD61

CD61 IVD FFPE

Clone	2f2
Isotype	IgG1
Reactivity	
Control	Bone marrow
Cat. No.	ACI 3139 A, C; API 3139 AA

The CD61 antigen, also known as GPIIIa, has been shown to be expressed in myeloid cells, monocytes, endothelial cells, smooth muscle cells, macrophages and platelets. CD61 may be useful in evaluating megakaryocytopoiesis as it relates to myelodysplastic disorders, acute myeloid leukemias and acute megakaryoblastic leukemias. Immunohistochemistry with CD61 has also been useful in identifying platelet adhesion in advanced atherosclerosis and was helpful in identifying fat embolism in pulmonary tissue. The identification of CD61 expression in patients with insudative platelet arteriolopathy helped facilitate recognition of vascular calcineurin inhibitor toxicity in renal allograft biopsies.

1. Jiménez-Marín A, *et al.* Gene. 2008 Jan 31; 408(1-2):9-17. 2. Fox SB, *et al.* Histopathology. 1990 Jul; 17(1):69-74. 3. Thiele J, *et al.* Virchows Arch B Cell Pathol Incl Mol Pathol. 1992; 62(5):275-82. 4. Gonzalez J, *et al.* J Obes. 2014; 2014:591270. 5. Neri M, *et al.* Forensic Sci Int. 2010 Oct 10; 202(1-3):e13-7. 6. Meehan SM, *et al.* Hum Pathol. 2008 Apr; 39(4):550-6.



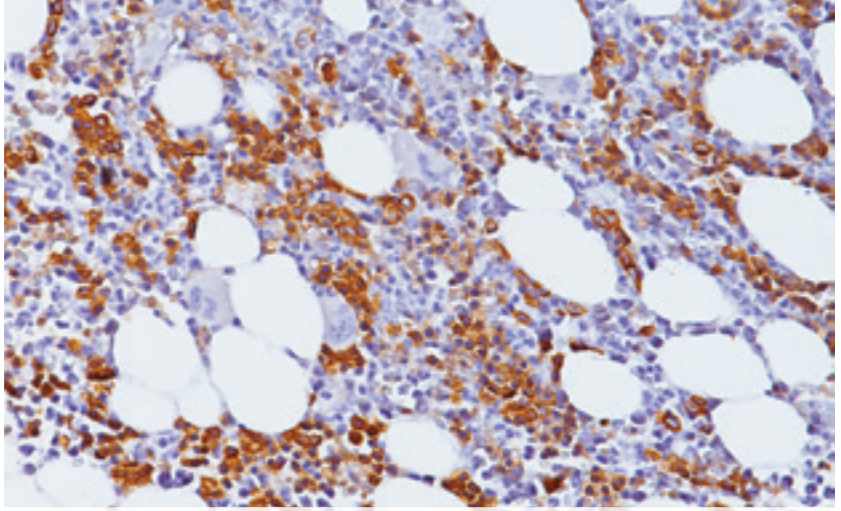
Tonsil stained with CD68 [KP1]

CD68 [KP1] IVD FFPE

Clone	KP1
Isotype	IgG1/kappa
Reactivity	
Control	Tonsil
Cat. No.	CM 033 A, B, C; PM 033 AA; IP 033 G10; OAI 033 T60

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.



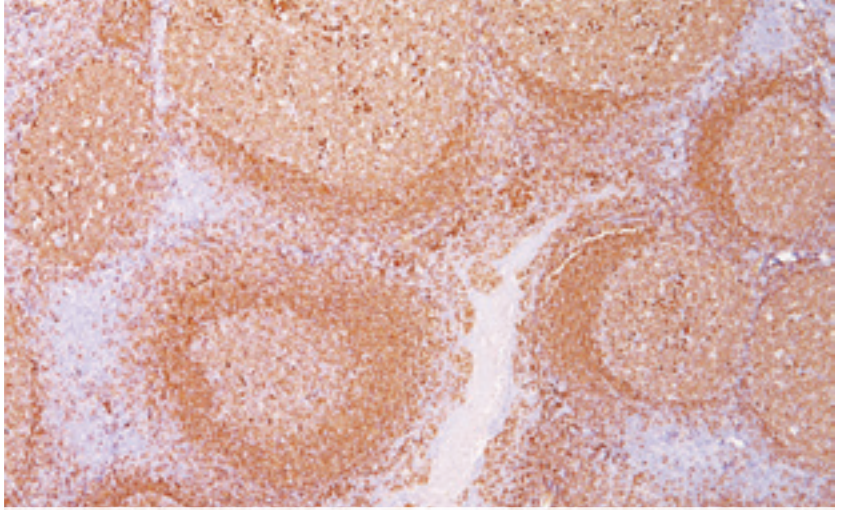
Bone marrow stained with CD71

CD71 IVD FFPE

Clone	H68.4
Isotype	IgG1
Reactivity	
Control	Bone marrow
Cat. No.	ACI 3110 A, B; API 3110 AA

CD71 (transferrin receptor) has been shown to exhibit strong membranous and cytoplasmic staining in all erythroid precursors of normal and dyspoietic bone marrow biopsies. CD71 expression decreases with the maturation of erythrocytes; mature erythrocytes do not express CD71. Compared to hemoglobin or CD235a (glycophorin A), CD71 displayed the most specific distinct staining and did not label mature red blood cells. CD71 was positive in all cases of parvovirus and acute erythroleukemia, unlike glycophorin A and hemoglobin A. CD71 did not stain benign lymphoid infiltrates or low grade lymphomas involving the marrow. CD71 may therefore be a reliable erythroid marker in bone marrow.

1. Dong HY, Wilkes S, Yang H. Am J Surg Pathol. 2011 May; 35(5):723-32. 2. Marsee DK, Pinkus GS, Yu H. Am J Clin Pathol. 2010 Sep; 134(3):429-35. 3. Habashy HO, *et al*. Breast Cancer Res Treat. 2010 Jan; 119(2):283-93.



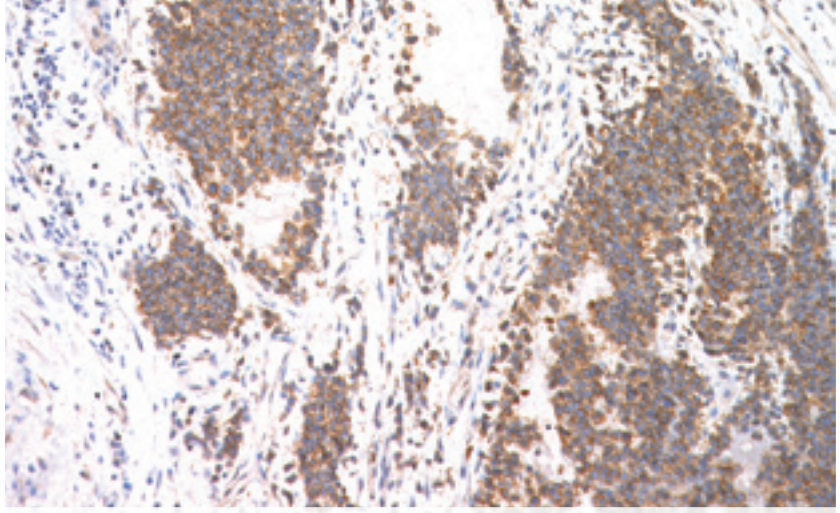
Tonsil stained with CD79a

CD79a IVD FFPE

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.



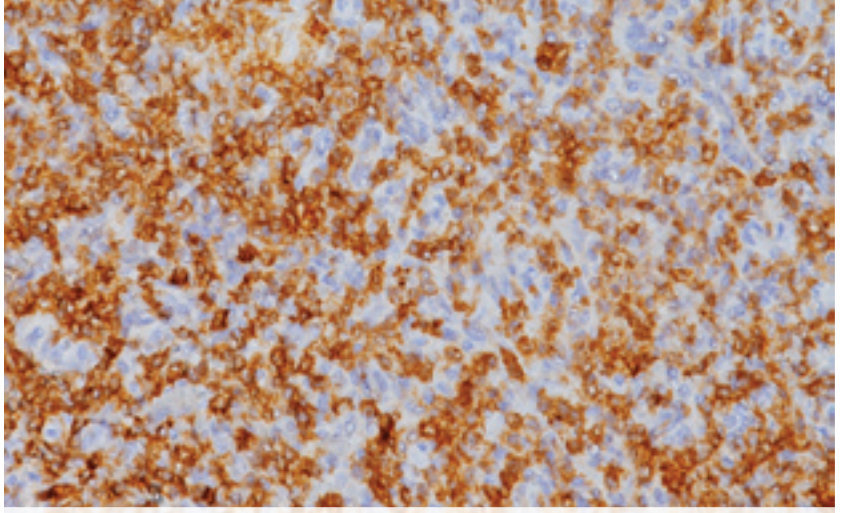
Ewing's sarcoma stained with CD99

CD99 IVD FFPE

Clone	EP8
Isotype	IgG
Reactivity	
Control	Pancreas
Cat. No.	CME 392 A; PME 392 AA; OAI 392 T60

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.



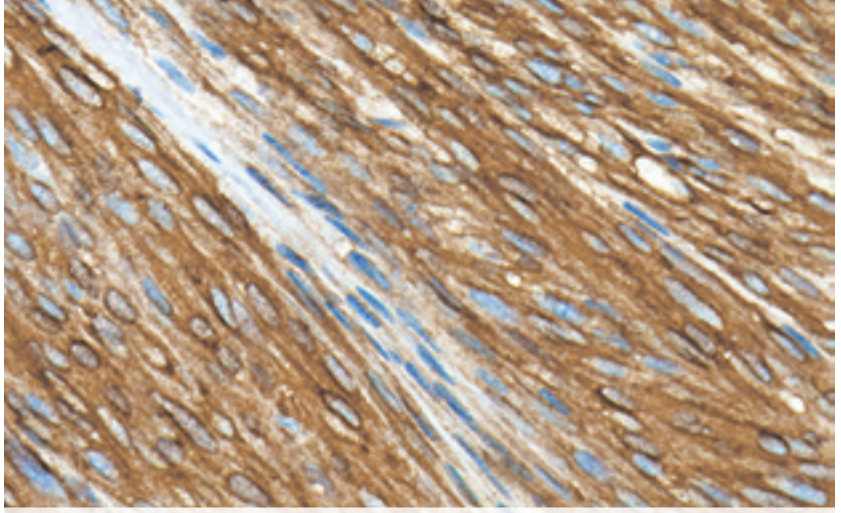
Hairy cell leukemia stained with CD103 (RM)

CD103 (RM) IVD FFPE

Clone	EP206
Isotype	IgG
Reactivity	
Control	Hairy cell leukemia
Cat. No.	ACI 3117 A, B; API 3117 AA

CD103 antibody recognizes the integrin subunit CD103 cell surface antigen, which is characteristically expressed in hairy cell leukemia (HCL), a B-cell lymphoproliferative disorder. CD103 [EP206] has demonstrated reactivity in FFPE tissue, eliminating the need for flow cytometric analysis or frozen section IHC, making it a valuable addition to an IHC panel for the diagnosis of HCL. Other antibodies that have been used in conjunction with CD103 for the detection of HCL include CD25, TIA-1, DBA44 and CD11c. Intraepithelial CD8(+) tumor-infiltrating lymphocytes (TIL) that express CD103 have been shown to be strongly associated with patient survival in high-grade serous ovarian cancer.

1. Morgan EA, *et al.* Am J Clin Pathol. 2013 Feb; 139(2):220-30. 2. Dong HY, *et al.* Am J Clin Pathol. 2009 Apr; 131(4):586-95. 3. Mori N, *et al.* Mod Pathol. 2004 Jul; 17(7):840-6. 4. Webb JR, *et al.* Clin Cancer Res. 2014 Jan 15; 20(2):434-44.



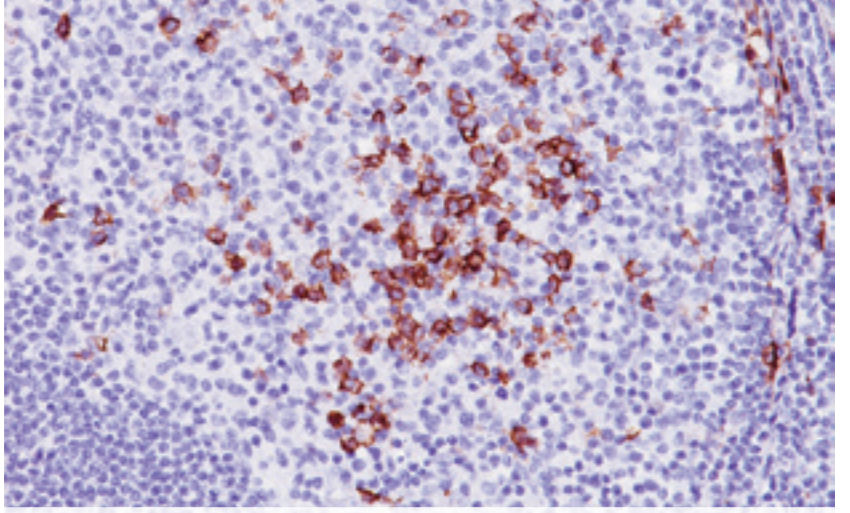
GIST stained with CD117/c-kit

CD117/c-kit IVD FFPE

Clone	EP10
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; OAI 296 T60

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.



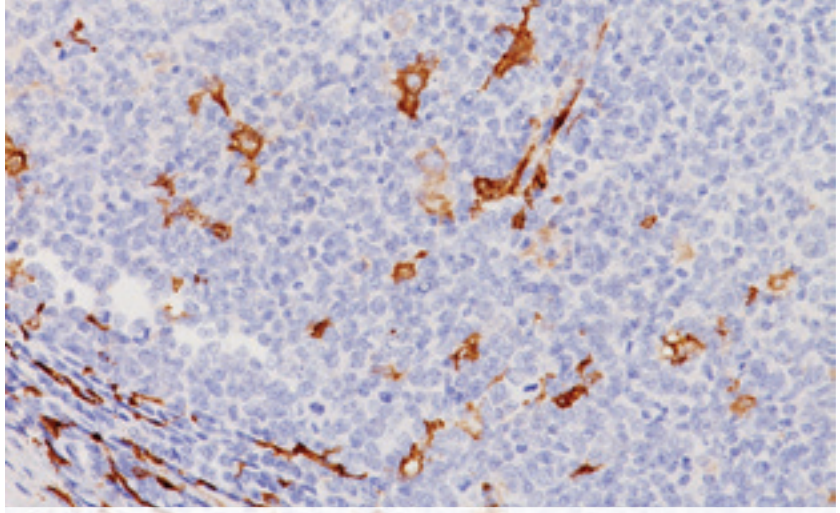
Plasma cells in tonsil stained with CD138

CD138 IVD FFPE

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.



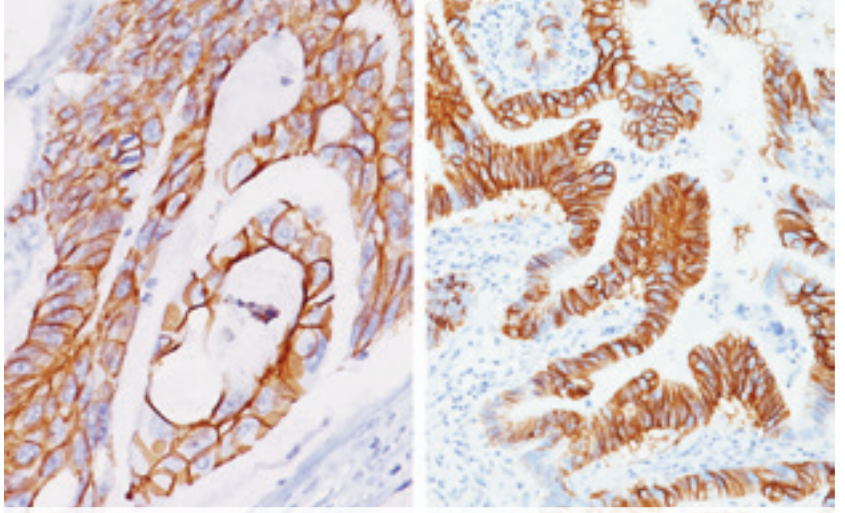
Tonsil stained with CD163

CD163 IVD FFPE

Clone	10D6
Isotype	IgG1
Reactivity	
Control	Tonsil or placenta
Cat. No.	CM 353 AK, CK; PM 353 AA; OAI 353 T60

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.



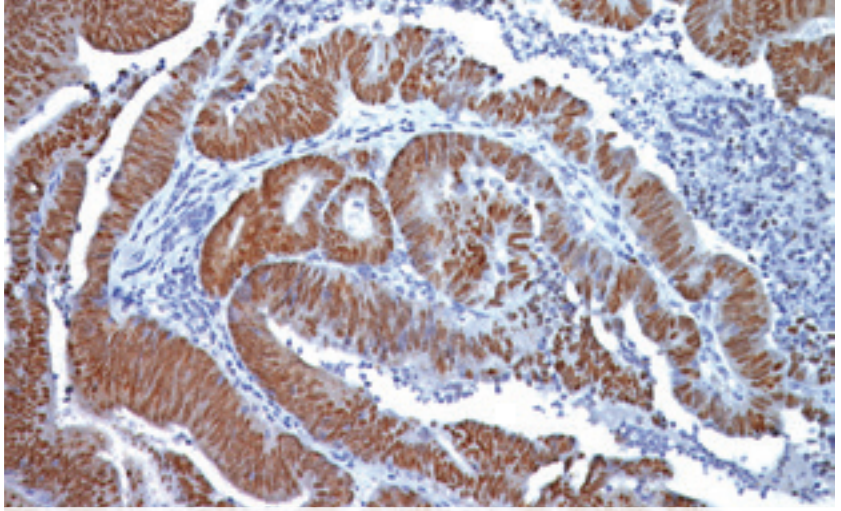
Colon adenocarcinoma (L) and stomach adenocarcinoma (R) stained with CDH17 (M)

CDH17 (M) IVD FFPE

Clone	1H3
Isotype	IgG1/kappa
Reactivity	
Control	Colon carcinoma
Cat. No.	ACI 3111 A, C; API 3111 AA, AVI 3111 G

CDH17 antibody (Cadherin 17 or LI-cadherin) is a novel oncogene which is involved in tumor invasion and metastasis and is expressed in intestinal epithelium. CDH17 is a highly specific marker in colon cancer (99/99, 100%) and is a more sensitive marker than CDX2 (93/99, 94%) and CK20 (91/99, 92%). Overexpression of CDH17 (and conversely, underexpression of CDX2) correlates to poor prognosis in patients with epithelial ovarian cancer. CDH17 may be helpful for early diagnosis of Barrett's esophagus. CDH17 has been shown to be a useful marker for distinguishing between primary urinary bladder adenocarcinoma and urothelial carcinoma with glandular differentiation.

1. Huang LP, *et al.* Int J Gynecol Cancer. 2012 Sep; 22(7):1170-6. 2. Panarelli NC, *et al.* Am J Clin Pathol. 2012 Aug; 138(2):211-22. 3. Tacha D, Zhou D. Poster session presented at: CAP'14; 2014 Sep 7-10; Chicago, IL. 4. Mokrowiecka A, *et al.* Dig Dis Sci. 2013 Mar; 58(3):699-705. 5. Rao Q, *et al.* Mod Pathol. 2013 May; 26(5):725-32.



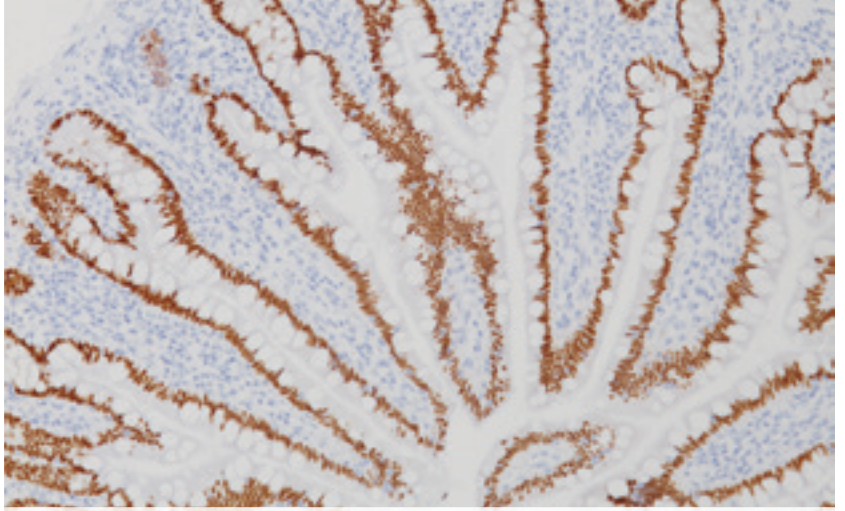
Colon cancer stained with CDX2

CDX2 IVD FFPE

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; OAI 226 T60

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.



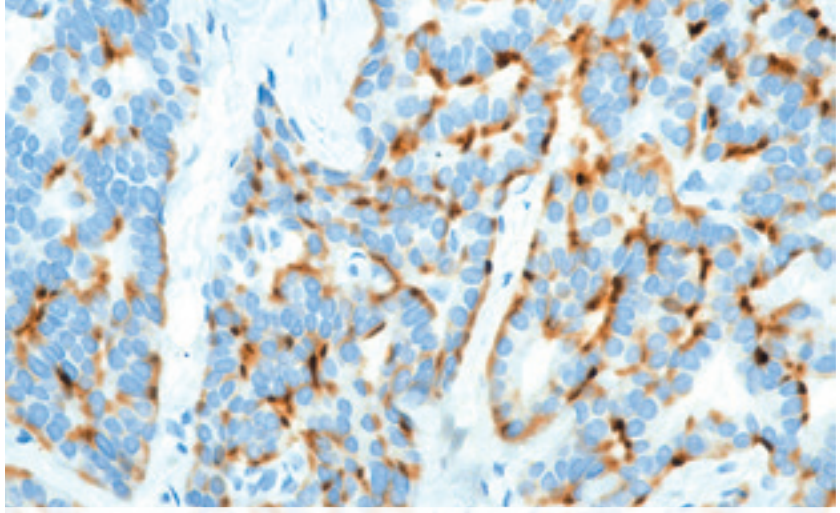
Small intestine stained with CDX2 (RM)

CDX2 (RM) IVD FFPE PREFERRED

Clone	EP25
Isotype	IgG
Reactivity	
Control	Normal colon or colon cancer
Cat. No.	ACI 3144 A, B; API 3144 AA

CDX2 has been useful to establish gastrointestinal origin of metastatic adenocarcinomas and carcinoids and can be especially useful in distinguishing metastatic colorectal adenocarcinoma from tumors of unknown origin. CDX2 has been shown to be more specific and more sensitive than Villin or CK20. The CDX2 rabbit monoclonal is a more sensitive clone than other CDX2 mouse monoclonal antibodies. Data has also shown that rabbit monoclonal CDX2 had fewer false negatives. The specificity was similar when compared to other mouse monoclonal CDX2 antibodies. The overall specificity for CDX2 antibodies can be significantly improved in a panel with CK7, TTF-1 and CDH17.

1. Kim JH, *et al.* Acta Cytol. 2010 May-Jun; 54(3):277-82. 2. Saad RS, *et al.* Appl Immunohistochem Mol Morphol. 2009 May; 17(3):196-201. 3. Qi W, *et al.* Appl Immunohistochem Mol Morphol. 2009 May; 17(3):233-8. 4. Bayrak R, Haltas H, Yenidunya S. Diagn Pathol. 2012 Jan 23; 7:9. 5. Lee MJ, *et al.* Tumour Biol. 2012 Dec; 33(6):2185-8. 6. Vang R, *et al.* Mod Pathol. 2006 Nov;19(11):1421-8. 7. Borrisholt M, Nielsen S, Vyberg M. Appl Immunohistochem Mol Morphol. 2013 Jan; 21(1):64-72. 8. Panarelli NC, *et al.* Am J Clin Pathol. 2012 Aug; 138(2):211-22



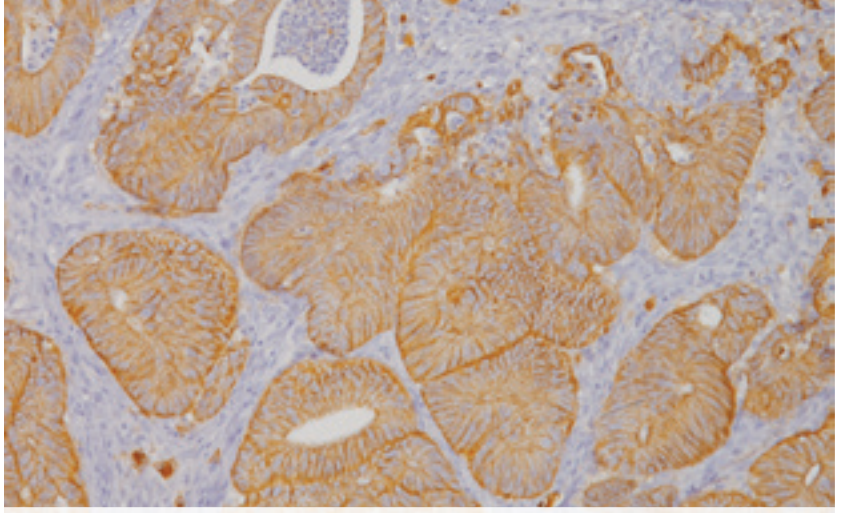
Neuroendocrine tumor stained with Chromogranin A

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; OAI 010 T60

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.



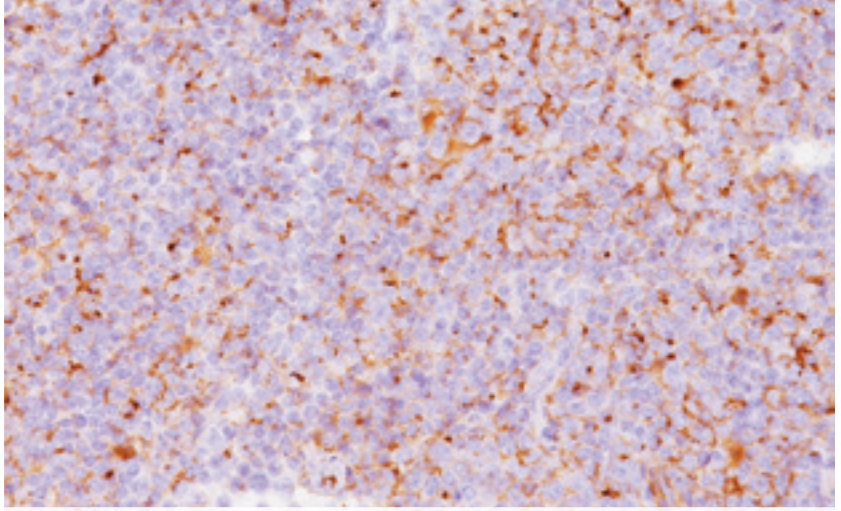
Colon cancer stained with Claudin-4

Claudin-4 IVD FFPE

Clone	3E2C1
Isotype	IgG1
Reactivity	
Control	Colon carcinoma or breast carcinoma
Cat. No.	ACI 3121 A, B; API 3121 AA

Claudin-4 (*Clostridium perfringens* enterotoxin receptor) expression has been associated with different outcomes, depending on the cancer type. Claudin-4 has been shown to distinguish adenocarcinoma from malignant mesothelioma with 99% specificity. In some breast cancers, Claudin-4 overexpression was associated with poor prognosis, high tumor grade and Her2 expression. However, the presence of Claudin-4 in triple negative breast cancer demonstrated a favorable prognosis. Claudin-4 loss was also seen in 69% of advanced gastric cancers and correlated with poor differentiation. Low expression also correlated with lymphatic metastasis and higher recurrence risk in esophageal squamous cell cancer.

1. Jo VY, Cibas ES, Pinkus GS. Cancer Cytopathol. 2014 Apr; 122(4):299-306. 2. Lanigan F, *et al.* Int J Cancer. 2009 May 1; 124(9):2088-97. 3. Kolokytha P, *et al.* Appl Immunohistochem Mol Morphol. 2014; 22(2):125-31. 4. Lu S, *et al.* Mod Pathol. 2013 Apr; 26(4):485-95. 5. Lee SK, *et al.* Oncol Rep.2005 Feb; 13(2):193-9. 6. Shi M, *et al.* Med Oncol. 2014 May; 31(5):951. 7. Maeda T, *et al.* Prostate. 2012 Mar; 72(4):351-60.



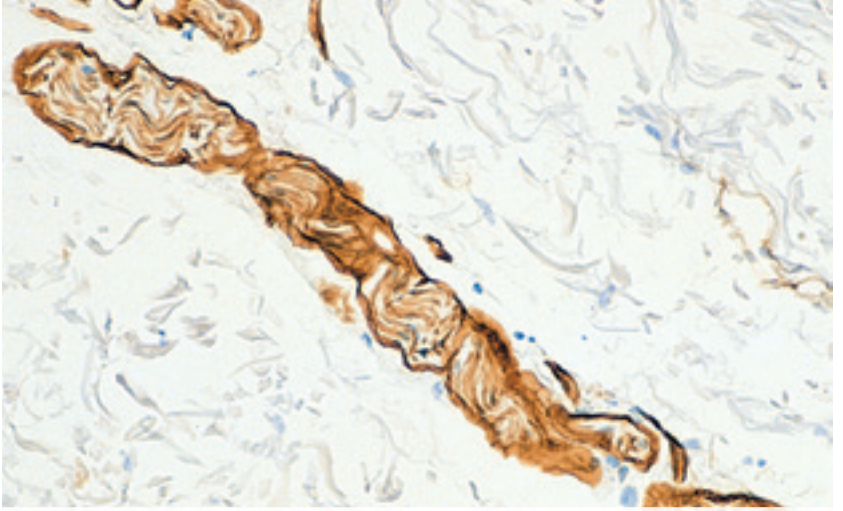
Lymphoma stained with Clusterin

Clusterin IVD FFPE

Clone	41D
Isotype	IgG1/kappa
Reactivity	
Control	Brain or anaplastic large cell lymphoma
Cat. No.	ACI 218 A

Clusterin, also known as apolipoprotein 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.



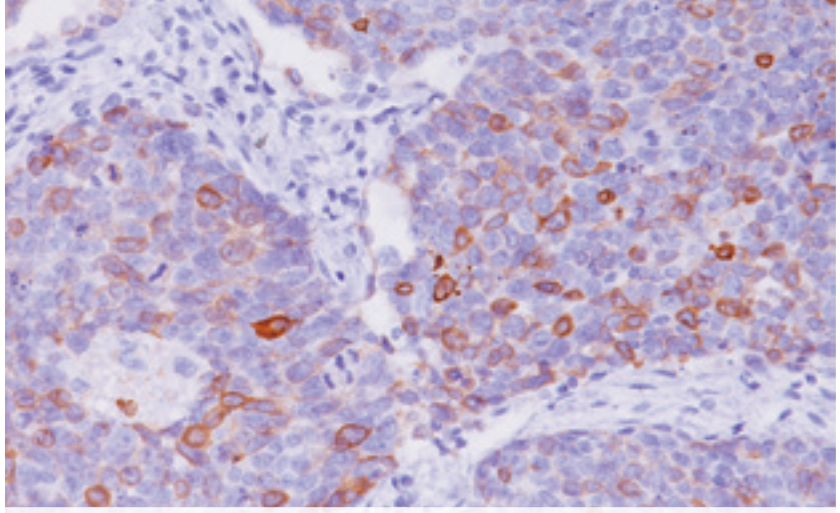
Skin stained with Collagen IV

Collagen IV IVD FFPE

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.



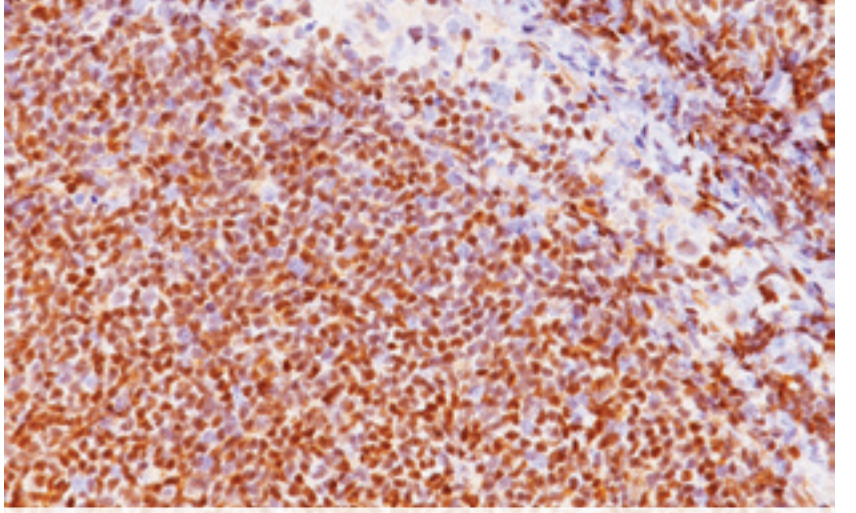
Breast cancer stained with COX-2

COX-2 IVD FFPE

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

Cyclooxygenase2 (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.



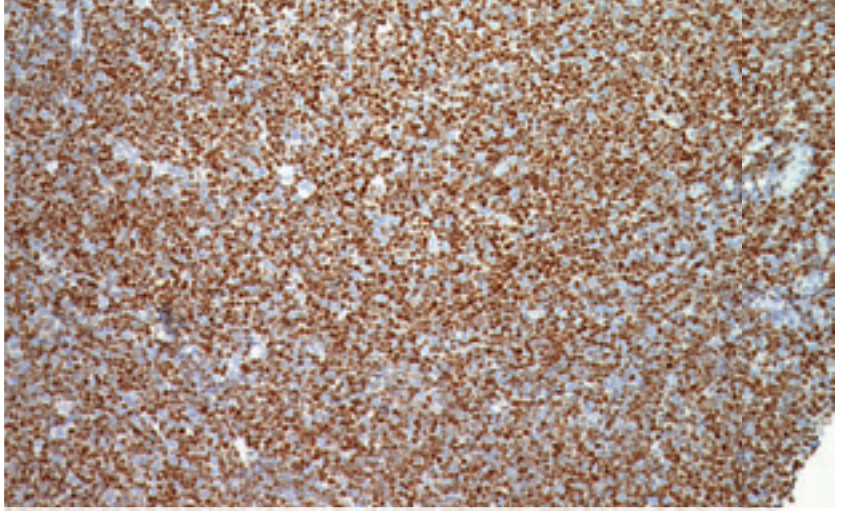
Mantle cell lymphoma stained with Cyclin D1

Cyclin D1 IVD FFPE PREFERRED

Clone	EP12
Isotype	IgG
Reactivity	
Control	Mantle cell lymphoma or breast cancer
Cat. No.	CME 432 A, C; PME 432 AA; OAI 432 T60

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 chromic 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.



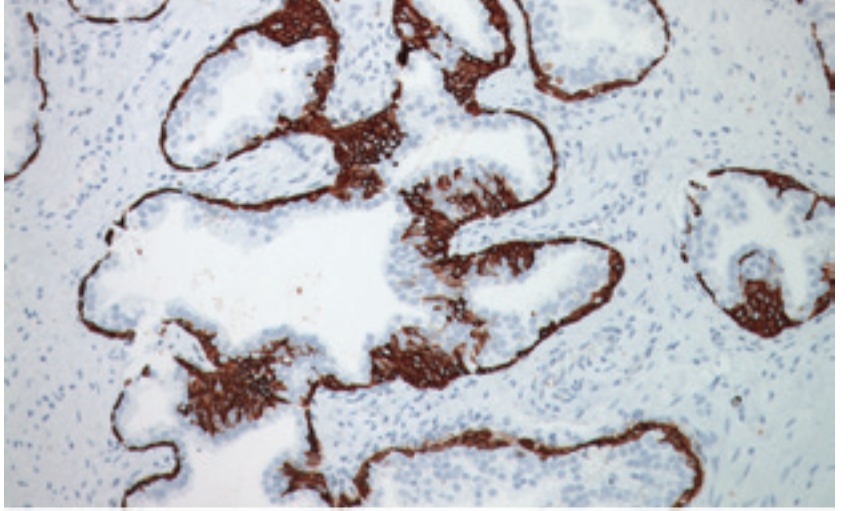
Mantle cell lymphoma stained with Cyclin D1

Cyclin D1 IVD FFPE

Clone	SP4
Isotype	IgG
Reactivity	
Control	Mantle cell lymphoma or breast cancer
Cat. No.	CRM 307 AK, BK, CK; PRM 307 AA; IPI 307 G10

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.



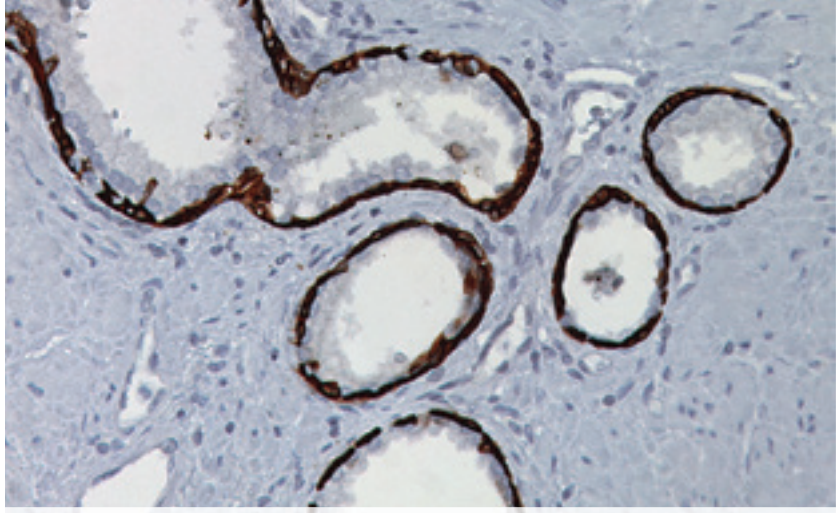
Prostate stained with Cytokeratin 5 (CK5)

Cytokeratin 5 (CK5) IVD FFPE

Clone	EP42
Isotype	IgG
Reactivity	
Control	Lung SqCC, some 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.



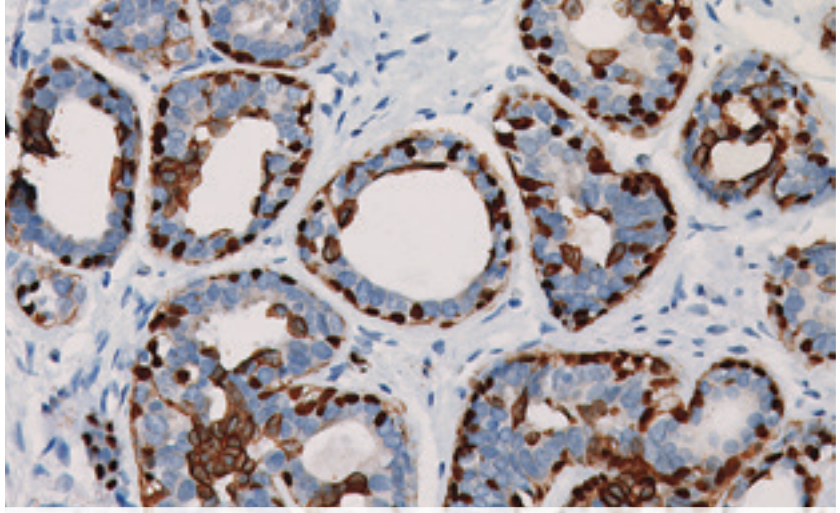
Prostate stained with Cytokeratin 5 (CK5)

Cytokeratin 5 (CK5) IVD FFPE PREFERRED

Clone	XM26
Isotype	IgG1/kappa
Reactivity	
Control	Normal prostate
Cat. No.	CM 234 A, C; PM 234 AA; OAI 234 T60

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.



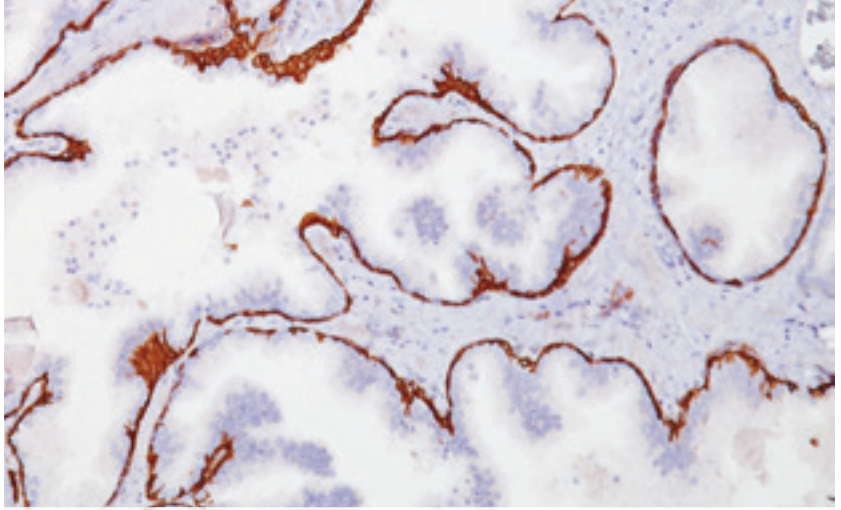
Breast cancer stained with CK5 + p63

CK5 + p63 IVD FFPE

Clone	XM26 + 4A4
Isotype	IgG1/kappa + IgG2a/kappa
Reactivity	
Control	Normal breast or ductal cell carcinoma
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.



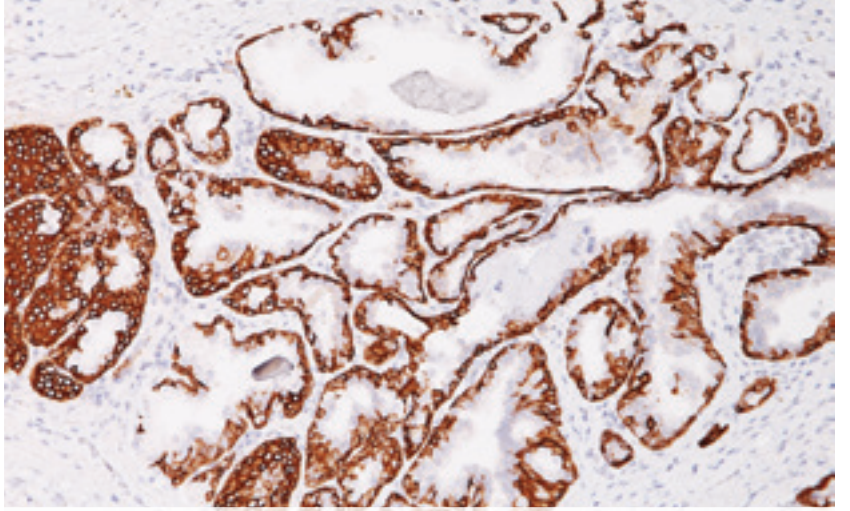
Prostate stained with Cytokeratin 5/6 (CK 5/6)

Cytokeratin 5/6 (CK 5/6) IVD FFPE

Clone	CK5/6.007
Isotype	IgG1
Reactivity	
Control	Prostate or skin
Cat. No.	CM 105 A, B, C; PM 105 AA; IPI 105 G10

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. Ordonez 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.



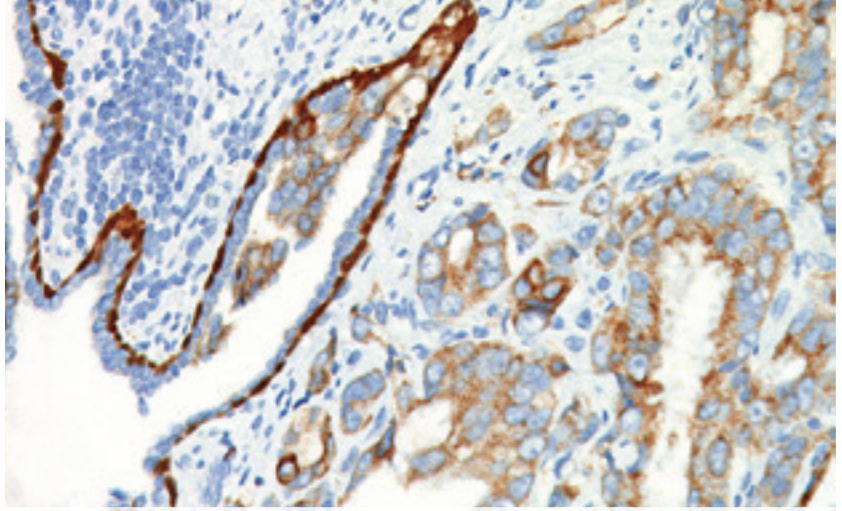
Prostate stained with Cytokeratin 5/14 Cocktail

Cytokeratin 5/14 Cocktail IVD FFPE

Clone	XM26 + LL002
Isotype	IgG1/kappa + IgG3
Reactivity	
Control	Normal prostate
Cat. No.	ACI 3025 A, C; API 3025 AA; OAI 3025 T60

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.



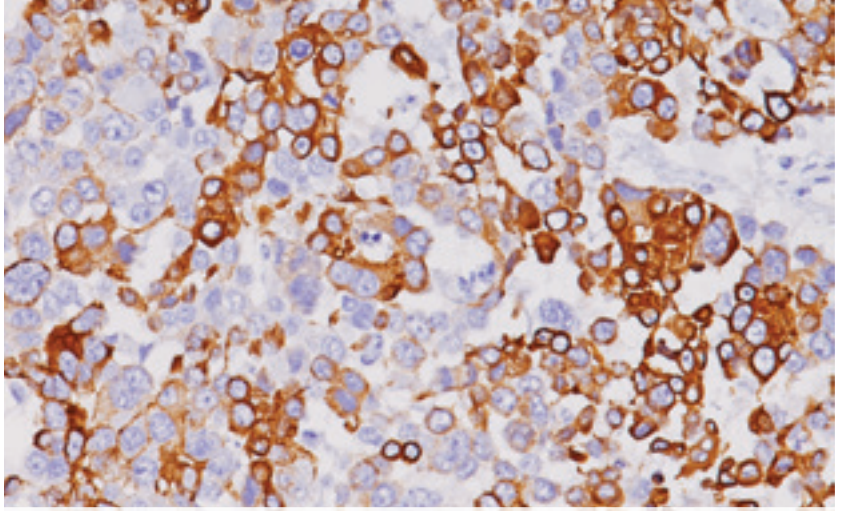
Prostate cancer stained with CK5/14 + p63 + P504S

CK5/14 + p63 + P504S RUO FFPE

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.



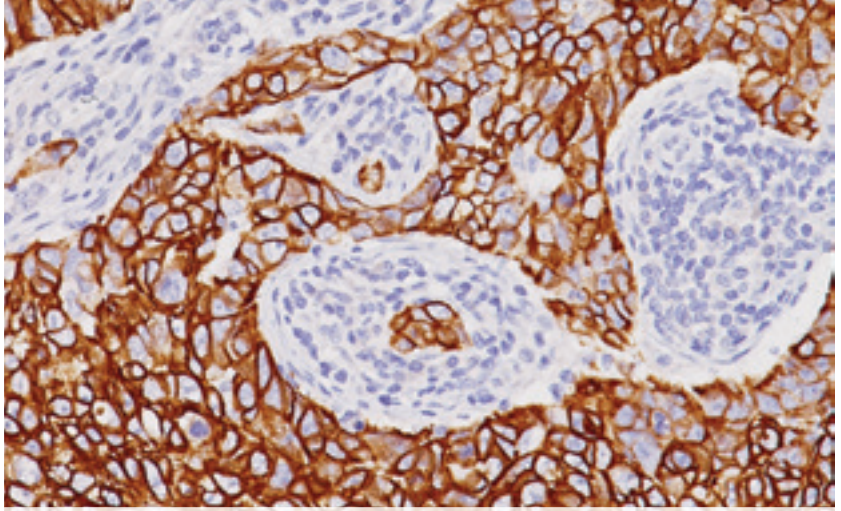
Breast cancer stained with Cytokeratin 7 (CK7)

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 CDX2 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.



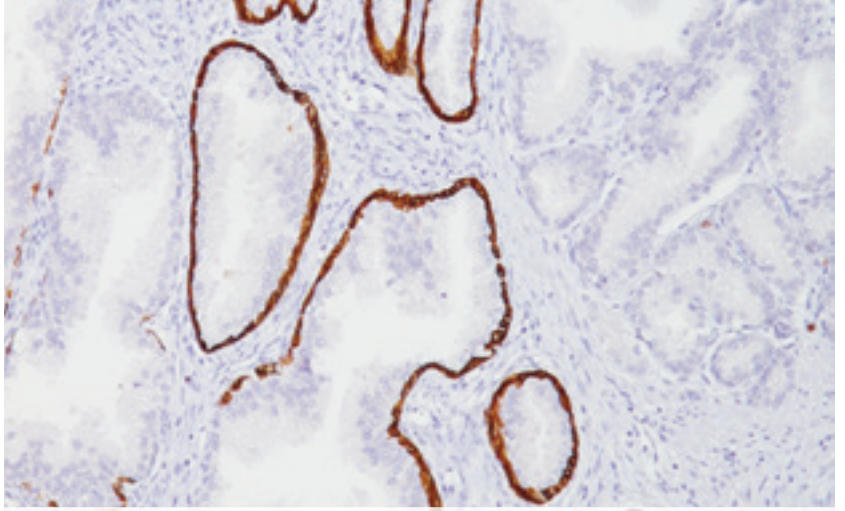
Breast cancer stained with Cytokeratin 7 (CK7)

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; IPI 061 G10; OAI 061 T60

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.



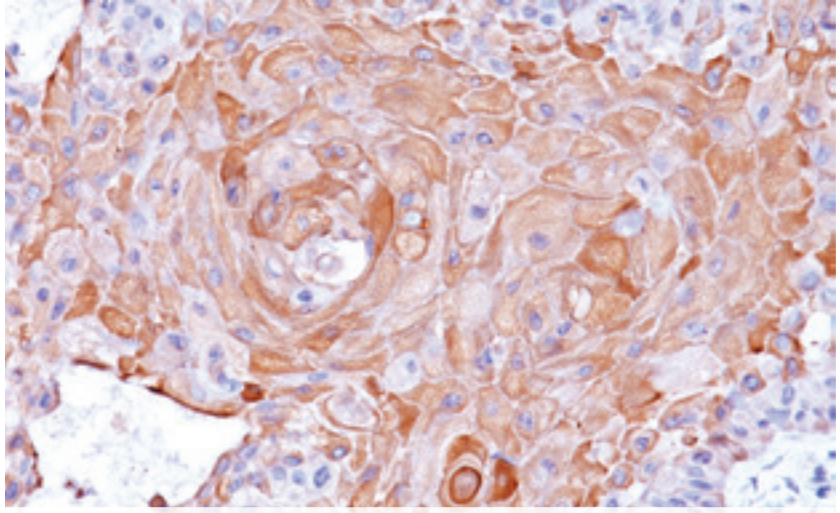
Prostate stained with Cytokeratin 14 (CK14)

Cytokeratin 14 (CK14) IVD FFPE

Clone	LL002
Isotype	IgG3
Reactivity	
Control	Prostate
Cat. No.	CM 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.



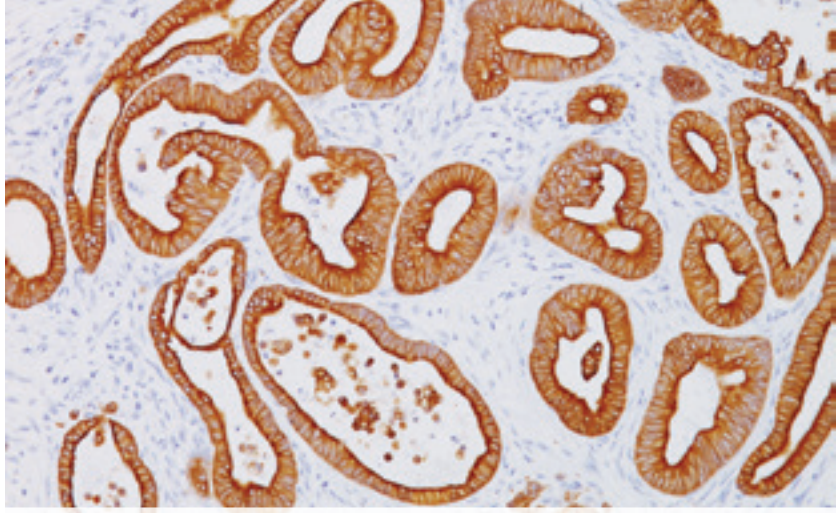
Lung squamous cell carcinoma stained with Cytokeratin 17 (CK17)

Cytokeratin 17 (CK17) IVD FFPE

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.



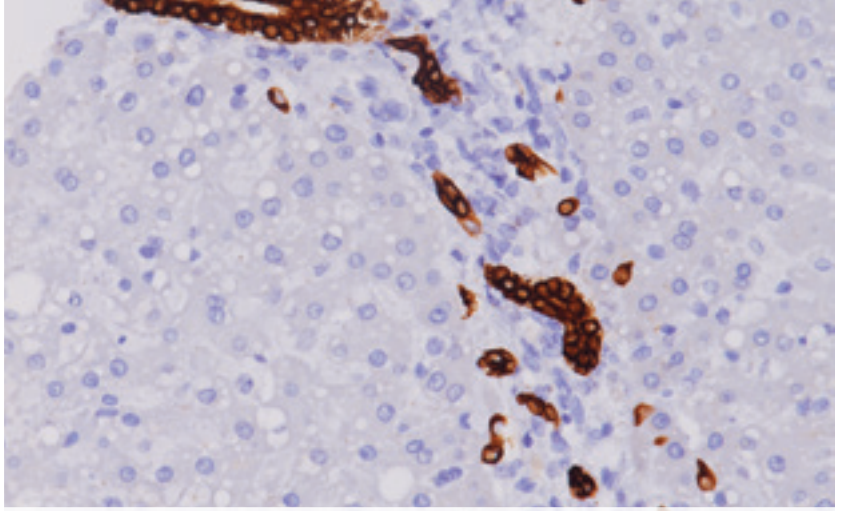
Colon cancer stained with Cytokeratin 18 (CK18)

Cytokeratin 18 (CK18) IVD FFPE

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.



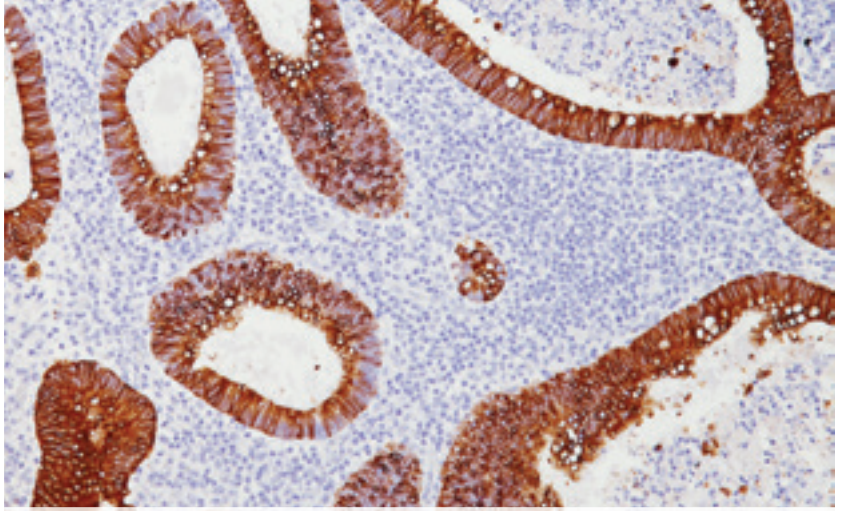
Bile ducts in normal liver stained with Cytokeratin 19 (CK19)

Cytokeratin 19 (CK19) IVD FFPE

Clone	Ks19.1
Isotype	IgG2a/kappa
Reactivity	
Control	Colon cancer or skin
Cat. No.	CM 242 A, C; PM 242 AA; OAI 242 T60

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.



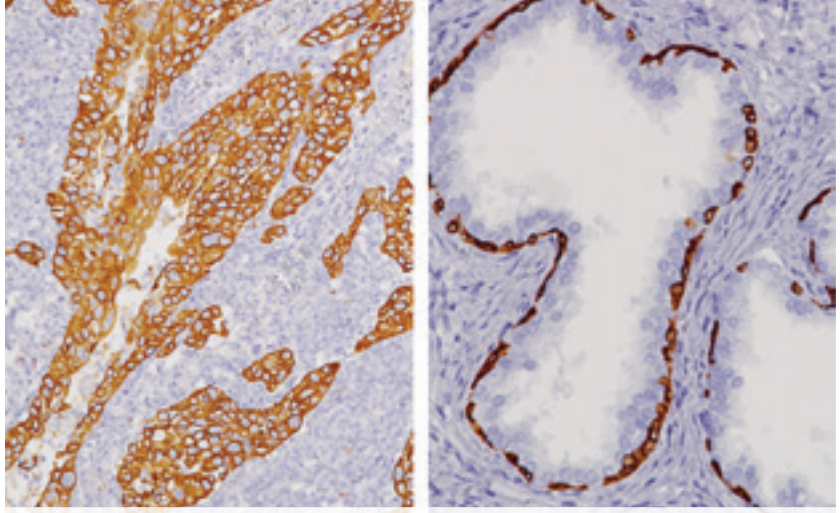
Colon cancer stained with Cytokeratin 20 (CK20)

Cytokeratin 20 (CK20) IVD FFPE

Clone	Ks20.8
Isotype	IgG2a
Reactivity	
Control	Colon carcinoma
Cat. No.	CM 062 A, C; PM 062 AA, H; IP 062 G10; OAI 062 T60

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.



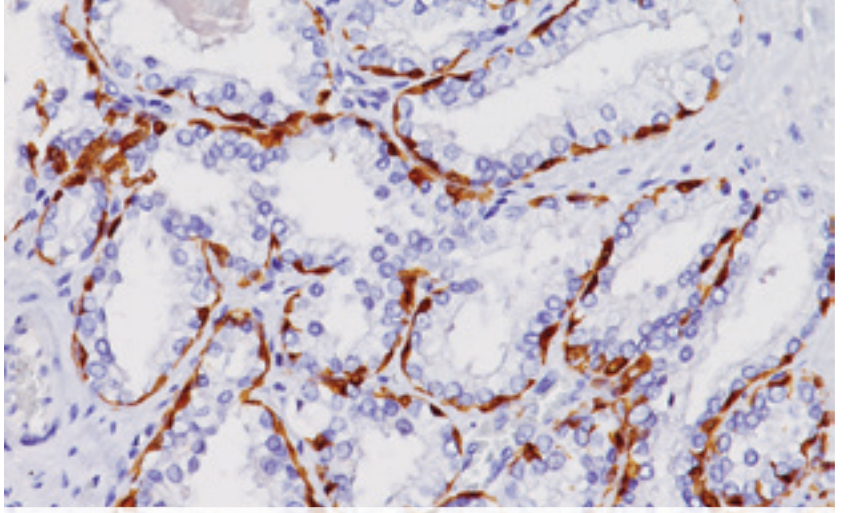
Lung (L) and Prostate (R) stained with Cytokeratin HMW [34βE12]

Cytokeratin HMW [34βE12] IVD FFPE

Clone	34βE12
Isotype	IgG1/kappa
Reactivity	
Control	Skin, prostate or squamous cell carcinoma
Cat. No.	CM 127 A, C; PM 127 AA, H; IPI 127 G10; OAI 127 T60

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.



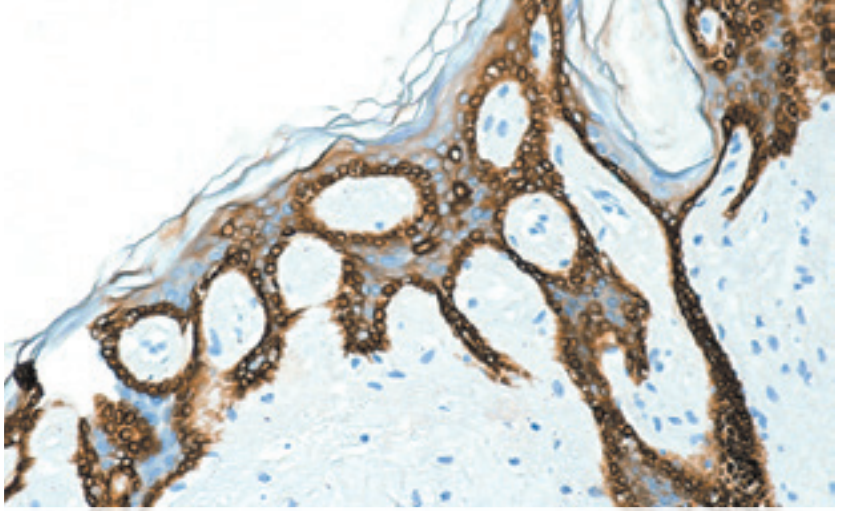
Prostate cancer stained with CK HMW + p63, 2X

CK HMW + p63, 2X IVD FFPE

Clone	34βE12 + 4A4
Isotype	IgG1/kappa + IgG2a/kappa
Reactivity	
Control	Normal prostate glands
Cat. No.	OAI 3124K T90 supernova

In prostate, CK HMW [34βE12] has been shown to be a useful marker of basal cells of normal glands and prostatic intraepithelial neoplasia (PIN), a precursor lesion to prostatic adenocarcinoma; whereas invasive prostatic adenocarcinoma typically lacks a basal cell layer. p63 was detected in nuclei of the basal epithelium in normal prostate glands; however, it was not expressed in malignant tumors of the prostate. Studies have shown that CK HMW [34βE12] with p63 may be useful in the evaluation of normal prostate glands, PIN and prostatic adenocarcinoma. A 2-fold dilution of CK HMW + p63, 2X is intended to create a ready-to-use antibody cocktail for use on the ONCORE Automated Slide Stainer.

1. Moll R, *et al.* Cell. 1982 Nov; 31(1):11-24. 2. Bostwick DG, Qian J. Mod Pathol. 2004 Mar; 17(3):360-79. 3. Humphrey PA. J Clin Pathol. 2007 Jan; 60(1):35-42. 4. Yang A, *et al.* Mol Cell. 1998 Sep; 2(3):305-16. 5. Signoretti S, *et al.* Am J Pathol. 2000 Dec; 157(6):1769-75. 6. Shah RB, *et al.* Am J Surg Pathol. 2002 Sep; 26(9):1161-8. 7. Shah RB, *et al.* Am J Clin Pathol. 2004 Oct; 122(4):517-23.



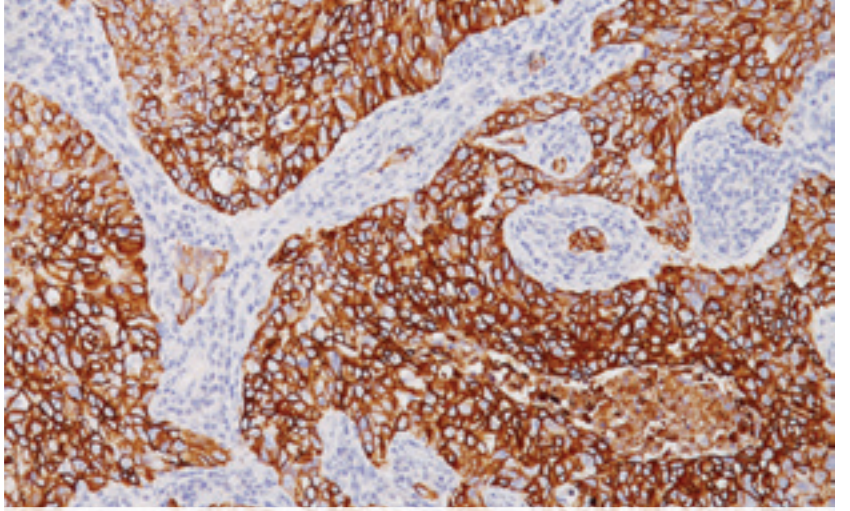
Skin stained with Cytokeratin [AE1] LMW

Cytokeratin [AE1] LMW IVD FFPE

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.



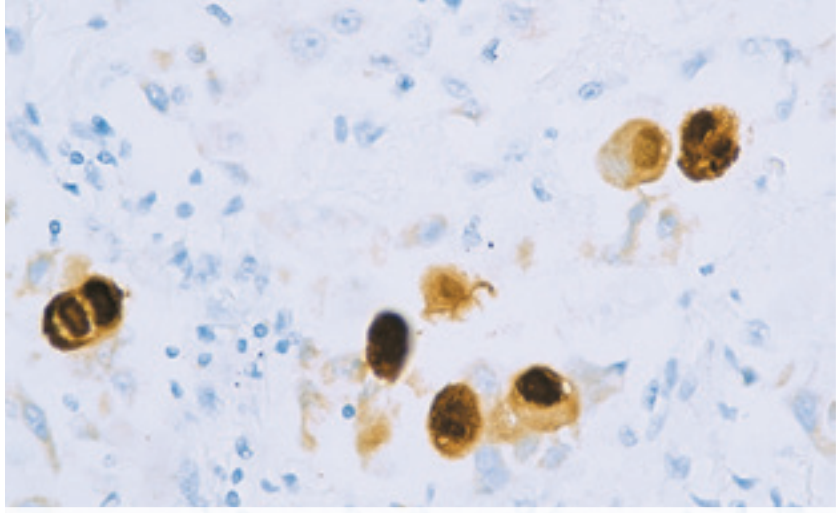
Breast cancer stained with Cytokeratin LMW (8/18)

Cytokeratin LMW (8/18) IVD FFPE

Clone	5D3
Isotype	IgG1
Reactivity	
Control	Skin
Cat. No.	CM 056 A, C; PM 056 AA, H; IPI 056 G10; OAI 056 T60

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.



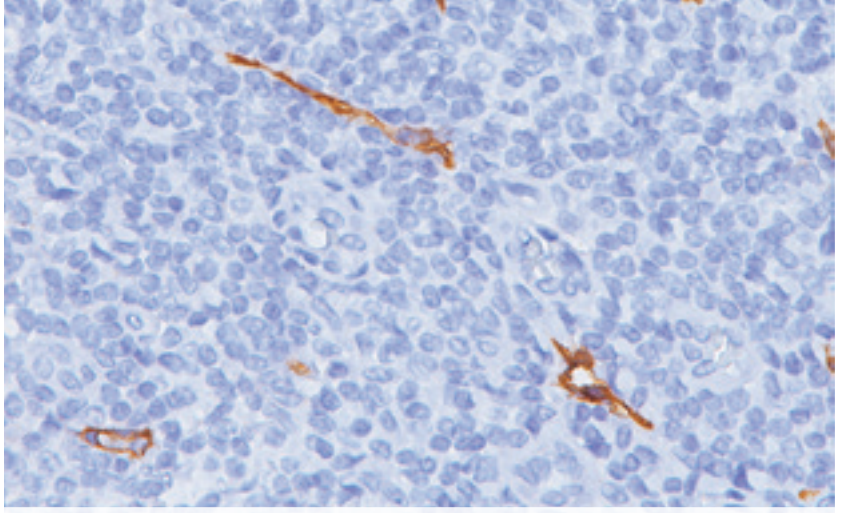
CMV infected tissue stained with Cytomegalovirus (CMV)

Cytomegalovirus (CMV) ASR FFPE

Clone	DT10 + BC90
Isotype	IgG2a + IgG1
Reactivity	N/A
Control	N/A
Cat. No.	ACA 118 A, B, C; APA 118 AA; OAA 118 T60

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.



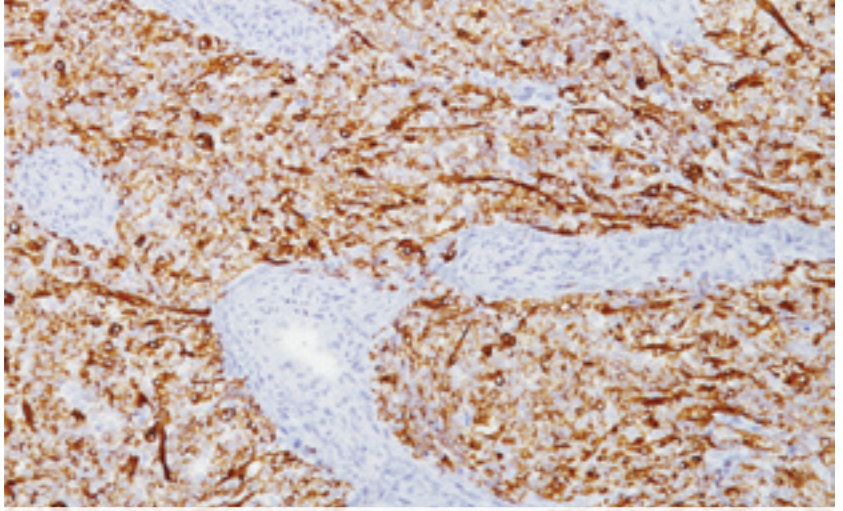
Lymphatic vessel stained with D2-40 (Lymphatic Marker)

D2-40 (Lymphatic Marker) IVD FFPE

Clone	D2-40
Isotype	IgG1
Reactivity	
Control	Tonsil, breast cancer or colon cancer
Cat. No.	CM 266 A, B, C; PM 266 AA; IP 266 G10; OAI 266 T60

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, angiolipomas, 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.



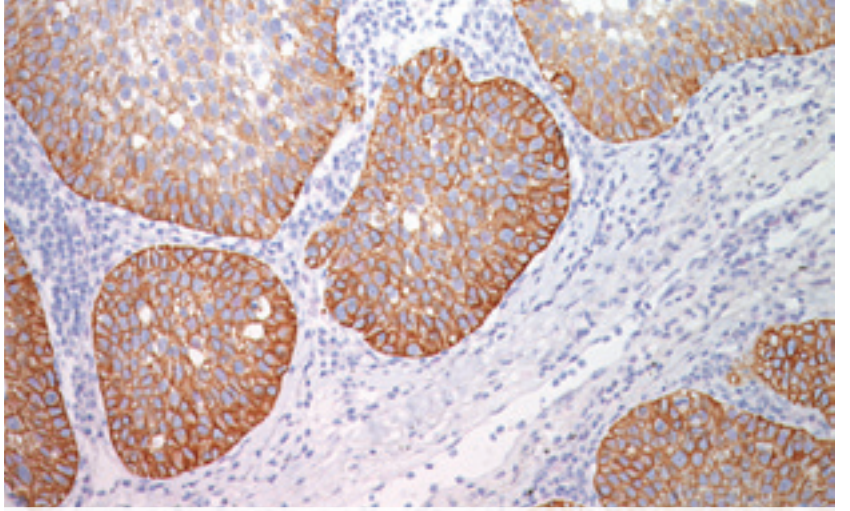
Rhabdomyosarcoma stained with Desmin

Desmin IVD FFPE

Clone	D33
Isotype	IgG1/kappa
Reactivity	
Control	Leiomyoma, leiomyosarcoma or rhabdomyosarcoma
Cat. No.	CM 036 A, B, C; PM 036 AA; IP 036 G10; OAI 036 T60

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.



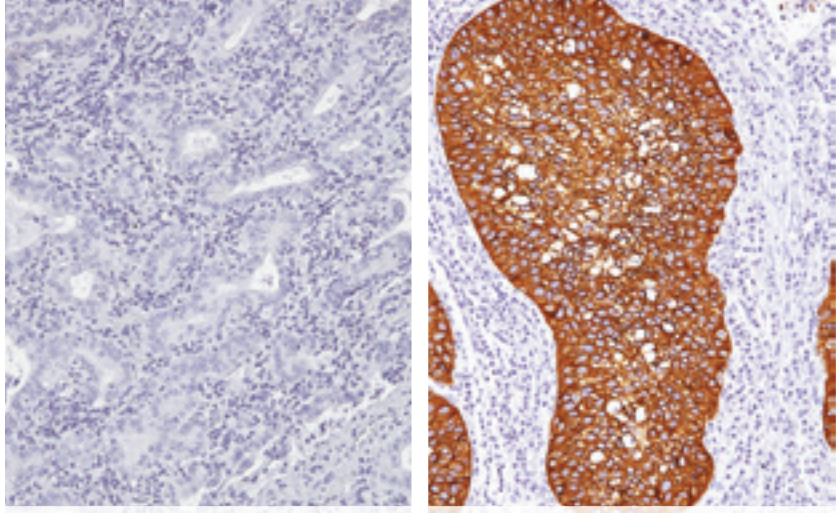
Lung squamous cell carcinoma stained with Desmoglein 3

Desmoglein 3 IVD FFPE

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.



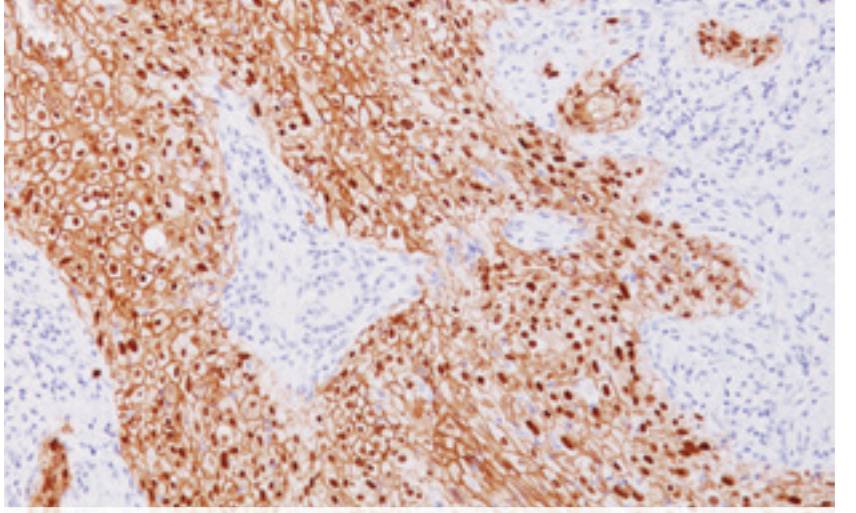
(L) Lung ADC and (R) Lung SqCC stained with Desmoglein 3 + CK5

Desmoglein 3 + CK5 IVD FFPE

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

Desmoglin 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.



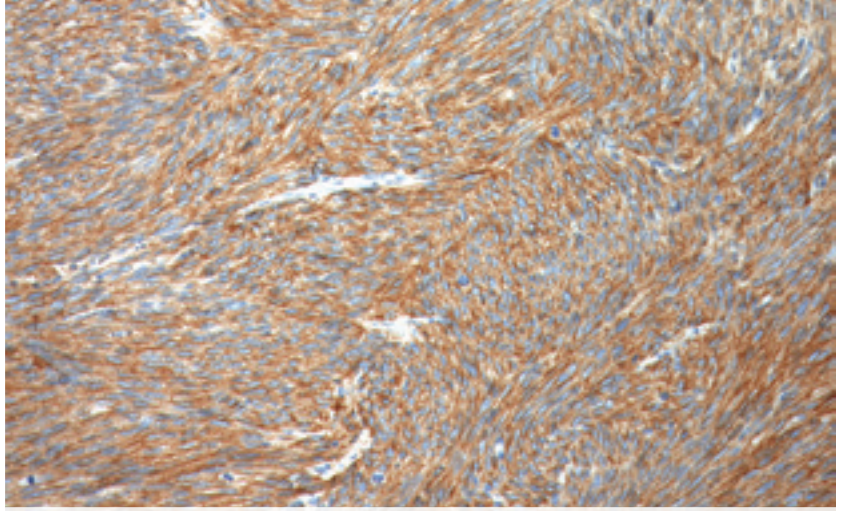
Lung squamous cell carcinoma stained with Desmoglein 3 + p40 (M)

Desmoglein 3 + p40 (M) IVD FFPE

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.



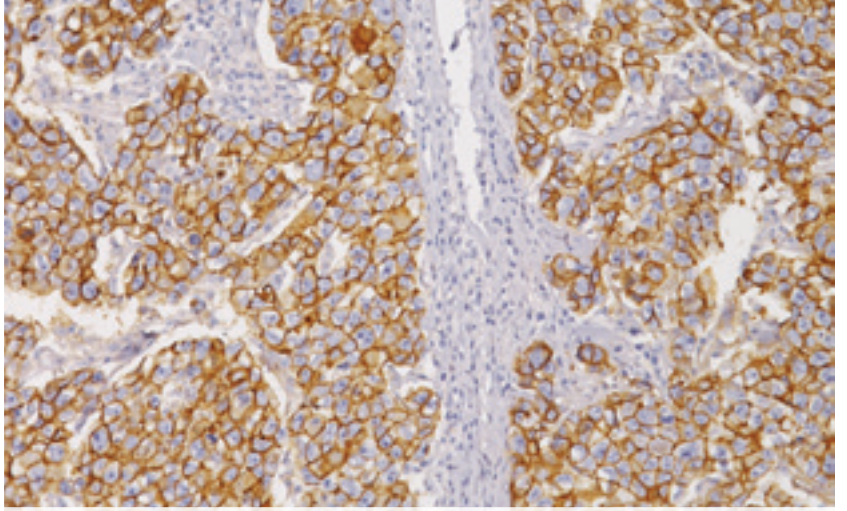
GIST stained with DOG1

DOG1 IVD FFPE

Clone	DOG1.1
Isotype	IgG1/kappa
Reactivity	
Control	Gastrointestinal stromal tumors
Cat. No.	CM 385 A, C; PM 385 AA; OAI 385 T60

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.



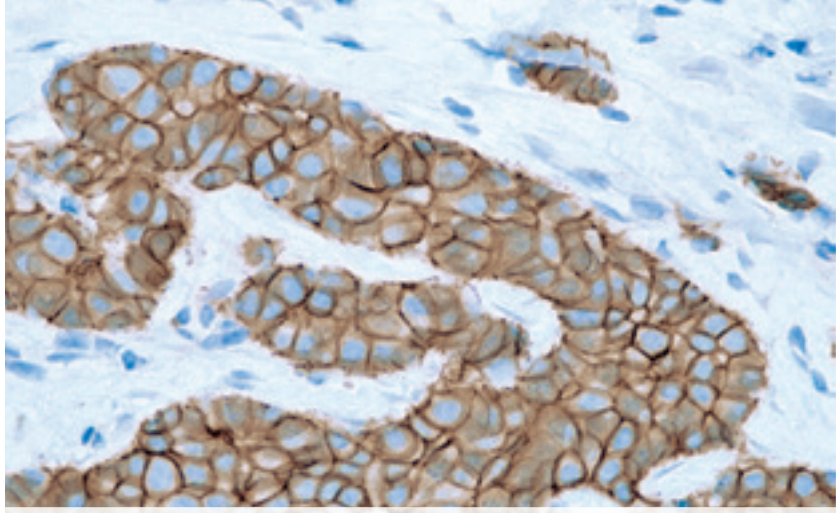
Breast ductal cell carcinoma stained with E-cadherin (RM)

E-cadherin (RM) IVD FFPE PREFERRED

Clone	EP6
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.



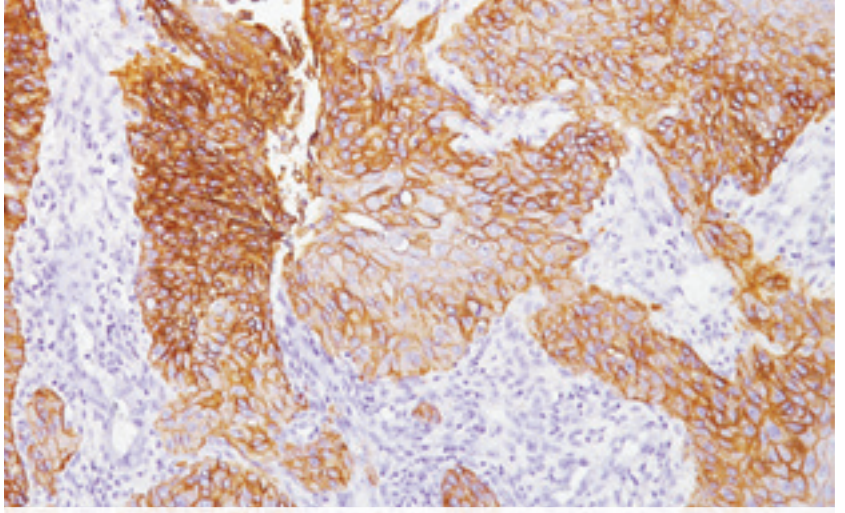
Breast cancer stained with E-cadherin

E-cadherin IVD FFPE

Clone	HECD-1
Isotype	IgG1
Reactivity	
Control	Breast cancer
Cat. No.	CM 170 A, 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.



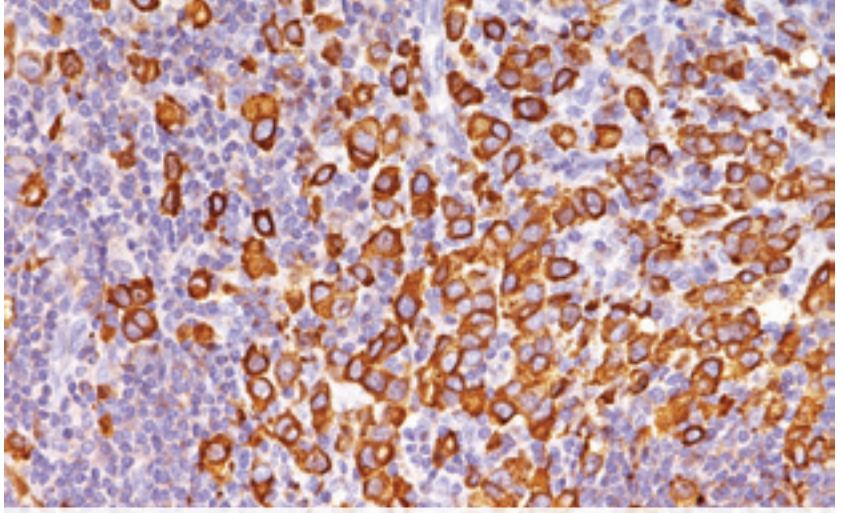
Lung cancer stained with Epidermal Growth Factor Receptor (EGFR)

Epidermal Growth Factor Receptor (EGFR) IVD FFPE

Clone	H11
Isotype	IgG1
Reactivity	
Control	Squamous cell carcinoma or skin
Cat. No.	ACI 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, cerbB-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.



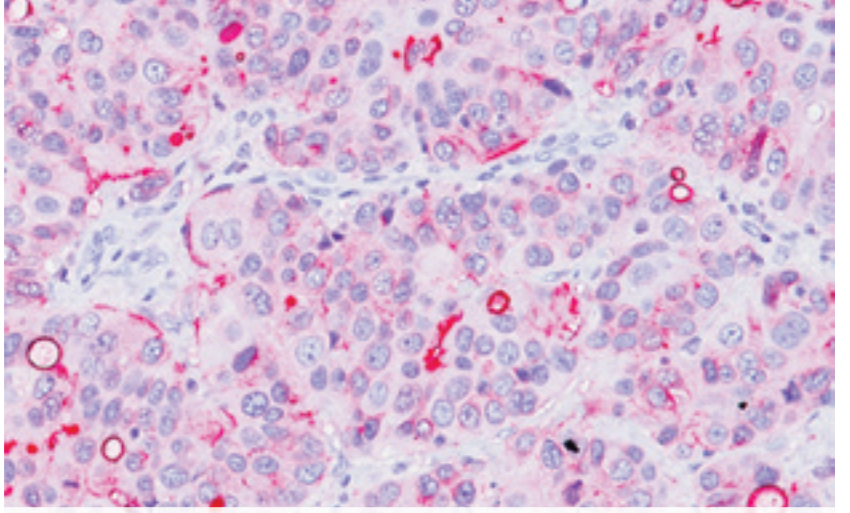
Breast cancer stained with Epithelial Membrane Antigen (EMA) [E29]

Epithelial Membrane Antigen [E29] IVD FFPE

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.



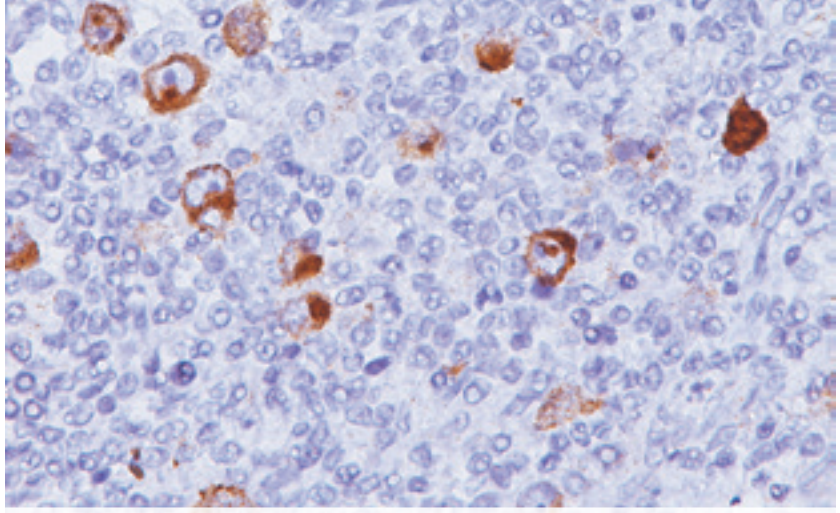
Breast cancer stained with Epithelial Membrane Antigen (EMA) [Mc-5]

Epithelial Membrane Antigen [Mc-5] IVD FFPE 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.



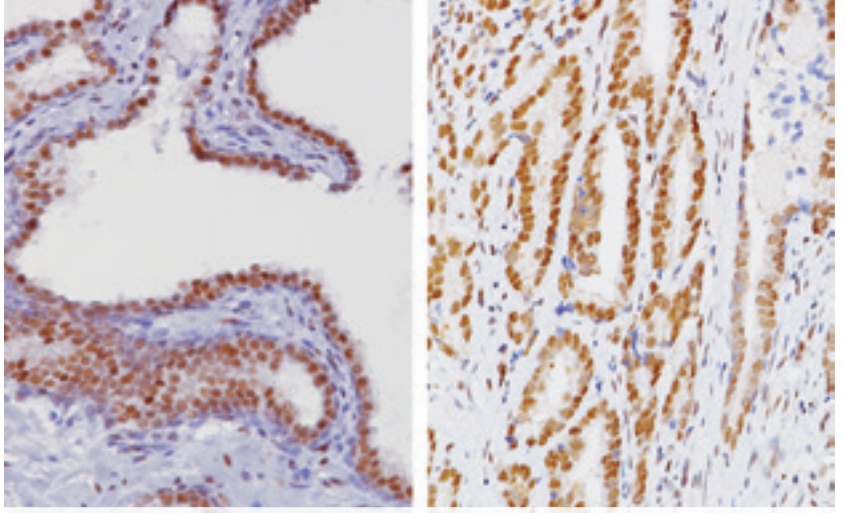
Hodgkin's lymphoma stained with Epstein-Barr Virus (EBV)

Epstein-Barr Virus (EBV) ASR FFPE

Clone	EBV01 + EBV02 + EBV03
Isotype	IgG1/kappa + IgG1/kappa + 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.



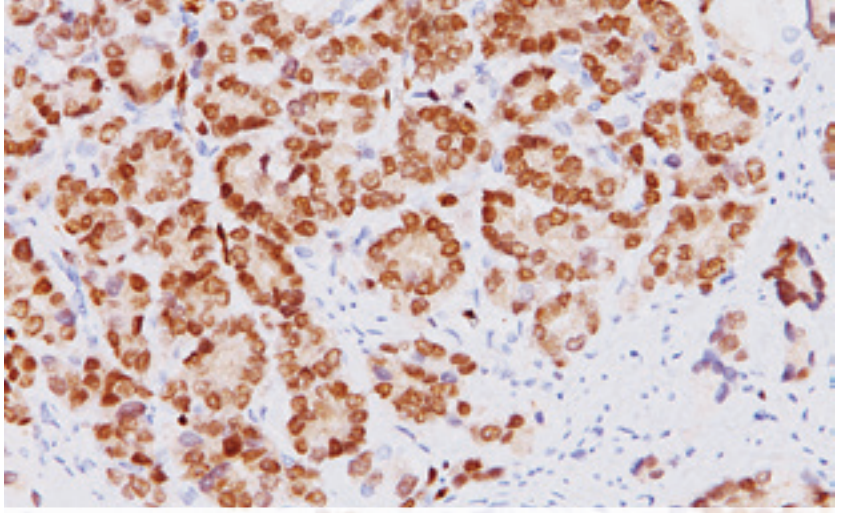
(L) Normal prostate; (R) Prostate cancer stained with ERCC1

ERCC1 IVD FFPE

Clone	4F9
Isotype	IgG1
Reactivity	
Control	Prostate or prostate cancer
Cat. No.	ACI 3147 A, B

The excision repair cross-complementation group 1 (ERCC1) gene encodes a protein required for nucleotide excision repair and inter-strand crosslink repair of DNA. Platinum chemotherapy drug resistance has been linked to elevated levels of ERCC1-XPF nuclease, making ERCC1 a potential predictive diagnostic biomarker. ERCC1 expression may have prognostic value in lung, colorectal, head and neck, bladder, breast and cervical cancers. Although clone 8F1 has traditionally been used in IHC to detect ERCC1 expression, 8F1 has been found to cross-react with PCYT1A, an unrelated nuclear membrane protein. Clone 4F9 does not show this cross-reaction, providing superior specificity for ERCC1 expression.

1. Bhagwat NR, *et al.* Cancer Res. 2009 Sep 1; 69(17):6831-8. 2. Ma D, *et al.* BMC Biotechnol. 2012 Nov 21; 12:88. 3. Smith DH, *et al.* Sci Rep. 2014 Mar 7; 4:4313. 4. Bauman JE, *et al.* Br J Cancer. 2013 Oct 15; 109(8):2096-105. 5. Ozcan MF, *et al.* Urol Oncol. 2013 Nov; 31(8):1709-15. 6. Palomba G, *et al.* J Transl Med. 2014 Sep 25; 12:272.



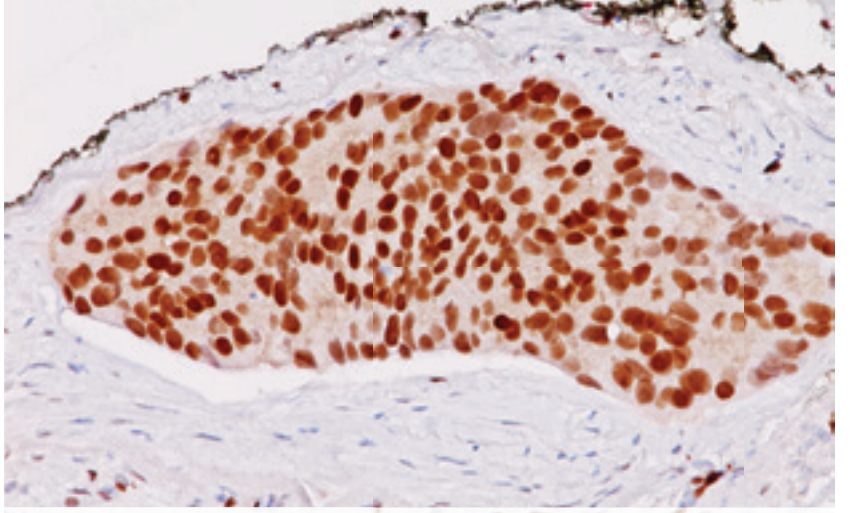
Prostate cancer stained with ERG

ERG IVD FFPE

Clone	9FY
Isotype	IgG1
Reactivity	
Control	ERG positive prostate cancer and/or PIN glands
Cat. No.	CM 421 A, C; PM 421 AA; VP 421 G; OAI 421 T60

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.* US Patent: 8,765,916 B2

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.



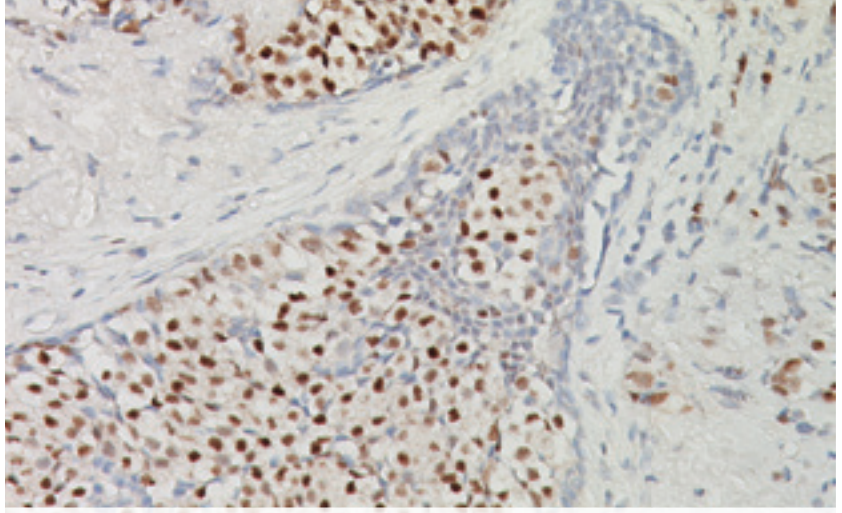
Prostate cancer stained with ERG (M), 2X

ERG (M), 2X IVD FFPE

Clone	9FY
Isotype	IgG1
Reactivity	
Control	ERG positive prostate cancer and/or PIN glands
Cat. No.	API 3017 AAK supernova

TMPRSS2:ERG has been found to be a frequent gene rearrangement in prostate cancers, occurring in 45-65% of North American patients. There is a strong correlation between ERG protein expression and the presence of TMPRSS2:ERG rearrangement and a high concordance of ERG positive prostatic intraepithelial neoplasia (PIN) and ERG positive carcinoma. ERG expression offers a rare, but definitive marker of adenocarcinoma of prostatic origin. ERG (M), 2X may be combined with AMACR (RM), 2X to form a primary antibody combination. *Note: ERG [9FY] was developed by the Center for Prostate Disease Research in association with the Henry M. Jackson Foundation, Rockville, Maryland.* US Patent: 8,765,916 B2

1. Petrovics G, *et al*. Oncogene. 2005 May 26; 24(32):3847-52. 2. Kumar-Sinha C, Tomlins SA, Chinnaiyan AM. Nat Rev Cancer. 2008 Jul; 8(7):497-511. 3. Furusato B, *et al*. Prostate Cancer Prostatic Dis. 2010 Sep; 13(3):228-37. 4. Mohamed AA, *et al*. J Cancer. 2010 Oct 25; 1:197-208. 5. Miettinen M, *et al*. Am J Surg Pathol. 2011 Mar; 35(3):432-41. 6. Mohamed AA, *et al*. Cancer Biol Ther. 2011 Feb 15;11(4):410-7. 7. Hameed O, Humphrey PA. Semin Diagn Pathol. 2005 Feb; 22(1):88-104. 8. Trpkov K, Bartczak-McKay J, Yilmaz A. Am J Clin Pathol. 2009 Aug; 132(2):211-20.



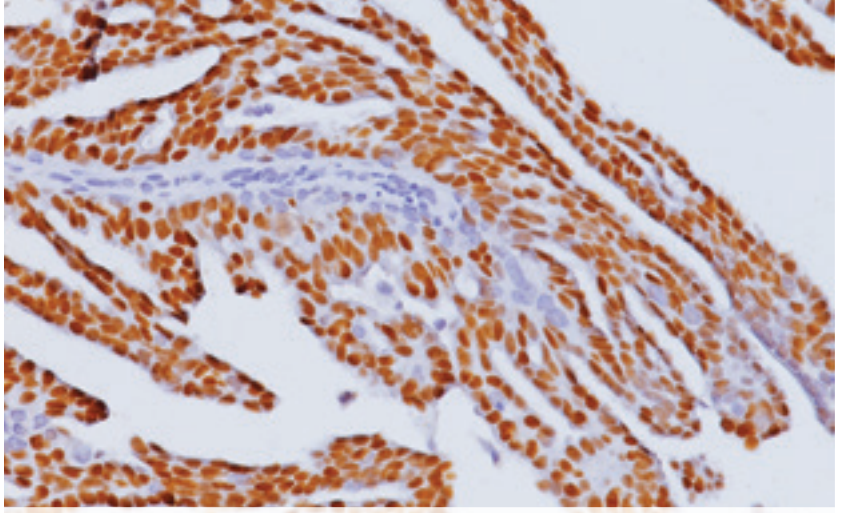
Breast cancer stained with Estrogen Receptor (ER) [1D5]

Estrogen Receptor (ER) [1D5] ASR FFPE

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.



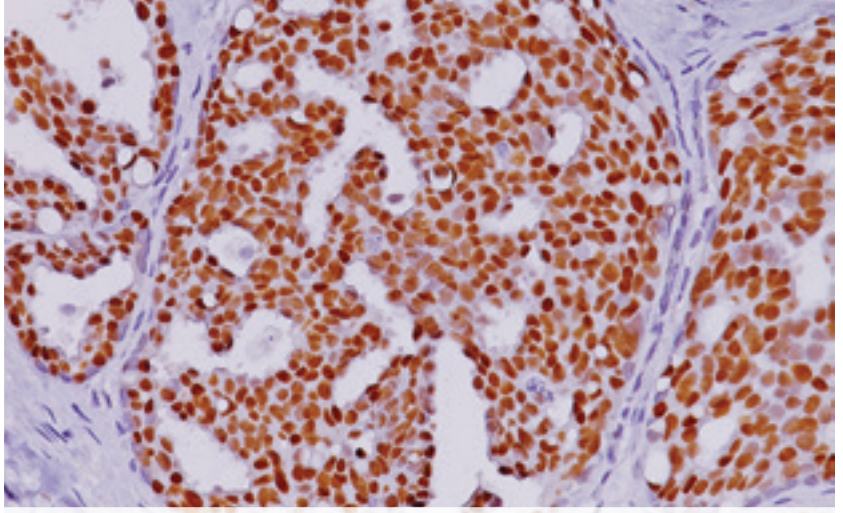
Breast cancer stained with Estrogen Receptor (ER) [6F11]

Estrogen Receptor (ER) [6F11] ASR FFPE

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.



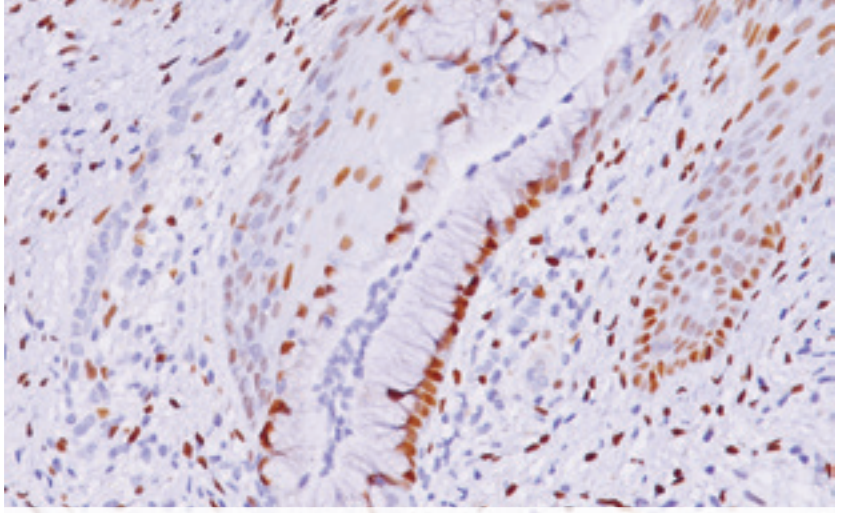
Breast cancer stained with Estrogen Receptor (ER) [6F11 + SP1]

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

Clone	6F11 + SP1
Isotype	IgG1/kappa + IgG
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. 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. 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.



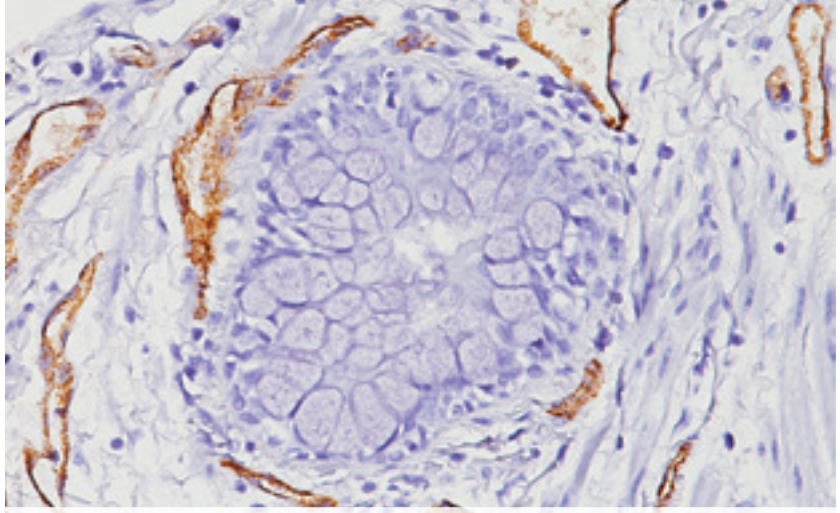
Cervix stained with Estrogen Receptor (ER) [SP1]

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; OAA 301 T60

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.



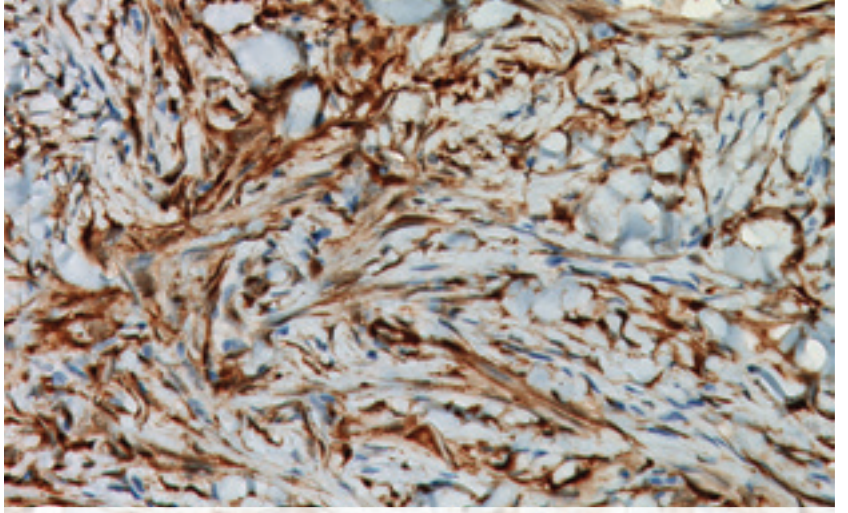
Blood vessels in lung stained with Factor VIII

Factor VIII IVD FFPE

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.



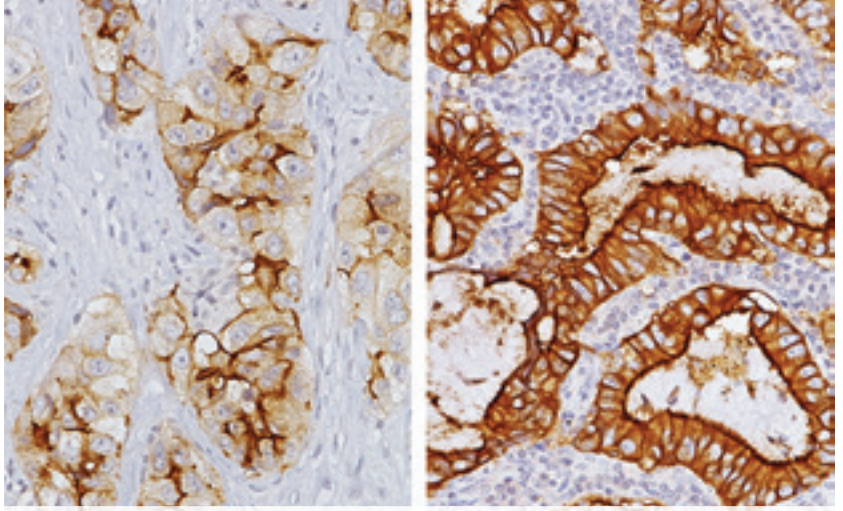
Dermatofibroma stained with Factor XIIIa

Factor XIIIa IVD FFPE

Clone	E980.1
Isotype	IgG1
Reactivity	
Control	Dermatofibroma, placenta or skin
Cat. No.	CM 357 AK, CK; PM 357 AA; IP 357 G10

Factor XIII is a betaglobulin 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.



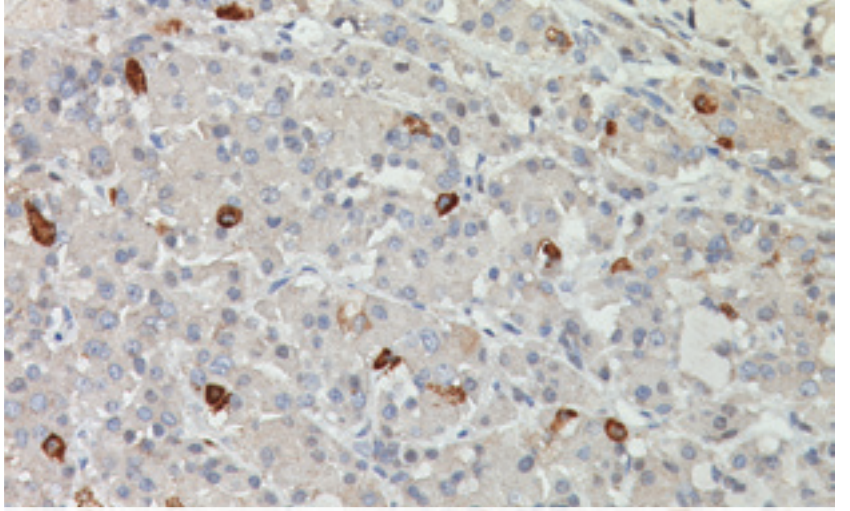
Lung adenocarcinoma from L to R: 2+ staining, 3+ staining with Folate Receptor alpha

Folate Receptor alpha IHC Assay Kit IVD FFPE

Clone	26B3.F2
Isotype	IgG1/kappa
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.



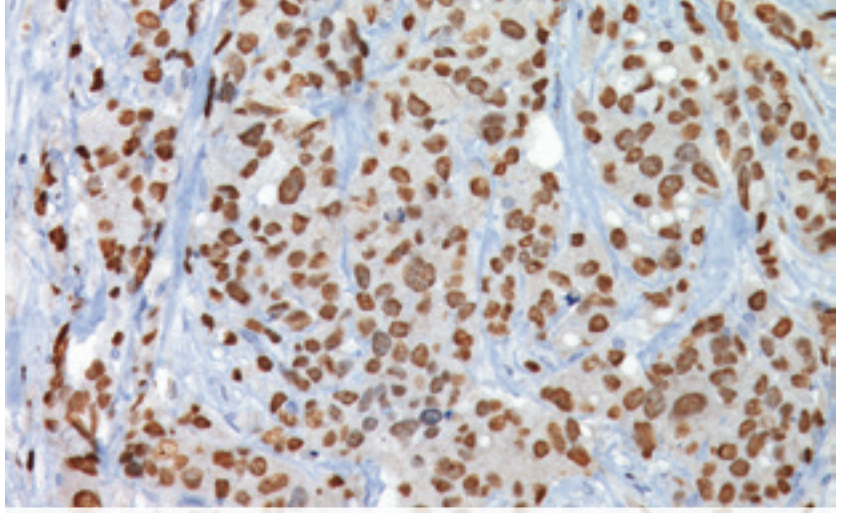
Pituitary gland stained with Follicle Stimulating Hormone (FSH)

Follicle Stimulating Hormone (FSH) IVD FFPE

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.



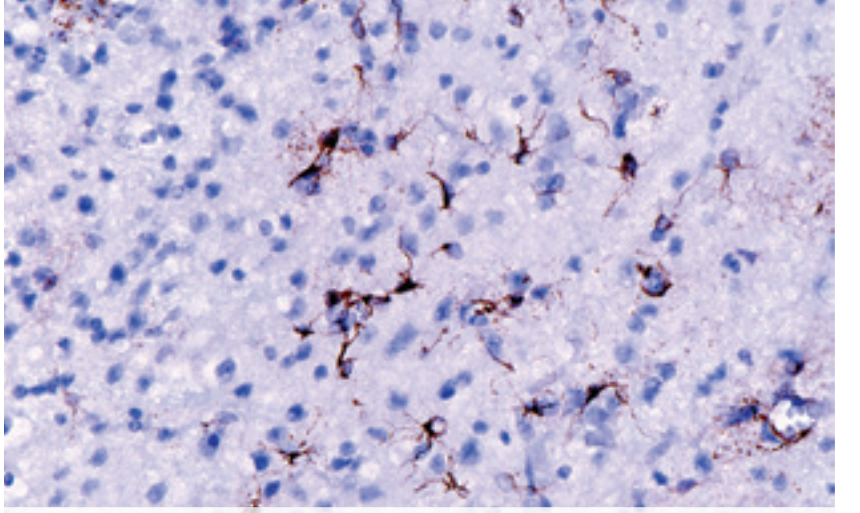
Breast cancer stained with GATA-3

GATA-3 IVD FFPE

Clone	L50-823
Isotype	IgG1/Kappa
Reactivity	
Control	Bladder and breast cancer
Cat. No.	CM 405 A, B; PM 405 AA; OAI 405 T60

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.



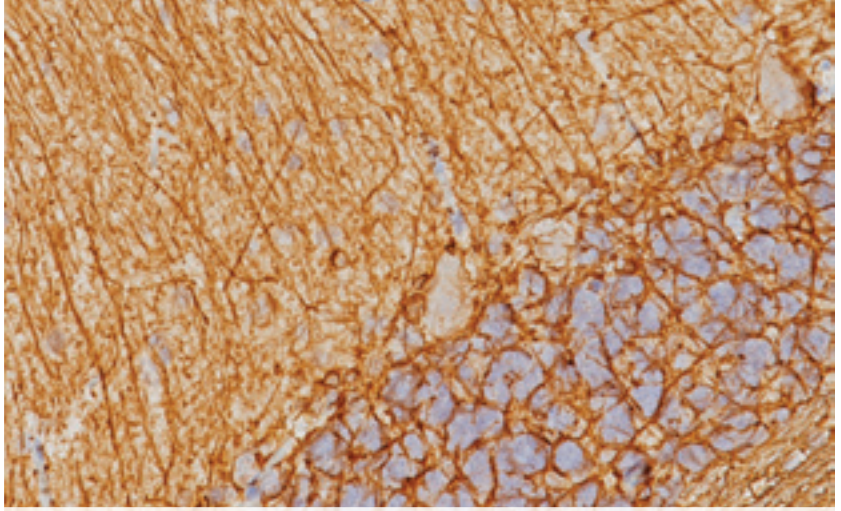
Rat cerebellum stained with Glial Fibrillary Acidic Protein (GFAP {M})

Glial Fibrillary Acidic Protein{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.



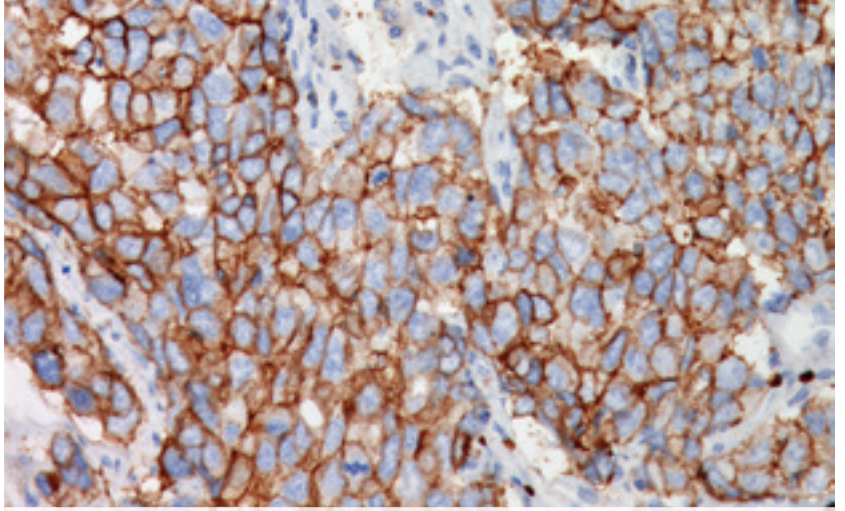
Brain stained with Glial Fibrillary Acidic Protein (GFAP {P})

Glial Fibrillary Acidic Protein (GFAP {P}) IVD FFPE

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 Opthalmol. 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



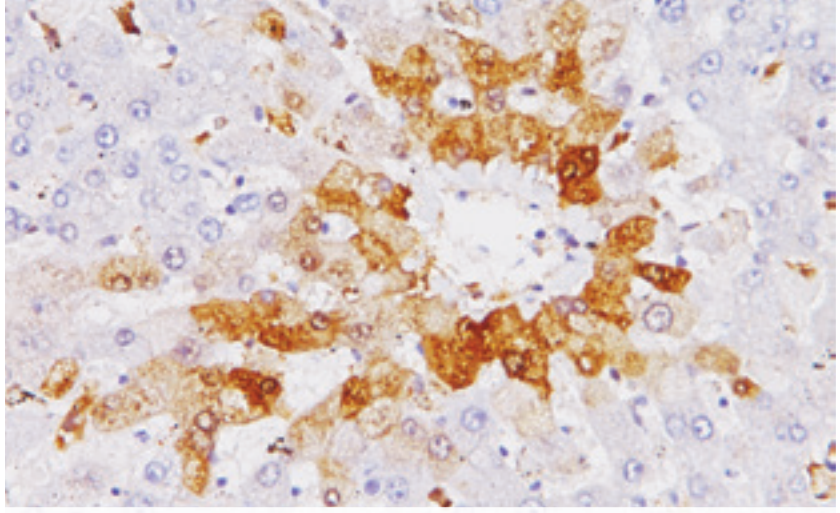
Breast cancer stained with GLUT-1

GLUT-1 IVD FFPE

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.



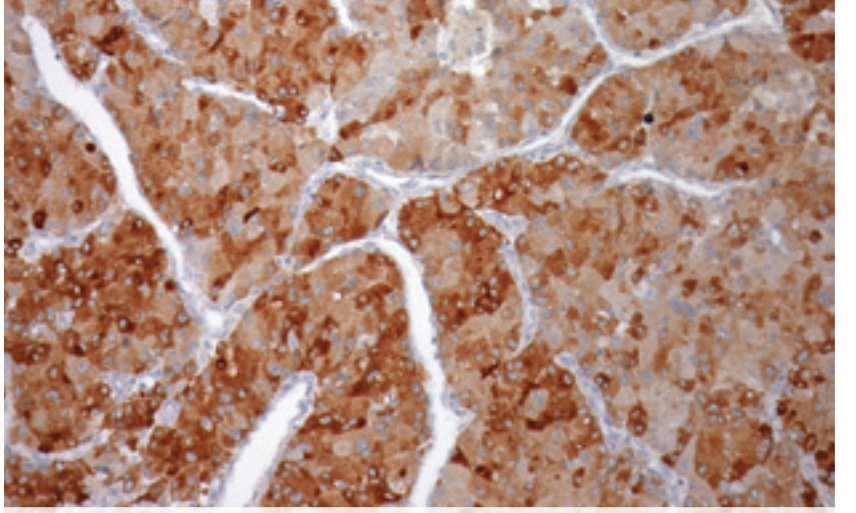
Liver cancer stained with Glutamine Synthetase

Glutamine Synthetase IVD FFPE

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.



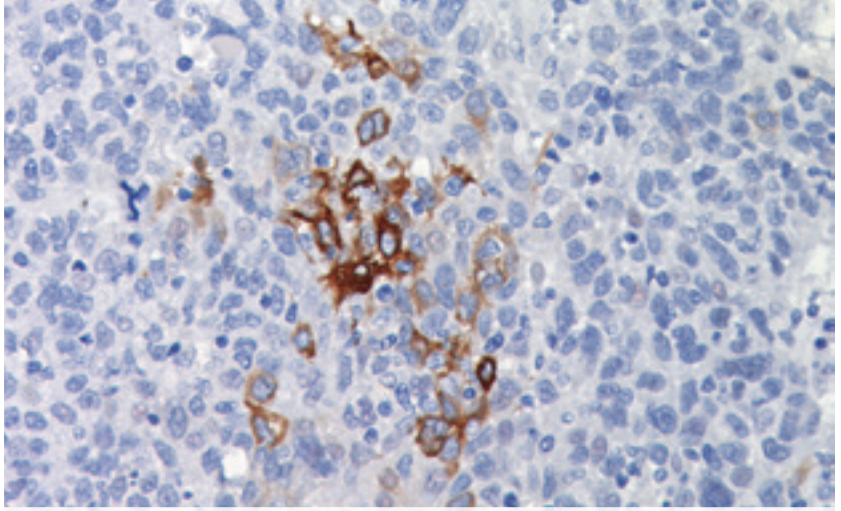
Liver cancer stained with Glypican-3

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.



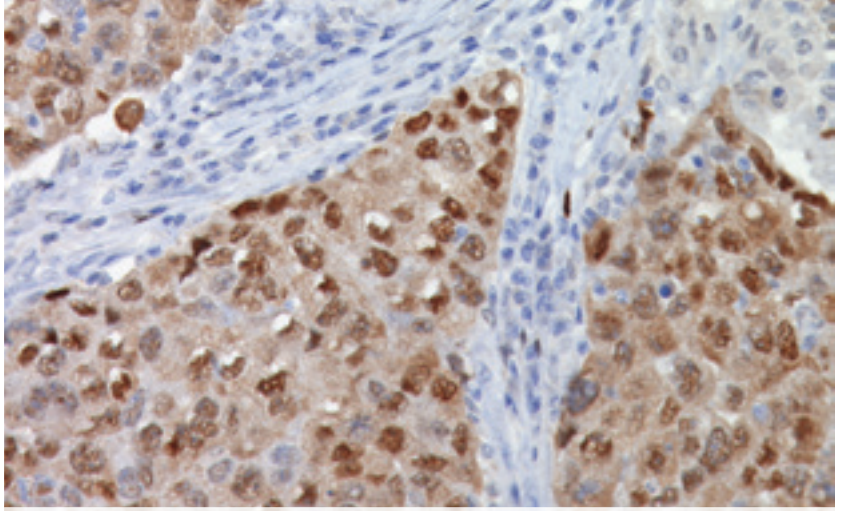
Breast cancer stained with Gross Cystic Disease Fluid Protein-15

Gross Cystic Disease Fluid Protein-15 IVD FFPE

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.



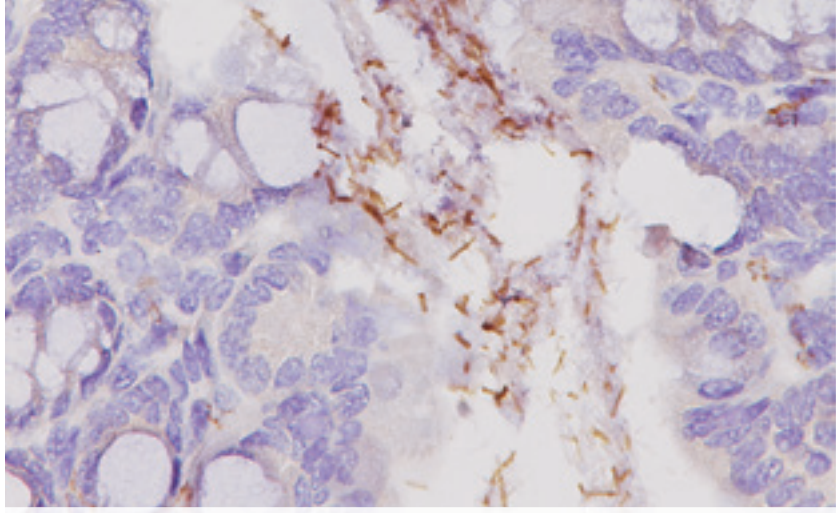
Breast cancer stained with Heat Shock Protein 70

Heat Shock Protein 70 IVD FFPE

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, Jego G, Garrido C. Methods Mol Biol. 2011; 787:205-30.



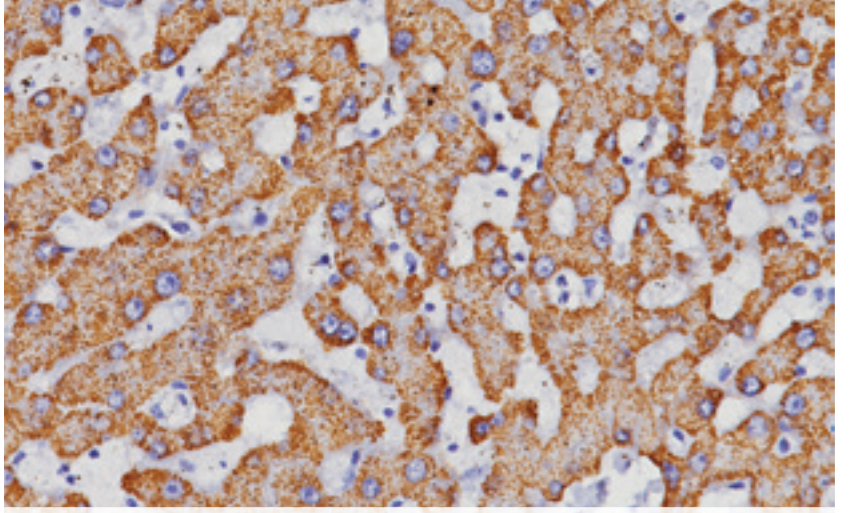
Small intestine stained with *Helicobacter pylori*

Helicobacter pylori IVD FFPE

Clone	BC7
Isotype	IgG1
Reactivity	
Control	Stomach infected with *Helicobacter pylori*
Cat. No.	CM 383 A, C; PM 383 AA, H, L; IP 383 G10; OAI 383 T60

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.



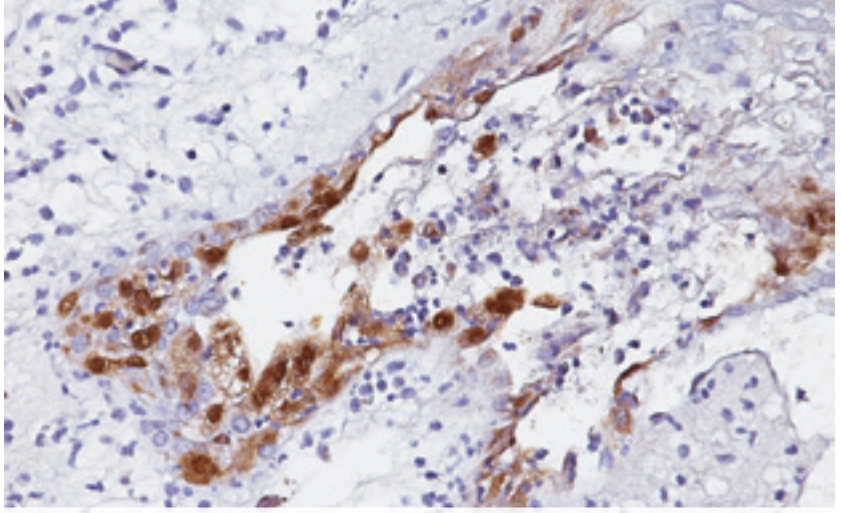
Liver cancer stained with Hepatocyte Specific Antigen (HSA)

Hepatocyte Specific Antigen (HSA) IVD FFPE

Clone	OCH1E5
Isotype	IgG1/kappa
Reactivity	
Control	Liver or liver carcinoma
Cat. No.	CM 166 A, C; PM 166 AA; OAI 166 T60

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.



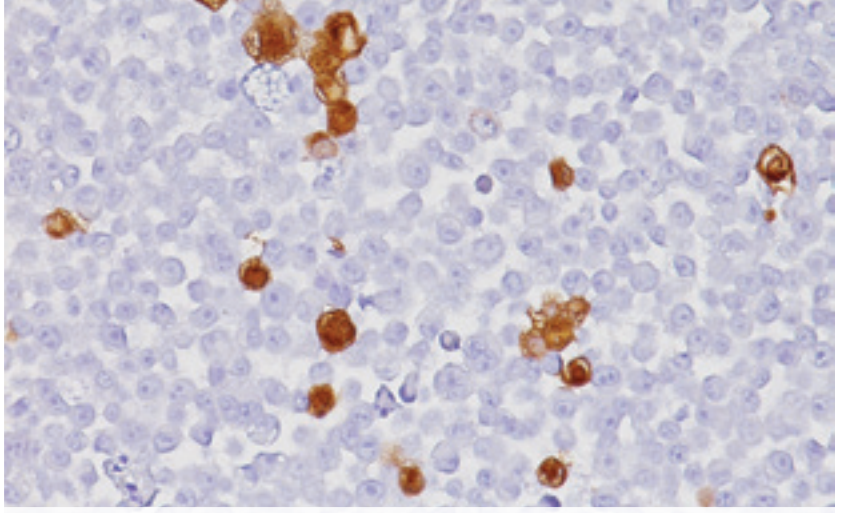
HSV 1 infected skin stained with Herpes Simplex Virus 1 (2X)

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.



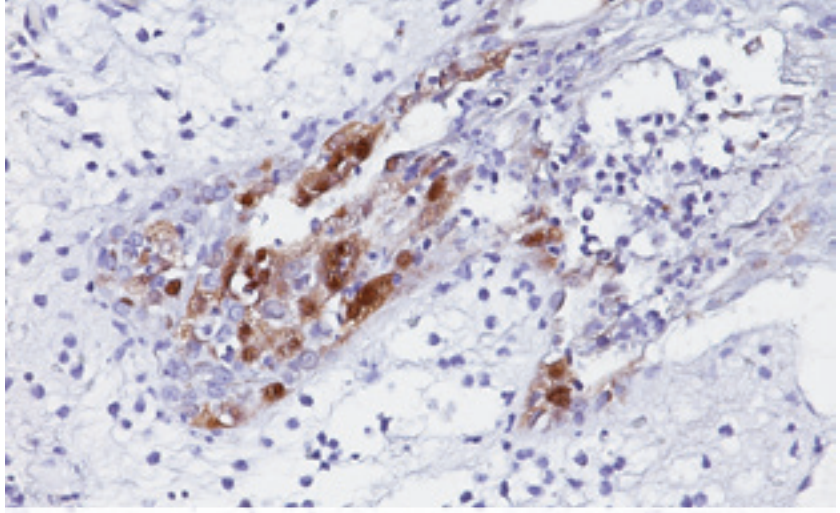
Herpes Simplex infected lung stained with Herpes Simplex Virus 1 & 2 (HSV 1 & 2)

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; IPR 108 G10; OAR 108 T60

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.



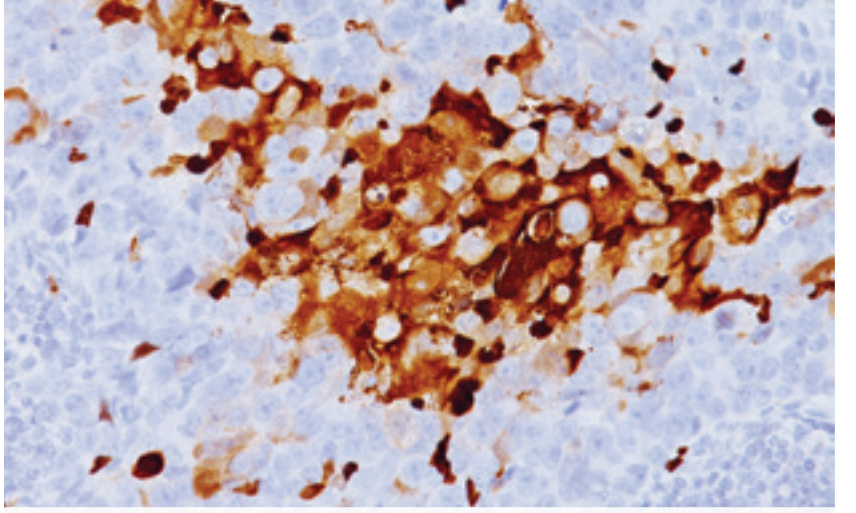
HSV 2 infected skin stained with Herpes Simplex Virus 2 (2X)

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.



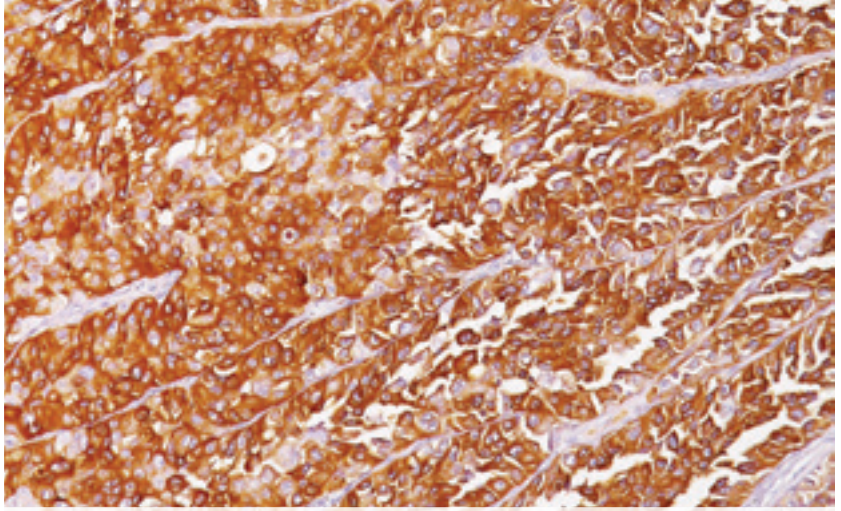
Breast cancer stained with HIF-1 alpha

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.



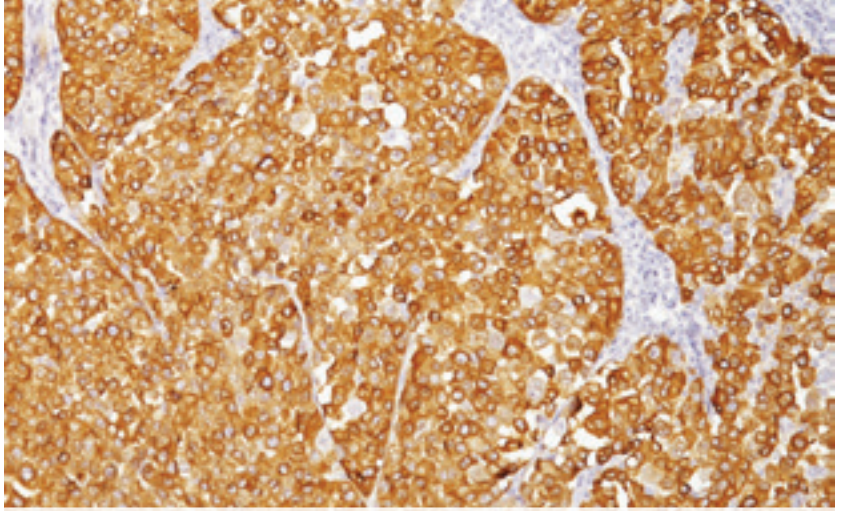
Melanoma stained with HMB45

HMB45 IVD FFPE

Clone	HMB45
Isotype	IgG1/kappa
Reactivity	
Control	Melanoma
Cat. No.	CM 057 A, B, C; PM 057 AA; IP 057 G10; OAI 057 T60

HMB45 reacts with a neuraminidase-sensitive oligosaccharide side chain of a glyco-conjugate 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.



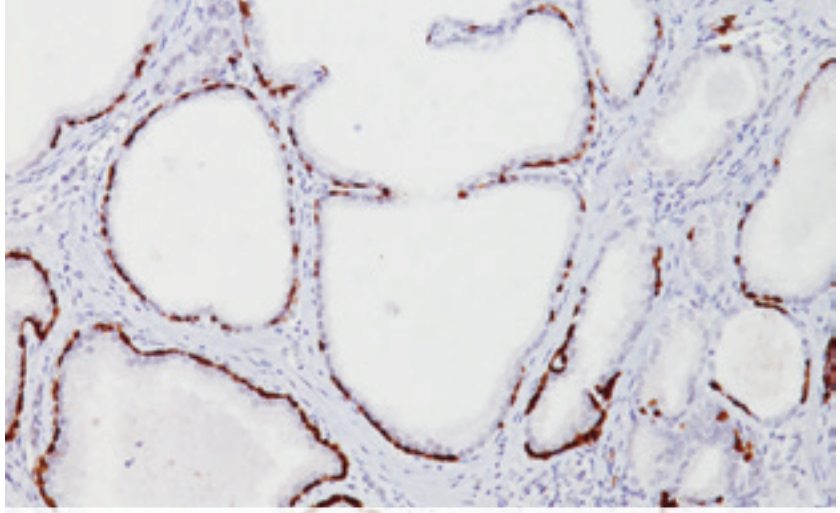
Melanoma stained with HMB45 + MART-1 + Tyrosinase

HMB45 + MART-1 + Tyrosinase IVD FFPE

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; IPI 165 G10

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.



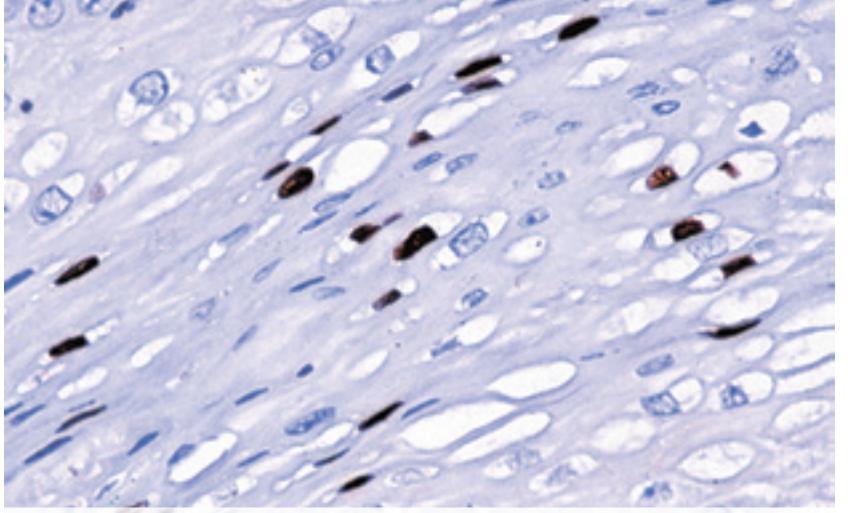
Prostate stained with HMW CK + p63 (Basal Cell Cocktail)

HMW CK + p63 (Basal Cell Cocktail) IVD FFPE

Clone	XM26 / LL002 + 4A4
Isotype	IgG1,kappa/IgG3 + IgG2a,kappa
Reactivity	
Control	Prostatic intraepithelial neoplasia (PIN)
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.



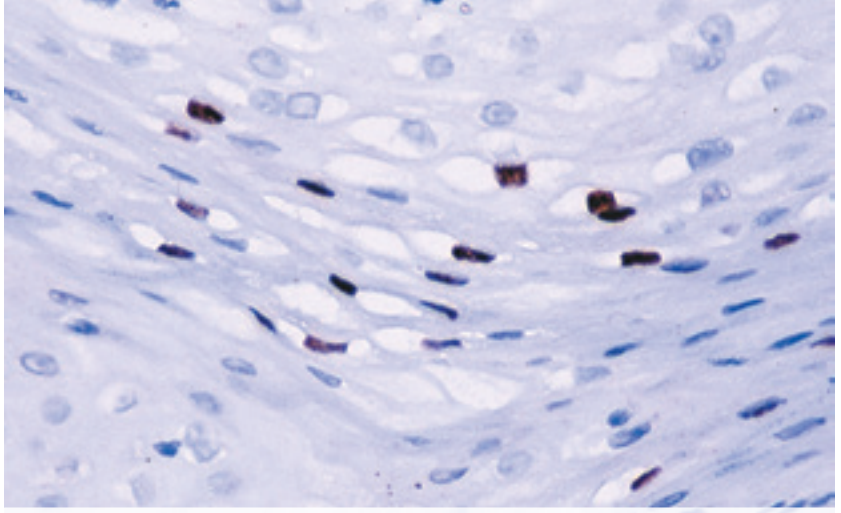
Cervix stained with HPV Cocktail Broad Spectrum

HPV Cocktail Broad Spectrum RUO FFPE

Clone	BPV-1/1H8 + CAMVIR-1
Isotype	IgG + IgG2a
Reactivity	
Control	Infected cervical biopsy
Cat. No.	CM 177 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.



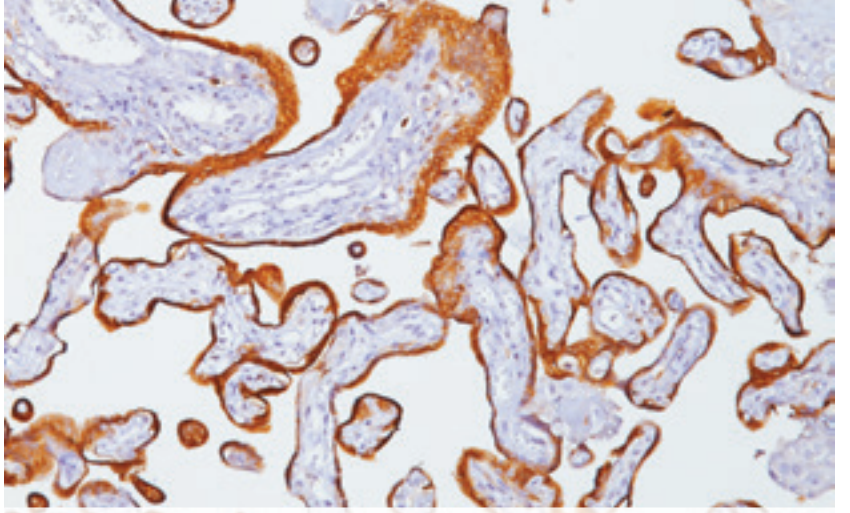
Cervix stained with HPV-16 (CAMVIR-1)

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.



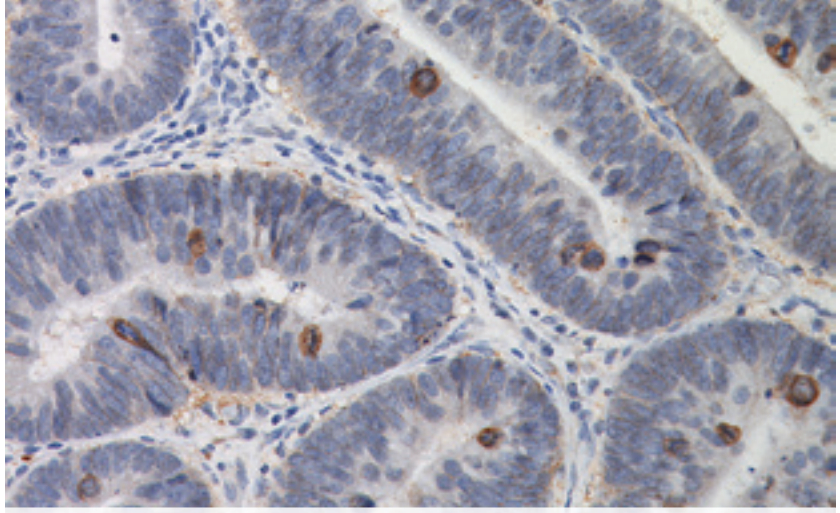
Placenta stained with Human Chorionic Gonadotropin (Beta)

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 then 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.



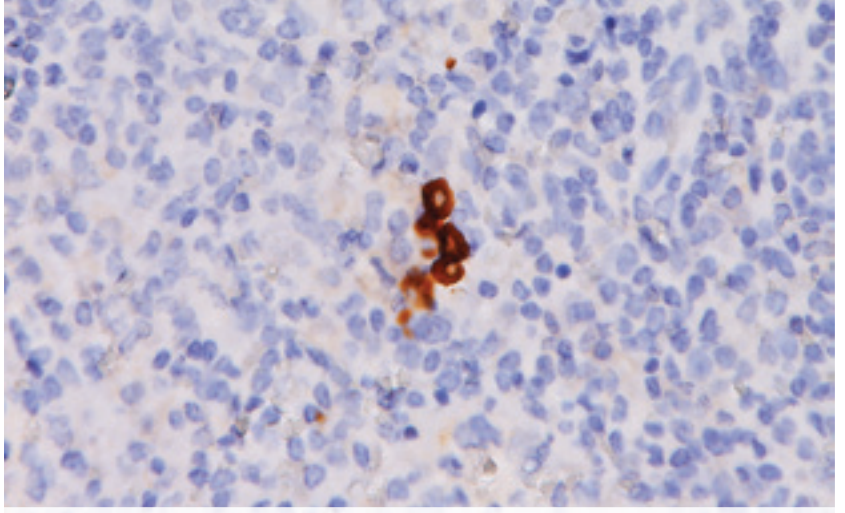
Colon stained with IGF-1R

IGF-1R IVD FFPE

Clone	BC10
Isotype	IgG2a
Reactivity	
Control	Colon or breast cancers or lung squamous cell carcinoma
Cat. No.	CM 414 A, C

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.



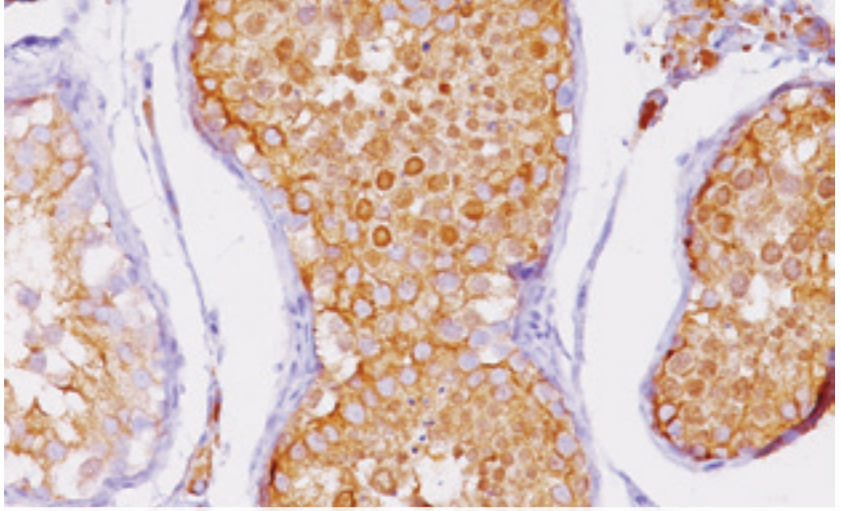
Human spleen stained with IgG4 (M)

IgG4 (M) IVD FFPE

Clone	HP6025
Isotype	IgG1
Reactivity	
Control	Spleen
Cat. No.	ACI 3115 A, B; API 3115 AA

IgG4 is specific for the Fc region of human IgG4. IgG4 can aid in the diagnosis of IgG4 related systemic disease (IgG4-RSD). IgG4-RSD can be found in many different organs with symptoms such as lymphoplasmacytic infiltration, mass formation, sclerosis and increased expression of IgG4+ plasma cells as well as a high IgG4+/IgG+ ratio. IgG4 has been shown to be overexpressed in inflammatory pseudotumor (IPT) and under expressed in inflammatory myofibroblastic tumor (IMT). In pulmonary nodular lymphoid hyperplasia (PNLH), there are an increased number of IgG4+ plasma cells compared to other proliferations. Overexpression of IgG4 has also been found in primary cutaneous marginal zone lymphomas.

1. Khosroshahi A, *et al.* Curr Opin Rheumatol. 2011 Jan; 23(1):57-66. 2. Divatia M, Kim S, Ro J. Yonsei Med J. 2012 Jan; 53(1):15-34. 3. Sato Y, *et al.* Mod Pathol. 2013 Apr; 26(4):523-32. 4. Saab ST, *et al.* Mod Pathol. 2011 Apr; 24(4):606-12. 5. Bhagat P, *et al.* Virchows Arch. 2013 Dec; 463 (6):743-7. 6. Guinee DG Jr, *et al.* Am J Surg Pathol. 2010 Dec; 34(12):1812-9. 7. Brenner I, *et al.* Mod Pathol. 2013 Dec; 26(12):1568-76.



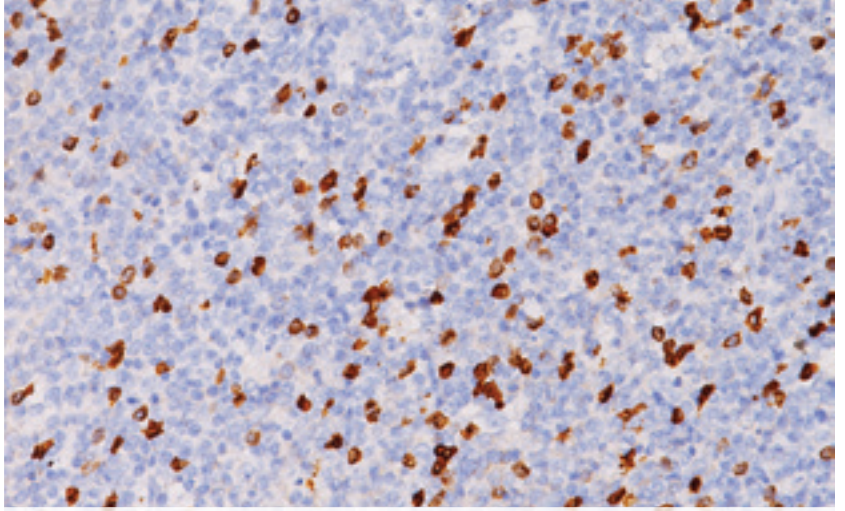
Testicular tissue stained with Inhibin, Alpha

Inhibin, Alpha IVD FFPE

Clone	BC/R1
Isotype	IgG2a
Reactivity	
Control	Normal testis or normal ovary, adrenal gland
Cat. No.	CM 171 A, B, C; PM 171 AA

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.



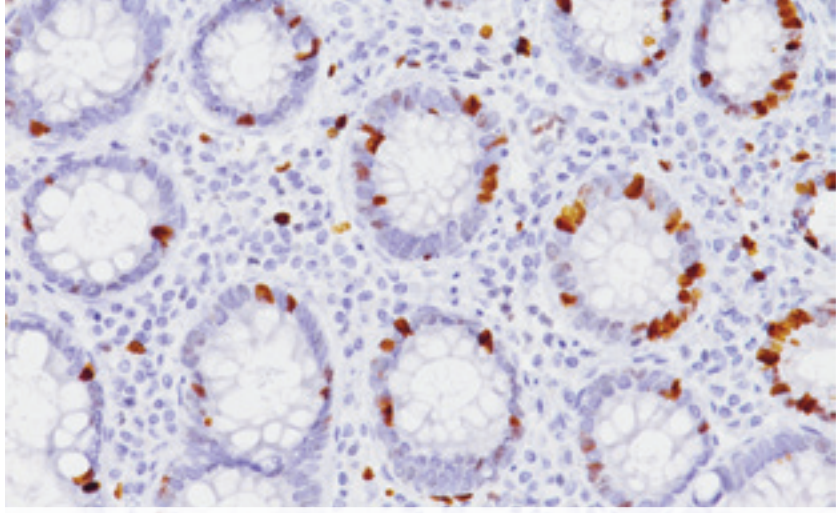
Tonsil stained with Kappa Light Chain [L1C1]

Kappa Light Chain [L1C1] IVD FFPE

Clone	L1C1
Isotype	IgG1
Reactivity	
Control	Tonsil or bone marrow
Cat. No.	ACI 3149 A, C; API 3149 AA

The Kappa Light Chain antibody recognizes kappa light chains of human immunoglobulins, which may be useful 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. The normal human kappa/lambda ratio is approximately 2:1. The presence of clear cut light chain restriction with a kappa/lambda ratio more than 10:1 is consistent with a malignant proliferation.

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. 6. Kremer M, *et al.* Virchows Arch. 2005 Dec; 447(6):920-37.



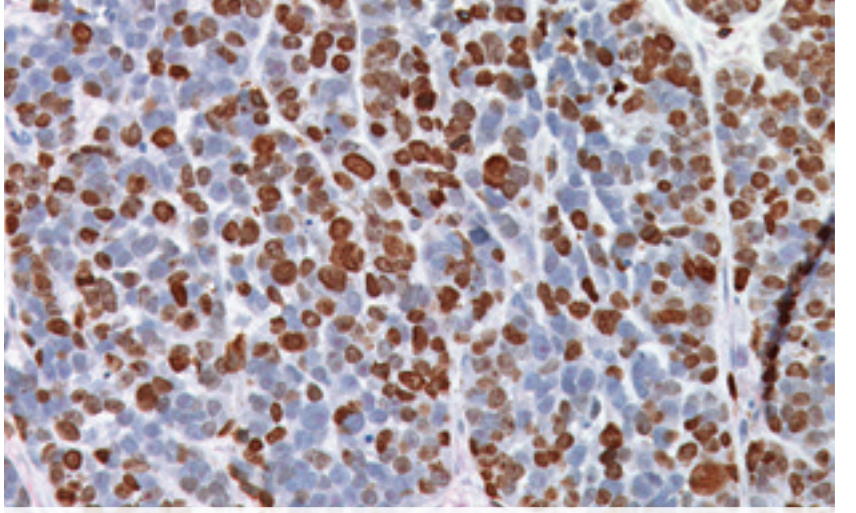
Normal colon adjacent to colon cancer stained with Ki-67 [MIB-1]

Ki-67 [MIB-1] IVD FFPE

Clone	MIB-1
Isotype	IgG1/kappa
Reactivity	
Control	Colon cancer
Cat. No.	API 3156 AA

The Ki-67 nuclear antigen is associated with cell proliferation. It is found throughout the cell cycle that includes the G1, S, G2, and M phases; but not the (G0) phase. 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. Key G, *et al.* Lab Invest. 1993 Jun; 68(6):629-36. 2. Jansen RL, *et al.* Br J Cancer. 1998 Aug; 78(4):460-5. 3. Goodson WH 3rd, *et al.* Breast Cancer Res Treat. 1998 May; 49(2):155-64.



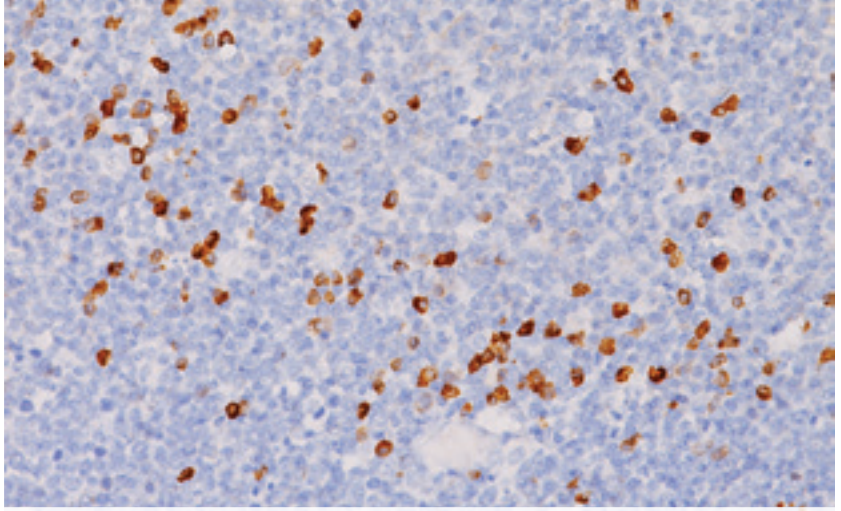
Breast cancer stained with Ki-67

Ki-67 IVD FFPE PREFERRED

Clone	SP6
Isotype	IgG
Reactivity	
Control	Tonsil or breast cancer
Cat. No.	CRM 325 A, B, C; PRM 325 AA; OAI 325 T60

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.



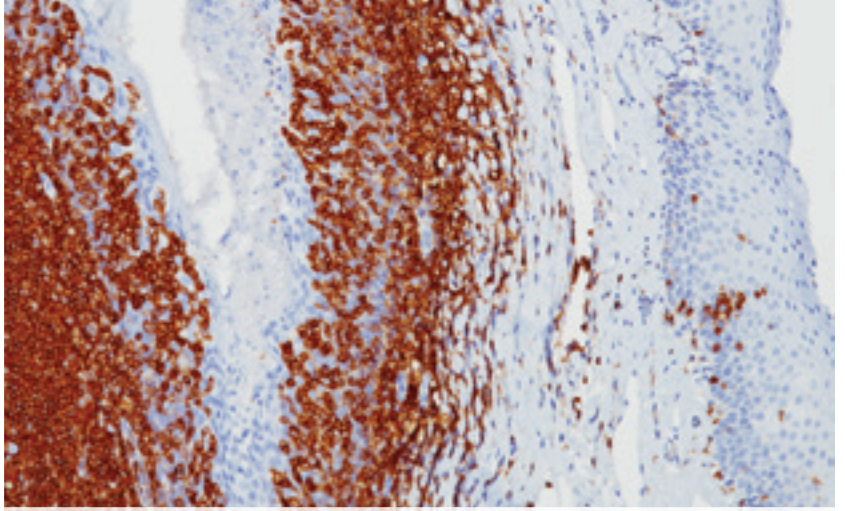
Tonsil stained with Lambda Light Chain [N10/2]

Lambda Light Chain [N10/2] IVD FFPE

Clone	N10/2
Isotype	IgG1
Reactivity	
Control	Tonsil or bone marrow
Cat. No.	ACI 3063 A, C; API 3063 AA

The Lambda Light Chain antibody recognizes lambda light chains of human immunoglobulins, which may be useful 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. The normal human kappa/lambda ratio is approximately 2:1. The presence of clear cut light chain restriction with a kappa/lambda ratio more than 10:1 is consistent with a malignant proliferation.

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. 6. Kremer M, *et al.* Virchows Arch. 2005 Dec; 447(6):920-37.



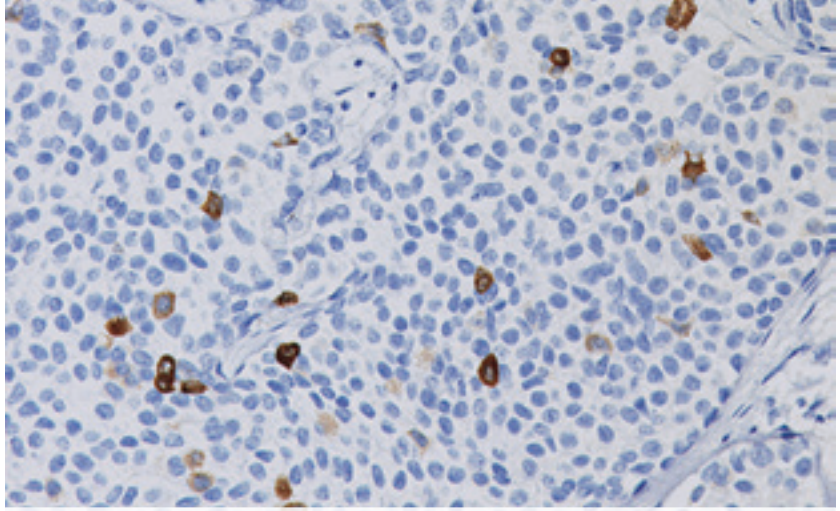
Tonsil stained with Leukocyte Common Antigen (LCA) Cocktail

Leukocyte Common Antigen Cocktail IVD FFPE

Clone	PD7/26 + 2B11
Isotype	IgG1/kappa
Reactivity	
Control	Tonsil or lymphoma
Cat. No.	CM 016 AK, BK, CK; PM 016 AA; IP 016 G10; OAI 016 T60

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.



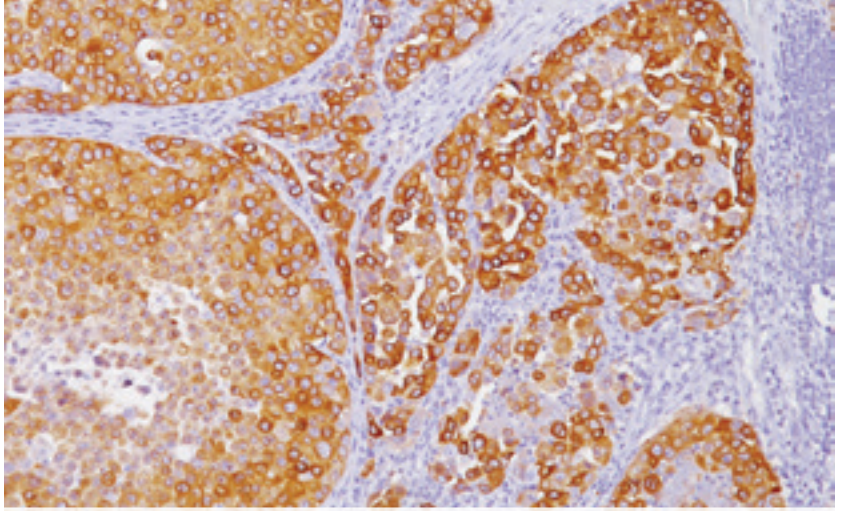
Breast cancer stained with Mammaglobin (M)

Mammaglobin (M) IVD FFPE

Clone	1A5
Isotype	IgG1
Reactivity	
Control	Normal breast
Cat. No.	PM 269 AA, H; OAI 269 T60

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 GCDFP-15 and estrogen receptor in evaluating tumors of unknown primary sites.

1. Han JH, *et al.* Arch Pathol Lab Med. 2003 Oct; 127(10):1330-4. 2. Noriega M, *et al.* Diagn Pathol. 2012 Jun; 7:73. 3. Wang Z, *et al.* Int J Clin Exp Pathol. 2009; 2(4):384-9. 4. Bhargava R, Beriwal S, Dabbs DJ. Am J Clin Pathol. 2007 Jan; 127(1):103-13. 5. Chia SY, *et al.* Breast. 2010 Oct; 19(5):355-9.



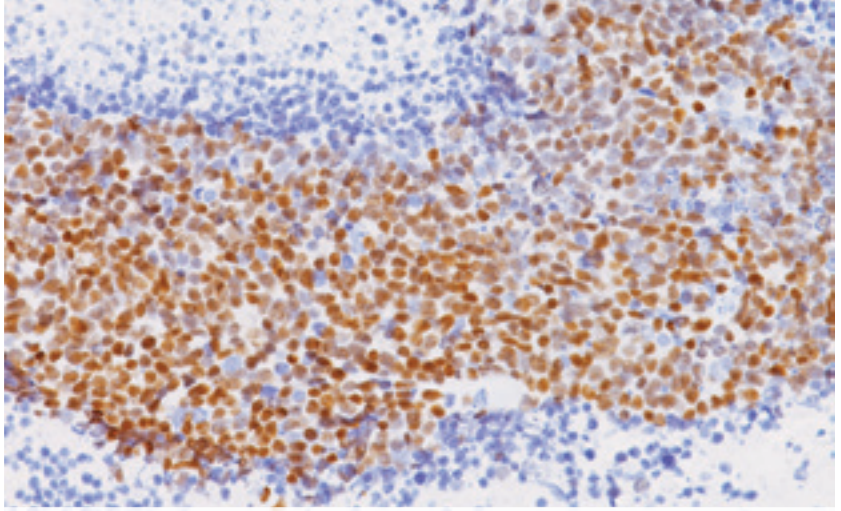
Melanoma stained with MART-1 Cocktail

MART-1 Cocktail IVD FFPE

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; OAI 077 T60

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.

1. Orchard GE. Br J Biomed Sci. 1998 Mar; 55(1):8-9. 2. Blessing K, Sanders DS, Grant JJ. Histopathology. 1998 Feb; 32(2):139-46. 3. Kageshita T, *et al.* J Immunother. 1997 Nov; 20(6):460-5.



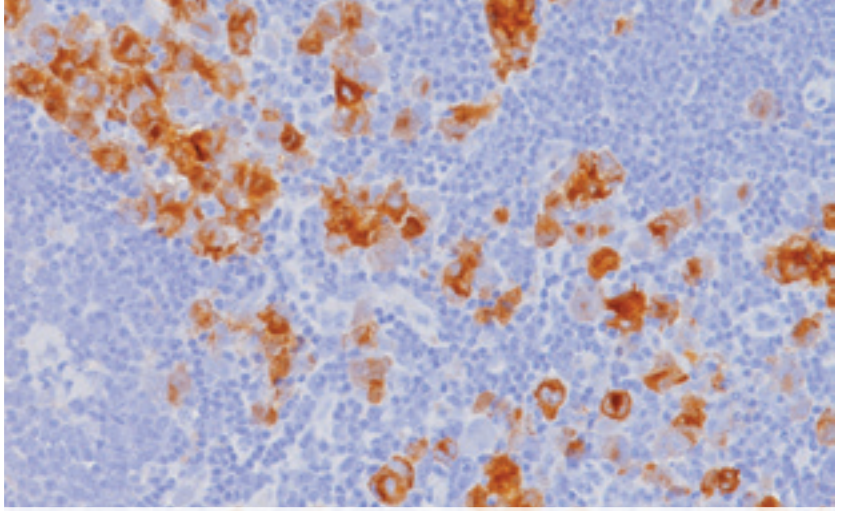
Small cell lung cancer stained with MASH1

MASH1 IVD FFPE

Clone	24B72D11.1
Isotype	IgG1
Reactivity	
Control	Small cell lung cancer
Cat. No.	ACI 3131 A; API 3131 AA

Achaete-scute complex homolog-1 (ASCL1), known as mASH1 in rodents and hASH1 in humans, is a transcription factor critical for neuroendocrine cell differentiation. Neuroendocrine markers such as chromogranin and CD56 cannot distinguish high grade, poorly differentiated neuroendocrine carcinomas (NECs) from low grade neuroendocrine tumors (NETs). MASH1 stains hASH1 in human tissues and can distinguish NECs from NETs. MASH1 has also been shown to distinguish large cell neuroendocrine carcinomas (LCNECs) and small cell lung carcinomas (SCLCs) from other lung cancers. MASH1 may assist in distinguishing neuroendocrine carcinomas from neuroendocrine tumors in poorly differentiated cases.

1. Ball DW, *et al.* Proc Natl Acad Sci U S A. 1993 Jun 15; 90(12):5648-52. 2. La Rosa S, *et al.* Hum Pathol. 2013 Jul; 44(7):1391-9. 3. Schnabel PA, Junker K. Pathologe. 2014 Nov; 35(6):557-64. 4. Hiroshima K, *et al.* Mod Pathol. 2006 Oct; 19(10):1358-68. 5. Jiang SX, *et al.* Mod Pathol. 2004 Feb; 17(2):222-9. 6. Ralston J, Chiriboga L, Nonaka D. Mod Pathol. 2008 Nov; 21(11):1357-62.



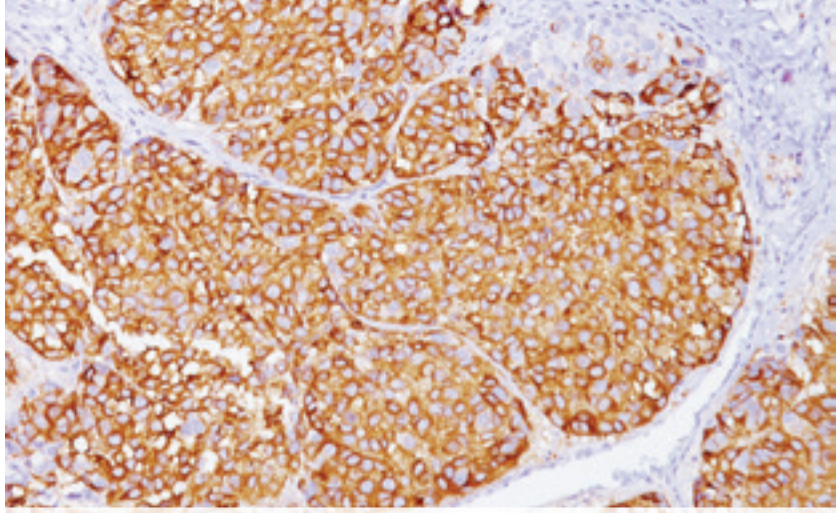
Metastatic melanoma in lymph node stained with Melan A (M)

Melan A (M) IVD FFPE

Clone	A103
Isotype	IgG1
Reactivity	
Control	Melanoma
Cat. No.	ACI 3114 A, B; API 3114 AA

Melan-A (MART-1) [A103], a melanoma-specific antigen, is a transmembrane protein and a melanocyte differentiation marker recognized by cytotoxic T lymphocytes. Melan-A is expressed in skin, in the majority of melanocytes and in renal angiomyolipomas. The Melan-A A103 clone, unlike clones M2-7C10 and M2-9E3, can also aid in the recognition of steroid hormone-producing tumors and may be particularly useful in the diagnosis of adrenocortical carcinoma.

1. Shidham VB, *et al.* Am J Surg Pathol. 2001 Aug;25(8):1039 -46. 2. Zubovits J, *et al.* Hum Pathol. 2004 Feb; 35(2):217-23. 3. Tuna EB, Lebe B, Yörükoğlu K. Tumori. 2003 Jan-Feb; 89 (1):46-8. 4. Busam KJ, *et al.* Am J Surg Pathol. 1998 Jan; 22(1):57-63. 5. Zhang HY, *et al.* Zhonghua Bing Li Xue Za Zhi. 2004 Jun; 33(3):203-7.



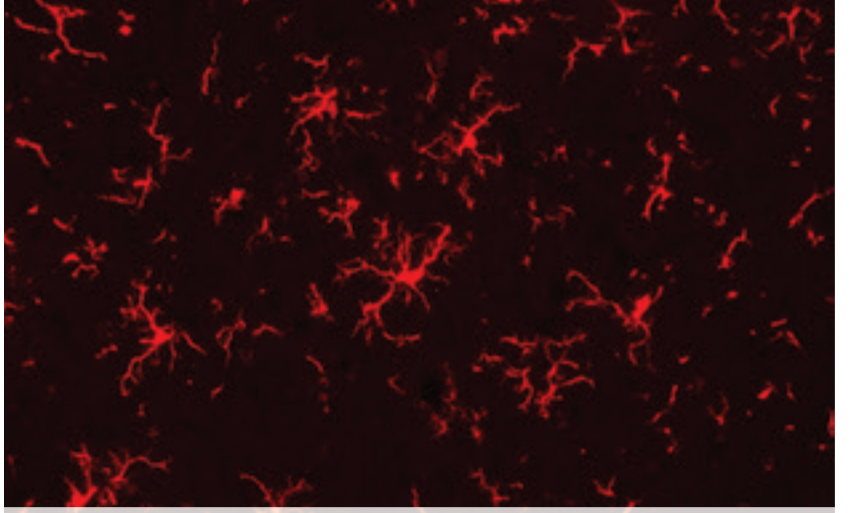
Melanoma stained with Melanoma Cocktail

Melanoma Cocktail IVD FFPE

Clone	HMB45 + M2-7C10 + M2-9E3
Isotype	IgG1/kappa + IgG2b + IgG2b
Reactivity	
Control	Metastic melanoma in lymph node
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. Beaty 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.



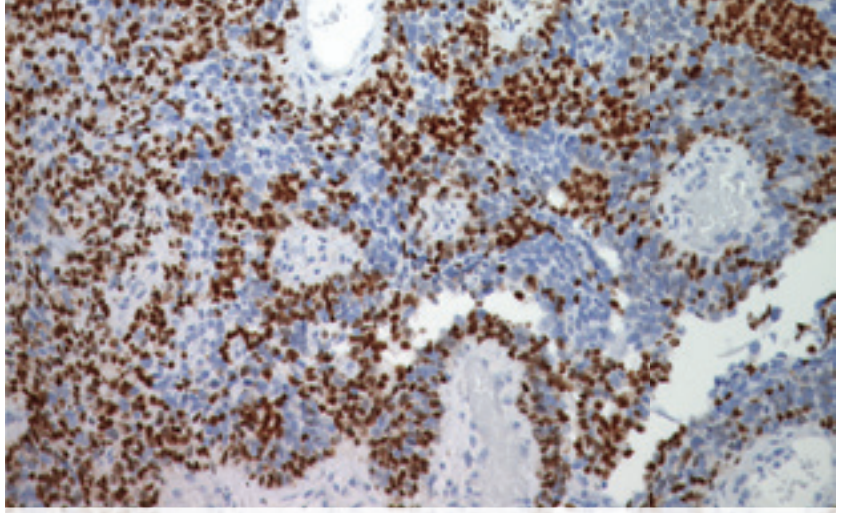
Rat spinal cord stained with Microglia (Iba1)

Microglia (Iba1) IVD FFPE

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.



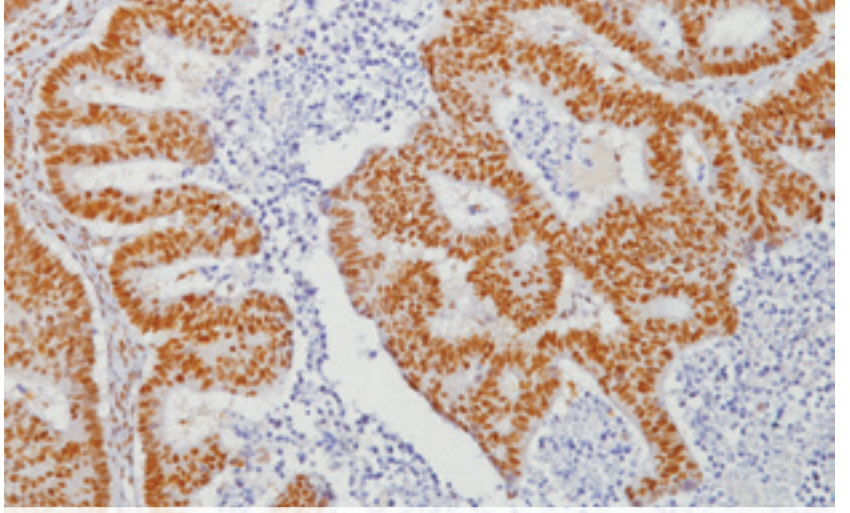
Metastatic melanoma stained with Microphthalmia Transcription Factor (MiTF)

Microphthalmia Transcription Factor (MiTF) IVD FFPE

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.



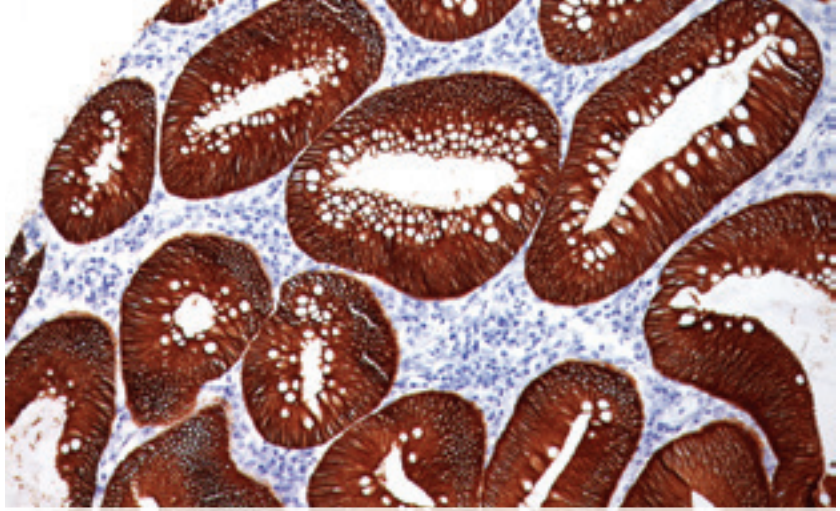
Colon cancer stained with MLH-1

MLH-1 IVD FFPE

Clone	G168-15
Isotype	IgG1/kappa
Reactivity	
Control	Colon cancer
Cat. No.	CM 220 AK, BK, CK; PM 220 AA; IPI 220 G10; OAI 220 T60

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.



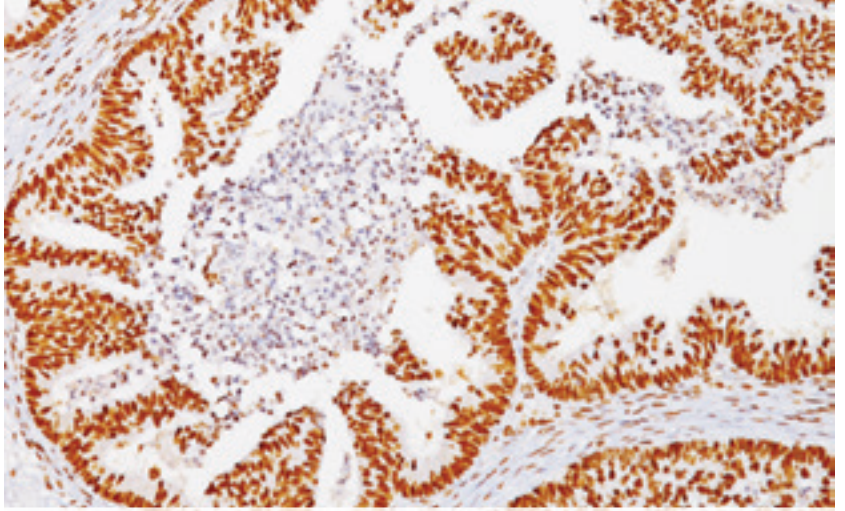
Colon cancer stained with MOC-31

MOC-31 IVD FFPE

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. Ordonez NG. Human Pathol. 1998 Feb; 29(2): 166-9.



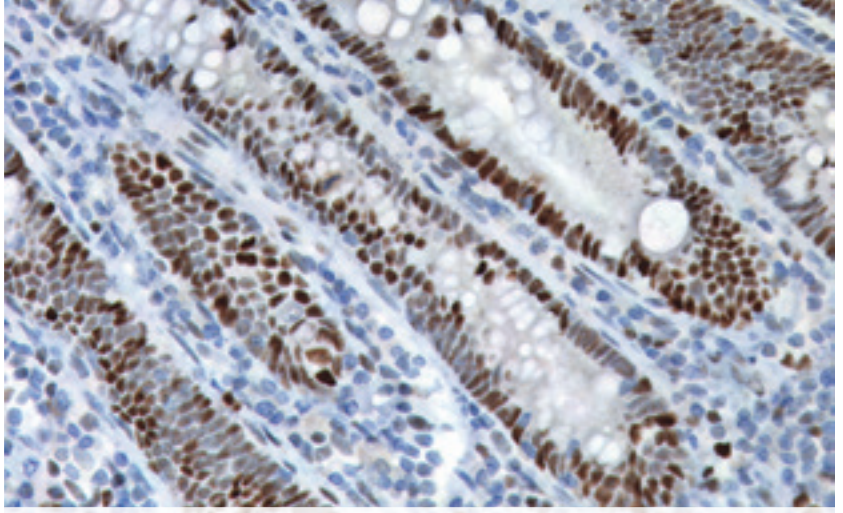
Colon cancer stained with MSH2

MSH2 IVD FFPE

Clone	FE11
Isotype	IgG1/kappa
Reactivity	
Control	Colon cancer
Cat. No.	CM 219 AK, BK, CK; PM 219 AA; OAI 219 T60

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.



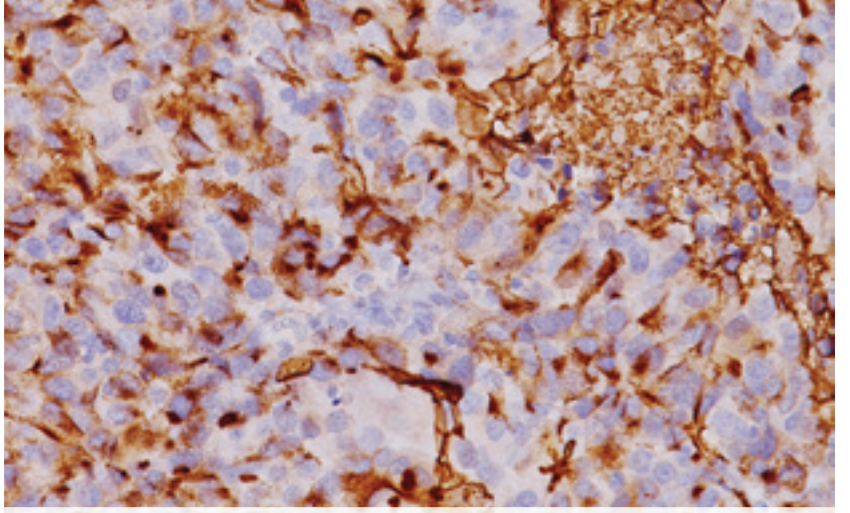
Colon cancer stained with MSH6

MSH6 IVD FFPE

Clone	BC/44
Isotype	IgG1
Reactivity	
Control	Colon cancer
Cat. No.	CM 265 AK, BK, CK; PM 265 AA; IPI 265 G10; OAI 265 T60

MSH6 is a heterodimer of MSH2 and binds to DNA containing G/T mismatches. 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. 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.



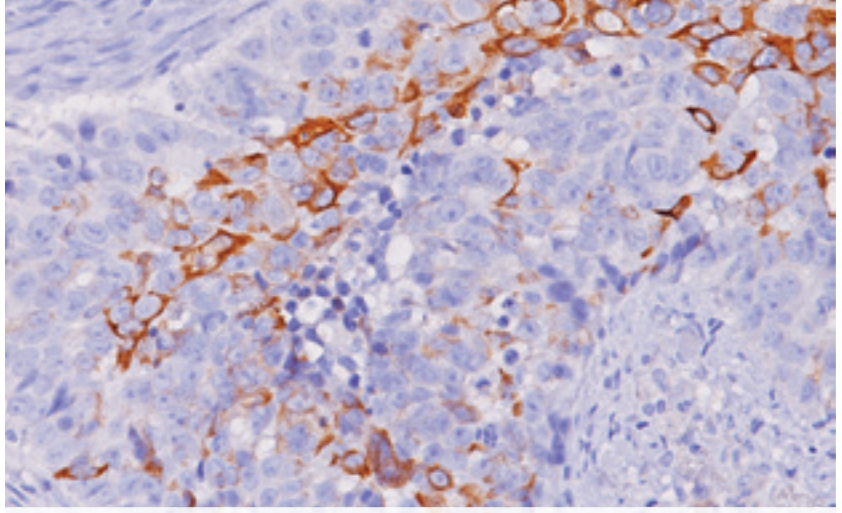
Breast cancer stained with MUC-1

MUC-1 IVD FFPE

Clone	695
Isotype	IgG1
Reactivity	
Control	Lung
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.



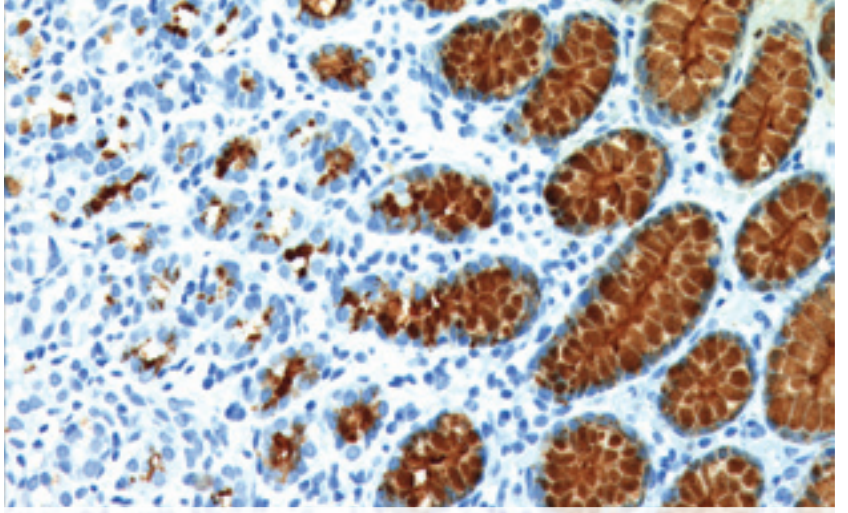
Breast cancer stained with MUC-4

MUC-4 IVD FFPE

Clone	8G-7
Isotype	IgG1/kappa
Reactivity	
Control	Lung 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.



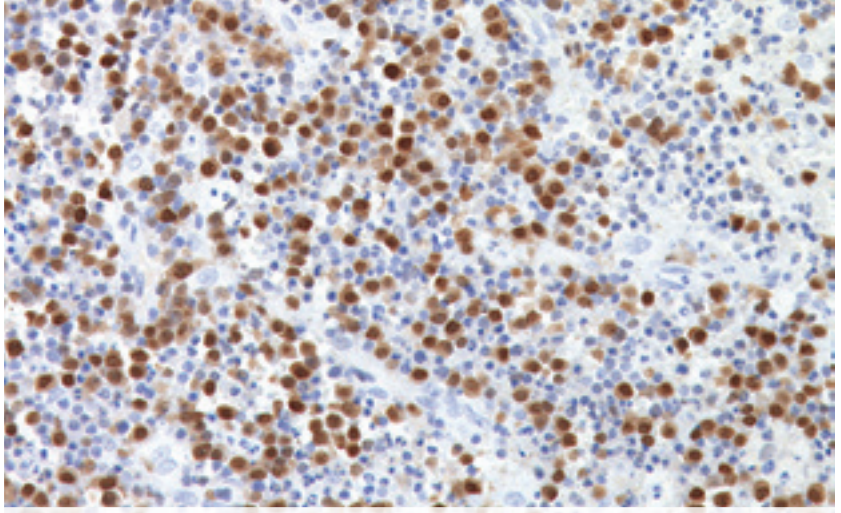
Stomach stained with Mucin 5AC (Gastric Mucin)

Mucin 5AC (Gastric Mucin) IVD FFPE

Clone	45M1
Isotype	IgG1/kappa
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. Vernygorodskyi S. Exp Oncol. 2013 Jun; 35(2):114-7.



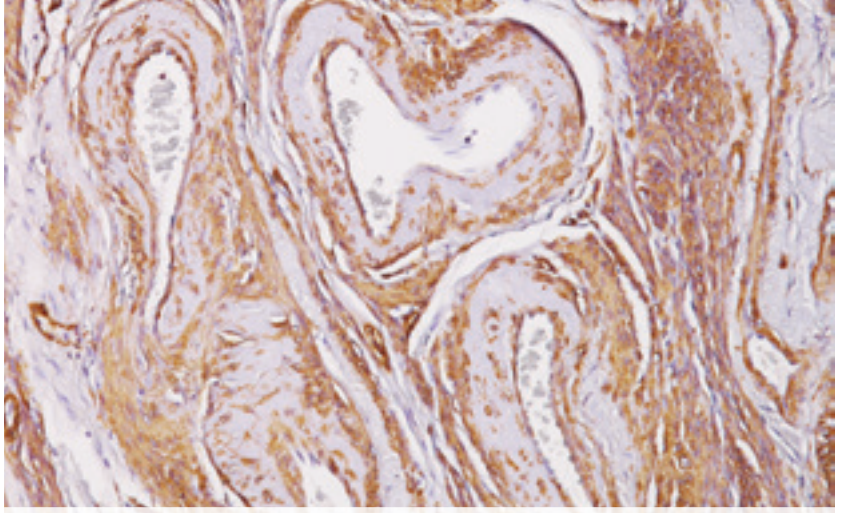
Multiple myeloma stained with MUM-1

MUM-1 IVD FFPE

Clone	BC5
Isotype	IgG
Reactivity	
Control	Tonsil
Cat. No.	CRM 352 A, B; PRM 352 AA; OAI 352 T60

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.



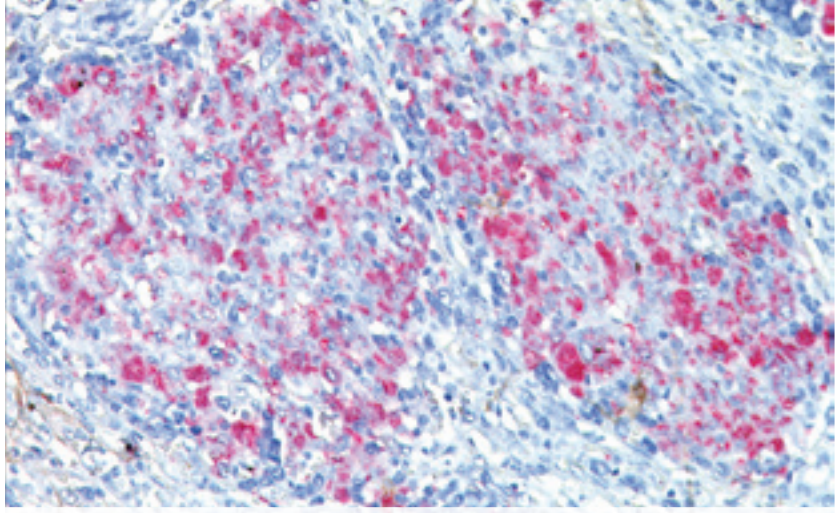
Smooth muscle stained with Muscle Specific Actin (MSA)

Muscle Specific Actin (MSA) IVD FFPE

Clone	HHF35
Isotype	IgG1/kappa
Reactivity	
Control	Leiomyoma, leiomyosarcoma, muscle or prostate
Cat. No.	CM 079 A, B; PM 079 AA; IP 079 G10; OAI 079 T60

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 Vechio 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. Dundr P, Povýsil C, Tvrdík D. Cesk Patol. 2006 Jul; 42(3):139-44. 6. Hisaoka M, *et al.* Appl Immunohistochem Mol Morphol. 2001 Dec; 9(4):302-8.



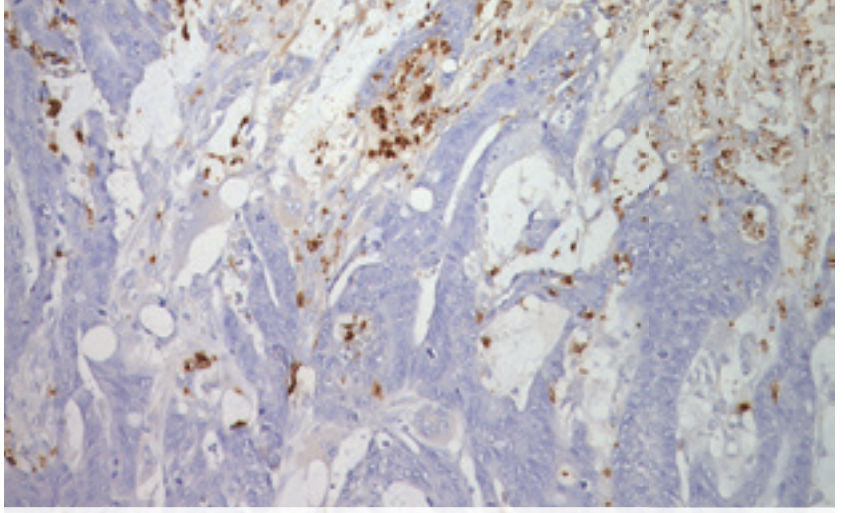
Lung tissue stained with *Mycobacterium tuberculosis (TB)*

Mycobacterium tuberculosis (TB) RUO FFPE

Clone	N/A
Isotype	N/A
Reactivity	
Control	*mycobacterium tuberculosis* 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.



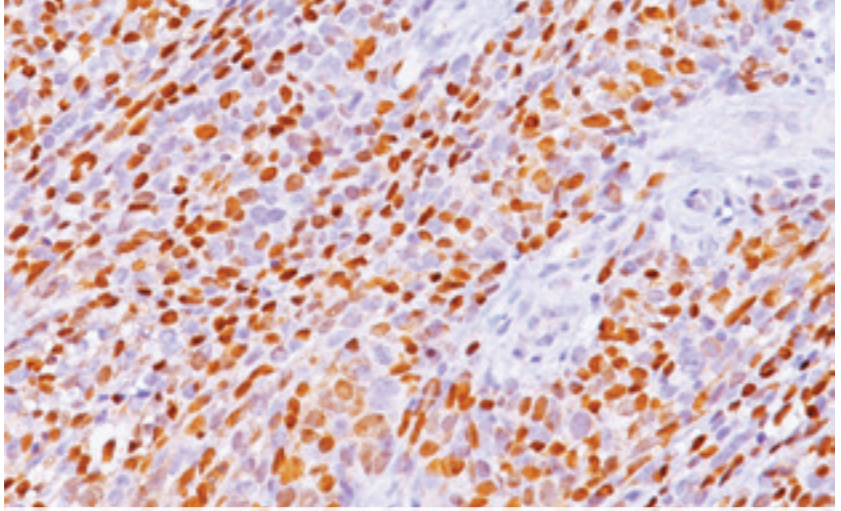
Colon cancer stained with Myeloperoxidase (P)

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; OAI 023 T60

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.



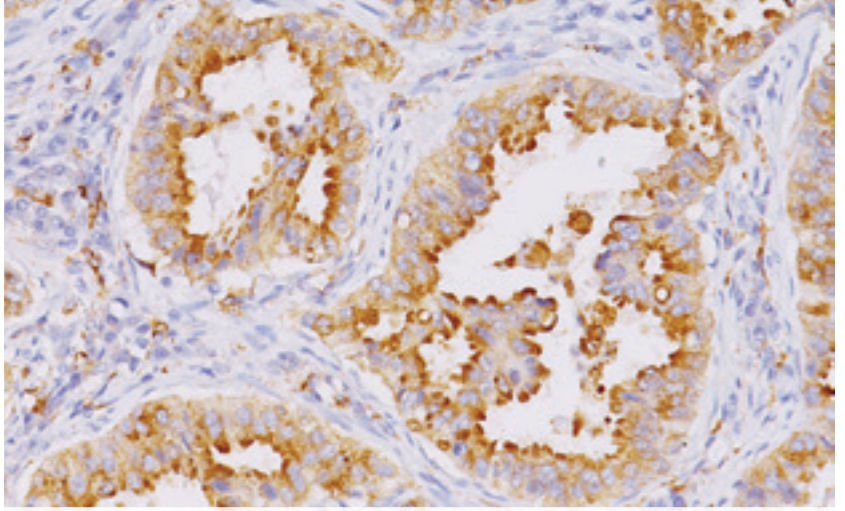
Rhabdomyosarcoma stained with Myogenin

Myogenin IVD FFPE

Clone	MyG007
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.



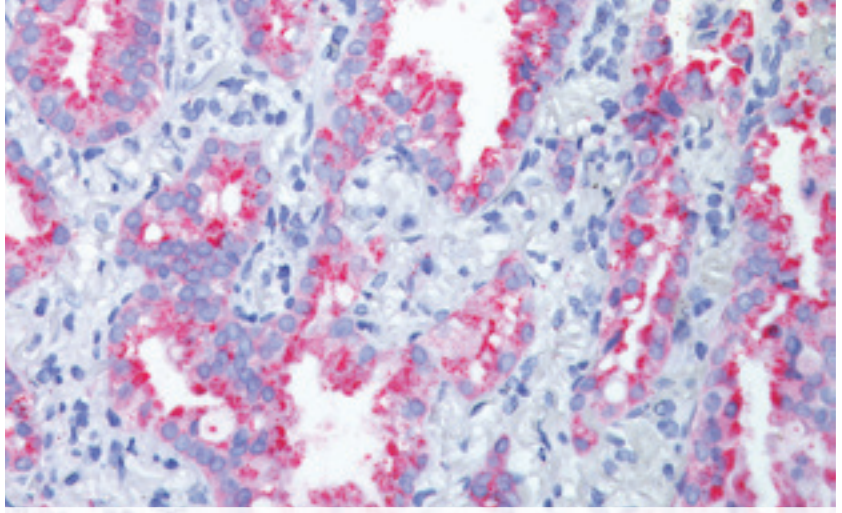
Lung adenocarcinoma stained with Napsin A

Napsin A IVD FFPE

Clone	TMU-Ad 02
Isotype	IgG1
Reactivity	
Control	Lung adenocarcinoma
Cat. No.	CM 388 AK, CK; PM 388 AA; IPI 388 G10; OAI 388 T60

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.



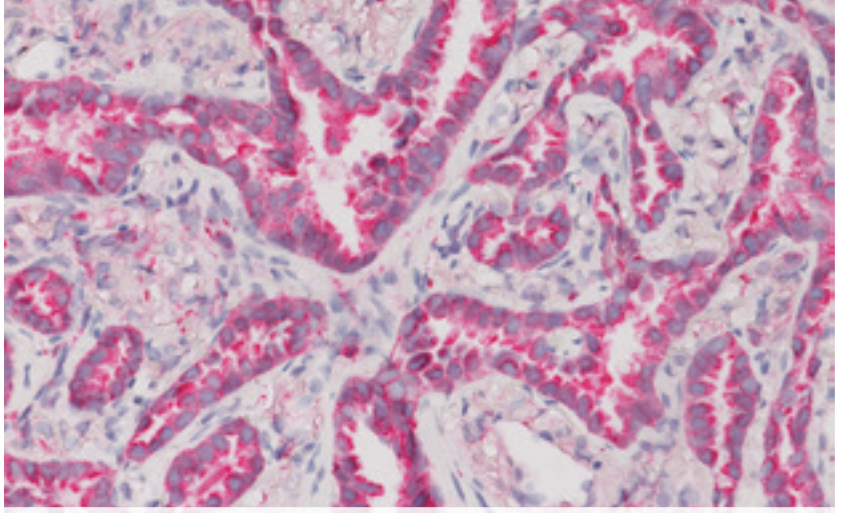
Lung adenocarcinoma stained with Napsin A

Napsin A IVD FFPE

Clone	N/A
Isotype	N/A
Reactivity	
Control	Lung adenocarcinoma
Cat. No.	PP 434 AA

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.



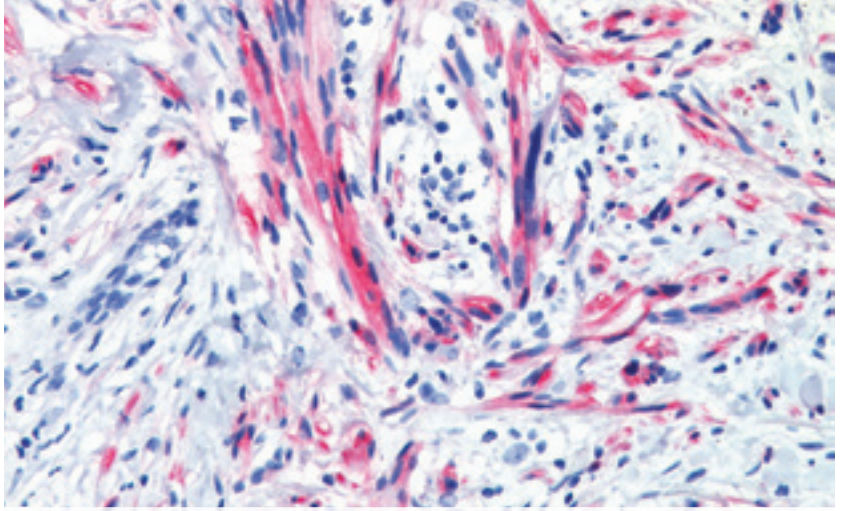
Lung adenocarcinoma stained with Napsin A (RM)

Napsin A (RM) IVD FFPE PREFERRED

Clone	BC15
Isotype	IgG
Reactivity	
Control	Lung adenocarcinoma
Cat. No.	ACI 3043 A, C; API 3043 AA

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.



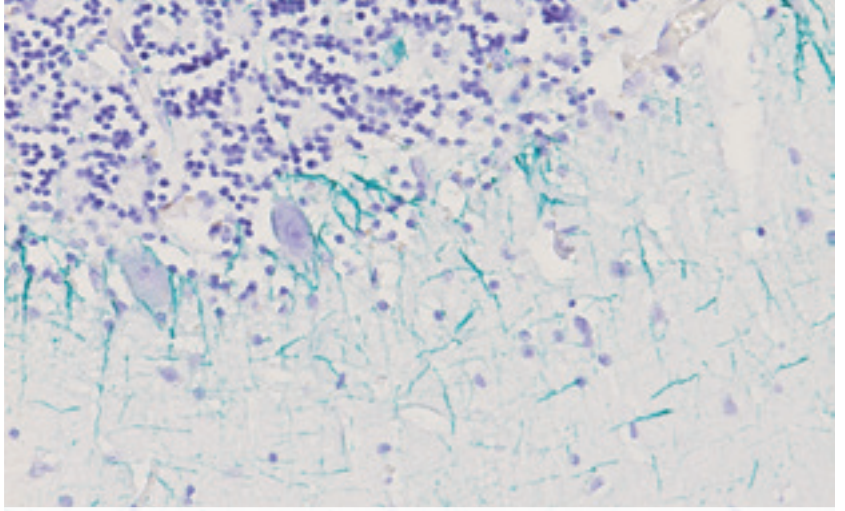
Neurotrophic melanoma stained with Nerve Growth Factor Receptor (NGFR)

Nerve Growth Factor Receptor (NGFR) IVD FFPE

Clone	EP31
Isotype	IgG
Reactivity	
Control	Neuronal tissues or pancreas
Cat. No.	ACI 369 A

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.



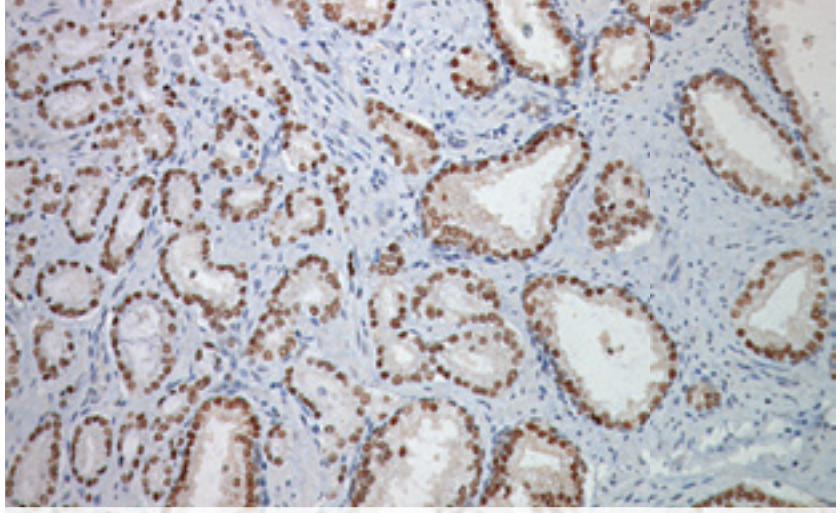
Normal cerebullum stained with Neurofilament

Neurofilament IVD FFPE

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.



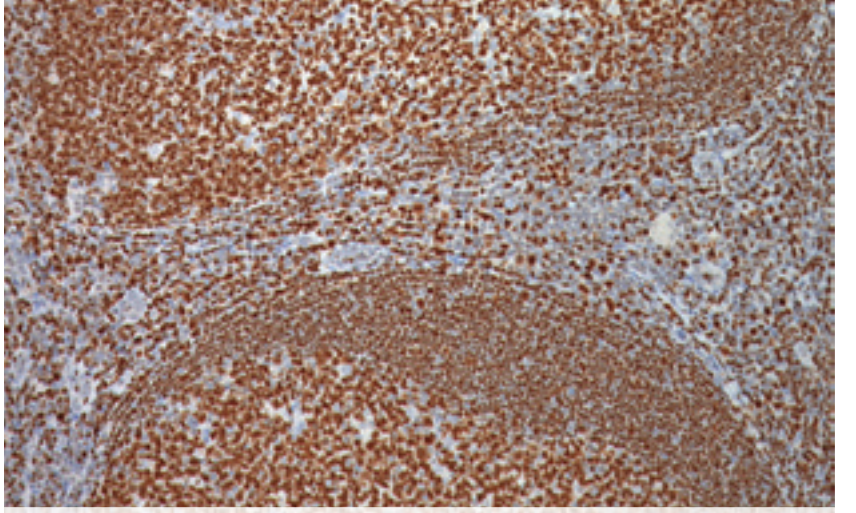
Prostate cancer stained with NKX3.1

NKX3.1 IVD FFPE

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.



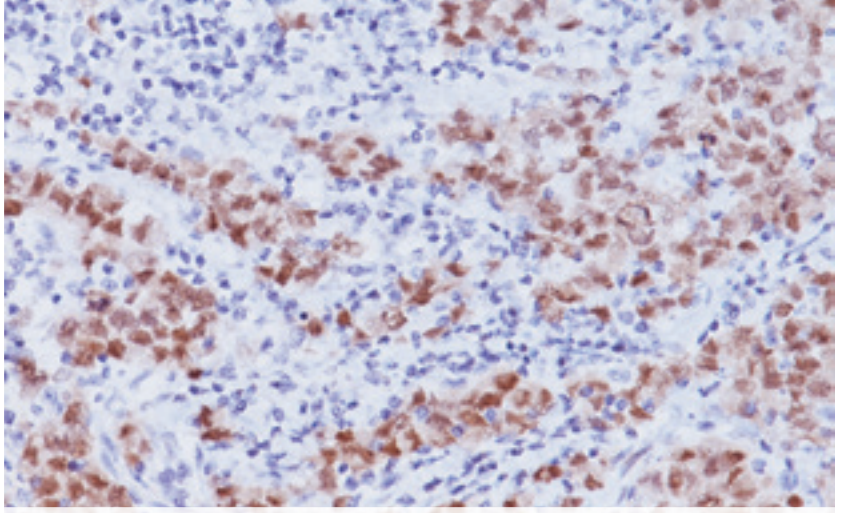
Tonsil stained with Oct-2

Oct-2 IVD FFPE

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 immunoglobin 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.



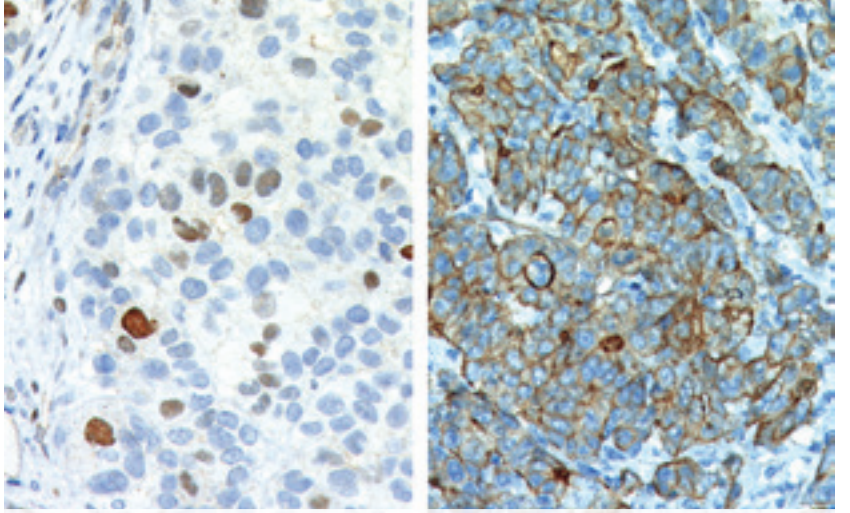
Seminoma stained with Oct-3/4

Oct-3/4 IVD FFPE

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.



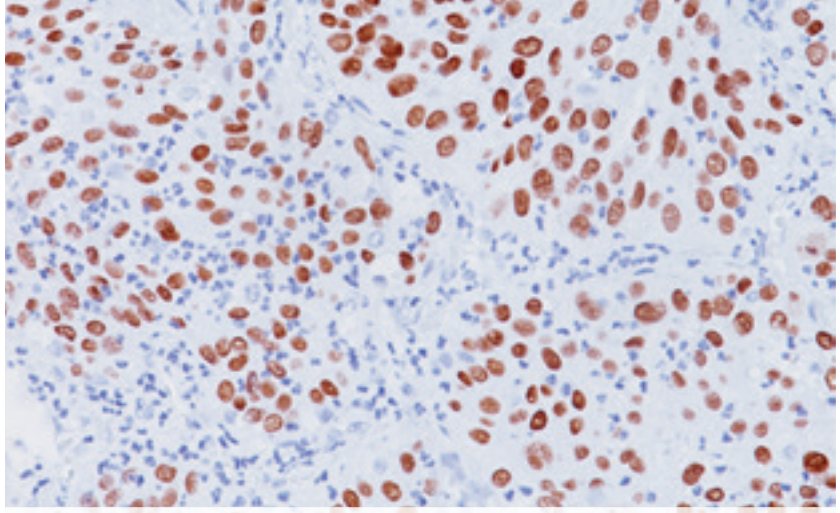
p21 staining nuclear (L) and cytoplasmic (R)

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.



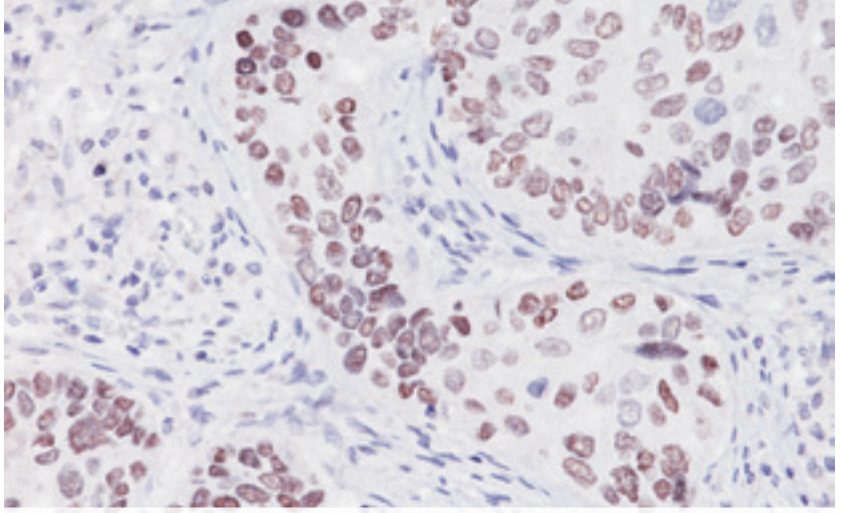
Lung SqCC stained with p40 (M)

p40 (M) IVD FFPE PREFERRED

Clone	BC28
Isotype	IgG1
Reactivity	
Control	Lung squamous cell carcinoma
Cat. No.	ACI 3066 A, C; API 3066 AA, H; AVI 3066 KG; IPI 3066 G10

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.



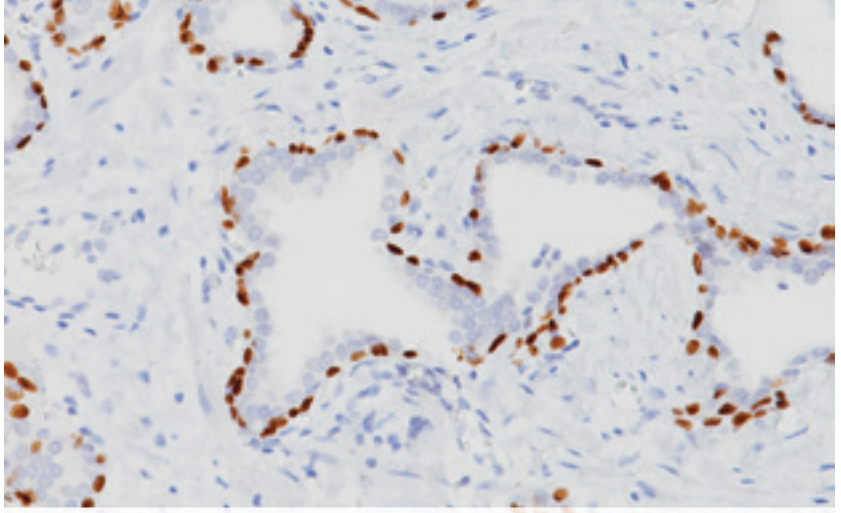
Lung SqCC stained with p40 (P)

p40 (P) IVD FFPE

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.



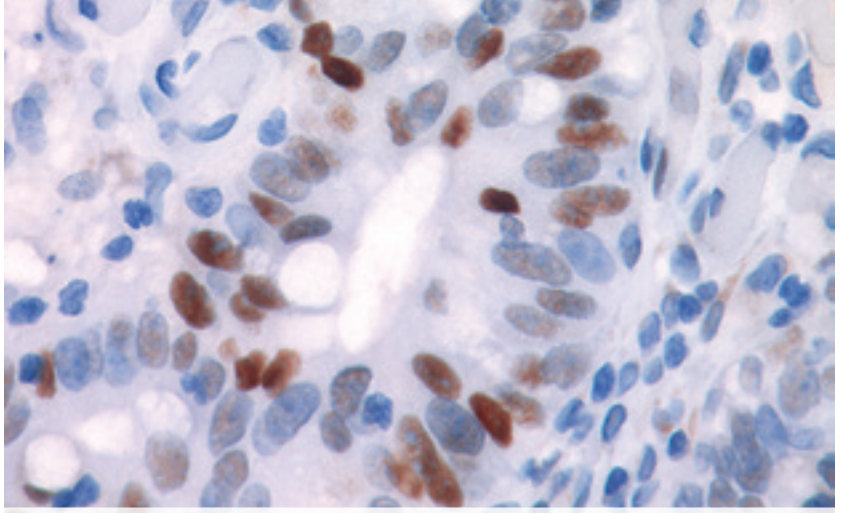
Prostate tissue stained with p40 (M), 3X

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

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.



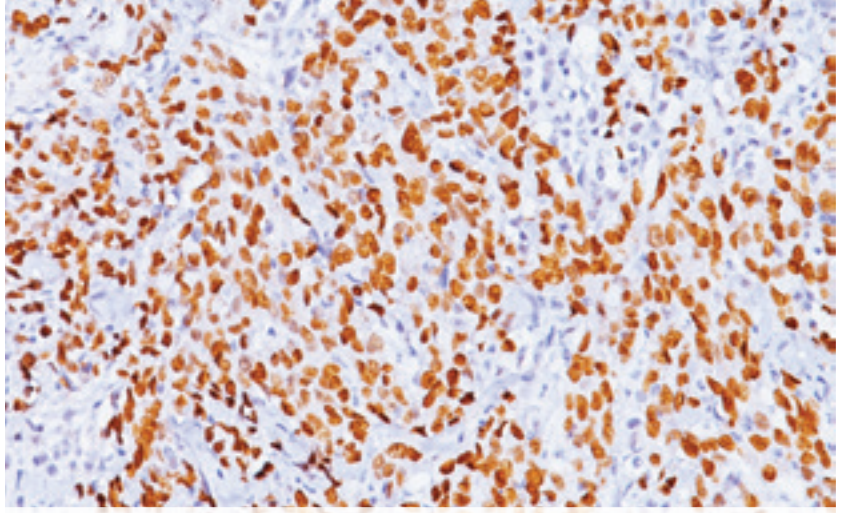
Colon cancer stained with p53

p53 IVD FFPE

Clone	EP9
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.



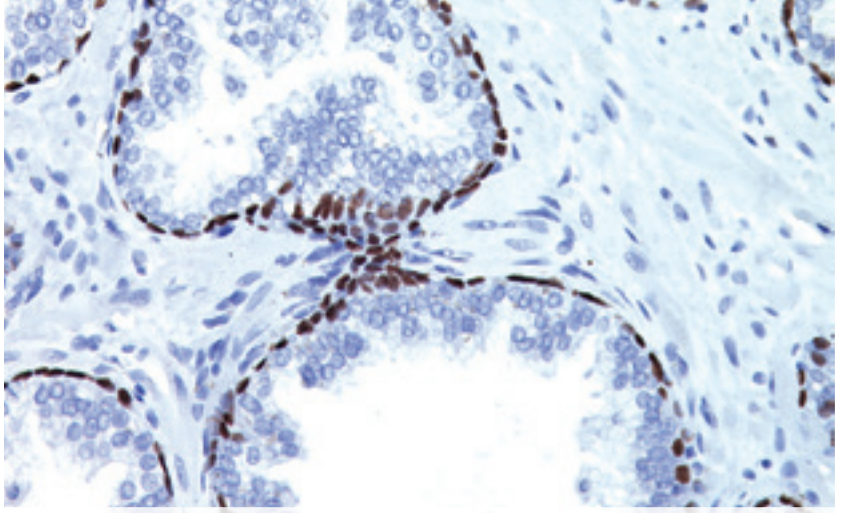
Colon cancer stained with p53 Tumor Suppressor Protein (M)

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.



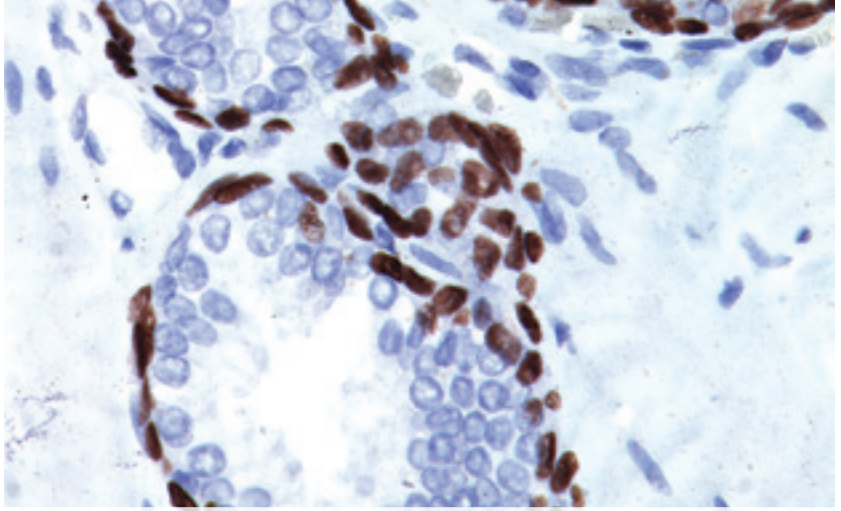
Prostate tissue stained with p63

p63 IVD FFPE

Clone	4A4
Isotype	IgG2a/kappa
Reactivity	
Control	Normal prostate
Cat. No.	CM 163 A, B, C; PM 163 AA, H; IP 163 G10; VP 163 G, G25; OAI 163 T60

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 [34ßE12], 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.



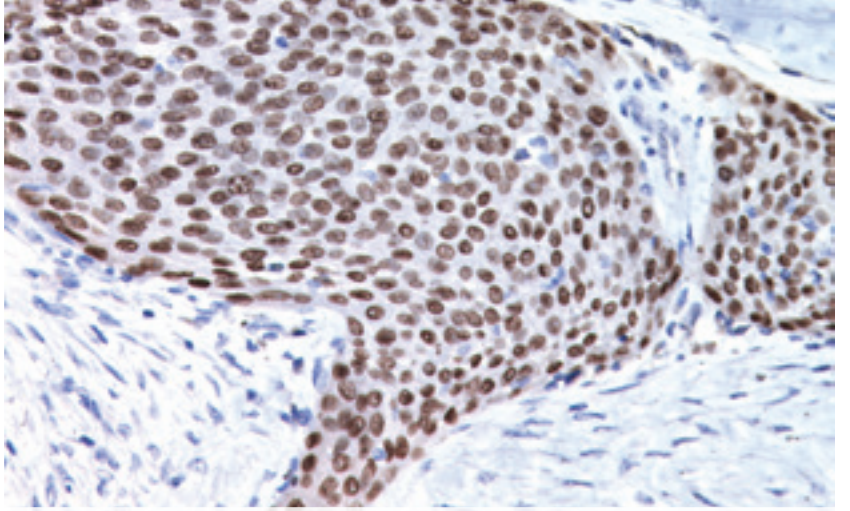
Prostate cancer stained with p63, 2X

p63, 2X IVD FFPE

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

p53 homologue p63 encodes for different isotypes 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.



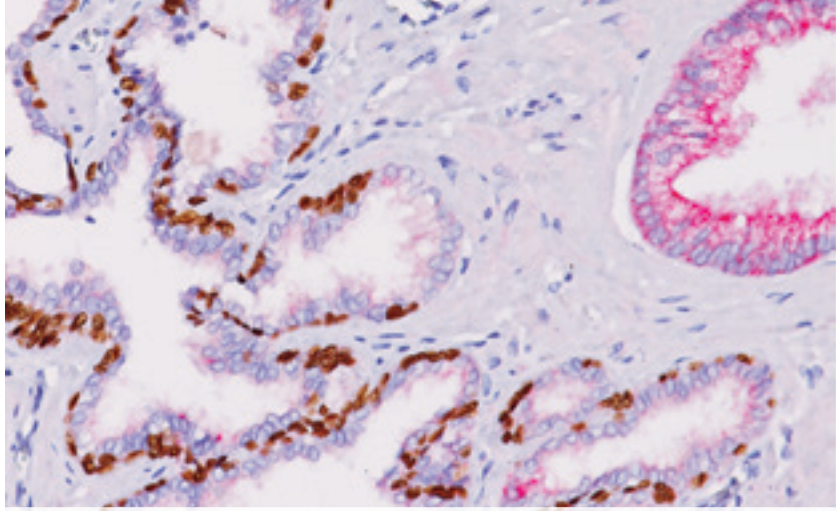
Lung squamous cell carcinoma stained with p63, 2X (Lung)

p63, 2X (Lung) IVD FFPE

Clone	4A4
Isotype	IgG2a/kappa
Reactivity	
Control	Lung squamous cell carcinoma
Cat. No.	API 3070 AA supernova

p63 has been shown to be a sensitive marker for lung squamous cell carcinomas (SqCC), with reported sensitivities of 80-100%. Specificity for lung SqCC, vs. lung adenocarcinoma (LADC), has been reported to be approximately 70-90%, as positive staining with p63 has been typically observed in 10-30% of LADC. Cocktails of p63 with complementary markers for lung SqCC have also proven useful. A cocktail of p63 + TRIM29 demonstrated a 94.7% sensitivity for lung SqCC and 100% specificity vs. LADC, in cases where Napsin A and TTF-1 were both negative. Similarly, the combination of p63 + CK5 identified 87% of cases of lung SqCC, with 94% specificity.

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. Kargi A, Gurel D, Tuna B. Appl Immunohistochem Mol Morphol. 2007 Dec; 15(4):415-20. 4. Khayyata S, *et al.* Diagn Cytopathol. 2009 Mar; 37:178–83. 5. Terry J, *et al.* Am J Surg Pathol. 2010 Dec; 34(12):1805-11. 6. Pu RT, Pang Y, Michael CW. Diagn Cytopathol. 2008 Jan; 36(1):20-5. 7. Tacha D, Yu C, Haas T. Mod Pathol. 2011 Feb; 24 (Supplement 1s):425A. 8. Tacha D, Zhou D, Henshall-Powell RL. Mod Pathol. 2010 Feb; 23 (Supplement 1s):222A.



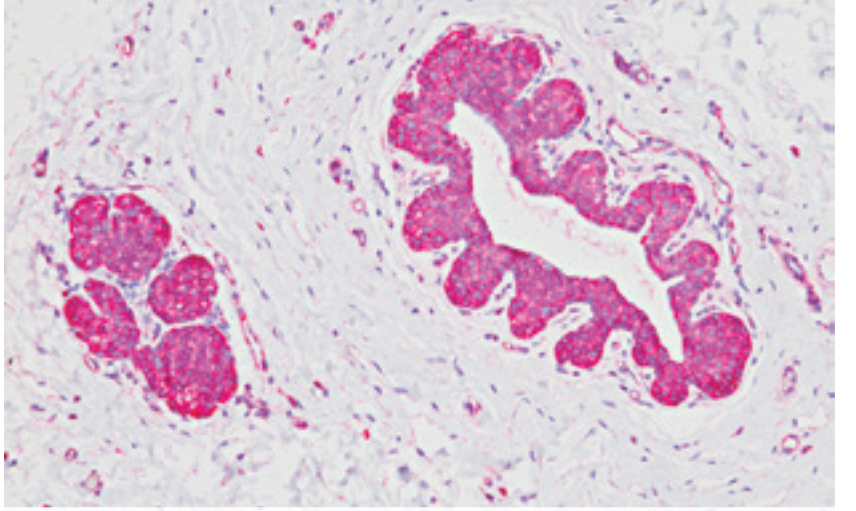
Prostate cancer stained with p63 + P504S

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; IPR 201 G10

P504S is an enzyme in the ß-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 isotypes 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 tissue 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.



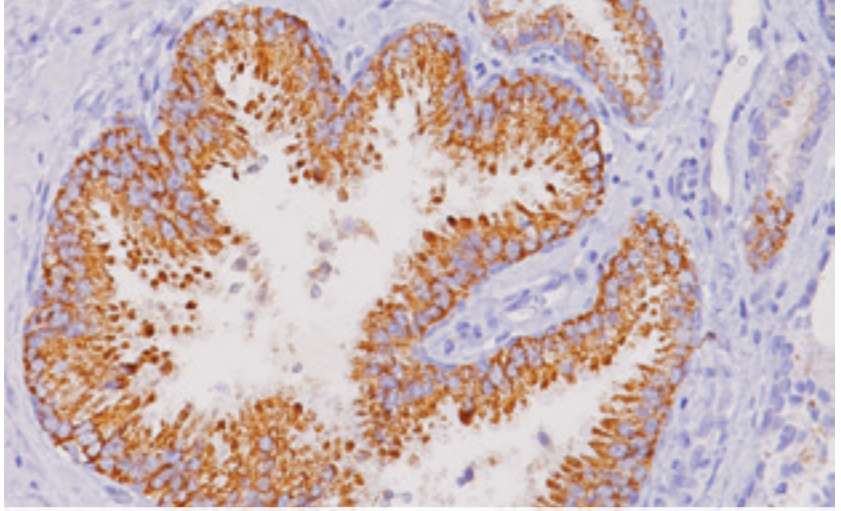
Lobular breast carcinoma *in situ* stained with p120 Catenin

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, Bhargara 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.



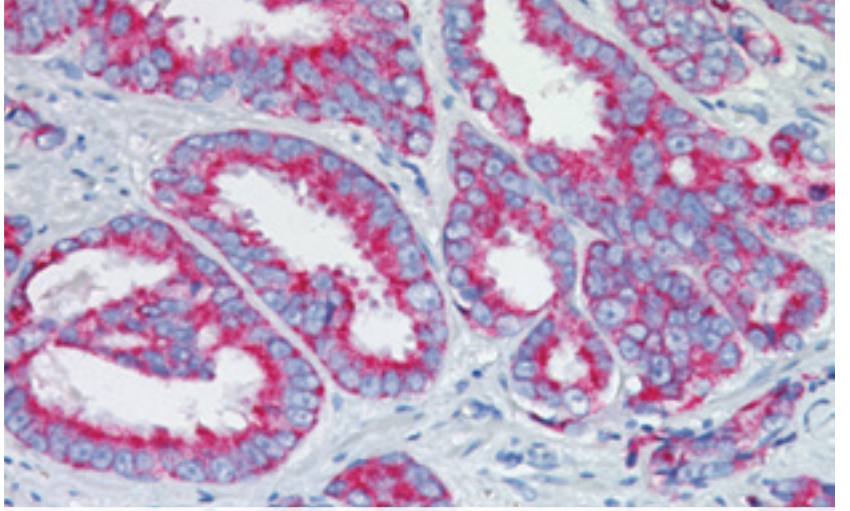
Prostate cancer stained with P504S (P)

P504S (P) ASR FFPE

Clone	N/A
Isotype	IgG
Reactivity	N/A
Control	N/A
Cat. No.	ACA 200 A, B, C; APA 200 AA, H; AVA 200 G, G25; IPA 200 G10

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.



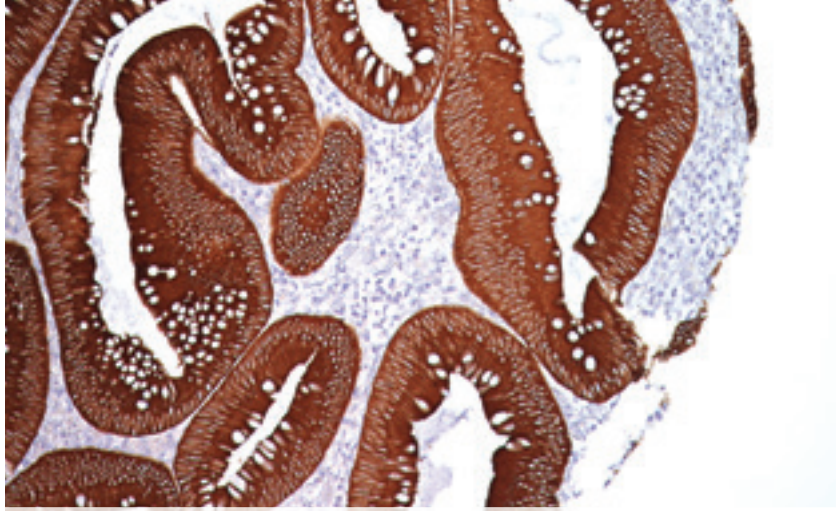
Prostate cancer stained with P504S, 2X

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.



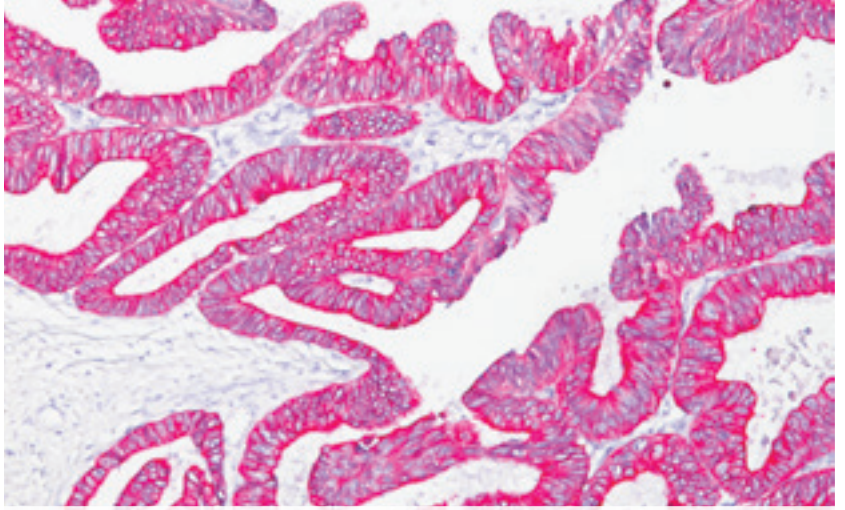
Colon cancer stained with Pan Cytokeratin [AE1/AE3]

Pan Cytokeratin [AE1/AE3] IVD FFPE

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; IPI 011 G10

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.



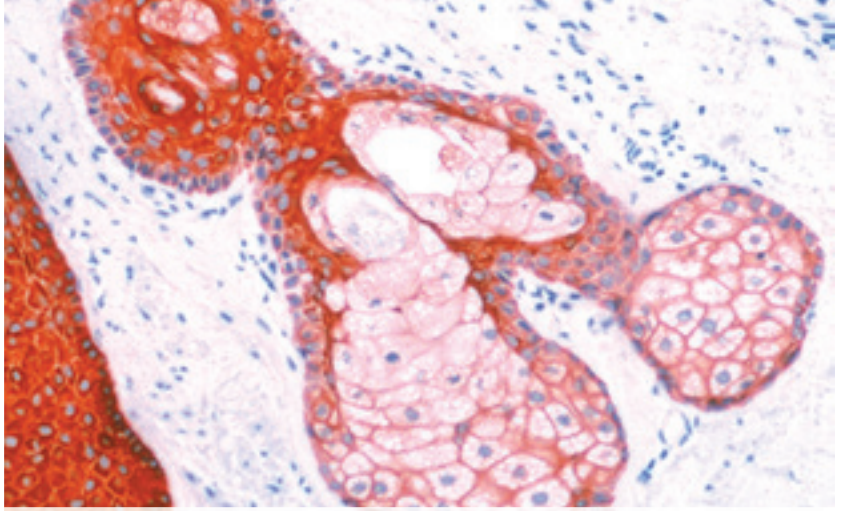
Colon cancer stained with Pan Cytokeratin [Lu-5]

Pan Cytokeratin [Lu-5] IVD FFPE

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] is 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.



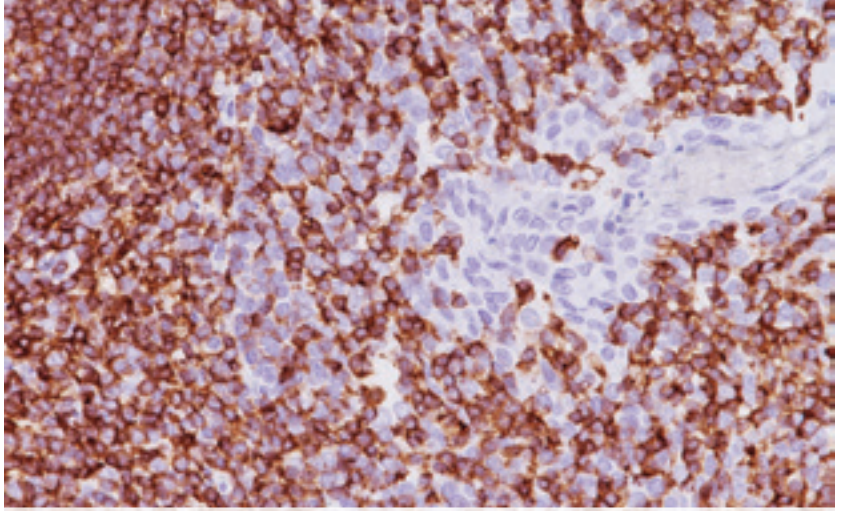
Skin stained with Pan Cytokeratin Plus [AE1/AE3 + 8/18]

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

Clone	AE1/AE3 + 5D3
Isotype	IgG1 + IgG1
Reactivity	
Control	Skin or adenocarcinoma
Cat. No.	CM 162 A, B, C; PM 162 AA, H; IP 162 G10; OAI 162 T60

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.



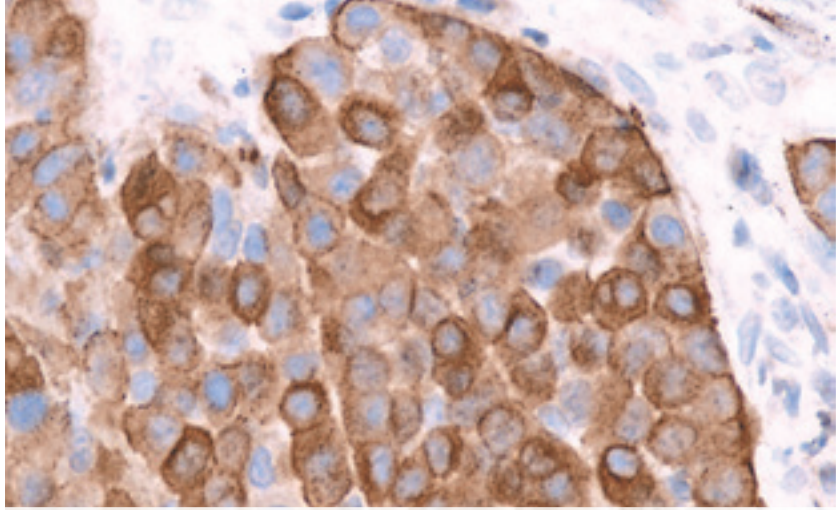
Tonsil stained with Pan Lymphoma Cocktail

Pan Lymphoma Cocktail IVD FFPE

Clone	PD7/26/16 + 2B11 + L26 + PS1 + DF-T1
Isotype	IgG1/kappa + IgG1/kappa + IgG2a/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.



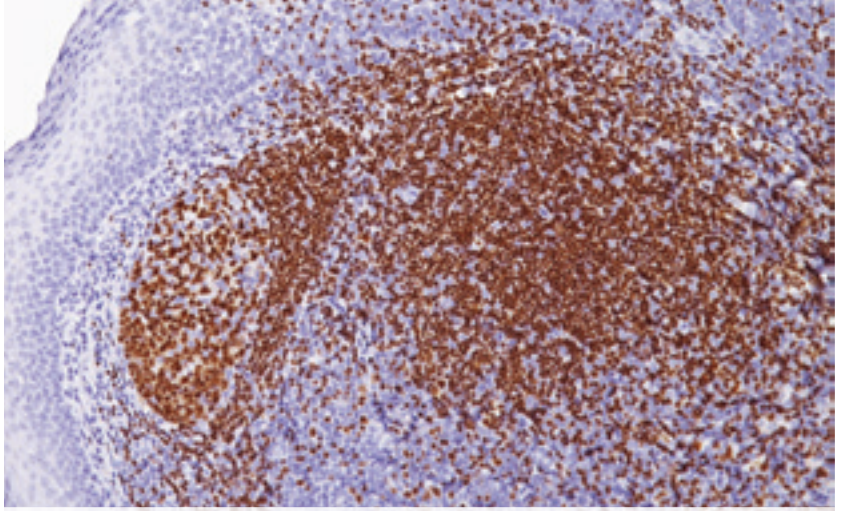
Melanoma stained with Pan Melanoma Cocktail-2

Pan Melanoma Cocktail-2 IVD FFPE

Clone	M2-7C10 + M2-9E3 + T311
Isotype	IgG2b + IgG2b + IgG2a
Reactivity	
Control	Melanoma
Cat. No.	CM 178 A; PM 178 AA; OAI 178 T60

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.



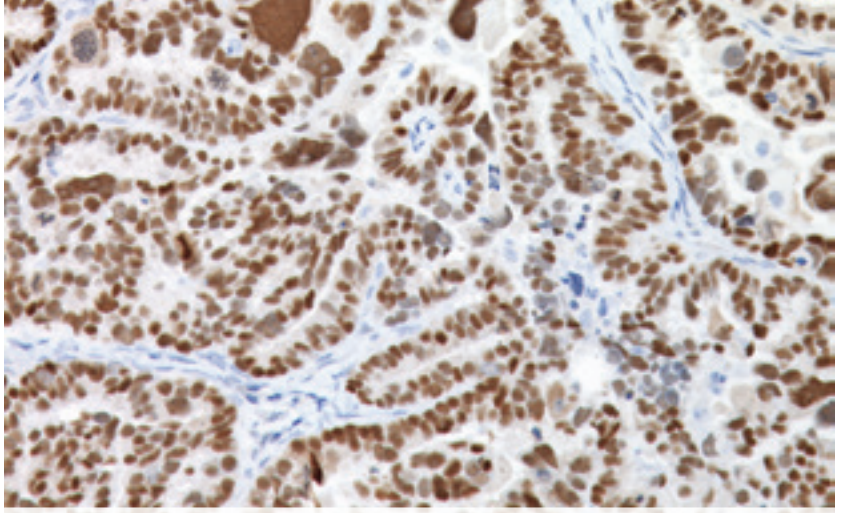
Tonsil stained with PAX-5

PAX-5 IVD FFPE

Clone	BC/24
Isotype	IgG1
Reactivity	
Control	Tonsil or B-cell lymphoma
Cat. No.	CM 207 A, B, C; PM 207 AA; OAI 207 T60

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.



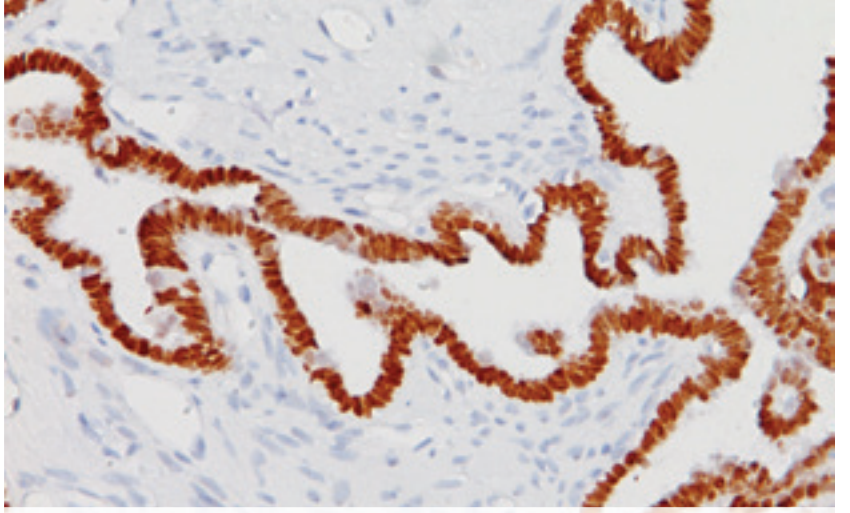
Serous ovarian adenocarcinoma stained with PAX8

PAX8 IVD FFPE

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.



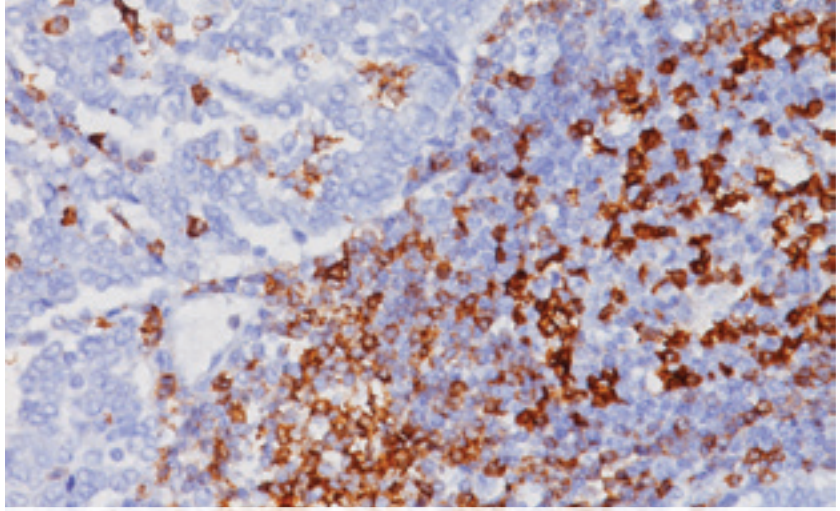
Ovarian cancer stained with PAX8 (M)

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; OAI 438 T60

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. U.S. Patent 8,852,592 and patents pending.

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. Narlis 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.



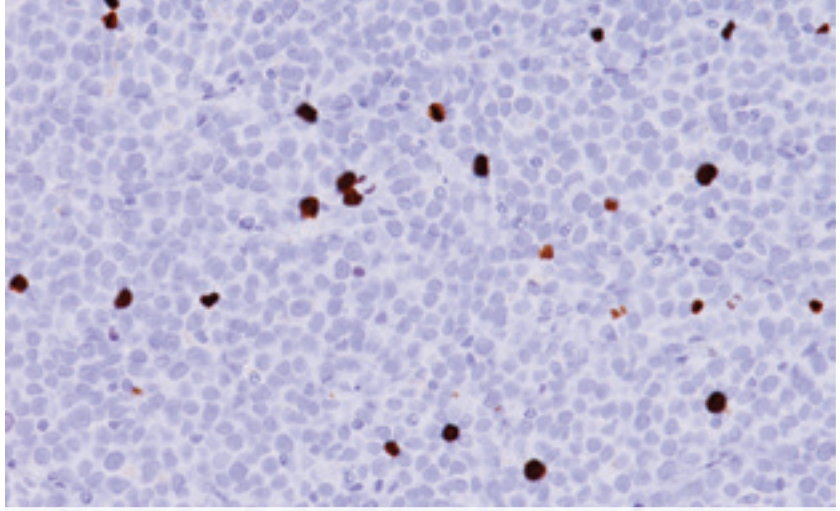
Breast cancer stained with PD-1

PD-1 IVD FFPE

Clone	NAT105
Isotype	IgG1/kappa
Reactivity	
Control	Tonsil
Cat. No.	ACI 3137 AK, CK; API 3137 AA

Programmed death 1 (PD-1) functions as a down regulator of the immune system through a dual mechanism of inhibition. PD-1 is expressed on the cell surface of activated T- and B-cells. Anti-tumor immunity may be controlled by the PD-1/PD-L1 signaling pathway. The presence of PD-1 positive tumor infiltrating lymphocytes (TIL) has been associated with poor prognosis in human breast cancers and may be useful in antibody therapy targeting the PD-1/PD-L1 signaling pathway. Treatments targeting PD-1 and its ligand, PD-L1, have also shown encouraging results in non-small-cell lung cancer, renal cell carcinoma and melanoma.

1. Muenst S, *et al.* Breast Cancer Res Treat. 2013 Jun; 139(3):667-76. 2. Kim JW, Eder JP. Oncology. (Williston Park). 2014 Nov; 28(11 Suppl 3). 3. Tumeh PC, *et al.* Nature. 2014 Nov 27; 515(7528):568-71. 4. D'Incecco A, *et al.* Br J Cancer. 2015 Jan 6; 112(1):95-102. 5. Tykodi SS. Onco Targets Ther. 2014 Jul 25; 7:1349-59.



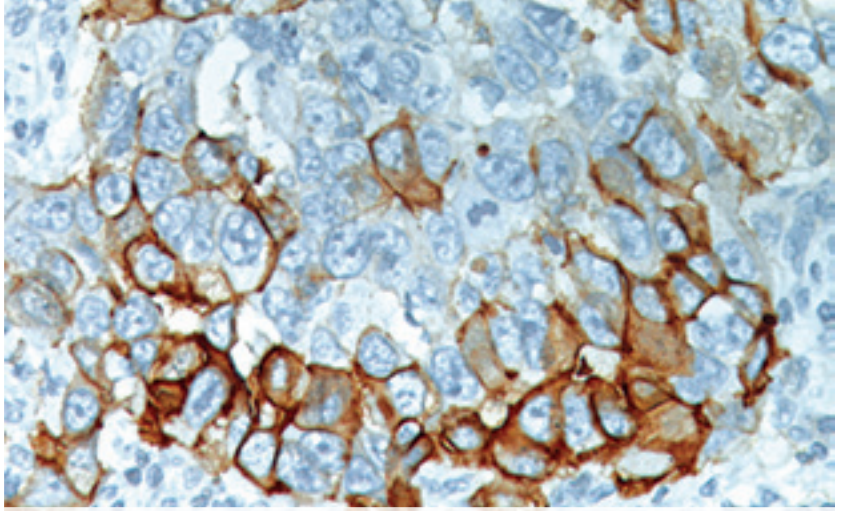
Melanoma stained with pHH3 (RM)

pHH3 (RM) IVD FFPE PREFERRED

Clone	BC37
Isotype	IgG
Reactivity	
Control	Tonsil or melanoma
Cat. No.	ACI 3130 A, C; API 3130 AA

Phospho-Histone H3 (pHH3) is specific for cells undergoing mitosis. Serine 10 of Histone H3 is phosphorylated in association with mitotic chromatin condensation in late G2 and M phase of the cell cycle. H&E staining may misclassify mitotic cells as apoptotic bodies or piknotic nuclei, resulting in an underestimation of the mitotic index (MI). IHC with pHH3 may provide a more accurate assessment of all mitotic cells, as well as cells in which Histone H3 has been phosphorylated immediately prior to entering prophase. pHH3 (RM) [BC37] displays stronger staining intensity in mitotic figures and does not exhibit granular staining in interphase nuclei compared to the polyclonal pHH3.

1. Ladstein RG, *et al.* J Invest Dermatol. 2012 Apr; 132(4):1247-52. 2. Jannink I, van Diest PJ, Baak JP. Hum Pathol. 1995 Oct; 26(10):1086-92. 3. Yadav KS, *et al.* J Contemp Dent Pract. 2012 May 1; 13(3):339-44. 4. Thareja S, *et al.* Am J Dermatopathol. 2014 Jan; 36(1):64-7. 5. Ikenberg K, *et al.* J Cutan Pathol. 2012 Mar; 39(3):324-30. 6. Casper DJ, *et al.* Am J Dermatopathol. 2010 Oct; 32(7):650-4. 7. Veras E, *et al.* Int J Gynecol Pathol. 2009 Jul; 28(4):316-21. 8. Skaland I, *et al.* Mod Pathol. 2007 Dec; 20(12):1307-15. 9. Kim YJ, *et al.* Am J.Clin Pathol. 2007 July; 128(1):118-25.



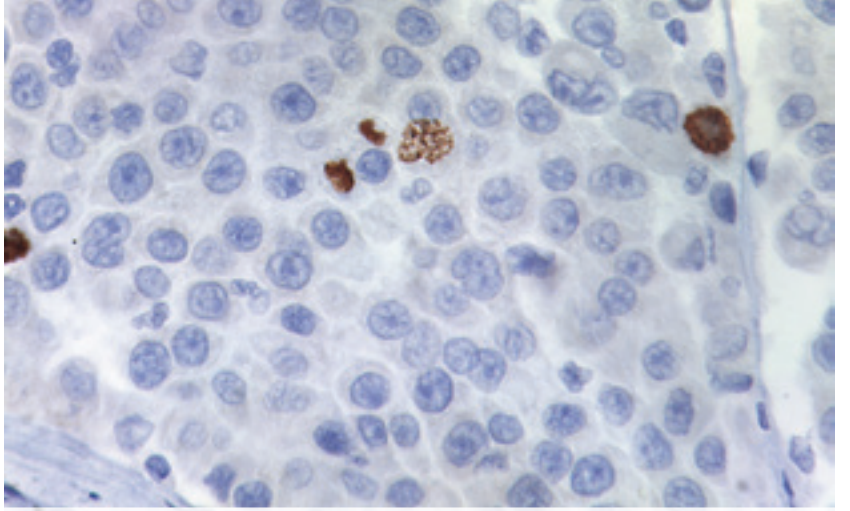
Breast cancer stained with Phospho-EGFR

Phospho-EGFR IVD FFPE

Clone	EP774Y
Isotype	IgG
Reactivity	
Control	Squamous cell carcinoma or colon cancer
Cat. No.	API 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.



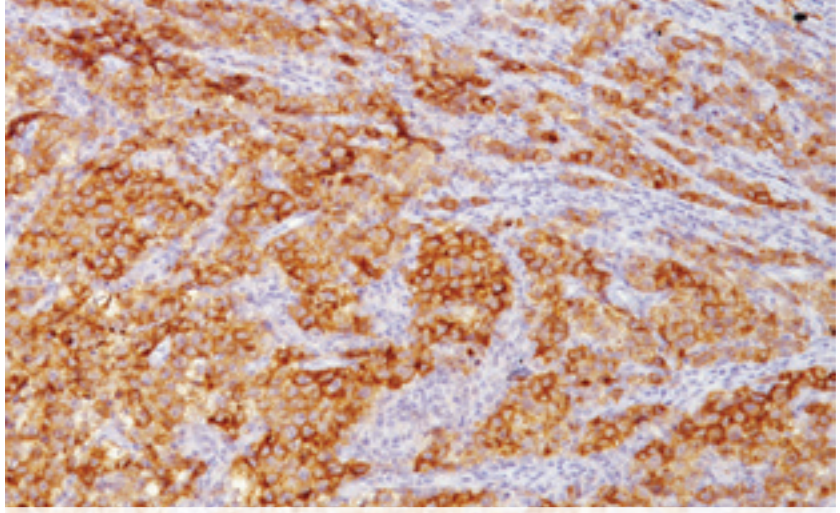
Melanoma stained with Phospho-Histone H3

Phospho-Histone H3 IVD FFPE

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.



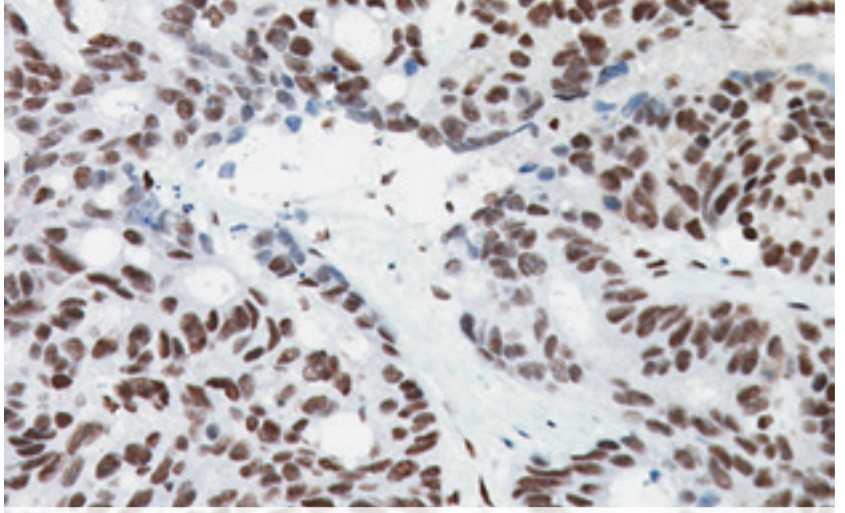
Ovarian dysgerminoma stained with Placental Alkaline Phosphatase (PLAP)

Placental Alkaline Phosphatase (PLAP) IVD FFPE

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.



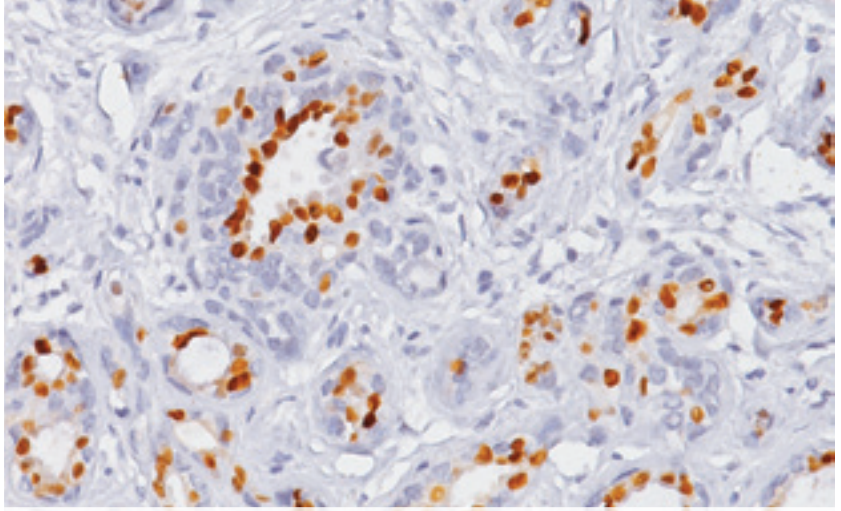
Colon cancer stained with PMS2

PMS2 IVD FFPE

Clone	A16-4
Isotype	IgG1/kappa
Reactivity	
Control	Placenta, colon cancer
Cat. No.	CM 344 AK, BK; PM 344 AA; IPI 344 G10; OAI 344 T60

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.



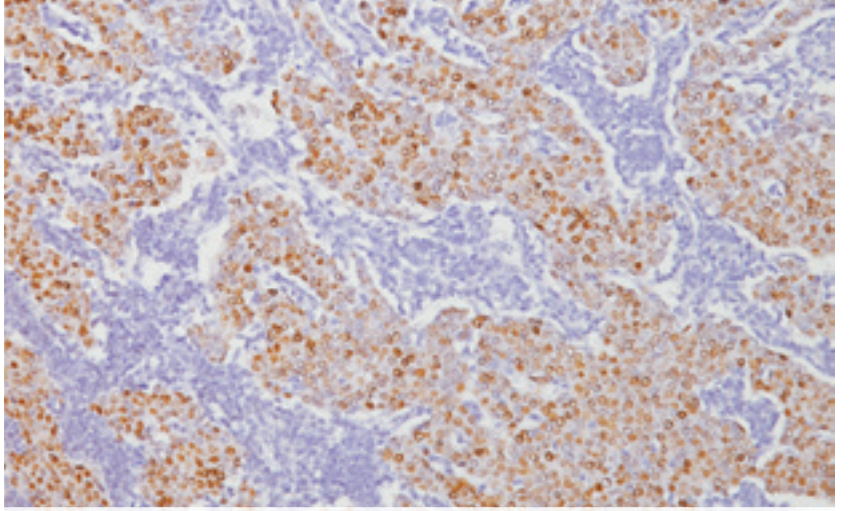
Breast cancer stained with Progesterone Receptor (PR) [16]

Progesterone Receptor (PR) [16] ASR FFPE PREFERRED

Clone	16
Isotype	IgG1
Reactivity	N/A
Control	N/A
Cat. No.	ACA 424 A, C; OAA 424 T60

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.



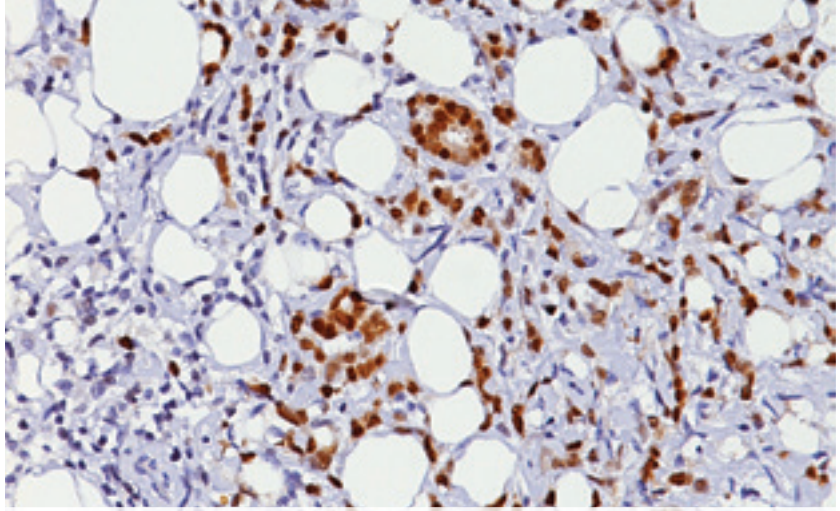
Breast cancer stained with Progesterone Receptor (PR) [1A6]

Progesterone Receptor (PR) [1A6] ASR FFPE

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.



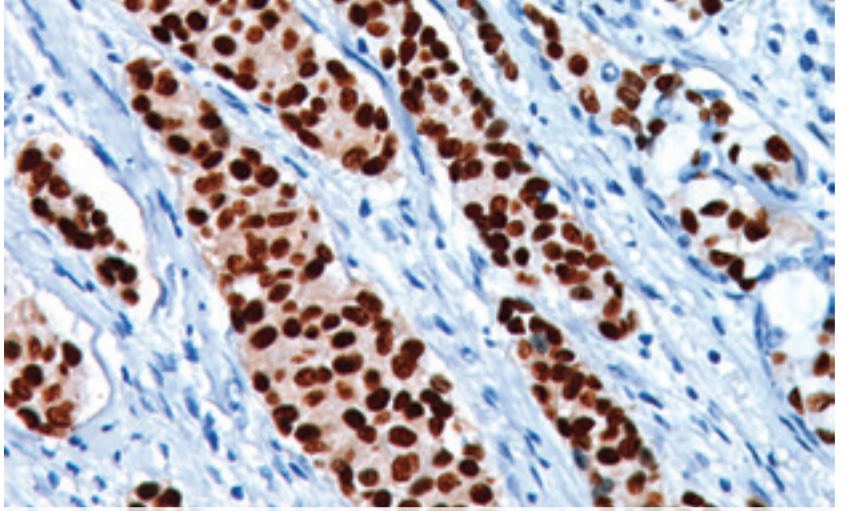
Breast cancer stained with Progesterone Receptor (PR) [PgR636]

Progesterone Receptor (PR) [PgR636] ASR FFPE

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



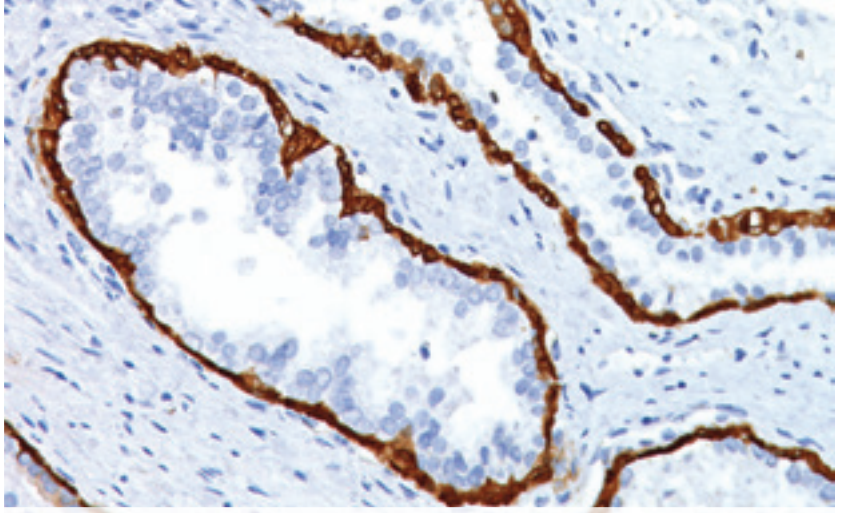
Breast cancer stained with Progesterone Receptor (PR) [SP2]

Progesterone Receptor (PR) [SP2] ASR FFPE

Clone	SP2
Isotype	IgG
Reactivity	N/A
Control	N/A
Cat. No.	ACA 302 A, 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.



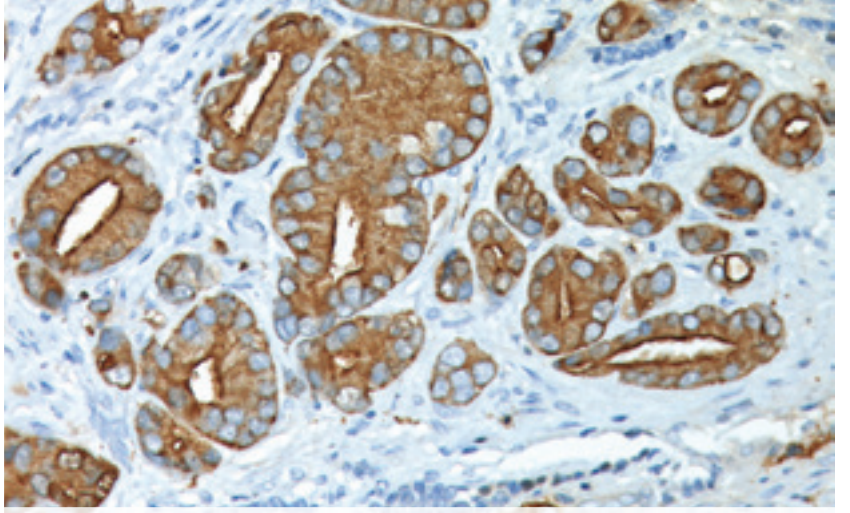
Prostate stained with Prostate Cocktail, 2X

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

Clone	XM26 + LL002 + 4A4
Isotype	IgG1/kappa + IgG3 + IgG2a/kappa
Reactivity	
Control	Normal 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.



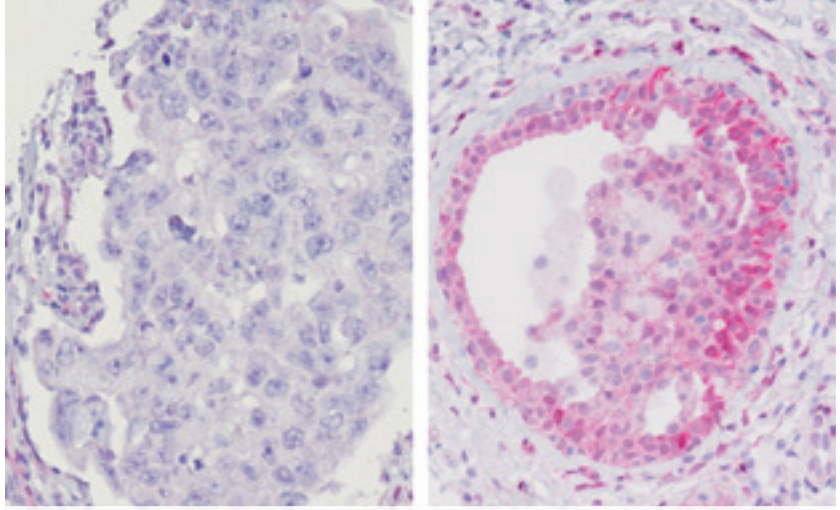
Prostate cancer stained with Prostate Specific Antigen (PSA)

Prostate Specific Antigen (PSA) IVD FFPE

Clone	EP109
Isotype	IgG
Reactivity	
Control	Prostate or prostate carcinoma
Cat. No.	CME 390 AK, CK; PME 390 AA; OAI 390 T60

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.



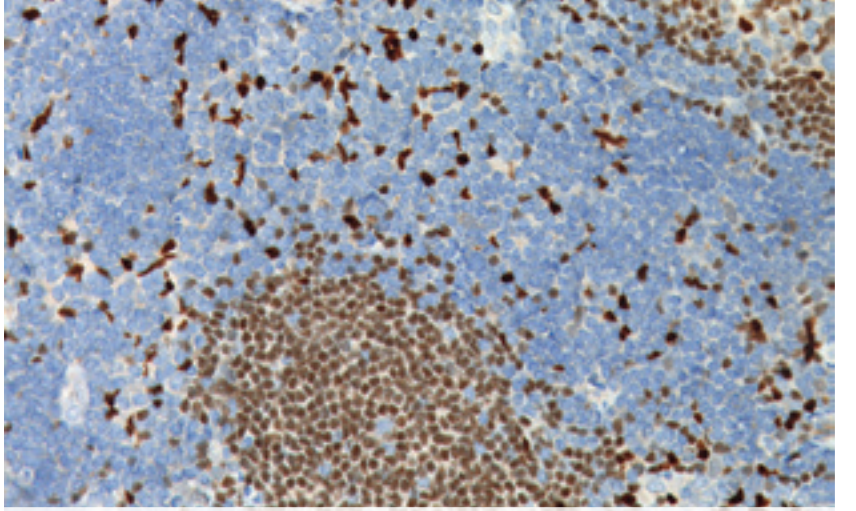
Breast cancer (DCIS) with (L) PTEN deletion & (R) PTEN staining

PTEN (Tumor Suppressor) IVD FFPE

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.



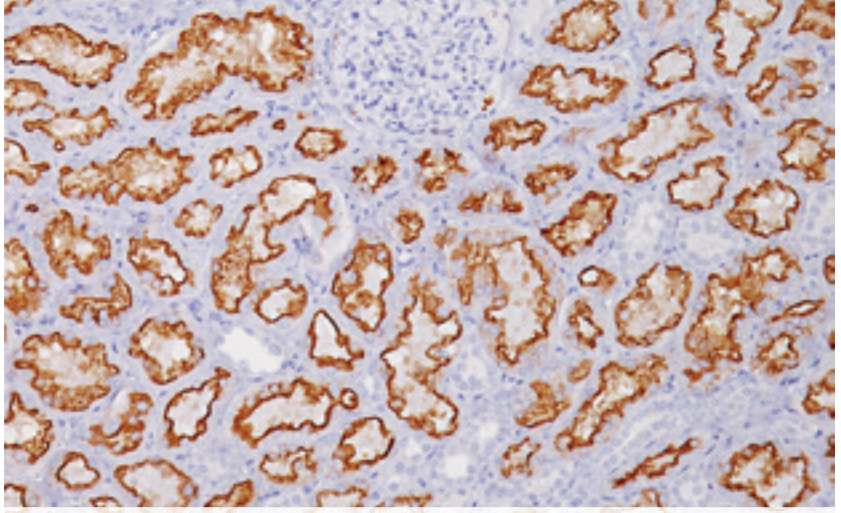
Normal tonsil stained with PU.1

PU.1 IVD FFPE

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.



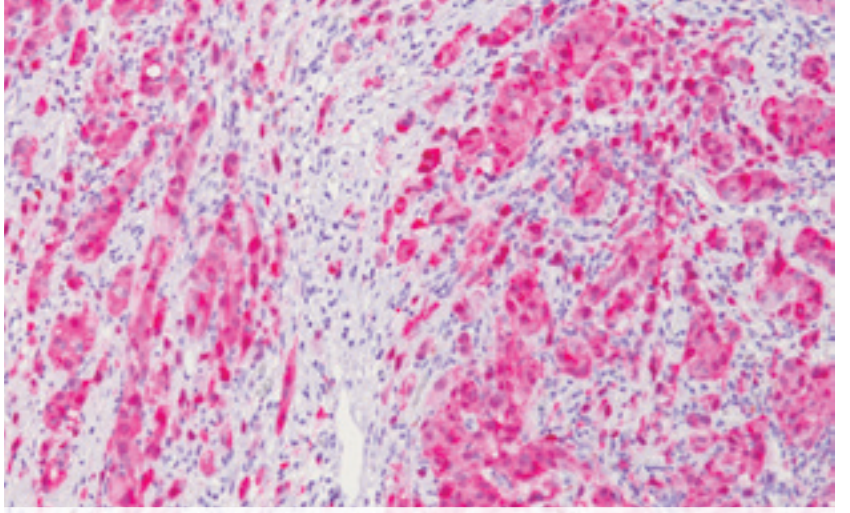
Kidney cancer stained with Renal Cell Carcinoma

Renal Cell Carcinoma IVD FFPE

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 resistance to chemotherapy and radiation therapy. RCC [66.4.C2] recognizes the renal tumor associated antigen gp200, which is localized along the brush border of the proximal tubules and the luminal surface of Bowman's capsule. RCC labels the majority of clear cell carcinomas and the proximal tubules of papillary renal cell carcinoma. It is expressed by both primary and metastatic 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.



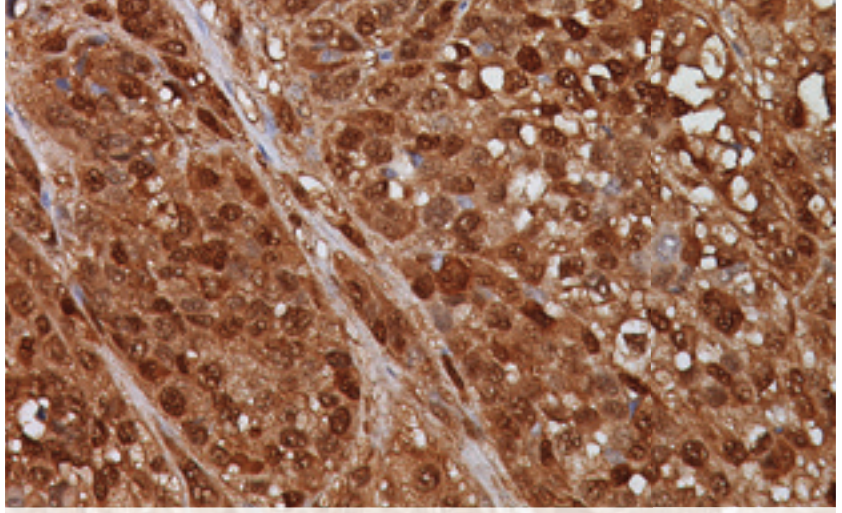
Melanoma stained with S100 Protein (P)

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; OAI 021 T60

S100 belongs to the family of calcium binding proteins such as calmodulin and troponin C. The S100 antibody stains Schwannomas, ependymomas, astrogliomas, 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.



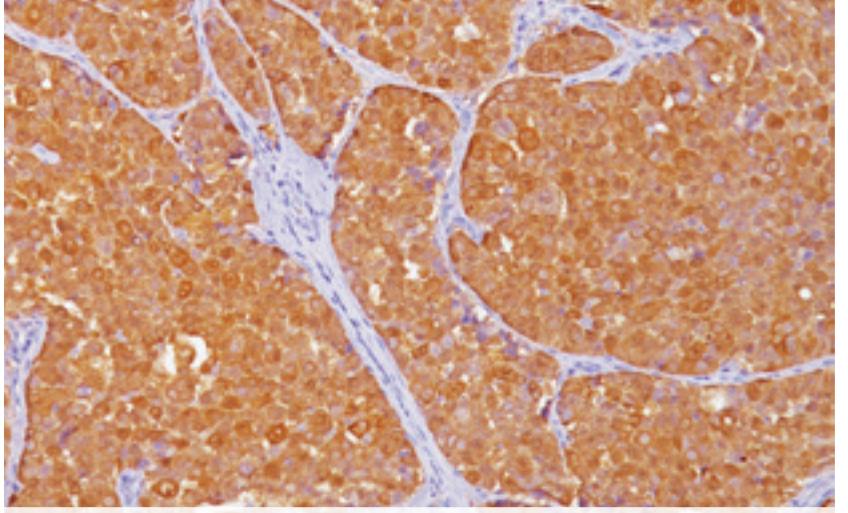
Melanoma stained with S100 Protein [15E2E2] (M)

S100 Protein [15E2E2] (M) IVD FFPE

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.



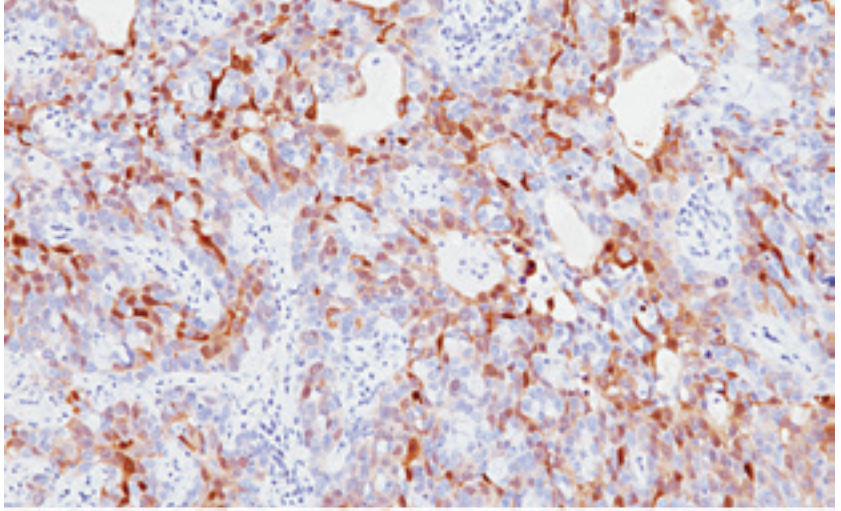
Melanoma stained with S100 Protein Cocktail

S100 Protein Cocktail IVD FFPE PREFERRED

Clone	15E2E2 + 4C4.9
Isotype	IgG2a + IgG2a
Reactivity	
Control	Melanoma
Cat. No.	CM 089 A, B, C; PM 089 AA, H; IP 089 G10; OAI 089 T60

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.



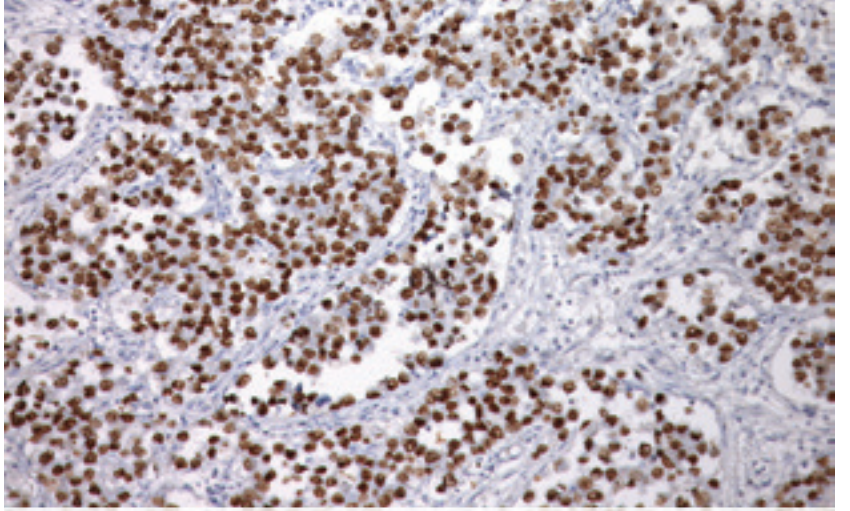
Bladder cancer stained with S100P

S100P IVD FFPE

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.



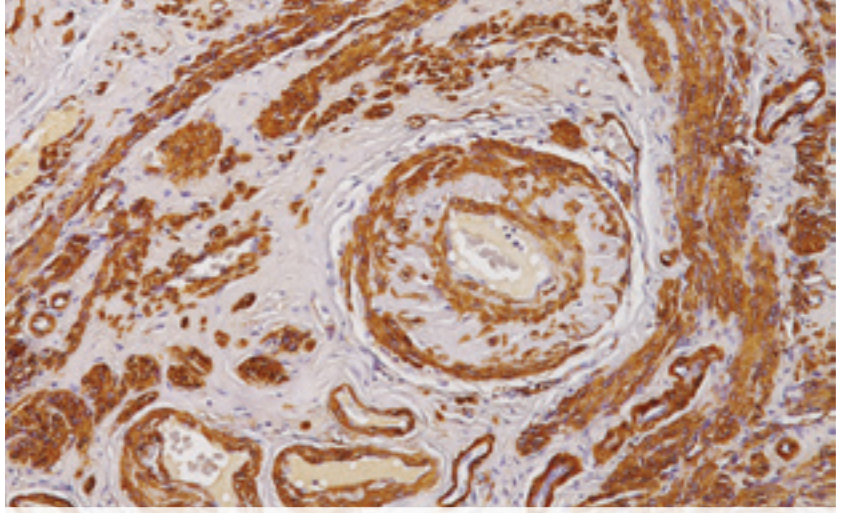
Seminoma stained with SALL4

SALL4 IVD FFPE

Clone	6E3
Isotype	IgG1/kappa
Reactivity	
Control	Seminoma
Cat. No.	CM 384 A, C; PM 384 AA; OAI 384 T60

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.



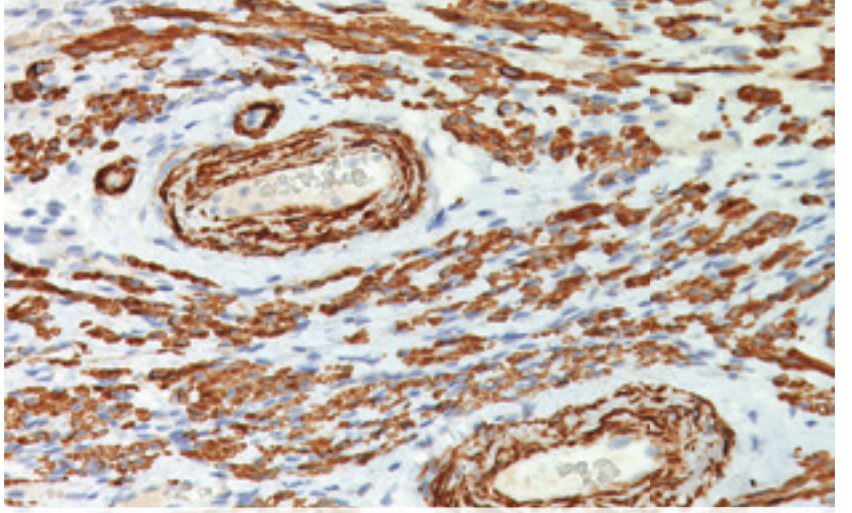
Blood vessels stained with Smooth Muscle Actin (SMA)

Smooth Muscle Actin (SMA) IVD FFPE

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; OAI 001 T60

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.



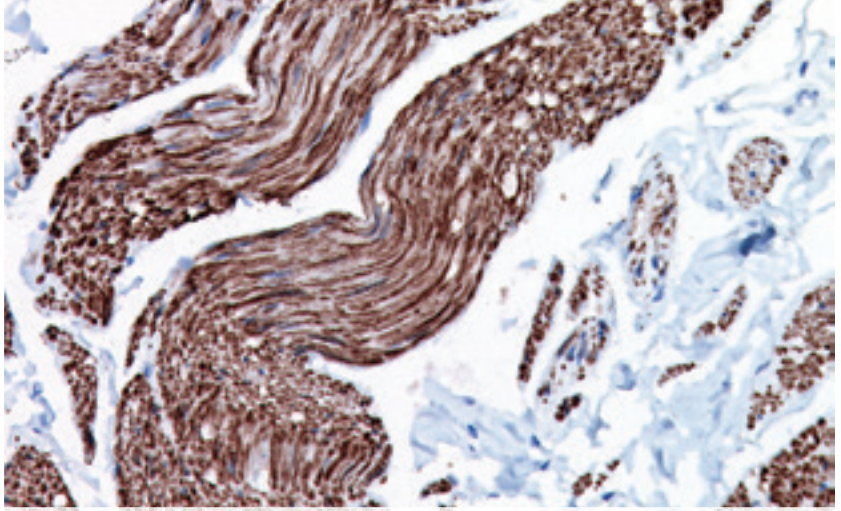
Uterus stained with Smooth Muscle Myosin Heavy Chain

Smooth Muscle Myosin Heavy Chain IVD FFPE

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.



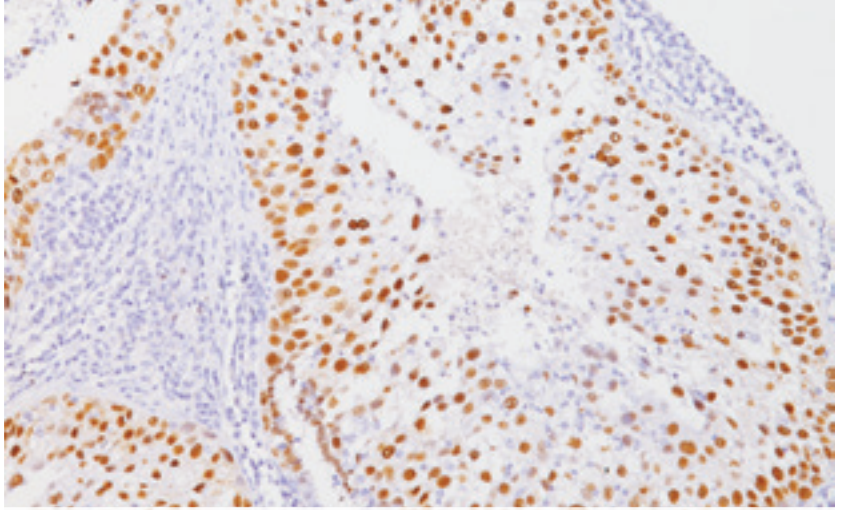
Bladder muscle stained with Smoothelin

Smoothelin IVD FFPE

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.



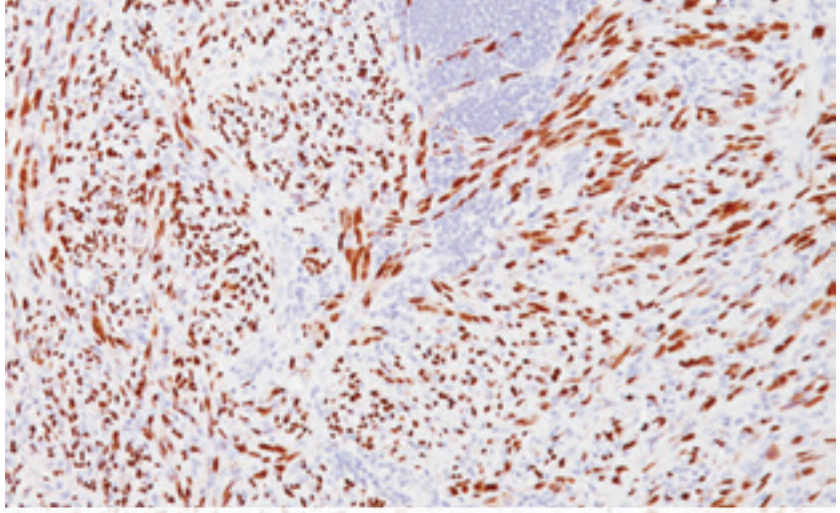
Lung squamous cell carcinoma stained with SOX2

SOX2 IVD FFPE

Clone	BC36
Isotype	IgG1/kappa
Reactivity	
Control	Lung squamous cell carcinoma
Cat. No.	ACI 3109 A, C; API 3109 AA

The SOX2 gene encodes a member of the SRY-related HMG-box (SOX) family of transcription factors. SOX2 is expressed in multipotent neuronal stem cells, and may aid to identify cells that are capable of self-renewal and multipotent differentiation. SOX2 has been shown to be a negative prognostic factor and associated with aggressive phenotypes in breast, head and neck, gastric, colorectal and bladder cancers. In small cell lung cancers, SOX2 was also correlated with a poor prognosis. Conversely, SOX2 is expressed in a high percentage of lung squamous cell carcinomas and was shown to be an independent positive prognostic marker.

1. Graham V, *et al.* Neuron. 2003 Aug 28; 39(5):749-65. 2. Ellis P, *et al.* Dev Neurosci. 2004 Mar-Aug; 26 (2-4):148-65. 3. Rodriguez-Pinilla SM, *et al.* Mod Pathol. 2007 Apr; 20(4):474-81. 4. Huang YH, *et al.* Histopathology. 2014 Mar; 64(4):494-503. 5. Li W, *et al.* Acta Otolaryngol. 2014 Nov; 134(11):1101-8. 6. Camilo V, *et al.* BMC Cancer. 2014 Oct 9; 14:753. 7. Lundberg IV, *et al.* PLoS One. 2014 Jul 10; 9(7):e101957. 8. Velcheti V, *et al.* PLoS One. 2013 Apr 19; 8(4):e61427. 9. Yang F, *et al.* Int J Clin Exp Pathol. 2013 Nov 15; 6 (12):2846-54.



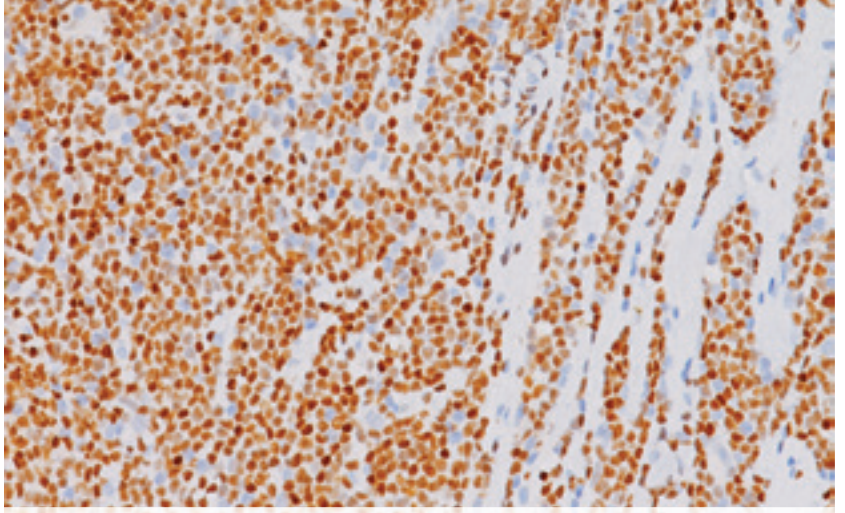
Spindle cell carcinoma stained with SOX10 (M)

SOX10 (M) IVD FFPE

Clone	BC34
Isotype	IgG1
Reactivity	
Control	Melanoma
Cat. No.	ACI 3099 A, C; API 3099 AA, H; AVI 3099 G; IPI 3099 G10; OAI 3099 T60

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.



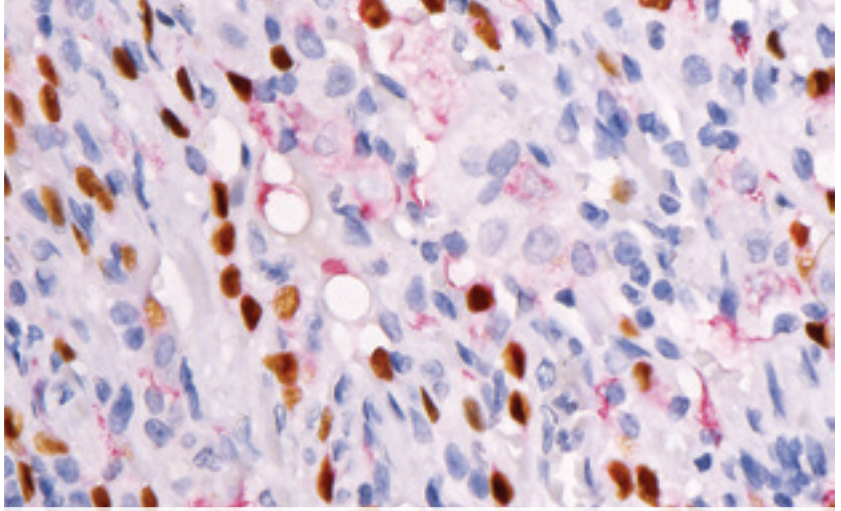
Mantle cell lymphoma stained with SOX11 (M)

SOX11 (M) IVD FFPE

Clone	SOX11-C1
Isotype	IgG1/kappa
Reactivity	
Control	Mantle cell lymphoma
Cat. No.	ACI 3120 A, C; API 3120 AA

SOX11 antibody (SRY (Sex Determining Region Y)-Box 11) is a member of the SOX family of transcription factors. The diagnosis of mantle cell lymphoma (MCL) can be difficult, especially when t(11;14) translocation and cyclin D1 overexpression are not detected. In such cases, the transcription factor SOX11 represents an important diagnostic marker as it is expressed in most MCLs and, in particular, in all cyclin D1(-) MCLs reported so far. The novel SOX11-C1 offers high sensitivity and improved specificity compared to previous SOX11 antibodies in IHC based detection of MCL. SOX11 expression has also been shown to be a favorable prognostic marker in glioblastoma.

1. Pusch C, *et al.* Hum Genet. 1998 Aug; 103(2):115-23. 2. Soldini D, *et al.* Am J Surg Pathol. 2014 Jan; 38(1):86-93. 3. Chen YH, *et al.* Mod Pathol. 2010 Jan; 23(1):105-12. 4. Nordström L, *et al.* BMC Cancer. 2012 Jun 27;12:269. 5. Korkolopoulou P, *et al.* Br J Cancer. 2013 May 28;108(10):2142-52.



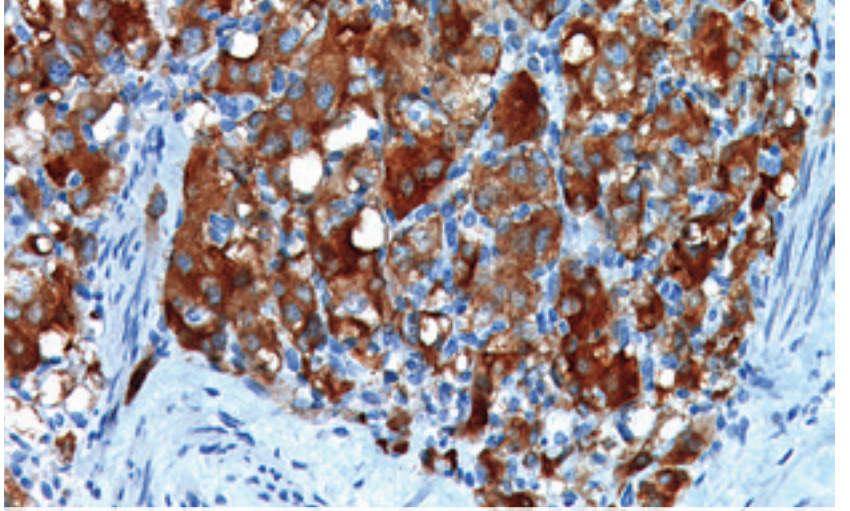
Double stain of Surfactant apoprotein-A (red) and TTF-1 (brown)

Surfactant apoprotein-A [32E12] IVD FFPE

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.



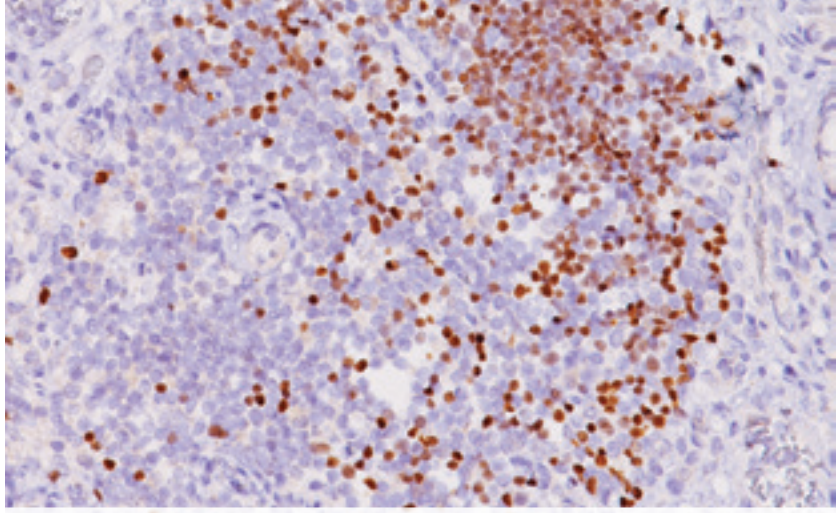
Phaeochromocytoma stained with Synaptophysin

Synaptophysin IVD FFPE

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; OAI 371 T60

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, phaeochromocytomas 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.



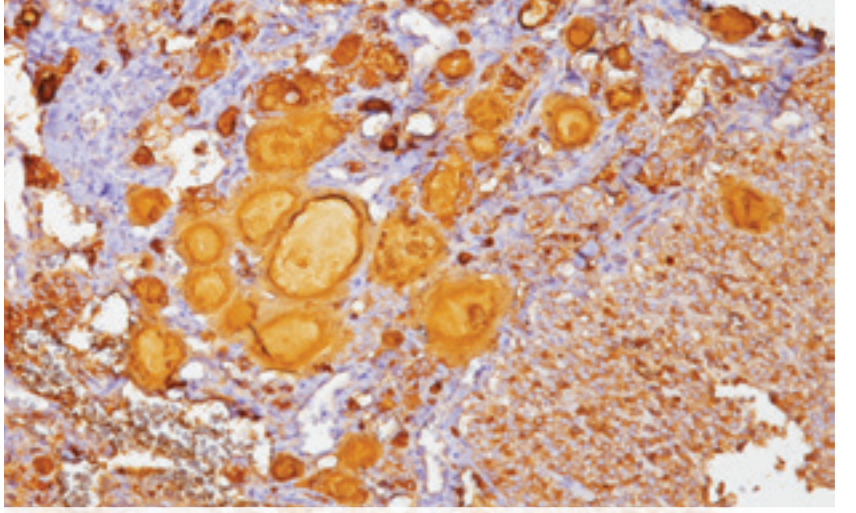
Thymus stained with Terminal Deoxynucleotidyl Transferase

Terminal Deoxynucleotidyl Transferase IVD FFPE

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.



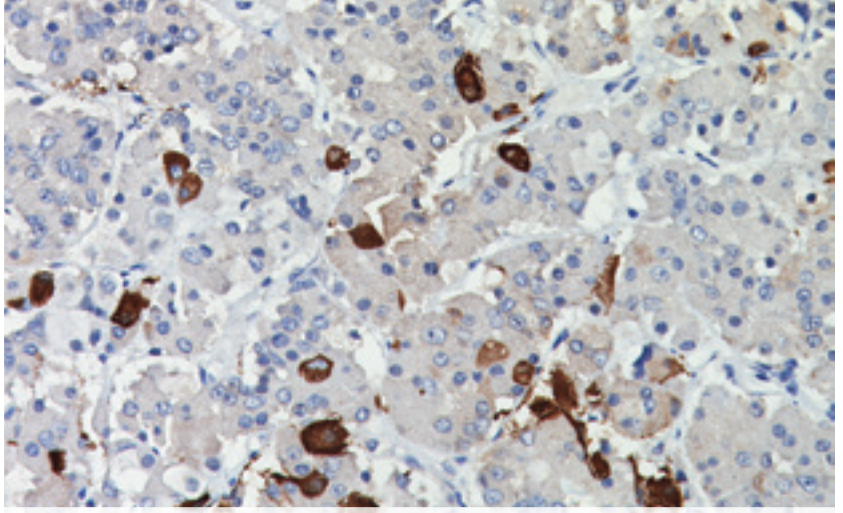
Thyroid cancer stained with Thyroglobulin Cocktail

Thyroglobulin Cocktail IVD FFPE

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.



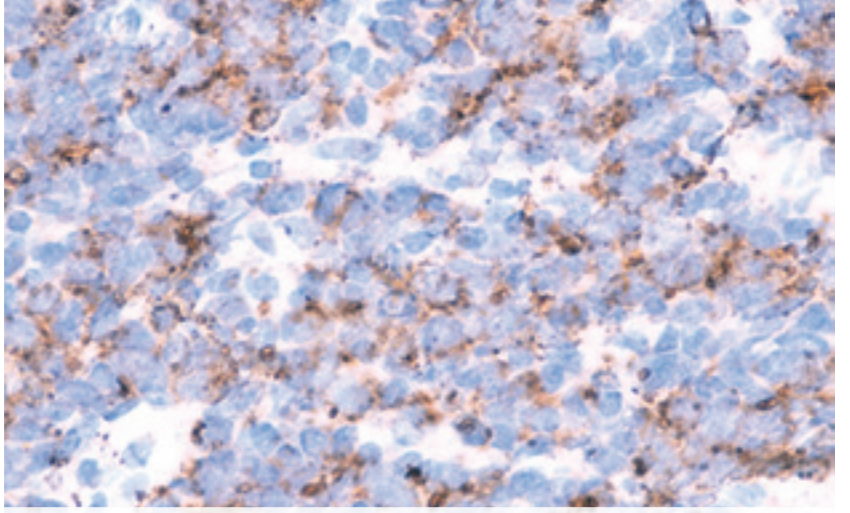
Pituitary gland stained with Thyroid Stimulating Hormone (TSH)

Thyroid Stimulating Hormone (TSH) IVD FFPE

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 Endocnnol Invest. 2007 Jul-Aug; 30 (7):603-9. 3. Ness-Abramof R, *et al.* Pituitary. 2007;10(3):307-10.



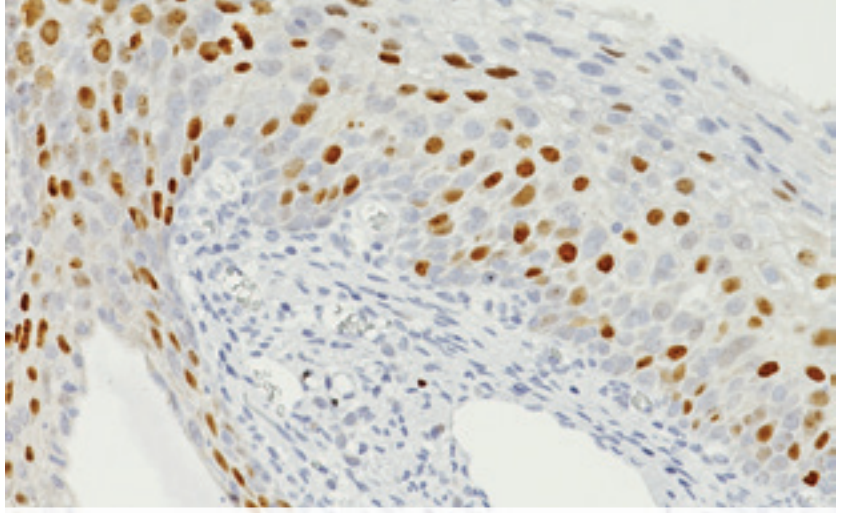
Anaplastic large cell lymphoma stained with TIA-1

TIA-1 IVD FFPE

Clone	TIA-1
Isotype	IgG1
Reactivity	
Control	Anaplastic large cell lymphoma or tonsil
Cat. No.	CM 130 A, B, C; PM 130 AA

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.



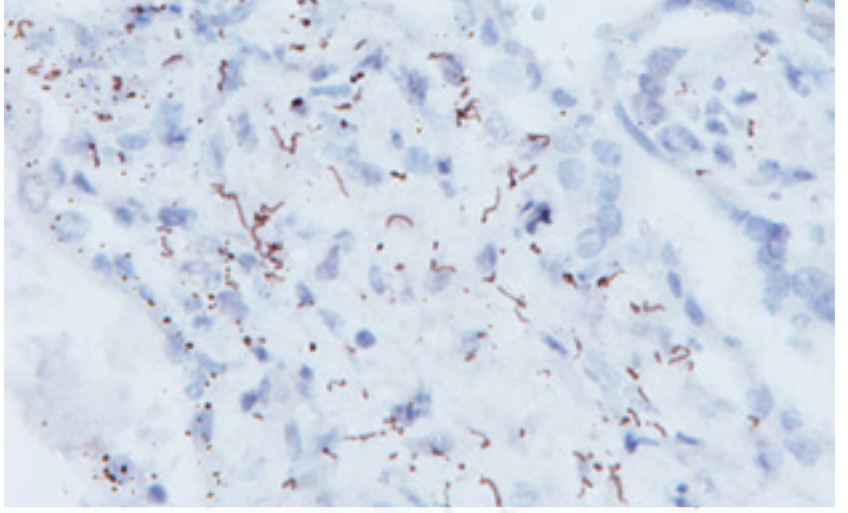
Normal cervix stained with Topoisomerase II alpha

Topoisomerase II alpha IVD FFPE

Clone	31
Isotype	IgG1
Reactivity	
Control	Cervix or tonsil
Cat. No.	ACI 3045 A, B; API 3045 AA

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.



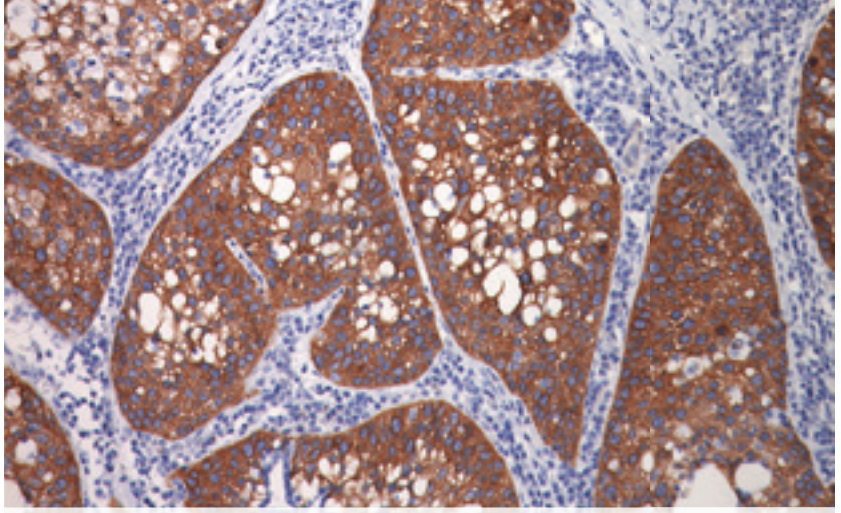
Spirochete infected tissue stained with *Treponema pallidum* (Spirochete)

Treponema pallidum (Spirochete) ASR FFPE

Clone	N/A
Isotype	IgG
Reactivity	N/A
Control	N/A
Cat. No.	ACA 135 A, B, C; APA 135 AA; IPA 135 G10; OAA 135 T60

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-Ezquerra G, *et al.* Hum Pathol. 2009 May; 40(5):624-30.



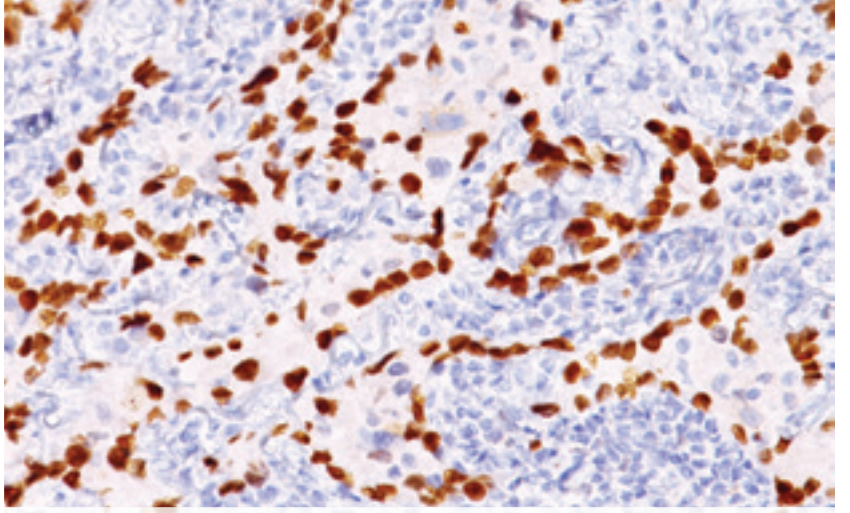
Lung squamous carcinoma stained with TRIM29 (P)

TRIM29 (P) IVD FFPE

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.



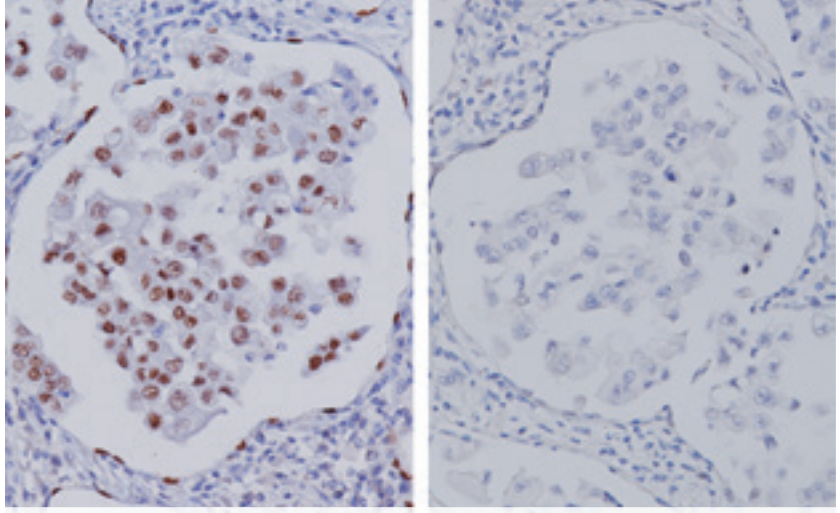
Lung adenocarcinoma stained with TTF-1

TTF-1 IVD FFPE

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

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.



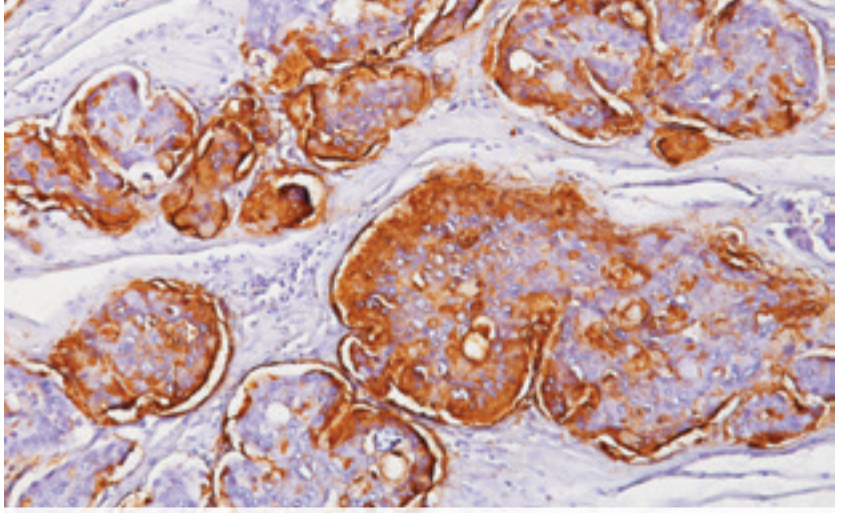
(L) Lung adenocarcinoma stained with TTF-1 [SPT24]; (R) TTF-1 [8G7G3/1]

TTF-1 [SPT24] IVD FFPE PREFERRED

Clone	SPT24
Isotype	IgG1/kappa
Reactivity	
Control	Lung adenocarcinoma
Cat. No.	ACI 3126 A, C; API 3126 AA; OAI 3126 T60

Thyroid transcription factor-1 (TTF-1) is mostly detected in primary lung adenocarcinomas and small cell carcinomas. TTF-1 can be very useful in lung cancers when used in a panel with Desmoglein 3, p40 and Napsin A antibodies. TTF-1 monoclonal antibodies 8G7G3/1 and SPT24 have been shown to have different sensitivities in lung adenocarcinomas (LADC) and lung squamous cell carcinomas (SqCC). Higher sensitivity for LADC vs. lung SqCC can be achieved with SPT24, compared to 8G7G3/1, while retaining specificity, by the use of a cut-off value and optimal antibody titer. Unlike clone 8G7G3/1, no cytoplasmic staining in lung cancers has been observed with clone SPT24.

1. Di Loreto C, *et al.* J Clin Pathol. 1997 Jan; 50(1):30-2. 2. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May; 20 (3):201-7. 3. Brown AF, *et al.* Arch Pathol Lab Med. 2013 Sep; 137(9):1274-81. 4. Masai K, *et al.* Appl Immunohistochem Mol Morphol. 2013 Jul; 21(4):292-7. 5. Matoso A, *et al.* Appl Immunohistochem Mol Morphol. 2010 Mar; 18(2):142-9. 6. Ordóñez NG. Appl Immunohistochem Mol Morphol. 2012 Oct; 20 (5):429-44. 7. Bejarano PA, Mousavi F. Arch Pathol Lab Med. 2003 Feb; 127(2):193-5.



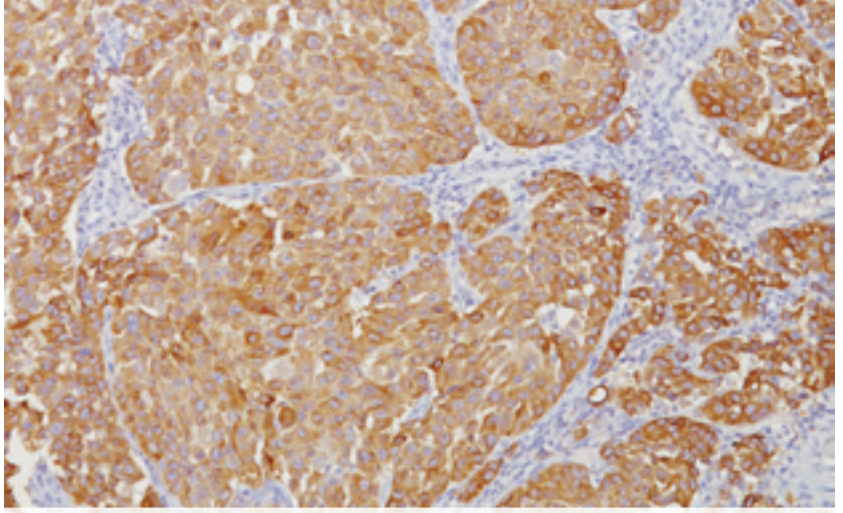
Breast cancer stained with Tumor Associated Glycoprotein [B72.3]

Tumor Associated Glycoprotein [B72.3] IVD FFPE

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.



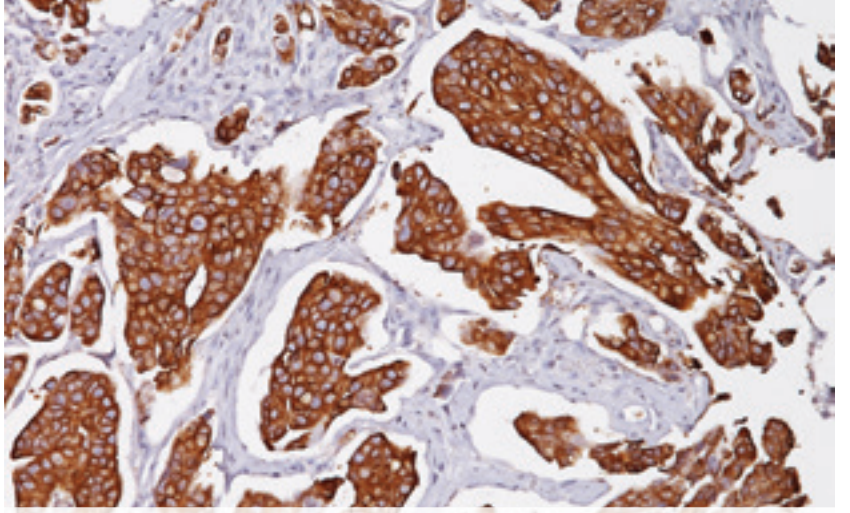
Melanoma stained with Tyrosinase

Tyrosinase IVD FFPE

Clone	T311
Isotype	IgG2a
Reactivity	
Control	Melanoma
Cat. No.	CM 155 A, B, C; PM 155 AA; OAI 155 T60

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.



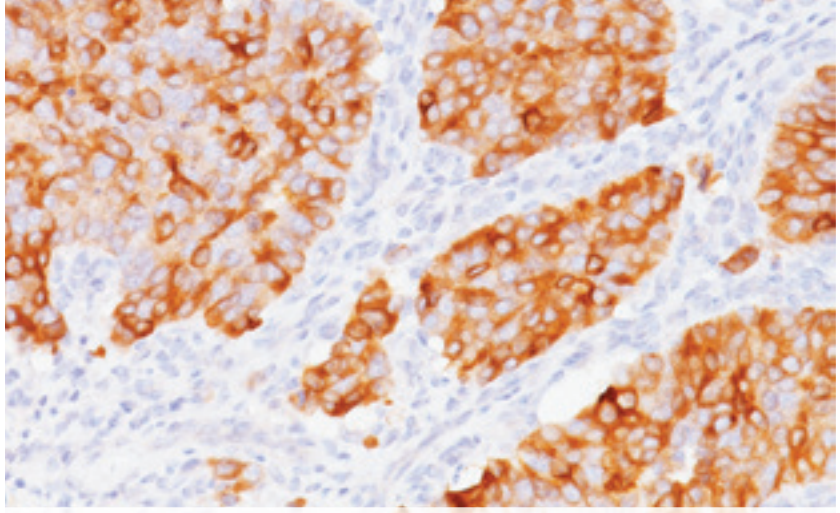
Bladder cancer stained with Uroplakin II

Uroplakin II IVD FFPE

Clone	BC21
Isotype	IgG1/kappa
Reactivity	
Control	Normal bladder or urothelial carcinoma
Cat. No.	ACI 3051 A, C; API 3051 AA; AVI 3051 KG; OAI 3051 T60

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.



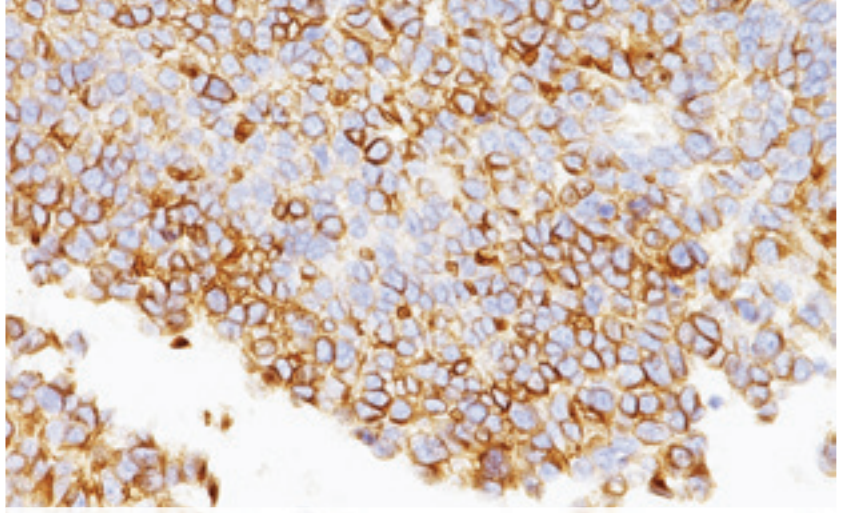
Urothelial carcinoma stained with Uroplakin II + Uroplakin III

Uroplakin II + Uroplakin III 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.



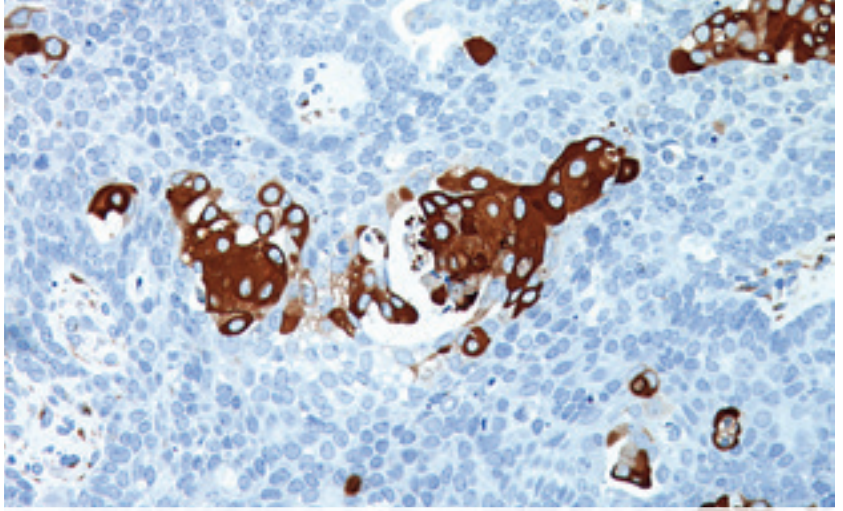
Bladder transitional cell carcinoma stained with Uroplakin III

Uroplakin III IVD FFPE

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.



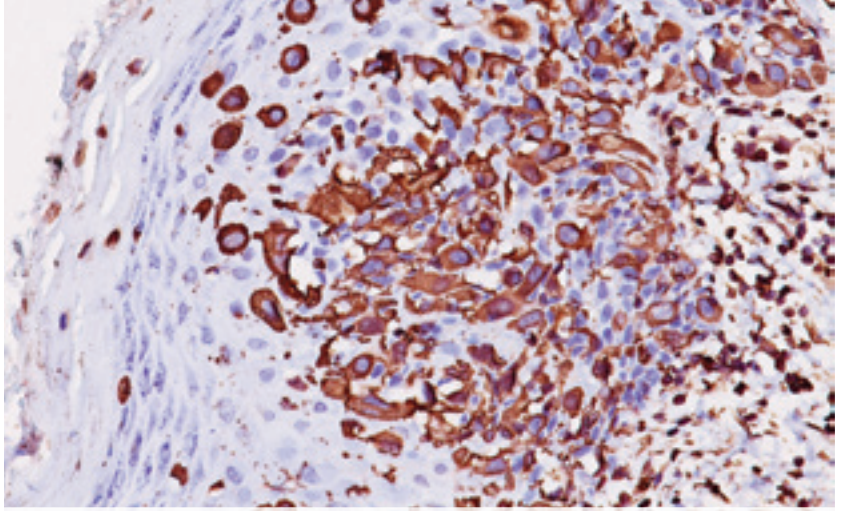
Ovarian cancer stained with VEGF

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.



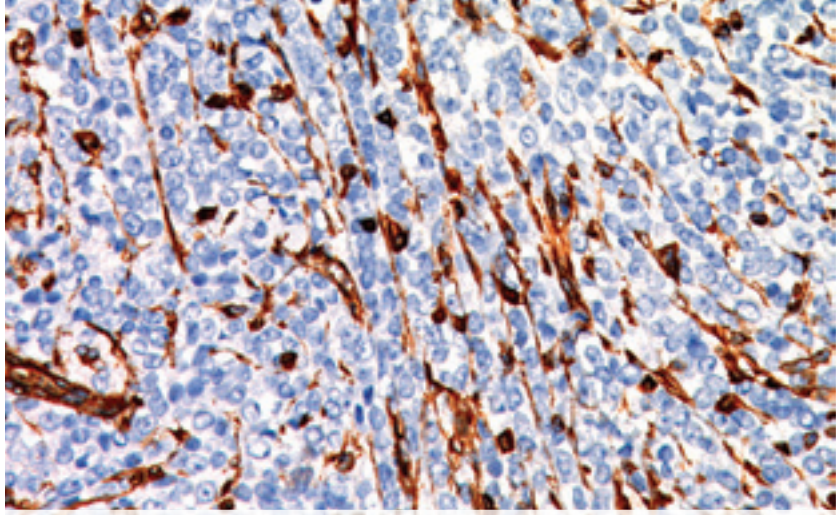
Cutaneous melanoma stained with Vimentin

Vimentin IVD FFPE PREFERRED

Clone	V9
Isotype	IgG1/kappa
Reactivity	
Control	Melanoma
Cat. No.	CM 048 A, C; PM 048 AA; IP 048 G10; OAI 048 T60

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.



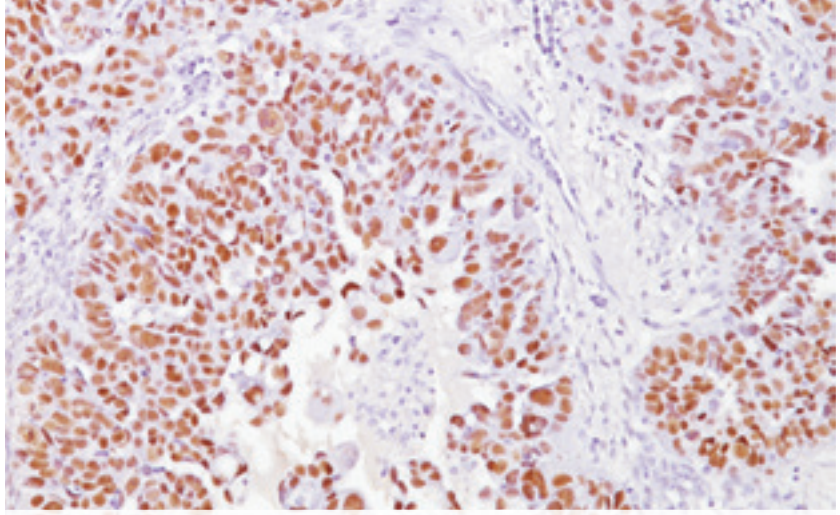
Tissue stained with Vimentin

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.



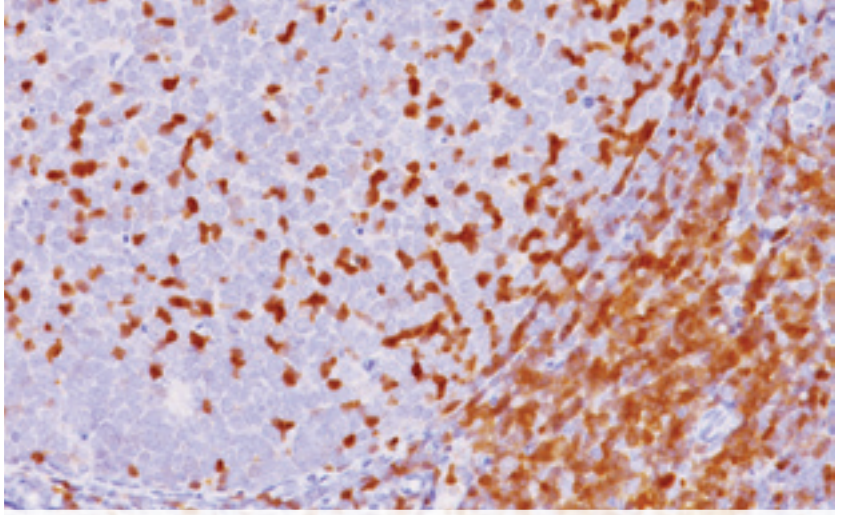
Ovarian cancer stained with WT1 (Wilms' Tumor)

WT1 (Wilms' Tumor) IVD FFPE

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; OAI 258 T60

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 or 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.



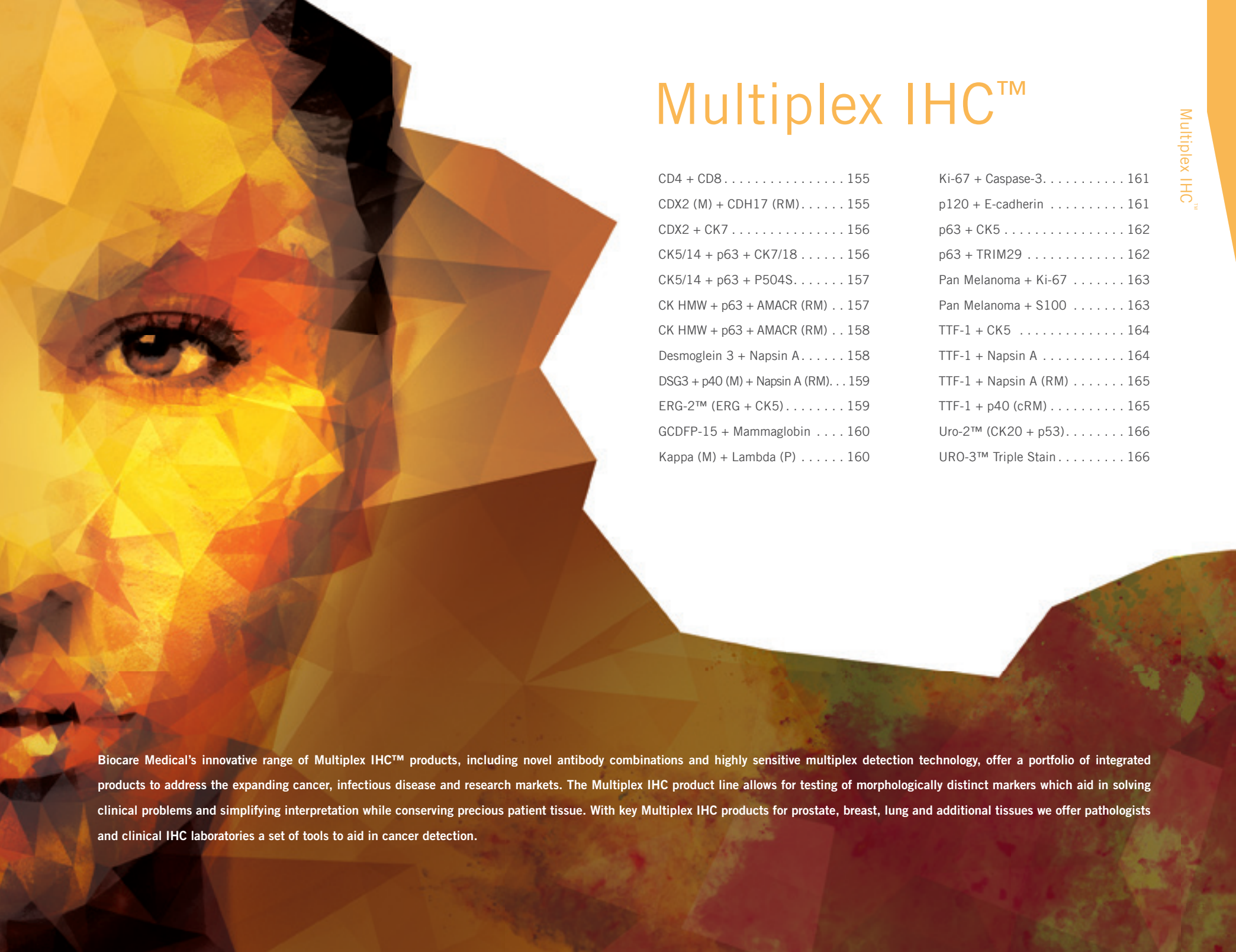
Tonsil stained with ZAP-70 (LR)

ZAP-70 (LR) IVD FFPE

Clone	BC.2F3.2
Isotype	IgG2a
Reactivity	
Control	Tonsil
Cat. No.	ACI 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 IgHV 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™

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.

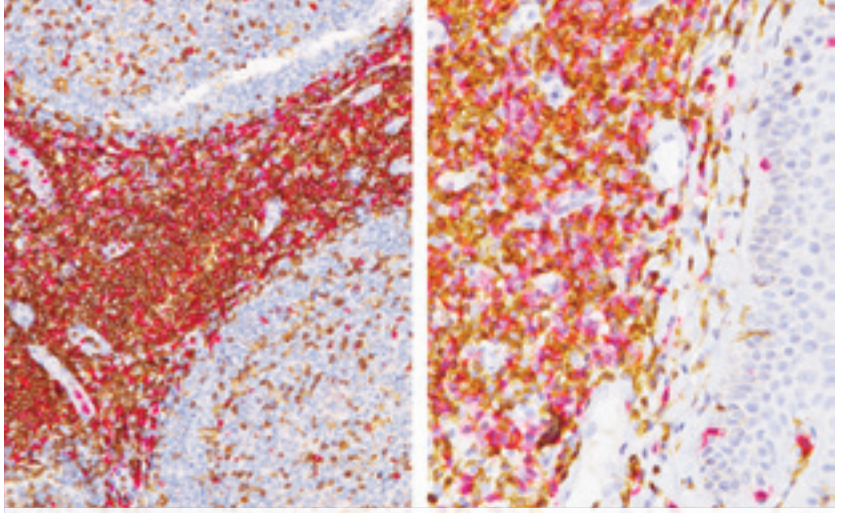
Multiplex IHC

Simultaneously test for multiple IHC markers • Prevent the unneccessary staining of limited tissue • Reduce labor and reagent costs over 50%

Marker	Organ	Cat. No.
Uro-2™ (CK20 + p53)	Bladder	API 3001DS
URO-3 Triple Stain™	Bladder	PM 370TS
CK5/14 + p63 + CK7/18	Breast	PM 360DS; VP 360DSK
GCDFP-15 + Mammaglobin	Breast	PM 317DS
p120 + E-cadherin	Breast	API 3011DS
CDX2(M) + CDH17(RM)	Colon	API 3135DS
Desmoglein 3 + p40(M) + Napsin A(RM)	Lung	API 3132DS
Desmoglein 3 + Napsin A	Lung	PPM 428DS
p63 + CK5	Lung	PM 391DS
p63 + TRIM29	Lung	PPM 427DS
TTF-1 + CK5	Lung	PM 425DS
TTF-1 + Napsin A	Lung	PPM 394DS; IPI 394DS
TTF-1 + Napsin A(RM)	Lung	API 3078DS
TTF-1 + p40(cRM)	Lung	API 3141DS
Pan Melanoma + Ki-67	Melanoma	PM 362DS
Pan Melanoma + S100	Melanoma	PPM 213DS
CK5/14 + p63 + P504S	Prostate	PPM 225DS; IPR 225DS
CK HMW + p63 + AMACR(RM) (IVD)	Prostate	API 3154DS
CK HMW + p63 + AMACR(RM) (RUO)	Prostate	OAR 3123
ERG-2™ (ERG + CK5)	Prostate	API 437DS

Additional Markers	Type	Cat. No.
Ki-67 + Caspase-3	Proliferation / Cell Death	PPM 240DS
CD4 + CD8	Lymphoma Markers	API 3157DS
Kappa + Lambda	Lymphoma Markers	API 3159DS
CDX2 + CK7	Tumors of unknown origin	PM 367DS

Multiplex Detection	Cat. No.
MACH 2 Double Stain 1	MRCT523
MACH 2 Double Stain 2	MRCT525
intelliPATH™ Multiplex Secondary Reagent 2	IPSC5004
ONCORE Multiplex Detection 2	ORI6045



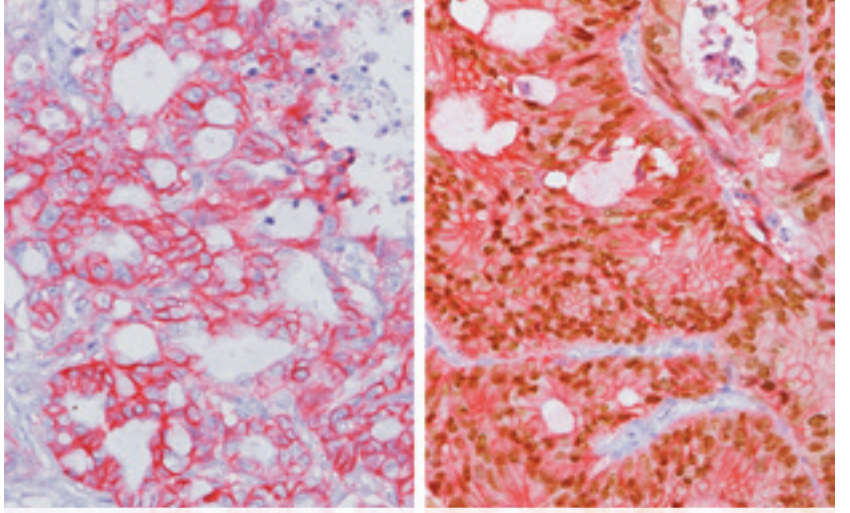
(L) Tonsil (R) *Mycosis fungoides* stained with CD4 + CD8

CD4 + CD8 IVD FFPE

Clone	4B12 + SP16
Isotype	IgG1/kappa + IgG
Reactivity	
Control	*Mycosis fungoides* and normal tonsil
Cat. No.	API 3157DS AA

CD4 + CD8 is helpful in distinguishing *mycosis fungoides*, a common form of cutaneous T-cell lymphoma. CD4 is found in 80% of thymocytes and in 45% of peripheral blood lymphocytes. CD4 is expressed in the majority of T-cell lymphomas, including *mycosis fungoides*. CD8 is an important marker in the analysis of T-cell mediated inflammatory dermatoses and for *mycosis fungoides*. CD8 can be used with CD4, CD56, and TIA-1 for identifying subsets of inflammatory skin diseases. CD4 and CD8 have also been shown to be valuable in squamous cell cervical cancer and gastric mucosa in HIV infection. Multiplex IHC may also give distinct advantages if ratios and/or cell counts on a single slide are desired.

1. Boone SL, Guitart J, Gerami P. G Ital Dermatol Nenereol. 2008 Dec;143(6):409-14. 2. Hodak E , *et al.* J Am Acad Dermatol. 2006 Aug;55(2):276-84. 3. Tirumalae R, Panjwani PK. Indian J Dermatol. 2012 Nov;57(6):424-7. 4. Harvell JD, Nowfar-Rad M, Sundram U. J Cutan Pathol. 2003 Feb;30(2):108-13. 5. Shi Z, *et al.* Za Zhi. 2009 Aug;23(4):261-4. 6. Shah W, *et al.* Cell Mol Immunol. 2011 Jan;8(1):59-66. 7. Barth TF, *et al.* Virchows Arch. 2000 Apr; 436(4):357-64.



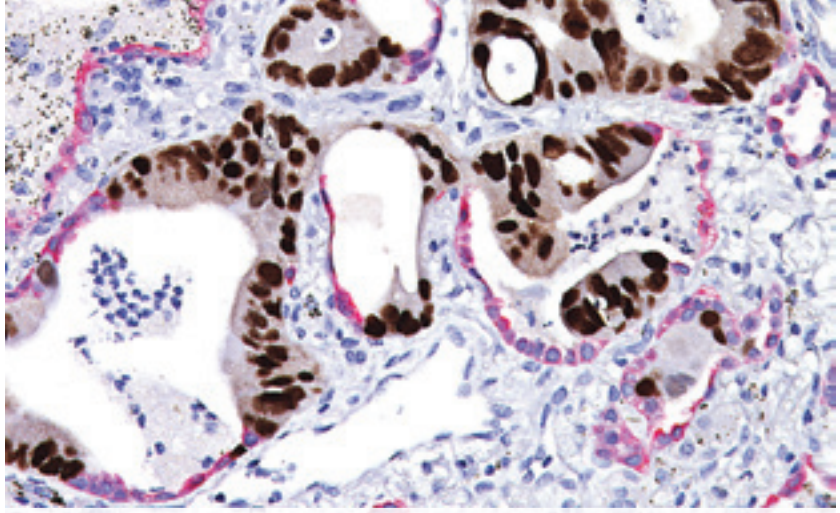
(L) Colon cancer stained with CDH17 (+) and CDX2 (-) / (R) Colon cancer stained with CDH17 (+) and CDX2 (+)

CDX2 (M) + CDH17 (RM) IVD FFPE

Clone	CDX2-88 + EP86
Isotype	IgG1 + IgG
Reactivity	
Control	Normal colon or colon cancer
Cat. No.	API 3135DS AA

CDX2 has been useful in establishing gastrointestinal origin of metastatic adenocarcinomas and carcinoids. CDX2 has been shown to be more specific and more sensitive than Villin or CK20. CDH17 is a highly specific marker in colon cancer and is a more sensitive marker than CDX2 and CK20. Data suggests that the combination of CDX2 and CDH17 along with CK7 may improve specificity compared to the panel consisting of CK20, CDX2, Villin and CK7. Compared to CDX2 or CK20 alone, the combination of CDX2 and CDH17 is highly sensitive and somewhat specific for colorectal and stomach adenocarcinoma in routine immunohistochemistry, especially in cases with a CK7-/CDX2-/CK20- carcinoma.

1. Werling RW, *et al.* Am J Surg Pathol. 2003 Mar; 27(3):303-10. 2. Saad RS, *et al.* Appl Immunohistochem Mol Morphol. 2009 May; 17(3):196-201. 3. Bayrak R, Haltas H, Yenidunya S. Diagn Pathol. 2012 Jan 23; 7:9. 4. Panarelli NC, *et al.* Am J Clin Pathol. 2012 Aug; 138(2):211-22. 5. Lin F, *et al.* Arch Pathol Lab Med. 2014 Aug; 138 (8):1015-26.



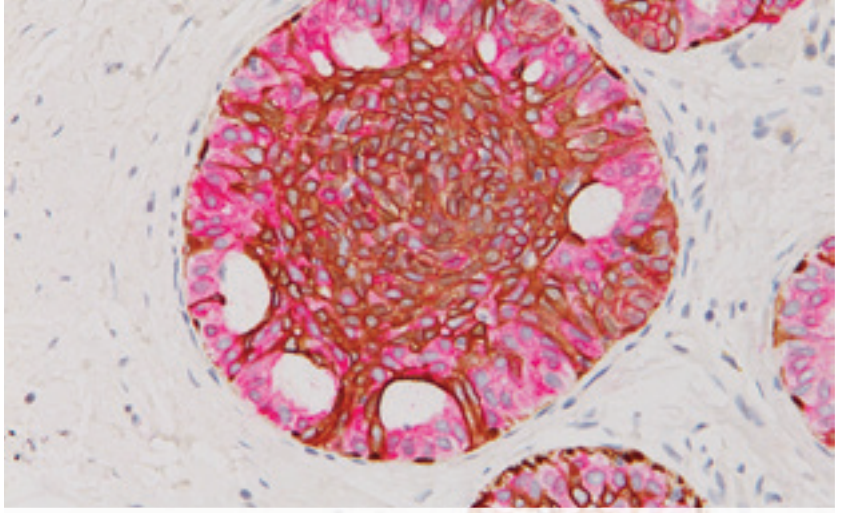
Colon cancer metastasized into lung tissue stained with CDX2 + CK7

CDX2 + CK7 IVD FFPE

Clone	CDX2-88 + BC1
Isotype	IgG1 + IgG
Reactivity	
Control	Colon, breast, ovary and 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.



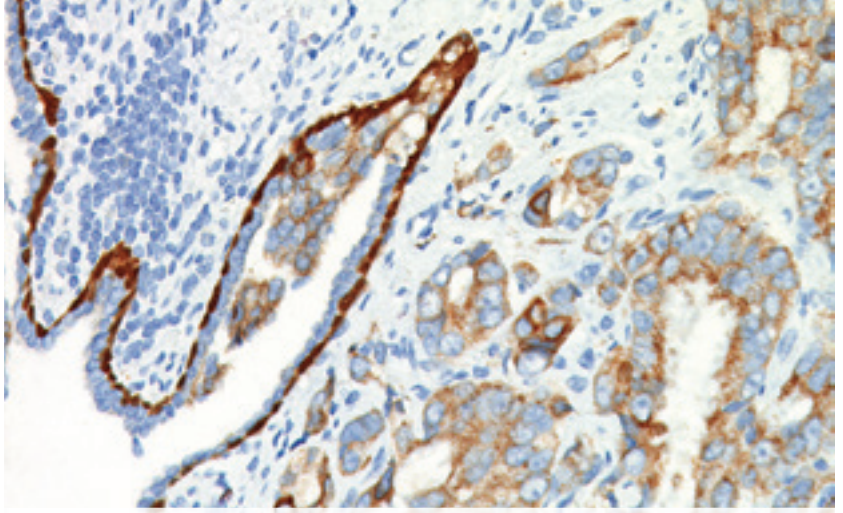
Breast tissue stained with CK5/14 + p63 + CK7/18

CK5/14 + p63 + CK7/18 IVD FFPE

Clone	XM26 / LL002 + 4A4 + BC1 / EP30
Isotype	IgG1, kappa / IgG3 + IgG2a, kappa + IgG / IgG
Reactivity	
Control	Breast carcinoma
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.



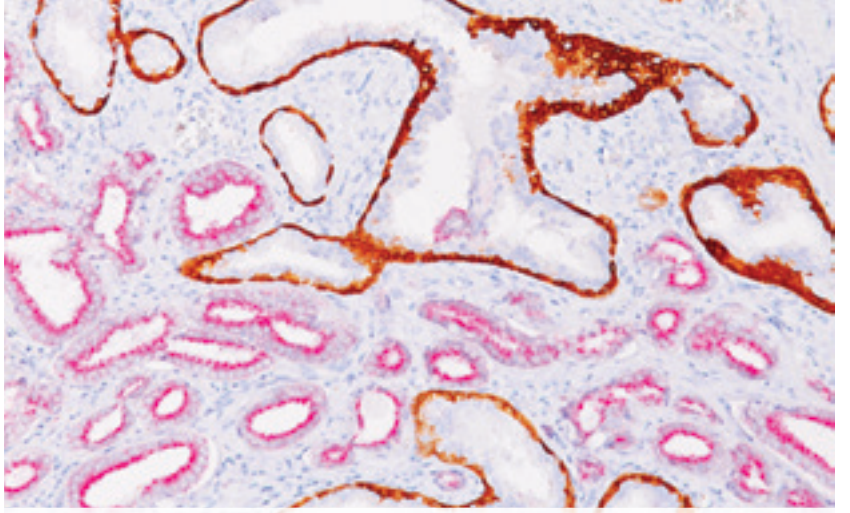
Prostate cancer and PIN stained with CK5/14 + p63 + P504S

CK5/14 + p63 + P504S* RUO FFPE

Clone	XM26 / LL002 + 4A4 + N/A
Isotype	IgG1,kappa / IgG3 + IgG2a,kappa + N/A
Reactivity	
Control	Normal prostate and prostatic adenocarcinoma
Cat. No.	PPM 225DS AA, H; IPR 225DS G10

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 the basal epithelium in normal prostate glands but 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. U.S. Patent 8,603,765 and patents pending. *Previously known as PIN-4™

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.



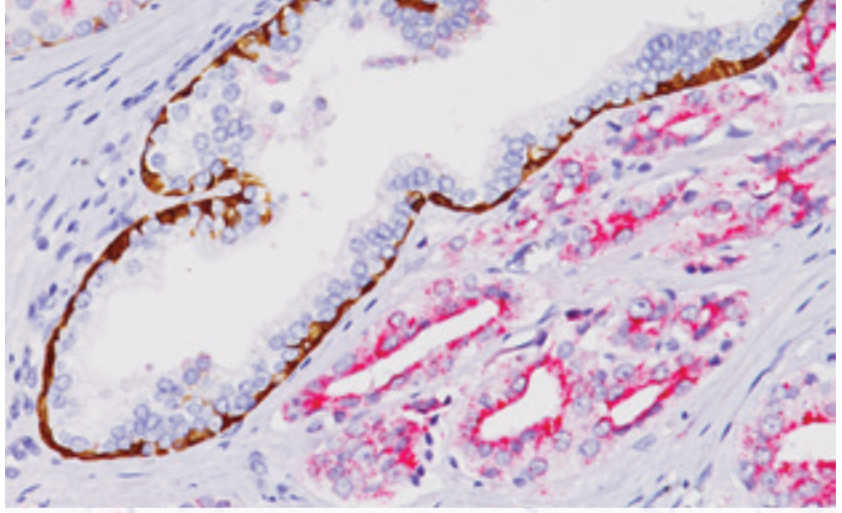
Prostate cancer stained with CK HMW + p63 + AMACR (RM)

CK HMW + p63 + AMACR (RM) IVD FFPE

Clone	34βE12 + 4A4 + 13H4
Isotype	IgG1/kappa + IgG2a/kappa + IgG
Reactivity	
Control	Normal prostate and prostatic adenocarcinoma
Cat. No.	API 3154DS AA, H; IPI 3154DS G10

In prostate, CK HMW [34βE12] has been shown to be a useful marker of basal cells of normal glands and prostatic intraepithelial neoplasia (PIN). p63 was detected in nuclei of the basal epithelium in normal prostate glands but is not expressed in malignant tumors of the prostate. α-Methylacyl coenzyme A racemase (AMACR), also known as P504S, is a specific marker of prostatic adenocarcinoma and was nearly undetectable in benign glands. Combinations of CK HMW [34βE12], p63, and/or AMACR may be useful in the evaluation of normal prostate glands, PIN and prostatic adenocarcinoma. U.S. Patent 8,603,765 and patents pending.

1. Bostwick DG, Qian J. Mod Pathol. 2004 Mar; 17(3):360-79. 2. Humphrey PA. J Clin Pathol. 2007 Jan; 60(1):35-42. 3. Shah RB, *et al.* Am J Surg Pathol. 2002 Sep; 26(9):1161-8. 4. Signoretti S, *et al.* Am J Pathol. 2000 Dec; 157(6):1769-75. 5. Rubin MA, *et al.* JAMA. 2002 Apr 3; 287(13):1662-70. 6. Zhou M, *et al.* Am J Surg Pathol. 2002 Jul; 26(7):926-31. 7. Wu CL, *et al.* Hum Pathol. 2004 Aug; 35(8):1008-13. 8. Shah RB, *et al.* Am J Clin Pathol. 2004 Oct; 122(4):517 -23. 9. Sung MT, *et al.* Hum Pathol. 2007 Feb; 38(2):332-41.



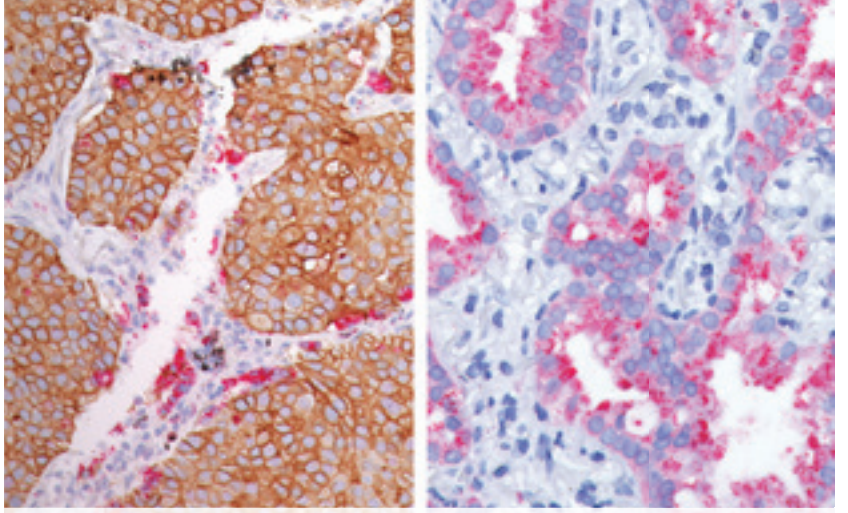
Prostate cancer stained with CK HMW + p63 + AMACR (RM)

CK HMW + p63 + AMACR (RM) RUO FFPE

Clone	34βE12 + 4A4 + 13H4
Isotype	IgG1/kappa + IgG2a/kappa + IgG
Reactivity	
Control	Normal prostate and prostatic adenocarcinoma
Cat. No.	OAR 3123 T60 ONCORE

In prostate, CK HMW [34βE12] has been shown to be a useful marker of basal cells of normal glands and prostatic intraepithelial neoplasia (PIN). p63 was detected in nuclei of the basal epithelium in normal prostate glands but is not expressed in malignant tumors of the prostate. α-Methylacyl coenzyme A racemase (AMACR), also known as P504S, is a specific marker of prostatic adenocarcinoma and was nearly undetectable in benign glands. Combinations of CK HMW [34βE12], p63, and/or AMACR may be useful in the evaluation of normal prostate glands, PIN and prostatic adenocarcinoma. U.S. Patent 8,603,765 and patents pending.

1. Humphrey PA. J Clin Pathol. 2007 Jan; 60(1):35-42. 2. Signoretti S, *et al.* Am J Pathol. 2000 Dec; 157(6):1769-75. 3. Wu CL, *et al.* Hum Pathol. 2004 Aug; 35(8):1008-13. 4. Shah RB, *et al.* Am J Clin Pathol. 2004 Oct; 122(4):517-23. 5. Sung MT, *et al.* Hum Pathol. 2007 Feb; 38(2):332-41.



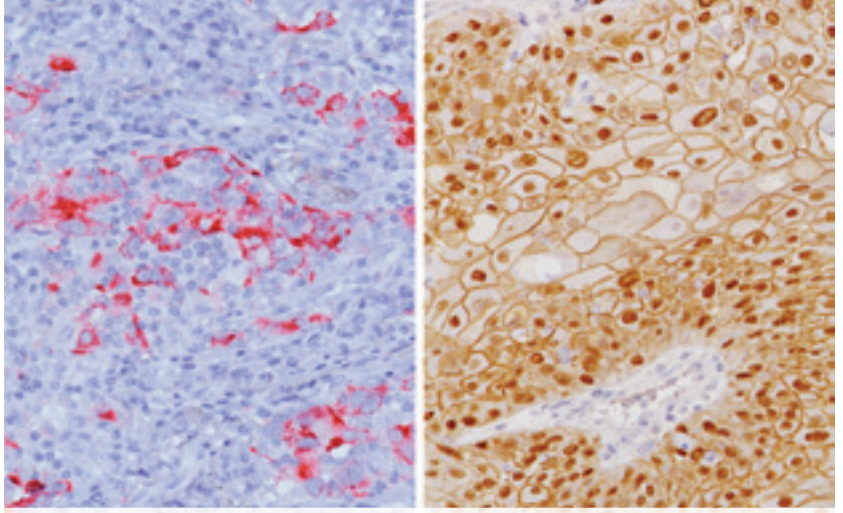
Lung SqCC (L) and Lung ADC (R) stained with Desmoglein 3 + Napsin A

Desmoglein 3 + Napsin A IVD FFPE

Clone	BC11 + N/A
Isotype	IgG1 + N/A
Reactivity	
Control	Lung squamous cell carcinoma or lung adenocarcinoma
Cat. No.	PPM 428DS AA

Desmoglein 3 (DSG3) + Napsin A are very sensitive and specific markers, and may be useful for discriminating between lung SqCC and lung adenocarcinoma. DSG3 is a membrane stain that marks lung SqCC while Napsin A is a cytoplasmic stain that marks lung adenocarcinomas. In the vast majority of lung cancers tested, only a single antibody stain was observed. Coexpression of both antibodies may be observed in adenosquamous cell carcinomas and Napsin A staining is observed in some cases of residual normal lung. In grades 1-2, Desmoglein 3 + Napsin A provide staining sensitivity in the mid 90% range.

1. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May; 20(3):201-7. 2. Agackiran Y, *et al.* Appl Immunohistochem Mol Morphol. 2012 Jul; 20(4):350-5. 3. Tacha D, *et al.* Mod Pathol. 2011 Feb; 24(Suppl 1s):425A. 4. Tacha D, *et al.* Mod Pathol. 2010 Feb; 23(Suppl 1s):414A. 5. Terry J, *et al.* Am J Surg Pathol. 2010 Dec; 34(12):1805-11. 6. Savci-Heijink CD, *et al.* Am J Pathol. 2009 May; 174(5):1629-37.



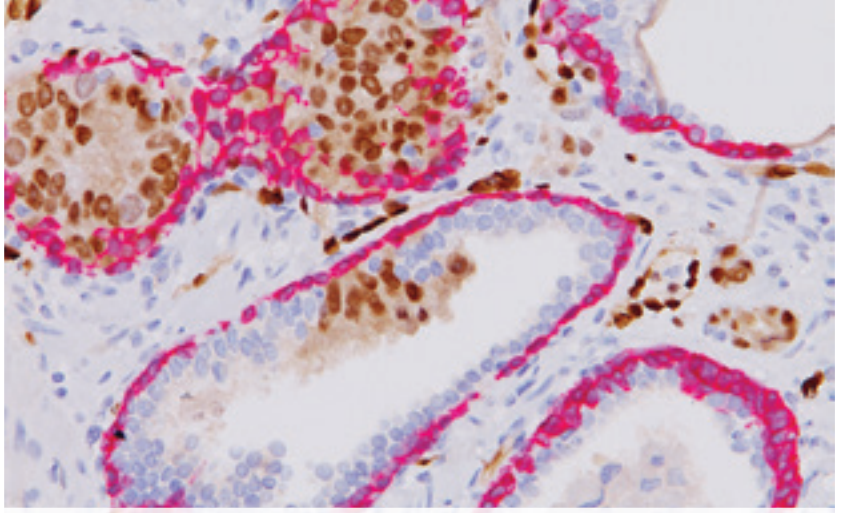
Lung adenocarcinoma (L) and lung squamous cell carcinoma (R) stained with DSG3 + p40 + Napsin A

DSG3 + p40 (M) + Napsin A (RM) IVD FFPE

Clone	BC11 + BC28 + BC15
Isotype	IgG1 + IgG1 + IgG
Reactivity	
Control	Lung squamous cell carcinoma and lung adenocarcinoma
Cat. No.	API 3132DS 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 [BC28] is selectively expressed in lung SqCC with diminished reactivity in lung ADC compared to p63. The combination of both membrane (DSG3) and nuclear (p40) staining may increase overall sensitivity for lung SqCC (4,5). Napsin A is extremely specific for lung ADC vs. 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. Brown AF, *et al.* Arch Pathol Lab Med. 2013 Sep; 137(9):1274-81. 4. Agackiran Y, *et al.* Appl Immunohistochem Mol Morphol. 2012 Jul;20(4):350-5. 5. Bishop JA, *et al.* Mod Pathol. 2012 Mar; 25(3):405-15. 6. Tacha D, *et al.* Arch Pathol Lab Med. 2014 Oct; 138(10):1358-64.



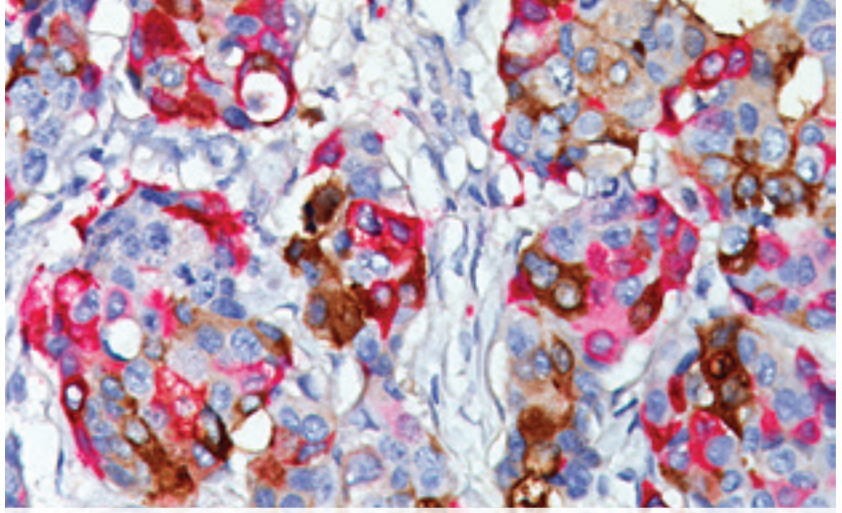
ERG positive prostate cancer stained with ERG-2™ (ERG + CK5)

ERG-2™ (ERG + CK5) IVD FFPE

Clone	9FY + EP42
Isotype	IgG1 + IgG
Reactivity	
Control	ERG positive prostate cancer or PIN glands
Cat. No.	API 437DS 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. 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. U.S Patent 8,765,916 and patents pending. *Note: ERG [9FY] was developed by the Center for Prostate Disease Research in association with the Henry M. Jackson Foundation, Rockville, Maryland.*

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.



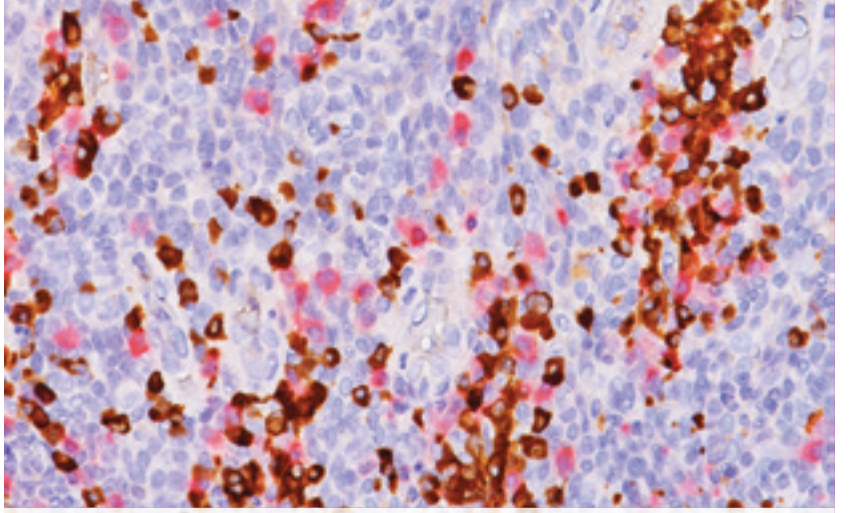
Breast cancer stained with GCDFP-15 + Mammaglobin

GCDFP-15 + Mammaglobin IVD FFPE

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.



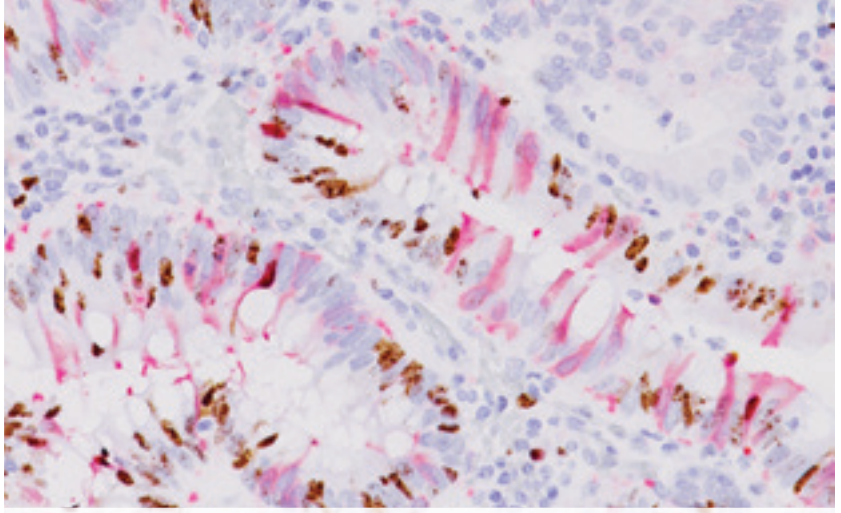
Tonsil stained with Kappa (M) + Lambda (P)

Kappa (M) + Lambda (P) IVD FFPE

Clone	L1C1 + N/A
Isotype	IgG1 + IgG
Reactivity	
Control	Tonsil or bone marrow
Cat. No.	API 3159DS AA

Kappa and Lambda antibodies are usually run together on two separate tissues. In normal tissue, the Kappa and Lambda cell ratio is approximately 2:1. The double stain antibody allows the investigator to simultaneously see both Kappa (M) (brown) and Lambda (P) (red) on the same tissue section, thus allowing the end-user a more accurate and easier assessment of both stains. It 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 may indicate that the infiltrate is malignant.

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.



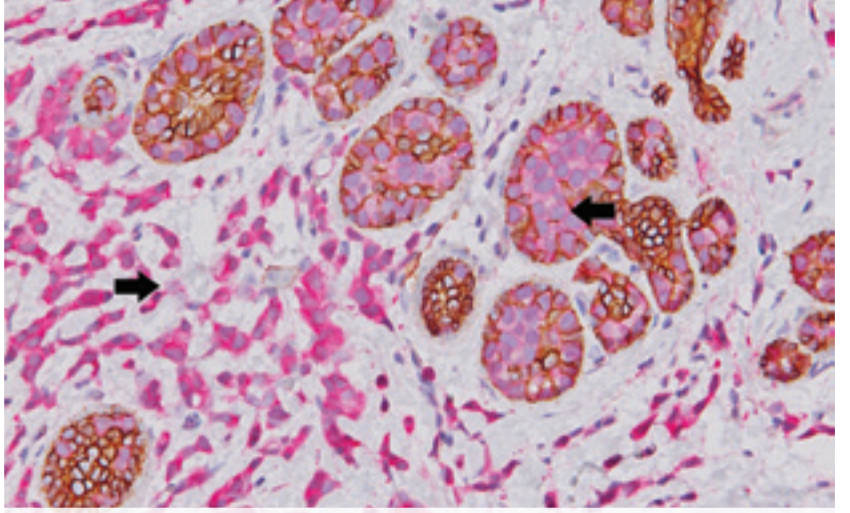
Colon cancer stained with Ki-67 + Caspase-3

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 proliferation vs. cell death 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.



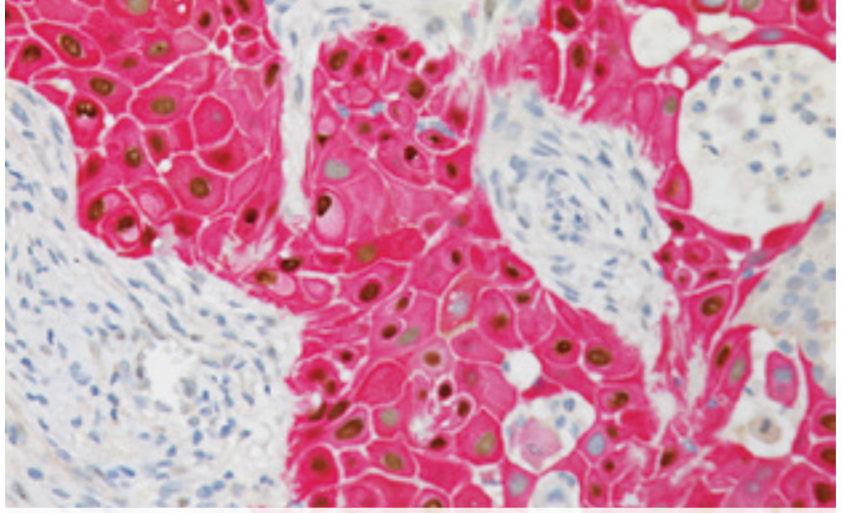
Lobular hyperplasia with invasive lobular carcinoma stained with p120 + E-cadherin

p120 + E-cadherin IVD FFPE

Clone	98/pp120 + EP6
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. Bellovin DI, *et al.* Cancer Res. 2005 Dec; 65(23):10938-45. 4. de Dues Moura R, *et al.* AIMM. 2013; 21(1):1-12.



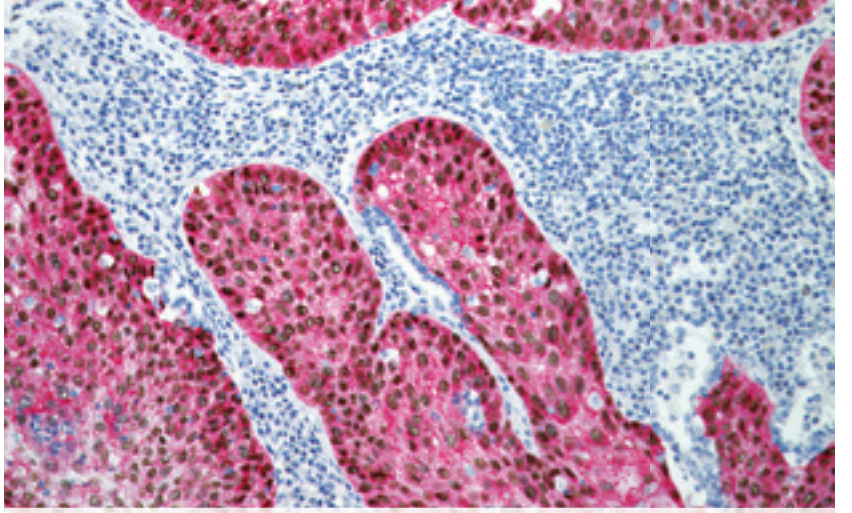
Squamous cell carcinoma stained with p63 + CK5

p63 + CK5 IVD FFPE

Clone	4A4 + EP42
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. Khayyata 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. Rekhtman 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.



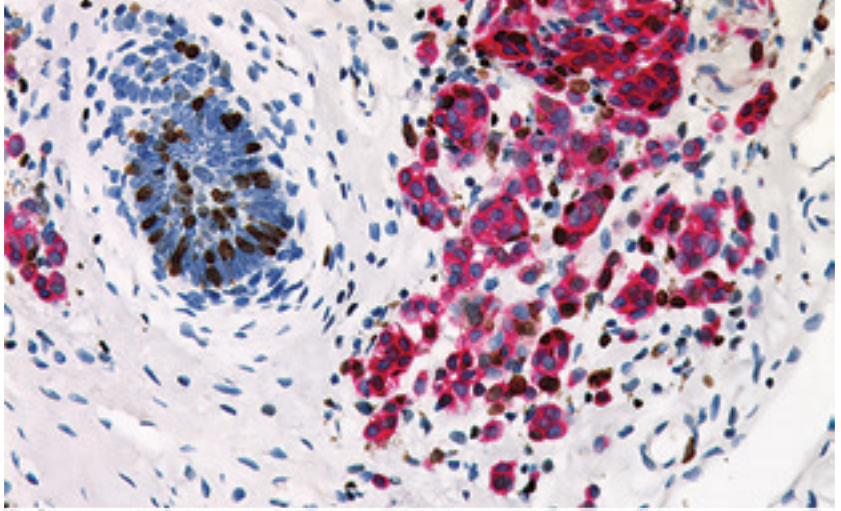
Lung squamous cell carcinoma stained with p63 + TRIM29

p63 + TRIM29 IVD FFPE

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.

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.



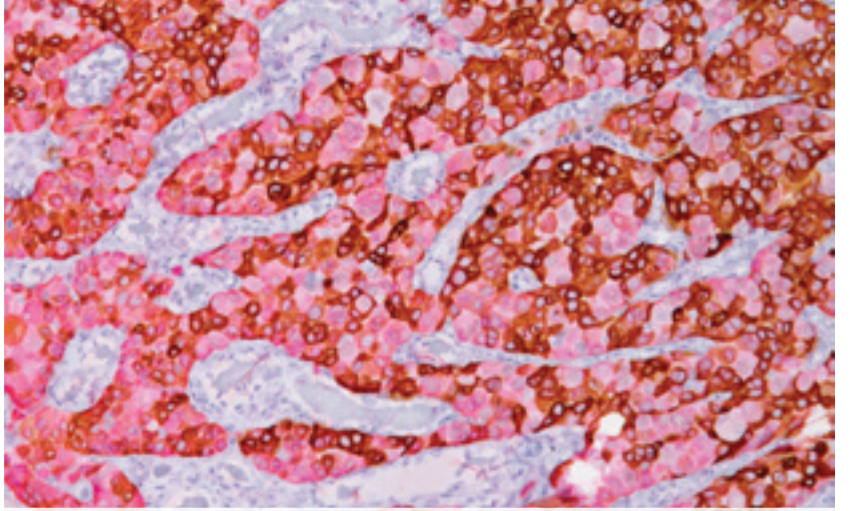
Melanoma stained with Pan Melanoma + Ki-67

Pan Melanoma + Ki-67 IVD FFPE

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.



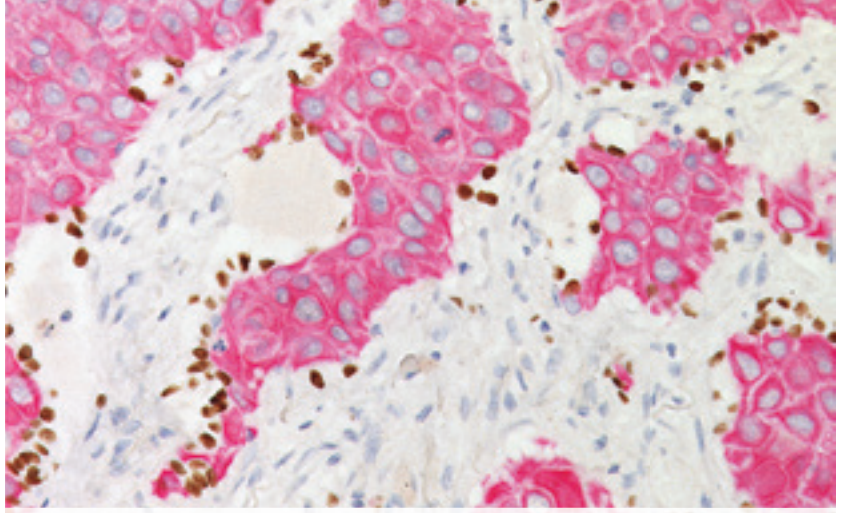
Melanoma stained with Pan Melanoma + S100

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

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, astrogliomas 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, Bäte J. Pathology. 1994 Jan; 26(1):16-9.



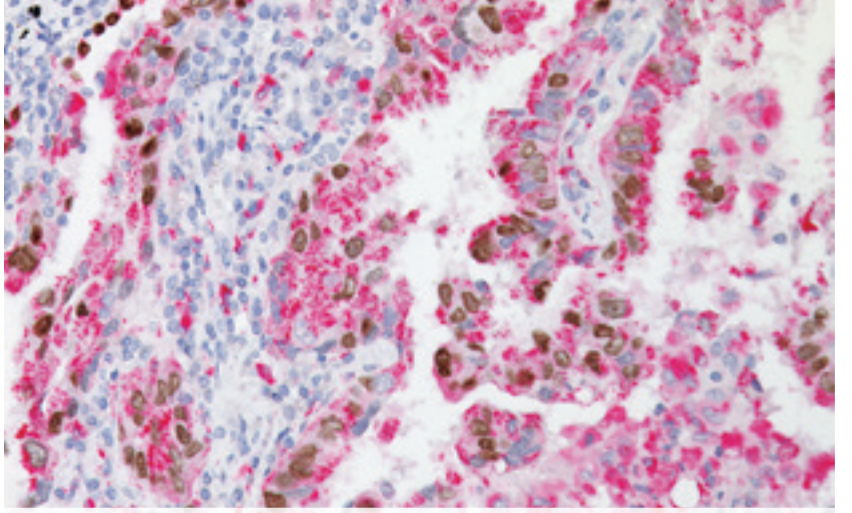
Lung squamous cell carcinoma stained with TTF-1 + CK5

TTF-1 + CK5 IVD FFPE

Clone	8G7G3/1 + EP42
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).

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.



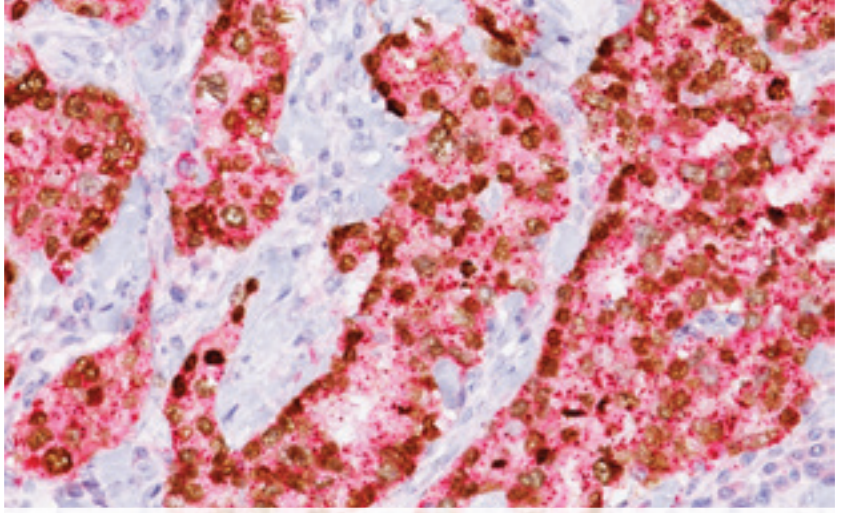
Lung adenocarcinoma stained with TTF-1 + Napsin A

TTF-1 + Napsin A IVD FFPE

Clone	8G7G3/1 + N/A
Isotype	IgG1 + IgG
Reactivity	
Control	Lung adenocarcinoma
Cat. No.	PPM 394DS AA; IPI 394DS G10

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.



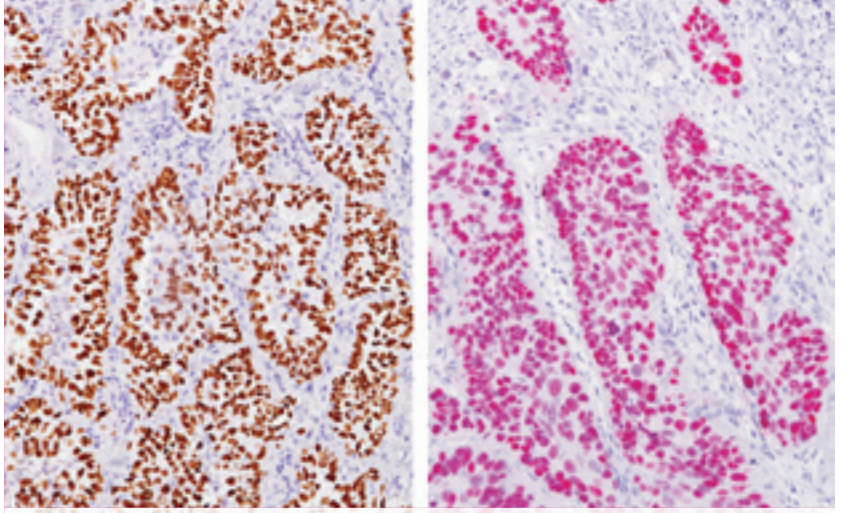
Lung adenocarcinoma stained with TTF-1 + Napsin A (RM)

TTF-1 + Napsin A (RM) 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. Mukhopadhyay S, Katzenstein AL. Am J Surg Pathol. 2011 Jan; 35(1): 15-25. 5. Turner BM, *et al.* Arch Pathol Lab Med. 2012 Feb; 136(2): 163-71.



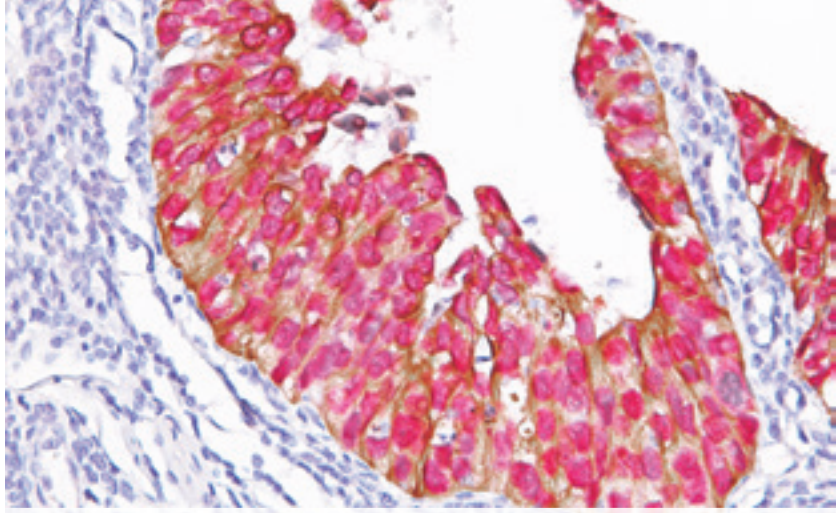
(L) Lung ADC (R) Lung SqCC stained with TTF-1 + p40 (cRM)

TTF-1 + p40 (cRM) IVD FFPE

Clone	8G7G3/1 + BC28/cRM
Isotype	IgG1 + IgG
Reactivity	
Control	Lung adenocarcinoma (TTF-1); lung SqCC (p40)
Cat. No.	API 3141DS AA

Thyroid transcription factor-1 (TTF-1) been shown to be a sensitive and specific marker in the majority of primary lung adenocarcinomas (ADC). Mouse monoclonal p40 [BC28] recognizes an epitope unique to p40 and has been shown to be sensitive and specific for lung SqCC. Chimeric rabbit monoclonal rabbit p40 [BC28/cRM] was designed to replicate the sensitivity and specificity of mouse monoclonal p40 [BC28] as a rabbit antibody that would be suitable for a double-stain procedure. In a side-by-side study on the same tissues, mouse monoclonal p40 [BC28] and chimeric rabbit monoclonal p40 [BC28/cRM] exhibited identical sensitivity for lung SqCC and specificity vs. lung ADC. Patent Pending.

1. Tacha D, *et al.* Appl Immunohistochem Mol Morphol. 2012 May;20 (3):201-7. 2. Mukhopadhyay S, Katzenstein AL. Am J Surg Pathol. 2011 Jan; 35(1):15-25. 3. Bishop JA, Sharma R, Illei PB. Hum Pathol. 2010 Jan; 41(1):20-4. 5. Brown AF, *et al.* Arch Pathol Lab Med. 2013 Sep;137(9):1274-81. 5. Bishop JA, *et al.* Mod Pathol. 2012 Mar; 25(3):405-15. 6. Tacha D, Bremer R, Haas T, Qi W. Arch Pathol Lab Med. 2014 Oct;138(10):1358-64. 7. Pelosi G, *et al.* J Thorac Oncol. 2012 Feb; 7(2):281-90.



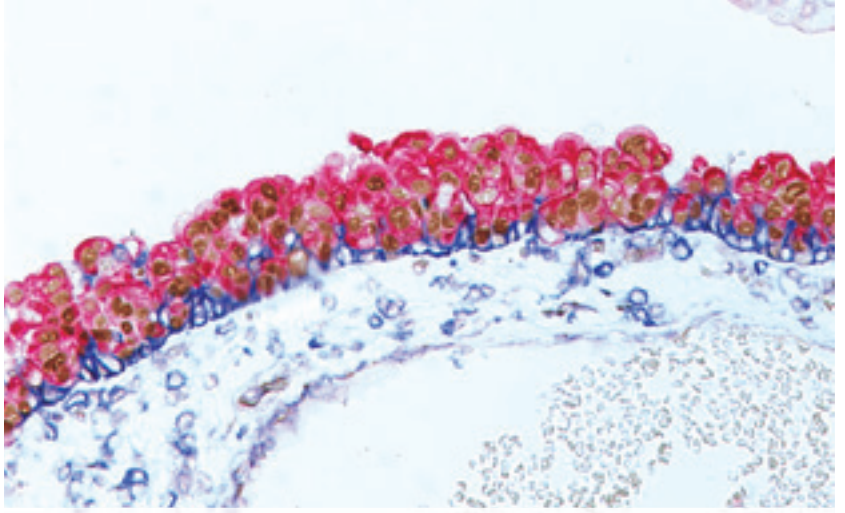
Bladder CIS stained with Uro-2™ (CK20 + p53)

Uro-2™ (CK20 + p53) IVD FFPE

Clone	Ks20.8 + EP9
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 is observed for CK20 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. 4. 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 IVD FFPE

Clone	BC8 + EP9 + Ks20.8
Isotype	IgG1 + 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

in situ **hybridization (ISH) is used to identify specific nucleic acid target sequences (DNA or RNA) within a tissue sample. ISH can be used to identify genetic anomalies which provide diagnostic and prognostic results within the context of the tissue/cell/nucleus. Advanced genomic sequencing information allows for the intelligent design of probes to maximize specificity. The use of ISH is increasing due to the higher information content in the context of cellular morphology, along with better signal-to-noise ratio than immunohistochemistry (IHC), and is often used to validate equivocal IHC findings.**

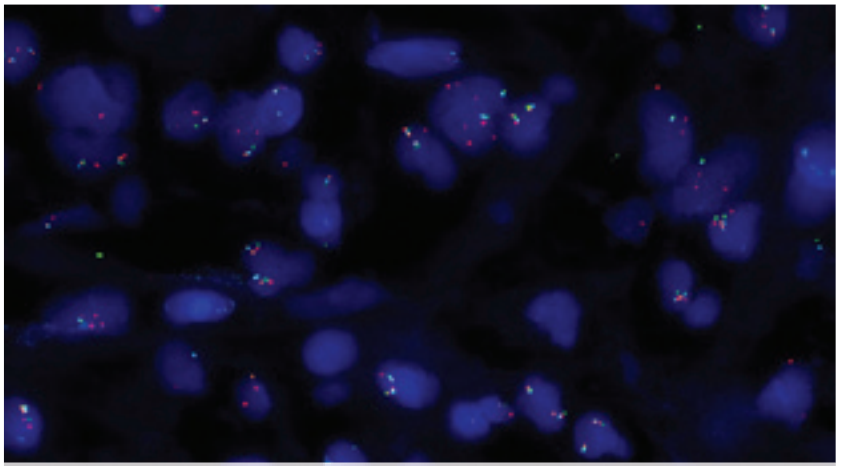
Trident FISH™

Each type of cancer carries signature genetic anomalies that are readily revealed by fluorescence *in situ* hybridization (FISH). Biocare Medical's TRIDENT FISH™ probes are designed for use in the study of numerous disease and cancer types, including, but not limited to, prostate, breast, lung, bladder, brain and blood. TRIDENT FISH™ probes can be routinely applied to understand the underlying genetics of these cancers.

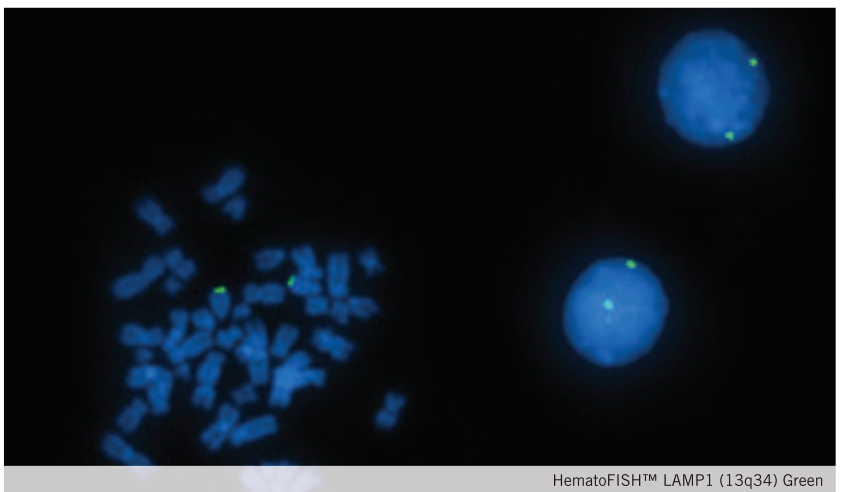
TRIDENT FISH™ probes have been designed to identify genomic aberrations in formalin fixed, paraffin embedded (FFPE) tissues, bone marrow aspirates, and cytology and blood specimens. TRIDENT FISH™ products are sequence-specific probes for aiding the study and understanding of numerous solid tumor, as well as hematologic and cytologic cancers. The advanced TRIDENT FISH™ probe design utilizes the most current comparative genomic hybridization data to identify the minimally deleted region for enhanced precision and mitigation of false negatives. Biocare's patent-pending Deletion Detection (del-TECT™) technology provides unprecedented analytical accuracy in FFPE specimens, minimizing false positive deletion results due to the truncation artifact. Exclusive labeling technology makes clear and concise, "tight and bright," signals to ease scoring and minimize scope time and error.

TRIDENT FISH™ probes are available in three distinct offerings, based on use: PathoFISH™, HematoFISH™, and CytoFISH™. PathoFISH probes are designed and optimized for use on FFPE tissue. HematoFISH probes have been designed and optimized for use on hematology samples. CytoFISH probes are designed and optimized for use on cytology samples. These offerings incorporate all of the TRIDENT FISH™ technological developments, and have raised the bar on performing more precise analysis for chromosomal targets in specific cells or tissue of interest.

For most up-to-date FISH probe offerings from Biocare Medical please visit www.biocare.net.



PathoFISH™ PTEN del-TECT Four Color



HematoFISH™ LAMP1 (13q34) Green

HematoFISH™	Color	Cat. No.
Copy Control 3 Green		HFA 7163 A
Copy Control 3 Aqua		HFA 7164 A
Copy Control 12 Green		HFA 7210 A
Copy Control 12 Aqua		HFA 7211 A
1p21.2 Green		HFA 7307 A
1p21.2 Orange		HFA 7308 A
6q21 Green		HFA 7309 A
ATM (11q22.3) Orange		HFA 7262 A
CCND1 (11q13) Orange		HFA 7260 A
D13S25 (13q14.3) Orange		HFA 7266 A
D13S319 (13q14.2) Orange		HFA 7267 A
FGFR3 (4p16.3) Aqua		HFA 7276 A
FGFR3 (4p16.3) Orange		HFA 7277 A
IgH (14q32) Constant Orange		HFA 7278 A
IgH (14q32) Variable Green		HFA 7279 A
LAMP1 (13q34) Aqua		HFA 7282 A
LAMP1 (13q34) Green		HFA 7281 A
MAF (16q23) Orange		HFA 7284 A
MYB (6q23) Orange		HFA 7283 A
RB1 (13q14.2) Green		HFA 7315 A
RB1 (13q14.2) Orange		HFA 7298 A
TP53 (17p13) Orange		HFA 7306 A

PathoFISH™	Color	Cat. No.
Copy Control 1p12 Green		PFA 7153 V
Copy Control 3 Green		PFA 7163 V
Copy Control 3 Aqua		PFA 7164 V
Copy Control 7 Green		PFA 7184 V
Copy Control 7 Orange		PFA 7187 V
Copy Control 8 Red		PFA 7191 V
Copy Control 8 Orange		PFA 7192 V
Copy Control 10 Green		PFA 7200 V
Copy Control 12 Green		PFA 7210 V
Copy Control 12 Aqua		PFA 7211 V
Copy Control 17 Green		PFA 7225 V
Copy Control 18 Aqua		PFA 7231 V
Copy Control 20q11.2 Green		PFA 7235 V
Copy Control Y Red		PFA 7247 V
Copy Control Y Orange		PFA 7248 V
Copy Control X Red + Copy Control Y Green		PFR 7050 A
1q21.3 Orange/ 1p21.2 Green		PFR 7044 A
5p15.2 Red		PFA 7251 V
ALK (2p23.2) Break Apart (Orange/Green)		PFR 7002 A
ALK (2p23.2) Break Apart (Red/Green)		PFR 7003 A
ALK/EML del-TECT Four Color		PFR 7001 A
ALK/EML4 Tri-Color		PFR 7000 A
AR (Xq12) Red + Copy Control Xp11.21 Green		PFR 7004 A
BCL2 (18q21) Break Apart (Orange/Green)		PFR 7005 A
CCND1 (11q13) Break Apart (Orange/Green)		PFR 7009 A

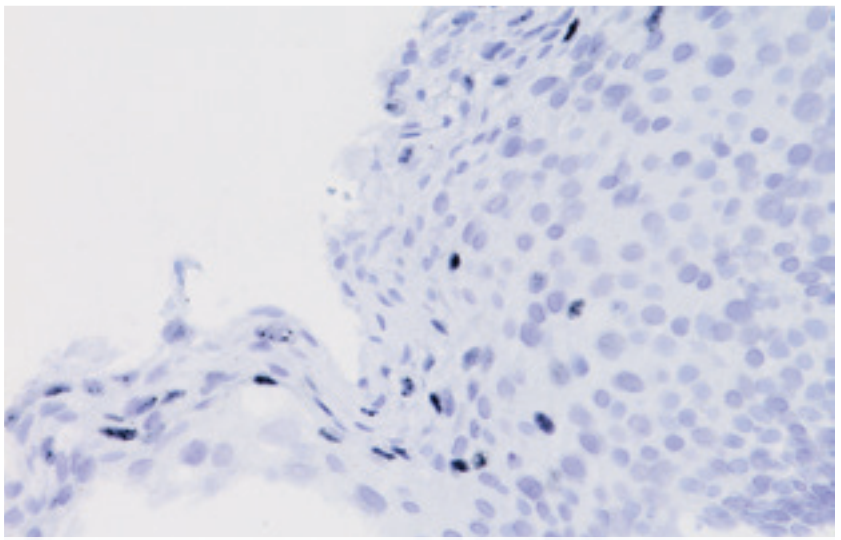
PathoFISH™	Color	Cat. No.
CCND1 (11q13) Orange + Copy Control 11 Green		PFR 7006 A
CDKN2A (9p21.3) Orange + Copy Control 9 Green		PFR 7008 A
CDKN2A del-TECT Four Color		PFR 7007 A
D13S25 (13q14.3) Orange/ LAMP1 (13q34) Green		PFR 7010 A
EGFR (7p11.2) Orange + Copy Control 7 Green		PFR 7012 A
EGFR (7p11.2) Red + Copy Control 7 Green		PFR 7013 A
ERBB2 (17q12) Orange + Copy Control 17 Green		PFR 7014 A
ERBB2 (17q12) Red + Copy Control 17 Green		PFR 7015 A
ERG (21q22) Break Apart (Red/Green)		PFR 7011 A
FGFR1 (8p11) Red + Copy Control 8 Green		PFR 7016 A
IgH (14q32) Break Apart (Orange/Green)		PFR 7020 A
IgH (14q32) Green/ CCND1 (11q13) Orange		PFR 7017 A
IgH (14q32) Green/ FGFR3 (4p16.3) Orange		PFR 7019 A
IgH Green/ CCND1 Orange/ FGFR3 Aqua		PFR 7018 A
MET (7q31) Orange + Copy Control 7 Green		PFR 7028 A
MYC (8q24) Break Apart (Orange/Green)		PFR 7026 A
MYC (8q24) Orange + Copy Control 8 Green		PFR 7027 A
PHLPP1 (18q21) Red + Copy Control 18 Green		PFR 7035 A
PTEN (10q23) Orange + Copy Control 10 Green		PFR 7034 A
PTEN del-TECT Four Color		PFR 7032 A
RET (10q11.21) Break Apart (Orange/Green)		PFR 7039 A
ROS1 (6q22) Break Apart (Orange/Green)		PFR 7038 A
TERC (3q26.2) Red		PFA 7305 V
TMPRSS2/ ERG del-TECT Four Color		PFR 7049 A
TP53 (17p13) Orange + Copy Control 17 Green		PFR 7036 A
TP53 del-TECT Four Color		PFR 7042 A

CytoFISH™	Color	Cat. No.
Copy Control 3 Aqua		CFA 7164 A
Copy Control 7 Orange		CFA 7187 A
Copy Control 10 Green		CFA 7200 A
5p15.2 Red		CFA 7251 A

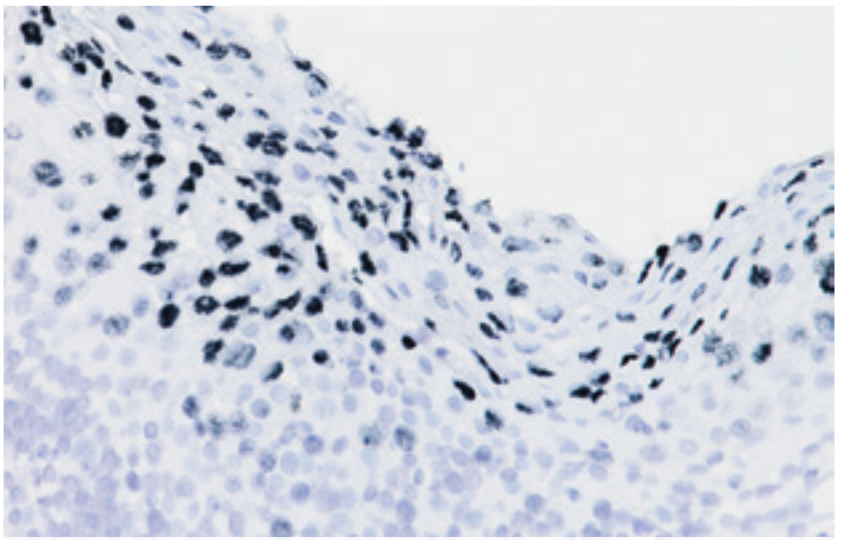
FISH Reagents	Cat. No.
CymoBrite Counterstain (100ng/mL)	FRR 7310 B
FISH Hybridization Buffer	FRR 7311 A

HPV

Human Papilloma Virus (HPV) is considered to be the most common sexually transmitted infection, with almost 80 million Americans infected with HPV, and about 14 million becoming newly infected each year. Biocare Medical offers chromogenic *in situ* hybridization technology for specific detection of HPV DNA viral subtypes 6, 11, 16, 18, 31 or 51. Each biotinylated individual probe is intelligently designed to minimize background and ensure subtype specificity. Individual probe format allows for maximum adaptability to a laboratory's testing needs.



HPV Type 31 Probe



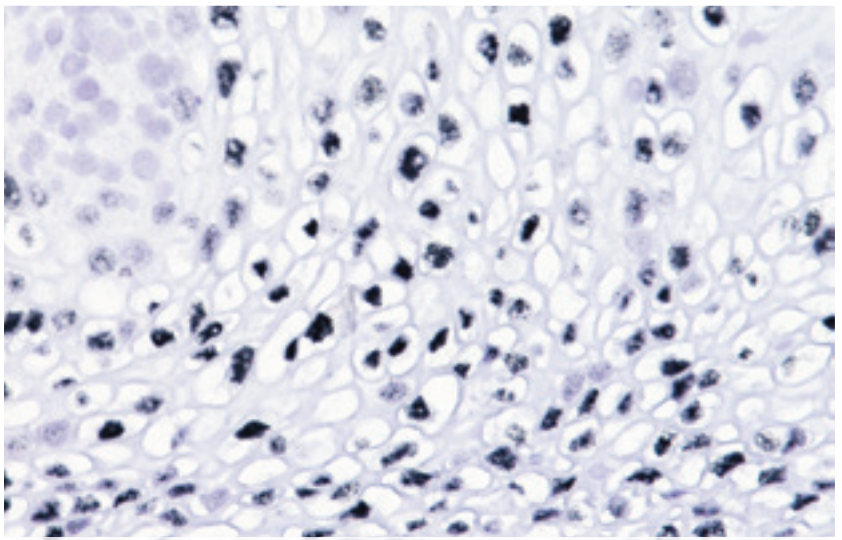
HPV Type 51 Probe

HPV Probes	Status	Volume	Cat. No.
HPV Type 6 Probe	ASR	0.1 mL	BRA 4030 A
HPV Type 11 Probe	ASR	0.1 mL	BRA 4031 A
HPV Type 16 Probe	ASR	0.1 mL	BRA 4032 A
HPV Type 18 Probe	ASR	0.1 mL	BRA 4033 A
HPV Type 31 Probe	ASR	0.1 mL	BRA 4034 A
HPV Type 51 Probe	ASR	0.1 mL	BRA 4035 A

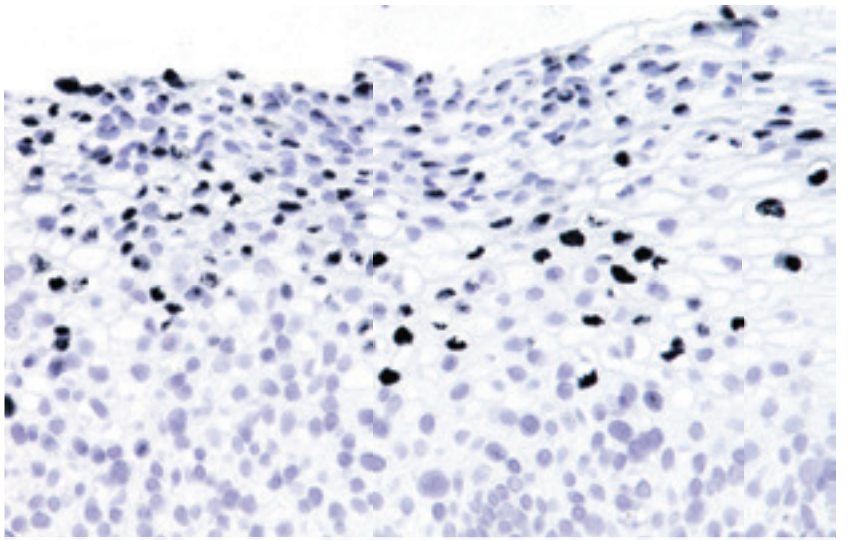
in situ Hybridization HRP Detection Kit

Biocare's ISH HRP Detection Kit for Biotinylated Probes is an optimized detection system incorporating Biocare's proven micro-polymer technology specifically developed to detect biotin-labeled probes on FFPE tissues. The same level of care and detail has been applied to the buffers for probe dilution and post-hybridization washes to provide the most reliable and consistent staining possible.

- Accurate – Enhanced sensitivity and specificity
- Clear – Simultaneous ISH interpretation along with assessing tissue morphology
- Biocare's Deep Space Black™ HRP chromogen provides crisp, punctate staining
- Archivable – Chromogenic signal is stable for extended storage



Biotinylated probes targeting HPV 6 and 11



Biotinylated probe targeting HPV 16

HPV Probes	Status	Volume	Cat. No.
ISH HRP Detection Kit for Biotinylated Probes	IVD	6 mL	BRI 4038 KG
Deep Space Black™ Chromogen Kit	IVD	25 mL	BRI 4015 H
DNA Hybridization Buffer	IVD	10 mL	BRI 4036 G10
SSC Wash Buffer	IVD	1000 mL	BRI 4039 MM
CAT Hematoxylin	IVD	500 mL	CATHE-M
Carezyme III: Pronase Kit	IVD	25 mL	PRT957 KH
Pronase Buffer*	IVD	25 mL	PRB957 H

*Buffer is included in the Pronase Kit, but some users may utilize additional buffer to further dilute the enzyme for protocol optimization.

RISH™

Biocare Medical's RISH™ probes and detection kits simplify *in situ* hybridization (ISH) for the histotechnologist, allowing RISH™ to fit easily into a typical daily workflow. The RISH™ probe technology enables extremely stable hybridization with the nucleic acid target, resulting in a more abundant signal and conferring highly specific staining. The 5-step RISH™ protocol has been simplified by removal of the overnight hybridization step, the typical ISH requirement for RNase-free reagents and labware, and harsh stringency washes 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.

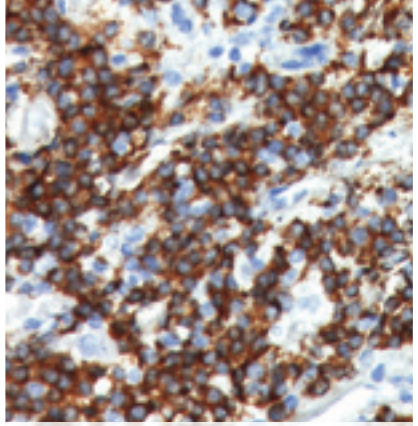
RISH™ Detection

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.

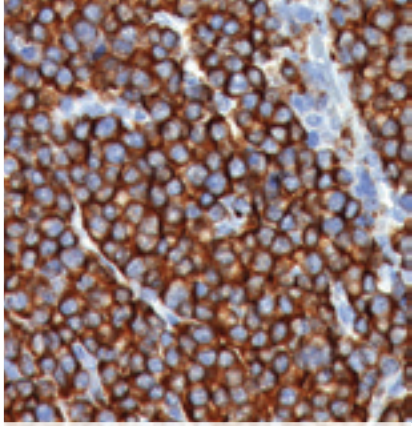
AP and HRP RISH Detection Kits are designed for use with proprietary RISH probes and can be used with digoxigenin labeled probes that hybridize to mRNA targets in FFPE tissues. The RISH AP and HRP Detection Kits provide reagents and materials for the preparation, pretreatment, hybridization and detection 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



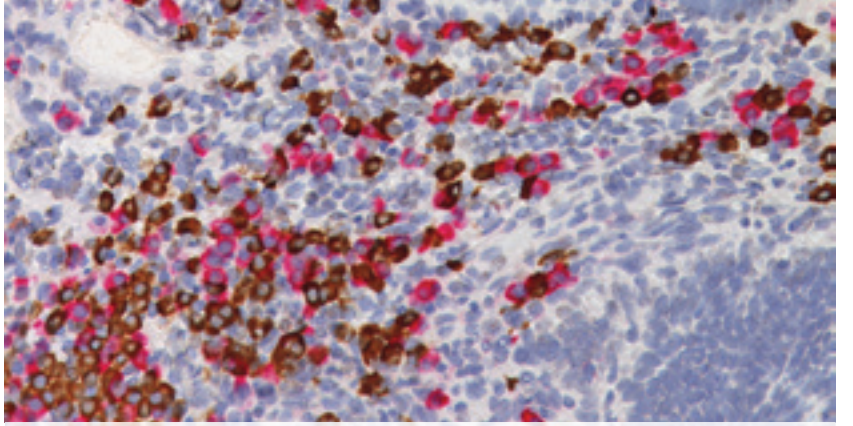
Kappa mRNA in bone marrow plasma cell myeloma (L)



Lambda mRNA in bone marrow myeloma of the neck (R)

Kappa & Lambda Light Chain DNA Probe

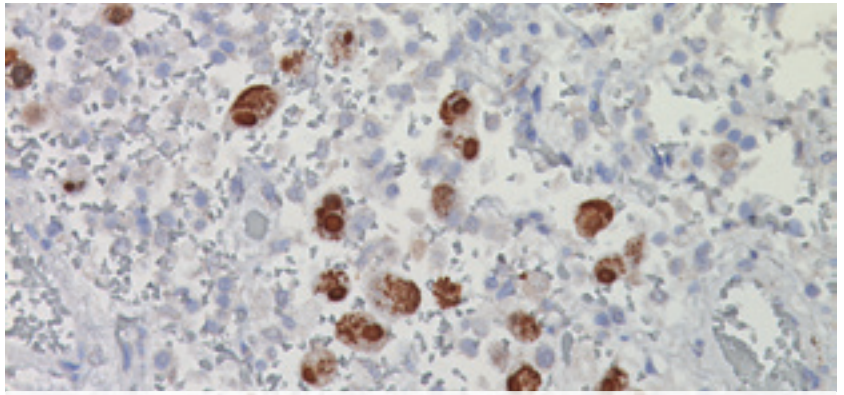
Kappa and Lambda light chain mRNA may be detected in the cytoplasm of normal and neoplastic B-cells in human lymphoid tissue. Kappa and Lambda tests are useful in differentiating immunoblastic reactions related to viral infections, such as mononucleosis, from lymphoid tumors. Kappa and Lambda are also used in the study of monoclonality of lymphoid tumors, lymphoproliferative syndromes, myelomas and immunodeficiency-associated lymphoproliferative syndromes.



Dual Kappa / Lambda staining polyclonal plasma cells (K: Brown, L: Red) surrounding nests of basal cell carcinoma

Dual Kappa / Lambda Probe

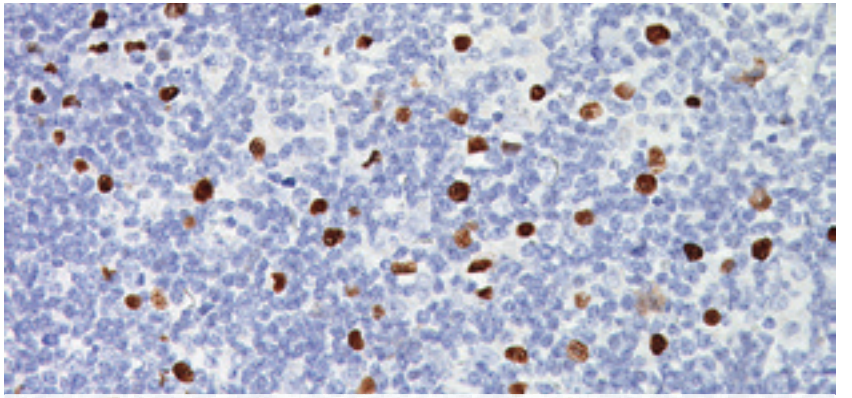
The multiplex Dual Kappa/Lambda Probe enables simultaneous evaluation of immunoglobulin light chain ratios in one tissue section. This capability allows the user a more accurate and easier assessment of both stains resulting in superior diagnostic results. Possible restricted expression of a single light chain class demonstrates the clonality in lymphoid infiltrates, indicating that malignancy is simplified. Kappa and Lambda detection is localized to the cell cytoplasm.



Cytomegalovirus (CMV) mRNA and DNA in CMV infected lung cells

Cytomegalovirus (CMV) Probe

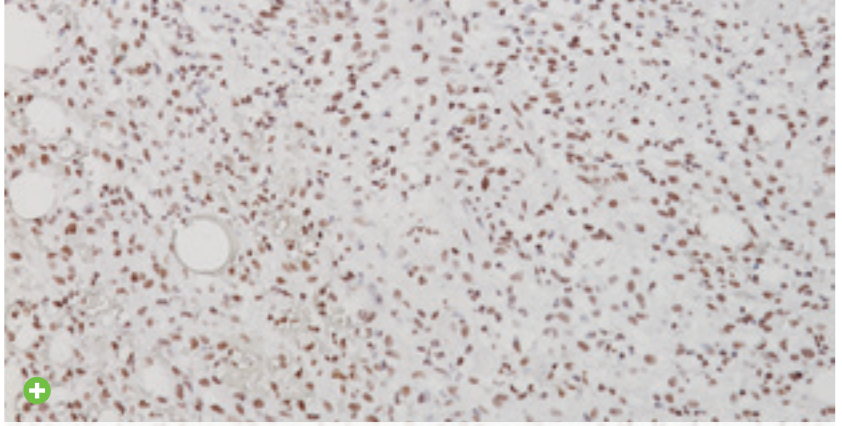
Cytomegalovirus (CMV) is a member of the human herpes virus-5 (HHV-5) group. It can be transmitted in breast milk, during organ transplantation, sexual activity or blood transfusions. It is estimated that 40-100% of people may be infected with this virus. CMV infections are common cause of morbidity and mortality, especially in immune-compromised individuals. CMV detection is localized to the cell cytoplasm and nucleus.



Epstein-Barr Encoded RNA (EBER) in Hodgkin's lymphoma

Epstein-Barr Encoded RNA (EBER) Probe

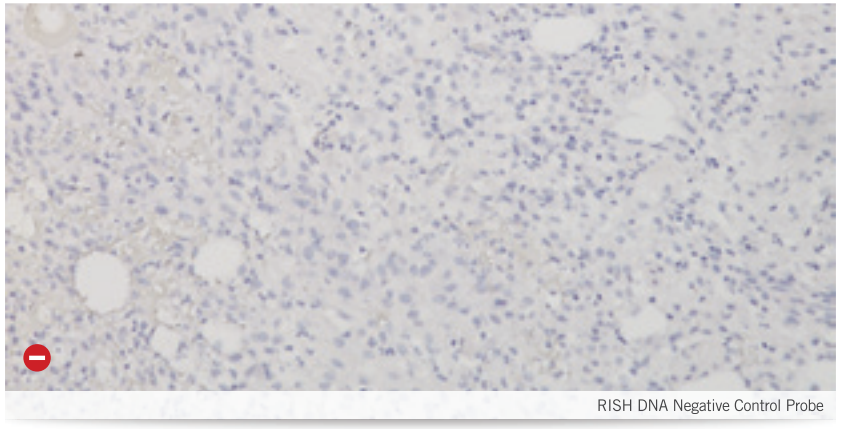
The Epstein-Barr virus is a member of the gamma-herpes viruses (HHV-4). Numerous human pathological conditions associated with EBER include infectious mononucleosis, non-differentiated nasopharyngeal carcinoma, African Burkitt's lymphoma, Hodgkin's disease mixed cellularity, some B, T and NK lymphomas, as well as lymphoproliferative processes associated with immunodeficiency. EBER detection is localized to the cell nucleus.



RISH DNA Positive Control Probe

DNA Positive Control Probe

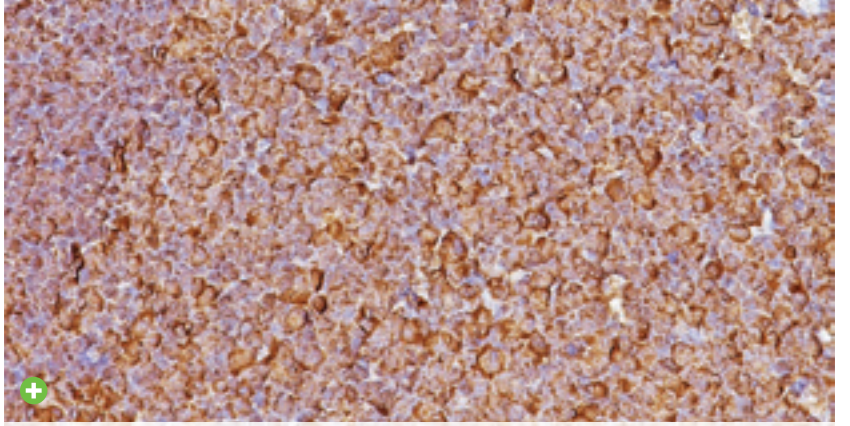
This digoxigenin-labeled oligonucleotide probe recognizes Alu repetitive sequences present within the mammalian genome. Specific hybridization of this probe to human Alu in FFPE tissues indicates that the test material contains intact DNA. This probe is to be used as a control when running specific DNA targeting probes. Weak or light staining in a test sample indicates that specifically targeted DNA may be compromised.



RISH DNA Negative Control Probe

DNA Negative Control Probe

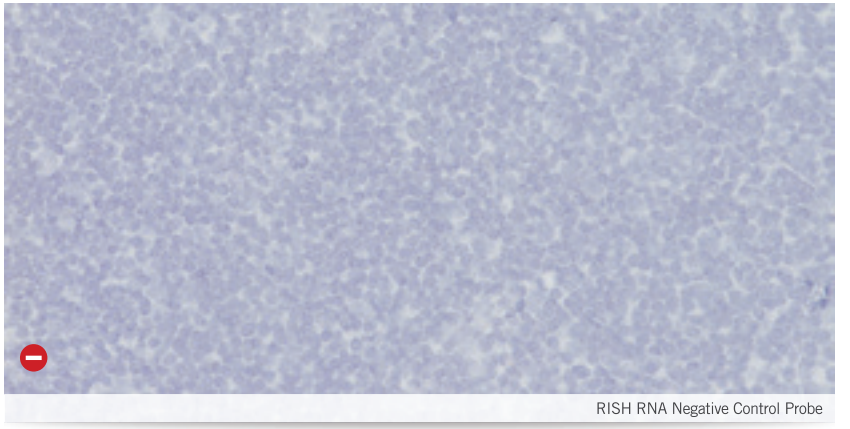
This digoxigenin-labeled oligonucleotide probe negative control probe consists of a random set of oligonucleotide sequences with a GC content of 40-70%. It should be used to assess non-specific staining when performing *in situ* hybridization. No positive staining should result.



RISH RNA Positive Control Probe

RNA Positive Control Probe

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.



RISH RNA Negative Control Probe

RNA Negative Control Probe

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.

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	BRA 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™ Control Probes	**Status**	**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	**Status**	**Cat. No.**
RISH HybriSlips™	N/A	RI 0210 C (100 coverslips)

Instrumentation

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 IHC. 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

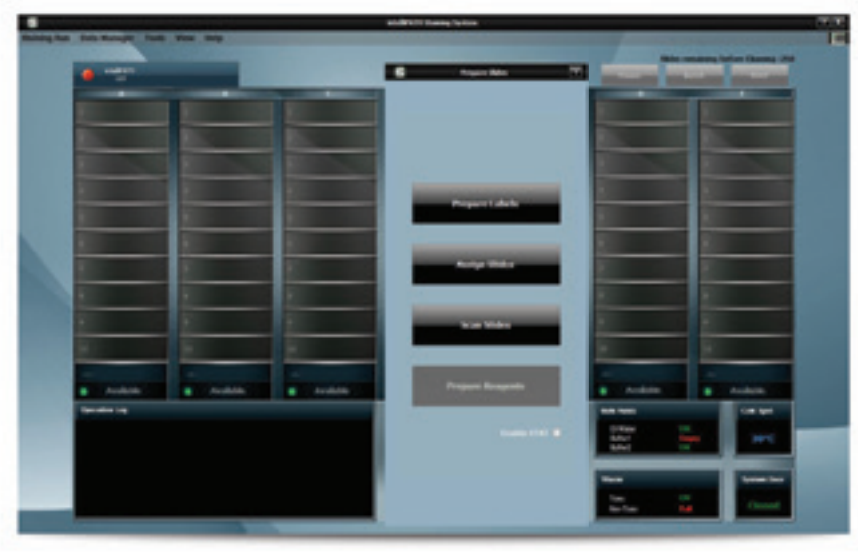
Ordering Information	Cat. No.
intelliPATH Automated Staining Instrument* (110 V markets)	IPS0001US
intelliPATH Automated Staining Instrument* (220 V markets)	IPS0001INTL

*Includes the intelliPATH Automated Staining Instrument, PC, monitor, keyboard, mouse, UPS, label and report printers (IPS0001 Only).

intelliPATH Research Software

More Freedom Than Ever

The intelliPATH Research Software addresses the specific needs of users within pharmaceutical research, veterinary pathology and other biotechnology settings. This optional software package offers advanced features that complement the intelliPATH's flexible and fully open design for maximized efficiency and improved workflow. Its user interface has been updated to align with the needs of the research laboratory. The simplified main screen provides increased efficiency of run initiation and label utilization options. Protocol management is straightforward with streamlined protocol creation and editing features. The Research Software allows complete customization of study detail fields and slide label information, and adjustable text display options for mapped or scanned slides. Data entry supports free-flowing text to easily add new protocol steps or reagents.



Ordering Information	Cat. No.
intelliPATH Research Software	IPSW001

intelliPATH Reagents & Ancillaries

intelliPATH Detection	Volume	Cat. No.
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
Additional intelliPATH Reagents	**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
TBS 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.**
intelliPATH Reagent Vials and Caps, 20 mL	100 each	IPVL115
intelliPATH 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

*HP Barrier Slide Labels not sold seperately. **Includes one label Ribbon (NM002) and 2 Reagent Label Rolls (NM029).

ONCORE

Fully Automated for IHC & Multiplex IHC

The ONCORE Automated Slide Stainer is a compact and convenient bench-top instrument that is capable of performing IHC procedures on FFPE tissues. The on-board capabilities include baking, deparaffinization, antigen retrieval and antibody detection for IHC 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 IHC are available for the ONCORE System.

Ordering Information	Cat. No.
ONCORE Automated Staining Instrument (110 V markets)	ONC0001-110V
ONCORE Automated Staining Instrument (220 V markets)	ONC0001-220V

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

*Includes the ONCORE Automated Staining Instrument, PC, monitor, keyboard, mouse, UPS, label and report printers (ONC0001-110V Only).

ONCORE Reagents & Ancillaries

ONCORE Detection	Cat.No
Mouse HRP Detection	ORI 6007 T60
Mouse Amp HRP Detection	ORI 6050 T60
Rabbit HRP Detection	ORI 6008 T60
Mouse AP Detection	ORI 6044 T60
Rabbit AP Detection	ORI 6043 T60
Multiplex Detection 2	ORI 6045 T60
DAB Chromogen Kit	ORI 6011K T90, T180
Fast Red Chromogen Kit	ORI 6042K T60
ONCORE Reagents	**Cat.No**
Dewax Solution Kit	ORI 6004K T60
DS Enzyme	ORI 6049 T60
Antigen Retrieval 1 (AR1), high pH	ORI 6006 T60
Antigen Retrieval 2 (AR2), low pH	ORI 6005 T60
Wash Buffer	ORI 6012 MM
Universal Negative Control Serum	ORI 6013 T60
Ancillaries	**Cat.No**
ONCORE Improv Reagent Vials, 50 or 100 count	ONC101 JJ, L
Chamber cleaning kit	ORI6031K C8
Tubing cleaning kit	ORI6036K C3
Label Ribbon, 1 each	NM002
Reagent Label Roll, 1500 labels	NM029
Reagent Labels Kit,* 3000 labels and one label ribbon	NM129
Slide Label Roll, 2500 labels	IP560040

*Includes one Label Ribbon (NM002) and 2 Reagent Label Rolls (NM029)

intelliPATH™ and ONCORE Antibodies

The intelliPATH and ONCORE are accompanied by a complement of pre-optimized primary antibodies. Antibody details are listed in the Antibodies section of this catalog.

Antibodies	intelliPATH	ONCORE
ALK [5A4]		OAI 3041 T60
AMACR (RM), 2X		OAA 3125 G10
Arginase-1		OAI 3058 T60
Bcl-2	IP 003 G10	OAI 003 T60
Bcl-6 [LN22]		OAI 410 T60
Ber-EP4	IP107 G10	OAI 107 T60
c-erbB-2/HER2		OAA 342 T60
Calretinin	IP 092 G10	OAI 092 T60
Carcinoembryonic Antigen (CEA {P})	IP 009 G10	
CD5 (M)		OAI 099 T60
CD7		OAI 158 T60
CD10	IP 129 G10	OAI 129 T60
CD15 Cocktail	IP 073 G10	OAI 073 T60
CD20 [L26]	IP 004 G10, G20	OAI 004 T60
CD21		OAI 142 T60
CD23		OAI 100 T60
CD30 (Ki-1)	IP 031 G10	
CD31 (PECAM-1)		OAI 131 T60
CD34	IP 084 G10	OAI 084 T60
CD43	IP 005 G10	
CD56		OAI 164 T60
CD57 (Natural Killer Cell)		OAI 007 T60
CD68 [KP1]	IP 033 G10	OAI 033 T60
CD99		OAI 392 T60
CD117/c-kit	IP 296 G10	OAI 296 T60

Antibodies	intelliPATH	ONCORE
CD138	IP 167 G10	
CD163		OAI 353 T60
CDX2	IP 226 G10	OAI 226 T60
Chromogranin A	IP 010 G10	OAI 010 T60
Cyclin D1	IPI 307 G10	OAI 432 T60
Cytokeratin 5 (CK5)		OAI 234 T60
Cytokeratin 5/6	IPI 105 G10	
Cytokeratin 5/14 Cocktail		OAI 3025 T60
Cytokeratin 7	IP 339 G10	
Cytokeratin 7 (CK7)	IPI 061 G10	OAI 061 T60
Cytokeratin 19 (CK19)		OAI 242 T60
Cytokeratin 20	IP 062 G10	OAI 062 T60
Cytokeratin HMW [34βE12]	IPI 127 G10	OAI 127 T60
Cytokeratin LMW (8/18)	IPI 056 G10	OAI 056 T60
Cytomegalovirus (CMV)		OAA 118 T60
D2-40 (Lymphatic Marker)	IP 266 G10	OAI 266 T60
Desmin	IP 036 G10	OAI 036 T60
DOG1		OAI 385 T60
E-cadherin	IP 170 G10	
ERG		OAI 421 T60
Estrogen Receptor (ER) [SP1]		OAA 301 T60
Factor XIIIa	IP 357 G10	
Folate Receptor alpha IHC Assay Kit	IPI 4006K G10	
GATA-3		OAI 405 T60
Gross Cystic Disease Fluid Protein-15	IP 113 G10	

Antibodies	intelliPATH	ONCORE
Helicobacter pylori	IP 383 G10	OAI 383 T60
Hepatocyte Specific Antigen (HSA)		OAI 166 T60
Herpes Simplex Virus 1&2 (HSV 1&2)	IPR 108 G10	OAR 108 T60
HMB45	IP 057 G10	OAI 057 T60
HMB45 + MART-1 + Tyrosinase	IPI 165 G10	
Ki-67		OAI 325 T60
Leukocyte Common Antigen (LCA) Cocktail	IP 016 G10	OAI 016 T60
Mammaglobin		OAI 269 T60
MART-1 Cocktail	IP 077 G10	OAI 077 T60
MLH-1	IPI 220 G10	OAI 220 T60
MSH2		OAI 219 T60
MSH6	IPI 265 G10	OAI 265 T60
MUM-1		OAI 352 T60
Muscle Specific Actin (MSA)	IP 079 G10	OAI 079 T60
Napsin A	IPI 388 G10	OAI 388 T60
p40 (M)	IPI 3066 G10	
p53	IP 298 G10	
p63	IP 163 G10	OAI 163 T60
p63 + P504S	IPR 201 G10	
P504S	IPA 200 G10	
P504S-2X	IP 365 G10	
Pan Cytokeratin [AE1/AE3]	IPI 011 G10	
Pan Cytokeratin [Lu-5]	IP 043 G10	
Pan Cytokeratin Plus [AE1/AE3 + 8/18]	IPI 162 G10	OAI 162 T60
Pan Melanoma Cocktail-2		OAI 178 T60
PAX-5		OAI 207 T60
PAX8 (M)		OAI 438 T60
PMS2	IPI 344 G10	OAI 344 T60

Antibodies	intelliPATH	ONCORE
anti-Prion Protein Mab F99	IPR 3047 G10	
Prion IHC Assay Kit A	IPR 5030K G15	
Prion IHC Assay Kit B	IPR 5033K G80	
Progesterone Receptor (PR) [16]		OAA 424 T60
Progesterone Receptor [PgR636]	IPA 343 G10	
Prostate Cocktail-2X	IP 364 G10	
Prostate Specific Antigen (PSA)		OAI 390 T60
S100 Protein (P)		OAI 021 T60
S100 Protein Cocktail	IP 089 G10	OAI 089 T60
SALL4		OAI 384 T60
Smooth Muscle Actin (SMA)	IP 001 G10	OAI 001 T60
SOX10 (M)	IPI 3099 G10	OAI 3099 T60
Synaptophysin	IP 371 G10	OAI 371 T60
Thyroglobulin Cocktail	IP 022 G10	
Treponema pallidum (Spirochete)	IPA 135 G10	OAA 135 T60
TTF-1	IP 087 G10	OAI 3126 T60
Tyrosinase		OAI 155 T60
Uroplakin II		OAI 3051 T60
Vimentin	IP 048 G10	OAI 048 T60
WT1 (Wilms' Tumor)		OAI 258 T60

Multiplex Antibodies	intelliPATH	ONCORE
CK5/14 + p63 + P504S	IPR 225DS G10	
CK HMW + p63 + AMACR (RM)	IPI 3154DS G10	
CK HMW + p63 + AMACR (RM)		OAR 3123 T60
CK HMW + p63, 2X		OAI 3124 T90
TTF-1 + Napsin A	IPI 394DS G10	

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.

U.S. patent 6,580,056

Ordering Information	Cat. No.
Decloaking Chamber NxGen (110 V markets)	DC2012
Decloaking Chamber NxGen (220 V markets)	DC2012-220V

Specifications	
Temperature settings	60°C, 80°C, 90°C, 95°C, 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

Ancillaries	Quantity	Cat. No.
Metal Slide Canister	1 or 3	DCA132 / DCA132-3PK
Steam Monitor Strips	25, 100, 250 strips	613 H, C, D
Pressure Limit Valve	1 each	DCA120
Sealing Gasket Kit	1 each	DCA061
Condensation Collector	1 each	DCA070
Basket, Rack Holder DC2012	1 each	DCA125
4-Slot Metal Rack Holder DC2012	1 each	DCA176

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

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

Ordering Information	Cat. No.
Desert Chamber Pro (110 V markets)	DRY2008US
Desert Chamber Pro (220 V markets)	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

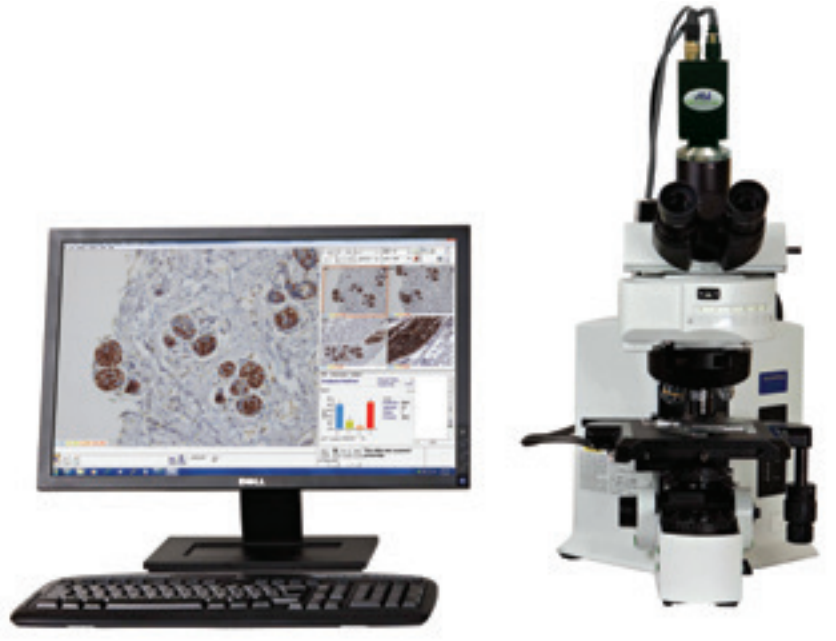
Ordering Information	Capacity	Dimensions	Weight	Cat. No.
IQ1000 (110 V)	1 Digital Hot Bar, 1 Waste Basin, 12 Slides	23" x 14" x 14" / 58 cm x 36 cm x 36 cm	29 lbs / 13 kg	IQ1000US (w/ Shaker) / IQ1000US-NS (No Shaker)
IQ1000 (220 V)	1 Digital Hot Bar, 1 Waste Basin, 12 Slides	23" x 14" x 14" / 58 cm 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 Pathology Suite

Quantitative Analysis of IHC, CISH and FISH

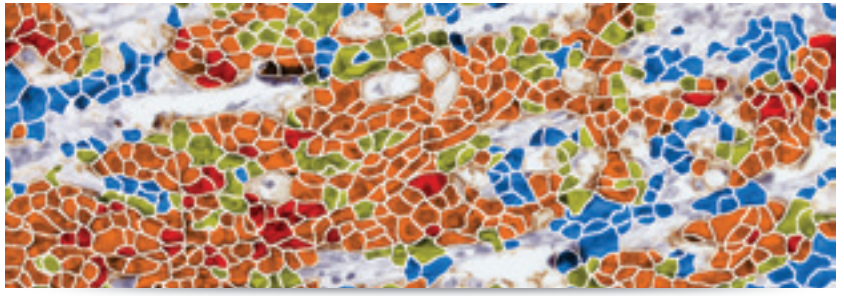
ASI's Pathology Suite on the GenASIs™ platform is a digital pathology platform for imaging, scoring and reporting of quantitative brightfield and fluorescent samples. ASI's Pathology Suite integrates within the traditional workflow of microscope and pathologist and provides labs with a cost-effective and easy-to-use solution for digital pathology applications. Combining the benefits of computer-aided scoring with the advantages of traditional microscopy, ASI's Pathology Suite is the ideal solution for every lab.



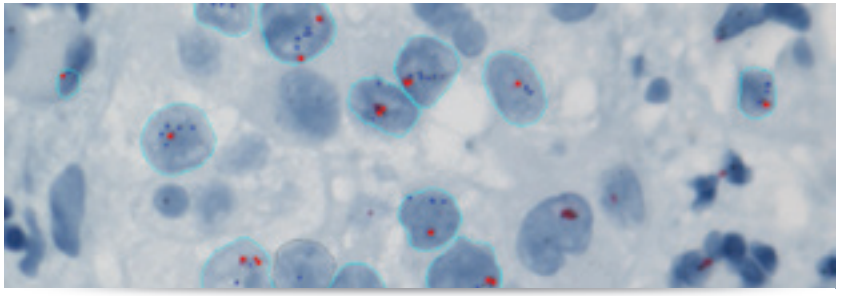
Ordering Information

Please call 1-800-799-9499 for more information. Available in the US only.

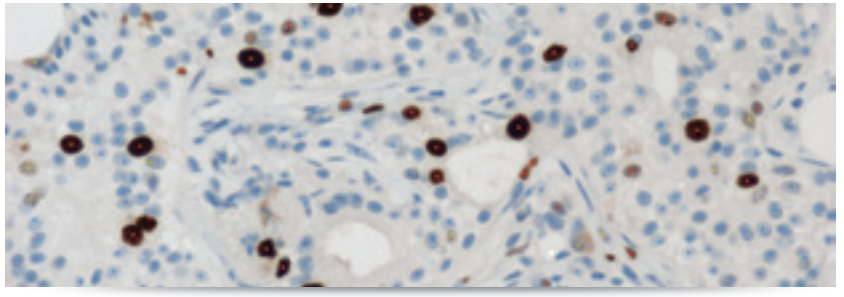
Applications



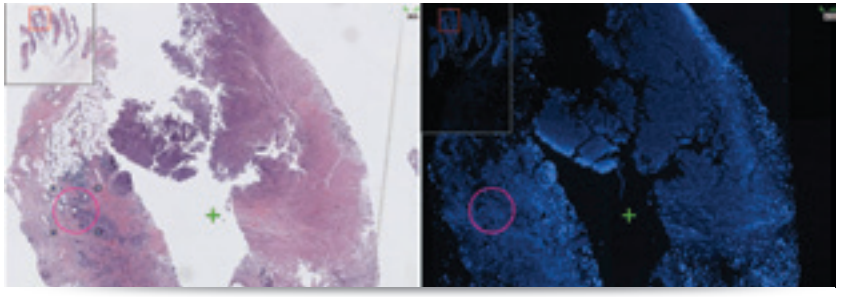
Membrane IHC (HER2)



CISH



Nuclear IHC (Ki67)



H7E / FISH Tissue Matching

Detection

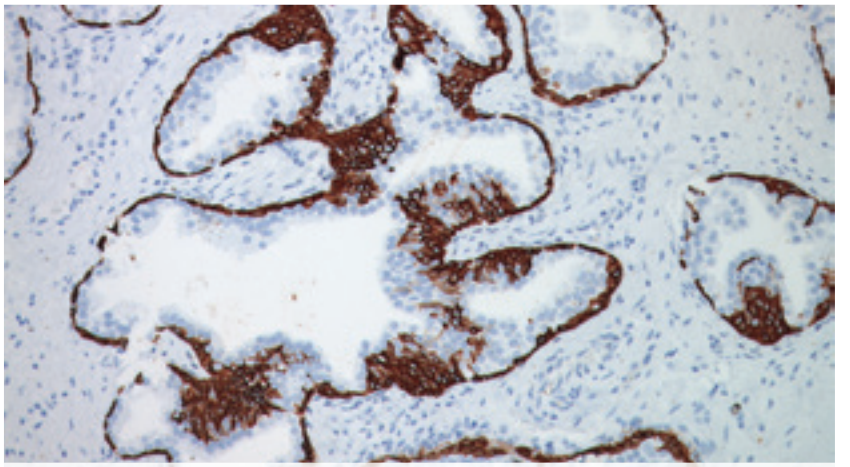
Biocare offers sensitive, specific and reproducible detection systems. Available optimized for either human or animal tissues, detection includes both biotin-free micro-polymers for single or double stains and streptavidin-biotin. The streptavidin-biotin 4plus™ detection reagents provide a high level 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 chromogenic substrates in multiple colors for both HRP and AP. 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™ & ONCORE Detection

Biocare Medical has sensitive and reliable detection systems ideal for human tissue. Using innovative micro-polymer technology, MACH 4, MACH 3, MACH 2, intelliPATH and ONCORE 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, non-specific 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	ONCORE	4plus
Primary Antibody	+	Universal for &	or	Universal, or	or	Universal, or
Technology	One-step Micro-polymer	Two-step Micro-polymer	Two-step Micro-polymer	One-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	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™ & ONCORE

Optimized and packaged for the intelliPATH and ONCORE automated staining instruments, these detection systems enable maximum sensitivity for detection of tissue antigens in an automated format. They are very sensitive and clean detections 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	Background Sniper
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	
ONCORE	or		HRP or AP	AR1 / AR2	N/A
4plus	or or Universal		HRP or AP	Reveal / Diva / Borg	Avidin-Biotin, Background Sniper

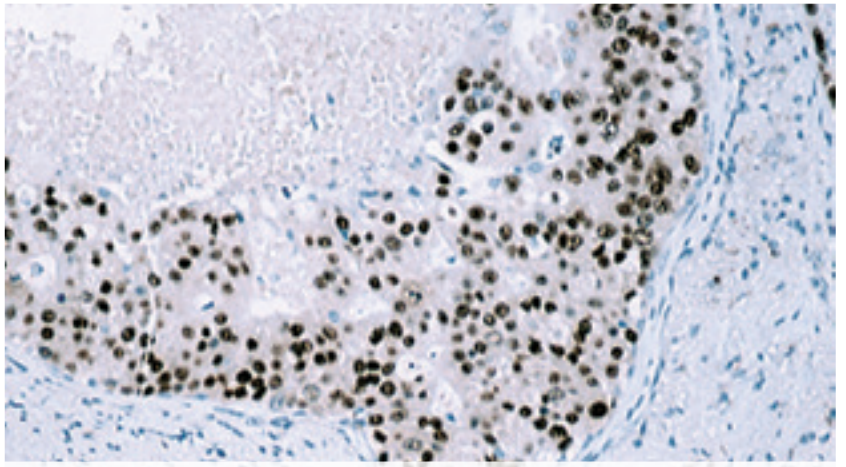
*Horseradish Peroxidase (HRP) and Alkaline Phosphatase (AP).

MACH 4™ Micro-polymer Detection

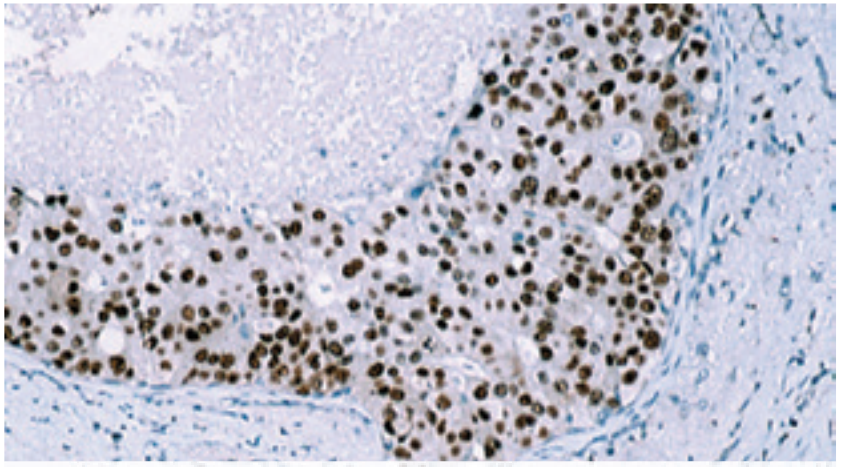
MACH 4 is a highly sensitive detection system that can detect mouse and rabbit antibodies with a two-step universal detection method. MACH 4 detection consists of two reagents: the secondary, also known as the enhancing reagent, is applied between the primary antibody and micro-polymer reagent. MACH 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 and packaged for automated immunostainers

Competitor Polymer vs. MACH 4



Breast stained with ER (1D5), 1:25 dilution



Breast stained with ER (1D5), 1:1000 dilution

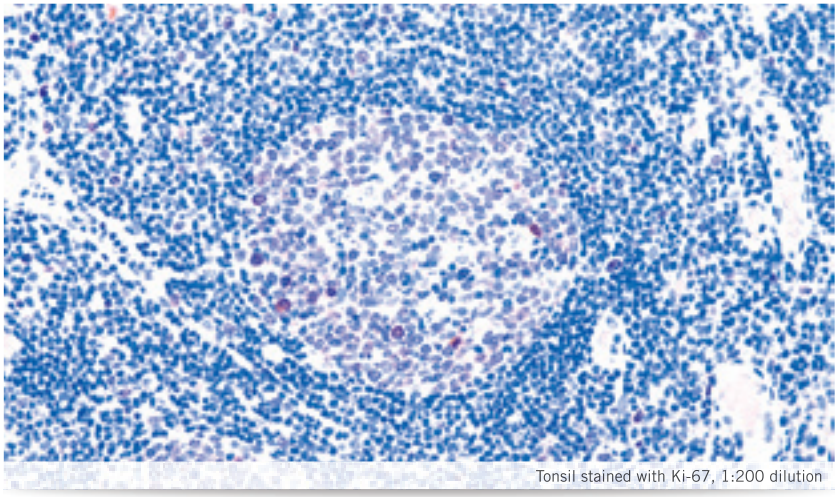
MACH 4 Micro-polymer Detection	Cat. No.
MACH 4 Universal HRP-Polymer	M4U534 G, H, L, MM, G80
MACH 4 Universal AP-Polymer	M4U536 G, H, L, G20

MACH 3™ Micro-polymer Detection

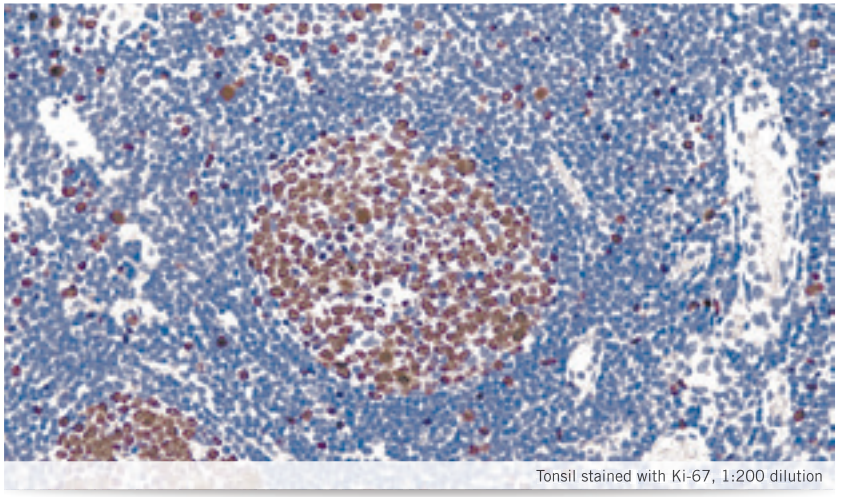
MACH 3 is a two-step, biotin-free detection system which provides excellent specificity, sensitivity and nuclear staining for mouse or rabbit primary antibodies. Available for either mouse or rabbit primary antibodies, labeled with either Horseradish Peroxidase (HRP) or Alkaline Phosphatase (AP).

- 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

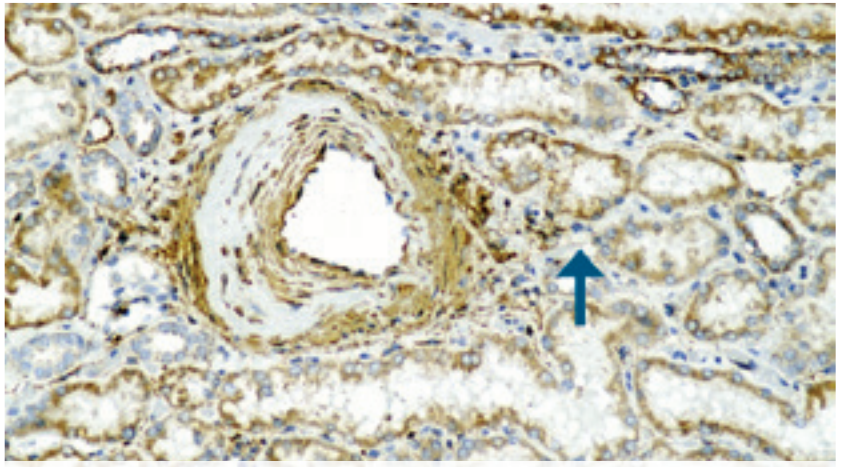
MACH 3 Micro-polymer Detection	Cat. No.
MACH 3 Mouse HRP-Polymer	M3M530 G, H, L
MACH 3 Mouse AP-Polymer	M3M532 G, H, L
MACH 3 Rabbit HRP-Polymer	M3R531 G, H, L
MACH 3 Rabbit AP-Polymer	M3R533 G, H, L

MACH 2™ Micro-polymer Detection

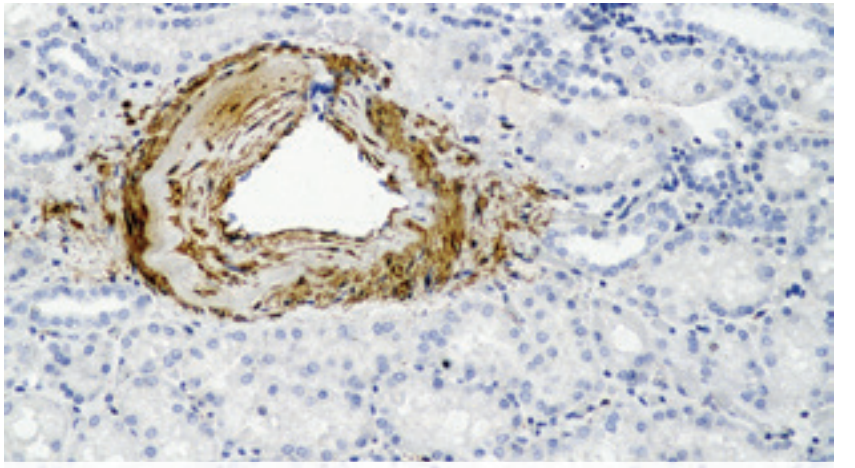
MACH 2 Detection is a one-step / one-solution, biotin-free detection system which combines superior work flow and sensitivity for mouse and rabbit primary antibodies. Consisting of a single reagent applied after the primary antibody, MACH 2 is ideal for use with prediluted antibodies or concentrates 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

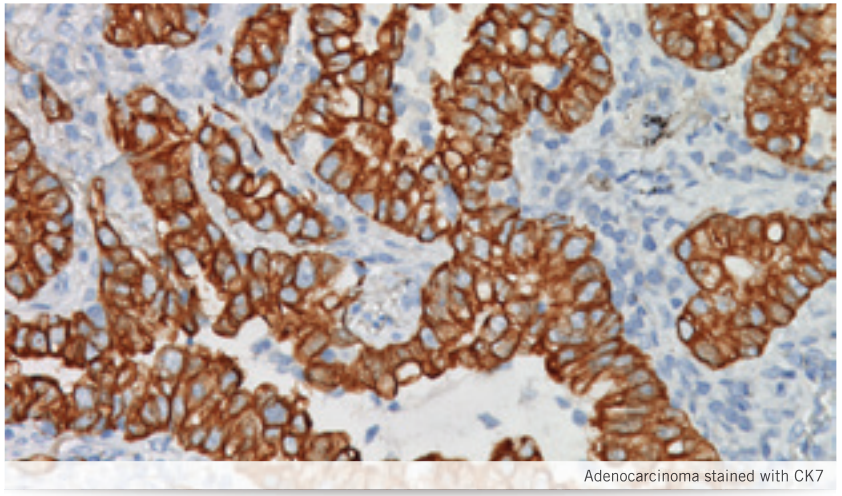
MACH 2 Micro-polymer Detection	Cat. No.
MACH 2 Universal HRP-Polymer	M2U522 G, H, L
MACH 2 Mouse HRP-Polymer	MHRP520 G, H, L, MM
MACH 2 Mouse AP-Polymer	MALP521 G, H, L
MACH 2 Rabbit HRP-Polymer	RHRP520 G, H, L, MM
MACH 2 Rabbit AP-Polymer	RALP525 G, H, L

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

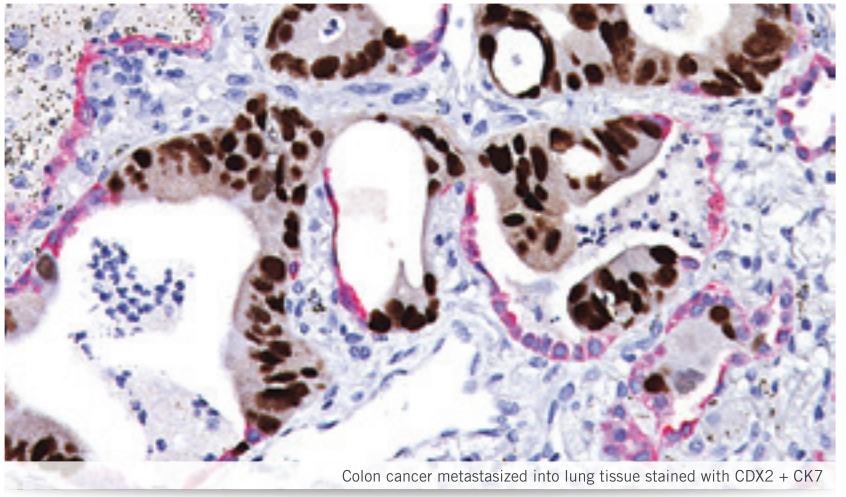
This sensitive two-step universal detection for mouse and rabbit primary antibodies offers superior specificity and minimal background staining. It is provided as a kit with the mouse secondary, a universal HRP tertiary, peroxidase block, DAB chromogen and hematoxylin in intelliPATH vials.



Adenocarcinoma stained with CK7

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.



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

ONCORE Micro-polymer Detection

These micro-polymer detections are optimized and packaged for use on Biocare's ONCORE Automated Slide Stainer. They provide crisp, intense staining patterns for a wide variety of mouse and rabbit primary antibodies with minimal background staining.

HRP Detections

Mouse HRP, Mouse Amp HRP and Rabbit HRP Detections are ready-to-use horseradish peroxidase –antibody conjugate systems. They are intended for detection of mouse IgG, mouse IgM or rabbit IgG primary antibodies as part of an IHC staining procedure on the ONCORE Automated Slide Stainer. Mouse Amp HRP Detection is recommended for use with specific primary antibodies, as indicated in the individual antibody protocols.

AP Detections

Mouse AP and Rabbit AP Detections are ready-to-use alkaline phosphatase –antibody conjugate systems. They are intended for detection of mouse IgG, mouse IgM or rabbit IgG primary antibodies as part of an IHC staining procedure on the ONCORE Automated Slide Stainer.

Multiplex Detection 2

This detection system is a ready-to-use cocktail of HRP anti-mouse antibody conjugate and AP anti-rabbit antibody conjugate. It is suitable for the simultaneous detection of mouse and rabbit primary antibodies as part of an IHC double-stain procedure on the ONCORE Automated Slide Stainer.

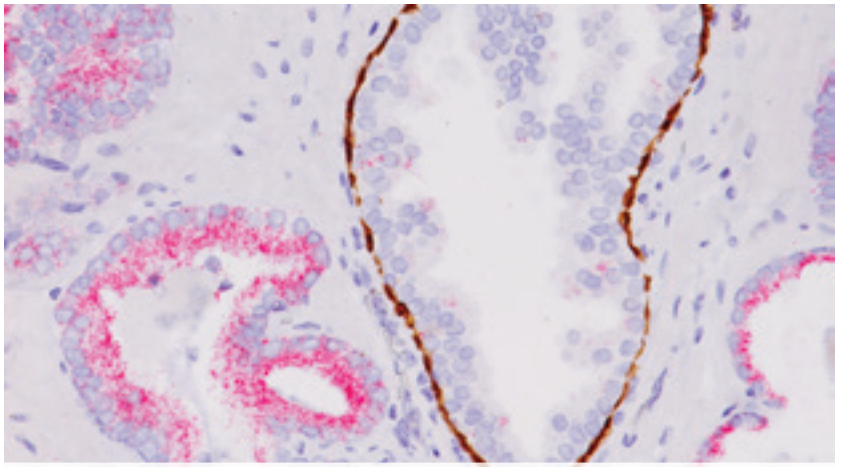
ONCORE Micro-polymer Detection	**Cat. No.**
Mouse HRP Detection	ORI6007 T60
Mouse Amp HRP Detection	ORI6050 T60
Rabbit HRP Detection	ORI6008 T60
Mouse AP Detection	ORI6044 T60
Rabbit AP Detection	ORI6043 T60
Multiplex Detection 2	ORI6045 T60

Multiplex Micro-polymer Detection

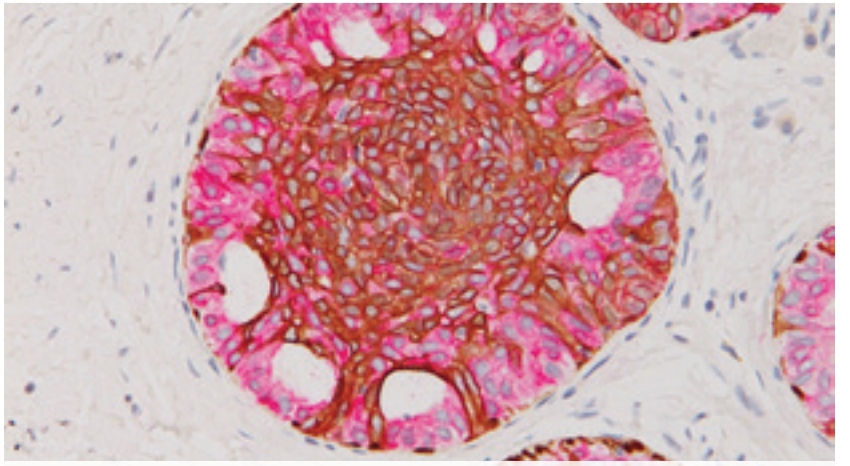
Biocare Medical is the proven leader in providing Multiplex detection to enable simultaneous IHC staining of multiple antibodies on a single slide. This superior micro-polymer technology, simplifies protocols, reduces reagents and improves turnaround time. The micro-polymer provides significant increase 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



Prostate cancer stained with CK5/14 + p63 + P504S



Breast tissue stained with CK5/14 + p63 + CK7/18

Denaturing Solution (Elution Step)

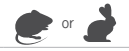
In a seven-step double stain procedure, this solution denatures the first antibody to ensure the second staining protocol will not cross-react with the first.

Denaturing Solution	Cat. No.
Denaturing Solution	DNS001 L

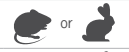
4plus™ Detection

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.

4plus Biotinylated Secondary Antibodies	Antibody Species	Tissues Species	Cat. No.
Universal Goat Link			GU600 H, L
Goat Anti-Mouse IgG			GM601 H
Goat Anti-Rabbit IgG			GR602 H
Goat Anti-Rabbit IgG			GR608 H

4plus Streptavidin-Enzyme Conjugates	Cat. No.
HRP Label	HP604 H, L
AP Label	AP605 H, L

4plus Detection Kits	Slides	Antibody Species	Tissue Species	Cat. No.
HRP Universal	1000, 5000			HP504 US, UM
AP Universal	1000			AP506 US

IHC Detection for Research

PromARK™ Detection

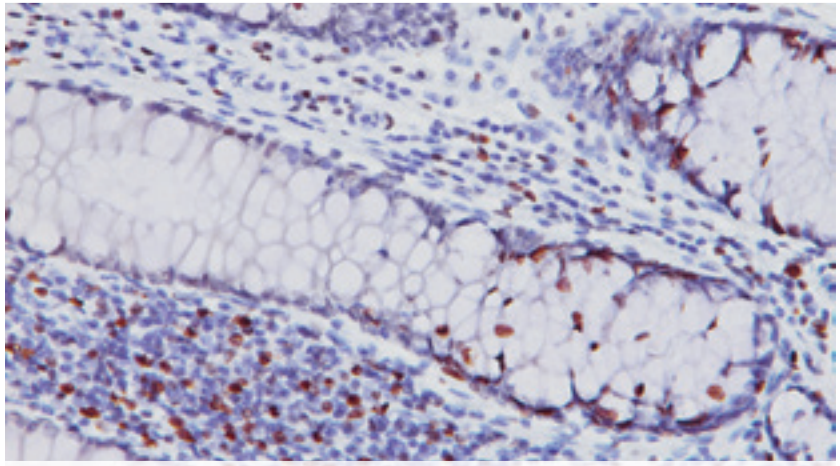
PromARK includes optimally formulated heat-retrieval solutions, blocking agents, and one- and two-step micro-polymers to minimize background staining while providing sensitive and specific detection. The micro-polymer detection systems are designed for use with various primary antibodies on a variety 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	Background Punisher	Reveal / Diva / Borg
Rabbit-on-Farma			HRP		
Mouse-on-Canine			HRP or AP		
Rabbit-on-Canine			HRP or AP		
Goat-on-Rodent			HRP or AP	Background Punisher	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	

Farm & Bird Tissues with Mouse or Rabbit Antibodies

The Mouse-on-Farma and Rabbit-on-Farma detection polymers have minimal cross-reactivity to cow, horse, pig, sheep, chicken and swan IgGs, providing superior specificity and sensitivity for mouse or rabbit primary antibodies. The advanced one-step polymer technology virtually eliminates cross-reactivity to endogenous IgGs and reduces IHC steps. In most cases, tissues do not require a protein block.

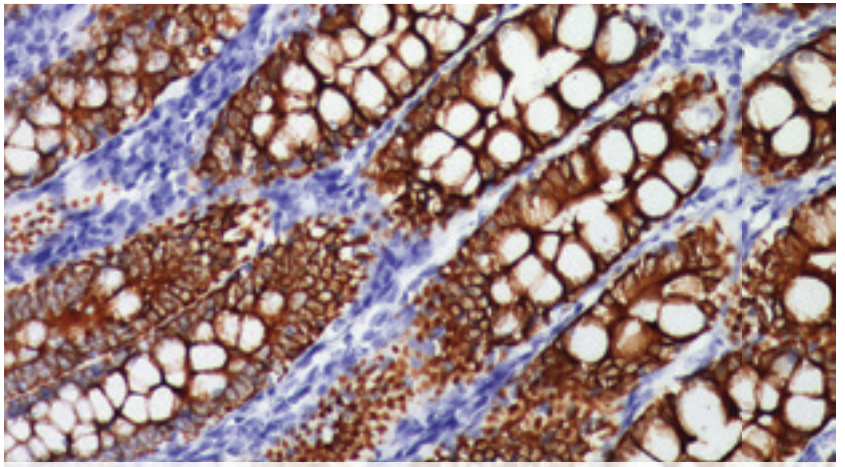


Pig colon stained with Ki-67

Cow, Horse, Pig & Sheep Tissues	Cat. No.
Mouse-on-Farma HRP-Polymer	BRR4002 H
Rabbit-on-Farma HRP-Polymer	BRR4009 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 IgGs. Usable with paraffin-embedded tissues, floating sections and frozen sections. Combine together for universal or simultaneous double stains.

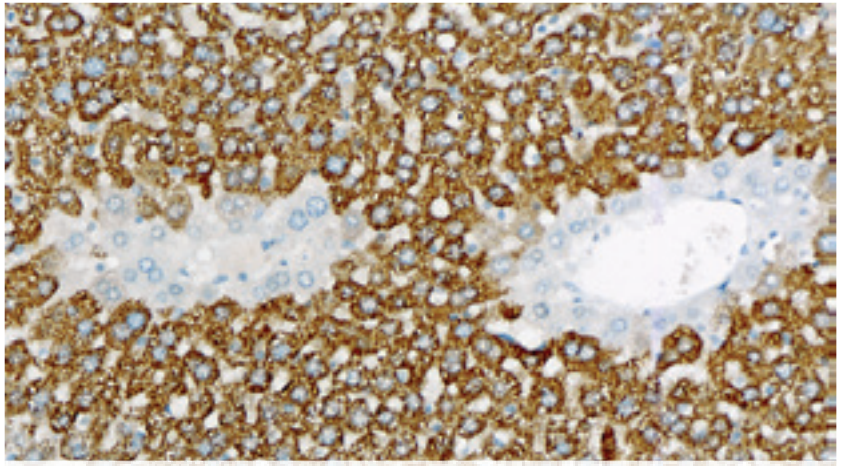


Dog colon stained with CK8/18

Canine & Feline Tissues	Cat. No.
Mouse-on-Canine HRP-Polymer	MC541 H, L
Mouse-on-Canine AP-Polymer	BRR4003 H
Rabbit-on-Canine HRP-Polymer	RC542 H, L
Rabbit-on-Canine AP-Polymer	BRR4004 H

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.

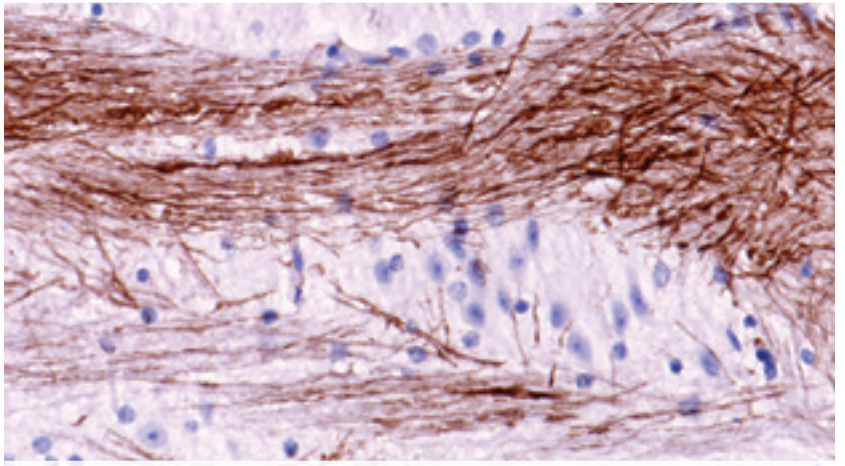


Mouse liver stained with Hepatocyte Specific Antigen

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.

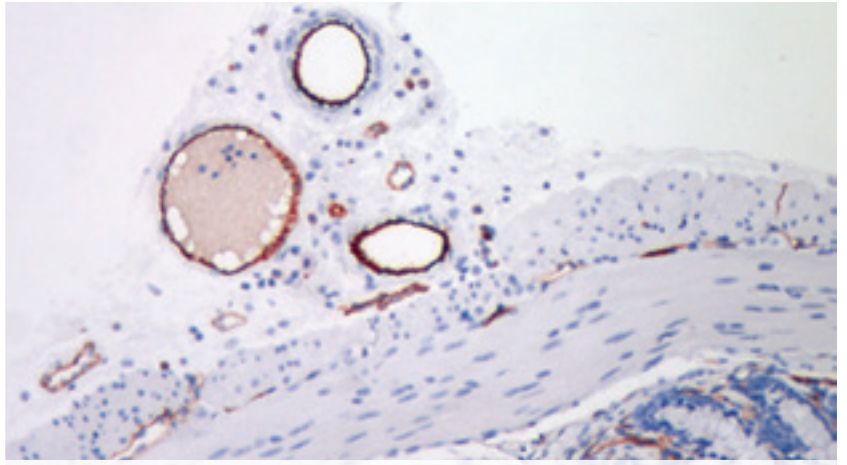


Rat brain stained with Neurofilament

Mouse-on-Rat	Cat. No.
Mouse-on-Rat HRP-Polymer	MRT621 G, H, L
Mouse-on-Rat AP-Polymer	MRT623 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.

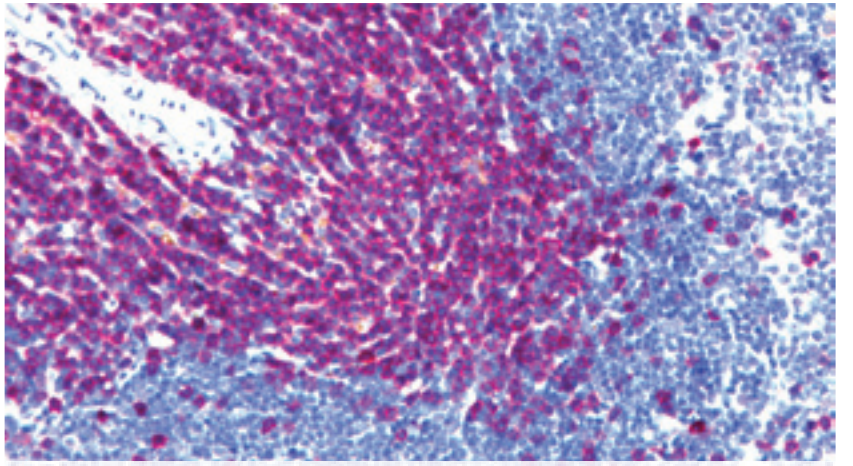


Mouse colon stained with CD31

Rat-on-Mouse	Cat. No.
Rat-on-Mouse HRP-Polymer	RT517 G, H, L
Rat HRP-Polymer, 1-Step	BRR4016 H
Rat-on-Mouse AP-Polymer	RT518 G, H

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.

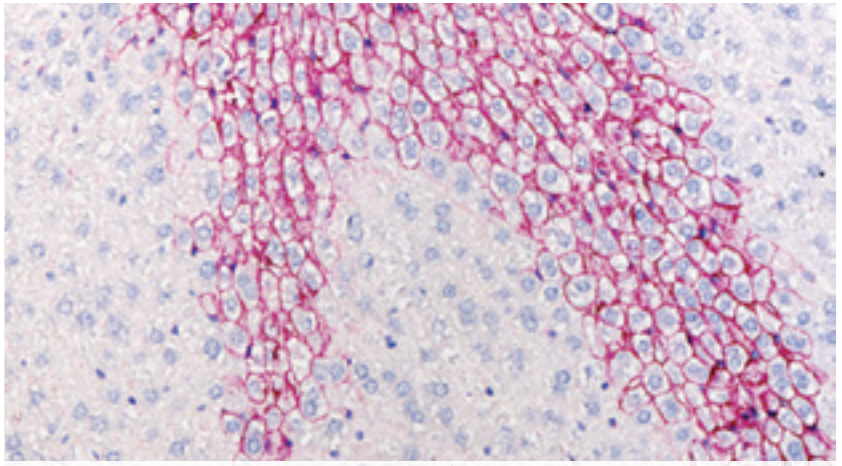


Mouse spleen stained with CD3

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.

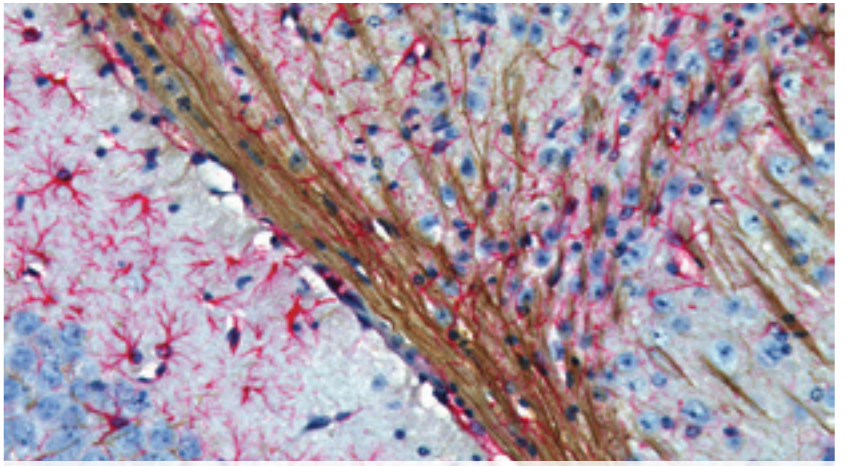


Goat anti-E-cadherin on mouse liver (FR)

Rabbit-on-Rodent	Cat. No.
Goat-on-Rodent HRP-Polymer	GHP516 G, H, L
Goat-on-Rodent AP-Polymer	GAP514 G, H

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

Product Name	Cat. No.
Mouse-&-Rabbit-on-Rodent Double Stain Polymer	RDS513 H

Sheep, Goat & Deer Tissues with Prion Antibody

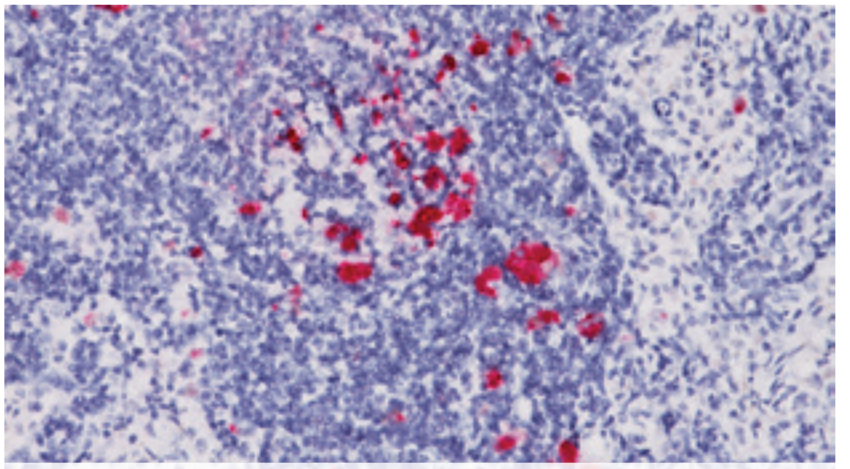
IHC Detection of Prion Infection in Animal Tissue

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.

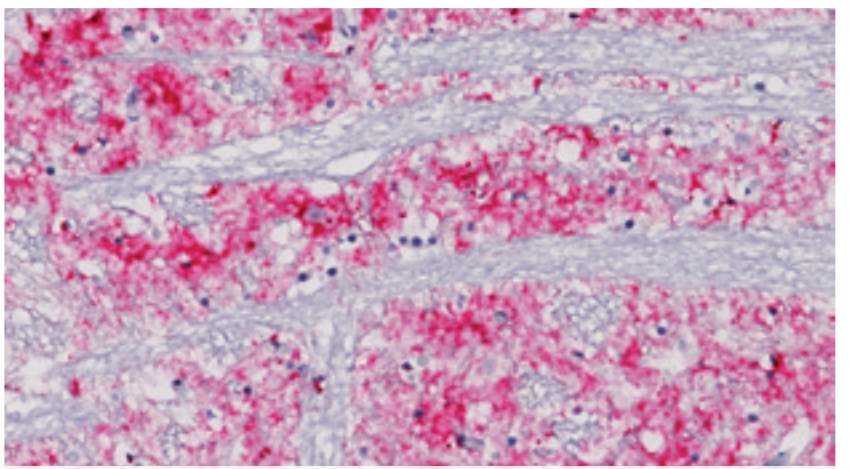
With Biocare’s column-adsorbed anti-prion antibody, sensitive and highly specific results are seen when staining prion positive tissue from infected brain and lymphoid tissues. Use of the Prion IHC Assay on the intelliPATH system results in high-quality, artifact-free staining targeted to the abnormal 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

Reference Table for Micro-polymer Detection Systems

Human Tissue: MACH, intelliPATH & ONCORE Detection

Antibody	Tissue Species	Technology	HRP	AP	Retrieval Reagents	Blocking Reagents
Mouse		ONCORE	ORI6007 / ORI6050	ORI6044	AR1 (ORI6006) / AR2 (ORI6005)	N/A
Rabbit		ONCORE	ORI6008	ORI6043		
Mouse or Rabbit		intelliPATH	IPK5011	N/A	Diva (DV2004) Reveal (RV1000) Borg (BD1000)	intelliPATH Background Punisher (IP974)
Mouse or Rabbit		MACH 4	M4U534	M4U536		Background Punisher (BP974)
Mouse		MACH 3	M3M530	M3M532		
Rabbit		MACH 3	M3R531	M3R533		
Mouse or 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			intelliPATH Background Punisher (IP974)
Mouse + Rabbit		ONCORE Multiplex 2	ORI6045		AR1 (ORI6006) / AR2 (ORI6005)	N/A

Animal Tissue: PromARK Detection

Antibody	Tissue Species	Technology	HRP	AP	Retrieval Reagents	Blocking Reagents
CD31		One-Step	RT517SK	N/A	Rodent Decloaker (RD913)	Rodent Block R (RBR962)
Mouse		One-Step	MM620/MM510	MM624		Rodent Block M (RBM961)
Mouse		One-Step	MRT621	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	Background Punisher
Mouse		One-Step	MC541	BRR4003	Diva, Reveal, Borg	
Rabbit		One-Step	RC542	BRR4004		
Mouse		One-Step	BRR4002	N/A		
Rabbit		One-Step	BRR4009	N/A		

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

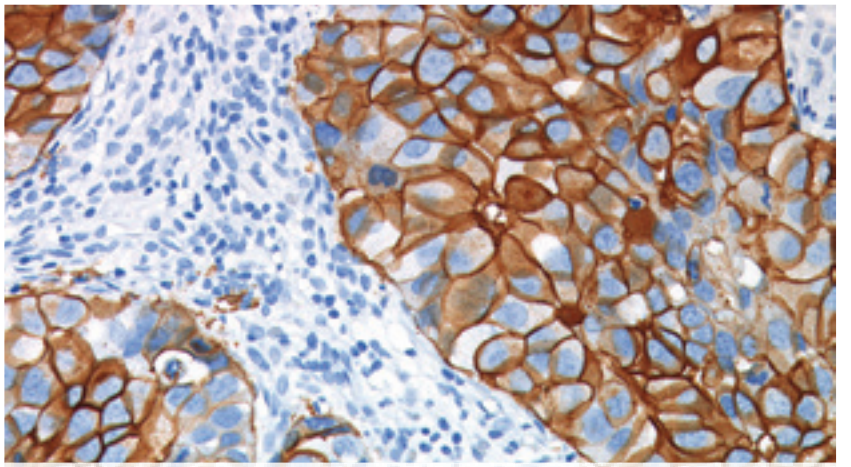
DAB is a permanent chromogen that produces a brown stain in the presence of HRP. DAB is clearly distinguishable from other chromogen colors on a single slide, enabling high flexibility for Multiplex IHC™ applications. This two-component system consists of a liquid stable DAB chromogen and DAB substrate 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.



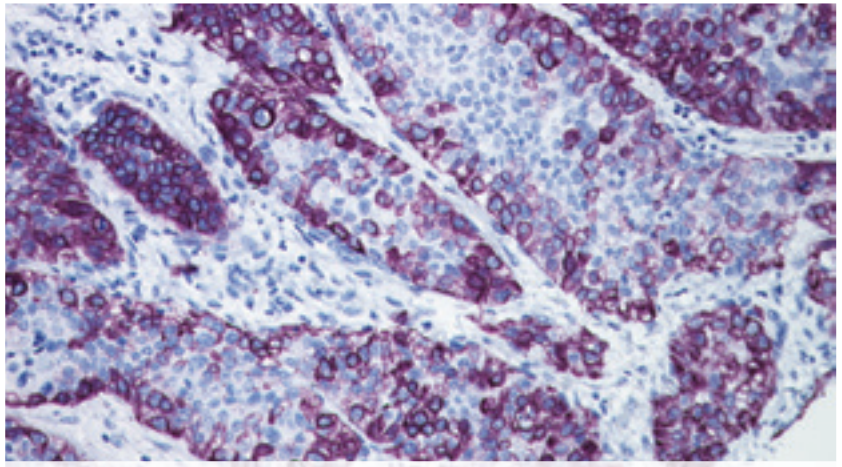
Betazoid DAB staining breast cancer with c-erbB-2

Vina Green™ Chromogen Kit

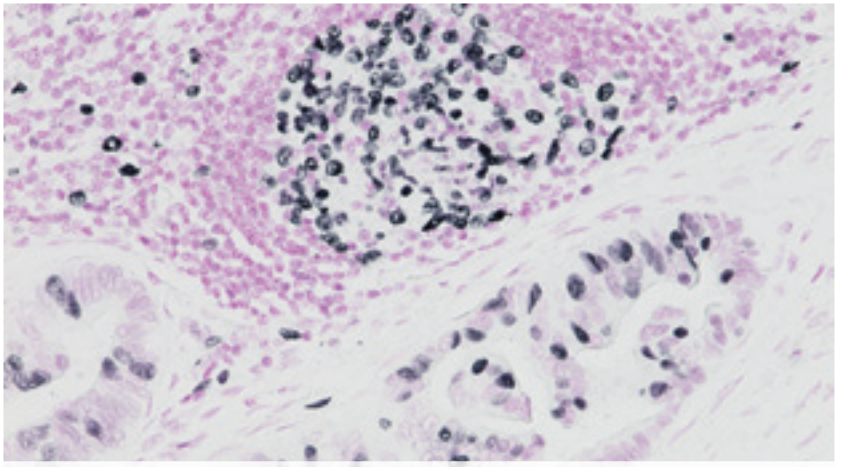
Vina Green is a novel permanent chromogen that produces a green stain. Stable for at least 4 hours at room temperature, Vina Green is clearly distinguishable from other chromogen colors on a single slide, enabling high flexibility for its application in Multiplex IHC. Developed for both manual and automated platforms.

Romulin AEC Chromogen Kit

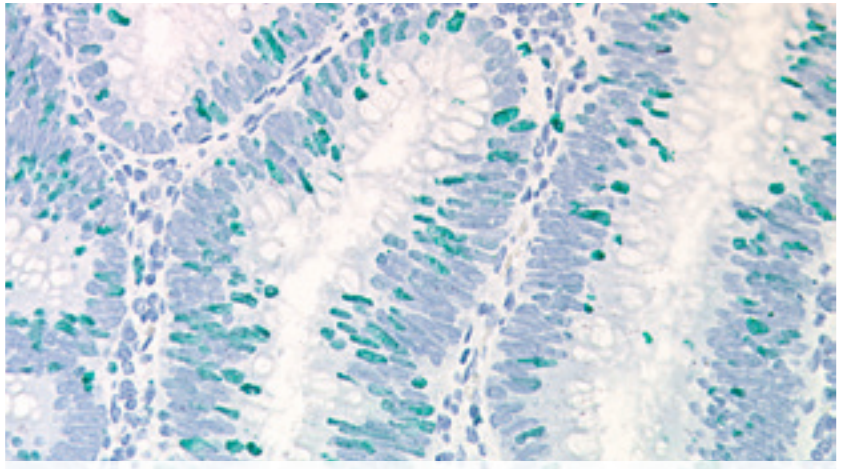
Romulin AEC produces a brick-red stain. It is not soluble in alcohol, xylene or xylene substitutes and can be coverslipped just like DAB. It does not fade with permanent mounting media. This four component system consists of buffer, stabilizer, chromogen and hydrogen peroxide. This chromogen is compatible with both manual and automatic coverslippers.



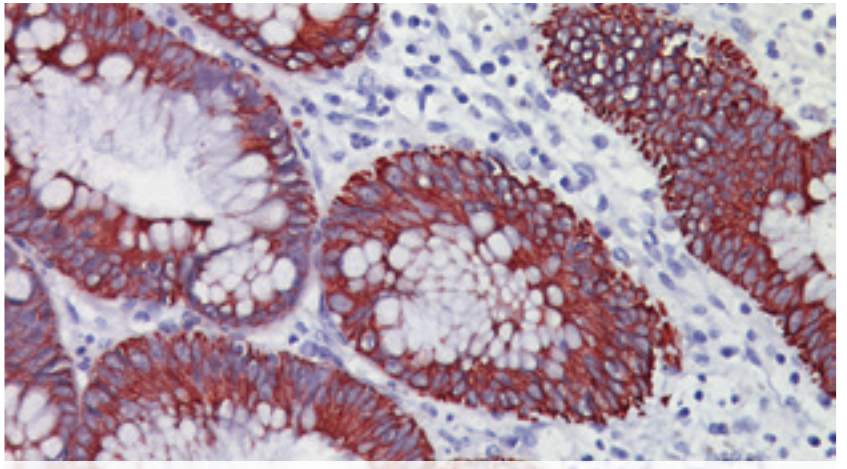
Bajoran Purple staining squamous cell carcinoma with CK5



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

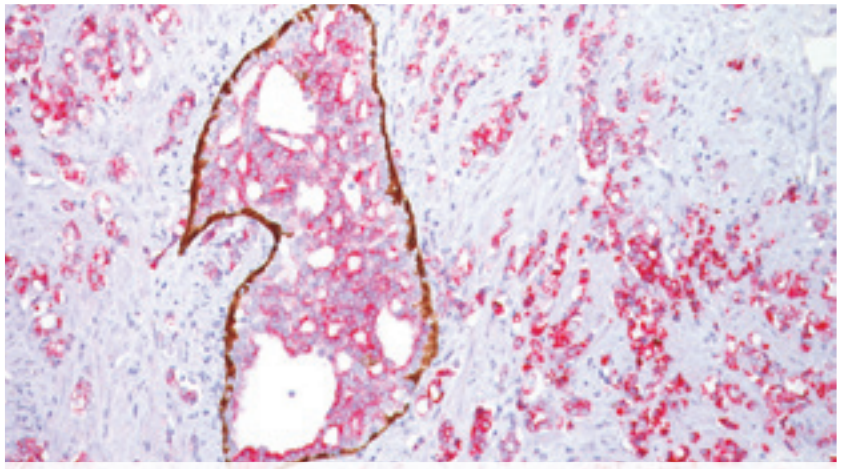
Warp Red Chromogen is a faster, sharper and more stable red chromogen for both manual and automated systems, such as the intelliPATH™. Warp Red is quick and sensitive, similar to DAB, providing an accelerated protocol and consistent staining quality. The sharp and intense red stain creates superior contrast 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

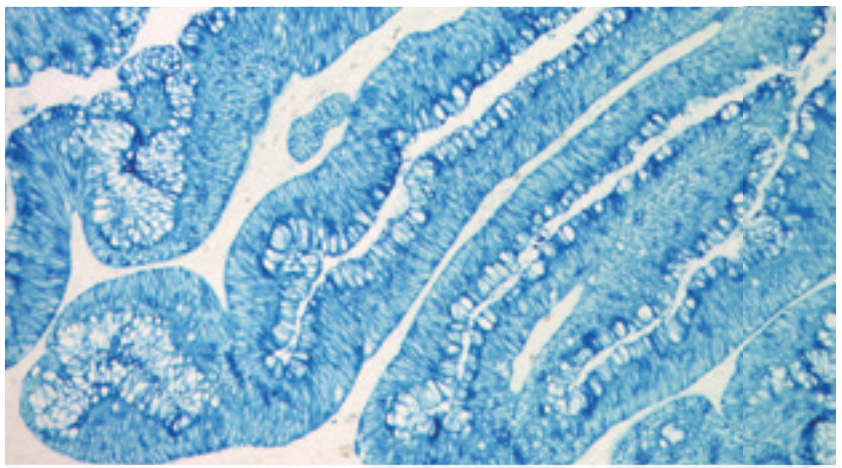
Vulcan Fast Red Chromogen produces a bright fuchsin-red precipitate in the presence of AP. This chromogen is insoluble in organic solvents and can be coverslipped with a permanent mounting media. For optimum results, use Immunocare TBS Wash Buffer. Vulcan Fast Red can be viewed by both brightfield and 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™.



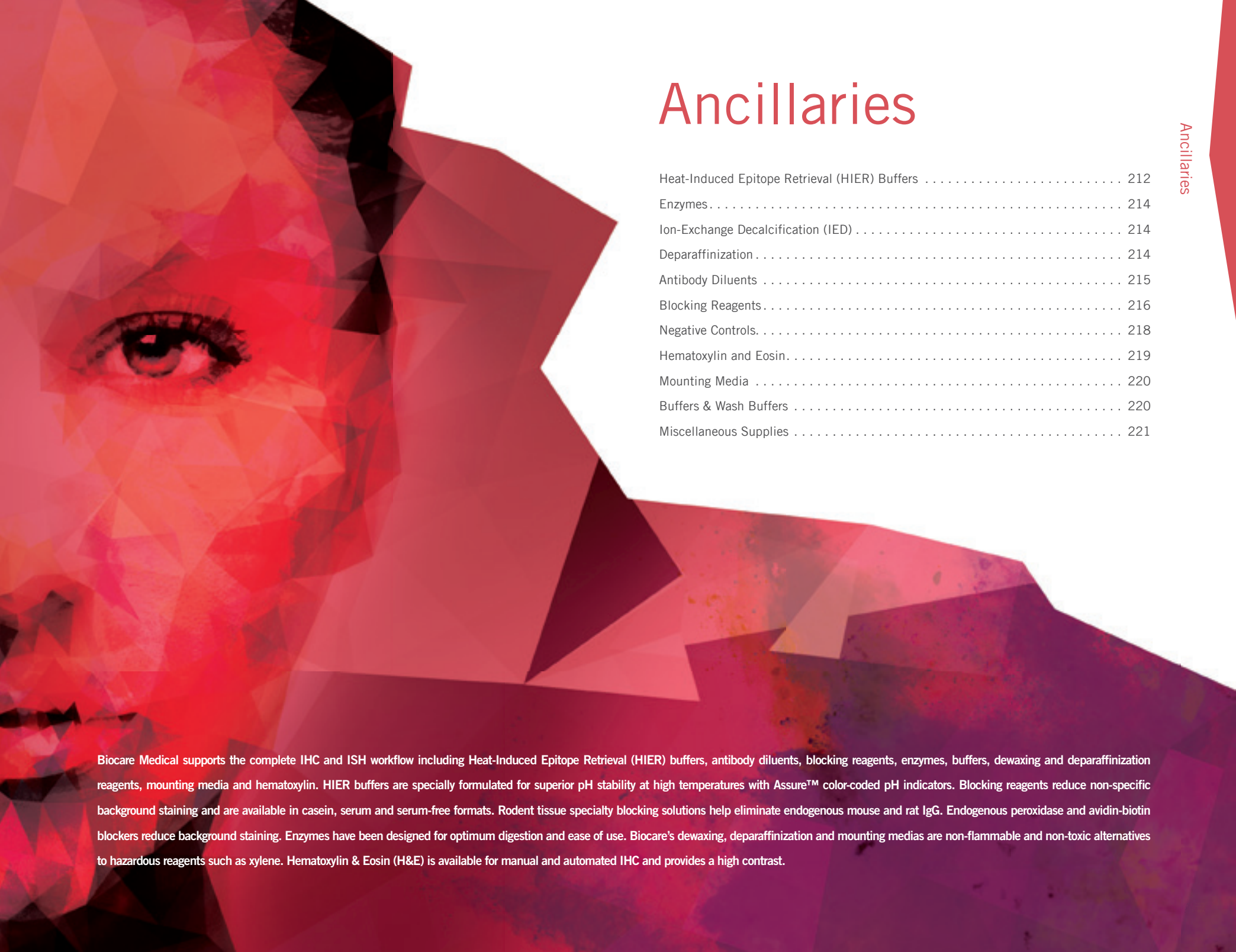
Warp Red Chromogen Kit staining prostate cancer with CK5/14 + p63 + P504S



Ferangi Blue Chromogen Kit 2 staining colon cancer with CK8/18

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
ONCORE DAB Chromogen Kit	Brown	ORI6011K T90, T180
Cardassian DAB Chromogen Kit	Dark Brown	DBC859 L10
DAB Chromogen Kit	Brown	DB801 L
DAB Substrate Buffer	N/A	DS854 H
DAB Sparkle	N/A	DS830 H, 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, M
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
ONCORE Fast Red Chromogen Kit	Fuchsin Red	ORI6042K T60
Ferangi Blue™ Chromogen Kit 2	Royal Blue	FB813 H, S
intelliPATH™ Ferangi Blue™ Chromogen Kit	Royal Blue	IPK5027 G20



Ancillaries

Biocare Medical supports the complete IHC and ISH 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 and Borg 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 citrate-based 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 and blocks endogenous peroxidase. Suitable for IHC and *in situ* hybridization assays.

Borg Decloaker

This Tris-based buffer, pH 9.5, contains a surfactant and 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 citrate-based 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.

RISH™ Retrieval

This citrate-based 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.

Antigen Decloaker

This specially formulated citrate buffer, pH 6.0, does not contain a surfactant and 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.

Antigen Retrieval 1 (AR1), high pH

This Tris-EDTA buffer, pH 9.0, is a ready-to-use solution for pretreatment of FFPE tissues in an IHC procedure performed on the ONCORE Automated Slide Stainer.

Antigen Retrieval 2 (AR2), low pH

This citrate buffer, pH 6.0, is a ready-to-use solution for pretreatment of FFPE tissues in an IHC procedure performed on the ONCORE Automated Slide Stainer.

HIER Buffers	Status	Buffer Base	pH	Surfactant	Usage	Formulation	Volume	Cat. No.
Diva Decloaker	IVD	Citrate	pH 6.2	Yes	IHC	Ready-to-Use	1000 mL, 1 gallon	DV2004 MM, G1
Diva Decloaker	IVD	Citrate	pH 6.2	Yes	IHC	Concentrate, 10X	100, 500 mL	DV2004 LX, MX
Diva Decloaker	IVD	Citrate	pH 6.2	Yes	IHC	Concentrate, 20X	250 mL	DV2005 L2J
Reveal Decloaker	IVD	Citrate	pH 6.0	Yes	IHC, ISH	Ready-to-Use	1000 mL, 1 gallon	RV1000 MMRTU, G1
Reveal Decloaker	IVD	Citrate	pH 6.0	Yes	IHC, ISH	Concentrate, 10X	500 mL	RV1000 M
Borg Decloaker	IVD	Tris	pH 9.5	Yes	IHC	Ready-to-Use	250, 1000 mL, 1 gallon	BD1000 S-250, MM, G1
EDTA Decloaker	IVD	EDTA	pH 8.5	No	IHC	Concentrate, 5X	100, 500 mL	CB917 L, M
Rodent Decloaker	RUO	Citrate	pH 6.2	Yes	Rodent IHC	Concentrate, 10X	100, 500 mL	RD913 L, M
RISH™ Retrieval	IVD	Citrate	pH 6.2	Yes	ISH	Concentrate, 10X	500 mL	RI0209 M
Antigen Decloaker	IVD	Citrate	pH 6.0	No	IHC	Concentrate, 10X	500 mL	CB910 M
Nuclear Decloaker	IVD	Tris	pH 9.5	No	IHC	Concentrate, 10X	500 mL	CB911 M
Antigen Retrieval 1 (AR1), high pH	IVD	Tris-EDTA	pH 9.0	No	IHC	Ready-to-Use	60 tests	ORI6006 T60
Antigen Retrieval 2 (AR2), low pH	IVD	Citrate	pH 6.0	No	IHC	Ready-to-Use	60 tests	ORI6005 T60

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. DS Enzyme is pepsin packaged for use on the ONCORE Automated Slide Stainer.

Enzymes	Volume	Cat. No.
Carezyme I: Trypsin Kit	25 mL	TRP955 KH
Carezyme II: Pepsin Kit	25, 100, 500 mL	PEP956 H, L, M
Carezyme III: Pronase Kit	25 mL	PRT957 KH
Pronase Buffer	25 mL	PRB957 H
Protease XXIV	15 mL	PR960 KG15
intelliPATH™ Pepsin	20 mL	IPE5007 G20
intelliPATH™ Pronase Kit	20 mL	IPK5014 G20
ONCORE DS Enzyme	60 tests	ORI6049 T60

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, 1000 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. It eliminates the use of xylenes and alcohols.

DepART Solution

DepART is a water-soluble deparaffinization reagent for IHC and H&E that eliminates the use of xylenes and alcohols while providing equivocal results. DepART can also be used as part of a two-step deparaffinization retrieval protocol with most retrieval solutions.

Hot Rinse

This clarifying reagent is used with Reveal, Borg or Universal HIER reagents to remove residual paraffin after depaffinization. It is non-toxic, non-flammable and odorless.

ONCORE Dewax Solution Kit

These are ready-to-use water-based solutions for the removal of paraffin wax from FFPE tissue specimens as part of an IHC staining procedure on the ONCORE Automated Slide Stainer.

Slide Brite

Slide Brite is a non-flammable, non-hazardous alternative to xylene for the deparaffinization and clearing of tissue sections. Slide Brite has been designated non-hazardous on the basis of aquatic toxicity, eliminating hazardous waste and requires no hood or ventilation.

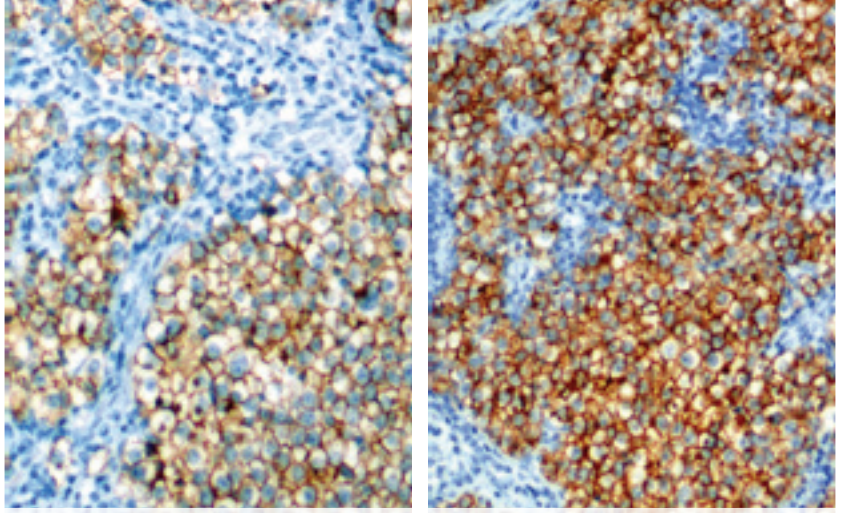
Deparaffinization	Volume	Cat. No.
Aqua DePar, 10X	500 mL	ADP1002 M
DepART Solution	1 gallon	BRI4044 G1
Hot Rinse, 25X	500 mL	HTR1001 M
ONCORE Dewax Solution Kit	60 tests	ORI6004K T60
Slide Brite	1 gallon	SBT G1

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.

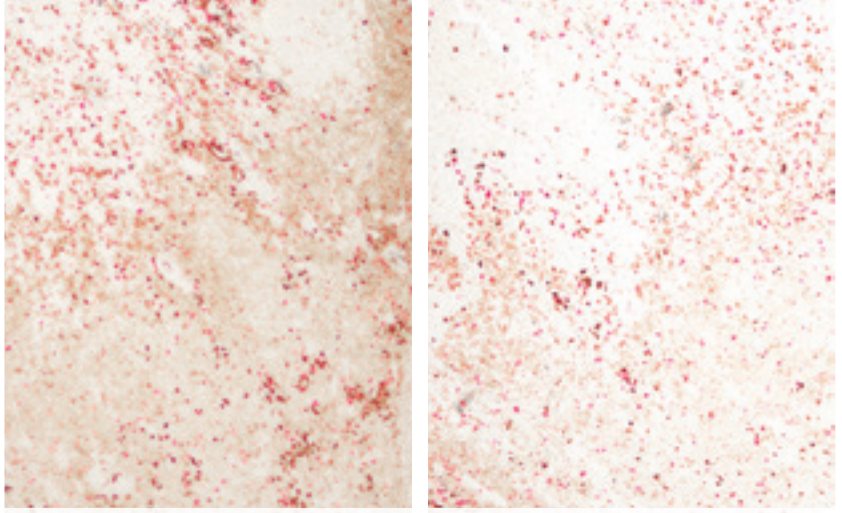
Additional specialty diluents include Renaissance Background Reducing Diluent and Fluorescence Antibody Diluent. Renaissance Background Reducing Diluent includes potent background reducing agents and is ideal for antibodies that have a tendency to produce non-specific background staining. Fluorescence 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	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 non-specific 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

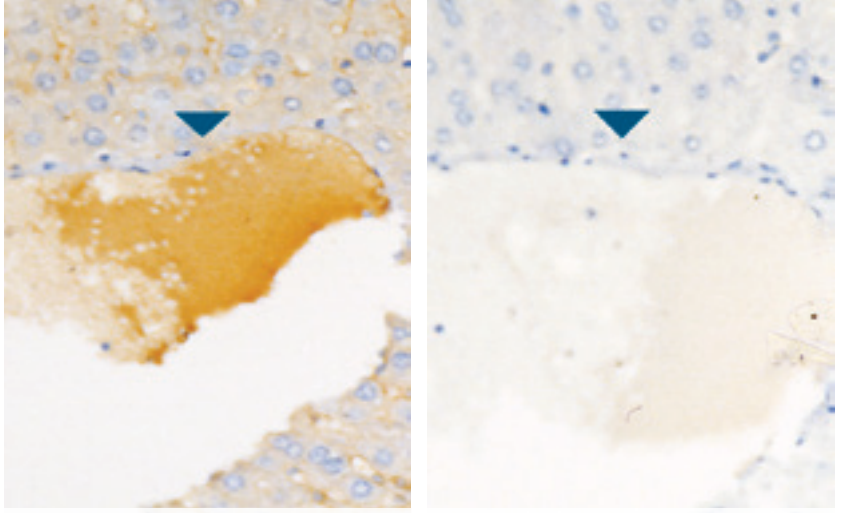
A universal casein blocker used for reducing non-specific background staining often found with IHC, ELISA, immunoelectron microscopy and immunogold techniques. Casein has proven to be a superior blocking reagent compared to serum proteins.

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 Perozidazed 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	25, 100, 500 mL	BP974 H, L, M
intelliPATH™ Background Punisher	20 mL	IP974 G20
Background Sniper	25, 50, 100, 500, 1000 mL	BS966 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	25, 500, 1000 mL	PX968 H, M, MM
Peroxidazed Diluent	125 mL	PX970 LH
Peroxabolish	100, 500 mL	PXA969 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 titered for Biocare's antibodies and optimized to work with Biocare's 4plus streptavidin-biotin, MACH™, PromARK™ or ONCORE micro-polymer detection systems. These are suitable for manual or automated protocols.

Polymer Serum (Mouse & Rabbit)

Polymer Negative Control Serum can be used with any of Biocare's mouse and/or rabbit polymer detection kits or Biocare's double stain kits. It is intended for use as a negative control for either mouse or rabbit antibodies. The Polymer Negative Control Serum has been titered for Biocare's monoclonal and polyclonal antibodies, as well as antibody cocktails and double stains.

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.

Universal Serum

Universal Negative Control Serum can be used with any of Biocare's mouse and/or rabbit streptavidin kits. It is intended for use as a negative control for either mouse or rabbit antibodies. The Universal Negative Control Serum has been titered for Biocare's monoclonal and polyclonal antibodies, as well as antibody cocktails.

ONCORE Universal

This negative control is a buffered solution of mouse IgG and rabbit IgG antibodies. It is intended for use on FFPE tissues in an IHC procedure performed on the ONCORE Automated Slide Stainer.

Negative Controls	Usage	Volume	Cat. No.
Polymer Negative Control Serum (Mouse & Rabbit)	Mouse and rabbit antibodies with polymer detection	6, 25, 100 mL	NC499 AA, H, L
Universal Negative Control Serum	Mouse and rabbit antibodies with streptavidin-biotin detection	6, 25, 100, 1000 mL	NC498 AA, H, L, MM
intelliPATH™ Universal Negative Control	Mouse and rabbit antibodies on the intelliPATH™ Slide Stainer	20 mL	IP498 G20
ONCORE Universal Negative Control Serum	Mouse and rabbit antibodies on the ONCORE Slide Stainer	60 tests	ORI6013 T60

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	500, 1000 mL, 1 gallon	CATHE-M, MM, GL
intelliPATH™ Hematoxylin	20 mL, 100 mL	IPCS5006 G20, L
Tacha's Automated Hematoxylin	500 mL	NM-HEM M
Edgar Degas Eosin	1 gallon	HTE-GL
Rubens Eosin-Phloxine	1 gallon	HTEP-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.

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	FP001 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 thimerasol free, the buffers are available with or without surfactant. Immunocare TBS Wash Buffer is formulated with an enzyme activator for alkaline phosphate (AP) detection systems. Tween 20 is a non-ionic polysorbate detergent used as an additive to enhance reagent spreading across tissues and reduce background staining. SSC Wash Buffer, also known as 2X SSC, is a saline sodium citrate buffer suitable for use in *in situ* hybridization procedures.

Buffers & Wash Buffers	Surfactant	Volume	Cat. No.
TBS Automation Wash Buffer, 20X	Tween 20	500 mL	TWB945 M
TBS Automation Wash Buffer, 40X	Tween 20	250 mL	TWB946 L2J
Immunocare PBS Wash Buffer, 10X	Yes	500 mL	PWB941 M
Immunocare TBS Wash Buffer, 10X	Yes	500 mL	TWB943 M
PBS Plus, 10X	None	500 mL	PBS940 M
TBS Plus, 10X	None	500 mL	TBS942 M
20% Tween 20	Tween 20	25, 100, 500 mL	TWN20 H, L, M
Automation Tween 20, 20X	Tween 20	500 mL	TWA20 M
ONCORE Wash Buffer	Yes	1000 mL	ORI6012 MM
SSC Wash Buffer	0.3% NP40	1000 mL	BRI4039 MM

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.
Tissue Tek® Containers	4 each	TTSET-4PK
Super Pap Pen	1 each	PEN1111
Kling-On Slides	10 gross	SFH1103 B
Q-Barrier Slides, Full	10 gross	SFHB1300 B
Q-Barrier Slides, Two Thirds	1 gross	SFHB1367 A

Tissue Tek® is a registered trademark of Sakura Finetek USA, Inc.; 1 gross = 144 slides / 10 gross = 1,440 slides

Index 1 - By Product Name

Index 1 - By Product Name

Index 1 - By Product Name

Index 1 - By Product Name

Index 1 - By Product Name

Index 1 - By Product Name

Index 1 - By Product Name

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Index 2 - By Catalog Number

Appendix - Clones

Clone	Product Title	Page
14	β-Catenin	33
100/D5	Bcl-2	33
10D6	CD163	64
13H4	AMACR (RM)	29
13H4	AMACR (RM), 2X	2, 30
13H4	CK HMW + p63 + AMACR (RM)	10, 11, 157, 158
156-3C11	CD44	57
15E2E2	S100 Protein [15E2E2] (M)	136
15E2E2	S100 Protein Cocktail	136
16	Progesterone Receptor (PR) [16]	131
1A4	Smooth Muscle Actin (SMA)	138
1A5	Mammaglobin (M)	104
1A6	Progesterone Receptor (PR) [1A6]	131
1B12	CD23	52
1D5	Estrogen Receptor (ER) [1D5]	86
1G12	Glypican-3	92
1H3	CDH17 (M)	9, 64
24B72D11.1	MASH1	16, 105
26B3.F2	Folate Receptor alpha IHC Assay Kit	89
27G12	Synaptophysin	141
2B11	Leukocyte Common Antigen Cocktail	103
2B11	Pan Lymphoma Cocktail	125
2F11	Neurofilament	115
2f2	CD61	7, 60
2G9	CD21	51
2H11	Thyroglobulin Cocktail	142
31	Topoisomerase II alpha	144

Clone	Product Title	Page
31A5	GCDFP-15 + Mammaglobin	160
32E12	Surfactant apoprotein-A [32E12]	141
34CA5	Microphthalmia Transcription Factor (MiTF)	107
34βE12	Cytokeratin HMW [34βE12]	76
34βE12	CK HMW + p63, 2X	11, 76
34βE12	CK HMW + p63 + AMACR (RM)	10, 11, 157, 158
3E2C1	Claudin-4	12, 66
41D	Clusterin	67
45M1	Mucin 5AC (Gastric Mucin)	110
4A4	CK HMW + p63, 2X	11, 76
4A4	CK HMW + p63 + AMACR (RM)	11, 157
4A4	p63	120
4A4	p63, 2X	121
4A4	p63, 2X (Lung)	17, 121
4A4	p63 + CK5	162
4A4	p63 + P504S	122
4A4	p63 + TRIM29	162
4A4	HMW CK + p63 (Basal Cell Cocktail)	98
4A4	CK5/14 + p63 + CK7/18	156
4A4	CK5/14 + p63 + P504S	72, 157
4A4	CK5 + p63	70
4A4	Prostate Cocktail, 2X (CK5 + CK14 + p63)	133
4A4	CK HMW + p63 + AMACR (RM)	10, 158
4B12	CD4 [4B12]	5, 45
4B12	CD4 + CD8	5, 155
4C4.9	S100 Protein Cocktail	136
4C7	CD5 (M)	46

Appendix - Clones

Clone	Product Title	Page
4F9	ERCC1	13, 84
56C6	CD10	48
5A4	ALK [5A4]	28
5D11	CD11c (Leu-M5)	6, 48
5D3	Cytokeratin LMW (8/18)	77
5D3	Pan Cytokeratin Plus [AE1/AE3 + 8/18]	125
6/Glutamine Synthetase	Glutamine Synthetase	92
66.4.C2	Renal Cell Carcinoma	135
695	MUC-1	109
6E1	Thyroglobulin Cocktail	142
6E3	SALL4	137
6F11	Estrogen Receptor (ER) [6F11]	86
6F11	Estrogen Receptor (ER) [6F11 + SP1]	87
6H2.1	PTEN (Tumor Suppressor)	134
8G-7	MUC-4	110
8G7G3/1	TTF-1	145
8G7G3/1	TTF-1 + Napsin A	164
8G7G3/1	TTF-1 + Napsin A (RM)	165
8G7G3/1	TTF-1 + p40 (cRM)	20, 165
8G7G3/1	TTF-1 + CK5	164
98/pp120	p120 Catenin	122
98/pp120	p120 + E-cadherin	161
9FY	ERG	85
9FY	ERG (M), 2X	85
9FY	ERG-2™ (ERG + CK5)	159
A103	Melan A (M)	17, 105
A16-4	PMS2	130

Clone	Product Title	Page
A24-T	C4d (RM)	3, 38
AE1	Cytokeratin [AE1] LMW	77
AE1/AE3	Pan Cytokeratin [AE1/AE3]	124
AE1/AE3	Pan Cytokeratin Plus [AE1/AE3 + 8/18]	125
AR441	Androgen Receptor	32
B72.3	Tumor Associated Glycoprotein [B72.3]	146
B-A38	CD138	63
BC.2F3.2	ZAP-70 (LR)	151
BC.6F-H2	WT1 (Wilms' Tumor)	150
BC/121SLE	CA 19-9	39
BC/24	PAX-5	126
BC/44	MSH6	109
BC/R1	Inhibin, Alpha	101
BC1	Cytokeratin 7 (CK7)	72
BC1	CDX2 + CK7	156
BC1	CK5/14 + p63 + CK7/18	156
BC10	IGF-1R	100
BC11	Desmoglein 3	79
BC11	Desmoglein 3 + p40 (M)	80
BC11	DSG3 + p40 (M) + Napsin A (RM)	12, 159
BC11	Desmoglein 3 + Napsin A	158
BC11	Desmoglein 3 + CK5	80
BC12	PAX8 (M)	127
BC15	TTF-1 + Napsin A (RM)	165
BC15	DSG3 + p40 (M) + Napsin A (RM)	12, 159
BC15	Napsin A (RM)	114
BC17	Uroplakin III	148

Appendix - Clones

Clone	Product Title	Page
BC17	Uroplakin II + Uroplakin III	148
BC2	CD31 (PECAM-1)	55
BC21	Uroplakin II	147
BC21	Uroplakin II + Uroplakin III	148
BC28	Desmoglein 3 + p40 (M)	80
BC28	DSG3 + p40 (M) + Napsin A (RM)	12, 159
BC28	p40 (M)	118
BC28	p40 (M), 3X (Prostate)	119
BC28/cRM	TTF-1 + p40 (cRM)	20, 165
BC34	SOX10 (M)	140
BC36	SOX2	19, 139
BC37	pHH3 (RM)	18, 128
BC5	MUM-1	111
BC56C04	CD56	59
BC7	*Helicobacter pylori*	94
BC8	URO-3™ Triple Stain	166
BC8	CD44	58
BC90	Cytomegalovirus (CMV)	78
Ber-EP4	Ber-EP4	34
Ber-EP4	Ber-EP4 + BG8	3, 35
Ber-H2	CD30 (Ki-1)	53
Ber-H2	CD30 Cocktail	54
BPV-1/1H8	HPV Cocktail Broad Spectrum	98
BU20a	Biotinylated Bromodeoxyuridine (BrdU)	35
BY87	CD15 Cocktail	49
C8/144B	CD8 [C8/144B]	6, 47
CALP	Calponin	40

Clone	Product Title	Page
CAMVIR-1	HPV Cocktail Broad Spectrum	98
CAMVIR-1	HPV-16 [CAMVIR-1]	99
CB11	c-erbB-2 [CB11]	37
CD19	CD19	50
CDX2-88	CDX2	65
CDX2-88	CDX2 + CK7	156
CDX2-88	CDX2 (M) + CDH17 (RM)	9, 155
CK5/6.007	Cytokeratin 5/6 (CK 5/6)	71
Col 94	Collagen IV	67
COL-1	Carcinoembryonic Antigen (CEA {M})	41
CON6D/B5	CD30 Cocktail	54
CON6D/B5	CD30 (Ki-1)	53
D2-40	D2-40 (Lymphatic Marker)	78
D33	Desmin	79
D6	Gross Cystic Disease Fluid Protein-15	93
D6	GCDFP-15 + Mammaglobin	160
DC10	Cytokeratin 18 (CK18)	74
DF-T1	CD43	57
DF-T1	Pan Lymphoma Cocktail	125
DO-7	p53 Tumor Suppressor Protein (M)	120
DOG1.1	DOG1	81
DT10	Cytomegalovirus (CMV)	78
DVB-2	Ki-67 + Caspase-3	161
E29	Epithelial Membrane Antigen(EMA) [E29]	83
E980.1	Factor XIIIa	88
EBV01	Epstein-Barr Virus (EBV)	84
EBV02	Epstein-Barr Virus (EBV)	84

Appendix - Clones

Clone	Product Title	Page
EBV03	Epstein-Barr Virus (EBV)	84
EP10	CD117/c-kit	63
EP109	Prostate Specific Antigen (PSA)	133
EP1176Y	VEGF	149
EP12	Cyclin D1	68
EP121	c-Myc	38
EP1215Y	HIF-1 alpha	96
EP206	CD103 (RM)	8, 62
EP25	CDX2 (RM)	10, 65
EP261	Arginase-1	32
EP3	c-erbB-2/HER2	37
EP30	CK5/14 + p63 + CK7/18	156
EP31	Nerve Growth Factor Receptor (NGFR)	115
EP41	CD3	44
EP42	p63 + CK5	162
EP42	TTF-1 + CK5	164
EP42	ERG-2™ (ERG + CK5)	159
EP42	Cytokeratin 5 (CK5)	69
EP6	p120 + E-cadherin	161
EP6	E-cadherin	81
EP774Y	Phospho-EGFR	129
EP8	CD99	62
EP86	CDX2 (M) + CDH17 (RM)	9, 155
EP9	p53	119
EP9	URO-3™ Triple Stain	166
EP9	Uro-2™ (CK20 + p53)	166
F3	Ber-EP4 + BG8	3, 35

Clone	Product Title	Page
FE11	MSH2	108
FPC1	CD22	52
FSH03	Follicle Stimulating Hormone (FSH)	89
G148-74	PU.1	134
G168-15	MLH-1	107
GA-5	Glial Fibrillary Acidic Protein (GFAP {M})	90
H11	Epidermal Growth Factor Receptor (EGFR)	82
H2A10	Cat Scratch Fever (*Bartonella henselae*)	43
H68.4	CD71	8, 61
HECD-1	E-cadherin	82
HHF35	Muscle Specific Actin (MSA)	111
HM47/A9	CD79a	61
HMB45	HMB45	97
HMB45	Melanoma Cocktail	106
HMB45	HMB45 + MART-1 + Tyrosinase	97
HP6025	IgG4 (M)	14, 100
JC/70A	CD31 (PECAM-1)	55
KP1	CD68 [KP1]	60
Ks 17.E3	Cytokeratin 17 (CK17)	74
Ks19.1	Cytokeratin 19 (CK19)	75
Ks20.8	URO-3™ Triple Stain	166
Ks20.8	Cytokeratin 20 (CK20)	75
Ks20.8	Uro-2™ (CK20 + p53)	166
L1C1	Kappa Light Chain [L1C1]	14, 101
L1C1	Kappa (M) + Lambda (P)	15, 160
L26	CD20	50
L26	Pan Lymphoma Cocktail	125

Appendix - Clones

Clone	Product Title	Page
L50-823	GATA-3	90
LK2H10	Chromogranin A	66
LL002	Cytokeratin 14 (CK14)	73
LL002	HMW CK + p63 (Basal Cell Cocktail)	98
LL002	CK5/14 + p63 + CK7/18	156
LL002	CK5/14 + p63 + P504S	72, 157
LL002	Prostate Cocktail, 2X (CK5 + CK14 + p63)	133
LL002	Cytokeratin 5/14 Cocktail	71
LN10	CD3 [LN10]	4, 45
LN22	Bcl-6 [LN22]	34
LP15	CD7	46
Lu-5	Pan Cytokeratin [Lu-5]	124
M2-7C10	HMB45 + MART-1 + Tyrosinase	97
M2-7C10	Melanoma Cocktail	106
M2-7C10	Pan Melanoma + S100	163
M2-7C10	MART-1 Cocktail	104
M2-7C10	Pan Melanoma Cocktail-2	126
M2-7C10	Pan Melanoma + Ki-67	163
M2-9E3	HMB45 + MART-1 + Tyrosinase	97
M2-9E3	Melanoma Cocktail	106
M2-9E3	Pan Melanoma + S100	163
M2-9E3	Pan Melanoma + Ki-67	163
M2-9E3	MART-1 Cocktail	104
M2-9E3	Pan Melanoma Cocktail-2	126
mc1	Amyloid A	31
Mc-5	Epithelial Membrane Antigen(EMA) [Mc-5]	83
Mec13.3	CD31	54

Clone	Product Title	Page
MIB-1	Ki-67 [MIB-1]	15, 102
MMA	CD15 [MMA]	49
MMA	CD15 Cocktail	49
MOC-31	MOC-31	108
MS110	BRCA-1	36
MyG007	Myogenin	113
N10/2	Lambda Light Chain [N10/2]	16, 103
NAT105	PD-1	18, 128
NK-1	CD57 (Natural Killer Cell)	59
O10	CD1a [O10]	4, 43
OC125	CA 125	39
OCH1E5	Hepatocyte Specific Antigen (HSA)	94
Oct-207	Oct-2	116
OV-TL 12/30	Cytokeratin 7 (CK7)	73
PD7/26	Leukocyte Common Antigen Cocktail	103
PD7/26	Pan Lymphoma Cocktail	125
PgR636	Progesterone Receptor (PR) [PgR636]	132
PHE5	Chromogranin A	66
PS1	Pan Lymphoma Cocktail	125
PWS44	CD33	7, 56
QBEnd/10	CD34	56
R4A	Smoothelin	139
SEMGC	Oct-3/4	117
SMMS-1	Smooth Muscle Myosin Heavy Chain	138
SOX11-C1	SOX11 (M)	19, 140
SP1	Estrogen Receptor (ER) [6F11 + SP1]	87
SP1	Estrogen Receptor (ER) [SP1]	87

Appendix - Clones

Clone	Product Title	Page
SP15	Placental Alkaline Phosphatase (PLAP)	130
SP16	CD4 + CD8	5, 155
SP16	CD8	47
SP2	Progesterone Receptor (PR) [SP2]	132
SP20	Vimentin	150
SP21	COX-2	68
SP4	Cyclin D1	69
SP6	Pan Melanoma + Ki-67	163
SP6	Ki-67	102
SPM498	GLUT-1	91
SPT24	TTF-1 [SPT24]	20, 146
T311	HMB45 + MART-1 + Tyrosinase	97
T311	Pan Melanoma + S100	163
T311	Pan Melanoma + Ki-67	163
T311	Pan Melanoma Cocktail-2	126
T311	Tyrosinase	147
TG14	BOB-1	36
TIA-1	TIA-1	143
TMU-Ad 02	Napsin A	113
TSH01	Thyroid Stimulating Hormone (TSH)	143
TSH02	Thyroid Stimulating Hormone (TSH)	143
UCHL-1	CD45RO [UCHL-1]	58
V9	Vimentin	149
W27	Heat Shock Protein 70	93
WA-1	p21	117
XM26	Desmoglein 3 + CK5	80
XM26	Cytokeratin 5 (CK5)	70

Clone	Product Title	Page
XM26	HMW CK + p63 (Basal Cell Cocktail)	98
XM26	CK5/14 + p63 + P504S	72, 157
XM26	CK5 + p63	70
XM26	Cytokeratin 5/14 Cocktail	71
XM26	Prostate Cocktail, 2X (CK5 + CK14 + p63)	133
XM26	CK5/14 + p63 + CK7/18	156